

EXHIBIT C

TAB 2

Socotec Report

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East-West Tie Line Project

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REPORT OF FINDINGS:

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ADDITIONAL COSTS due to PRODUCTIVITY LOSSES

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CAUSED by the COVID-19 PANDEMIC

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September 26, 2023

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1 CHRISTOPHER E. ANDERSON
2 **Socotec Advisory, LLC**
3 27412 Aliso Creek Road
4 Aliso Viejo, CA 92656
5 T: 307-263-1999
6 Chris.anderson@Socotec.us

7

8 ROBERT T. ADAMS
9 **Socotec Advisory, LLC**
10 27412 Aliso Creek Road
11 Aliso Viejo, CA 92656
12 T: 949-387-9400 Ext. 264
13 robert.adams@Socotec.us

14

15 Consultants for:

16 EAST-WEST TIE LIMITED PARTNERSHIP

17 By its general partner

18 UPPER CANADA TRANSMISSION 2, INC.

Table of Contents

1

2 **1. Introduction.....1**

3 **1.1 Nature of Engagement.....1**

4 **1.2 Executive Summary2**

5 **2. Project Background.....8**

6 **2.1 Overall Project Construction Timeline.....11**

7 **3. Analysis of COVID-19 Inefficiencies.....13**

8 **3.1 Industry Studies & Analysis.....14**

9 **3.1.1 Project Specific Mitigation & Productivity Impacts24**

10 **3.1.1.1 Mitigation Tracking.....25**

11 **3.1.1.2 Productivity Loss.....31**

12 **3.2 Measured Mile.....35**

13 **4. COVID-19 Pandemic Lost Productivity Settlement Costs53**

14 **4.1 Calculation Methodology54**

15 **4.2 Summary of Calculations58**

16 **4.2.1 Quantification of Labour Hours Incurred After the Onset of COVID-**

17 **19.....58**

18 **4.2.2 Quantification of Added Labour Costs.....58**

19 **4.2.3 Quantification of Added Equipment Costs58**

20 **4.2.4 Quantification of Added Travel, LOA and Camp Costs59**

21 **4.2.5 Summary of Added COVID Impact Costs.....59**

22 **5. Conclusion.....60**

23
 24

1

Table of Exhibits

Exhibit 1	Curriculum Vitae: Christopher E. Anderson
Exhibit 2	Curriculum Vitae: Robert T. Adams
Exhibit 3	Graphic Illustration: EWT Overall Schedule w/ Ontario COVID Case Count
Exhibit 4	Graphic Illustration: Summary Schedule Comparison – As Planned vs As-Built
Exhibit 5	Industry Study: Empirical Productivity Impacts of the Novel Coronavirus
Exhibit 6	Industry Study: The Silver Lining of Construction Productivity and COVID-19
Exhibit 7	Industry Study: Early Impacts of the COVID-19 Pandemic on the United States Construction Industry
Exhibit 8	Industry Study: Mental Health During COVID-19 Outbreak
Exhibit 9	Industry Study: COVID-19-Related Mental Health Effects in the Workplace
Exhibit 10	Industry Study: Both Remote and On-Site Workers are Grappling with Serious Mental Health Consequences of COVID-19
Exhibit 11	Industry Study: An Analysis of the Psychological Anxiety Factors of Construction Workers
Exhibit 12	Industry Study: Analyzing Psychological Conditions of Field-Workers in the Construction Industry
Exhibit 13	Industry Study: Mental Health Policies and Programmes in the Workplace
Exhibit 14	Industry Study: How Anxiety Can Affect Our Attention and Concentration at Work and What to Do About It
Exhibit 15	Industry Study: Why Anxiety Is the Number One Productivity Killer
Exhibit 16	Industry Study: A Systematic Review of the Prevalence of Anxiety Symptoms During Coronavirus Epidemics
Exhibit 17	Industry Study: Both Remote and On-Site Workers are Grappling with Serious Mental Health Consequences of COVID-19
Exhibit 18	Industry Study: Mobile Work and Mental Health; A Preliminary Study of Fly-in Fly-out Workers in the Alberta Oil Sands
Exhibit 19	Industry Study: UK Construction Counts the Productivity Cost of COVID-19
Exhibit 20	Industry Study: COVID-19 Construction Productivity Changes

Exhibit 21	Industry Study: Pandemics and Construction Productivity: Quantifying the Impact
Exhibit 22	Industry Study: Pandemics and Productivity: Quantifying the Impact
Exhibit 23	Industry Study: Evaluation of measures to prevent the spread of COVID-19 on the construction sites
Exhibit 24	Industry Study: Impact of COVID-19 Pandemic on Demand, Output, and Outcomes of Construction Projects in Singapore
Exhibit 25	Socotec Work Product: Supporting Calculations of Added Costs Resulting from 24.7% Negotiated Inefficiency Factor

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1 **1. INTRODUCTION**

2 **1.1 NATURE OF ENGAGEMENT**

3 Christopher E. Anderson and Robert T. Adams of Socotec Advisory, LLC (“Socotec”)
4 have been retained by East-West Tie Limited Partnership, by its general partner Upper
5 Canada Transmission 2 Inc. (“UCT 2”), to review and analyze Project records for the
6 purpose of providing opinions related to the prudence of cost overruns incurred
7 during the construction of the East-West Tie Line Project (“Project”) resulting from lost
8 time and inefficiencies associated with the COVID-19 Pandemic. Valard Construction,
9 LP (“Contractor”) was the prime contractor on the Project and was engaged by
10 NextBridge Infrastructure, LP (“Owner”), the initial partnership among affiliates of
11 NextEra Energy Canada, Enbridge and OMERS Infrastructure (and which partnership
12 subsequently became the East-West Tie Limited Partnership).

13 Socotec was asked by the Owner and Contractor to assist in facilitating discussions
14 regarding COVID-19 impacts on construction projects. Socotec did so through reviews
15 of academic journal articles and detailed analysis of the Project records to assess
16 whether, and to what extent, Project costs were materially impacted by the Pandemic.
17 As a result of our work, a productivity inefficiency factor was provided to the parties
18 for consideration.

19 The Owner and the Contractor reached a settlement which involved, in part, additional
20 payments being provided by the Owner towards the Contractor under the EPC
21 Contract. A portion of the settlement relied on Socotec’s approach to developing a
22 production inefficiency factor to account for lost time and inefficiencies associated with
23 the COVID-19 Pandemic.

1 We have been asked to review and assess the reasonableness of the increase in Project
2 costs based on the productivity inefficiency factor developed previously and formalize
3 our opinion in this report.

4 The opinions and analyses presented in this report are based on currently available
5 information. As of the date of this report, the Project has been completed and is in
6 service. Current biographies for Christopher E. Anderson and Robert T. Adams are
7 attached hereto as **Exhibits 1 and 2**.

8 1.2 EXECUTIVE SUMMARY

9 The impacts associated with the COVID-19 Pandemic caused, among other challenges,
10 significant increases in Project labour, material, and equipment costs. These increases
11 resulted from a variety of combined factors including: scheduling changes,
12 construction timing delays, and worker inefficiencies arising from new and
13 unprecedented work environments. All of these factors dramatically increased Project
14 construction costs which would not have been incurred, but for the COVID-19
15 Pandemic.

16 Our assessment categorizes these costs into the following: (1) additional mitigation
17 costs to comply with COVID-19 protocols (e.g. worker time consumed to comply with
18 new measures designed to reduce the risk of exposure to the virus, such as training,
19 health screenings, cleaning and disinfecting, job site access, and administration); and
20 (2) additional costs incurred arising from worker productivity impacts (e.g. reductions
21 in direct work productivity resulting from factors such as social distancing, staggered
22 shifts, reduced crew sizes, use of increased personal protective equipment when
23 carrying out work tasks, related job site regulations, extra mobilizations and

1 demobilizations, work fatigue from anxiety, excess absenteeism, and altered delivery
2 of materials). These costs were in addition to the additional direct costs incurred to
3 develop and implement COVID-19 protocols used on Project worksites.¹

4 Project construction occurred throughout the COVID-19 Pandemic and in an
5 unprecedented, and unpredictable environment. States of emergency under the
6 Emergency Management and Civil Protection Act were declared. Several
7 municipalities and local Indigenous communities also implemented changes affecting
8 the ability to conduct Project work in the manner originally planned. All of these types
9 of changes in the work environment had cumulative impacts that resulted in
10 numerous inefficiencies for the Owner and Contractor.

11 As of the date of this Report, it is our understanding that the Owner and Contractor
12 reached an agreement to address the actual incremental costs incurred by the
13 Contractor arising from additional work efforts and worker productivity impacts that
14 occurred due to the COVID-19 Pandemic. We understand that the Owner and
15 Contractor's settlement agreement was based in part upon on Socotec's advice at the
16 time that productivity losses arising due to COVID-19 could reasonably be assessed
17 using a 24.7% percentage factor applied to Project labour and labour-related costs (the
18 "Productivity Inefficiency Factor" or "PIF"). This Report describes the PIF
19 methodology presented to the parties and ultimately used to calculate the increase in
20 Project costs.

¹ Exhibit 25 provides supporting calculations of added costs resulting from 24.7% Productivity Inefficiency Factor.

1 Notably, based on the timing of our original analysis, which was completed during the
2 COVID-19 Pandemic surge referred to as the Omicron variant, full consideration could
3 not be given to the substantial additional impacts that were occurring in the final stages
4 of construction. Additionally, at the time of our original analysis, only limited industry
5 studies were available, as the impacts from the COVID-19 Pandemic were effectively
6 peaking. Consequently, while we were able to use the Contractor's records at the time
7 to verify that its losses exceeded the 24.7% PIF factor, Socotec's assessment was
8 ultimately based on an average loss derived from the limited number of industry
9 studies that were available at the time. Given this, and as part of our current
10 assignment, Socotec has performed substantial additional analysis to reassess the
11 productivity losses by implementing a methodology favored in the construction
12 industry known as a "measured mile analysis." It is well recognized that this
13 methodology and more detailed analysis provides for a much more accurate
14 assessment of productivity losses. As discussed in Section 3.3 of this Report, this
15 analysis shows that the actual losses associated with COVID-19 significantly exceed
16 Socotec's original PIF assessment of 24.7%.

17 Moreover, as part of our due diligence in preparing this report we also conducted a
18 forensic review of the Contractor's final cost accounting data. This review included an
19 assessment of the budget costs for the work, the actual costs incurred, and the
20 quantification of the Contractor's cost overruns. Our assessment indicates that, prior
21 to the consideration of the settlement, the Contractor's overall cost overrun on the
22 Project totaled \$255.5 million, including its budgeted general and administrative costs
23 and fee. It is our understanding that the settlement reached between the Owner and

1 Contractor, as well as the adjustments now being sought, are both substantially lower
2 than the Contractor's total job cost overruns.

3 The structure of this Report first discusses the general impacts of COVID-19 on
4 construction projects. This discussion was informed by a review of over 20 industry
5 articles and reports. This review focused on whether, and to what extent, significant
6 production and productivity cost impacts occur when construction projects are carried
7 out during COVID-19 Pandemic circumstances, as compared to a traditional
8 construction work environments.

9 Next, the report addresses the specific lost time and worker inefficiencies experienced
10 on this Project.

11 While the industry studies available at the time of the settlement varied in format,
12 generally the losses were divided into two main categories: mitigation tracking (which
13 quantifies hours consumed carrying out measures designed to reduce the risk of
14 exposure to the virus, such as training, health screenings, cleaning and disinfecting,
15 job site access, and administration) and productivity benchmarking (which quantifies
16 the reduction in direct work productivity resulting from factors such as social
17 distancing, staggered shifts, reduced crew sizes, use of increased personal protective
18 equipment, related job site regulations, extra mobilizations/demobilizations, work
19 fatigue from anxiety and excess absenteeism, and altered delivery of materials).

20 Notably, several of the available industry studies did not segregate mitigation efforts
21 and the productivity loss, but rather offered an overall assessment of the losses
22 incurred. Accordingly, we calculated the overall loss of 24.7% based on the average of
23 all the industry studies that provided specific percentage loss assessments. As

1 indicated in the table below, one-half of the studies segregated mitigation efforts and
 2 the productivity loss and one-half provided an overall assessment. While the inclusion
 3 of the studies providing only an overall assessment lowered the resulting overall
 4 average loss, it was our view that the inclusion of all of the available industry
 5 assessments provided the most accurate and conservative result.

Publication	Industry Group	Type of Losses Addressed	Low	High
UK construction counts the productivity cost of COVID-19	Turner & Townsend	Overall Loss	15.0%	15.0%
Pandemics and Productivity: Quantifying the Impact	New Horizons Foundation	Mitigation & Productivity Loss	17.9%	17.9%
COVID-19 Construction Productivity Changes	Compass International	Overall Loss	5.0%	35.0%
Pandemics and Construction Productivity: Quantifying the Impact	Electri International	Mitigation & Productivity Loss	21.8%	21.8%
Evaluation of measures to prevent the spread of COVID-19 on the construction sites	Cleaner Engineering & Technology	Mitigation & Productivity Loss	20.0%	70.0%
Impact of COVID-19 Pandemic on Demand, Output, and Outcomes of Construction Projects in Singapore	ASCE	Overall Loss	28.6%	28.6%
Averages			18.1%	31.4%
Mid-Point of Averages			24.7%	

6 Given the information compiled from the available industry studies, we then turned
 7 to analyses of the data available from the Contractor on this Project. As suggested in
 8 the industry studies reviewed, our analysis is segregated into two cost categories: (1)
 9 mitigation tracking and (2) productivity loss.

1 While the analysis was performed prior to the onset of the Omicron variant, the
2 information from the Contractor indicated lost time associated specifically with the
3 *mitigation* efforts (when workers were diverted from productive operations to
4 unplanned mitigation tasks) in a range of 9.3% to 14.7%.

5 In addition to mitigation, COVID-19 also caused significant declines in *productivity*
6 during hours when production work was being performed. Our analysis of the
7 productivity loss at the time was more difficult, as the impacts from COVID-19 were
8 present during the majority of the Project and there was no unimpacted performance
9 period for comparison. Based on the data available at the time and our own
10 experience, we established a minimum range of 10% to 15% and a maximum range of
11 25% to 30%. (i.e., the productivity loss incurred when work was being performed).

12 Since determining the overall impact factor above, additional analysis was completed
13 by Socotec, supporting the conclusion that a 24.7% PIF rate represented a conservative
14 estimate of the overall impact experienced. With the benefit of hindsight, it is apparent
15 that consideration of the winter weather construction seasons (when the majority of
16 the work on this Project was performed), specific Project considerations including
17 worker camp occupancy requirements, and the onset of the different COVID-19 waves
18 and new variants, such as the Omicron surge in the winter of 2021/2022, significantly
19 increased overall Project productivity inefficiencies.

20 Socotec's measured mile analysis compares the Contractor's performance capabilities
21 on various other Projects (before and after the COVID-19 Pandemic) to performance
22 on this Project. This analysis establishes that an impact factor in the range of 45% is a

1 more realistic assessment of the overall impacts experienced on this Project
2 from COVID-19. arising

3 Finally, Section 4 of this report provides the detailed accounting to support the added
4 costs totaling \$89 million included in Change Orders Nos. 6 and 7. As summarized
5 below, the costs quantified are segregated into the categories of labour, equipment,
6 and travel/LOA/camps, and amount to **\$89,014,103** (excluding applicable taxes).

COVID-19 Mitigation & Productivity Loss Costs:

Added Labour Costs	\$40,935,560
Added Equipment Costs	\$26,249,568
Added Travel, LOA, and Camp Costs	<u>\$7,963,967</u>
Subtotal	\$75,149,095
 15% Valard markup and 3% Supercomm Fees	 <u>\$13,864,978</u>
Total	\$89,014,103

7 It is our opinion that the increased Project costs of \$89,014,103 is not only reasonable,
8 but also that it represents an undervaluation of the actual Contractor losses
9 experienced on this Project due to implemented COVID-19 mitigation measures and
10 productivity inefficiencies.

11 **2. PROJECT BACKGROUND**

12 On December 5, 2017, the Contractor and Owner entered into a comprehensive
13 Engineering, Procurement and Construction Contract in respect of the Project.

14 The EPC Contract addressed the following key elements:

- 15 • Design and construction of a double-circuit, 230kv transmission line
16 approximately 450 kilometers in length

- Three Transformer Stations – Lakehead (Shuniah), Marathon and Wawa
- Total transfer capability of 450 megawatts (MW) (in conjunction with existing transmission infrastructure) in northwestern Ontario, with ability to accommodate up to 650 MW
- 1,228 Towers

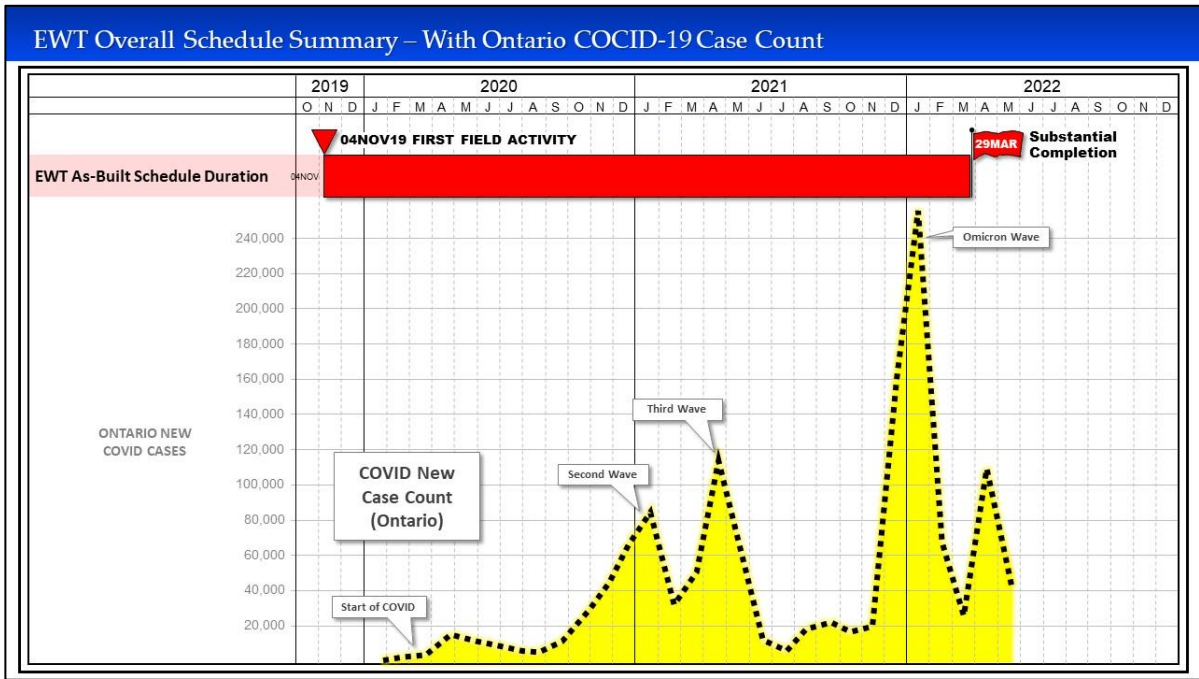


The Contract specified that the Owner would furnish the structures (steel towers), the conductor, the optical ground wire (OPGW), and the overhead ground wire (OHGW). The Contract also specified that the Owner would obtain most of the provincial and federal permits required to commence construction activities. The Contractor's work scope was generally comprised of all field installation work, including the following:

- Gates and Fencing
- Temporary Culvert and Bridge Installation and Removal
- Permanent Culvert and Bridge Installation
- Access Roads

- 1 • Erosion Control
- 2 • Restoration and Reclamation
- 3 • Excavation
- 4 • Foundations
- 5 • Structure Assembly and Framing
- 6 • Structure Erection
- 7 • Guying and Anchoring
- 8 • Grounding and Bonding
- 9 • Conductor, OPGW and OHGW
- 10 • Specific Permits – as specified per Exhibit H to the Contract

11 Construction began in the third quarter of 2019, and the Transmission line was
12 completed and in service by late March 2022. As indicated on the figure below and
13 included as **Exhibit 3**, the COVID-19 Pandemic occurred throughout the time in which
14 Project construction field work occurred.



1

2.1 OVERALL PROJECT CONSTRUCTION TIMELINE

2

3 Exhibit C-1 to the Contract included the original construction timing schedule,
 4 outlining the planned start and finish dates for each element of work within each work
 5 Segment on the Project. The original Contract contemplated Provisional Acceptance
 6 would occur on December 11, 2020, 770 calendar days after the start of field
 7 construction activities on November 2, 2018. The completion of the field installation
 8 work on the Project, including right-of-way reclamation, which was to continue
 9 beyond Provisional Acceptance, was planned for an overall duration of 833 calendar
 10 days from November 2, 2018, to February 12, 2021.

11 Change Order No. 1, dated July 1, 2019, adjusted the time requirements of the Contract,
 12 stating in part that "OEB LTC approval was delayed causing the construction

1 separate work disciplines performed on the Project was required to be conducted
2 during the Pandemic (i.e., right-of-way clearing, foundations, structure work,
3 conductor stringing and reclamation). Consequently, the impacts caused by COVID-
4 19 affected every aspect of the work performed during nearly the entire as-built
5 duration of the East-West Tie Project.

6 **3. ANALYSIS OF COVID-19 INEFFICIENCIES**

7 Construction productivity, in its most basic form, is defined as the quantity of “inputs”
8 required to produce an “output.” [*Empirical Productivity Impacts of the Novel*
9 *Coronavirus, Exhibit 5*] Typically, construction contractor inputs consist of labour,
10 equipment, and materials needed to complete a project. The resulting output is the
11 construction progress made for a project, whether constructing a building, paving a
12 roadway, or constructing a transmission line. When the required inputs are greater
13 per unit of work performed than that which the contractor anticipated when
14 developing its bid, a loss of productivity occurs.

15 The Contractor’s actual “inputs” on this Project were substantially higher than
16 anticipated when developing its bid. In our view, there can be little debate over the
17 fact that the working environment during the Project was substantially different than
18 what the Contractor could have anticipated at the time of preparing its bid. New safety
19 measures, rules, and regulations (i.e., mitigation efforts) had the effect of taking time
20 away from what would have otherwise been productive operations. Similarly, when
21 production work was being performed, the speed at which the work could be carried
22 out was reduced due to several factors such as worker safety uncertainty, social
23 distancing, staggered shifts, reduced crew sizes, use of increased personal protective

1 equipment, related job site regulations, extra mobilizations and demobilizations, work
2 fatigue from anxiety, excess absenteeism, and altered delivery of materials.

3 **3.1 INDUSTRY STUDIES & ANALYSIS**

4 When Project construction commenced, no industry standard metrics had been
5 developed to assess how to measure COVID-19 impacts on the construction of major
6 infrastructure projects. However, as the COVID-19 Pandemic developed and
7 continued over an extended period, empirical research from North America and the
8 United Kingdom began to emerge on the topic of measuring estimated losses due to
9 COVID-19. As described below, the studies available at the time of the Owner and
10 Contractor negotiations suggested that losses attributable to COVID-19 were generally
11 in the range of at least 18% to 31%, with even greater losses observed for certain types
12 of work.

13 Socotec reviewed the following 21 industry studies/publications to assess and quantify
14 the impacts of COVID-19 on the Project:

- 15 ○ Empirical Productivity Impacts of the Novel Coronavirus (JS Held)
- 16 ○ The Silver Lining of Construction Productivity and COVID-19 (FMI)
- 17 ○ Early Impacts of the COVID-19 Pandemic on the United States
- 18 Construction Industry (Environmental Research and Public Health)
- 19 ○ Mental Health During COVID-19 Outbreak (Pollara Strategic Insights)
- 20 ○ COVID-19-Related Mental Health Effects in the Workplace
- 21 (Environmental Research and Public Health)
- 22 ○ Both Remote and On-Site Workers are Grappling with Serious Mental
- 23 Health Consequences of COVID-19 (Kaiser Family Foundation)
- 24

- 1 ○ An Analysis of the Psychological Anxiety Factors of Construction
2 Workers (International Symposium on Computers & Informatics)
- 3 ○ Analyzing Psychological Conditions of Field-Workers in the
4 Construction Industry (International Journal of Occupational Health)
- 5 ○ Mental Health Policies and Programs in the Workplace (World Health
6 Organization)
- 7 ○ How Anxiety Can Affect Our Attention and Concentration at Work and
8 What to Do About It (Stewart Geddes)
- 9 ○ Why Anxiety Is the Number One Productivity Killer (Fearless Culture)
- 10 ○ A Systematic Review of the Prevalence of Anxiety Symptoms During
11 Coronavirus Epidemics (Journal of Health Psychology)
- 12 ○ Both Remote and On-Site Workers are Grappling with Serious Mental
13 Health Consequences of COVID-19 (Kaiser Family Foundation)
- 14 ○ UK Construction Counts the Productivity Cost of COVID-19 (Turner &
15 Townsend Suiko)
- 16 ○ COVID-19 Construction Productivity Changes (Compass International,
17 Inc.)
- 18 ○ Pandemics and Construction Productivity: Quantifying the Impact
19 (Electri International)
- 20 ○ Pandemics and Productivity: Quantifying the Impact (New Horizons
21 Foundation)
- 22 ○ Dealing With The Construction Impacts Of COVID-19 (American Bar
23 Association)
- 24 ○ Evaluation of measures to prevent the spread of COVID-19 on the
25 construction sites (Cleaner Engineering and Technology)
- 26 ○ Impact of COVID-19 Pandemic on Demand, Output, and Outcomes of
27 Construction Projects in Singapore (ASCE)

- Mobile Work and Mental Health; A Preliminary Study of Fly-in Fly-out Workers in the Alberta Oil Sands

- **Impact of Government Measures on Productivity**

Research conducted revealed that significant losses in productivity and efficiency were attributed to government-mandated safety measures designed to protect the workforce by curbing the spread of COVID-19. In the construction industry, such measures encompassed, for example, crew size reductions to accommodate social distancing requirements and sanitizing of tools, equipment, work areas, and materials. [*The Silver Lining of Construction Productivity and COVID-19, Exhibit 6*]

Furthermore, according to a survey of construction project managers conducted in the United States, productivity decreased because workers failed to report to work for various reasons, including quarantining requirements, caring for children due to school closures, and fear of being infected at work. [*Early Impacts of the COVID-19 Pandemic on the United States Construction Industry, Exhibit 7*] These impacts necessitated additional recruitment and training of replacement workers, consuming additional time and resources, which was even more difficult and time consuming when construction activities were carried out in remote locations, as was the case on this Project.

Psychological Impacts of COVID-19 on Productivity

- **Psychological Impacts on the Workforce**

Construction worker productivity reductions have also been attributed to negative changes in mental health. Data collected in 2021 by Mental Health Research Canada

1 (“MHRC”) from 3,000 Canadians revealed that during the COVID-19 outbreak,
2 Canadians recorded the highest level of anxiety (25%) and depression (17%) to date.
3 [*Mental Health During COVID-19 Outbreak, Exhibit 8*] During the height of the first
4 wave of the COVID-19 Pandemic, the level of depression amongst Canadians
5 increased by 70%. Within the overall Canadian population, younger Canadians (aged
6 18-34), who make up a large portion of the Canadian work force, were more likely to
7 experience anxiety and depression than their older counterparts.

8 One of the most common causes of anxiety and stress amongst workers during the
9 Pandemic was reported to be contagion risk in the workplace and the adoption of
10 adequate preventive procedures. A research paper published in the International
11 Journal of Environmental Research and Public Health concluded that the Pandemic
12 had major psychological impacts on members of the workforce. [*COVID-19-Related*
13 *Mental Health Effects in the Workplace, Exhibit 9*] New mental health issues emerged as
14 people learned to cope with working condition changes and novel stressors. The
15 Pandemic was observed to exacerbate existing mental health issues. In addition, many
16 workers experienced burnout, which frequently resulted from chronic workplace
17 stress, impacting an individual’s motivation and productivity. [*Both Remote and On-*
18 *Site Workers are Grappling with Serious Mental Health Consequences of COVID-19, Exhibit*
19 **10**]

20 In a survey of 132 construction workers, it was found that the working environment
21 had the greatest influence on psychological anxiety. [*An Analysis of the Psychological*
22 *Anxiety Factors of Construction Workers, Exhibit 11*] The key factors deeply affecting the
23 mental well-being of workers included a shortage of personal protective equipment
24 (particularly in the early stages of the Pandemic); physical weight and inconvenience

1 caused by wearing such equipment; fear of infection and the associated risk of harm
2 to family members; conflict between safety procedures and the desire for social
3 interaction; longer working hours; increased multitasking; and the stigmatization of
4 infected people returning to work after quarantine . As a result, workers developed a
5 range of behavioral (e.g., direct consequences on performance), physical (e.g.,
6 headache, gastric disturbances), and psychological (e.g., mood swings, lowered
7 motivation, depressive thoughts, feelings of isolation) reactions leading to decreases
8 in productivity. [COVID-19-Related Mental Health Effects in the Workplace, Exhibit
9 9]

10 • **Psychological Issues and Decreased Productivity in Construction Workers**

11 Mental health challenges impact both the wellbeing and productivity of construction
12 workers. A study from 2017 [*Analyzing Psychological Conditions of Field-Workers in the*
13 *Construction Industry, Exhibit 12*] analyzed the effects of psychological conditions of
14 fieldworkers in the construction industry and concluded that, in accordance with
15 findings of the World Health Organization, [*Mental Health Policies and Programmes in*
16 *the Workplace, Exhibit 13*] mental health problems such as stress, personality disorder,
17 depression and anxiety (all of which can also lead to substance abuse) can affect the
18 ability of workers to perform work safely and can lower productivity. In the
19 construction industry, many studies have identified mental health as a critical factor
20 influencing safety and productivity. Occupational stress (e.g., heavy workload, job
21 insecurity), organizational stress (e.g., inefficient communication, interpersonal
22 conflicts, lack of rewards), and environment-related stress (e.g., inadequate personal
23 protective equipment, excessive noise, severe weather conditions) can reduce
24 workplace safety and productivity. Worker anxiety causes avoidance and

1 procrastination, unnecessary task-switching, and excessive worry about completing a
2 given task, leading to delays in work output. [*How Anxiety Can Affect Our Attention and*
3 *Concentration at Work and What to Do About It*, **Exhibit 14**] An American study [*Why*
4 *Anxiety Is the Number One Productivity Killer*, **Exhibit 15**] analyzed the various ways
5 anxiety impacts workers and concluded that it has negative effects on the following:

- 6 ○ Workplace performance (56%)
- 7 ○ Relationships with coworkers and peers (51%)
- 8 ○ Quality of work (50%)
- 9 ○ Relationships with superiors (43%)

10 Anxiety has been coined “the number one productivity killer”. Approximately 40% of
11 workers experience persistent stress or excessive anxiety in their daily lives and 72%
12 find that it interferes with their job performance and personal lives. Other studies
13 revealed that depression and anxiety were strongly linked to long-term productivity
14 losses and safety issues by causing motivation, satisfaction, and emotional problems.

15 While the mental health factors discussed above existed pre-Pandemic, the issues are
16 relevant to the assessment of the impacts associated with COVID-19 Pandemic, as
17 many studies point out that mental health issues were exacerbated during the
18 Pandemic, with approximately half of the population being affected by symptoms of
19 anxiety. [*A Systematic Review of the Prevalence of Anxiety Symptoms During Coronavirus*
20 *Epidemics*, **Exhibit 16**] Research indicates that individuals that worked during the
21 COVID-19 Pandemic faced unique threats to mental health and wellbeing depending
22 on which sector they worked in and their potential for exposure to the coronavirus,
23 with construction workers being at one of the highest levels of risk for increased mental

1 health issues. [*Both Remote and On-Site Workers are Grappling with Serious Mental Health*
2 *Consequences of COVID-19, Exhibit 17]*

3 Moreover, studies also indicate that mental health issues were exacerbated during the
4 COVID-19 Pandemic when projects were situated in remote and isolated locations (i.e.,
5 fly-in fly-out camp projects like the EWT Project). Work-related stress on these types
6 of projects was greater than that found on construction projects that were local to the
7 work force. [*Mobile Work and Mental Health; A Preliminary Study of Fly-in Fly-out Workers*
8 *in the Alberta Oil Sands, Exhibit 18]* Many accounts observed that the Pandemic created
9 a “fear driven atmosphere” in the lives of workers. However, on isolated projects, this
10 observation was compounded by additional stresses around changing schedules and
11 travel disruptions, high contact among mobile workers, longer work shifts, stricter
12 isolation measures at camps, and the uncertainty of potential layoffs. While there are
13 always difficulties unique to remote projects, the studies reviewed indicated that these
14 health concerns were worsened by the Pandemic.

15 • **Quantification**

16 Quantifying the impact of COVID-19 on productivity in the construction industry is
17 critical because it allows for equitable compensation of incurred losses and formulation
18 of more accurate cost projections. The available empirical studies conducted in North
19 America and the United Kingdom provided a broad measure of the magnitude of the
20 losses, all of which were considered in the context of this specific Project.

21 A study of 70 medium-sized construction projects in the United Kingdom found that
22 COVID-19 caused a typical productivity loss of 15%. [*UK Construction Counts the*
23 *Productivity Cost of COVID-19, Exhibit 19]* Of this, labour shortages and social

1 distancing measures accounted for a combined 7%, with late or unavailable materials
2 contributing another 7%. The final 1% was attributable to poor transfer of design
3 information while remote working.

4 Compass International conducted a survey of construction managers, site
5 superintendents, and estimators on industrial projects in Canada and the US to assess
6 the productivity losses arising on various projects. The results indicate that pandemic-
7 related losses are typically in the range of about 5% to 35%, depending on the type of
8 work involved. For example, site clearance experienced losses of 5% to 10%, while
9 losses for concrete work and the installation of electrical and instrumentation work
10 were as high as 30%. In all cases, losses for indirect site work, including material
11 distribution, clean-up, administration, and transport ranged from 15% to 25%.
12 [*COVID-19 Construction Productivity Changes*, **Exhibit 20**]

13 A study commissioned by ELECTRI International analyzed the productivity losses
14 suffered by electrical contractors as a result of COVID-19. [*Pandemics and Construction*
15 *Productivity: Quantifying the Impact*, **Exhibit 21**] The losses were divided into two main
16 categories: mitigation tracking (which quantifies hours consumed carrying out
17 measures designed to reduce the risk of exposure to the virus, such as training, health
18 screenings, cleaning and disinfecting, job site access, and administration) and
19 productivity benchmarking (which quantifies the reduction in direct work
20 productivity resulting from factors such as social distancing, staggered shifts, reduced
21 crew sizes, use of increased personal protective equipment, related job site regulations,
22 extra mobilizations/demobilizations, work fatigue from anxiety and excess
23 absenteeism, and altered delivery of materials).

1 Based on a random sampling of more than 92,000 labour hours in the electrical
2 industry across the United States and Ontario, ELECTRI International found an 8.9%
3 productivity loss as a result of mitigation tracking, with a further 12.9% loss associated
4 with productivity benchmarking. Importantly, these two metrics are additive, such
5 that the average productivity impact was found to be 21.8%. The study concluded that
6 this result constituted a suitable baseline metric for productivity loss across a wide
7 array of projects, with modifications to be made based on the specific circumstances at
8 hand.

9 A similar study conducted by New Horizons Foundation also adopted mitigation
10 tracking and productivity benchmarking measures to assess COVID-19 impacts on
11 sheet metal, HVAC and mechanical contractors. The study was based on random
12 sampling of over 20,000 labour hours across the United States. [*Pandemics and*
13 *Productivity: Quantifying the Impact*, **Exhibit 22**] The New Horizons study identified lost
14 time associated with mitigation tracking of 8.7%, and a reduction in productivity of
15 9.2%. These metrics are again additive, for a total productivity loss of 17.9%.

16 A study conducted by Cleaner Engineering and Technology indicated that
17 “compliance costs of health and safety regulations to prevent COVID-19 will increase
18 project cost by more than 20%, site productivity will be reduced by up to 50%, and the
19 Pandemic will have caused a 40% increase in skill shortages.” [*Evaluation of measures to*
20 *prevent the spread of COVID-19 on the construction sites*, **Exhibit 23**]

21 A study conducted by American Society of Civil Engineers indicated that “projects
22 suffered significant delays and cost overruns and lower quality. It was found that
23 construction demand and output decreased by 27.9% and 28.6%, respectively.” [*Impact*

1 of COVID-19 Pandemic on Demand, Output, and Outcomes of Construction Projects in
 2 Singapore, Exhibit 24]

3 Combined, the above studies lead to the conclusion that COVID-19 impacts upon
 4 construction costs due to productivity loss ranged from 18.10% to 31.40%, for an
 5 overall average of 24.7% (as shown in the table below). For the purpose of calculating
 6 losses later in this Report, our analysis will utilize the average of the ranges agreed to
 7 in the Change Orders, which equates to a combined rate of 24.7% for mitigation
 8 tracking and productivity loss. This factor represents the total additional time
 9 associated with the COVID-19 impacts and is multiplied times the Contractor’s labour
 10 work-hours expended during the Pandemic to allow for the quantification of added
 11 costs.

Publication	Industry Group	Type of Losses Addressed	Low	High
UK construction counts the productivity cost of COVID-19	Turner & Townsend	Overall Loss	15.0%	15.0%
Pandemics and Productivity: Quantifying the Impact	New Horizons Foundation	Mitigation & Productivity Loss	17.9%	17.9%
COVID-19 Construction Productivity Changes	Compass International	Overall Loss	5.0%	35.0%
Pandemics and Construction Productivity: Quantifying the Impact	Electri International	Mitigation & Productivity Loss	21.8%	21.8%
Evaluation of measures to prevent the spread of COVID-19 on the construction sites	Cleaner Engineering & Technology	Mitigation & Productivity Loss	20.0%	70.0%
Impact of COVID-19 Pandemic on Demand, Output, and Outcomes of Construction Projects in Singapore	ASCE	Overall Loss	28.6%	28.6%
Averages			18.1%	31.4%

Publication	Industry Group	Type of Losses Addressed	Low	High
Mid-Point of Averages			24.7%	

1 It is noteworthy that all of the studies above were undertaken before the full impact of
 2 the Omicron variant was realized, which occurred in the winter of 2021/2022. Since
 3 that time, it is apparent that the actual impacts due to COVID-19, particularly during
 4 the Omicron surge, were clearly higher than the 24.7% agreed in the Change Orders
 5 and used in our calculations. This is confirmed by the measured mile analysis outlined
 6 in Section 3.2 below.

7 **3.1.1 PROJECT SPECIFIC MITIGATION & PRODUCTIVITY**
 8 **IMPACTS**

9 Socotec’s approach to evaluating productivity impacts caused by COVID-19 was
 10 informed by the common approaches used in the studies noted above. Our analysis
 11 also segregated costs and impacts arising from mitigation tracking and worker
 12 productivity loss.

13 Mitigation tracking includes impacts that are more directly associated with addressing
 14 the many operational changes brought about by the Pandemic. These changes, all of
 15 which were unanticipated, include items such as the purchase of additional safety
 16 supplies and personal protective equipment; time spent on additional safety training;
 17 time spent on health screenings and symptom testing; time spent cleaning and
 18 sanitizing; added workplace and camp inspections; and travel disruptions and
 19 restrictions. Generally, the mitigation tracking impacts are discernible and lend
 20 themselves to more discrete quantification.

1 The productivity loss component is intended to separately quantify the indirect
2 impacts of the Pandemic. In this case, the productivity losses result from a
3 combination of the implementation of the operational changes referenced above and
4 the psychological impacts of the Pandemic. As summarized previously, the factors
5 giving rise to inefficiencies include a shortage of personal protective equipment
6 (particularly in the early stages of the Pandemic); physical weight and inconvenience
7 caused by wearing such equipment; fear of infection and the associated risk of harm
8 to family members; conflict between safety procedures and the desire for social
9 interaction; longer working hours; increased multitasking; and the stigmatization of
10 infected people returning to work after quarantine. All of these factors deeply affect
11 the mental well-being of workers. While these factors would reasonably be expected
12 to have significant adverse impact on productivity, the quantification of the overall
13 impact is more difficult to assess.

14 3.1.1.1 **MITIGATION TRACKING**

15 The examples of added costs and inefficiencies associated directly with the COVID-19
16 Pandemic are numerous. First, time was lost on a daily basis due to the implementation
17 of additional safety protocols. Below are daily impacts faced by the field crews while
18 working in the unprecedented Pandemic conditions. Notably, these were not captured
19 separately in the Contractor's reviewed cost accounting data. Rather, the information
20 was embedded within the direct cost accounts by crew and/or work type.

- 21 • **COVID-19 Screening at Security Gate/Check-in Site:**

- 22 ✓ At the start of each shift, all personnel are required to line-up to get a
23 temperature check and answer a list of questions.

1 ✓ The worker wait time varied significantly depending on the number of
2 crews at each gate and their locations.

3 • **Daily Crew Checklist with Tailboard Meetings:**

4 ✓ While these daily meetings are standard operating procedure, the duration
5 of tailboard meetings were extended to address COVID-19 related topics
6 and discussion.

7 ✓ Field Supervision were required to perform COVID-19 daily screening with
8 each crew member. This included asking each crew member individually if
9 they have any of the following: new or worsening cough, shortness of breath
10 or difficulty breathing, temperature equal to or over 37.5°C, feeling feverish,
11 chills, fatigue or weakness, muscle or body aches, new loss of smell or taste,
12 headache, gastrointestinal symptoms (abdominal pain, diarrhea, vomiting).
13 Positive responses to any of these questions then led to further time and
14 effort to determine if the crew member was able to work.

15 • **Daily Truck Cleaning:**

16 ✓ Daily truck and equipment cleaning was required at the Project site.
17 ✓ Operators of shared vehicles or equipment being used on the Project were
18 required to disinfect/sanitize commonly touched surfaces in/on the vehicle
19 or equipment at the start and end of the day and between uses when sharing
20 with another co-worker. COVID-19 vehicle inspections must be completed
21 daily.

22 • **Truck Passenger Limitations (travel, breaks and meal rotations):**

23 ✓ The Contractor was required to limit the number of members traveling in a
24 truck at any given time to two individuals.

25 ✓ The restriction in vehicle occupancy also impacted worker breaks and lunch
26 scheduling. While work crews would normally work and break at the same
27 time (particularly for meals), vehicle occupancy (in winter) restrictions
28 meant a higher number and the staggering of breaks, degrading overall
29 efficiency of the work crew.

1 • **Additional Cleaning of Tools and Equipment:**

- 2 ✓ Time spent wiping electronic keyboards, workstations, small tools, etc.
3 ✓ While not easily quantifiable, additional time was spent cleaning tools and
4 equipment, wiping down workstations, etc.

5 • **Personal Protective Equipment, Sanitizer, Signage:**

- 6 ✓ Lost time associated with employees using sanitizer throughout the day,
7 having to replace their mask, adjust their mask, etc.
8 ✓ Eye wear fogging up, constant adjustments throughout the day. Use of
9 masks often fog up glasses & goggles and restrict breathing during laborious
10 activity.
11 ✓ Supervisors were asked to constantly monitor signage (i.e., for damage,
12 removal, etc.). As crews moved from location to location, which was quite
13 often, signage was required to be removed, relocated and replaced.

14 • **Exit Screening:**

- 15 ✓ Workers were required to inform security when exiting the project. Failure
16 to complete exit screening resulted in the worker not being able to access
17 worksites for up to 14 days.
18 ✓ If a worker was staying off camp, they were required to visit a security check
19 point on their last day of work to have exit screening completed.
20 ✓ Depending on the number of crews at the gate, Valard estimated the wait
21 time ranges from 5 to 30 minutes.

22 In addition to daily performed tasks, time was also lost for other periodic activities
23 performed in relation to the work on the Project due to the Pandemic conditions.

24 • **COVID-19 Training and Response Drills:**

- 25 ✓ COVID-19 training and response drills were held monthly. All personnel
26 working on the Project were required to attend these meetings to review

1 COVID-19 protocols and practices to help minimize the risk of contracting
2 the virus.

3 ✓ These monthly meetings were typically 30 minutes in duration.

4 • **Weekly Inspections of Camps and Work Areas:**

5 ✓ Once weekly, all camps and work areas (tool cribs, shops, storage containers,
6 etc.) were inspected to ensure that procedures and protocols were in place
7 and enforced at each of the Contractor's camp facilities (i.e., screening
8 requirements, cleaning and cleaning supplies were suitable, signage in
9 place, social distancing requirements being followed, etc.).

10 • **Travel Disruptions and Restrictions:**

11 ✓ COVID-19 protocols required an additional 24-48 hours notice before
12 workers were permitted to travel to a work site. Typical travel procedures
13 under COVID-19 restrictions were as follows:

- 14 ▪ Employee received a travel itinerary.
- 15 ▪ 24-48 hours prior to travel the employee was required to complete a pre-
16 travel screening form.
- 17 ▪ Employee travelled to site (flights, driving, etc.).
- 18 ▪ Upon arrival at site, the employee underwent a PCR (polymerase chain
19 reaction) testing at the Valhalla Inn, Thunder Bay or the Thunder Bay
20 Office. Depending on the arrival time in Thunder Bay, the employee was
21 required to stay overnight either due to testing capacities and/or
22 timeline.
- 23 ▪ Wait times for employee test results took between 2-3 hours.
- 24 ▪ If a negative result was received, the employee travelled to
25 camp/hotel/work site via a Contractor crew vehicle or a shuttle service.
- 26 ▪ If a positive or inconclusive result was received, the employee was
27 required to take additional tests and/or self-isolate.

1 ✓ In general, the Project team prioritized booking efforts to ensure that travel
2 was arranged to have work crews travel from their homes to the intended
3 accommodations/camp that they would work from in one travel day. This
4 approach allowed the employee to start construction activities the next day
5 (the official first workday). COVID-19 impacted these efforts as follows:

- 6 ▪ Availability of flights that would normally allow workers to get from
7 their homes to the worksite, in one day, were restricted.
- 8 ▪ A charter flight program mitigated this impact; however, charters were
9 typically more expensive unless completely full.
- 10 ▪ While the Contractor did not provide compensation to the workers to
11 travel on the day they go from their home to the Project, when someone
12 had to stay in a hotel as a direct result of the COVID-19 testing, there was
13 a lost day, or at the least a delayed start.
- 14 ▪ For example, typically an employee could make it to the camp on the first
15 travel day, but because they would have to wait for test results, it became
16 too late to travel and extra accommodation costs were incurred. The
17 Contractor paid for those additional costs.
- 18 ▪ This all significantly hindered the Contractor's ability to plan and
19 coordinate its field efforts efficiently and lead ongoing adjustments in
20 crew placement and sizes.

21 These examples and their impacts outline how added Pandemic safety protocols
22 negatively affected construction progress. These are not inefficiencies in the classic
23 sense, but rather increments of time lost on a daily basis as a result of having to perform
24 additional tasks not required under typical working conditions. While the time to
25 perform these tasks varied from crew to crew and day to day, lost time estimates based
26 on a review of Contractor records are summarized as follows:

Activity	Time Impact Range (minutes)		Notes
Daily truck cleaning checklist	20	30	30 minutes previously allocated by Valard to ROW subcontractors.
Wait time at security gate	10	15	Varies from 5-25 mins, based on number of crews at the gate.
Additional time related to COVID-19 checklist on crew tailboard	8	12	Meetings has been extended by at least 10 minutes for COVID-19 related discussion.
Additional wait time for entry and exit screening	5	10	Varies. Typically, 5 mins, but could be up to 30 mins if there is a line. Time impact range includes both entrance and exit.
Extra lunch time due to truck rotation	5	10	Crews cannot eat in truck together due to social distancing requirements. Must rotate to 2/truck, sitting on opposite ends.
Impact of daily COVID-19 Impacts (minutes)	48	77	
Total Shift (minutes)	660	660	Standard workday is 11 hours for EWT
Daily Impacts (calculated %)	7.3%	11.7%	
Other Impacts	2%	3%	Other periodic impacts applied to the overall work force.
Total	9.3%	14.7%	

1 Socotec is of the view that the time impacts listed in the table above represent a
 2 conservative assessment of the lost time due to employees being diverted from normal
 3 construction related activities to Pandemic related activities. This view is supported by
 4 the measured mile analysis shown in Section 3.3 below. Again, these are not
 5 inefficiencies in the classic sense, but rather increments of lost time as a result of having
 6 to perform additional unplanned COVID-19 related tasks, which are not required
 7 under typical working conditions.

3.1.1.2 PRODUCTIVITY LOSS

This section describes COVID-19 related work task productivity losses. This involves quantification of reductions in direct work productivity resulting from factors such as social distancing, staggered shifts, reduced crew sizes, use of increased personal protective equipment, related job site regulations, extra mobilizations and demobilizations, work fatigue from anxiety and excess absenteeism, and altered delivery of materials. Additional description of these impacts includes the following:

- **Distancing Requirements:**

- ✓ Most crews on this type of project normally work in close proximity to one another. The Contractor had to reorganize activities and work to ensure physical distancing could be observed pursuant to safety requirements.
- ✓ Indoor office management and supervisory staff had to be reorganized and use separate working locations in order to respect physical distancing requirements.
- ✓ Tower assembly crews unpacking steel from bundles were required to abide by physical distancing and proper mask and safety protocols. Increased time to complete assembly activities resulted.
- ✓ Distancing requirements were an ongoing obstacle to the tower erection and line stringing crews. Many of the activities associated with this work required 2 or more employees working in direct proximity (ladders, splice locations, man baskets, puller/tensioner sites). Masks were required if distancing was not possible (masks often fog up glasses and goggles and restrict breathing during laborious activity).

- **Truck Passenger Limitations (other follow-on impacts):**

- ✓ Significant time was spent by supervisors to procure and accommodate additional vehicles for the 2-person per vehicle protocol. Additionally, supervisors spent significant additional effort enforcing COVID-19

1 protocols and paperwork instead of focusing on the planning and
2 coordination of the work.

- 3 ✓ The 2-person per vehicle protocol resulted in increased congestion on site
4 (i.e., 6 trucks per assembly crew, rather than 3). Congested sites made
5 moving material & equipment through trails of limited size over difficult
6 terrain more difficult, as well as increasing the risk of impact/damage to
7 equipment.
- 8 ✓ The 2-person per vehicle protocol resulted in long wait times even before
9 arriving at the tower locations. Often times, lines of vehicles at security
10 checkpoints and fueling depots doubled, which further degraded efficiency
11 and delayed physical work progress.

12 • **Isolation of employees**

- 13 ✓ The requirement for employee isolation occurred frequently from the onset
14 of the Pandemic. During the construction phase, 210 employees were
15 isolated. Symptomatic workers also meant those found to have been in
16 direct contact/exposure were also subject to additional testing and were
17 isolated, where possible, on site or sent home.
- 18 ✓ Due to the isolation procedures resulting from rotational COVID-19 testing
19 (most notably the close contact isolation requirement) many of the crews
20 worked with 1-2 missing crew members for various periods of time. The
21 crew size disparity further exacerbated the loss of productivity.

22 • **Psychological Impacts on the Workforce**

- 23 ✓ As noted previously, the available industry studies indicate that a
24 combination of numerous psychological issues associated with the
25 Pandemic further impacted productivity in the field:
- 26 ▪ Physical weight and inconvenience caused by wearing such additional
27 personal protective equipment;
 - 28 ▪ Fear of infection and the associated risk of harm to family members;
 - 29 ▪ Stress and family unrest creating a psychological distraction while at site;

- 1 ▪ Conflict between safety procedures and the desire for social interaction;
- 2 ▪ Increased multitasking;
- 3 ▪ The stigmatization of infected people returning to work after quarantine;
- 4 ▪ Occupational stress (e.g., heavy workload, job insecurity); and
- 5 ▪ Organizational stress (e.g., inefficient communication, interpersonal
- 6 conflicts, lack of rewards).
- 7 ✓ Worker anxiety caused avoidance and procrastination, unnecessary task-
- 8 switching, and excessive worry about completing a given task, leading to
- 9 delays in work output.
- 10 • **Diversion of Management and Supervisory Resources:**
- 11 ✓ The Contractor’s management and supervisory team were required to draft
- 12 many policies and continue to provide guidance and oversight to respond
- 13 to changing circumstances and government regulations, which have been in
- 14 a constant state of flux. The time spent developing policies by management
- 15 personnel required significant effort on the part of the Contractor and
- 16 diverted those resources from typical planning and coordination work on
- 17 the Project.
- 18 ✓ The Contractor’s unplanned role as liaison to various levels of health
- 19 authorities took significant effort by the Contractor’s management
- 20 employees. This effort was essential in order to prevent stop-work orders.
- 21 ✓ In addition to monitoring themselves for Pandemic burnout, the
- 22 Contractor’s supervisors were asked to take a more active role in monitoring
- 23 employees for mental fatigue.
- 24 ✓ Significant research was required to develop best practices, and significant
- 25 time was spent communicating and educating these practices to
- 26 management and supervisory staff members, and to the field workers.
- 27 ✓ The Contractor’s out of province resources, including executive leadership,
- 28 were not deemed essential workers and therefore were restricted from
- 29 attending sites to provide guidance and support to the Project.

- 1 ✓ In addition, the scope of this Project affected many communities. The
2 Contractor and Owner were constantly preparing concise and clear
3 messaging to assure its workforce and members of the public would allow
4 construction to continue in a safe manner.
- 5 ✓ To ensure practice was as good as policy, members of the safety team and
6 supervisors were required to constantly audit protocols, including as
7 follows:
- 8 ▪ Checks for levels of safety equipment (PPE/sanitizer was required – i.e.,
9 inventory checks);
 - 10 ▪ Checks on cleanliness of worksites and equipment; and
 - 11 ▪ Of course, the ongoing inspections also required unplanned time for the
12 workers to stop their activities during any spot audits and answer
13 questions.
- 14 ✓ Development of the many new policies and procedures during the
15 Pandemic took significant time and resources:
- 16 ▪ Develop and implement COVID-19 management plan;
 - 17 ▪ Create various COVID-19 safety checklists;
 - 18 ▪ Create all field forms and documents used in relation to COVID-19;
 - 19 ▪ Compile weekly tracking documents (Safety Meetings, Tailboards); and
 - 20 ▪ Develop and implement testing procedures.
- 21 • **Psychological Impacts:**
- 22 ✓ During our interviews with workers on the Project they consistently
23 expressed an increased level of overall stress related to having to be extra
24 aware of social distancing protocols while completing the work.
 - 25 ✓ To varying degrees, all Project workers complained of increased mental
26 fatigue, anxiety over family health, and Pandemic burn-out.
 - 27 ✓ The Contractor’s Project management and supervision team members
28 repeatedly reported that they had never seen the mental concerns of its work
29 staff reach such high levels. Employee tracking records clearly support this

1 declaration. As verification of these statements, the Contractor provided
2 statistical information maintained at a company-wide level:

- 3 ■ From 2019 to 2020, there was an 11% increase in claims related to
4 workplace stress;
- 5 ■ Quarter over quarter (Q1 2020 and Q1 2021), there was a 42% increase in
6 claims related to workplace stress; and
- 7 ■ Between the second quarter 2020 and the first quarter 2021, 15% of all
8 calls to the Contractor's employee assistance program were related to
9 COVID-19.

10 Although the statistics above were derived from Contractor-wide reporting because
11 they are not maintained on a project-level basis, the significant majority of the
12 Contractor's work during the period in question was focused on the East-West Tie Line
13 Project.

14 Based on the data compiled from the Contractor's records, Socotec estimated the
15 productivity loss impacts associated with COVID-19 to be in the range of 10% to 15%.
16 As detailed in Section 3.1.1.1 above, our assessment of the losses associated with
17 mitigation tracking was in the range of 9.3% to 14.7%. In combination, an overall loss
18 range of 19.3% to 29.7% was derived for both mitigation tracking and productivity
19 losses on the Project. This range closely supports the industry studies referenced
20 previously (18.10% to 31.40%). Accordingly, for purposes of calculating financial
21 impact, our analysis utilized the mid-point average of the available industry studies,
22 which equates to 24.7% for both mitigation tracking and productivity loss.

23 3.2 MEASURED MILE

24 One of the most common approaches to benchmarking project productivity is the
25 'Measured Mile' approach. A measured mile analysis is used to quantify lost

1 productivity on a project by comparing the cost of “impacted” work with the cost
2 incurred to perform the same or similar “un-impacted” work. AACE International
3 acknowledges in Recommended Practice 25R-03 ‘Estimating Lost Labor Productivity
4 in Construction Claims’ that *“the Measured Mile study is the method most often cited in
5 court cases. It is probably the best of the recommended practices, assuming there is sufficient
6 contemporaneous data to allow such an approach. This method appears to be recognized as the
7 most credible in the legal system. Additionally, unlike some other methods, the Measured Mile
8 study can be used after the impact has occurred or as a sampling technique, while the impacted
9 work is in progress.”*

10 Some well-known benefits of the measured mile analysis include:

- 11 ✓ Provides a clear and objective way of assessing productivity loss by
12 benchmarking the contractor’s actual performance capabilities when
13 working in planned conditions.
- 14 ✓ The measured mile technique is the most straightforward and reliable way
15 to calculate lost labour productivity and largely eliminates the need for
16 subjective judgements that can unduly influence the results of the analysis.
- 17 ✓ This method utilizes only actual productivity as opposed to a contractor’s
18 estimated productivity heading into the job, avoiding disputes over the
19 accuracy of the contractor’s original estimate or bid.
- 20 ✓ While not reliant on the contractor’s original bid estimate, the measured mile
21 analysis does also allow for an assessment of the reasonableness of the
22 contractor’s expectations at the outset of the project.
- 23 ✓ The productivity levels for both the measured mile and the impact periods
24 are derived from consistent project records, including accounting payroll
25 data, and field quantity tracking systems.

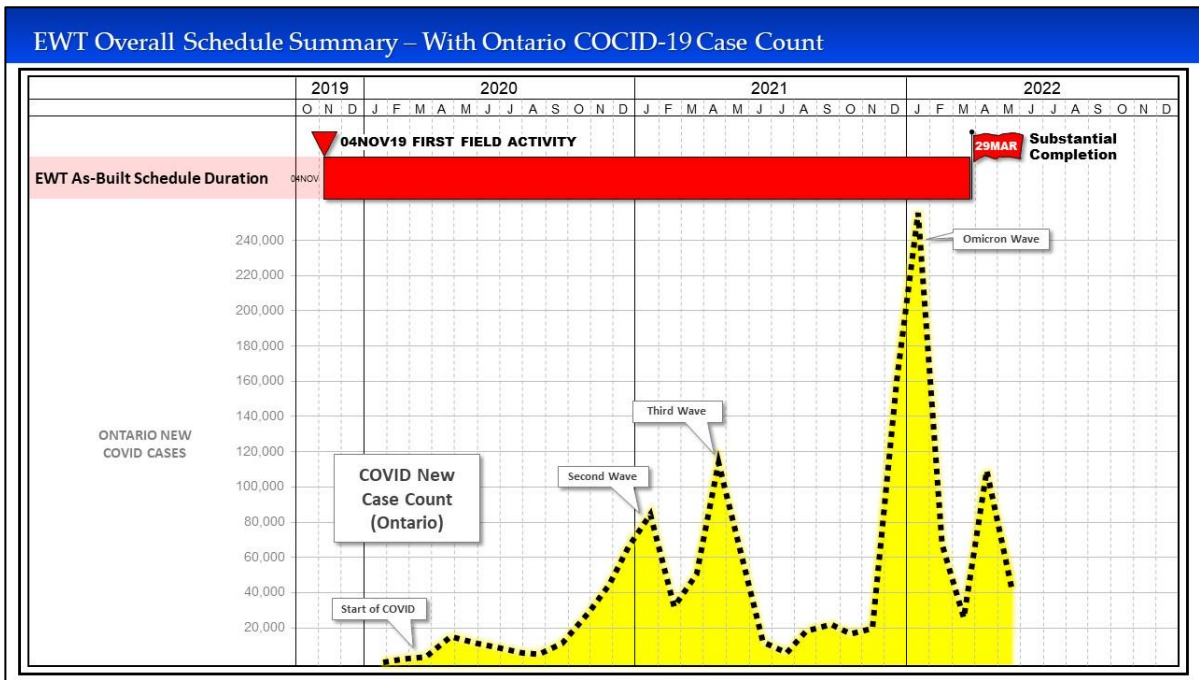
1 In our opinion, the measured mile method is presently the most widely accepted
2 evaluation of productivity deviations. Accordingly, we have completed significant
3 additional work in developing a measured mile analysis to verify and validate the PIF
4 (i.e., 24.7% productivity loss), which, at the time was based on available industry
5 studies and presented to the Owner and Contractor.

6 Our analysis focuses on the Contractor's performance of tower structure assembly and
7 erection and conductor stringing. These work categories represent approximately one-
8 half of all the work-hours expended by the Contractor on the Project, or 80% of the
9 direct field work.

10 Ideally, a measured mile analysis would rely on actual productivity data from the same
11 project. However, because we are assessing the productivity loss during a multi-year
12 Pandemic, in this case there was no un-impacted period during the work on the
13 Project. The full notice to proceed ("NTP") with the work on EWT was issued on
14 August 1, 2019. However, due to initial permit-related delays, field work on EWT did
15 not start until early November 2019, just 3 to 4 months before the start of COVID. From
16 the issuance of the NTP, through February 2020, the Contractor had spent less than 7%
17 of the actual fieldwork work-hours on the Project. Consequently, the early Project
18 disruptions substantially impacted the full start of field work on the Project and do not
19 allow for any type of measured mile benchmarking prior to the onset of COVID.

20 Moreover, the work on the Project was substantially completed in March 2022, which
21 time period coincided with the Omicron variant outbreak. As indicated on the
22 following graphic illustration included below as (previously included as Exhibit 3),

1 there was no significant period during the field work on the Project that was not
 2 impacted by COVID.



3
 4 Since there was no significant un-impacted performance period during the course of
 5 the Project, to establish a baseline of measured mile data, Socotec analyzed
 6 performance data from four other transmission line projects that the Contractor
 7 completed or was in the process of completing:

NALCOR HVAC Lower Churchill Transmission Project
(Labrador, Canada)

Work Period: 2014 to 2017	Towers: 1350 lattice towers
Value: \$258 Million	Conductor: Two Bundle
Length: 2 parallel lines at 245 km	Camps: Yes
Voltage: 315 kV	Project Lead: Darcy Magnussen



1

West Fort McMurray Transmission Project
(Central Alberta, Canada)

Work Period: 2017 to 2019
Value: \$1.43 Billion
Length: 508 km
Voltage: 500 kV

Towers: 1405 lattice towers
Conductor: Four Bundle
Camps: Yes
Project Lead: Brett Smit



1

Manitoba – Minnesota Transmission Project
(Southern Manitoba, Canada)

Work Period: 2019 to April 2020
Value: \$91 Million
Length: 120 km
Voltage: 500 kV

Towers: 304 lattice towers
Conductor: Triple Bundle
Camps: Yes
Project Lead: Jaimie Creasy



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Based on our review of detailed records for each of the projects selected, it is our opinion that the projects are in fact reasonably comparable.

- The introduction of performance on comparable projects largely eliminates any questions around the impacts of COVID, as the comparable projects generally represent “unhindered performance” (three projects considered pre-Pandemic and one after the primary COVID impacts had subsided).
- The introduction of performance on comparable projects provides for a much larger sample of the Contractor’s proven performance capabilities.
- ✓ The comparable projects combined baseline includes a total of 1,799,873 actual performance work-hours in assembly, erection and stringing work (compared to the 1,235,796 hours on EWT).

- 1 • The comparable projects baseline includes all types of logistical considerations,
2 access constraints and project working environments similar to what was
3 experienced on the EWT Project.
- 4 • Many of the Contractor's key personnel on the EWT Project were also present
5 during the performance of the work on all the comparable projects.
- 6 • While there will always be some exceptions, the work being measured (lattice
7 tower assembly / erection and conductor stringing does not vary materially
8 from project to project – and was not materially different on the Project selected
9 here).

10 Again, while we recognize the preference to compare the Contractor's performance
11 during impacted and un-impacted periods on the same project, this is not possible on
12 the EWT Project alone. Given the points above, and the obvious benefits of utilizing
13 the measured mile approach (namely that it eliminates reliance on the accuracy of the
14 Contractor's bid estimate by relying on actual proven productivity capabilities), it is
15 our view that a comparison to Contractor's proven performance on the comparable
16 projects provides a reasonable assessment of the productivity losses actually incurred.

17 Finally, to further verify that the projects were comparable, Socotec examined the
18 Contractor's detailed bid estimates for each of the comparison projects. The table
19 below compares the bid estimate productivity rates for the four comparable projects
20 to the EWT Project.

	MMTP	WFMAC	NALCOR	WATAY Groups 1 & 2	BASELINE AVERAGE	EWT	EWT (@ Baseline MM Rates)	VARIANCES (+) EWT is more difficult; (-) EWT is less difficult)
ASSEMBLY	BUDGET	BUDGET	BUDGET	BUDGET	BUDGET	BUDGET	BUDGET	
Manhours	89,752	497,655	290,482	294,891	1,172,780	473,256	462,402	+2.92%
Weight	2,906,278	20,122,676	10,165,473	12,501,251	45,695,679	18,016,821	18,016,821	(53.7% of work)
Assembly (kg per MH)	32.38	40.43	35.00	42.39	38.96	38.07	38.96	
ERECTION	BUDGET	BUDGET	BUDGET	BUDGET	BUDGET	BUDGET	BUDGET	
Manhours	22,067	128,602	63,651	119,658	333,979	120,181	131,681	-9.57%
Weight (kg)	2,906,278	20,122,676	10,165,473	12,501,251	45,695,678	18,016,821	18,016,821	(15.3% of work)
Erection (kg per MH)	131.70	156.47	159.71	104.47	136.82	149.91	136.82	
STRINGING	BUDGETED	BUDGETED	BUDGETED	BUDGETED	BUDGETED	BUDGETED	BUDGETED	
Stringing Hours	82,117	507,053	279,178	353,618	1,221,966	345,062	267,526	+22.47%
Line length (m)	121,000	478,600	491,500	1,078,042	2,169,142	445,403	445,403	(31.1% of work)
conductor length (m)	1,331,000	6,700,400	3,932,000	4,312,170	16,275,570	3,563,222	3,563,222	
Stringing (meters per MH)	16.21	13.21	14.08	12.19	13.32	10.33	13.32	

When combined, the overall comparable measured mile budgeted productivity is within 8.19% of the EWT budget.

Valard's detailed bid estimates indicate that the productivity for the work is generally comparable.

Overall **+8.19%**

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The calculation above compares the work-hours that the Contractor originally included in the EWT bid estimate versus what the work-hour requirements would be using the average of the estimated unit rates from the four comparable projects. This comparison indicates that the Contractor's pre-bid assessment of the four benchmarked projects assumed productivity rates (for the three major disciplines examined) as being within approximately 8% of those for the EWT Project. In general, the data indicates that the Contractor viewed the work on the EWT Project to be slightly more difficult than the comparable projects. Notably, when compared to one another, variations in the estimated productivity on the four comparable projects are also in the range of 6% to 8%.

1 The introduction of performance on comparable projects largely eliminates any
2 questions around the impacts of COVID, as the comparable projects generally
3 represent “unhindered performance” (three projects considered pre-Pandemic and
4 one after the primary COVID impacts had subsided). The introduction of performance
5 on comparable projects provides for a large sample of the Contractor’s performance
6 capabilities. On a combined basis, the comparable projects baseline includes a total of
7 1,799,873 actual performance work-hours in assembly, erection and stringing work
8 (compared to the 1,293,361 hours on EWT).

9 The comparable projects baseline includes all types of logistical considerations, access
10 constraints, and project working environments. Many of the Contractor’s key
11 personnel on the EWT Project were also present during the performance of the work
12 on all the comparable projects. In our view, the considerations above provide
13 confirmation that the projects included in the analysis are in fact comparable, and that
14 the comparison of the Contractor’s actual pre- and post-Pandemic performance on
15 these projects provides a reasonable basis for the assessment of the productivity loss
16 associated with the Project’s performance during COVID-19.

17 While the review of the original bid estimates for the available projects helps to
18 establish that the projects are comparable, the principal tenet of a measured mile
19 analysis is to utilize actual proven performance. Accordingly, the table below provides
20 the actual productivity rates for each of the four comparable projects and an overall
21 average, which is used to compare to the actual rates achieved on the EWT Project
22 during COVID. Again, the analysis focuses on tower structure assembly, erection
23 work, and conductor stringing, which represents the primary work that was generally

1 self-performed or undertaken under the direction of the Contractor during
 2 construction.

		PRE-COVID			POST-COVID	Comparable Projects Totals / Average (ACTUAL)
		Manitoba - Minnesota Transmission Project (ACTUAL)	West Fort McMurray Project (ACTUAL)	NALCOR HVAC Lower Churchill Project (ACTUAL)	Wataynikaneyap Transmission Project - Group 2 Post Pandemic (ACTUAL + 10% Loss in Period)	
ASSEMBLY	Manhours	130,927	395,552	195,094	64,402	785,975
	Weight	4,083,893	22,151,444	11,886,401	2,943,894	41,065,632
	Assembly (kg per manhour)	31.19	56.00	60.93	45.71	52.25
ERECTION	Manhours	40,346	108,204	87,424	28,966	264,940
	Weight (kg)	4,083,893	22,151,444	11,886,401	2,992,766	41,114,504
	Erection (kg per manhour)	101.22	204.72	135.96	103.32	155.18
STRINGING	Stringing Hours	99,366	316,794	238,255	94,543	748,958
	Line length (m)	120,430	508,582	491,500	470,141	1,590,653
	conductor length (m)	1,324,735	7,120,145	3,932,000	1,880,562	14,257,442
	Stringing (meters per MH)	13.33	22.48	16.50	19.89	19.04

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 5 The table above summarizes actual productivity rates by units per work-hour (i.e.,
 6 weight for structure work and length for conductor stringing). The more units
 7 installed for each work-hour, the better the productivity. As expected, there are
 8 variations in the rates achieved on each of the projects considered. However, removing
 9 any one of the four projects from the analysis alters the results in a range of only 10%
 10 (from 7% slower productivity to 3% higher productivity).

11 Notably, the Manitoba Minnesota Transmission Project was one that we initially
 12 considered excluding from the analysis, as the terrain on that project is generally flat
 13 farmland and the right-of-way was generally more accessible. However, as indicated
 14 above, this project actually experienced the lowest productivity of the four considered.
 15 Ultimately, in an effort towards conservatism, we elected to include this project in the

1 analysis, which had the effect of reducing the overall average productivity by
2 approximately 4%.

3 We must also provide some clarification around the Watay project. This project
4 initially commenced at the outbreak of COVID-19. Not surprisingly, the first two years
5 of the Watay project experienced impacts similar to the EWT project. The measured
6 mile performance period included above is for the period of May 1, 2022, generally at
7 the end of the Omicron wave, through the 12-month period ending April 30, 2023.
8 Socotec is of the view that it was important to the analysis to include “post-Pandemic”
9 performance to the extent available. In the case of Watay, while COVID-related
10 impacts have continued during this period (i.e., continuing cases, out-of-sequence
11 work, delay mitigation efforts, etc.), productivity impacts subsided as the Omicron
12 wave disipated. Given all this, our analysis assumes an ongoing 10% loss during the
13 Watay measured mile period (i.e., the analysis has mathematically improved
14 performance by a 10% factor). This manual adjustment alters the overall results by a
15 factor of only six-tenths of one percent.

16 Socotec also considered how the actual productivity achieved on the four comparable
17 projects compared to the Contractor’s original bid estimates. Put simply, if the actual
18 rates achieved on the comparable projects represented losses in comparison to the
19 Contractor’s original bid estimates, one could infer that the losses incurred on the EWT
20 Project could also have been anticipated. The table below compares work-hours
21 quantified based on estimated rates, multiplied by actual quantities installed versus
22 the actual work-hours incurred on each of the four comparable projects.

	Actual Quantities x Budget Rates					Actual Quantities and Rates				
	MMTP	WFMAC	NALCOR	WATAY Group 2 (post pandemic - incl. 10% trailing loss)	BUDGET TOTALS	MMTP	WFMAC	NALCOR	WATAY Group 2 (post pandemic - incl. 10% trailing loss)	ACTUAL TOTALS
ASSEMBLY	BUDGET	BUDGET	BUDGET	BUDGET	BUDGET	ACTUAL	ACTUAL	ACTUAL	ACTUAL	BUDGET
Manhours	126,119	547,829	339,611	69,443	1,083,002	130,927	395,552	195,094	64,402	785,975
Weight	4,083,893	22,151,444	11,886,401	2,943,894	41,065,632	4,083,893	22,151,444	11,886,401	2,943,894	41,065,632
Assembly (kg per MH)	32.38	40.43	35	42.39	37.92	31.19	56	60.93	45.71	52.25
ERECTION	BUDGET	BUDGET	BUDGET	BUDGET	BUDGET	ACTUAL	ACTUAL	ACTUAL	ACTUAL	BUDGET
Manhours	31,009	141,568	74,427	28,646	275,642	40,346	108,204	87,424	28,966	264,940
Weight (kg)	4,083,893	22,151,444	11,886,401	2,992,766	41,114,504	4,083,893	22,151,444	11,886,401	2,992,766	41,114,504
Erection (kg per manhour)	131.7	156.47	159.71	104.47	149.16	101.22	204.72	135.96	103.32	155.18
STRINGING	BUDGET	BUDGET	BUDGET	BUDGET	BUDGET	ACTUAL	ACTUAL	ACTUAL	ACTUAL	BUDGET
Stringing Hours	81,730	538,817	279,178	154,215	1,053,940	99,366	316,794	238,255	94,543	748,958
Line length (m)	120,430	508,582	491,500	303,409	1,423,922	120,430	508,582	491,500	303,409	1,423,921
conductor length (m)	1,324,735	7,120,145	3,932,000	1,880,562	14,257,442	1,324,735	7,120,145	3,932,000	1,880,562	14,257,442
Stringing (meters per MH)	16.21	13.21	14.08	12.19	13.53	13.33	22.48	16.5	19.89	19.04
	238,858	1,228,214	693,216	252,304	2,412,592	270,639	820,550	520,773	187,911	1,799,873
	Units per Work-Hour (at Budgeted Rates)					Units per Work-Hour (at Actual Rates)				
	40.0					53.6				

As indicated above, the Contractor performed better than originally forecast on each of the four benchmarked projects (i.e., the units per work-hour actually achieved exceeded what was contemplated in the budget). This is not meant to suggest that the Contractor beat its overall cost estimates for the four comparable projects, as there are many other risks and cost factors that must also be considered when assessing the overall project financial success (i.e., material purchases, subcontractor fees, camp costs, logistical constraints, etc.). The structure and conductor stringing work included in the comparison above represents the “core” self-performed work for the Contractor on these types of projects. Accordingly, these work activities do not represent areas of high risk for the Contractor, and the expectation is that the contractor would perform in accordance with its budgets. The comparison above confirms that, free from impacts, the Contractor has in fact consistently demonstrated its capability of achieving its budget rates for the key work disciplines studied.

Once the measured mile averages for the four sample projects were determined, Socotec’s next step was to compare the hours that ‘should have’ been expended on the

1 Project, using the measured mile rates, compared to the actual hours that were
 2 expended. The variance between the measured mile proven performance values and
 3 those actually experienced on the Project indicates the productivity loss levels
 4 incurred.

		Comparable Projects Totals / Average (ACTUAL)	East-West Tie Transmission Line Project (ACTUAL)	East-West Tie Transmission Line - (MANHOURS CALCULATED AT MM RATES)	East-West Tie Transmission Line Project - (PRODUCTIVITY LOSS COMPARED TO MM RATES)
ASSEMBLY	Manhours	785,975	639,591	360,643	43.1%
	Weight	41,065,632	18,842,893	18,842,893	
	Assembly (kg per manhour)	52.25	29.46	52.25	
ERECTION	Manhours	264,940	285,221	121,423	57.4%
	Weight (kg)	41,114,504	18,842,893	18,842,893	
	Erection (kg per manhour)	155.18	66.06	155.18	
STRINGING	Stringing Hours	748,958	310,984	187,180	39.8%
	Line length (m)	1,590,653	445,403	445,403	
	conductor length (m)	14,257,442	3,563,222	3,563,222	
	Stringing (meters per manhour)	19.04	11.46	19.04	
Average					45.8%

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 7 The calculations above are relatively straightforward. For example, based on the
 8 measured mile rate of 52.25 kilograms per hour for Assembly work, had the 18,842,893
 9 kilograms of assembly work on the EWT Project been completed at the proven
 10 productivity rate, a total of 360,643 labour hours would have been expended.
 11 However, on the EWT Project the Contractor actually expended 639,591 hours
 12 performing the assembly work, which calculates to a 43.1% loss of productivity.

13 Once all three work scopes were analyzed, the resultant average equates to a 45.8%
 14 loss of productivity on the EWT Project. The average referenced above is derived by
 15 comparing the total actual work-hour expenditures on the EWT Project to what the

1 total work-hour expenditures would have been had the work been performed at the
2 actual unit rates achieved on the four comparable projects.

3 When the actual 45.8% loss of productivity is compared to the PIF (24.7%), the PIF
4 understated the actual COVID-19 impacts on the EWT Project. Again, we attribute the
5 reasonableness of the PIF to the fact that the original productivity analysis was
6 completed midway through the actual construction phase of the Project and that the
7 settlement was achieved before the Omicron outbreak.

8 As a final step in our analysis, Socotec compared the Contractor's performance on the
9 EWT Project to the Watay project during the first two-year impact period. The purpose
10 of this comparison was to determine whether productivity on the two projects
11 performed during COVID was similar, or if the EWT Project was somehow an outlier.
12 The table below provides this comparison.

	EWT (during pandemic)	WATAY Groups 1 & 2 (during pandemic)	VARIANCES (+ EWT was more difficult; - EWT was less difficult)
ASSEMBLY	ACTUAL	ACTUAL	
Manhours	639,591	316,490	+1.24%
Weight	18,842,893	9,329,316	
Assembly (kg per manhour)	29.46	29.48	
ERECTION	ACTUAL	ACTUAL	
Manhours	285,221	155,462	-17.24%
Weight (kg)	18,842,893	8,530,945	
Erection (kg per manhour)	66.06	54.87	
STRINGING	ACTUAL	ACTUAL	
Stringing Hours	310,984	157,811	+3.37%
Line length (m)	445,403	467,827	
conductor length (m)	3,563,222	1,871,308	
Stringing (meters per manhour by conductor length)	11.46	11.86	

The productivity rates on Watay and EWT during COVID were very similar (and both were in a substantial loss position compared to budget)

Overall Variance	1.4%
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As indicated above, the actual overall productivity achieved on EWT and Watay during the primary COVID-19 Pandemic period was nearly identical, with an overall variance of 1.4%. This differential is determined by applying the unit rates achieved on Watay to the EWT quantities for each work category and then comparing the total work-hour differential. As shown above, while the only fairly significant variance among the three disciplines was in tower erection work, this discipline represents only 23% of the total hours expended. Notably, both projects were also in a significant loss position compared to the Contractor’s original bid estimates.

Finally, another meaningful comparison is to measure the Contractor’s performance with the benchmarked projects grouped in the periods of construction (i.e., the pre,

during, and post-Pandemic time periods) with actual productivity levels achieved for each of the three work groups (Assembly, Erection, Stringing). The table below provides this comparison.

	PRE-PANDEMIC (MMTP, WFMAC & NALCOR)	DURING PANDEMIC (EWT and Watay Groups 1 & 2)	POST-PANDEMIC (Watay Group 2 - incl. 10% trailing loss)
ASSEMBLY	ACTUAL	ACTUAL	ACTUAL
Manhours	721,573	956,081	64,402
Weight	38,121,738	28,172,209	2,943,894
Assembly (kg per manhour)	52.83	29.47	45.71
ERECTION	ACTUAL	ACTUAL	ACTUAL
Manhours	235,974	440,683	28,966
Weight (kg)	38,121,738	27,373,838	2,992,766
Erection (kg per manhour)	161.55	62.12	104.47
STRINGING	ACTUAL	ACTUAL	ACTUAL
Stringing Hours	654,415	468,795	94,543
Line length (m)	1,120,512	913,230	303,409
conductor length (m)	12,376,880	5,434,530	1,880,562
Stringing (meters per manhour)	18.91	11.59	19.89
	55.0 Units Per Hour Budget Gain	32.7 Units Per Hour Budget Loss	41.6 Units Per Hour Budget Gain

The comparison above provides what is perhaps the most straightforward evidence of the productivity loss experienced during the COVID-19 Pandemic. The Contractor's bid estimate productivity rates were very similar for all projects considered, it consistently beat its budgeted productivity pre-Pandemic, it consistently experienced budget losses during the Pandemic, and when the primary COVID impacts subsided it immediately returned to achieving budget gains as was the case before the onset of COVID.

On a unit per work-hour basis, during the Pandemic the Contractor's rate of installation was reduced to 59.5% of what it had achieved pre-Pandemic (55.0 units per

1 hour pre-Pandemic ÷ 32.7 per hour units during the Pandemic = 59.5% or a 40.5%
2 reduction). In the post-Pandemic period, when most of the COVID-19 impacts had
3 subsided, the Contractor realized an improvement of 27.2% (41.6 units per hour post-
4 Pandemic ÷ 32.7 units per hour during the Pandemic = 127.2% or a 27.2% increase).

5 In our opinion, and based on the analysis presented, material adverse effects occurred
6 to the construction costs of the Project due to COVID-19. The Contractor's experience
7 both before March 2020 and after subsidence of the Omicron variant, budgeted
8 construction costs and productivity levels were in line with actual achieved outcomes.
9 But for COVID-19, Socotec is of the opinion that this trend would have continued.

10 Regarding the reasonableness of the PIF, the analysis provided here demonstrates that
11 the PIF of 24.7% used to quantify the cost of productivity losses on the Project was not
12 only reasonable, but proved to be an undervaluation of the impacts actually
13 experienced.

14 **4. COVID-19 PANDEMIC LOST PRODUCTIVITY SETTLEMENT COSTS**

15 This section sets forth the findings of our evaluation of the added costs due to lost time
16 and inefficiencies associated with the COVID-19 Pandemic. As set forth below, Socotec
17 has calculated \$89,014,103 of additional costs due to lost time and inefficiencies
18 associated with the 24.7% loss of productivity for the COVID-19 Pandemic, as agreed
19 by the parties to be paid on the Project accounting. In calculating the loss, we have
20 relied on the Contractor's internal books and records, some of which are summarized
21 here and/or referenced in the attached exhibits.

1 As summarized below, the inefficiency costs of mitigation and productivity loss due
2 to COVID-19 impacts experienced during the construction of the Project amount to
3 \$89,014,103 (excluding applicable taxes)

COVID-19 Mitigation & Productivity Loss Costs:

Added Labour Costs	\$40,935,560
Added Equipment Costs	\$26,249,568
Added Travel, LOA, and Camp Costs	<u>\$7,963,967</u>
Subtotal	\$75,149,095
15% Valard markup and 3% Supercomm Fees	<u>\$13,864,978</u>
Total	\$89,014,103

4 **4.1 CALCULATION METHODOLOGY**

5 As discussed above, our analysis quantifies the specific Project impacts experienced
6 relying on available industry studies and the parties ultimately reached a commercial
7 settlement around a negotiated Productivity Inefficiency Factor of 24.7% (previously
8 referred to as "PIF"). This section is intended to clarify the key considerations in our
9 calculations to quantify the Contractor's added costs associated with the 24.7% PIF.

10 The first step in the process of applying the PIF was to determine the appropriate
11 methodology (i.e., what the factor was to be applied against, what costs were to be
12 included, and how to consider and avoid any potential duplication in the calculations).
13 The development of the PIF was based in large part on the application of available
14 industry studies that quantified "lost time" associated with the Pandemic. As
15 discussed previously, the studies generally quantify cost impacts based on the time
16 workers were diverted to mitigation efforts and the reduction in output associated
17 with productivity loss.

1 Regarding the mitigation efforts, the studies specifically quantify the portion of time
2 when workers were diverted to activities associated with preventative measures such
3 as training, health screenings, cleaning and disinfecting, job site access, and
4 administration - all instituted to minimize exposure. To quantify the impact to
5 productivity, the studies generally quantify the reduction in direct work output
6 resulting from social distancing rules, staggered shifts, reduced crew sizes, increased
7 personal protective equipment requirements, and related job site regulations.

8 In both cases, the studies are effectively quantifying "lost time." As a simple example,
9 if it is determined that a worker lost 1 hour of productive operations in a given 10-hour
10 day due to being diverted to mitigation efforts, the inefficiency factor is calculated at
11 10% (1 hour of impact ÷ 10 hours of work time = 10%). Similarly, if during the
12 remaining 9 hours of work time, the workers output is determined to have been
13 reduced to only 8 hours of production, the factor is calculated at 11.1% (1 hour of
14 impact ÷ 9 hours of remaining work time = 11.1%). These two factors combined would
15 equate to a loss of 21.1% for the worker in our example.

16 However, because some of the available studies do not segregate the losses between
17 mitigation efforts and productivity loss, we adopted the approach of applying the two
18 factors together, which adds a level of conservatism to calculation. In our example
19 above, the 2 hours of lost time would be calculated at 20%, rather than the 21.1% shown
20 above (2 hour of impact ÷ 10 hours of work time = 20%).

21 On this Project the average daily workday was approximately 11 hours. Based on the
22 method of quantifying the loss in the available studies, applying the 24.7% PIF to actual
23 hours incurred results in "lost time" of approximately 2.7 hours in a given worker's

1 day. Based on our efforts to segregate the loss, the analysis indicates that this would
2 equate to approximately 1 hour and 20 minutes of time being diverted to mitigation
3 efforts and approximately 1 hour and 25 minutes of productivity loss in a worker's
4 typical day.

5 We then turned to consideration of which hours to include in the calculation.
6 Ultimately, we determined that generally the hours expended by both direct craft
7 workers and indirect management, supervision and support workers should be subject
8 to application of the PIF. In considering this issue, we recognized that given the nature
9 of the impact (a global Pandemic), few, if any, Project workers would be excluded from
10 the COVID-19 impacts. To some extent, it can be argued that the indirect staff may
11 have experienced a higher level of impact because they typically have increased
12 exposure. For example, a superintendent generally has contact throughout the day
13 with all the workers on a crew, while a specific crew member is often more isolated
14 performing specific tasks with a smaller subset of the crew. Similarly, support
15 personnel such as material management and delivery workers would typically
16 encounter more individuals in a given day than a typical craft worker.

17 Equally important is the fact that to the extent the field craft workers are experiencing
18 impacts, these impacts effectively transfer to the management, supervision, and
19 support personnel. By that we mean that if the production and/or productivity of the
20 field craft workers is slowed due to an unplanned impact, the indirect personnel (who
21 are there to support the craft workers) will necessarily experience a similar level of
22 impact. For example, if the field installation work takes longer than planned as a result
23 of lost production, the indirect staff will be required to stay on the project longer to
24 support the delayed completion of the field work.

1 Given the considerations above, our analysis applies the PIF to both field craft and
2 indirect labour hours.

3 Finally, our analysis recognized that the Contractor was seeking other additional costs
4 as the parties entered into negotiations. Accordingly, several precautions were
5 necessary to ensure that there would be no duplications between the quantification of
6 the COVID-19 losses and other discrete claim issues. Much of the concern over
7 potential duplication was alleviated based on the fact that the Contractor had
8 established separate “extra work” cost codes to discretely capture what it viewed as
9 added costs associated with its additional claims, as well as the COVID-19 direct costs
10 (i.e., symptom testing, quarantine, added site safety costs, etc.). These cost codes were
11 excluded from the application of the PIF to avoid any possibility of duplication.

12 However, there were other claimed costs that the Contractor could not segregate into
13 the extra work cost codes. These costs included claimed additional travel and camp
14 costs associated with either other discrete claims and/or the COVID-19 direct cost
15 change order requests. In these cases, our analysis applied credits of the amounts
16 requested elsewhere before applying the PIF in the COVID-19 productivity loss
17 calculations.

18 In summary, our methodology to calculate the added costs associated with the 24.7%
19 PIF applies the factor to actual labour hours incurred for direct and indirect personnel
20 (excluding any extra work costs claimed elsewhere and/or applying credits where
21 necessary), and then multiplies the resulting impact hours times the actual rates spent
22 for the cost of labour, related equipment and usage, and employee travel and camp
23 accommodations costs.

1 that the construction equipment employed in the performance of the field work was
2 necessarily extended, thereby costing more for rental, fuel, and maintenance (i.e., if
3 24.7% of the labour time in a given day is lost due to the impacts of COVID, then the
4 same loss is incurred in the equipment being utilized in support of the work). To
5 validate this premise, our analysis included a detailed schedule review, which
6 confirmed that the field work performance for each of the major work disciplines on
7 the Project did experience substantial delays, and that the Contractor's equipment-
8 related costs were significantly increased as a result. Accordingly, our analysis
9 determined the actual average equipment cost per labour work-hour and calculated
10 the costs associated with the lost productive equipment time at a total of \$26,249,568.

11 4.2.4 QUANTIFICATION OF ADDED TRAVEL, LOA AND CAMP 12 COSTS

13 Similar to the construction equipment costs discussed above, travel, LOA (living out
14 allowance) and camp costs are a function of labour. The loss in productive labour
15 work-hours extends the performance time for the workforce and therefore increases
16 costs associated with onsite living accommodations and travel to and from the site.
17 Accordingly, our analysis determined the actual average labour hours rate for travel,
18 LOA, and camp costs and calculated the costs associated with the lost production time
19 at a total of \$7,963,967. Notably, this amount is derived after crediting amounts
20 requested by the Contractor in other discrete claims and/or the COVID-19 direct cost
21 change order requests.

22 4.2.5 SUMMARY OF ADDED COVID IMPACT COSTS

23 The cost elements above result in added costs totaling \$75,149,095 for the productivity
24 loss impacts associated with the COVID-19 Pandemic. Including 15% for Contractor

1 markups and 3% for additional Supercomm fees, the total requested additional
2 compensation for time-related field overhead costs totals **\$89,014,103**.

3 **5. CONCLUSION**

4 As discussed at the outset of this report, Socotec’s scope of work was to review and
5 assess the reasonableness of the increase in Project costs based on the application of
6 the productivity inefficiency factor developed previously. Every element of the Project
7 was substantially impacted by COVID-19, including the management and supervision
8 staff, field craft workers, subcontractors, material suppliers, and the governing
9 agencies responsible for approvals and inspections. Based on our additional analysis,
10 it is our opinion that the increased Project costs of **\$89,014,103** is not only reasonable,
11 but also that it represents an undervaluation of the actual Contractor losses
12 experienced on this Project due to implemented COVID-19 mitigation measures and
13 productivity inefficiencies.

14 As summarized below, the costs of mitigation and productivity loss due to COVID-19
15 impacts experienced during the construction of the project amount to **\$89,014,103**
16 (excluding applicable taxes) at the agreed COVID-19 related productivity loss of 24.7%.

COVID-19 Mitigation & Productivity Loss Costs:

Added Labour Costs	\$40,935,560
Added Equipment Costs	\$26,249,568
Added Travel, LOA, and Camp Costs	<u>\$7,963,967</u>
Subtotal	\$75,149,095
15% Valard markup and 3% Supercomm Fees	<u>\$13,864,978</u>
Total	\$89,014,103

1 We have not been asked to determine the additional cost and productivity loss impacts
2 related to either (i) the Omicron variant or (ii) the measured mile data from comparable
3 Projects, as the parties have already reached resolution. However, we have had the
4 benefit of reviewing this information and are of the view that the 24.7% figure was
5 clearly lower than Valard's actual COVID-19 related losses.

6
7 Dated this 26th day of September 2023

8 

9
10 Christopher E. Anderson



Robert T. Adams

Exhibit 01



Christopher E. ANDERSON

Senior Principal

CONTACT

✉ Chris.Anderson@socotec.us

Telephone: 949.387.9400 Ext. 227

☎ Direct: 307.263.1999
Mobile: 949.246.0118

📍 27412 Aliso Creek Road
Aliso Viejo, California 92656

ABOUT

Mr. Anderson has more than thirty years experience in management, CPM scheduling, claims evaluation and analysis services for industrial, infrastructure and commercial construction projects. His experience includes the assessment of damages in support of litigation, including all aspects of estimating, scheduling, construction management, project risk management and dispute resolution.

Mr. Anderson has been retained to provide consulting and testifying expert services for labor productivity, schedule analysis, delay and impact evaluations, construction contracts, project management and project cost.

PROFESSIONAL EXPERIENCE

12+ YEARS WITH FIRM | 30+ YEARS IN INDUSTRY

SOCOTEC

2022 – Present | Senior Principal

C2G INTERNATIONAL, LLC – A SOCOTEC COMPANY

2019 to 2021 | Executive

C2G INTERNATIONAL, LLC (FORMERLY CRITERIUM GROUP, LLC)

2012 to 2019 | Executive

CONSTRUCTION MANAGEMENT SERVICES COMPANY, LLC

2010 to 2012 | Principal

NAVIGANT CONSULTING, INC

2005 to 2010 | Managing Director

A.W. HUTCHISON & ASSOCIATES, LLC

1995 to 2005 | Partner

BARGE – WAGNER, INC.

1987 to 1995 | Senior Project Manager / Estimator

BEACON INDUSTRIES, INC.

1984 to 1987 | Assistant Project Manager / Estimator

LB FOSTER COMPANY

1983 to 1984 | Welder / Fabricator

QUALIFICATIONS

EDUCATION

- Welding Technology, North Georgia Technical College

PRACTICE AREAS

- Acceleration / Disruption Analysis
- Change Management
- Change Order Analysis, Preparation & Negotiation
- Construction & Project Management
- Construction Practices & Safety
- Cost Analysis
- Cost & Cash Flow Budgeting & Monitoring
- Damages Calculation
- Delay Causation Analysis
- Dispute Resolution
- Engineering / Procurement / Construction
- Expert Witness Testimony
- International Arbitration
- Preparation & Evaluation of Claims
- Productivity Analysis
- Project Advisory
- Project Controls
- Risk Analysis
- Scheduling / Critical Path / Delay Analysis
- Schedule & Contract Management
- Troubled Project Evaluation & Turnaround

TESTIMONY FORUMS & VENUES

- State & Federal Courts
- United States Armed Services Board of Contract Appeals (ASBCA)
- American Arbitration Association (AAA)
- International Chamber of Commerce (ICC)
- United Nations Commission on International Trade Law (UNCITRAL)



TESTIMONY EXPERIENCE

Mr. Anderson has been appointed as an expert in scheduling / construction management and is an experienced testifier in Trials and Arbitrations. Mr. Anderson has provided expert testimony on services for numerous commercial, environmental, infrastructure and institutional projects.

Alder Canal Sewer Main Project, El Centro, California

- Deposition

Burgos Monterrey LPJ Pipeline, Tamaulipas Nuevo León, México

- ICC Arbitration (1)

County Road 775 and Pine Street Widening Project, Charlotte County, Florida

- Deposition for Trial

Disney's Pacific Wharf, Los Angeles, California

- Deposition and Arbitration (2)

Emerald Bay Residence, Laguna Beach, California

- Deposition and Trial (3)

F.E. Warren Air Force Base, 210 Housing Units, Washington, D.C.

- Deposition and Trial (4)

Four Seasons Emerald Bay Resort, Great Exuma Island, Bahamas

- Deposition for Arbitration

The Hermitage Apartments, St. Petersburg, Florida

- Deposition and Trial (5)

James C. Enochs High School, Modesto, California

- Deposition and Trial (6)

Jones Residences, Montecito, California

- Deposition for Trial

Kinder Morgan Louisiana Pipeline, Cameron Parish, Louisiana

- Deposition for Trial

Lake Arrowhead Resort Renovation, Lake Arrowhead, California

- Deposition and Arbitration (7)

Las Alamos National Laboratory RLUOB Facility, Las Alamos, New Mexico

- Deposition for Trial

Laurelwood Condominiums, Los Angeles, California

- Deposition for Trial

Lawrence Livermore Space Frame Demolition, Livermore, California

- Deposition and Arbitration (8)

Lenwood Sewer Project, San Bernardino, California

- Deposition and Trial (9)

Lia Honua Wailea Beach Villas, Maui, Hawaii

- Deposition and Arbitration (10)

Magnolia and La Verne Apartments, Los Angeles, California

- Deposition and Trial (11)

Mountain House WWRF, Tracy, California

- Deposition and Arbitration (12)

New Reid Hospital, Richmond, Indiana

- Deposition and Arbitration (13)

NTC Landfill Remediation - Phase 2, San Diego, California

- Deposition and Trial (14)

Portland Natural Gas Transmission System, Portland, Maine

- Deposition for Arbitration

TESTIMONY EXPERIENCE

Ritz Carlton Grand Cayman Resort, Grand Cayman, B.W.I.

- Deposition and Trial (15)

San Francisco to Santa Clara Fiber Optic System, San Francisco, California

- Deposition for Trial

Santa Ana River Interceptor (SARI), Yorba Linda, California

- Deposition and Arbitration (16)

Sè San Diego Hotel, San Diego, California

- Deposition and Arbitration (17)

Sherwood to Majorsville Pipeline Project, West Virginia

- Deposition and Trial (18)

South Enclave Condominiums, Maui, Hawaii

- Deposition and Arbitration (19)

Tustin Navy Base Valencia Loop Pipeline, Tustin, California

- Deposition and Trial (20)

UCLA Southwest Campus Housing Project, Los Angeles, California

- Deposition and Arbitration (21)

Veronica S. Shoemaker Boulevard, Fort Myers, Florida

- Deposition and Trial (22)

West Gateway Mixed Use Development, Long Beach, California

- Deposition for Trial

Western Avenue Pump Station, Los Angeles, California

- Deposition and Trial (23)

MEDIATIONS

Mr. Anderson also has extensive experience leading presentations in numerous facilitated mediation and settlement venues.

- 88 South Broadway I, Millbrae, California – Mediation
- 88 South Broadway II, Millbrae, California – Mediation
- Adelanto Detention Center Expansion Project, Adelanto, California - Mediation
- Aladdin Bazaar, Las Vegas, NV, California – Mediation
- Aladdin Hotel & Casino, Las Vegas, NV – Mediation
- Alder Canal Sewer Main Project, El Centro, California – Mediation
- Allergan Von Karman Expansion, Los Angeles, California – Mediation
- Alex Spanos Heart Center, Sacramento, California – Mediation
- Bipole III Converter Stations HVDC, Manitoba, Canada – Mediation
- Balboa Biltmore Condominiums, Los Angeles, California – Mediation
- BelaRosa Anthem Apartments, Anthem, Arizona – Mediation
- Broadway Tower 655, San Diego, California - Mediation
- Camden Main & Jamboree, Irvine, California – Mediation
- Camp Roberts Standby Generating Facility, Sacramento, California – Mediation
- Cerritos Community College Seismic Retrofit, Cerritos, California – Mediation
- City of Long Beach Water Treatment Plant, Los Angeles, California – Mediation
- Concord to Sacramento Pipeline, Northern California – Mediation
- Copper Basin Reservoir, San Bernardino County, California – Mediation
- Cuesta College Library Expansion, San Luis Obispo, California – Mediation
- Dooley Elementary School, Long Beach, California - Mediation

MEDIATIONS

TESTIMONY EXPERIENCE

- Dow-Mitsui Chlor-Alkali EDC Storage & Loading Facility, Freeport, Texas - Mediation
- Florida Citrus Bowl Reconstruction, Orlando, Florida - Mediation
- Four Seasons at University Circle, Palo Alto, California – Mediation
- Giganti Market, Los Angeles, California – Mediation
- Gisler/Redhill Sewer, Orange County, California - Mediation
- Glendale Police Facility, Glendale, California – Mediation
- Grand Plaza Shopping Center, San Marcos, California - Mediation
- Highland Pipeline Inland Feeder Project, San Bernardino, California - Mediation
- Hollywood & Vine Subway Station, Phase II, Los Angeles, California – Mediation
- Hunter Park Storm Drain Project, Riverside California – Mediation
- Irvine Center Drive Rehabilitation, Irvine, California – Mediation
- Las Alamos National Laboratory RLUOB Facility, Las Alamos, New Mexico
- Lenwood Sewer Project, San Bernardino, California – Mediation
- Los Gatos High School, Los Gatos, California – Mediation
- Lucile Packard Children’s Hospital, Palo Alto, California - Mediation
- Mammoth 80|50, Mammoth Lakes, California - Mediation
- McWilliams Power Plant Upgrades, San Francisco, California – Mediation
- Melchiorre Residence, Santa Barbara, California – Mediation
- Mercy Medical Center, Roseberg, Oregon - Mediation
- Mills Water Treatment Facility, Riverside, California - Mediation
- Nacimiento Water Pipeline Project, San Luis Obispo, California - Mediation
- N.A.S.A./S.O.F.I.A., Sacramento, California – Mediation
- Nellis AFB, Las Vegas, Nevada – Mediation
- Oxnard WWTP Headworks Project, Oxnard, California – Mediation
- Oceanside Emergency Land Outfall, Oceanside, California – Mediation
- Orange County Sanitation District Activated Sludge Facility 2, Orange County, California – Mediation
- Pacific Pipelines Systems, Los Angeles, California – Mediation
- Palmdale Regional Medical Center, Palmdale, California – Mediation
- Perris Valley Pipeline – North Reach, Perris, California – Mediation
- Pleasant Grove Wastewater Treatment Plant, Roseville, California – Mediation
- Prima Deshecha Landfill Office Building, Orange County, California – Mediation
- Raymond Avenue Street Improvements, Pasadena, California - Mediation
- Sacramento Wastewater Treatment Plant, Sacramento, California – Mediation
- Santa Clara Valley Medical Center Replacement Bed Building 1, San Jose, California – Mediation
- Slater Channel Improvements, Ventura, California – Mediation
- Sound Transit Beacon Hill Station & Tunnel Contract, Seattle Washington – Mediation
- Stanford Lucile Packard Children's Hospital, Palo Alto, California – Mediation
- Tosco Refinery, Los Angeles, California – Mediation

MEDIATIONS

TESTIMONY EXPERIENCE

- UC Berkeley Memorial Stadium Seismic Safety Improvements, Berkeley, California – Mediation
- University of California, Santa Barbara Science Building, Santa Barbara, California – Mediation
- Watsonville High School, Watsonville, California – Mediation
- West Hills Community College, San Francisco, California – Mediation
- Wolf Creek Sports Park, Temecula, California – Mediation

COMPREHENSIVE ANALYSIS EXPERIENCE

REPRESENTATIVE PROJECTS

- 3rd Street Light Rail Transit Platform Finishes & Special Systems, San Francisco, California
- 88 South Broadway Condominiums, Millbrae, California
- 91st Avenue Wastewater Treatment Plant UP01, Phoenix, Arizona
- Adelanto Jail Expansion Project, San Bernardino County, California
- Aladdin Hotel & Casino, Las Vegas, Nevada
- Alder Canal Sewer Main Project, El Centro, California
- Allergan Von Karman Expansion, Irvine, California
- Alvarado Trunk Sewer Realignment, San Diego, California
- Arrowhead Regional Medical Center, San Bernardino, California
- Atlanta-Fulton County Water Treatment Plant Expansion, Phase II, Alpharetta, Georgia
- Badger Avenue Replacement Bridge, Los Angeles, California
- Balboa Biltmore Condominiums, Encino, California
- Bonabell & Duncan Streets S.W. Relief Pumping Station, Jefferson Parish, Louisiana
- Broadway Tower 655, San Diego, California
- Brucejack Gold Mine, Stewart, BC, Canada
- Burgos Monterrey LPJ Pipeline, Tamaulipas Nuevo León, México
- Caesars Palace, Phase II, Las Vegas, Nevada
- The Californian at Wilshire, Los Angeles, California
- CALTRAINS North CTX Project, San Francisco, California
- Camden Main & Jamboree, Irvine, California
- Camp Pendleton Regional Tertiary Treatment Plants, Marine Corps Base in Camp Pendleton, California
- Camp Roberts Standby Generating Facility, Sacramento, California
- Cape Coral Wastewater Collection Systems, Cape Coral, Florida
- Cerritos Community College Gymnasium Seismic Retrofit, Cerritos, California
- Cesar E. Chavez Park Development, Phase II, Long Beach, California
- Charleston Road L-109 Replacement Project, Palo Alto, California
- City of Long Beach Water Treatment Plant, Long Beach, California
- Coachella Trunk Sewer, Coachella, California
- Commerce Casino & Hotel, Commerce, California
- Concord to Sacramento Pipeline, Northern California

REPRESENTATIVE PROJECTS

- Conda Phosphate Plant Upgrade, Soda Springs, Idaho
- Cooper River Bridge, Charleston, South Carolina
- Cooper River Bridge, Urban Section Project, Charleston, South Carolina
- Craighead Technology Park Sewer Lines, Fayetteville, Arkansas
- Crescent Dunes Thermo Solar Power Plant, Tonopah, Nevada
- CSPC Nanhai Petrochemical Complex - Huizhou Municipality of Guangdong, China
- Curry Village Employee Housing Project, Yosemite Park, California
- Dairy Mart Bridge, San Diego, California
- Deer Island Wastewater Treatment Plant, Outfall Tunnel, Boston, Massachusetts
- Deer Island Wastewater Treatment Plant, North Headworks, Boston, Massachusetts
- Diamond Valley Lake Project, Los Angeles, California
- Disney Concert Hall, Los Angeles, California
- Disney's Pacific Wharf, Los Angeles, California
- Eastern Alberta Transmission Line (EATL), Alberta, Canada
- El Segundo Energy Center, El Segundo, California
- FAO Schwartz, Las Vegas, Nevada
- F.E. Warren Air Force Base, 210 Housing Units, Cheyenne, Wyoming
- Federal Aviation Administration Facility, Palmdale, California
- Forrest City Military Housing Projects, Multiple Locations, USA
- Four Seasons Emerald Bay Resort, Great Exuma Island, Bahamas
- Four Seasons at University Circle, Palo Alto, California
- Giganti Market, Los Angeles, California
- Gisler/Redhill Sewer, Orange County, California
- Glendale Police Facility, Glendale, California
- Harquahala Generating Project, Tonopah, Arizona
- Hartsfield International Airport Concourse E Apron Paving & Taxiway, Atlanta, Georgia
- Highland Pipeline Inland Feeder Project, San Bernardino, California
- Highway 1, McKenzie Interchange Phase 2, Victoria, BC, Canada
- Highway 97, Stone Creek to Williams Road Upgrades, Prince George, BC, Canada
- Hollywood & Vine Subway Station, Redline Phase II, Hollywood, California
- Hyatt Classic Residence, Yonkers, New York
- Hyperion Wastewater Treatment Plant – Digesters, Los Angeles, California
- I-8/I-805 Interchange, Seismic Upgrade, San Diego, California
- I-65 Contracts 26, 27, 28 & 29, Shepardsville to Elizabethtown, Kentucky
- I-565, Huntsville, Alabama
- Internationally Themed Residential College Project, Los Angeles, California
- James Island Bridge, Phase III & V, Charleston, South Carolina
- James Island Expressway, Phase I, Charleston, South Carolina
- Jasper Interconnection, Calgary, AB, Canada
- Jessie Elwin Nelson Academy / GTE Middle School, Long Beach, California

REPRESENTATIVE PROJECTS

- Jones Residences, Montecito, California
- Joseph Jenson Water Treatment Plant, Los Angeles, California
- Kamehameha Schools, East Campus Hawaii, Keaau, Hawaii
- Kern River Gas Transmission Company Pipeline Project, Multiple States
- Kinder Morgan Power Facility, Cape Girardeau, Missouri
- Labrador-Island Link Transmission Line, Newfoundland & Labrador, Canada
- LAC + USC Medical Center , Los Angeles, California
- Leachate Pipeline Project, County of Sonoma, California
- Lenwood Sewer Project, San Bernardino, California
- Lia Honua Wailea Beach Villas, Maui, Hawaii
- Lodi Energy Center Power Plant Project, Lodi, California
- Los Angeles MTA Vehicle Acquisition Project, Los Angeles, California
- Los Gatos High School, Los Gatos, California
- Lower Moosa Canyon Water reclamation Facility, Escondido, California
- Mammoth 80|50, Mammoth Lakes, California
- Marina Interceptor Sewer, Los Angeles, California
- Mariposa Energy Project, Alameda County, California
- Matrix Service Port Facility, Long Beach, California
- McCabe Richland Trunk Sewer Project, Nashville, Tennessee
- McWilliams Power Plant Upgrades, Gantt, Alabama
- Melchiorre Home, Santa Barbara, California
- Mercy Medical Center, Roseberg, Oregon
- Michelson Water Recycling Plant Phase 2 Expansion, Irvine, California
- Miramonte High School, Orinda, California
- Montalvo Square Shopping Center, Ventura, California
- Mountain House WWRF, Tracy, California
- MTA Hollywood & Vine / Hollywood & Highland Tunnel, Hollywood, California
- N.A.S.A./S.O.F.I.A., Sacramento, California
- Nellis AFB, Las Vegas, Nevada
- New Croton Lake Gate House & Appurtenances, Westchester County, New York
- New Therapy Pool & Expand Polytrauma Project, Seattle Washington
- New White Memorial Medical Center, Los Angeles, California
- Nevada Power Flamingo Underground Project, Las Vegas, Nevada
- NextBridge East-West Tie Transmission Project, Ontario, Canada
- North Hollywood Subway Station, North Hollywood, California
- Norman Wells Health Centre & LTC Facility, Northwest Territories, Canada
- Ocean Front Townhomes, Santa Monica, California
- Ojai Resort & Spa, Ojai, California
- OMPPA Transmission Project, Chula Vista, California

REPRESENTATIVE PROJECTS

- Orange County Sanitation District Secondary Activated Sludge Facility 2 at Plant No. 1, County of Orange, California
- Orion Power Plant, Wrightsville, Arkansas
- Oxnard WWTP Headworks Project, Oxnard, California
- Pacific Pipeline Systems – EMIDIO/LA, Kern and Los Angeles Counties, California
- Palmdale Regional Medical Center, Palmdale, California
- Picnic Point Waste Water Treatment Facility, Washington
- Pico Power Plant, San Jose, California
- Pleasant Grove Wastewater Treatment Plant, Roseville, California
- Pope & Talbot Paper Mill, Halsey, Oregon
- Portland Natural Gas Transmission System, Portland, Maine
- Praxair Hydrogen Plant, Richmond, California
- Promenade at Natomas Off-Site Trunk Sewer Project, Sacramento, California
- Raymond Avenue Street Improvements, Pasadena, California
- Ritz Carlton Grand Cayman Resort, Grand Cayman, B.W.I.
- River Mountains Water Treatment Plant, Henderson, Nevada
- Rosewood Park Community Center, Commerce, California
- Sacramento Waste Water Treatment Plant, Sacramento, California
- San Francisco Bay Area Rapid Transit, Airport Expansion, San Francisco, California
- San Francisco International Airport Special Systems Project, San Francisco, California
- San Luis Obispo County Government Center, San Luis Obispo, California
- San Ysidro Intermodal Transportation Center, San Diego, California
- Saint Joseph's Medical Center, Orange, California
- Santa Clara Valley Medical Center Replacement Bed Building 1, San Jose, California
- Santa Monica Civic Center Parking Structure, Santa Monica, California
- Santa Ynez Unit Petrochemical Expansion Project, Santa Barbara County, California
- Sierra de Montserrat Pipeline Project, Loomis, California
- Sierra SunTower Project, Lancaster, California
- Scheid Vineyards Winery Facilities, Monterey County, California
- Simple Cycle Peaking Plants, Southern California
- Skinner Water Treatment Plant Oxidation Retrofit Program, Riverside County, California
- Slater Channel Improvements, Huntington Beach, California
- Smuggler's Gulch & Goat Canyon Pumping Stations, San Diego, California
- Sofia, NASA Ground Support Facility, Moffett Field, California
- Sound Transit Beacon Hill Station & Tunnel Contract, Seattle, Washington
- Stanford Lucile Packard Children's Hospital, Palo Alto, California
- Staples Center, Los Angeles, California
- Stough Canyon Nature Center, Burbank, California
- Tosco Refinery, Long Beach, California
- TVA-FGD Project, Cumberland Unit, Cumberland, Tennessee

COMPREHENSIVE
ANALYSIS EXPERIENCE

COMPREHENSIVE
CONSTRUCTION
EXPERIENCE

REPRESENTATIVE PROJECTS

- Universal City to North Hollywood MTA Tunnel Project, Los Angeles, California
- University Medical Center of Southern Nevada, Las Vegas, Nevada
- University of California, Davis Medical Center, Sacramento, California
- University of California, Berkeley Memorial Stadium Seismic Safety Improvements, Berkeley California
- University of California, Los Angeles Southwest Campus Housing Project, Los Angeles, California
- University of California, Los Angeles Westwood Hospital, Los Angeles, California
- University of California, Santa Barbara Science Building, Santa Barbara, California
- Valley Transit Authority Combined Communications & Signal Contract, San Jose, California
- Wataynikaneyap (“Watay”) Power Project, Ontario Canada
- Wando River Bridge, Charleston, South Carolina
- Webcor, Inc., Acquisition Due Diligence, California
- West Hills Community College, Lemoore, California
- WGI Design, Various Cities, Michigan & Arkansas
- Wohler-Forestville Pipeline Project, Novato, California
- Wolf Creek Sports Park, Temecula, California
- Anheuser-Busch, Inc. Pretreatment Facility, Georgia
- Airport Industrial Park Waste Treatment Facility, Macon, Georgia
- Baldwin Raw Water Intake & Pump Station, Baldwin, Georgia
- Canton Industrial Park Water & Sewer Installation, Canton, Georgia
- Cedartown Wastewater Treatment Facility Upgrade, Cedartown, Georgia
- Cherokee Wastewater Treatment Plant & Land Application, Carrollton, Georgia
- City of Colquitt Wastewater Treatment Plant, Pump Stations & Force Mains, Colquitt, Georgia
- Douglasville Wastewater Treatment Plant, Douglasville, Georgia
- Duluth Booster Pump Station & Force Main, Georgia
- Fulton County Sewer Line Contracts A84, B84, C84, A85, Fulton County, Georgia
- Fulton County Water Line Contracts (various), Fulton County, Georgia
- Hardscrabble Road Force Main, Alpharetta, Georgia
- Mansell Road Trunk Sewer, Alpharetta, Georgia
- North Fulton County Interceptor Line, Roswell, Georgia
- Park Towers Phase I, Dunwoody, Georgia
- Oakbrook Shopping Center, Summerville, South Carolina
- R.L. Sutton Wastewater Treatment Plant, Cobb County, Georgia
- Rose Creek Water Treatment Plant, Cherokee County, Georgia
- Santee Cooper Surface Water Treatment Plant, South Carolina
- Southside Wastewater Treatment Plant, Scottsboro, Alabama
- Summerville Wastewater Treatment Plant, Summerville, South Carolina
- Warner Robbins Wastewater Treatment Plant, Warner Robbins, Georgia

Exhibit 02



Robert T. ADAMS

PMP, FICCP

Managing Director

CONTACT

✉ Robert.Adams@socotec.us

☎ Telephone: 949.387.9400 Ext. 264
Mobile: 714.768.2428

📍 27412 Aliso Creek Road
Aliso Viejo, California 92656

ABOUT

Robert Adams has over 26 years of experience in the engineering and construction industry with over 18 years spent specifically in the oil/gas and mining industry. Mr. Adams has spent the other eight years working as a consultant in construction claims and dispute resolution for owners and general contractors for a variety of projects throughout the United States, Canada, and the Middle East.

During his tenure in engineering and construction, he has worked in the United States and Canada as an onsite project scheduler, engineering lead planner, project controls lead and document control manager.

A certified Project Management Professional (PMP) since 2013, Mr. Adams' specializes in program management and project controls services on a variety of complex, multi-phase, multi-million dollar construction projects.

PROFESSIONAL EXPERIENCE

5+ YEARS WITH FIRM | 25+ YEARS IN INDUSTRY

SOCOTEC

2022 to Present | Managing Director

C2G INTERNATIONAL, LLC – A SOCOTEC COMPANY

2019 to 2021 | Director

C2G INTERNATIONAL, LLC

2018 to 2019 | Director

ANALYTICAL MANAGEMENT SOLUTIONS (AMS)

2015 to 2018 | Senior Consultant

TRANSCANADA

2013 to 2015 | Project Controls Lead

SNC LAVALIN, INC.

2012 to 2013 | Lead Planning/Scheduling Consultant

FLUOR CANADA, INC.

2011 to 2011 | Field Interface Planning Consultant

CASMAN CONSTRUCTION

2009 to 2011 | Senior Planner/Scheduler

SPECIALTY PLANT SERVICES

2007 to 2008 | Senior Schedule and Progress Consultant

SNC LAVALIN INC.

2003 to 2008 | Senior Planner/Scheduler

HALLIBURTON KBR

2002 to 2003 | Construction Scheduler

JNE CONSTRUCTORS

2000 to 2001 | Project Controls & Contract Administrator

THE STATE GROUP

1997 to 1999 | Scheduling & Cost Specialist

QUALIFICATIONS

EDUCATION

- Associates Degree in Accounting, ICS College, Ontario, Canada

PROFESSIONAL LICENSES & CERTIFICATIONS

- Project Management Professional - #1743164
- FICCP (Fellow) - #230009

PRACTICE AREAS

- Acceleration / Disruption Analysis
- Construction & Project Management
- Damages Calculation
- Dispute Resolution
- Engineering / Procurement / Construction
- Productivity Analysis
- Project Advisory
- Project Controls
- Preparation & Evaluation of Claims
- Risk Analysis
- Scheduling / Critical Path / Delay Analysis
- Schedule & Contract Management
- Technical Report Writing

PROFESSIONAL ASSOCIATIONS

- Project Management Institute (2013)
- Institute of Construction Claims Practitioners (2023)



AREAS OF EXPERTISE

- As a construction claims consultant, he has developed mediation and settlement presentation and offered expert opinions related to construction management, and delay and impact evaluation.
- Performed delay analysis and schedule forensics for projects such as sports facilities, industrial sites, pharmaceutical labs, resorts and residential mixed-use construction.
- Developed and maintained project management documentation using Primavera's project management software, Project Planner, Smartsheet, Team Play (time management module) and Microsoft Project.
- Developed project plans and schedules and determined the project's critical path from design thru construction. Updated schedules and managed, controlled and monitored the cost and resource loaded Project schedule.
- Developed and maintained detailed construction and engineering schedules, often in excess of 30,000 activities.
- Performed quantitative and qualitative risk analysis on projects in excess of \$4B
- Mr. Adams is fluent in Spanish

REPRESENTATIVE PROJECTS

Schedule Forensics & Delay Analysis

- Academy Museum of Motion Pictures, Los Angeles, California
- Avenida Palm Desert, California
- Bipole III Transmission Project, Manitoba, Canada
- Broadcom Campus, Irvine, California
- Christ Cathedral Academy, Garden Grove, California
- Cline Avenue Bridge, Lake County, Indiana
- Concordia University, Irvine, California
- Crenshaw/LAX Rail Line, Los Angeles, California
- East West Transmission Line, Ontario, Canada
- IH-35 Managed Lanes, Dallas, Texas
- RTA Terminal A Extension, Kitimat, BC, Canada
- Silver Line Light Rail Project, Dallas, Texas
- Shire Pharmaceuticals, Glendale, California
- Silvery Towers, San Jose, California
- T100 Tacoma Hilltop Link Extension, Seattle, Washington
- Wataynikaneyap Project Transmission Line, Ontario Canada

Risk Analysis

- Jordan Cove LNG Project, Oregon
- Keystone XL Pipeline, Houston, Texas
- LNG Facility, Jordan Cove, Oregon
- New Stanford Hospital, Palo Alto, California
- Tengiz Field Expansion, Chevron, Tengiz, Kazakhstan

COMPREHENSIVE
CONSTRUCTION
EXPERIENCE

DESIGN

REPRESENTATIVE PROJECTS

Planner/Scheduler and Project Controls for Construction

- Agrium Potash Mine, Saskatoon, Saskatchewan
- CNRL Horizon Oil Sands Project, Fort McMurray, Canada
- Broadcom Inc Headquarters, Irvine, California
- Dofasco Steel Galvanizing Line #5, Hamilton, Ontario
- Husky Oil Debottlenecking Project, Lloydminster, Alberta
- Imperial Oil Refinery Upgrade, Edmonton, Alberta
- JBL Citric Acid Plant, Port Colborne, Ontario
- Suncor Mine Upgrade, Fort McMurray, Alberta
- Syncrude North Mine Relocation, Fort McMurray, Alberta
- Syncrude UE-1 Upgrade, Fort McMurray, Alberta
- Transcanada Keystone XL Pipeline, Houston, Texas
- Texas Rangers Stadium, Arlington, Texas
- Indiana Double Track Project, Chicago

Planner/Scheduler and Project Controls for Design/Engineering

- SNC Lavalin Energy Upgrade Division , Toronto, Ontario
- Transcanada Keystone XL Pipeline, Houston, Texas

Exhibit 03

EWT Overall Schedule Summary – With Ontario COVID-19 Case Count

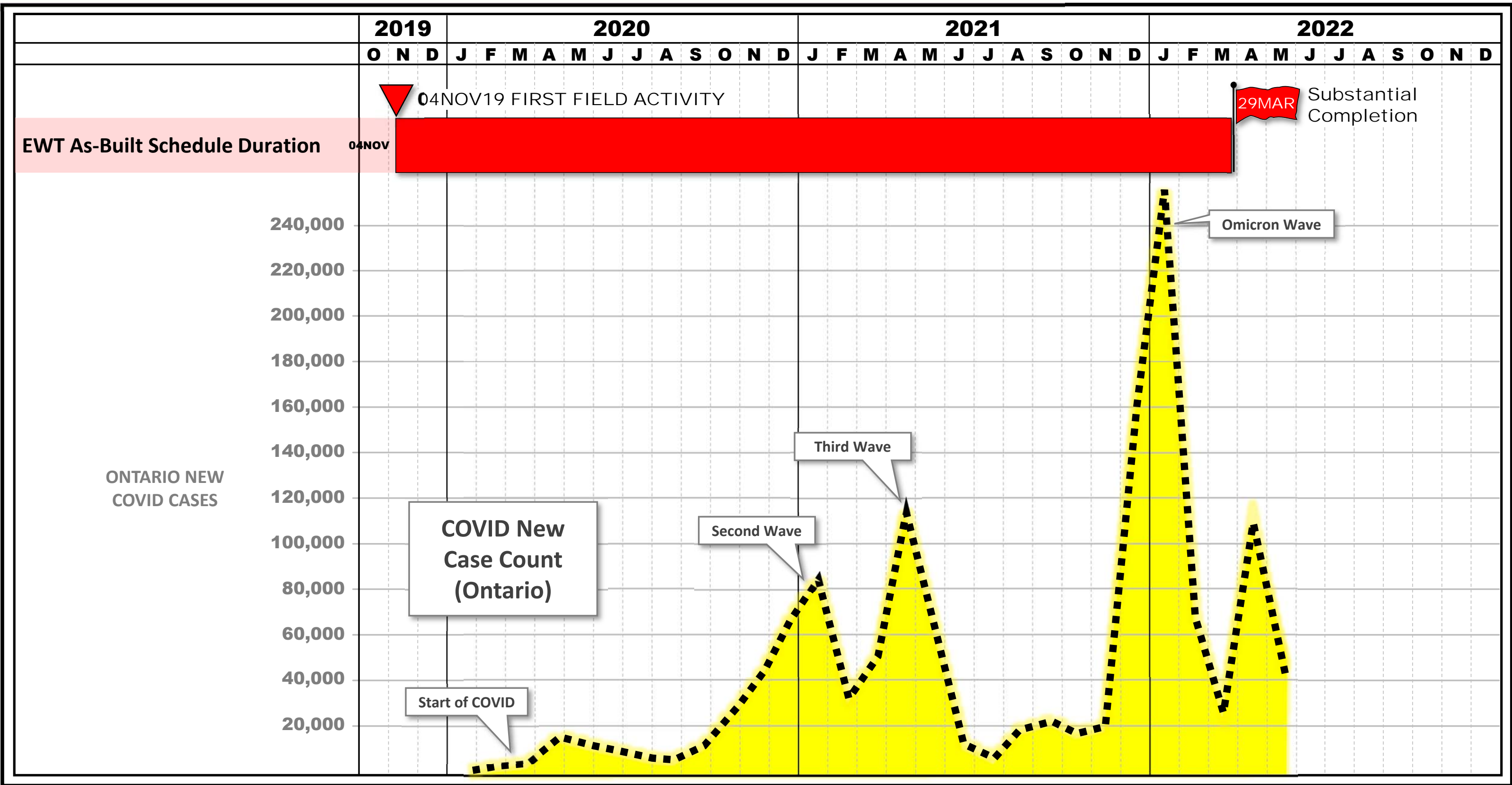


Exhibit 04

Summary Comparison - Original and Revised As-Planned Schedules vs. As-Built

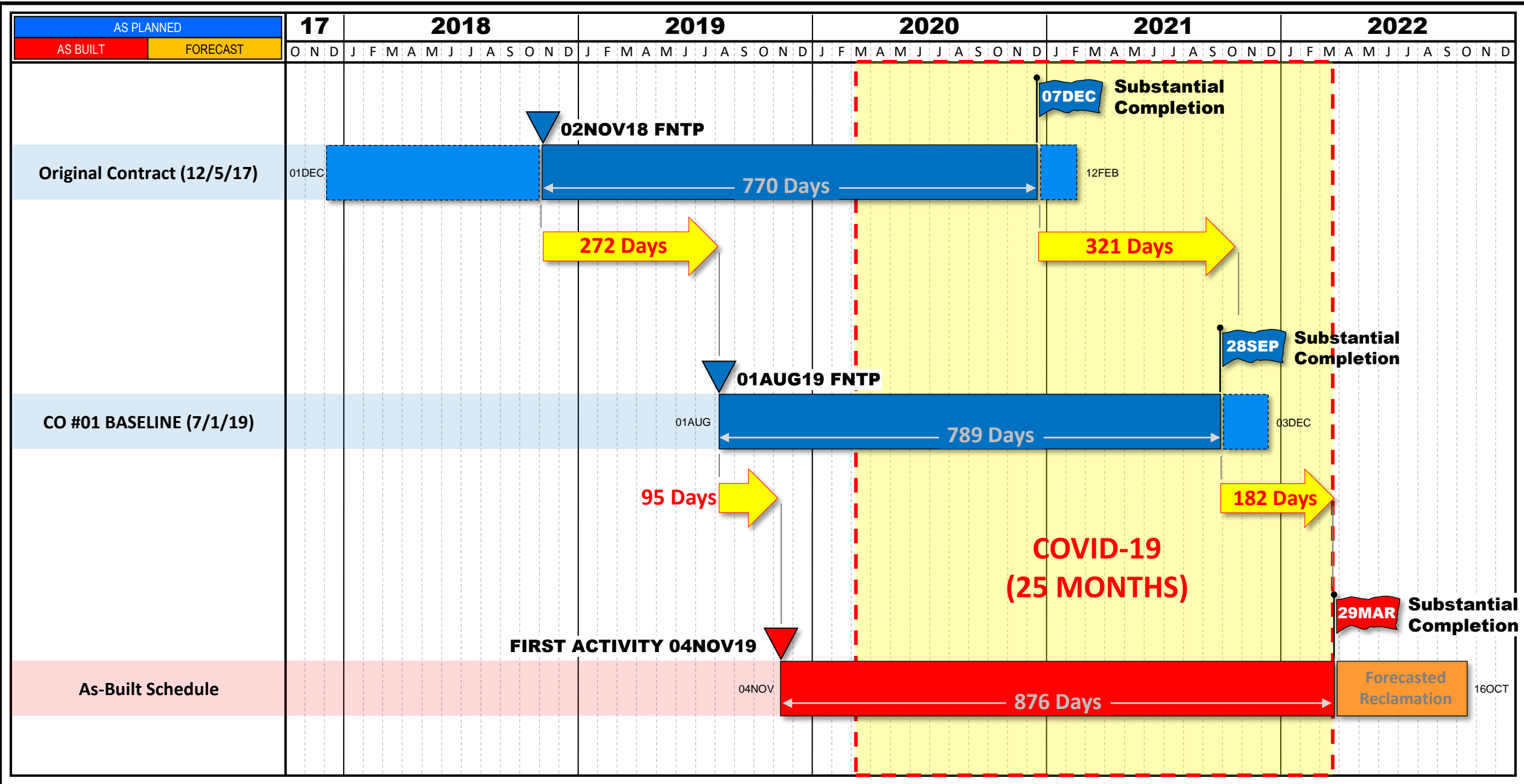


Exhibit 05

Empirical Productivity Impacts of the Novel Coronavirus

2nd Edition



JSI HELD
UNIVERSITY

516.621.2900 • info@jsheld.com • jsheld.com

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Introduction

As of March 2021, the construction industry has experienced almost a year of the COVID-19 pandemic and more information continues to become available as to the initial and perceived continued impacts that the pandemic had upon contractors' costs and production rates. Two tenets key to understanding cost and resource productivity still reign:

1. If a contractor is experiencing working conditions that require additional measures, the contractor should endeavor to contemporaneously capture the impacts of an issue(s) on its work that were not reasonably expected. In other words, there is no difference between capturing the time and costs associated with possible COVID-19 impacts from other issues that may cause impacts to productivity.
2. Reliably demonstrating the impacts to productivity still relies upon developing reasonable causation between the possible impacts of an issue (in this case, the COVID-19 pandemic) upon the actual resource productivity. This has long been a standard that contractors were expected to produce even before the pandemic.

In addition, each project is different and should be evaluated individually. Other factors that may affect a contractor's productivity might also include project type, location, scope of a contractor's work, and perhaps most importantly, the contractor's training of its personnel in working safely and productively.

As of the date of this publication, no study has concluded that every construction or restoration project has experienced delay, disruption, or increased costs due to the COVID-19 pandemic. The evaluation of schedule delay, labor productivity, material availability, and cost overruns should be performed on a project-by-project basis. Further, the overall degree of reliability of the studies referenced in this paper should be reviewed within the context of the constantly evolving and changing impact of the global pandemic. The impact of COVID-19 in all facets of life, including construction, has been dynamic and varying in nature, with restrictive measures changing from month-to-month and location-by-location.

Since the onset of the novel coronavirus in the first quarter of 2020, substantial guidance has been issued by construction industry leadership regarding perceived and potential impacts to construction projects from the COVID-19 pandemic. Much of the discussion has revolved around best practices and potential legal theories whereby additional costs and/or lost time may be recovered.

Contract law requires that a party to a contract need not only demonstrate its legal entitlement to the recovery of lost time and/or monies but that it must also reliably demonstrate its sustained monetary damages stemming from the actions or events that gave rise to its entitlement. In the absence of such calculable figures, a party may fail in its attempt at recovery.¹

Notwithstanding the guidance provided regarding entitlement to the recovery of pandemic-driven losses, information as to the quantifiable extent of impacts to construction projects has been largely absent

¹ Ohara, Carina Y., et al., editors. *Fundamentals of Construction Law*. American Bar Association, 2001, pp. 249-50.

(if not entirely). However, two United States-based construction industry organizations performed a joint study in the Summer of 2020 which published empirical information regarding quantifiable impacts related to the pandemic. A separate study performed on a limited number of construction projects in the United Kingdom yielded similar results: that some construction trades in both countries have experienced a 15-18% loss of productivity stemming from the COVID-19 pandemic.

According to Merriam-Webster's dictionary, "empirical" is defined as:²

"Originating in or based on observation or experience; relying on experience or observation alone without due regard for system and theory; capable of being verified or disproved by observation or experiment; of or relating to empiricism."

The information produced in the reports may gain the attention of the global construction industry as the metrics provided may apply to each project. That is, every project across the globe may have sustained impacts from the COVID-19 pandemic. Contractors, subcontractors, and owners alike may consider the information from the reports with respect to work performed during the pandemic as well as future work that is expected to operate in pandemic-driven circumstances.

Project stakeholders, and especially contractors, should not overlook the potential ramifications of the pandemic on projects, for it takes time for the full impact of lost productivity (and other impacts) to manifest themselves in a contractor's schedule, project cost ledger, and/or financials. If a contractor is not diligent in maintaining adequate records it may find itself unable to recover lost time and/or costs for which it may be entitled.

This white paper discusses the above-mentioned studies and how the information therein may be used in evaluating and analyzing the possible impacts of the COVID-19 pandemic upon contractors' production.

Construction Productivity and Why It Is Critical to Project Success

Prior to exploring the details of the studies, this paper will address the fundamental concept of construction productivity and why it is considered instrumental to the success (or failure) of a construction project. In its most basic form, construction productivity (and productivity, generally)

²Merriam-Webster. (n.d.). Empirical. In Merriam-Webster.com dictionary. Retrieved September 12, 2020, from <https://www.merriam-webster.com/dictionary/empirical>

is defined as the amount of “inputs” required to produce an “output”. The work of a contractor requires the expenditure of resources in order to produce outputs, or the actual placement of the construction work.

Typically, the “inputs” of a contractor consist of labor, equipment, and materials that are employed in the performance of a contractual scope of work. The result of the inputs are the “outputs”, which may include, for example, the installation of building foundations, the erection of a building super-structure, the installation of mechanical and electrical systems, the trenching of a pipeline, or the paving of a roadway.

According to construction industry materials, productivity is also defined as “the output per hour of input,” or the “relative measure of labor efficiency, either good or bad, when compared to an established base or norm as determined from an area of great expertise. Productivity change may be either an increase or decrease in cost.”³

Productivity is considered paramount in the performance of a contractor because 1) construction contractors typically formulate bids based on an estimated rate of productivity per unit of material installed; 2) construction projects usually have a definable date in which the work is to reach completion (which is driven by production⁴ and productivity); and 3) construction contractors are often paid on the basis of work completed (in contrast to payment per unit of input, e.g. a labor hour). Thus, for a contractor to fulfill its contractual obligations and still make a profit, the actual productivity achieved should perform to (or similar to) the estimated efficiency included in its bid.

In some instances, as a contractor attempts to produce outputs, the required input (often, a “labor hour”) is actually greater per unit of work installed than that which was assumed when the contractor developed its bid. Depending upon contract terms and prevailing law, when the causes and reasons for elevated resource requirements are beyond the contractor’s control or ability to foresee (at the time of bidding), the contractor may stand to recover the increased costs resulting from the reduced productivity. When this occurs, the contractor is said to have experienced a “loss of productivity” or “loss of efficiency.” Considering that labor costs are often the largest cost component to a contractor, it follows that losses in productivity can become substantial.⁵

Losses in construction productivity is a topic with substantial case law and related industry studies. According to the Association for the Advancement of Cost Engineering International (“AACE”), lost labor productivity is described as:⁶

³McDonald, D. F., & Zack Jr., J. G. (2004). Estimating Lost Labor Productivity in Construction Claims. In AACE International Recommended Practice No. 25R-03 (Rev. April 13, 2004 ed., p. 2). N.p.: AACE International.

⁴Production (as contrasted to “productivity”) is often described as the progress or rate of the contractor per unit of time, with no recognition of the quantum of input(s) necessary to meet a certain rate of progress.

⁵AACE International. Skills and Knowledge of Cost Engineering. 6th ed., AACE International, 2015, p. 270.

⁶McDonald, D. F., & Zack Jr., J. G. (2004). Estimating Lost Labor Productivity in Construction Claims. In AACE International Recommended Practice No. 25R-03 (Rev. April 13, 2004 ed., p. 2). N.p.: AACE International.

“Productivity loss, therefore, is experienced when a contractor is not accomplishing its anticipated achievable or planned rate of production and is best described as a contractor producing less than its planned output per work hour of input. Thus, the contractor is expending more effort per unit of production than originally planned. The result is a loss of money for a contractor. Therefore, a challenging aspect of construction cost control is measuring and tracking work hours and production in sufficient detail to allow analysis of the data in order to determine the root cause(s) of poor labor productivity, should it occur.”

In many instances, a contractor may indeed achieve the planned rate of production (progress its work according to the project schedule) yet not achieve its anticipated rate of productivity. For example, a contractor may be required to dedicate twice the amount of resources to a project in order to maintain a certain rate of production. In such a scenario, even though a contractor may achieve a necessary rate of production, a substantial loss of productivity may be incurred in doing so.⁷

With the above concepts in mind, this paper introduces empirical-based metrics which represent the extent of possible sustained impacts to construction productivity during the initial period of the pandemic (up to June 2020). This paper also introduces other considerations and possible “best practices” for owners and contractors for work performed prior to and during the pandemic.

RESULTS FROM CONSTRUCTION INDUSTRY STUDIES OF QUANTIFIED IMPACTS TO PRODUCTION PRIOR TO AUGUST OF 2020

During the summer of 2020, two reports were released addressing the results of productivity data collected and analyzed on active construction project sites in the United States (“US”) and the United Kingdom (“UK”). The first study, released in late June 2020, reported on productivity losses experienced on projects within the UK while the second report, released in July 2020, contained the results of studies performed on projects within the US.^{8,9} The findings summarized in the reports are similar – construction projects in both countries have experienced a 15-18% diminution in productivity stemming from the COVID-19 pandemic.

⁷McDonald, D. F., & Zack Jr., J. G. (2004). Estimating Lost Labor Productivity in Construction Claims. In AACE International Recommended Practice No. 25R-03 (Rev. April 13, 2004 ed., p. 2). N.p.: AACE International.

⁸Rubin, D. K. (2020, June 29). Analysis: COVID-19 Causes 35% Productivity Loss at UK Projects. In Engineering News-Record. Retrieved from <https://www.enr.com>; McLin, M., Doyon, D., & Lightner, B. (2020).

⁹McLin, M., Doyon, D., & Lightner, B. (2020). Mitigation and Productivity Impacts for Sheet Metal, HVAC, and Mechanical Contractors. In Pandemics and Productivity: Quantifying the Impact. Chantilly, VA: New Horizons Foundation.

COVID-19 CAUSES 35% PRODUCTIVITY LOSS AT UK PROJECTS AS OF JULY 2020

In the report released from the UK, the loss of productivity impact on construction project labor was reported to be “about 35%” because of COVID-19.¹⁰ The study was based on an analysis of forty-five (45) projects that performed construction work during the global pandemic. A news headline that goes on to report the published results stated labor shortages (presumably caused by the pandemic) and social distancing measures accounted for approximately 7% of incurred productivity losses; that 1% of productivity was lost through “poor transfer of design information while remote working;” and an additive 7% of productivity was lost because of late or unavailable materials.

The report stated that a single project had incurred a 35% productivity loss attributable to the novel coronavirus but details that 20% (of the 35%) was attributable to “an average 20% productivity loss,” and that the remaining 15% was attributable to the pandemic.

The report goes on to state that construction projects in the UK have “systemic productivity challenges,” which often force contractors to “accelerate” (or dedicate additional resources to a project to increase rates of production) so that contractual milestones are not violated. However, the report noted that acceleration measures may be unavailable as an option for projects operating under pandemic-driven health and safety protocols. That is, to adhere to social distancing measures, a limit may be placed as to the amounts of additional laborers a contractor may place on the work fronts. In such instances, a contractor may instead face consequences for failing to finish according to its contract.

The report also stated that, in early July, UK officials announced the reduction of social distancing measures in England to a required distance of “1m+.” Projects in Scotland, Wales, and Northern Ireland continued to follow their respective country’s rules. However, the report noted that many of the measures implemented by contractors since the onset of the pandemic would continue to be voluntarily enforced (many of which were more restrictive). Thus, although some jurisdictions in the UK have relaxed social distancing measures, some contractors may continue to enforce the more restrictive measures. In such instances, a contractor may face exposure to its subcontractors for additional costs incurred because of the refusal to relax social distancing measures, and/or preclude the subcontractor from accelerating its work.

SMACNA REPORT: “PANDEMICS AND PRODUCTIVITY: QUANTIFYING THE IMPACT”

In July of 2020, two US-based construction industry organizations, the Sheet Metal and Air Conditioning Contractor’s National Association (“SMACNA”) and National Electrical Contractors Association (“NECA”), released a joint report based on the analysis of “113,000” labor hours¹¹ incurred on job sites in twenty-one (21) states that operated under pandemic-driven protocols and conditions.¹²

¹⁰Rubin, D. K. (2020, June 29). Analysis: COVID-19 Causes 35% Productivity Loss at UK Projects. In Engineering News-Record. Retrieved from <https://www.enr.com>; McLin, M., Doyon, D., & Lightner, B. (2020).

¹¹The 113,000 labor hours are a combination of man-hours from the SMACNA and NECA studies. SMACNA sampled 20,000 man-hours while NECA sampled 92,000 man-hours.

¹²McLin, M., Doyon, D., & Lightner, B. (2020). Mitigation and Productivity Impacts for Sheet Metal, HVAC, and Mechanical Contractors. In *Pandemics and Productivity: Quantifying the Impact*. Chantilly, VA: New Horizons Foundation.

Construction worker activity was collected from various types of primarily new build projects, including Commercial Facilities, Chemical, Manufacturing, Governmental, Energy, Infrastructure, Healthcare, Transportation Systems, and others.

The results of the study are noteworthy because, to date, no other US-based information or resource(s) had been available that provided for an empirical-based quantification of impacts to productivity arising out of the pandemic. Construction project stakeholders have merely observed possible or perceived impacts and have discussed scenarios in which a party might be entitled to additional time and/or money.

However, beyond such general commentary, documented efforts to establish a firmer “causal connection” to a loss in productivity were not widely available.

The results of the SMACNA/NECA study are summarized as follows:

- During 2020, construction labor forces working under pandemic-driven protocols and conditions experienced a composite 8.8% loss in labor productivity due to “Jobsite Mitigation Measures” implemented to prevent exposure and/or spread of the virus. Such measures consisted of the “Management of Personal Protective Equipment (PPE),” “Safety Meetings & Orientations,” “Time Waiting to Access Work Areas,” “Respirator Training & Fitting,” “Time Waiting for Medical Screenings,” “Cleaning & Disinfection of Common Areas,” “Worksite and Workfront Access Protocols,” “Extra Distance for Lunch and Break Areas,” “Cleaning & Disinfection of Tools/ Equipment/Gear,” and additional time of “Administration Procedures.” Now, a year into the pandemic, owners and contractors (with guidance from governmental agencies and health care professionals) have figured out how to accomplish these measures and to do so in as efficient a method as possible, and to document the time and effort to do so.
- During 2020, construction labor forces working under pandemic-driven protocols and conditions experienced a 9.2% loss of labor productivity during operations. The study indicates that such additional impact may be attributable to “Extra Demobilization and Re mobilizations,” “Worker Fatigue from Anxiety and Absenteeism,” “Social Distancing Protocols During Work Activities,” “Off-Shift Work,” “Altered Material Delivery and Receiving Procedures,” “Additional Inspections During Work Performance,” “Cleaning Requirements,” and others. These are typical impacts that a contractor may have experienced before the pandemic. The importance of documentation cannot be understated, and, at times, efforts to discretely capture or accurately estimate (e.g., for “Extra Demobilization and Re-mobilizations”) should be reasonably attempted. The contractor should also be aware that as the understanding of the COVID-19 virus increased after the first wave in early to mid-2020, and the mitigation measures became more consistent, then impacts to productivity would reasonably be assumed to have at least been reduced, if not eliminated. The maturation of these measures and the resiliency of the industry in dealing with them is analogous to the fall protection measures requiring many trades to wear full body fall protection harnesses now many years ago. At first, these measures had a marked impact upon productivity, but as the labor force became accustomed to the measures, the effects, if any, were discounted.

- Together, the above figures amount to a total potential impact of 17.9%, or a maximum of 86 minutes lost during an 8-hour workday for each affected worker. The amount of time “lost” each working day may accumulate to approximately seven (7) hours each week and twenty-nine (29) hours each month for each worker.¹³ The study concluded that workforces would have utilized the lost time to instead perform work.

As it relates to the Jobsite Mitigation Measures and the methods utilized to collect and analyze the data, the report explained that project supervisors observed and entered data on a daily basis into an application for the specific purpose of recording impacts during the sixty-five (65) day period of April 30, 2020 through July 3, 2020. The crew types for which data was collected included HVAC/Sheet Metal Crews, Mechanical Crews, Plumbing Crews, and Composite (Combined Trades) Crews.

Throughout the period of data collection, field supervisors entered data according to one of four observed categories (as applicable). These categories, and the time of construction workers related to each respective category of mitigation are listed in the below table. Together, they demonstrate the quantity of hours dedicated to each category of the various measures as summarized into “Mitigation Protocols”:

Mitigation Protocol	Hours Lost to Mitigation, SMACNA Data	Hours Lost to Mitigation, NECA Data	Total Hours Lost to Mitigation	% of "Total Hours" to "Total Hours Sampled"
1. Safety Training	470	1,759	2,229	2.0%
2. Distancing & Access Rules	439	3,642	4,081	3.6%
3. Cleaning & Disinfecting	580	2,259	2,839	2.5%
4. Administration	326	642	968	0.9%
Subtotal	1,815	8,302	10,117	8.9%
Total Hours Sampled	20,893	92,320	113,213	

Table 1 - Hours per Category of Mitigation Protocol

The report cautioned, “contractors should not be required to itemize the 8.8% loss into sub-categories since all categories require management on active projects during a pandemic. Federal distancing guidelines, Occupational Safety and Health Administration (“OSHA”) requirements, and the resulting general contractor and subcontractor safety plans apply to most active projects, regardless of region or type.”¹⁴

¹³Figures assume a working schedule of 8-hours per workday, 5 days per week.

¹⁴According to the report, the following standards are referenced by OSHA as being applicable in times of pandemic: “29 CFR § 1904, Recording and Reporting Occupational Injuries and Illness,” “29 CFR § 1910.132, General Requirements – Personal Protective Equipment,” “29 CFR § 1910.133, Eye and Face Protection,” “29 CFR § 1910.134, Respiratory Protection,” “29 CFR § 1910.141, Sanitation,” “29 CFR § 1910.145, Specification for Accident Prevention Signs and Tags,” “29 CFR § 1910.1020, Access to Employee Exposure and Medical Records,” and “Section 5(a)(1), General Duty Clause of the OSH Act.”

The second portion of the study, “Productivity Benchmarking,” addressed impacts to construction activity not related to mitigation protocols. The study concluded that contractors lost an additional 9.2% in productivity due to “Extra Mobilizations/Demobilizations,” “Work Fatigue from Anxiety and Excess Absenteeism,” “Social Distancing Effects,” “Off-Shift Work,” “Altered Delivery & Material Receiving,” and “Inspection and Cleaning Requirements,” among others.

The data was collected for specific construction tasks that allowed for the determination of “percent of work completed and the hours expended for common tasks.” Similar to the Jobsite Mitigation Measures, the data was collected in a “formalized gathering process” for sheet metal, mechanical, and plumbing contractors which was then used to analyze contractor productivity over time.

The results of the analysis reflect that from January 5, 2020 through June 21, 2020, the average reduction in contractors’ productivity was 9.2%. The analysis also suggested a level of correlation between productivity and national-level events such as the creation of an “Incident Management” by the Center for Disease Control (“CDC”) on January 7th, the declaration of a Public Health Emergency on January 31st, the declaration of a National Emergency on March 13th, the issuance of Shelter-in-Place orders on March 22nd, and the signing of the initial \$484 billion stimulus package on April 24th, to name a few.¹⁵ The data cited in the Report indicated that there was an apparent stabilization in the reported effects on productivity after May 2020, and leveled off in June 2020 (the last reported data).

Considering that the SMACNA/NECA study was performed almost a year ago, owners and contractors should evaluate each project independently and consider possible causes of productivity loss that may (or may not) have a relationship.

Considerations for Contractors

Based on the results summarized in the SMACNA/NECA Report, parties to current and/or future construction projects may possibly gain guidance for the following purposes:

- Support in quantifying cost and schedule impacts for purposes of seeking equitable adjustments for lost productivity and schedule delays, while remaining mindful of the need to develop sufficient causation;
- Pricing upcoming work (new contracts or changes to existing project scopes) that may possibly be affected by pandemic-driven protocols and conditions. However, the contractors should now be aware in 2021 that the uncertainties of early to mid-2020 have largely dissipated, and with vaccine roll-outs and “standard” mitigation measures becoming the norm, any pandemic “sur-charge” is likely increasingly unsubstantiated and lead to lost contracts;
- Formulating financial projections that account for stress on cash flows due to decreases in productivity and increases in overhead costs; and,

¹⁵McLin, M., Doyon, D., & Lightner, B. (2020). Mitigation and Productivity Impacts for Sheet Metal, HVAC, and Mechanical Contractors. In *Pandemics and Productivity: Quantifying the Impact*. Chantilly, VA: New Horizons Foundation.

- Utilizing the conclusions of the study to support and substantiate the added costs/impacts.¹⁶

According to the report, the information generated from the study was published to assist contractors (and project owners) in the calculation of productivity impacts incurred on 1) work performed during the months of 2020 in which its workforce(s) operated under pandemic-stricken circumstances and 2) future work that is reasonably expected to be performed under similar pandemic-driven working conditions.

WORK PERFORMED TO DATE

The SMACNA/NECA Report suggested construction contractors prepare and submit change order requests seeking relief from sustained impacts on work performed to date. To the extent that a contractor can reliably demonstrate that the Jobsite Mitigation Measures and items considered in the Benchmarking Study caused adverse impacts, the contractor should follow industry-prescribed procedures (and/or applicable contract provisions) in preparing a request for relief to the offset additional costs.

Contractors should recognize that the mere existence of the results provided in the SMACNA/NECA Report do not entitle it to recovery of time and/or money. Generally, pending prevailing law (or contract provisions) to the contrary, a contractor may be entitled to the recovery of lost time or costs incurred as a result of influences beyond its control or reasonable expectations, yet may fail in attempts to do so if its project record does not support its position.¹⁷ Thus, even during a pandemic, a contractor should develop its request for relief so that it is able to meet the burden of proof.

In addition to accounting for pandemic-driven losses, contractors (and their business partners) should also remember to account for losses in productivity due to non-pandemic-driven reasons. As the industry has adapted to the effects of the pandemic, contractors should still consider the many common factors that may result in a loss of construction productivity may include absenteeism, acceleration, adverse weather conditions, availability of skilled labor, multiple changes (“Cumulative Impact”), craft turnover, crowding or stacking of trades, defective engineering, dilution of supervision, excessive overtime, insufficient coordination, out of sequence work, rework and errors, schedule compression, and many others.¹⁸ In the instance a contractor is attempting to calculate losses in productivity not because of the pandemic, but the losses were incurred concurrent to any pandemic-driven productivity losses, care should be taken by the contractor to avoid “double counting” hours of lost productivity.

When attempting to quantify its monetary damages, a contractor should carefully consider whether it is appropriate to rely directly upon the metrics provided in the SMACNA/NECA Report. As has been the

¹⁶ McLin, M., Doyon, D., & Lightner, B. (2020). Mitigation and Productivity Impacts for Sheet Metal, HVAC, and Mechanical Contractors. In *Pandemics and Productivity: Quantifying the Impact*. Chantilly, VA: New Horizons Foundation.

¹⁷ Ohara, C. Y., Gatlin, C. T., & Wilshusen, F. D. (Eds.). (2001). Chapter 10: Construction Damages. In *Fundamentals of Construction Law* (p. 249). Chicago, IL: American Bar Association.

¹⁸ McDonald, D. F., & Zack Jr., J. G. (2004). Estimating Lost Labor Productivity in Construction Claims. In *AACE International Recommended Practice No. 25R-03* (Rev. April 13, 2004 ed., p. 4-7). N.p.: AACE International.

long-accepted standard, a contractor should continue to demonstrate a reliable connection between an issue and a productivity impact. Contractors may instead attempt to substantiate their calculations with references to the provided metrics. Either way, calculating losses in productivity from the pandemic is unique because the SMACA/NECA study has provided empirical-based metrics of losses in productivity. Many prevailing methods of calculating loss of productivity do not provide such specific metrics (typically a range is provided, if any). Often, a contractor is left to determine the “percent” (or quantity of hours, or costs) lost from an event or events that gave rise to the lost productivity.

An additional item to consider when attempting to quantify productivity losses is the extent and nature of work the contractor performed prior to the onset of the pandemic. By adopting a “Measured Mile” approach, a contractor may consider referencing its “pre-pandemic” rates of productivity in contrast to its rates during pandemic working conditions.¹⁹ This may be a worthwhile analysis if the contractor performed the same or similar work during both periods and the contractor’s records include a necessary degree of specificity that allows for such a comparison. If it can demonstrate diminished rates of productivity after the onset, and because of, the pandemic, in comparison to pre-pandemic rates of production (that, presumably, were better or more efficient), then such information may be helpful to include in requests for relief. In a similar fashion, contractors may consider progress in their project schedules prior to, and after, the onset of the pandemic in attempting to demonstrate delay.

BIDS FOR FUTURE WORK

An owner may take a position that a contractor should have accounted for expected pandemic-driven losses when formulating its bid and that the contractor’s failure to account for such losses in its bid should not become the financial burden of the owner. As a good practice, therefore, contractors may consider including line-items in their bids representing an estimate of the additional efforts due specifically to pandemic mitigation measures (but only to the extent that the contractor reasonably expects that such measures will be required). To avoid confusion, both parties may want to be clear as to the extent of expected mitigation measures prior to bidding and contractor execution.

A contractor may eventually find, however, that because of the vagaries of the shifting mitigation measures in different locales and by differing authorities, its productivity suffered more than it anticipated. Notwithstanding that a contractor “knew” about the pandemic, recovery of additional costs may be warranted if the actual conditions were different (or more extensive) than reasonably expected at the time the bid was prepared.

As of March 2021, a contractor should also consider the possibility that its work may not be impacted because of the pandemic. Instances of low to no productivity impacts might apply to contractors that were already experienced working in conditions that are similar to (or even more extensive) than those

¹⁹The “Measured Mile” is regarded as the preferred method in demonstrating inefficiency and calculating resultant damages. The Measured Mile compares a contractor’s rate of productivity during an “unimpacted” period to its rate of productivity during an apparent “impacted” period. The Measured Mile method is not always feasible, however. The reasons are many, but may include the absence of an unimpacted and impacted (or least impacted) period, the nature of the work performed in each period was not same or similar, or the nature in which the work was sequenced does not provide for a Measured Mile analysis.

related to pandemic mitigation measures. These would likely include contractors that are or were already accustomed to working around contaminants or other hazardous materials, such as contractors involved in renovation and restoration. Traditionally, renovation and restoration work has been known to require additional safety protocols, such as personal protective equipment and jobsite safety coordination efforts, which were in effect prior to the pandemic. If so, the contractor should be aware that considerations of minimal to no impact should be reflected in its pricing.

FINANCIAL AND CASH-FLOW PROJECTIONS

The SMACNA/NECA Report also suggested contractors rely upon the results of the report as part of the maintenance of regular cash-flow and financial projections. To the extent that a contractor's projects have sustained adverse impacts because of the pandemic, a contractor should carefully account for the potential stress caused by the impacts on cash flows and overall financial projections. The SMACNA/NECA Report states that the financial impact of contractor productivity losses can take as long as three to six months to "fully play out in a company's finances."²⁰ Such a scenario is plausible because, according to the report, losses in productivity may go unnoticed as conventional tracking, reporting, and projection mechanisms may not adequately account for lost productivity. The accuracy of cash flow projections may suffer if they do not reflect inefficient production and additional jobsite and/or home office overhead costs.

OTHER EFFECTS OF LOSSES OF LABOR PRODUCTIVITY

Construction projects on which losses of productivity have occurred commonly also experience a prolonged project duration. When a project's duration is extended, the contractor usually incurs additional "time-related" costs. Such costs are in addition to increased costs of lost productivity and typically include the contractor's costs of jobsite overhead and home office overhead.

To fully account for the potential impacts to a contractor's time-related costs and schedule caused by the COVID-19 pandemic, the contractor may want to consider the following items:

- Prolonged equipment and machinery costs, directly related to the work, that are required for longer-than-expected durations due to decreases in productivity (and likely resulting in decreased rates of production);
- Costs of time-related jobsite overhead items that continue to be incurred as the project completion date is extended;
- Costs of home office overhead that may be claimable as the project completion date is extended and the home office is required to support the project for longer than expected; and,

²⁰McLin, M., Doyon, D., & Lightner, B. (2020). Mitigation and Productivity Impacts for Sheet Metal, HVAC, and Mechanical Contractors. In *Pandemics and Productivity: Quantifying the Impact*. Chantilly, VA: New Horizons Foundation.

- Costs of additional health and safety professionals operating on the jobsite to enforce the additional protocols and monitor for compliance.

The SMACNA/NECA Report advises contractors to also contemplate the possibility of increases in project overhead costs. “Overhead” costs in construction usually relate to one or two categories: “jobsite overhead” and “home office overhead.” “Jobsite overhead,” more commonly referred to as “general conditions” costs, are frequently those that are incurred by a contractor in support of a specific project but are not directly attributable to any particular installation effort or construction activity.²¹ Examples of general conditions usually consist of (but are not limited to) project management and supervision; cost of jobsite trailer rentals; office equipment; utilities such as heat and electricity for the jobsite facilities; telecommunications; internet access; office supplies; storage bins for tool, equipment, and materials; equipment for jobsite logistics; administrative staff such as accountants and estimators; to name a few. These costs are generally “fixed” in nature and, although they do tend to fluctuate over the course of a project, are considered a function of time (instead of a function of activity volume) because many categories of general conditions costs continue to be incurred as long as the contractor is on site.²² Thus, a contractor may stand to recover additional general conditions costs if it can show that it would have finished earlier if not for impacting events.²³

The other time-related cost, or “home office overhead”, are generally considered to be costs incurred in support of the ongoing operations of an enterprise. A contractor’s home office overhead typically consists of rents for office space; utilities; insurance; salaries and travel of executive personnel; salaries of accounting, human resources, marketing and legal personnel; advertising; and others. These costs are also theoretically “fixed” in nature as they are incurred on a continuing basis – they are not directly attributable to any single project.²⁴

As part of its regular practices a contractor may include a provision in its bid representative of its expected home office costs, then, as construction is performed, periodically “allocate” the actual costs of its home office to each project account (usually based on the proportion of direct costs incurred by each project for each period).²⁵ The costs allocated each period represent the support provided by the home office to each project. Although the law related to a contractor’s entitlement to such damages is unsettled, where recognized, a contractor may recover “extended” or “unabsorbed” home office overhead damages in instances in which a project duration is extended or suspended.

Another item for a contractor to consider, related to a delayed or impacted project, is that it may incorrectly assume that labor and equipment resources will become available to perform “new work” (and generate “new” revenue), yet the resources, being trapped on existing projects due to issues that

²¹Cushman, Robert F., and David A. Carpenter, editors. *Proving and Pricing Construction Claims*. John Wiley & Sons, Inc., 1990, p. 129.

²²Jobsite overhead costs are known to also increase if a project is experiencing events or issues that require more personnel or resources to assist in the management of the project. Also, towards the end of the project, a contractor may start releasing resources that are no longer necessary to support a project (such as personnel, equipment, trailers, or storage facilities.)

²³*Id.*

²⁴McGeekin, Patrick A., et al., editors. *Construction Accounting*. American Bar Association, 2010, p. 237.

²⁵A contractor may often include a provision for its Home Office Overhead in its bid via a “markup” for Overhead and Profit.

result in a prolongation of the project's duration, do not start the new work as reflected in any corresponding financial projections.

As of March 2021, or almost a year after the onset of the pandemic, enough may be known regarding potential impacts from COVID-19 that construction project planning may be able to develop a reasonable schedule that provides for efficiency and a normal pace of work. According to accepted best practices in the construction industry, careful planning, in conjunction with known or possible issues, such as a pandemic, can reasonably alleviate impacts to construction work.

Conclusion

The COVID-19 pandemic forced many contractors around the globe to alter standard jobsite procedures and, depending upon the project type, location, scope, and trade, may have resulted in losses in productivity. However, as of March 2021, any effects from the pandemic are potentially being assimilated into the every-day working processes and, as the vaccine roll-outs continue, may disappear altogether. The results of the studies discussed, which were with respect to Sheet Metal, HVAC, and Mechanical contractors, applied to the period from March through July 2020.

The studies discussed in this paper have quickly brought into focus the potential quantifiable extent of impacts on construction productivity because of the pandemic. The information from the reports was shared as it may prove helpful to parties of a construction contract to facilitate discussions of equitable adjustments for work performed under different conditions because of the pandemic. Almost a year after the onset of the pandemic, however, the information from these reports should be treated carefully for future planning and costing because, as discussed, the results may no longer be applicable. As of March 2021, planning for future work should also account for current market conditions, and taken within the context of the particular project's type, working conditions, locale, and the trades involved.

Acknowledgments

We thank our colleague Caleb M. Sturm for providing insight and expertise and conducting research that was instrumental in the development of this paper.

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Exhibit 06



The Silver Lining of Construction Productivity and COVID-19

By Gregg Schoppman

An examination of the new normal COVID-19 productivity factor.

In early 2020 most business leaders probably didn't think a pandemic would shake the foundations of the world economy. In fact, the continued threat of diminished skilled labor and the related, detrimental impact to productivity were the common industry challenges that most construction executives faced at the time.

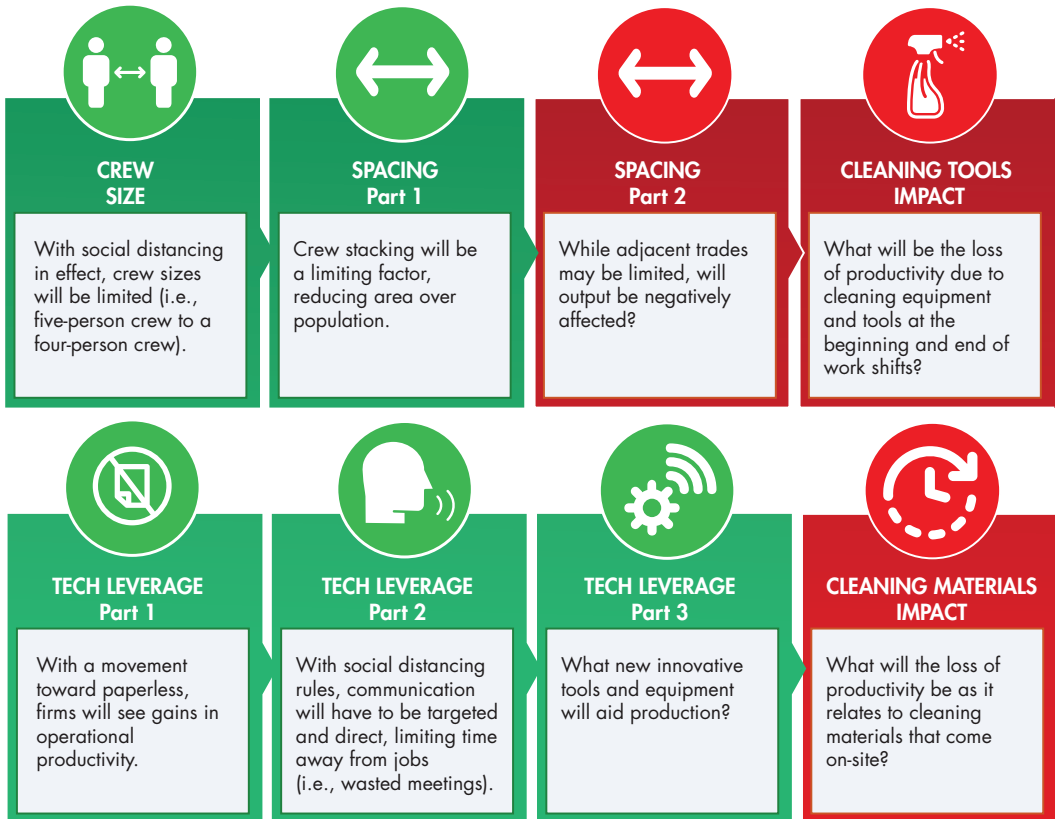
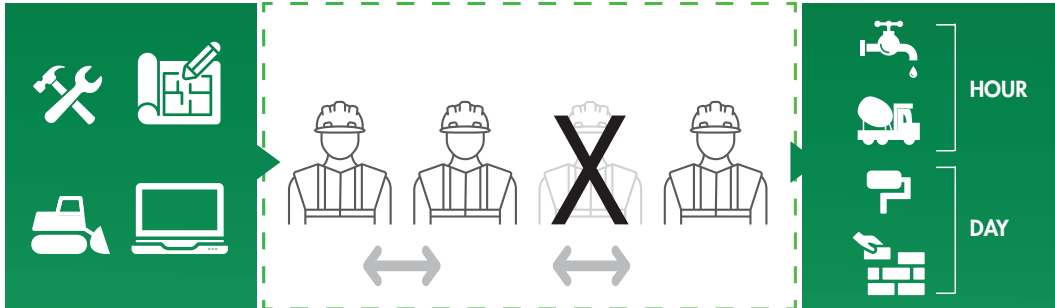
Today businesses have new sets of rules, guidelines and tactics to implement in order to succeed in the operating environment thrust upon everyone as a result of COVID-19. While the pandemic's earliest impacts on engineering and construction (E&C) remained unknown, many construction leaders shifted their focus to known variables such as social distancing, technology and clients' demands.

Looking ahead, business leaders will undoubtedly find new ways to thrive, but they'll also make errors as they react to

constantly changing dynamics. One area to watch closely is job site productivity, which is unlikely to remain static. However, there are probably several misconceptions and, more importantly, some of the pandemic's consequences may even benefit contractors in the long run.

For instance, there was a collective industry groan at the thought of testing every employee and cleaning every tool prior to commencing of work every day. However, there was also a moment of reflection where leading managers also recognized that for every productivity detractor, there was the potential of increased efficiency. All of the elements in Exhibit 1 are considerations that affect daily productivity and, in many cases, the upside is something that cannot be discounted.

Exhibit 1. Productivity Drivers and Inhibitors in the Wake of COVID-19





The Upside of New Crew Sizing and Spacing

With social distancing rules in effect, there may be a need to reduce crew size.

However, in many businesses, crew sizes have ballooned with no explanation or challenge to those increases. The question becomes: Can we do the same (or more) with less?

There are many studies that show the optimum spacing for personal productivity. Oil companies have explored these spatial constraints for years to determine effective spacing requirements in areas where safety and productivity must be maximized (e.g., on offshore rigs). Similarly, many construction managers assume that output increases when you cram more employees on a job site. The problem is that there is a law of diminishing return when it comes to overloading resources on a job site; simply adding bodies within confined spaces will only impede productivity. The good news is that new rules may prohibit placing more people in an area. Trade contractors will rejoice at this, knowing they will not have to work on top of other trades simultaneously.

The Flip Side of Spacing

In some cases, contractors need more employees on-site to get the work done (e.g., for installing a window, placing a lintel or tying rebar). New rules may require novel methods and means of getting this done. Additionally, as different trades occupy a space, general contractors

and owners may not allow crew stacking, even if they haven't reached the capacity allowed for a particular space. This may require longer durations for specific activities, and it should be reflected in project estimates and budgets accordingly.

Crew transportation should also be considered and evaluated in terms of cost impacts. For example, in many markets carpooling is common and helps employees save money. In a COVID-19 world, some organizations are limiting group transportation, thus increasing costs for employees or the project cost profile in the form of additional fuel expenses. Even if the cost is minimal, this can impact the overall project.

Cleaning Time: The Pros and Cons

Personal hygiene is not limited to hand-washing. It takes time to clean tools and work areas, both at the beginning and end of work shifts. Be sure to allocate time for preventive maintenance, as the new rules may dictate a less than optimal use of a 40-hour workweek.

The materials that arrive on job sites may also need to be cleaned prior to use. Obviously, a greenfield project may have a final cleaning phase that will provide a certain level of closure for customers. However, an electrical contractor working on a renovation of an active medical clinic may need extra time to clean switchgears and light fixtures. Be sure to factor this into the budget development process.



Additionally, contractors may have to do a more thorough final cleaning. In the past this could have meant simply vacuuming, floor waxing and restroom cleanings.

Today, owners' expectations may include a higher level of "cleaning commitment." At first glance, many contractors would concede that this is a change order as it deviates from the contract documents. Where this is undoubtedly a change in scope, it would be foolish to think that there would be no impact to general conditions (i.e., original final cleaning of one to two days, new final cleaning of five to seven days). In summary, these changes require careful planning and forethought and open communication with owners.

Overall, workspace hygiene and cleanliness will change and could have ramifications for contractor costs, but there's also another perspective that should be considered. Outside of extraordinary exceptions or requirements, trade contractors and general contractors alike have largely struggled with simply keeping sites clean. Spurred by the pandemic, this new focus on cleanliness and hygiene may actually improve productivity and job site safety.

Leveraging Technology

Optimizing digital technology for timecards, job reports, punch lists, submittals, schedules, purchase orders, quality assurance or quality control, and other documents is probably just what the construction industry needed. By going paperless, crews can focus on the work and gain efficiencies that were previously out of reach. For example, crews can use

digital tools to report both time and quantities, obtain real-time productivity information and quickly adapt to changing work environments.

Use of videoconferencing tools such as Zoom, Webex, Microsoft Teams, GoToMeeting and FaceTime has also accelerated due to the pandemic. In fact, communicating via virtual tools was often a last-ditch effort for some in the pre-COVID era. Now, in the absence of true face-to-face interactions, these tools have become essential to maintaining schedules and good communication. They've become as ubiquitous as a hammer drill or backhoe on job sites, enabling teams to close the distances and utilize time more effectively.

The Formulaic Approach

Most construction organizations use elaborate estimating programs and baseline crew rates that provide a multiplier for all work quantities. For instance, if a contractor estimates that it will need 100 linear feet of water piping, there is some labor multiplier that represents the appropriate crew blend (i.e., one crew leader, one equipment operator, three laborers).

However, for many organizations, the crew cost blend is one dynamic that may not receive the required level of scrutiny. For example, simply bolstering it with a cost of living increase doesn't work anymore. In fact, best-in-class firms are taking a more formulaic approach to dissecting the cost drivers. Exhibit 2 illustrates a theoretical formula that represents the new multiplier:

Exhibit 2.

$$\text{NEW CREW RATE} = (\text{Old Crew Rate} - \Theta) * \text{COVID FACTOR}$$

$$\text{COVID FACTOR} = (\text{B} + \text{X} + \Delta + \text{E} + \phi + \Gamma + \text{H})$$

Θ – Crew Size Decrease

B – Crew Size Loss of Production Decrease

X – Tool and Hygiene Cleaning Cost Production Decrease

Δ – Clean Materials Cost Impact

E – “Productive Site Through Cleanliness” Enhancement

ϕ – “Less Distractions” Enhancement

Γ – “We can’t carpool” Transportation Cost Increase

H – Spacing Enhancement

Many may initially question how to come up with the values for these factors. First, developing these productivity variables is an equal balance of art and science. Going through the process of identifying and quantifying these numbers is a win for any firm.

Successful businesses delve into their cost structure and avoid broad generalizations on productivity. With so much emphasis on increased time associated with cleaning and hygiene right now, contractors might mistakenly assume that costs should increase *across the organization*. This, in turn, could adversely affect the firm’s competitiveness. To avoid this problem, companies should focus their planning and analysis efforts across each project.

There are changes happening that all businesses should recognize as becoming new standard operating procedures. These changes must permeate across all aspects of the business, including (but not limited to) estimating, budgeting, planning, cost monitoring, productivity reporting and financial benchmarking. As challenging as the pandemic has been, COVID-19 is simply a manifestation of an ever-present list of business challenges that require leaders to pivot and adapt. If it wasn’t COVID-19, there would be some other obstacle to overcome. Overall, it is essential that construction business leaders adapt, react and pivot quickly to succeed in today’s changing operating environment.

About the Author



Gregg Schoppman is a principal with FMI. Gregg specializes in the areas of productivity and project management. He leads FMI's project management consulting practice as well as the consulting management group in FMI's Florida office. He can be reached at gschoppman@fminet.com.



for the Built Environment

Denver

210 University Boulevard
Suite 800
Denver, CO 80206
303.377.4740

Houston

1301 McKinney Street
Suite 2000
Houston, TX 77010
713.936.5400

Raleigh (headquarters)

223 S. West Street
Suite 1200
Raleigh, NC 27603
919.787.8400

Tampa

4300 W. Cypress Street
Suite 950
Tampa, FL 33607
813.636.1364

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Exhibit 07



Article

Early Impacts of the COVID-19 Pandemic on the United States Construction Industry

Abdullah Alsharif ^{1,2,*} , Siddharth Banerjee ¹ , S M Jamil Uddin ¹ , Alex Albert ¹ and Edward Jaselskis ¹

¹ Department of Civil, Construction, and Environmental Engineering, North Carolina State University, 2501 Stinson Dr., Raleigh, NC 27607, USA; sbaner22@ncsu.edu (S.B.); suddin@ncsu.edu (S.M.J.U.); alex_albert@ncsu.edu (A.A.); ejjasels@ncsu.edu (E.J.)

² Civil Engineering Department, College of Engineering, King Saud University, P.O. Box 22452, Riyadh 11451, Saudi Arabia

* Correspondence: afalshar@ncsu.edu; Tel.: +1-517-402-5422

Abstract: The COVID-19 pandemic has been the largest global health crisis in decades. Apart from the unprecedented number of deaths and hospitalizations, the pandemic has resulted in economic slowdowns, widespread business disruptions, and significant hardships. This study focused on investigating the early impacts of the COVID-19 pandemic on the U.S. construction industry since the declaration of the national emergency on 13 March 2020. The study objectives were achieved through 34 telephone interviews with project managers, engineers, designers, and superintendents that represented different states and distinct industry sectors in the United States (U.S.). The interviewees offered information on their experience with the pandemic, including the general and adverse effects experienced, new opportunities created, and risk management efforts being undertaken. The reported adverse effects included significant delays on projects, inability to secure materials on time, reduction in productivity rates, material price escalations, and others. The new opportunities that were created included projects involving the fast-track construction of medical facilities, construction of residential buildings, transportation-related work, and opportunities to recruit skilled workers. The risk management measures that were widely adopted included measures to enhance safety and reduce other project risks. The safety measures adopted included requiring employees to wear cloth face masks, adoption of social distancing protocols, staggering of construction operations, offering COVID-19-related training, administering temperature checks prior to entry into the workplace, and others. Measures to manage other project risks included the formation of a task force team to review the evolving pandemic and offer recommendations, advocating that construction businesses be deemed essential to combat delays and taking advantage of government relief programs. The study findings will be useful to industry stakeholders interested in understanding the early impacts of the pandemic on the construction industry. Industry stakeholders may also build upon the reported findings and establish best practices for continued safe and productive operations.

Keywords: COVID-19; COVID-19 risk; construction safety; occupational safety; lessons learned; mitigation strategies; construction delays; construction productivity; worker safety; safety risk



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1. Introduction and Study Motivation

The coronavirus disease also known as COVID-19 is caused by the virus named severe acute respiratory syndrome coronavirus 2 (i.e., SARS-CoV-2) [1]. The virus is confirmed as being transmitted from human to human and results in symptoms including fever, dry cough, fatigue, and shortness of breath [2]. Since the first cases were reported by the World Health Organization (WHO) on 31 December 2019, the virus has spread to over 200 nations [1]. The WHO declared the crisis as first being a public health emergency of international concern on 30 January 2020 [3]. Later, the crisis was declared as being a global health pandemic on 11 March 2020 [4].

Given the rapid spread in the U.S. following the first detected case in January, a national emergency was declared on 13 March 2020 [5]. Since then, the number of confirmed COVID-19 cases in the U.S. has continued to increase rapidly, as can be seen in Figure 1 [6]. As of 3 January 2020, over 20 million confirmed cases and more than 350,000 deaths had been linked with the COVID-19 pandemic in the U.S. [6]. Not surprisingly, the COVID-19 pandemic was identified as the leading cause of death in the U.S. in 2020 [7].

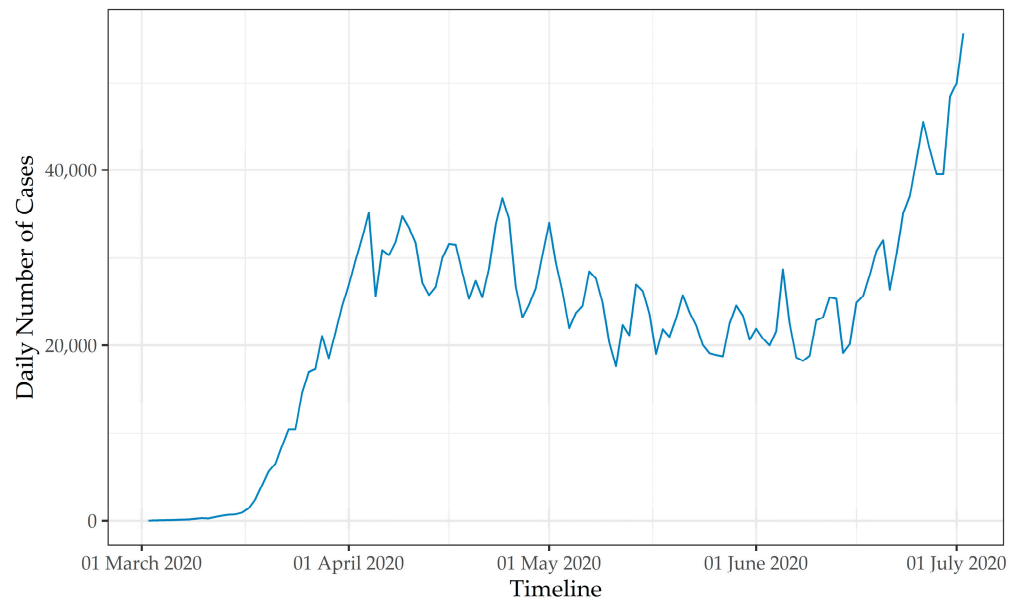


Figure 1. Daily number of confirmed COVID-19 cases in the U.S. between March and July 2020 (i.e., early impacts) as reported by the COVID Tracking Project [6].

Apart from the widespread health crisis, the COVID-19 pandemic has resulted in a nationwide economic downturn. In fact, the National Bureau of Economic Research (NBER) announced that the U.S. entered a recession phase in February—and called it the COVID-19 recession [8,9]. Because of the economic downturn, the U.S. has experienced record-high unemployment rates. More specifically, from an unemployment rate of about 3.8% in February 2020, the unemployment rate peaked at roughly 14.7% in April 2020 [10]. This corresponds to over 23 million individuals in the U.S. being unemployed—far exceeding the numbers experienced at any time during the Great Recession (i.e., 2007 to 2009) [10]. The high unemployment rates resulted from the massive shrinkage in demand that has devastated industries including airlines, restaurants, manufacturing, and retail [11–13]. These unemployment rates have resulted in much financial distress among citizens; particularly among lower-income individuals and those that were unable to continue work [14].

Like the other industries, the construction industry has also been impacted by the pandemic in a number of ways. For example, like other industries, the number of construction jobs available reduced following the pandemic onset—with the lower number of jobs reported in April 2020, as shown in Figure 2 [15]. These job losses are partly attributable to interruptions in work following work-related restrictions that were imposed to curb the virus spread, shortage in personal protective equipment (PPE) as it was prioritized for healthcare workers, and widespread market uncertainty. In addition, several construction projects were delayed and suspended; particularly in the oil and gas sector (e.g., West Loop Gas Pipeline, Liberty Pipeline, etc.), where the demand for oil dipped following travel restrictions [16,17].

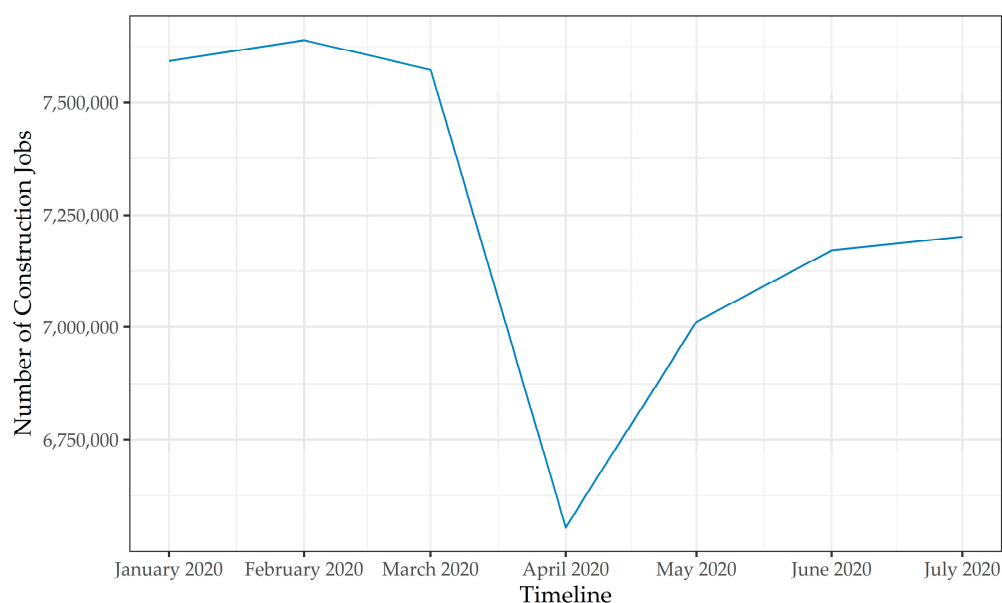


Figure 2. Construction industry employment data between January and July 2020 (i.e., early impacts) as reported by the Bureau of Labor Statistics (BLS) [15].

However, most importantly, a significant number of construction workers reportedly tested positive for COVID-19. In fact, a recent investigation from Los Angeles concluded that construction workers were reporting the highest number of positive cases compared to workers in other industries, including transportation, healthcare, and manufacturing [18]. Likewise, another study found evidence that construction workers are roughly five times more likely to be hospitalized as a result of COVID-19 than workers in other industries [19]. Several other state public departments have also highlighted the risk of COVID-19 infections, particularly among the construction workforce [20–22].

Although some preliminary surveillance data on the impacts of the COVID-19 pandemic in the context of the construction industry exist, there is much that remains unknown. Insights from industry stakeholders are particularly lacking in the broader literature. Accordingly, the reported effort focused on gathering information on the effect of the COVID-19 pandemic from the perspective of the construction workforce. The effort also focused on identifying new opportunities that may have been created and efforts that were undertaken to manage the challenges associated with the pandemic.

The findings are expected to be useful as the industry continues to combat the pandemic and grapple with preserving safety and maintaining productivity. The findings can also serve as a resource for the future if the industry encounters similar epidemics, pandemics, or emergencies.

2. Research Methods

To accomplish the research objectives, the research methods, as presented in Figure 3, were adopted. As can be seen, following a review of the limited and relevant research, a semi-structured interview template was developed. As per the template, after gathering information on the participant’s background (i.e., professional role, workplace location, experience in no. of years, etc.), the responses to the following questions were targeted for solicitation:

- How has the COVID-19 pandemic affected the construction industry and the project(s) you are involved in (i.e., general and adverse impacts)?
- Have there been new opportunities for the construction industry as a result of the COVID-19 pandemic? If so, what are they?

- What efforts have been undertaken to manage the challenges associated with the COVID-19 pandemic in the context of the construction industry? Are there any related challenges that are being experienced?

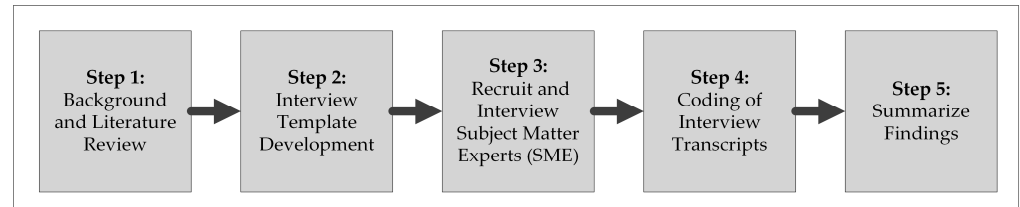


Figure 3. Adopted research process.

As can be seen, the targeted questions covered three specific thematic areas that captured the impact of the pandemic on the industry. After the interview template was finalized, prospective subject matter experts (SMEs) were identified through professional organizations including the Associated General Contractors of America (AGC), the Construction Specifications Institute (CSI), and personal contacts available to the research team. The effort resulted in the recruitment of 34 participants between April and May 2020—which represented the data collection period to capture the early effects of the pandemic on the construction industry following the declaration of the national emergency on 13 March 2020. Collectively, the participants possessed over 400 years of experience in the construction industry. Additional information on the background of the participants is presented in Table 1. It needs to be noted that certain participants were part of organizations that focused on multiple construction sectors and were involved in projects across multiple states. Accordingly, the total participant counts in the construction sector category and the state category exceed the total number of participants (i.e., 34) to account for these overlaps. The presented percentage corresponds to the ratio between the count associated with each of the background information categories and the total number of participants (i.e., 34).

The interviews were conducted via telephone to ensure the safety of the research team and the study participants. The responses of the study participants were transcribed as the conversations progressed. Follow-up questions and relevant examples were solicited for each of the questions to enhance the quality of the data and the insights gathered from the effort.

After the interviews were complete, the transcribed qualitative data were imported into the NVivo (Alfasoft, CA, USA) 10 software package for content analysis and coding. NVivo 10 offers powerful features, including the ability to search for keywords and iteratively select codes and subcodes [23]. The interview transcripts were inductively and iteratively coded by the first three authors over multiple meetings until complete consensus was achieved. The codes used corresponded to the three themes that the study targeted, and the subcodes were identified on an evolving and iterative basis as discussed above.

It is important to note that the codes and subcodes adopted were not necessarily mutually exclusive. Rather, the codes and subcodes were adopted to facilitate the presentation of the information gathered in a coherent manner for the purpose of the current article. The findings of the effort are summarized in the following sections.

Table 1. Summary of the participants and their organizations' background information.

Construction Sector		
Sector	Count	Percentage (%)
Commercial	23	67.65
Industrial	6	17.65
Infrastructure	9	26.47
Residential	11	32.35
Organization Type		
Type	Count	Percentage (%)
Contractor	25	73.53
Owner	7	20.59
Supplier	2	5.88
Job Role		
Role	Count	Percentage (%)
Project Manager/Engineer	26	76.47
Architect/Designer	6	17.65
Superintendent	2	5.88
Organization Size		
Size	Count	Percentage (%)
Less than 100	14	41.18
100–500	9	26.47
More than 500	11	32.35
Project Location (State)		
State	Count	Percentage (%)
Florida	9	26.47
Texas	5	14.70
Virginia	4	11.74
North Carolina	4	11.74
California	3	8.82
Arizona	2	5.88
New York	2	5.88
Illinois	1	2.94
South Carolina	1	2.94
Georgia	1	2.94
Kansas	1	2.94
Pennsylvania	1	2.94
Indiana	1	2.94
Washington	1	2.94
Arkansas	1	2.94
Washington, D.C.	1	2.94
New Jersey	1	2.94

3. Study Findings

The findings of the effort are organized on the basis of the three themes that the research targeted. However, as mentioned above, there was significant overlap in the content across the targeted areas. Therefore, the purpose of the division of the content in the following sections is only to present the gathered information in a digestible and coherent manner. Overall, the purpose of the organization is to offer a holistic understanding of the early impacts of the COVID-19 pandemic on the construction industry as captured from the interviews. Figure 4 summarizes the generated codes and subcodes under the three main themes (i.e., general and adverse impacts, new opportunities, and efforts to manage challenges).

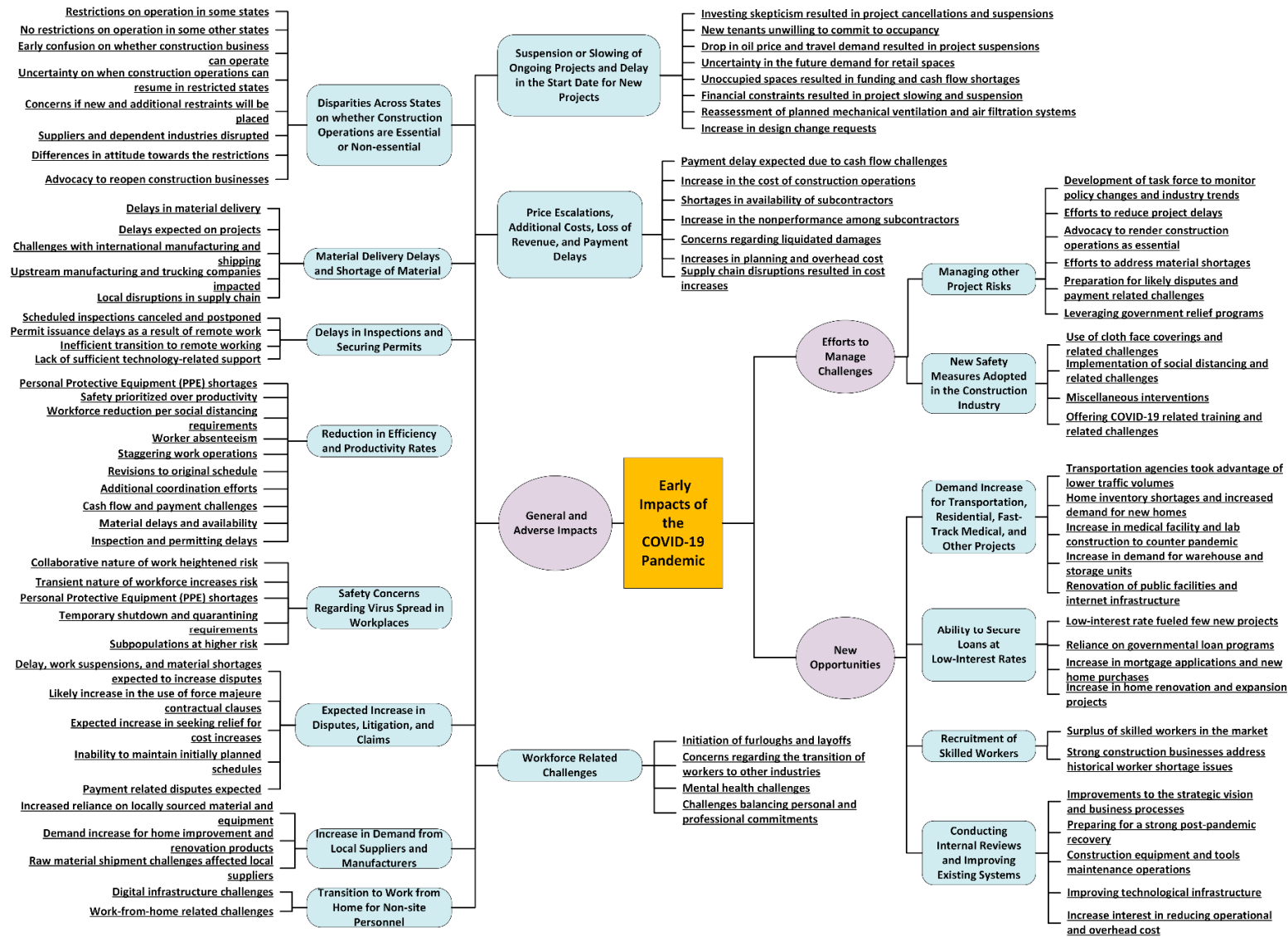


Figure 4. Themes, generated codes, and subcodes from the interviews.

3.1. General and Adverse Impacts of COVID-19 on the Construction Industry

3.1.1. Disparities across States on Whether Construction Operations Are Essential or Non-Essential

In the first few months of the pandemic, stay-at-home or shelter-in-place orders were being enforced across several states to prevent the spread of the novel coronavirus. However, a few states did not require any such restrictions. In most states, construction businesses were deemed to be essential; however, a few states identified construction operations to be at least partly non-essential. Therefore, there were restrictions for construction operations in some states whereas there were no restrictions in other states. Among the states where construction operations were partly restricted, there was much variability in the degree of restrictions. Accordingly, there were many differences in how construction businesses were impacted across different states.

For example, some of the participants mentioned that there was little impact on their projects and that operations continued as normal; although a number of new safety measures were adopted. However, others mentioned that construction operations had completely ceased in their workplaces. A few participants shared that during the first few days, there was significant confusion on whether their business was deemed essential or non-essential due to the variability in the degree of restrictions across states. More specifically, it was unclear to the participants' employer whether they can continue operations. There was also much uncertainty on when construction operations will resume in several states where restrictions were in place. In other cases, the participants were concerned whether new restraints would be placed if COVID-19 cases increased in their communities.

In cases where construction operations were considered non-essential, one participant mentioned that the impacts are not limited to only construction businesses. The participant shared that upstream suppliers and the operations of several downstream facilities were also adversely impacted. In addition, the participant mentioned that several other industries that serve the construction industry such as manufacturing will also experience negative impacts.

A few of the participants believed that the restrictions were essential given the risk of the virus spread. Others believed that the economic and adverse impacts far exceeded the risk of the virus spread. One of the participants mentioned that several agencies were advocating for the reopening of construction businesses and to change the status of construction businesses as being essential.

3.1.2. Material Delivery Delays and Shortage of Material

Most of the participants reported experiencing or expecting delays in material delivery. These delays in material delivery were also, in turn, expected to delay overall project progress and cause significant schedule disruptions. The delays were particularly relevant when the supply chain involved material or raw material from overseas. For example, one of the project managers mentioned that several building elements were to be shipped from Europe; however, the manufacturing plants were non-operational in Europe due to the COVID-19 pandemic. Others mentioned similar supply chain disruptions involving material and raw material from China, Mexico, Canada, and other nations.

Even within the U.S., although construction was deemed as an essential business in a number of states, several upstream manufacturing units and trucking companies within the supply chain were deemed non-essential. Accordingly, some of these businesses had to halt operations in response to the pandemic. In another case, a vendor mentioned that material delivery delays can also occur because several truck drivers are hesitant to cross state lines due to fears of contracting the virus and the requirement of quarantining for 14 days as imposed by certain states.

Material shortage was also experienced as a result of the social distancing and quarantining requirements that resulted in a smaller workforce within supply chain organizations. In many cases, the study participants were unable to predict the amount of delays given the number of factors that can impact delivery time in a pandemic situation.

3.1.3. Delays in Inspections and Securing Permits

Significant delays in inspections and securing permits were also reported. For example, one of the interviewed contractors mentioned that as all parties transitioned to the new format of working, there were delays in completing inspections and the certification of work. More specifically, the contractor mentioned that the owner's representative in many cases was unable to stick to the initial timeframe to complete the certification of completed work. In many cases, several inspection-related meetings had to be canceled and postponed due to the challenges and restrictions of meeting in person.

The participants also shared that there were delays with securing permits from various governmental agencies. These delays were largely due to governmental agencies transitioning to working remotely from home and challenges associated with accessing the necessary information and documentation. In fact, in many cases, designers, architects, and project engineers mentioned that governmental agencies did not have an efficient and working system in place to make such a rapid transition. There were also discussions on the lack of sufficient technology-related support for these agencies as they grappled with making operational changes to the permitting process. In a few cases, the participants mentioned that the permitting processes were suspended temporarily until the governmental agencies were able to set up an online protocol for issuing the necessary permits.

3.1.4. Reduction in Efficiency and Productivity Rates

Productivity rates reportedly suffered across the construction industry. Much of the loss in productivity and efficiency was attributed to the new safety measures that were necessary to protect the workforce as the pandemic continued to progress. In fact, one of the project managers indicated that working safely was the top priority, and productivity took a backseat in the pandemic situation. Reduction in productivity rates also was attributed to shortages in the availability of PPE and the reduction in the number of workers to comply with the social distancing recommendations. In many cases, the participants also mentioned that workers choose to not report to work for a variety of reasons, which also impacted productivity and efficiency. Some of the reasons mentioned included quarantining requirements, caring for children as a result of school closure, and the fear of being infected at work and being carriers of the virus when around family. Recruitment and training of replacement workers also consumed substantial amounts of time.

The staggering of subcontractors in such a way so that they do not work alongside other subcontractors also was mentioned as affecting productivity rates. One of the participants mentioned that such staggering required significant revisions to the initially planned schedule and required much additional work and coordination. Inefficiencies in coordination along with the safety contingencies that were applied yielded lower productivity levels.

Cash flow challenges experienced by contractors and subcontractors were also mentioned as affecting productivity. Cash flow issues were particularly a problem due to escalating material prices and challenges that owners experienced with making timely payments to the contractors. Finally, as already discussed above, delays in material delivery, shortages in material availability, and delays in inspections and permitting were all also associated with productivity losses.

3.1.5. Suspension or Slowing of Ongoing Projects and Delay in the Start Date for New Projects

Given that the pandemic caused widespread economic downturns and uncertainties, owners, investors, and businesses were increasingly wary about investing in construction projects and operations. Therefore, a number of projects were canceled or temporally suspended. For example, one of the participants mentioned that several developers of commercial property, in particular, are increasingly waiting on the commitment from potential tenants before they can begin customized construction operations. However, the volume of potential tenants willing to make a commitment has significantly reduced as

a result of the pandemic. In the same manner, one participant mentioned that with the plunge in the price of oil and the drop in the travel demand, a number of projects in the oil and gas sector have been suspended. The participant also mentioned that the budget devoted to oil and gas projects in the near future is expected to dramatically reduce.

In many other cases, the study participants reported that several private owners are citing financial concerns with the broader market and requesting that construction operations be either slowed or stalled. According to one architect, with the increasing number of individuals working, shopping, and studying over the internet, the future of retail and commercial property remains uncertain. The participant also mentioned that it is unlikely for the demand in these sectors to rebound in the immediate future, and hence, it may not be financially prudent to make progress in many of the ongoing projects.

One of the owners asked the contractors to slow the completion of a student apartment since students were not expected to report to the college town as classes were being taught online and cash flow was tight. Several of the owners experienced cash flow issues from existing properties and were unable to fund the completion of additional properties.

New construction projects were particularly impacted. One project engineer working for an industrial contractor reported that nearly 90% of the projects that were in the front-end loading (FEL) phase (i.e., pre-project planning) were put on hold. Moreover, several projects that were in the bidding stage were also canceled or postponed. One of the participants mentioned that fewer projects will be approved and funded as a result of the pandemic compared to previous years.

Another important reason for slowing down ongoing projects was the increase in requests to reassess mechanical ventilation and air filtration systems. One of the architects mentioned that owners were now concerned with whether their mechanical ventilation and air filtration systems would adequately replace contaminated air with clean air. In several cases, owners requested upgrades to the initial design to offer superior occupancy safety. There were also concerns on whether design changes will need to be incorporated in a post-pandemic world in anticipation of future events.

3.1.6. Price Escalations, Additional Costs, Loss of Revenue, and Payment Delays

According to several of the participants, supply chain disruptions resulted in an increase in the cost of construction materials. As discussed earlier, much of the disruption resulted from the closure and reduction in the capacity of manufacturing and processing facilities that are upstream in the supply chain. The increase in the cost of lumber, cement, and concrete products was particularly highlighted by a number of participants. Along with the increase in the cost of material, an increase in the cost of doing business was also reported. In many cases, the participants mentioned that this resulted in unexpected revenue and financial shocks at various points in the supply chain. In some cases, the participants mentioned that construction businesses may have to handle the extra costs themselves unless there is relief from the owners and other stakeholders as per the contractual agreement. This included the additional costs of managing safety, offering pandemic-related safety training, and securing the necessary PPE to sufficiently protect the workforce.

An increase in costs was also experienced since fewer subcontractors were willing to work and travel during the pandemic. According to one of the project managers, subcontractors that had to cross state lines were particularly hesitant to work given that they preferred to stay in their city of residence and avoid the 14-day quarantining requirement imposed by some states. In such cases, subcontractors often had to be offered larger compensations and incentives, which resulted in higher costs and potentially lower quality. An increase in the number of non-performance occurrences among subcontractors was also reported to increase costs.

Several contractors also expressed concerns with respect to additional costs from liquidated damages. The contractor representatives mentioned that the delays caused in the projects can result in these additional liabilities, and this can, in turn, impact the profit margins and the success of the projects.

Contractors were concerned that their staff will spend additional time on projects as a result of the experienced delays. This additional time was expected to translate into additional costs and overhead. Likewise, owners were concerned about the loss of revenue that was expected due to project delays and unoccupied retail and commercial properties. The participants were also concerned regarding the additional costs associated with the planning efforts that were necessary to transition successfully through the pandemic. Others alluded to the cost of shutting down projects and restarting the project as a major cost item that construction businesses will largely have to bear.

As construction operations are delayed, several participants mentioned that payment delays are likely to follow. The participants believed that this can result in cascading cash flow issues, and some contractors may struggle to pay their workforce, subcontractors, and suppliers in a timely manner.

3.1.7. Safety Concerns Regarding Virus Spread in Workplaces

There was much concern regarding the spread of the virus in construction workplaces. The participants were of the opinion that construction work is inherently collaborative and requires that different trades work alongside each other. In many cases, this requires workers to share workspaces and facilities, including portable bathrooms. Therefore, some of the participants believed that the risk of virus spread is significantly high and that robust safety measures were to be adopted to protect workers. However, given the collaborative nature of the work, several participants mentioned that safety guidelines such as social distancing were not very feasible in construction workplaces. In fact, concerns were expressed that the safety measures recommended for adoption in construction workplaces may have been developed without any consultation with construction professionals that are more familiar with construction operations. Additional information on these challenges is presented in greater detail in Section 3.3.1.

Some of the participants mentioned that the risk of transmission is particularly high given that infected individuals may not particularly experience any symptoms in the early stages of the infection and can be active carriers of the virus. There was also mention that the risk was exacerbated by the fact that tests were not widely available, and even when workers had access to tests, there was usually a delay in receiving the test results. One of the supervisors mentioned that the risk of spread is undoubtedly higher in industries that are identified as essential but experience shortages in PPE and lack effective measures to prevent the virus spread.

Others discussed that several subcontractors work on different sites. Therefore, one of the participants mentioned that these subcontractors can spread the virus from one workplace to the other. In fact, according to one of the project managers, one of the subcontractor employees that newly transitioned into a workplace tested positive for the virus. In response, the project had to be temporarily shut down and the other workers that worked in the proximity of the positively tested worker had to quarantine for 14 days. This resulted in significant paperwork and related challenges. Similar challenges were expected as a result of the transient nature of the workforce including independent contractors. Suppliers and delivery personnel that visit different sites were also expected to pose a higher risk of virus spread.

A few participants shared that Hispanic and Latino workers may particularly be at a heightened risk of infection given their greater involvement in essential work within and outside of the construction industry. Others mentioned that the lower wages, immigration status and associated challenges, social connections with other essential workers, and their role as independent contractors in the industry expose these workers to higher risks.

3.1.8. Expected Increase in Disputes, Litigation, and Claims

Most of the participants expected that there will be a significant increase in the number of disputes, litigations, and claims on their projects and across the industry. They believed that the delays, temporary suspension of work, material shortages, and the ad-

ditional costs that resulted from the pandemic will likely be the underlying cause for the disputes, litigations, and claims. The majority of the conflicts were expected between contractors and owners for nonperformance and delays. However, disputes were also expected in contractor-subcontractor, contractor-supplier, owner-future tenant, and contractor-insurance entity relationships.

Given the circumstances, the participants mentioned that there will be an increase in the use of the force majeure contractual clause, where contractors and subcontractors claim that the delays experienced were caused by circumstances that were unforeseeable and beyond their control. If contractors and subcontractors are able to successfully offer the relevant evidence, they may be able to secure a time extension and relief from delay-related penalties. In circumstances where a force majeure or another relevant contractual clause is absent in the contractual agreements, the contractors may seek relief in other ways. Disputes and conflicts become particularly likely when there are disagreements between the parties about the cause of the delay or the interpretation of the force majeure-related contractual language. The participants also mentioned that likelihood of disputes and litigation can increase if the owner has a future tenant that has committed to occupying the constructed facility.

Some participants also mentioned that contractors and subcontractors may seek relief for the increase in cost. The likelihood of success in these circumstances is dependent on the pricing mechanism adopted as per the contractual agreement. Contractors and subcontractors will also likely examine the contract to see if there are provisions to claim additional compensation using price escalation clauses. In some situations, there could also be disagreements with insurance agencies on whether the insurance policies offer coverage for a broad array of expected construction risks, including non-performance.

Other areas for conflict that the participants shared included the inability of suppliers to deliver construction materials in a timely manner, suppliers seeking to cancel delivery commitments, and suppliers seeking additional compensation for losses sustained from supply disruptions.

There were also many discussions about disputes related to payments. Because of the market uncertainty, cost overruns, and cash flow challenges, it was expected that owners, contractors, and subcontractors will experience financial hardships. Therefore, the parties involved may struggle with making timely payments and honoring the commitments if cash reserves are unavailable to them. In the context of contractors and subcontractors, one of the participants mentioned that the biggest challenge is going to be cash flow issues. More specifically, the participant shared that contractors and subcontractors will need to pay suppliers after the material is delivered; however, they will receive their payment only once the material is incorporated in the facility under construction. Therefore, contractors and subcontractors were particularly expected to experience cash flow-related challenges and claims.

Regardless of the conflicts and disputes experienced in the current pandemic, several participants mentioned that the pandemic has prompted industry stakeholders to take a closer look at the contractual documents and examine clauses that offer relief in uncertain circumstances. Additional information on some of the risk management efforts planned in the industry is presented in Section 3.3.2.

3.1.9. Workforce-Related Challenges

The participants shared considerable information about workforce-related challenges. Most participants shared that a large number of furloughs and layoffs are being initiated as the workloads in the construction industry are projected to decrease substantially. In fact, one of the project engineers mentioned that the projected workload reduction will range between 50% and 60% compared to the previous years. In addition, several participants mentioned that contractors and subcontractors are experiencing significant challenges with cash flow and that these furloughs and layoffs are necessary, as these businesses will not be able to make the payroll. Moreover, several participants mentioned that there is much

uncertainty in the future and that the demand for craft workers remains unclear given the early stages of the pandemic. Apart from craft workers, project engineers, estimators, administrative employees, and others were also considered likely to be impacted by furloughs and layoffs.

A significant challenge reported by some of the participants was the long-term effects of the pandemic on the construction workforce. For example, several project managers and supervisors alluded to the economic downturn that was previously experienced during the Great Recession when a large number of construction workers abandoned the construction industry to join other industries. These participants mentioned that these workers never returned to the construction industry following the recovery and that this has resulted in a large deficit in the number of skilled workers in the industry. The participants were worried that the current pandemic will further aggravate the situation if the laid-off workers choose to transition to other industries and not return.

Another problem that was discussed was the mental health challenges that workers experience in these uncertain times. For example, a few participants mentioned that a significant portion of the workforce are worried about their future prospects in the industry and the possibility that they may be laid off or furloughed. One participant mentioned that these workers have their own financial obligation, a family to care for, and rent and housing payments to make—which are all significant stressors for the workers. Some others, as discussed earlier, mentioned that workers are anxious that they may be exposed to the virus in the workplace and that many of the safety measures are not realistic to adopt or are not sufficiently enforced in construction workplaces. In addition, as discussed earlier, a supervisor mentioned that workers are often unable to report to work due to childcare unavailability, closure of schools, and caretaking responsibilities for sick family members, and these stressors impact their mental health.

One of the project managers mentioned that the social distancing requirement is also resulting in limited interactions among crewmembers, which may also contribute to mental health challenges. The project manager added that he had come across the term physical distancing, which must replace the use of the term social distancing. The participant believed that such a change would better communicate the intent of the social distancing safety measure and argued that complementary efforts must be adopted to build comradeship between workers during this difficult time.

3.1.10. Increase in Demand from Local Suppliers and Manufacturers

Given that there were significant delays with material delivery, particularly from overseas and across the country, many workplaces began to proactively adopt measures to find alternative material sources to reduce the risk of project delays. Preference was given to alternate local suppliers and manufacturers where the likelihood of delivery on short notice was higher. In many cases, contractors, in consultation with the architects and the designers, were able to identify alternate material and equipment that local suppliers and manufacturers were able to quickly ship. Therefore, these local suppliers experienced a significant spike in demand. More specifically, according to one of the suppliers, their sales substantially increased when compared to previous years. There was also additional demand from local suppliers for supplies such as disinfecting wipes, cleaning supplies, sanitizers and sanitizer stations, and acrylic glass (e.g., Plexiglas) that were necessary as safety measures during the pandemic for offices, retail spaces, and educational institutes.

In addition, because of the stay-at-home orders, a supplier mentioned that a larger proportion of the public began new home improvement and renovation projects. Therefore, there was an increase in demand for material for these small-scale projects. However, the supplier also mentioned that they were running low on stocks since they had not anticipated or planned for a surge in the demand. Moreover, these local suppliers were also unable to receive shipments of the raw material that they needed from outside sources to meet the local demand.

3.1.11. Transition to Work from Home for Non-Site Personnel

In response to the pandemic and to enhance safety, a significant number of non-site professionals were able to transition to working from home. However, several participants mentioned that they experienced a significant number of challenges. For example, businesses did not have the necessary digital infrastructure to make the transition easy in many cases. Therefore, there were significant challenges with gaining access to necessary software packages and other resources, which resulted in much inefficiency. In many cases, the businesses needed to make additional investments into technology to enhance their ability to efficiently work from home. For example, several businesses invested in virtual private networks (VPNs) to gain access to resources and software packages such as computer-aided design (CAD) remotely. Few organizations mentioned that they already had cloud solutions to access licensed software packages and business databases—which made the transition relatively easy.

In several other cases, the participants mentioned that there were additional challenges with making the transition because much of the workforce was not familiar with the newly adopted digital solutions. For example, certain individuals were not familiar with using virtual private networks (VPNs) to connect remotely to the business network. Others experienced challenges with adopting new communication platforms such as Zoom, Microsoft Teams, and Slack. Some employees also found it challenging to connect their business computers to their home network for a variety of reasons. Few participants also mentioned Internet outages and poor Internet quality as major challenges associated with remote working.

Apart from technology-related challenges, a few participants mentioned that there were more distractions at home that interfered with their ability to work effectively. In addition, many of the employees also had additional duties at home such as taking care of their children, given that schools were online and childcare services were not operational.

Because of the many challenges that employees experienced with technology and working from home, a few organizations decided to ask their employees to return to the office after providing safety measures such as acrylic (e.g., Plexiglas) panels between desks, sanitation stations, and sufficient spacing between workspaces.

3.2. *New Opportunities as a Result of the COVID-19 Pandemic*

3.2.1. Ability to Secure Loans at Low Interest Rates

The participants shared that one of the largest opportunities comes from the low interest rates that are available to owners, contractors, and potential home buyers. For example, one of the project managers indicated that they just secured a new project involving the construction of a hotel as the owner was able to secure a loan with a much lower interest rate than usual. The project manager also mentioned that such low interest rates are rare and that this offers a good opportunity for strong businesses to grow and be prepared to take advantage of the markets when the recovery begins. There were also participants that discussed the availability of the small business loan program, commonly known as PPP loans—the Paycheck Protection Program (PPP)—that small contractors were leveraging to ensure that their employers were paid and that their workforce successfully weathered the ongoing pandemic. According to the U.S. Small Business Administration (SBA), the first draw of PPP loans had an interest rate of 1% [24].

The participants also mentioned that the demand for new residential construction is likely to increase because potential buyers can secure a low interest rate for the life of the mortgage, which can go up to 30 years. One of the participants mentioned that a few families are expected to spend more on residential expansion projects by leveraging the low interest rates as they will spend more time in their homes, which will benefit small contractors. Furthermore, a few participants mentioned that potential home buyers are moving from rented properties in cities to the suburbs, where they can purchase larger and more spacious homes using the low interest rates; which will also increase sales in the residential sector.

3.2.2. Demand Increase for Transportation, Residential, Fast-Track Medical, and Other Projects

A large number of participants shared that the demand for a variety of construction projects has increased. For example, one of the project managers stated that Departments of Transportation (DOTs) are approving new projects and accelerating ongoing ones to take advantage of the lower traffic volumes following the shelter-in-place orders. The project manager added that this is a rare opportunity to work on infrastructure and highway projects, particularly in urban areas, where high traffic is typically a major concern and can result in much inconvenience and delays to drivers. In fact, one of the contractors from Texas reported that the limited volume of traffic has offered more lane closure opportunities and has allowed for the acceleration of projects. Another project engineer reported that the pandemic has enhanced the safety and productivity of workers as the traffic flow has reduced. Another manager mentioned that the pandemic has offered an opportunity to safely work on infrastructure projects that have been neglected for decades.

In terms of residential projects, apart from the additional demand following the reduction in mortgage and interest rates, demand for new construction was expected to increase as the inventory of homes in the market was expected to reduce. This was because fewer owners of existing homes were expected to list their homes for sale and allow public access to their properties during a pandemic. The shortage of inventory was expected to increase the sale of new homes.

Apart from transportation and residential projects, given the medical emergency that was being experienced due to the pandemic, the participants believed that more fast-track medical and patient care facilities will be built and renovated. Additional construction projects were also expected for building new research centers and medical labs to counter future medical emergencies.

In the commercial sector, many participants believed that there will be an increase in the construction of warehouses and storage units to support the substantial increase in online shopping. The participants mentioned that many retail spaces are also likely to be renovated as new warehouses as the demand for retail space reduces. The demand was further expected to increase as a growing number of businesses were expected to transition into the online shopping space.

Other projects that were expected to increase as a result of the pandemic included renovation work in universities and schools as students were away from campus, office renovations in preparation for employees to return and work safely during a pandemic, utility work as the number of Internet subscribers increased and traffic flow reduced, and renovation of public buildings such as museums and public offices with the decline in the number of visitors.

3.2.3. Recruitment of Skilled Workers

As discussed above, a large number of furloughs and layoffs were expected, not only from the construction industry but also from other industries including retail, manufacturing, and airlines. While this was an adverse outcome for many organizations and workers, a few participants believed that their organizations benefitted from the situation. More specifically, these participants stated that while the industry in the past suffered from a shortage of skilled workers, suddenly, there was a surplus of skilled workers looking for positions in the market. A project manager mentioned that their organization was able to recruit a number of skilled and experienced electricians that were typically difficult to come across in the industry. The project manager mentioned that well-established and financially strong contractors will particularly benefit from their ability to hire a strong workforce.

3.2.4. Conducting Internal Reviews and Improving Existing Systems

With the reduction in the workload experienced in the construction industry and fewer new opportunities, many construction businesses resolved to perform comprehensive

evaluations of their processes and systems to identify areas for improvement. According to several participants, their construction businesses began to examine their strategic vision, partnerships, their execution plans, their bidding approach, risk assessment approach, material planning protocol, software resources, and others to identify inefficiencies and strategic efforts that can be adopted to enhance success. According to one participant, these businesses focused on coming out stronger at the end of the pandemic and ready to thrive in a post-pandemic market with improved processes and systems.

Several organizations focused on performing maintenance operations for their construction equipment and tools. Two project managers mentioned that their organizations are examining the prospect of switching a larger number of positions to work-from-home positions. These managers argued that such a change can allow them to transition to a smaller office while reducing overhead costs and improving flexibility. Several businesses resolved to improve their technological infrastructure to better facilitate collaborations between suppliers, subcontractors, and other partners. One of the participants shared that their organization was in the last stages of proposing a new organizational structure to enhance communication channels and accountability.

3.3. Efforts to Manage the Challenges of the COVID-19 Pandemic

3.3.1. New Safety Measures Adopted in the Construction Industry

The participants reported a number of safety measures that were being adopted, along with their implementation challenges. Among others, the use of cloth face coverings was enforced widely in construction workplaces. However, in many cases, there were significant shortages in the availability of face coverings in the market and workplaces. Moreover, workers often forgot to bring their face coverings to work when they returned the next day, which further aggravated the shortage of face masks and coverings in many cases.

Even when face coverings were available, several supervisors reported that it was challenging to enforce the requirements in workplaces. For example, several workers often removed the face coverings due to discomfort and fogging of safety glasses. Workers also often complained of their discomfort with the masks, especially when performing strenuous tasks that were associated with a higher breathing rate and perspiration. Workers also expressed discomfort when working in humid conditions with their face coverings. In many other cases, workers often covered their mouths but did not cover their noses, which limits the effectiveness of cloth face coverings. Another supervisor mentioned that even when workers placed the mask correctly over their nose and the mouth, it often would not stay in place and would fall below the nose as they worked. Another significant challenge was that workers often reused face coverings without rewashing them. However, this was unrealistic to monitor according to one of the supervisors.

Workers and employees were also given instructions to follow social distancing guidelines. In addition to promoting social distancing efforts, several other approaches were adopted to support social distancing among site personnel. These included staggering work crews such that different work crews reported to work at different times to limit the number of workers in the workplace at the same time, posting signage to remind workers of the requirements of social distancing, preventing food trucks from coming into the site that typically encouraged crowding, limiting the number of workers in the breakroom, setting up open public break and lunch spaces, closing the site trailer, use of social distancing floor markers placed 6 ft. apart, encouraging non-essential workers to work from home, asking supervisors to work from their trucks or vehicles, reducing and postponing work in confined spaces, and others. While these efforts were all useful, some participants mentioned that it was unrealistic to maintain the 6 ft. requirement between each of the workers at all times due to the collaborative nature of construction operations, where workers are required to work alongside each other. Moreover, like monitoring the usage of face covering, it was unrealistic for site personnel to monitor that workers always followed social distancing guidelines as work progressed.

One of the supervisors mentioned that when workers used face coverings, many believed that the 6 ft. social distancing requirement no longer applied, as the face covering offered sufficient protection. The supervisor mentioned that this belief is untrue and the recommended practice is to adopt multiple safety measures to limit the likelihood of virus spread. In a number of instances, the supervisor mentioned that safety professionals must intervene when such behaviors are observed.

Another widely adopted safety measure was offering workers and site personnel training on the safety risks of COVID-19 and the safety measures that are to be adopted. The biggest challenge of delivering these training sessions was that the traditional classroom-type training approaches were no longer safe given the social distancing guidelines. Therefore, new training approaches that comply with the social distancing requirements were necessary. Some of the employers tried to adopt online training sessions. However, technology constraints were a significant issue because workers often did not have access to compatible computers and phones. Computer literacy and access to a good Internet connection were also a challenge in many cases. In several other cases, the contractors and the subcontractors did not have the infrastructure necessary to deliver training programs online given the unexpected demand for online training. Therefore, in some cases, training was offered over conference phone calls. However, trainers struggled with this format of training since the conversations were largely one-sided, with little to no participation from the training participants. In many cases, according to a participant, it was not clear if the workers were actually paying attention to or benefiting from the training. Moreover, the inability to see the facial expressions of the training participants was a challenge for trainers as they were unable to see the facial expressions as would be the case in a classroom-type training setting. To overcome all of these challenges, some of the employers offered the training in open spaces in the workplace while also complying with the social distancing requirements.

Other safety measures that were adopted without much challenge were administering temperature checks prior to entry into the workplace, the placement of sanitizers and hand wash stations at the entrance and various locations in the worksite, disinfecting tools and surfaces, discouraging sharing of tools and equipment, including PPE, encouraging workers with any COVID-19-like symptoms to remain at home, adopting air purification and filtration systems, and others. One concern that was reported by a supervisor regarding the temperature checks was the concern regarding the accuracy of these checks. More specifically, the supervisor was concerned that the temperature checks may be impacted by ambient temperature and environmental conditions if testing was performed in a non-controlled location (e.g., open space at the entrance to the workplace).

3.3.2. Managing Other Project Risks

Given the rapid change in governmental policies during the pandemic, several participants reported that their businesses maintained a task force or team of qualified employees or consultants who were tasked with examining proposed governmental policies and industry patterns to identify best practices for risk management. In many cases, such a task force or team was also delegated the responsibility of identifying and adopting safety measures that were recommended for the safe operation of construction workplaces. The taskforce continuously updated operational plans and offered guidance to the site leadership on managing work in construction workplaces. In one of the projects, while they did not have the resources to support a task force, one of the project managers examined the lessons learned database and past claims to identify possible solutions that were proposed in the past that may apply in the current crisis.

Much of the input that participants shared was related to managing delays on their projects, which appeared to be the largest risk apart from the safety concerns being experienced. Some participants mentioned that delays on their projects were inevitable and only the impacts of the delay can be minimized. Others mentioned that they were reviewing their original schedules to make modifications that may be helpful in reducing delays. For

example, some participants mentioned that they were considering the adoption of night and weekend shifts. One of the project managers mentioned that the introduction of additional shifts would also be helpful given that one of their subcontractors was not willing to share the workplace with other trades because of the safety risks during the pandemic. Several other participants mentioned the work of several advocacy groups, trade unions, and associations such as the Associated General Contractors (AGC) of America, North America's Building Trades Unions (NABTU), and the American Subcontractors Association (ASA) that were urging governmental agencies to render construction activities as being essential for recovery and offering exemption from shelter-in-place orders. According to these participants, if these efforts are successful, significant delays and associated hardships will be alleviated.

Another area that was highlighted was efforts to reduce the impacts of material delivery delays and related challenges. One of the participants mentioned that some businesses that were proactively monitoring the evolving pandemic were able to place material delivery requests prior to when deliveries became more challenging and shortages of supplies were experienced in the market. Some other subcontractors were able to resolve these issues by finding alternate vendors and local suppliers that were able to deliver material on time. Several other contractors were examining their project schedule to identify material that was needed throughout the project cycle and actively contacted vendors to ensure that they will be able to make deliveries as planned. Nonetheless, several workplaces were unable to find alternate approaches to have the materials delivered as per initial plans—particularly when customized products and fabricated elements were necessary.

As projects were experiencing delays and price escalations, several participants mentioned that they began reviewing the contracts to assess expected impacts and provisions that they can use in their defense. Several participants mentioned that they were keeping detailed records of the causes of the delays and price increases with the hope of requesting additional time and compensation. Such records were also expected to be useful to manage the risk of liquidated damages and delay-related penalties. Several of the participants also mentioned that such records will be useful for their defense if disputes or litigations occur on their projects. Apart from these efforts, few project managers mentioned that they were working on notices that were planned to be sent to project owners, alerting them of expected delays and cost escalations.

One of the other major risks that was expected was cash flow issues as a result of price escalations and delayed payments. Several participants mentioned that businesses were taking advantage of various governmental programs and relief plans to alleviate some of the challenges. These included new loans and economic relief plans that were becoming available for small businesses such as the PPP. One of the supervisors mentioned that an employer planned to use these programs to pay their workforce and ensure that they maintain their trained employees and skilled workers despite the pandemic. The supervisor mentioned that this was important for the long-term success of the business, as the construction industry has struggled with labor shortage issues. One of the participants mentioned that their organization maintained a generous contingency and emergency account which will be used to address the experienced cash flow challenges.

4. Study Limitations and Suggested Future Efforts

While the study makes important contributions, there are a few limitations that may be addressed in future efforts. First, although the study captures important findings related to the effects of the COVID-19 pandemic on the construction industry, there may be additional effects that may not have been captured in the current study due to a number of reasons. For example, the exploratory nature of the study was designed to only capture the effects of the pandemic as experienced by the study participants—who may not sufficiently represent the industry as a whole. While the participants represented 17 states across four different sectors with varying roles, there are a number of states and stakeholders that

were not represented in the reported effort due to the time constraints associated with capturing the early effects of the pandemic and limitations on the resources available to the research team. Nonetheless, it needs to be noted that the participating professionals were socially connected with other professionals and stakeholders across the U.S. and shared a significant amount of pertinent and useful information.

Second, the scope of the article was limited to the early effects of the pandemic as experienced between the declaration of the national emergency in the U.S. on 13 March 2020 and 30 May 2020, when the data collection efforts were concluded. Therefore, the effects of the pandemic and the related management efforts that may have occurred after the targeted timeline may vary. For example, given the evolving nature of the pandemic, it is unclear what the future will look like as the industry continues to grapple with the pandemic.

Third, while the current effort offers an overview of the effect of the pandemic on the construction industry as reported by industry stakeholders, it does not offer quantitative findings such as the average delay experienced, the average cost overruns expected, or the financial impacts on organizations. The study was also not designed to capture the prevalence of the reported challenges in the construction industry given the limited number of study participants. Future efforts may build upon the current findings to quantify the impacts of the pandemic on the industry. Future effects may also focus on investigating the effects of the pandemic on the global construction industry and developing universal state-of-the-art solutions to tackle the continued crisis. Efforts may also focus on vetting interventions and best practices to prepare for future unexpected pandemics and emergencies.

5. Conclusions

The COVID-19 pandemic has resulted in substantial disruptions and hardships across nations and industries. Like other industries such as airlines, retail, and restaurants, the construction industry has also been impacted in a number of ways. Through interviews with SMEs, the current article focused on cataloging the early impacts of the pandemic as reported by construction stakeholders. The study findings identified that the construction industry experienced a number of adverse effects. These included material delivery delays, shortage of material, permitting delays, lower productivity rates, cash flow-related challenges, project suspension, price escalations, and potential conflicts and disputes.

Despite the number of challenges, there were a number of new opportunities that were experienced in the construction industry as a result of the pandemic. These included opportunities that resulted from lower interest rates; demand increase in the medical, transportation, and residential sectors; and the ability to recruit skilled workers.

The research effort also unveiled specific efforts that were adopted to manage the challenge of the COVID-19 pandemic in construction workplaces. These included safety measures such as requiring workers to wear face coverings, implementing social distancing guidelines, adopting COVID-19-related safety training, and encouraging work-from-home initiatives. Other risk management measures to combat the effects of the pandemic included establishing a task force that is tasked with offering COVID-19-related guidelines, proactive steps to reduce the risk of delays, advocacy efforts seeking to establish construction operations as being essential, and leveraging governmental relief programs to preserve businesses and the workforce.

The presented research offers an understanding of the impacts of the COVID-19 pandemic on the construction industry. The findings of the effort will be useful to governmental agencies as they seek to elevate the adverse effects experienced in the construction industry. Industry representatives may use the findings to identify risk management efforts that may be appropriate for their own organizations. Researchers may use the findings to identify problem areas and propose relevant interventions to support the efforts of the industry.

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Exhibit 08



Mental Health During COVID-19 Outbreak: Poll #5 of 13 in Series (Data collected in February 2021)

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February 2021

Methodology

Methodology: This online survey was conducted among a sample of 3,005 adult Canadians, including an oversample of 500 surveys with residents of Saskatchewan. This was the fifth poll of this study (see below). Results between the polls are compared where applicable.

Weighting: National results have been weighted by the most current census data in terms of gender, age and region to ensure the total sample is representative of the population as a whole.

Region	Number of Interviews	Margin of error	Number of Interviews	Margin of error	Number of Interviews	Margin of error	Number of Interviews	Margin of error	Number of Interviews	Margin of error
	Poll One		Poll Two		Poll Three		Poll Four		Poll Five	
	April 22 to 28, 2020		August 21 to 31, 2020		October 22 to 28, 2020		December 10 to 18, 2020		February 1 to 8 2021	
National	1,803	±2.3%	4,010	±1.5%	2,004	±2.2%	2,761	±1.9%	3,005	±1.8%
British Columbia	251	±6.2%	275	±5.9%	271	±6.0%	270	±6.0%	361	±5.2%
Alberta	252	±6.2%	273	±5.9%	270	±6.0%	271	±6.0%	357	±5.2%
Prairies	200	±6.9%	701	±3.7%	231	±6.5%	250	±6.2%	703	±3.7%
Ontario	701	±3.7%	826	±3.4%	801	±3.5%	803	±3.5%	918	±3.2%
Quebec	300	±5.6%	394	±4.9%	356	±5.2%	359	±5.2%	516	±4.3%
Atlantic Canada	99	±9.8%	1541	±2.5%	75	±11.3%	808	±3.5%	150	±8.0%

Table 1. Poll Sample Size, Margin of Error and Field Dates, Overall and by Province

Summary of Major Findings

- Self-reported levels of **anxiety (25%)** and **depression (17%)** are at their **highest**, with an increase in both self-reported and diagnosed anxiety and depression. This means that the proportion of Canadians who have reported their level of depression as high has increased by 70% since the height of COVID's first wave.
- **6% of the population – or more than 1.8 million Canadians ages 18 and older – have the negative indicators, based on a composite index, that this polling uses to track mental health.** The four negative indicators are: rated high in anxiety and depression, showing moderate to severe mental health symptoms, low management of stress and low resiliency. Younger and female Canadians are over-represented in this group.
- **Being outside is the best activity to support positive mental health**, with two-fifths of Canadians indicating a positive impact on mental health even during the winter months. The impact is significantly more positive than physical activity (21%) and a number of indoor activities including reading (30%) and entertainment (25%).
- **The economy is again having a negative impact on mental health**, countering the signs of improvement noted in Poll 4. And more than one-half of Canadians are worried about making ends meet, a considerable increase since before the pandemic.
- **Social isolation is now the leading stressor** having a negative impact on mental health, increasing again in Poll 5.
- **Younger Canadians, ages 18 to 34, are the group who tend to be the most vulnerable to a decline in mental health.** This group reports a higher incidence of anxiety and depression and are more likely to be scored as severe on the Kessler Psychological Distress Scale (K10) and experience symptoms on a daily basis. Also, the economic decline, ability to make ends meet financially and social isolation are disproportionately having a negative impact on this group's mental health. They are also less likely to be optimistic about their ability to recover and are less likely to be receiving treatment.



Key Findings



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Anxiety and depression continue to show an upward trend

- **The COVID-19 outbreak and restrictions were associated with an increase in both anxiety and depression**, and almost a year into the outbreak this has not lessened. In Poll 1, the proportion of Canadians reporting high levels anxiety quadrupled while depression doubled following the start of the outbreak. The number of Canadians experiencing high levels of anxiety and depression has been increasing overtime.
- Anticipated levels of anxiety and depression if the lockdown continues for another two months increased by 3% and 4%, respectively, since Poll 4. This finding is worth monitoring.
- **Levels of anxiety and depression are serious.** Two-thirds of Canadians who report high levels of anxiety and/or depression are likely to be scored as moderate to severe on the Kessler 10 scale. In addition, one-third experience symptoms daily or have had signs of mental stress as recently as the past two days.
- Adding to mental health concerns, even Canadians who were handling stress well before the pandemic are starting to fray – one-third who handled stress well before are not able to do so anymore.
- A majority of Canadians diagnosed with a mood disorder are receiving some form of treatment. Prescription medication is the most common treatment reported (by a majority). And a third are receiving therapy administered by a professional.
- **Close to a year into the pandemic Canadians are still not accessing mental health supports at the same rate** as before the outbreak. Not only are they less likely to be getting in-person support from a mental health professional, but they are also less likely to be speaking to their physician.

Social isolation is now the leading self-reported stressor on mental health

- In Poll 1, **one-third of Canadians** reported that the fear they may catch the virus was having a negative impact on their mental health. In Poll 2, this number increased slightly to **two-fifths** and remains stable through to Poll 5.
- Canadians remain more concerned about family members, with one-half reporting that the concern for family continues to have a negative impact on their mental health.
- **Social isolation** continues to have a negative impact on mental health for more than one-half of Canadians, increasing slightly in Poll 5 (+4%) to become the leading self-reported stressor on mental health.
- Poll 2 saw a deterioration of social support through family and friends. This poll shows that these levels have remained stable – while there has been no further decline, positive impacts of communication with family and friends have not returned to Poll 1 levels.
- The negative impact of the economic downturn decreased slightly in Poll 4 but has returned to previous levels in Poll 5 with Canadians again reporting that the economic downturn is having a negative impact on mental health. Adding to this, more than one-half of Canadians are now worried about making ends meet, up from only just over one-quarter with this concern before the pandemic.

Positive mental health supports continue to be less impactful

- Following the COVID-19 outbreak, Canadians reported that physical activity and engaging in reading and entertainment was having a positive impact on their mental health. By Poll 2, **the positive aspects of these activities had declined** and continue at the same levels in Poll 5.
- Going outside continues to have a positive impact on mental health, increasing again (+4%) in Poll 5 despite the winter months.
- **The negativity of daily news about COVID-19 remains steady in Poll 5** for the first time since Poll 2 to 4, which saw increases in all three polls.
- **Canadians continue to follow the rules and regulations required to limit the spread of the virus**, with three-quarters saying they monitor the guidelines and do what is expected. Of those who do not, most say they monitor the guidelines, but do what they think is reasonable.



Results in Detail



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Anxiety and Depression in the COVID-19 Outbreak

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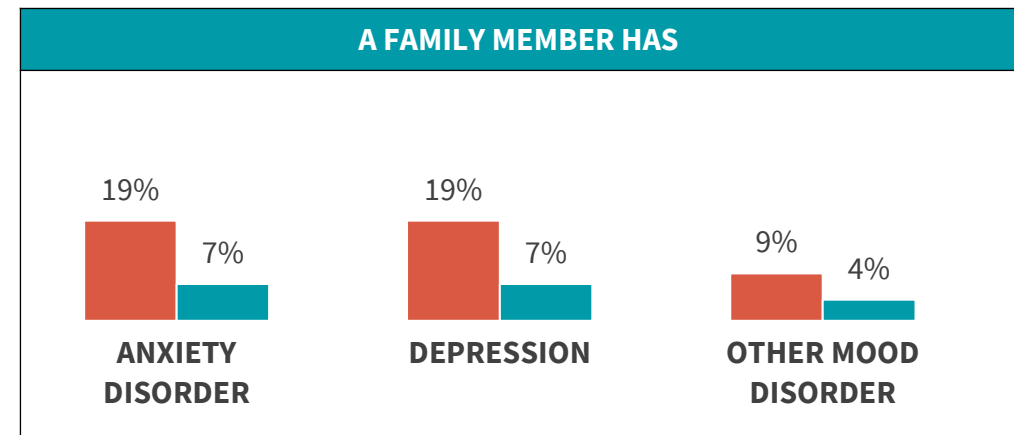
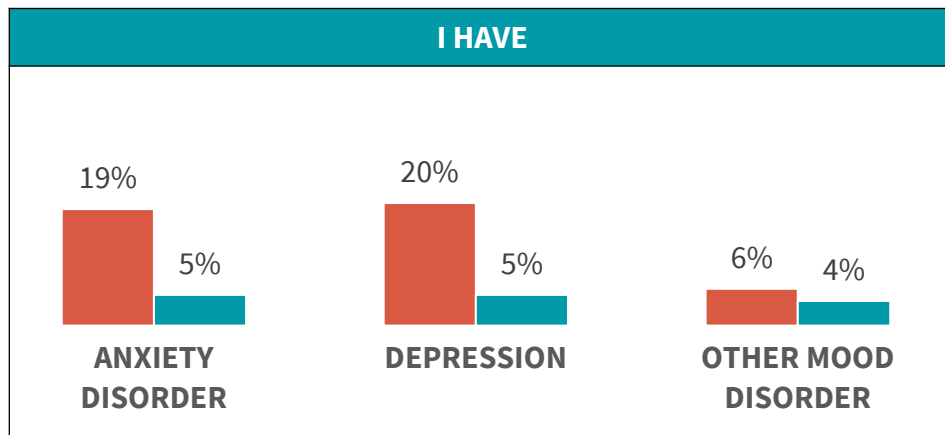
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One in four Canadians has been diagnosed with anxiety or depression

- Prior to COVID, one-fifth of Canadians have dealt with a personal or family diagnosis of anxiety (19% personal, 19% family) or depression (20% personal, 19% family). Other mood disorders are less common, with 6% having a personal diagnosis and 9% a diagnosis in their family.
- Since the outbreak, another 5% say they have personally been diagnosed with anxiety or depression, increasing the reported incidence of anxiety and depression to one in four. And another 7% say a family member has been diagnosed with anxiety or depression.



Base: (Total N=3,005)

A1. Have you ever, either before the Covid-19 outbreak or since it, received a diagnosis from a healthcare professional stating that you are affected by any of the following:

Younger Canadians, frontline healthcare workers & women among the most vulnerable to anxiety and depression

OF THE ONE IN FOUR DEALING WITH A MOOD DISORDER:

- Canadians most likely to be diagnosed with **anxiety**:
 - Females (27% vs. 19% of males)
 - Younger (18-34: 32%; 35-54: 28% vs. 55+: 13%)
 - People with children in the home (0-8 years: 29%; 9-17: 28%; vs. None: 22%)
 - Ontario (26%)
 - Frontline healthcare workers (40%)
- Canadians most likely to be diagnosed with **depression**:
 - Females (28% vs. 21% of males)
 - Younger (18-34: 30%; 35-54: 30% vs. 55+: 17%)
 - Frontline healthcare workers (36%)
 - Canadians with children under 9 years (29% vs. 24% with no children)
 - Ontario (27%)

HOUSEHOLDS DEALING WITH MENTAL HEALTH CONDITIONS:

TOTAL YES 46%

(Individual or households suffering from anxiety or depression or other mood disorder)

(Individual or households suffering from each)	
35%	ANXIETY
37%	DEPRESSION
17%	OTHER

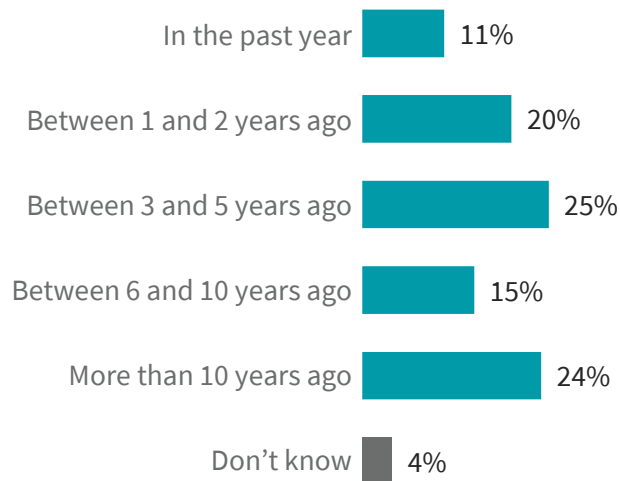
Base: (Total N=3,005)

A1. Have you ever, either before the Covid-19 outbreak or since it, received a diagnosis from a healthcare professional stating that you are affected by any of the following:

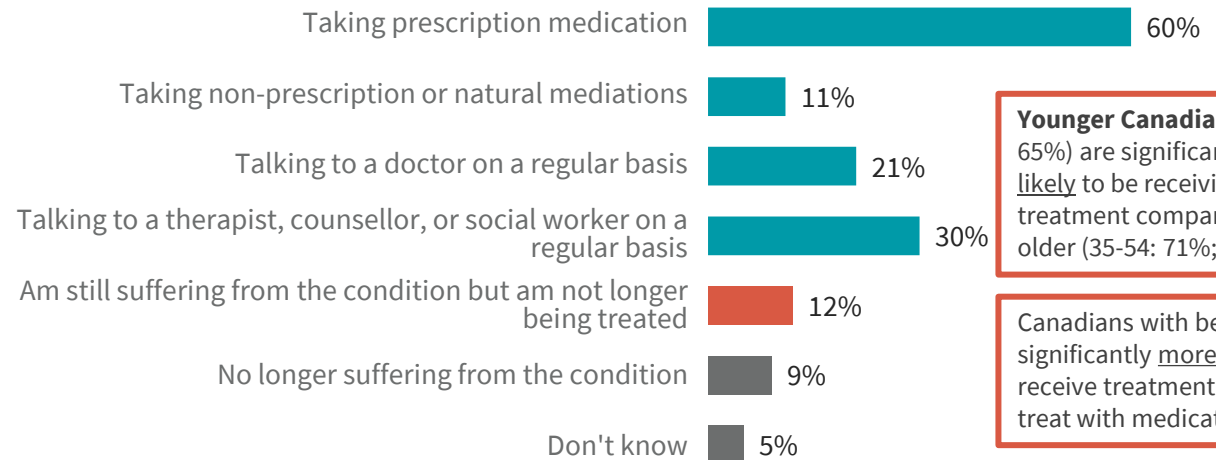
Majority of Canadians receive treatment; prescription medications the most common

- **One-third (31%)** of those who received a mental health diagnosis before COVID-19 received it in the past two years, with 11% receiving it in the past year.
- **Two-thirds (70%)** of those who have had a personal or family diagnosis are doing something to treat the condition, with prescription medication being most common (60%). Close to one-third (30%) talk to a therapist on a regular basis, and one-fifth (21%) talk to a doctor.

LENGTH OF TIME SINCE DIAGNOSIS



TREATING MENTAL HEALTH CONDITIONS: 70% Receiving treatment



Younger Canadians (18-34: 65%) are significantly less likely to be receiving treatment compared with older (35-54: 71%; 55+: 74%)

Canadians with benefits are significantly more likely to receive treatment (74%) and treat with medications (65%)

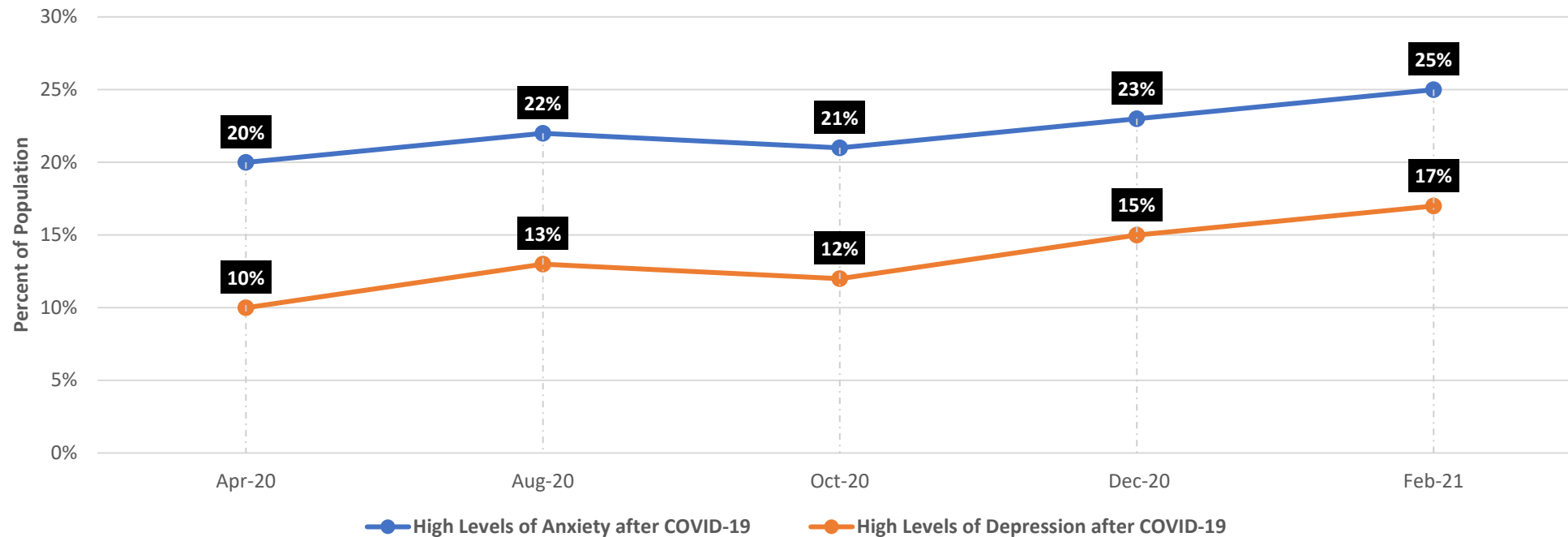
A1C. When did you/your family member receive the latest diagnosis of anxiety, depression or another mood disorder? Base: (Those who received diagnosis before COVID-19 n=1,184)

A1D. What, if anything, are you/your family member currently doing to treat the anxiety, depression or other mood disorder? (Base: Those who have received a diagnosis n=1,415)

Anxiety levels continue to be four times as high as pre-outbreak levels (1/3)

- Levels of anxiety and depression are not lessening as the pandemic continues. Similar to Poll 1, the proportion of Canadians reporting high levels of anxiety is close to four times pre-COVID levels with one-quarter (25%) reporting that they have high anxiety, up from 7% before the outbreak.
- The proportion of Canadians reporting high depression doubled following the COVID outbreak (from 4% to 10%) and by Poll 5 has increased to 17%, remaining more than double pre-COVID estimates (7%).
- Since the onset of COVID-19, one-in-three Canadians are indicating high anxiety and/or depression (29%), with 13% suffering from both.

High levels of Anxiety & Depression since COVID-19



A2A. Please rate each of the following using the scale 0-10 where “10” is Extremely high and “0” is None. Base: (Total N=3,005)

Younger Canadians (18-34) among most vulnerable to anxiety and depression (2/3)

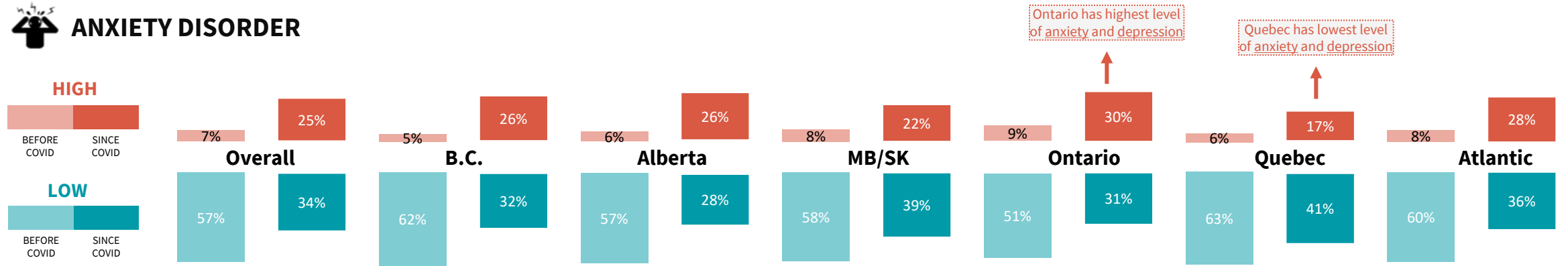
- Canadians most likely to rate **anxiety** high (8-10) since COVID:
 - Females (31% vs. 19% of males)
 - **Younger 18-34 (34% vs. 35-54: 27%; 55+: 18%)**
 - People with young children under 9 years in the home (30% vs. none: 24%)
 - Adults living with their parents are most likely to have high anxiety (37%) even more so than those living alone (25%), but those living with a spouse have the lowest likelihood of high anxiety (22%)
 - Ontario residents (30%)
 - Canadians exposed to COVID (32%), know someone with COVID (32%), or someone who has died (36%)
 - Canadians who either remain worried (42%) or are worried since COVID about making ends meet (38%)
 - Those who are negatively impacted by winter months (35%)
- Canadians most likely to rate **depression** high (8-10) since COVID:
 - Females (18% vs. 15% of males)
 - **Younger 18-34 (23% vs. 35-54: 18%; 55+: 11%)**
 - Adults living with their parents are most likely to have high depression (25%) even more so than those living alone (19%), but those living with a spouse have the lowest likelihood of high depression (14%)
 - Ontario residents (21%)
 - Frontline healthcare workers (26%)
 - Canadians exposed to COVID (22%) or know someone with COVID (20%)
 - Canadians who either remain worried (32%) or are worried since COVID about making ends meet (25%)
 - Those who are negatively impacted by winter months (24%)

Base: (Total N=3,005)

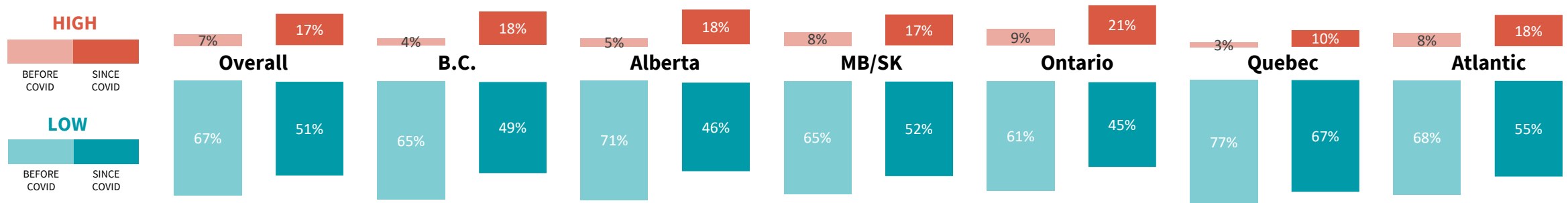
A1. Have you ever, either before the Covid-19 outbreak or since it, received a diagnosis from a healthcare professional stating that you are affected by any of the following:

Levels of anxiety and depression since COVID outbreak are similar across the country (3/3)

ANXIETY DISORDER



DEPRESSION



Two-thirds of Canadians reporting high depression or anxiety levels score as moderate or severe using the Kessler 10 scale

- Two-thirds (62%) of Canadians who rated their anxiety or depression high since COVID (8-10) are likely to have a moderate (20%) or severe (43%) mental health symptoms, while two-fifths (37%) are likely to have a mild (18%) or no (19%) mental health disorder. Results are relatively consistent across polls with a small decrease in severe mental health disorders noted in Poll 3.
- Among those who rate their anxiety or depression as moderate (5-7), more than one-quarter (29%) are likely to have a moderate (14%) or severe (15%) mental health condition, while one-fifth (21%) are likely to have a mild mental health disorder and one-half (50%) are likely to have no mental health disorder.
- Canadians more likely to be scored as severe: Ontario residents; younger (18-34 Canadians); parents with children under 9; those exposed to COVID and those who continue to worry or worry about making ends meet since COVID; those living with roommates or their parents.

Psychological Distress 1-5 Point Scale Items

	(All/Most)	(None/Little)
Tired out for no good reason	29%	37%
Nervous	22%	42%
That everything was an effort	22%	52%
Depressed	18%	53%
Restless or fidgety	18%	51%
Hopeless	17%	62%
Worthless	15%	69%
So restless you could not sit still	10%	73%
So sad that nothing could cheer you up	12%	69%
So nervous that nothing could calm you down	9%	75%

Mental Health Scores among Canadians with high and moderate anxiety or depression since COVID

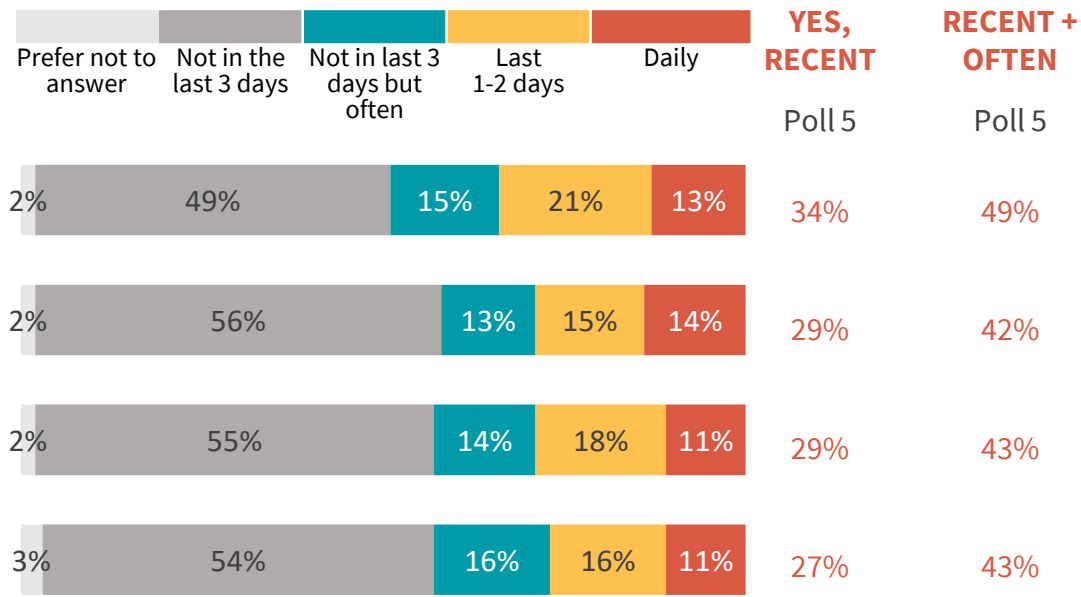
Moderate: 5-7

High: 8-10

	Poll 5	Poll 5	Poll 4	Poll 3	Poll 2	
	50%	19%	19%	18%	21%	Likely to have no mental health disorder (<20)
	21%	18%	18%	19%	16%	Likely to have a mild mental disorder (20-24)
	14%	20%	22%	26%	21%	Likely to have moderate mental disorder (25-29)
	15%	43%	40%	36%	42%	Likely to have severe mental disorder (30-50)

One-third of Canadians frequently experiences multiple symptoms of anxiety/depression

- More than one-third (36%) of Canadians say they experienced multiple symptoms of depression/anxiety recently, scoring as high (13%) or moderate (23%).
- Canadians more likely to be rated as high: Ontario (15%) and Alberta (19%) residents; **younger 18-34 (18% vs. 35-54: 14%; 55+: 7%)**; living alone (16%); and children under 9 (16% vs. None: 12%).
- In addition, those exposed to COVID (19%) and those who continue to worry (24%) or are now worried about making ends meet (19%) are more likely to classify as high.



Poll 5	Severity
13%	High (9-12): Experiencing > 2 symptoms of depression/anxiety recently and at least one symptom daily
23%	Moderate (5-8): Experiencing 2+ symptoms daily or recently
29%	Mild (1-4): Showing at least 1+ symptom daily or more than one recently or often
35%	None (0): Not showing signs of depression/anxiety recently

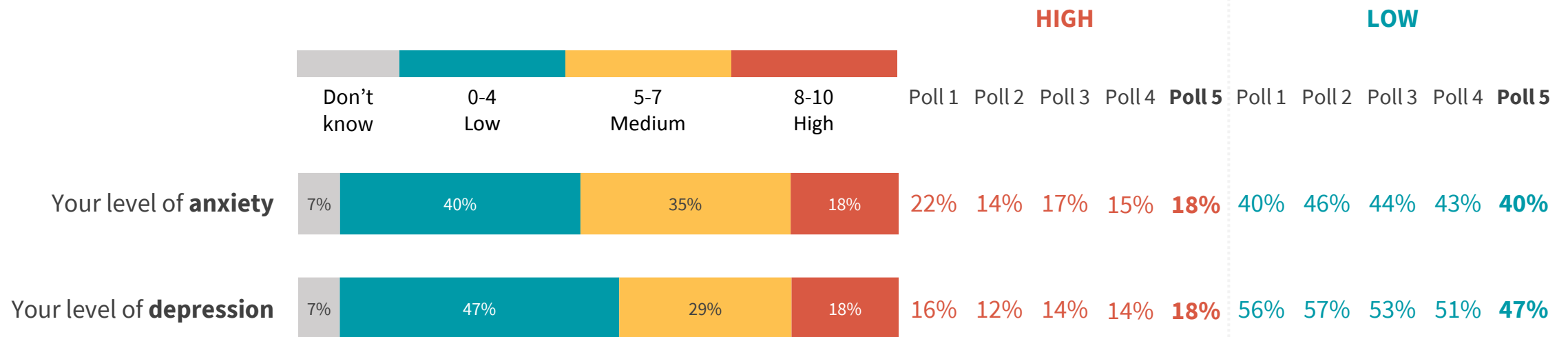
Negative impact of lockdown on mental health remains low with younger Canadians

- Following the outbreak, just over one-fifth (22%) of Canadians **expected their anxiety levels to be high** after two months of isolation (8-10). Close to a year since the outbreak, this has increased slightly by 3%. As well, the proportion who expect to have **a high level of depression** increased by 4%. While not yet an upward trend, it's worth monitoring.
- Canadians **younger than 55** (18-34: 24%; 35-54: 20%; vs. 55+: 13%) are significantly more likely to have an expectation of increased anxiety if they must isolate for another two months. And younger Canadians (18-34) are also more likely to anticipate higher rates of depression (18-34: 23%; 35-54: 20%; vs. 55+: 12%).
- Canadians living in Ontario are more likely to anticipate higher levels of anxiety (22%) and depression (21%) if the lockdown continues.
- Women anticipate higher levels of anxiety (21% vs. 15%) and depression (20% vs. 15%) compared with men if the guidelines remain in place.
- Canadians with children anticipate continued guidelines could increase both anxiety (under 9 years: 23%; 9-17: 23%; vs. None: 17%).
- Canadians worried about making ends meet both before and since COVID anticipate higher levels of anxiety and depression.
- Frontline healthcare workers anticipate a higher level of anxiety (31%) and depression (26%) than the general population as the pandemic wears on.
- Those who are negatively impacted by the winter are more likely to feel their anxiety (25%) and depression (25%) will be high if restrictions are in place for two more months.

Canadians remain optimistic about their mental health under restrictions

- Close to one-fifth (18%) of Canadians anticipate increased anxiety, a small increase of 3% since Poll 4, although not as high as estimates in Poll 1.
- Estimates of depression increased by 4% since Poll 4, and is at the highest level since the survey began, a trend worth monitoring if restrictions stay in place.
- Those living with their parents and, to a slightly lesser degree, roommates are most likely to feel their anxiety (25% and 21%) and depression (27% and 26%) will be high in two months. Those with a spouse are least likely to think so (anxiety 16%, depression 14%).
- **Of those who rated their anxiety high now, 64% feel their anxiety will be high if social isolation continues for two months. Of those who rate their depression high now, 75% feel it will be high if social isolation continues for two months.**

IF SOCIAL ISOLATION CONTINUES FOR TWO MORE MONTHS, WHAT DO YOU EXPECT...

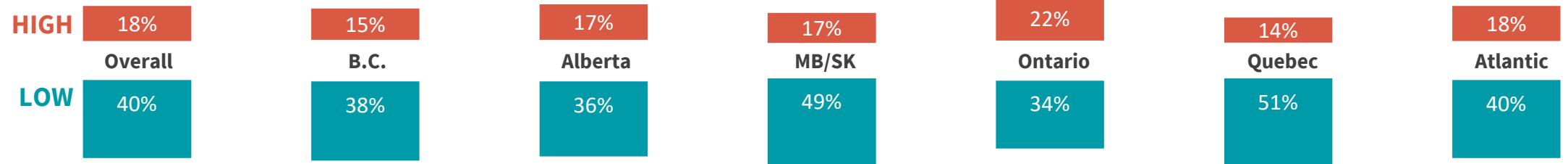


A2D. And, using the scale below... if COVID-19 – and the associated government guidelines and laws (ex. social distancing, social bubbles/circles, masks, quarantines, etc.) – remains in your province for 2 more months... what do you expect the following to be? Base: (Total N=3,005)

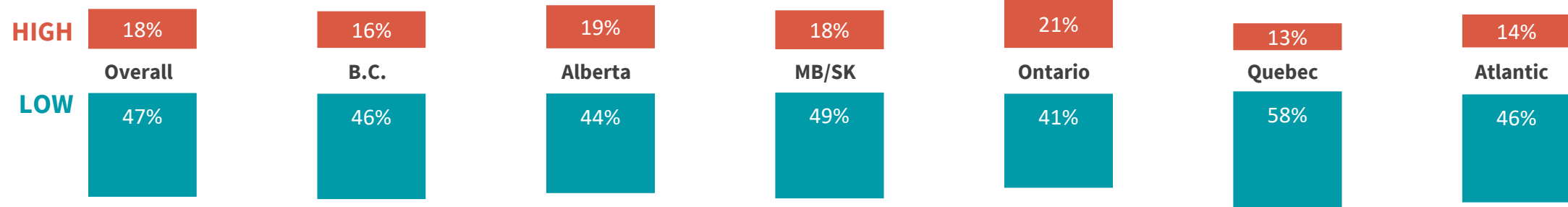
Ontario residents expect the highest levels of anxiety and depression if social isolation continues



ANXIETY DISORDER



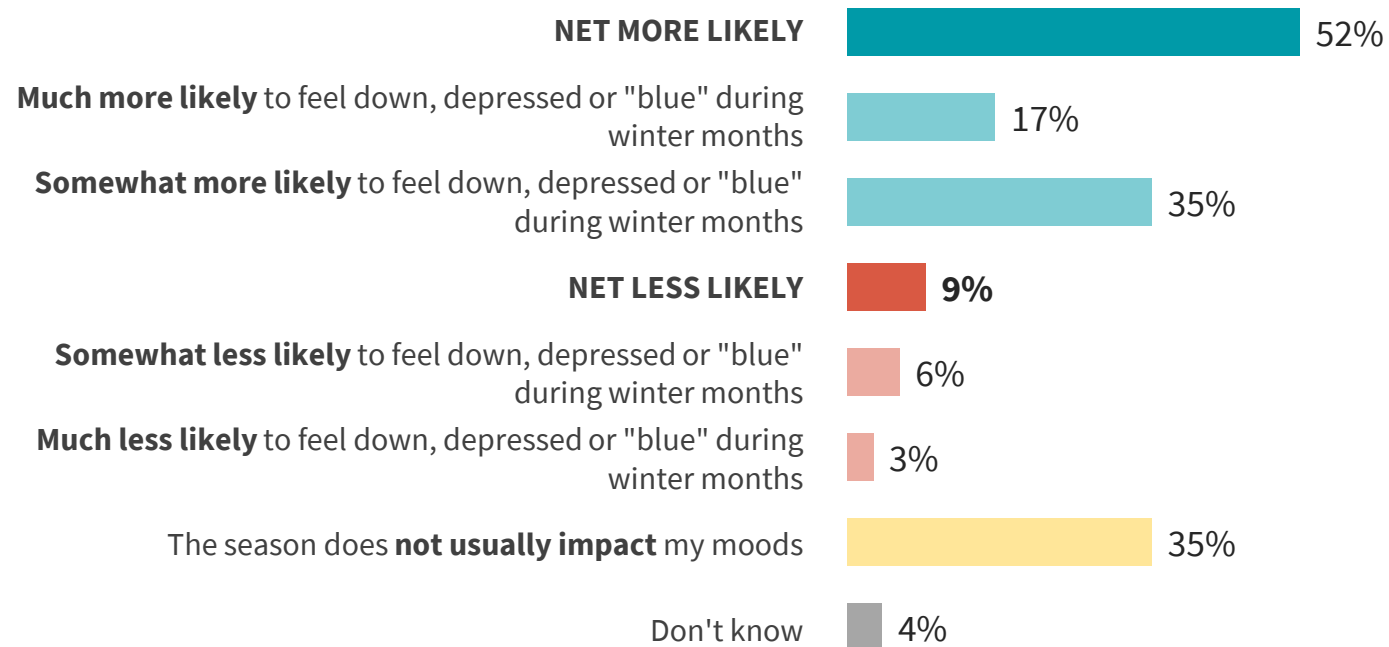
DEPRESSION



A2D. And, using the scale below... if COVID-19 – and the associated government guidelines and laws (ex. social distancing, social bubbles/circles, masks, quarantines, etc.) – remains in your province for 2 more months... what do you expect the following to be? Base: (Total N=3,005)

Half of Canadians report feeling down during winter months

- Younger Canadians, ages 18 to 34, are more likely to report feeling down in the winter months (60% vs. 35-54: 53%; 55+: 22%).
- Groups identified as being more vulnerable to seasonal affective disorder include women (58% vs. 45% of men); Ontario residents (54%); and Canadians with a mood disorder (64%).
- Winter is affecting those with multiple mental health risk factors – they are more likely to be impacted by the winter months (71%).

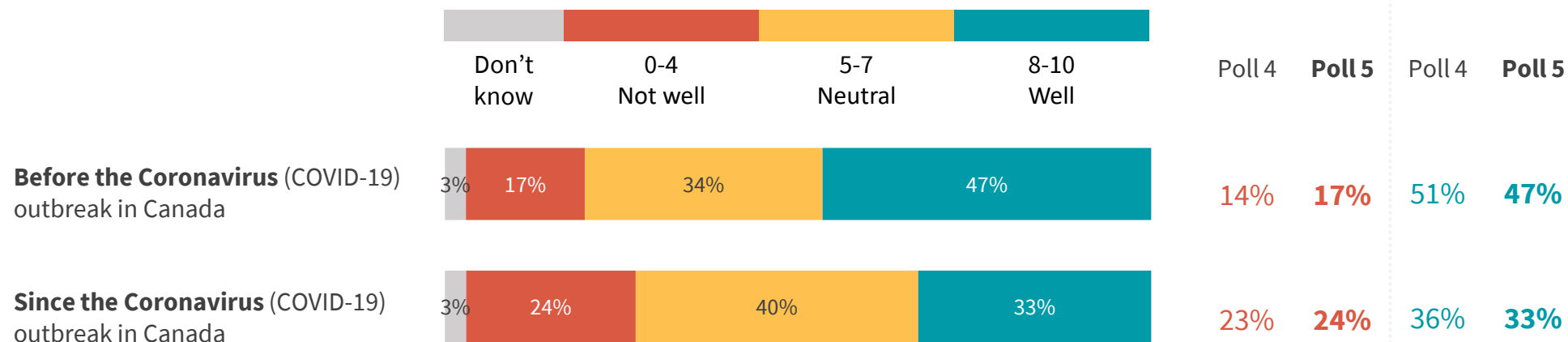


A9. Some people find the seasons affect their moods. In past years, before the COVID-19 outbreak, which of the following statement best describes how you have felt during the winter months? Base: (Total N=3,005)

COVID-19 continues to have a negative impact on the management of stress/mental health

- 47% of the Canadians say they were doing well managing feelings of stress, anxiety and depression prior to COVID. That is a 4% decrease from Poll 4.
- Consistent with Poll 4 findings, the proportion of Canadians in Poll 5 who say they are doing well managing their mental health following the outbreak dropped to just one-third (33%) with close to one-quarter (24%) reporting they are not doing well.
- Only 37% of the younger Canadians (18-34) felt that they were managing stress well before the pandemic. This fell further after the outbreak (26%) – the 35-54 group had a similar decline (42% to 29%, respectively).
- Those who are negatively impacted by winter months are not managing their feelings of stress, anxiety and depression well since the pandemic (29% vs. 17% of those not impacted by seasons).

MANAGED FEELINGS OF STRESS, ANXIETY AND DEPRESSION



Most likely to handle stress well (8-10) since COVID:

- Men (38% vs. 28% women)
- 55+ age group (42% vs 35-54 29%, 18-34 26%)
- No children (34% vs. children under 9 28%)
- Not worried about finances (35% vs. now worried 24%)



Impacts on Mental Health



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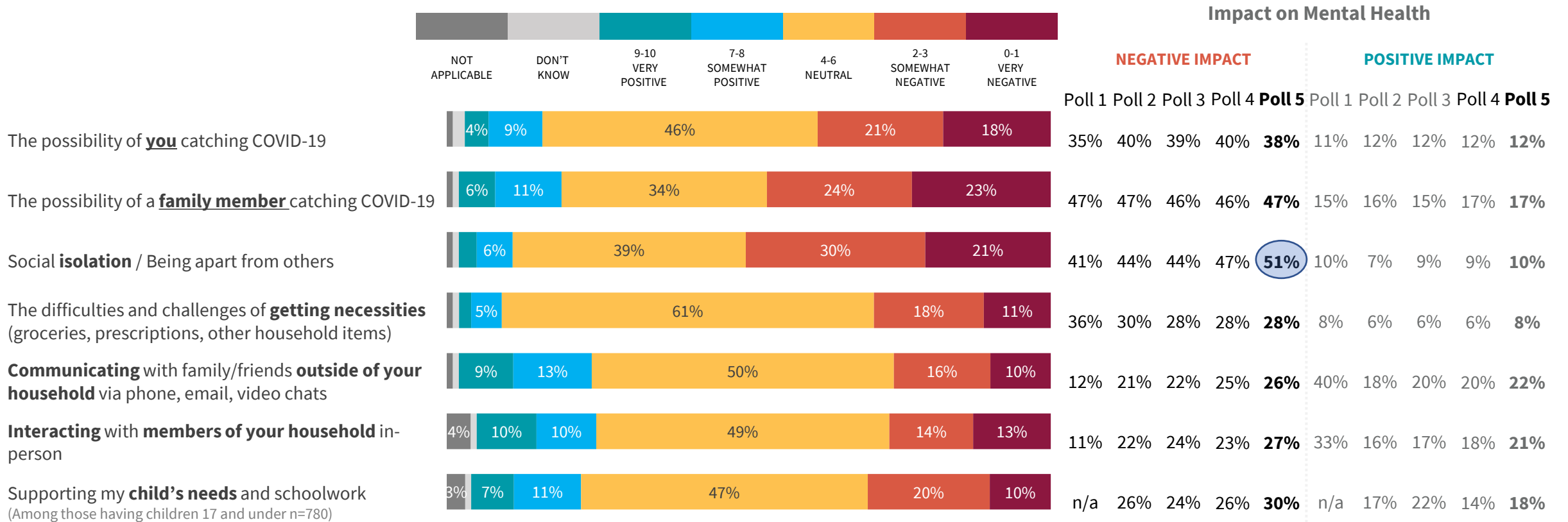
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Fear of the spread of COVID-19 continues to have a negative impact on mental health

- Two-fifths (38%) of Canadians say concerns about contracting COVID-19 is having a negative impact on their mental health while close to one-half (47%) remain concerned about family members contracting COVID-19. Results are on par with Poll 3 and 4 findings.
- **Social isolation** is now the leading stressor on mental health with one-half (51%) reporting a negative impact, an increase of 4% since Poll 4 and 10% since the first Poll. Those who live alone feel that social isolation has less of a negative impact (45%), although it is higher among those living with roommates (68%).
- However, social isolation is particularly hard on those who are more vulnerable to mental health conditions, with two-thirds (66%) saying it is having a negative impact on their mental health.
- In the early stages of the outbreak, Canadians reported that **communication with friends/family outside and inside the home** had a positive impact on mental health, but Poll 2 saw an increase in **the negative impact of these interactions**. In Poll 5, these interactions continue to have more of a negative impact with just over one-quarter saying communication with those outside the home (26%) and one-quarter saying that communication within the home is having a negative impact (27%, +4%) .
- Younger Canadians, ages 18-34, are feeling the negative impact of the pandemic on their mental health. They are more likely to be impacted by the following: social isolation (56% vs. 35-54: 51%; 55+: 47%); family member catching COVID (53% vs. 35-54: 47%; 55+: 43%); and buying necessities (33% vs. 35-54: 29%; 55+: 26%).
- Younger Canadians, ages 18-34, are more likely to identify **communicating** with others outside the home (28% vs. 35-54: 18%; 55+: 21%) and inside the home (24% vs. 35-54: 20%; 55+: 16%) as a **positive influence** on mental health despite the overall negative impact of communication already noted.
- Overall, **women** remain more likely to say the pandemic is having a negative impact including: social isolation(55%), a family member catching COVID (50%), catching COVID themselves (40%), and buying necessities (32%).

Social isolation remains a leading factor in poor mental health

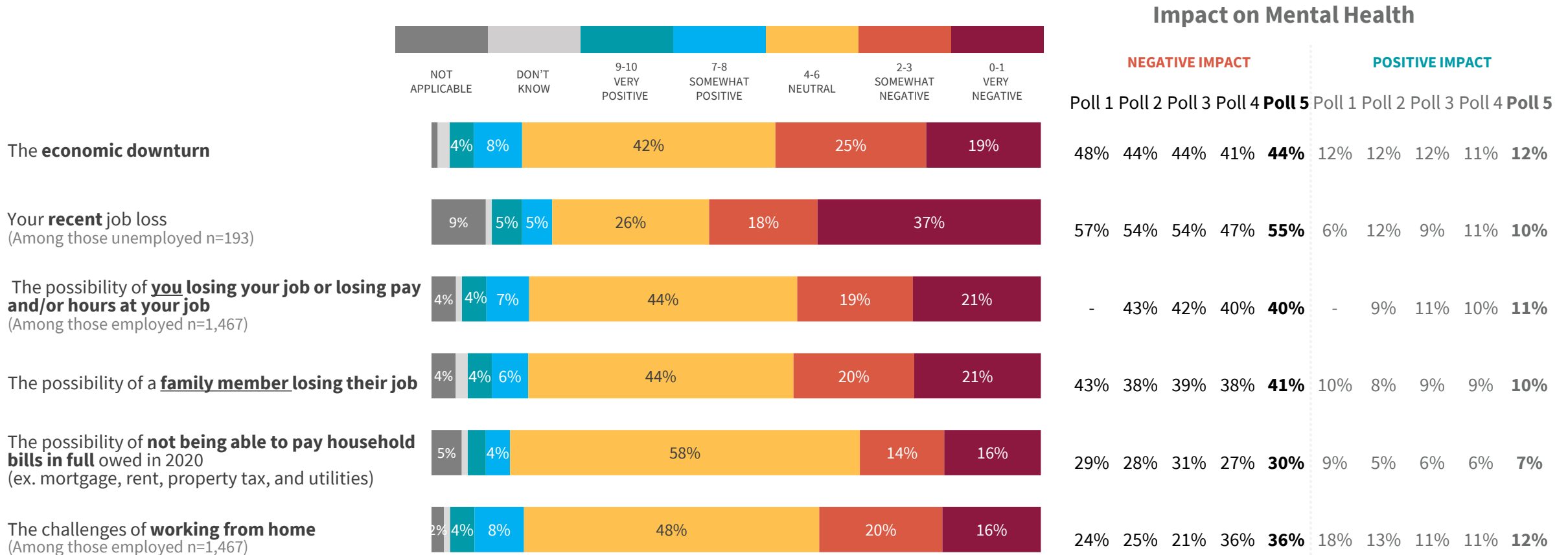


A3A. During the current Coronavirus (COVID-19) outbreak in Canada, please rate each of the following in terms of the impact they are currently having on your mental health, if any:
Base: (Total N=3,005)

The economy remains a stressor for Canadians and is disproportionately affecting younger Canadians

- In Poll 4, the negative impact of the economy had lessened for a few indicators (economic downturn, job loss, paying bills), but in Poll 5, the negative impact has returned to similar levels reported in the earlier polls.
- Two-fifths (44%) of Canadians continue to feel that the economic downturn has had a negative impact on their mental health, up slightly (+3%) since Poll 4 and similar to the earlier polls.
- More than half (55%) of unemployed Canadians say job loss is having a negative impact as the pandemic continues, an increase of 7% since Poll 4 and similar to the earlier polls.
- The negative impact on mental health of the possibility of individuals (40%) or their family (41%, +3%) losing their jobs remains and is consistent with previous polls.
- One-third (30%) agree that the possibility of not being able to pay bills is having a negative impact (+3% since Poll 4), in line with the findings from Poll 1 and 2.
- The negative impact on mental health as a result of **working from home** increased significantly in Poll 4 to over one-third (36%) and remains at this level in Poll 5.
- Younger Canadians, ages 18-34, are more likely to report that the economic downturn is having a negative impact on their mental health including: fear of a family member losing a job (49% vs. 35-54: 40%; 55+: 35%) and concern about paying bills (35% vs. 35-54: 32%; 55+: 23%).

The economic downturn continues to have a negative impact on mental health as pandemic continues

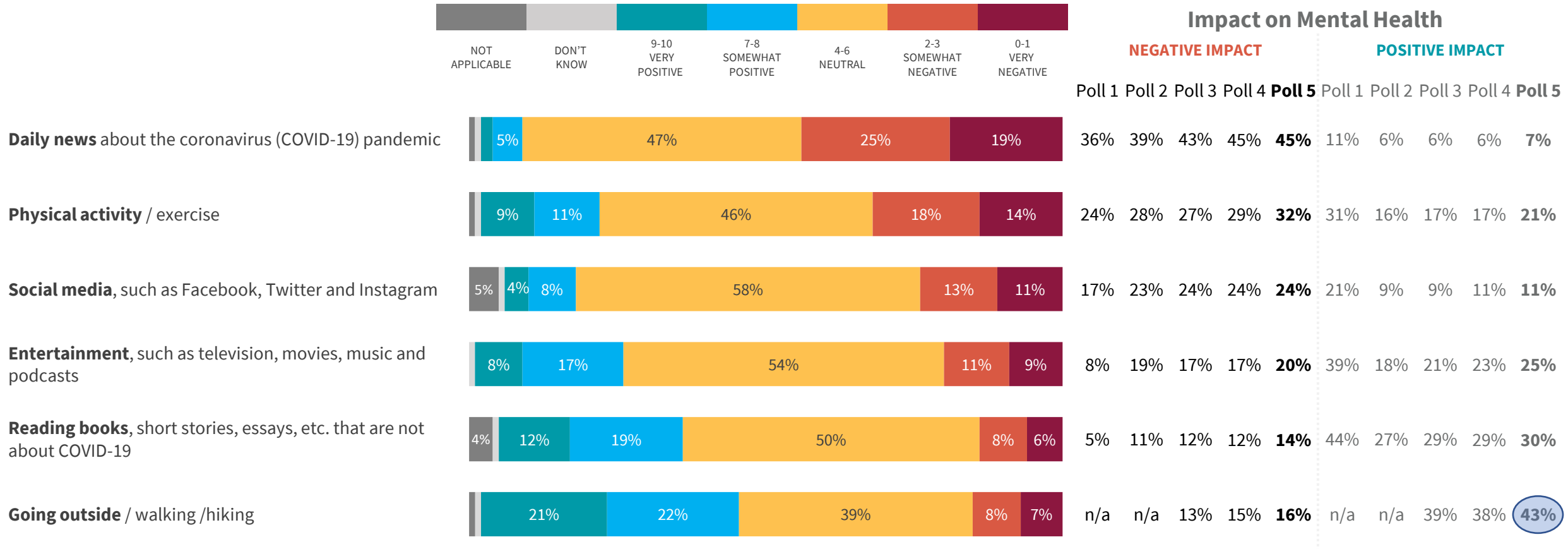


A3A. During the current Coronavirus (COVID-19) outbreak in Canada, please rate each of the following in terms of the impact they are currently having on your mental health, if any:
Base: (Total N=3,005)

Daily news about the pandemic continues to have a negative impact on mental health for many Canadians

- Two-fifths (45%) of Canadians report that daily news about COVID continues to have a negative impact on mental health, similar to Poll 4.
- Physical activity, considered a positive influence on mental health in Poll 1 and declining in Poll 2, remains a negative influence in Poll 5 (32%, +3) with only one-fifth (21%, +4) agreeing physical activity has a positive impact.
- Entertainment (25% say positive) and reading books (30%) remain a more positive than negative impact on mental health, similar to Poll 4, but are still not as positive an influence as in Poll 1.
- **Going outside even during winter continues to be the self-reported activity with the most positive (43%, +5) impact on mental health – only 15% say going out has a negative impact.**
- Younger Canadians, ages 18-34, are more likely to say a number of activities are having a positive impact on mental health during the pandemic compared with other age groups. This includes: entertainment (33% vs. 35-54: 23%; 55+: 22%); physical activity (23% vs. 35-54: 19%; 55+: 18%); and social media (14%; 35-54: 10%; 55+: 11%).
- The influence of social media on mental health polarizes younger Canadians, 18-34. While it is a positive influence on mental health for some, it can also have a significant negative impact (0-3 rating) compared with older Canadians: (28% vs. 35-54: 26%; 55+: 20%).

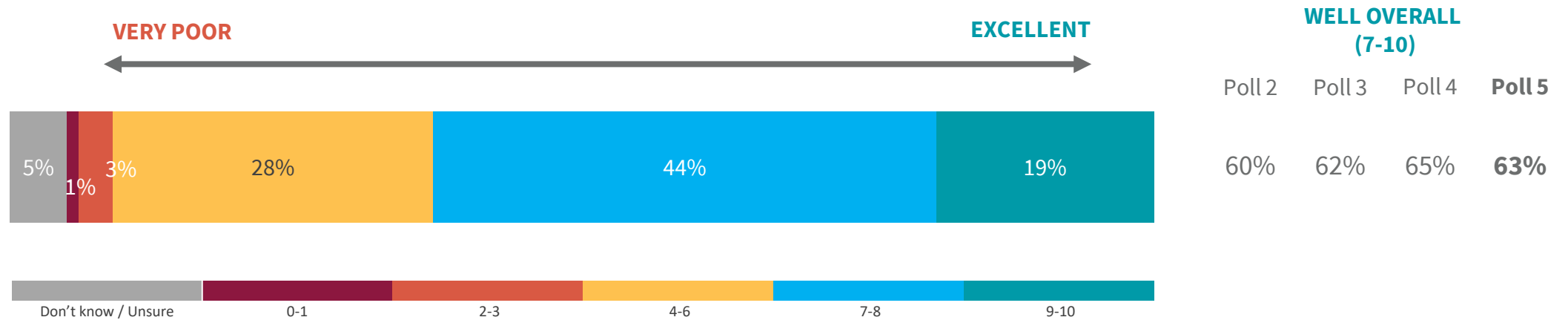
According to our polls, going outside continues to have the most positive impact on mental health



A3A. During the current Coronavirus (COVID-19) outbreak in Canada, please rate each of the following in terms of the impact they are currently having on your mental health, if any:
 Base: (Total N=3,005)

Canadians continue to feel confident about their ability to recover from the challenges presented by COVID-19

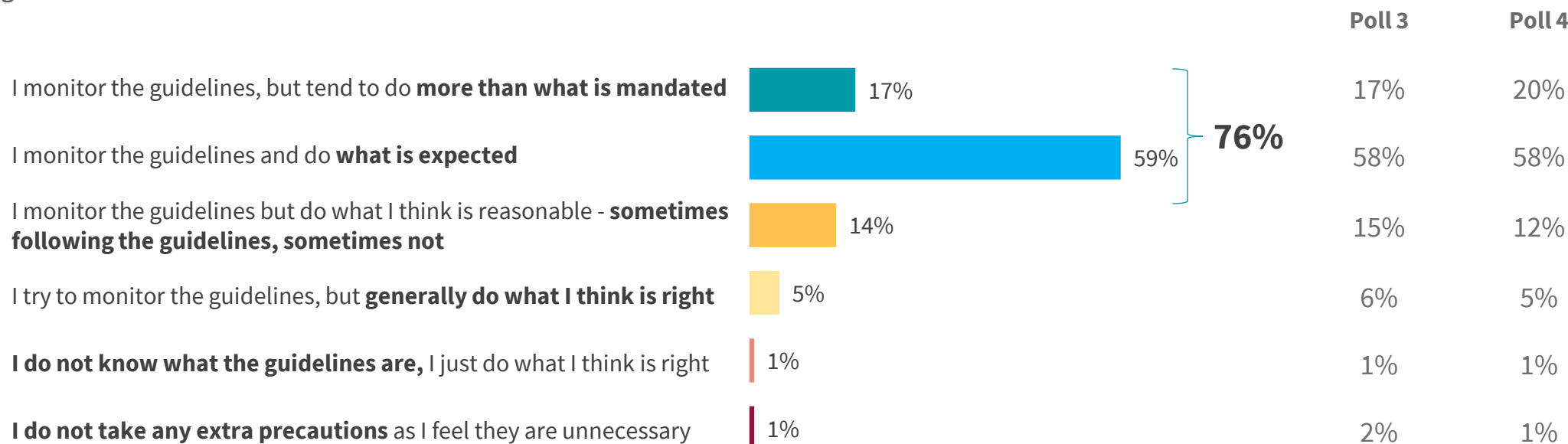
- Similar to Poll 4, three-fifths of Canadians continue to feel somewhat confident about their ability to bounce back from the challenges created by COVID (63% rate this 7 to 10, when 10 means excellent), with less than one-fifth feeling very confident (19% rating this a 9 or 10).
- Younger Canadians under age 55 are not as positive (7-10 rating) about their ability to bounce back from the challenges presented by COVID as older Canadians (18-34: 53%; 35-54: 60%; 55+: 73%).



A3B. Thinking about challenges and unexpected troubles that you have faced in your life... Overall, how would you rate your ability to manage and bounce back from these challenges and unexpected troubles? Base: (Total N=3,005)

Canadians are compliant with the government's COVID-19 guidelines

- While the majority of Canadians from across the country report they are following the guidelines, compliance is highest in the Atlantic region (83%) and Quebec (79%).
- Also more likely to follow guidelines: older Canadians 55+ (85% vs. 18 to 34: 64%; 35-54: 76%); and women (80% vs. 73% of men).
- Findings of Poll 4 show that those who do not monitor guidelines are more likely to rate their anticipated anxiety (29% vs. 18% of those who try to follow and 16% of those who do follow) and depression (25% vs. 15% of those who try to follow and 12% of those who do follow) as high.



A5. Which of the following best describes how you are complying with government COVID-19 guidelines and laws (ex. social distancing, social bubbles/circles, masks, quarantines, etc.) in your area? Base: (Total N=3,005)



Effect of COVID in the Workplace

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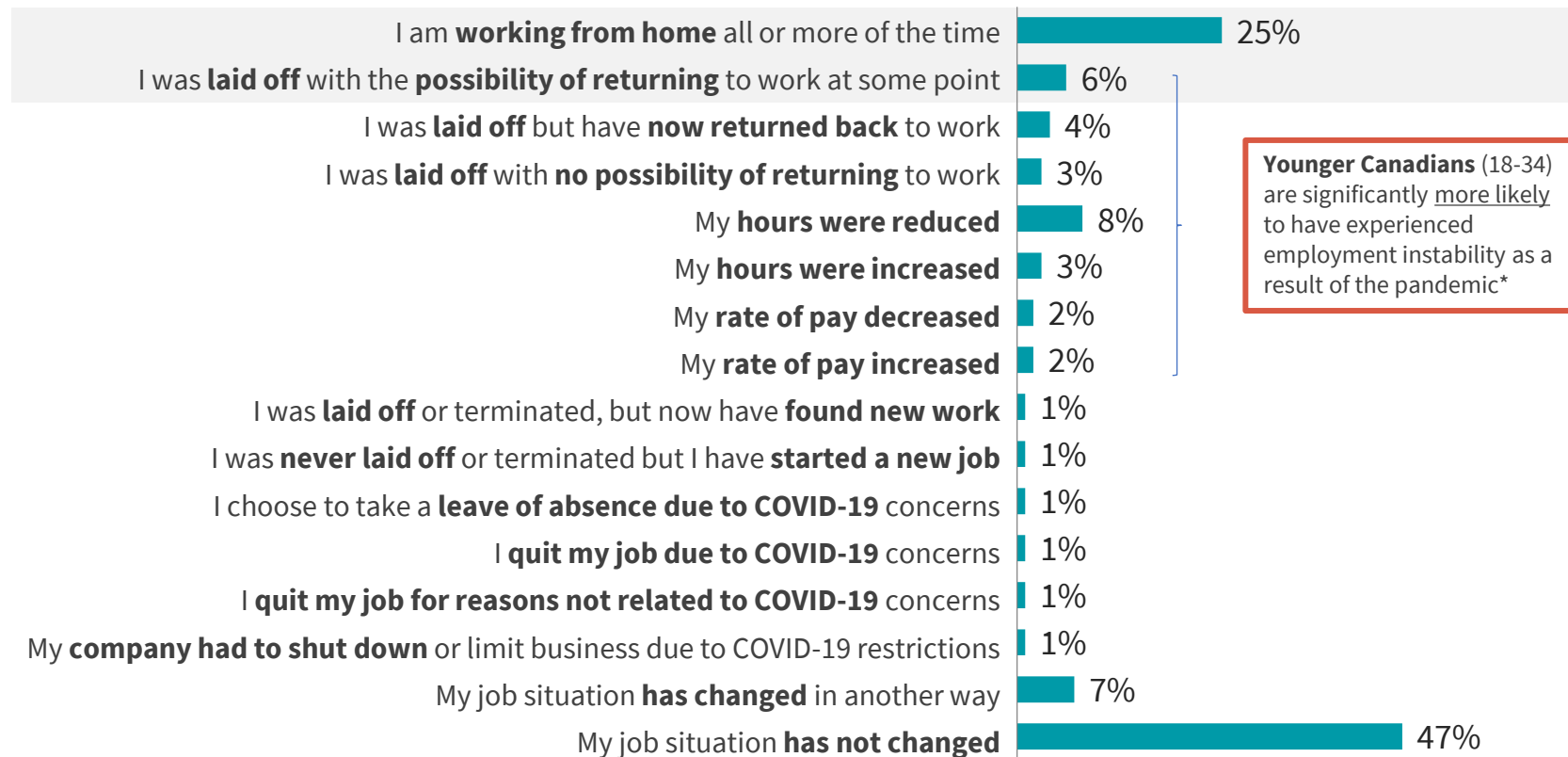
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Close to a year into the pandemic, half of Canadians still report no change in their job situation

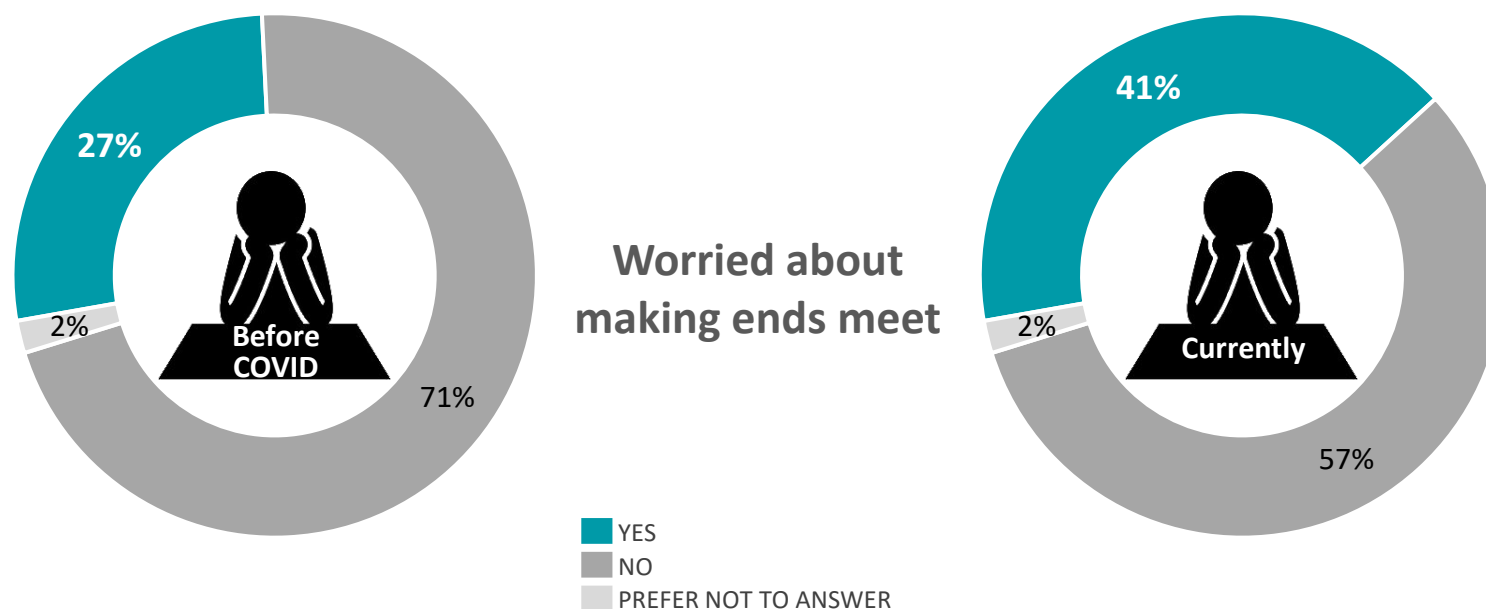
- Close to one-half (47%) of Canadians say their job situation has not changed and one-quarter (25%) report they now work from home.



SCR10. Has your employment situation been changed as a result of the COVID-19 pandemic? Base: (Total N=3,005)
 * Caution: Low base size

Since the pandemic, Canadians are more worried about finances

- Prior to the outbreak, only one-quarter (27%) of Canadians worried about making ends meet. Since the outbreak, the proportion has increased to two-fifths (41%).
- Younger Canadians (18-34) did not worry about finances more than other age groups prior to the outbreak, but since the pandemic they are significantly more likely to worry about making ends meet (48% vs. 55+: 29%) and are now on par with 35-54 year olds (48%) who continue to be worried about making ends meet (both before and after COVID).*



SCR15: Before the COVID-19 pandemic reached Canada, did you worry about making ends meet? Base: (Total N=3,005)

SCR16: Considering your current situation, are you now worried about making ends meet? Base: (Total N=3,005)

* The 35-54 group were significantly more likely to worry about making ends meet before the pandemic as well as after (33% and 48%, respectively)



Mental Health Supports

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Since COVID-19 the number of Canadians accessing mental health supports has decreased significantly

BEFORE COVID: one-third accessed support

NET YES 35%

Yes, **one-to-one in-person** with mental health professional (counsellor, psychologist, psychiatrist, etc.) 23%

Yes, one-to-one virtually **VIA ONLINE** (video chat) with mental health professional (counsellor, psychologist, psychiatrist, etc.) 3%

Yes, one-to-one virtually **VIA VERBAL PHONE CALLS** with mental health professional (counsellor, psychologist, psychiatrist, etc.) 3%

Yes, one-to-one virtually **VIA TEXTING/MESSAGING** with mental health professional (counsellor, psychologist, psychiatrist, etc.) 1%

Yes, my family doctor / GP 12%

Yes, group treatment/therapy 2%

Yes, trained peer support 1%

Yes, other mental health supports 3%

NET NO 61%

No - Needed mental health supports, but did not access any such supports 7%

No - Did not need mental health supports (and did not access any) 54%

Prefer not to answer 4%

SINCE COVID: less than a one-fifth accessed support

NET YES 19%

6%

6%

5%

1%

6%

1%

1%

2%

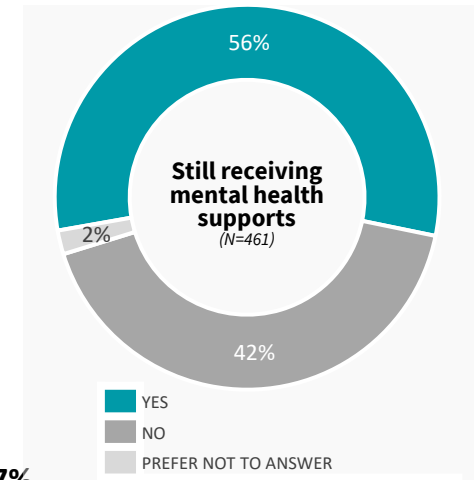
NET NO 77%

15%

62%

4%

A majority of those receiving mental health support before COVID still have support but two-fifths do not



Younger Canadians 18-34 are more likely to continue to access supports since COVID (30% vs. 35-54: 24%; 55+: 8%)

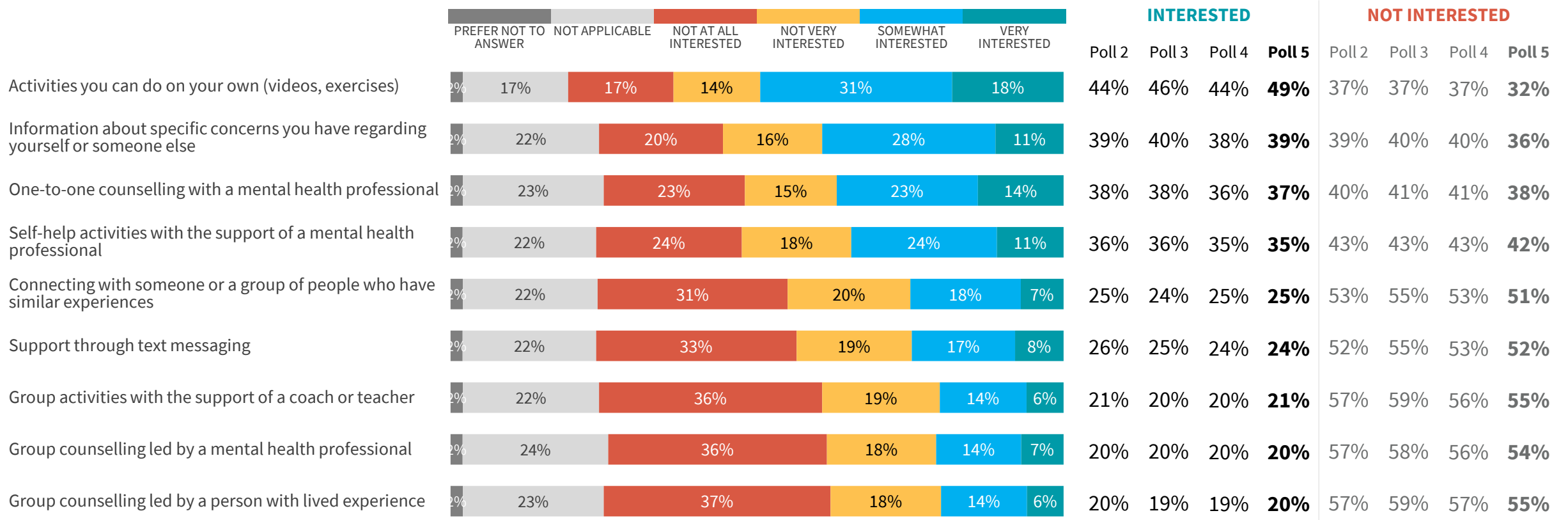
B11. BEFORE the outbreak of Coronavirus in Canada, have you ever had mental health support from any health care professionals? (Total N=3,005)

B13. SINCE the outbreak of the Coronavirus in Canada, have you had any support from any mental health professionals? (Total: N=3,005)

B14. Are you currently still receiving these mental health supports? (Total: N=605)

Canadians continue to be most interested in individual activities and mental health information

- Canadians continue to be most interested in activities they can do on their own (49%, +5 since Poll 4) and less interested in activities involving a group (only one-fifth are interested in group activities or counselling).

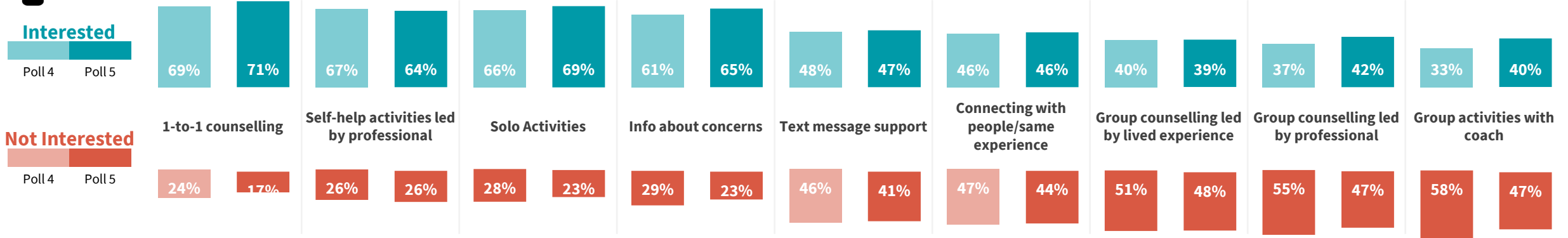


B5. How interested would you be in obtaining more information about each of the following mental health services either for yourself or to get information for someone else?
Base: (Total N=3,005)

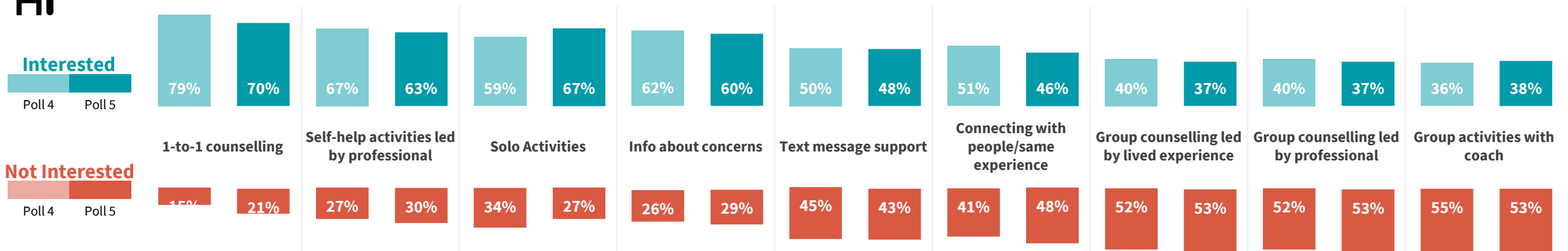
Canadians suffering from anxiety/depression want one-on-one professional support or activities that they can do on their own



High Anxiety since COVID (rated 9-10)



High Depression since COVID (rated 9-10)



B5. How interested would you be in obtaining more information about each of the following mental health services either for yourself or to get information for someone else?
 Base High Anxiety (n=331) High Depression (n=253)



Lesli Martin, Vice President, Pollara
Michael Cooper, Director, MHRC

Thanks to Dr. David Dozois, MHRC Board Member & National Spokesperson



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Exhibit 09



Review

COVID-19-Related Mental Health Effects in the Workplace: A Narrative Review

Gabriele Giorgi ¹, Luigi Isaia Lecca ² , Federico Alessio ³ , Georgia Libera Finstad ³,
Giorgia Bondanini ³ , Lucrezia Ginevra Lulli ⁴, Giulio Arcangeli ^{2,*} and Nicola Mucci ²

¹ Department of Human Sciences, European University of Rome, via degli Aldobrandeschi, 190, 00163 Rome, Italy; gabriele.giorgi@unier.it

² Department of Experimental and Clinical Medicine, University of Florence, Largo Brambilla, 3, 50134 Florence, Italy; luigiisaia.lecca@unifi.it (L.I.L.); nicola.mucci@unifi.it (N.M.)

³ Business @ Health Laboratory, European University of Rome, via degli Aldobrandeschi, 190, 00163 Rome, Italy; federico.alessio94@gmail.com (F.A.); g.liberafinstad@gmail.com (G.L.F.); giorgia.bondanini@gmail.com (G.B.)

⁴ School of Occupational Medicine, University of Florence, Largo Brambilla, 3, 50134 Florence, Italy; lucreziaginevra.lulli@unifi.it

* Correspondence: giulio.arcangeli@unifi.it

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Abstract: The Coronavirus Disease 2019 (COVID-19) pandemic has deeply altered social and working environments in several ways. Social distancing policies, mandatory lockdowns, isolation periods, and anxiety of getting sick, along with the suspension of productive activity, loss of income, and fear of the future, jointly influence the mental health of citizens and workers. Workplace aspects can play a crucial role on moderating or worsening mental health of people facing this pandemic scenario. The purpose of this literature review is to deepen the psychological aspects linked to workplace factors, following the epidemic rise of COVID-19, in order to address upcoming psychological critical issues in the workplaces. We performed a literature search using Google Scholar, PubMed, and Scopus, selecting papers focusing on workers' psychological problems that can be related to the workplace during the pandemic. Thirty-five articles were included. Mental issues related to the health emergency, such as anxiety, depression, post-traumatic stress disorder (PTSD), and sleep disorders are more likely to affect healthcare workers, especially those on the frontline, migrant workers, and workers in contact with the public. Job insecurity, long periods of isolation, and uncertainty of the future worsen the psychological condition, especially in younger people and in those with a higher educational background. Multiple organizational and work-related interventions can mitigate this scenario, such as the improvement of workplace infrastructures, the adoption of correct and shared anti-contagion measures, including regular personal protective equipment (PPE) supply, and the implementation of resilience training programs. This review sets the basis for a better understanding of the psychological conditions of workers during the pandemic, integrating individual and social perspectives, and providing insight into possible individual, social, and occupational approaches to this "psychological pandemic".

Keywords: SARS-CoV-2; COVID-19 pandemic; occupational health and safety; mental health; psychological disorders; workplace organization

1. Introduction

In late December 2019, a number of local health authorities of Wuhan, Hubei Province in China, reported clusters of patients with pneumonia of an unknown cause, which were epidemiologically

linked to a seafood market in Wuhan [1]. The first case was reported by the World Health Organization (WHO) on 31 December 2019. However, some experts believe that the earliest case of COVID-19 was detected as early as 17 November 2019 [2]. The pathogen, a novel coronavirus (SARS-CoV-2), was identified by local hospitals, as stated by the WHO on 9 January 2020. Subsequently, COVID-19 has spread rapidly throughout the world and has reached pandemic proportions affecting all continents. The WHO declared the outbreak a public health emergency of international concern on 30 January 2020, when all 34 regions of China showed cases of infection and the total number of infections exceeded that of severe acute respiratory syndrome (SARS) of 2003. On 11 March 2020, the outbreak was declared a global pandemic [3]. By 26 March 1.7 billion people worldwide were under some form of lockdown, which increased to 3.9 billion people by the first week of April, in other words, more than half of the world's population

From the beginning of the pandemic outbreak to date (23 July 2020), the following data emerge from the COVID-19 online dashboard of the Center for Systems Science and Engineering (CSSE) of the Johns Hopkins University (JHU): 15,239,805 actual and confirmed cases worldwide, 623,507 global deaths, 8,656,734 global recovered, and a total of 188 countries and territories with at least one COVID-19 case.

The 2019 coronavirus epidemic can undermine not only physical health but also individuals' psychological resources and resilience. In a highly interconnected and globalized world, the impacts of the pandemic on a social and economic level have become evident since the outbreak [4]. The global economy has slowed down sharply and global stock indices have plunged [4]. A lot of people committed suicide [5,6], and millions of people lost their jobs [7]. The press release of the International Labor Organization (ILO) of 18 March 2020, reported a drop of 24.7 million jobs as the worst-case scenario and 5.3 million as the best scenario. In the worst-case scenario, the world unemployment rate would rise from 4.936% to 5.644%, along with an increase in suicides of around 9570 per year. In the worst case scenario, unemployment would rise to 5.088% along with an increase of approximately 2135 suicides [8]. Moreover, the economic and productive consequences of the pandemic can affect job sectors differently. While some workers were substantially involved in countering the rise of COVID-19, others were forced to stop their work activity due to lockdown policies or effective job loss. Where possible, some companies have experienced a high increase of new organizational methods, such as smart working.

The pandemic could have severe effects on the mental health of the general population and of workers. Experts point out that both people who already suffered from psychiatric problems, and others who have never experienced symptoms, could be at risk [9].

In this pandemic scenario, some work-related and organizational factors could play a crucial role in exacerbating or moderating the effect on people's mental health. Therefore, in addition to the medical or economic implications, it is essential to analyze the psychological side of the pandemic and the factors related to mental health in the workplace. The various psychological problems that will arise once the acute coronavirus emergency phase has passed are not receiving the necessary attention. In this way, there is a risk of witnessing the presence of another "pandemic" around the world linked to the development of possible mental disorders. In a recent study, Gunnell and colleagues [10] provided accurate predictions on how the effects on mental health of the pandemic could, in turn, have an important psychological impact on the whole population. Therefore, research data for the development of evidence-based approaches are essential to reduce the negative consequences of the epidemic on psychological health [10].

1.1. Theoretical Background

It is well established that the 2019 coronavirus pandemic could have an important psychological impact [9]. Due to the deep changes determined by the SARS-CoV-2 in the workplaces, and in the way to perform work activities, it can be hypothesized that some occupational and organizational factors could play a relevant role in the mental health of workers and their ability to cope with a

new challenging working scenario. It has been widely demonstrated that the work environment, work organization, and work-related behaviors are factors capable of influencing mental health and psychological well-being of workers [11]. It is plausible that those factors could be influenced by the pandemic, contributing to exacerbate or moderate mental health outcomes. In fact, numerous stressors that employees face in a pandemic can affect different aspects of the workplace.

Being that COVID-19 is a communicable disease, some factors related to the risk of contagion in the workplace and the adoption of preventive procedures can cause several mental concerns. For example, the lack of personal protective equipment (PPE), the physical weight caused by wearing them, the fear of being infected and that this could harm family members, the conflict between safety procedures and the desire to provide support, longer working hours, pressing multitasking and the stigmatization of people working in high-risk environments can deeply affect mental well-being of workers. In response, workers may develop a range of behavioral (e.g., consequences on performance), physical (e.g., headache, gastric disturbances), and psychological (e.g., mood swings, lowered motivation, depressive thoughts, and isolation) reactions [12].

Although the pandemic constitutes a universal hazard for all professional categories, it is possible to trace high-risk populations (e.g., healthcare personnel). During acute health crises, the healthcare sector is subjected to an excessive strain that adversely affects working life [13]. In a pandemic, the number of patients increases significantly, placing additional stress on staff and undermining healthcare resources. Furthermore, doctors perceive a greater risk for themselves due to their exposure to patients—adding further stress [14,15]. Lai et al. [16] examined the mental health status of 1257 doctors and other healthcare professionals in China. 50.4% of study participants reported depression, 44.6% anxiety, 34.0% insomnia, and 71.5% distress. This stressful situation is further complicated by the shortage of personal protective equipment (PPE) that can arise during a pandemic [17]. The perceived risk of being infected is justified: a meta-analysis of the professional risk resulting from the 2009 swine flu pandemic (influenza A H1N1) showed that the chances of healthcare professionals contracting the virus were double that of the control groups [18]. This increased risk may be due to greater exposure to patients' respiratory secretions [19]. Another stressor is the increased risk of contagion for families of frontline healthcare workers [20]. Swine flu pandemic data from 2009 show that 20% of healthcare workers with symptoms reported symptoms in at least one of their family members [21]. One way for frontline healthcare providers to decrease the risk of infection for their families is through social distancing. Nevertheless, the role of social support in moderating the stress response is well demonstrated [22] and social distancing deprives the subject of a crucial defense against negative effects on psychological health precisely in the moment of greatest suffering [23].

Furthermore, one of the collateral phenomena of the COVID-19 pandemic is the progressive stigma that is spreading alarmingly, as evidenced by a large body of research [24,25]. The categories most exposed to discrimination and stigma are infected people and healthcare workers. The stigma towards COVID-19 patients increases the risk of psychopathology (e.g., depressive symptoms, stress-related disorders, and sleep disorders). Those who have been quarantined may also have problems returning to work. This delicate aspect highlights how work implications are extremely important for the well-being of the individual. Experiencing stigma and discrimination in the workplace could also lead to loss of productivity and income [26]. The results of a study on the effects of SARS epidemic showed how people who had healed experienced the stigma of family members, peers and co-workers [27]. Indeed, a further pivotal aspect concerns the inability to access employment and to resume one's work, with devastating consequences for the individual [28]. On the other hand, healthcare workers represent the professional category that suffers most from the consequences of stigma [29–31]. As a result, there is an increased risk of burnout, psychological distress, emotional exhaustion, anxiety and depressive symptoms [16,26,32]. Not being socially supported due to stigma could also affect workers' self-efficacy level [33].

The recent research by Ramaci et al. carried out on a sample of 260 healthcare workers from an Italian hospital, analyzed the impact of stigma on work outcomes [34]. The results of the study show

how stigma positively predicts burnout and fatigue and negatively predicts satisfaction, highlighting the importance of discriminatory behavior. In this perspective, the application of human resources (HR) practices to decrease the weight of discrimination becomes crucial [34].

Social exclusion is also negatively associated with mental health of migrants [35]. Internal migrant workers experience high levels of anxiety, psychotic, and post-traumatic disorders due to adverse socio-environmental conditions, such as loss of social status and discrimination [36]. In addition to the problems created by the pandemic, public health strategies, such as mandatory isolation, or quarantine in governments' temporary shelters, or the call for people to return to their original places, and social distancing, increase the feeling of loneliness, leading to mental problems that can contribute to suicide.

Based on what has been described, the current situation calls for the use of evidence-based best practices capable of moderating the negative effects of the pandemic on workers' mental health.

1.2. Aim of the Narrative Review

The management of work-related factors affecting mental health in a pandemic scenario seems crucial to support people engagement and consequently psychological well-being. This is of special interest to those professionals directly involved in the COVID-19 contrast actions, but also to the overall workforce dealing with new organizational approaches, different ways of working and other work related factors such as returning to work after a period of interruption, job loss, job insecurity, and fear of the future due to a possible business failure. For these reasons, there is a need to provide evidence on how organizational and work-related factors can contribute to maintain or affect psychological well-being.

The purpose of the following narrative review is to provide a general overview of the various psychological and social implications linked to work related factors, following the current SARS-CoV-2 pandemic. In particular, this narrative review aimed to describe and acknowledge how psychological aspects resulting from the outbreak of the SARS-CoV-2 epidemic could be linked to various workplace and organizational factors, in order to help researchers and stakeholders to entail targeted strategies aimed at managing psychological health outcomes related to the occupational scenario.

2. Materials and Methods

The literature search was performed during July 2020 using Google scholar, PubMed, and Scopus as databases. As inclusion criteria, we considered only articles in the English language, and only studies performed in humans. As publication type, we considered articles in scientific journals, letters to editor, comments, and book chapters. We restricted the literature search for articles published in the last year (December 2019–July 2020), while the historical background has been written without time restrictions. Following the population, intervention, comparison, outcomes (PICO) strategy for scientific research [37], we used a specific string of search. In order to include relevant literature about the theme, we combined several search terms belonging to each PICO section:

- Population: workers, employees;
- Intervention: workplace, organization, job, job task, occupation, occupational;
- Comparison: COVID-19, SARS-CoV-2, 2019-nCoV, coronavirus, epidemic, pandemic;
- Outcome: mental health, mental illness, psychological health, stigma, psychological disorders, stress, post-traumatic stress disorder, depression, suicide.

A total of 183 articles were collected and screened using a title-abstract analysis. All of the studies that did not consider occupational or organizational factors in the relationship between COVID-19 pandemic and mental health were excluded. Only articles that related to organizational and work-related factors on the psychological and mental health consequences of COVID-19 were then included and considered for a full-text content analysis. The judgement about the inclusion of each paper was performed separately by the investigators L.I.L. and F.A. In case of disagreement, the decision was made collegially with the contribution of a third investigator, G.G. Figure 1 shows a

flow-diagram of the literature search strategy and the review process following PRISMA 2009 flow diagram rules [38].

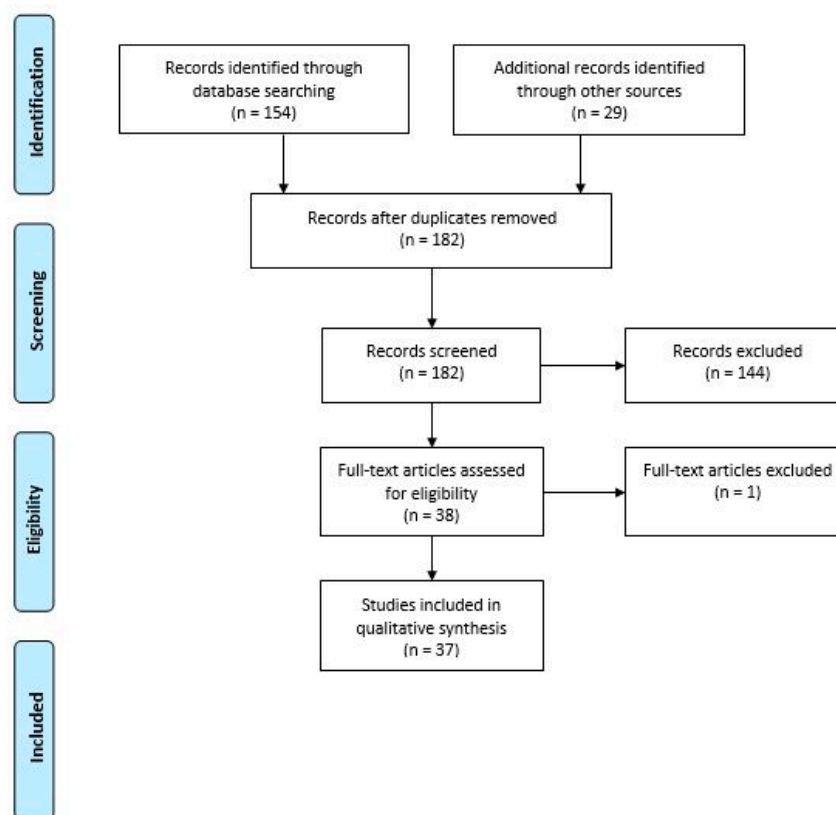


Figure 1. Flow diagram of the literature search strategy and review process, following PRISMA 2009 flow diagram rules.

After the exclusion of 145 non-relevant articles, we included 37 full-text articles to critically evaluate the workplace related factors that demonstrated an influence on psychological and mental health during the COVID-19 pandemic.

3. Results

Thirty-seven articles that met inclusion criteria in the title-abstract reading stage were identified and evaluated. The summary of the included articles is reported in Table 1.

The included studies found several occupational factors as being able to influence workers' mental health outcomes in the COVID-19 pandemic scenario.

Several studies considered job task as a risk factors for the onset of mental related issues. In particular, the majority of the studies considered healthcare workers and frontline workers as a work group at higher risk of developing several psychological outcomes such as depression, anxiety, stress, sleep disturbance and so on. Evidence demonstrates that COVID-19 pandemic caused sleep disturbances and suicidal thoughts in healthcare workers [39]. The SARS-CoV-2 epidemic brings high levels of psychological distress, insomnia, alcohol, and drug misuse, and symptoms of post-traumatic stress disorder (PTSD), depression, and higher perceived stress primarily on younger people, medical staff and all healthcare and emergency workers, which seems to be the most affected categories [40–42]. In a similar way, Horsch et al., (2020) clarified how SARS-CoV-2 epidemic will inevitably lead to depression, anxiety, and work-related problems for healthcare workers [43].

A relevant body of studies (number: 21) considered the impact of organizational factors on moderating or exacerbating the effect of COVID-19 on mental health. In particular, on the one hand, work related stress seems to exacerbate mental health issues, as well as poor social support and a

prolonged working time. On the other hand, the availability of secure procedure to manage the risk of contagion and the availability of personal protective equipment seems to moderate the risk of mental health concerns. Concerning suicide cases, the results of the qualitative analysis enlighten underlying reasons, such as fear of COVID-19 infection, financial crisis, loneliness, social boycott, pressure for quarantine, fear of positive COVID-19, and pre- and post- lockdown work-related stress [44]. Some common and social measures, such as quarantine and delays in returning to work, were also associated with mental health [45]. In addition, psychological help has been considered very useful although administered via social media [46]. Cognitive behavioral therapy (CBT), motivational interviewing (MI), and/or crisis intervention have been considered useful intervention strategy for the management of mental health outcomes in healthcare workers. Huang and Zhao (2020) observed higher levels of stress related to how often people think about the epidemic [40]. Thus, the return to work appeared as a relevant factor to stop ruminant thoughts on the pandemic.

Reducing working time, enhancing smart working, promoting secure protocols, trainings, and improving job/leadership support seems to be related to better performance and well-being. Above all, security and safety equipment seem to be highly and positive related to workers well-being and performance (6/42). The study of Sasaki et al. [47] showed how the amount of prevention measures was negatively associated with the psychological distress of the employees and positively associated with their performance, suggesting how rigorous prevention measures reduce psychological distress, protecting work outcomes.

Some studies considered the impact of COVID-19 pandemic on mental health outcomes in vulnerable working populations. The most vulnerable workers categories seems to be the front-line workers and health care workers, migrants, and young adult workers. In particular, results by Choudhari (2020) suggest that the professional community of internal migrant workers is prone to the development of psychological effects due to the disturbing double impact of the COVID-19 crisis and the related adverse professional scenario [48]. Similar results were obtained by the study of Chander et al. in a cohort of Indian migrant workers [49].

Table 1. Summary of included articles.

Title	Authors	Type of Study/Methods	Sample (If Available)	Study Setting and Main Results	Occupational Factor Considered	Outcomes
Nurses' Mental Health and Well-Being: COVID-19 Impacts [50].	Stelnicki AM, Carleton RN, Reichert C.	Narrative review/literature search	N.A.	This study examined the mental health of healthcare workers, such as nurses after the peak of the COVID-19 pandemic. Large-scale disasters have been accompanied by an increase in symptoms of depression, post-traumatic disorder, insomnia, and substance use, particularly in front-line workers.	Job task: health care workers	Negative psychological outcome
At the height of the storm: Healthcare staff's health conditions and job satisfaction and their associated predictors during the epidemic peak of COVID-19 [51]	Zhang SX, Liu J, Afshar Jahanshahi A, Nawaser K, Yousefi A, Li J, Sun S.	Cross sectional/survey	304	This study reports the levels of mental health, anxiety, depression, distress, and job satisfaction of doctors, nurses, and healthcare staff (Sample of 304 HCP) in Iran during the highest number of total active COVID-19 cases. Results indicate that a substantial portion of the sample reached the cutoff levels of disorders in anxiety (28.0%), depression (30.6%), and distress (20.1%).	Job task: health care workers	Negative psychological outcome
Workplace responses to COVID-19 associated with mental health and work performance of employees in Japan [47]	Sasaki N, Kuroda R, Tsuno K, Kawakami N.	Cross sectional/online survey	1448	This study investigated the links between workplace measures implemented in response to COVID-19 with mental health and work performance of employees (sample n = 1448) in Japan. The preventive measures were assessed on an original scale (based on the conceptual categories of recommendation for workplace measures). Workplace measures correlated positively with respondents' fear of and worry associated with COVID-19, negatively with psychological distress, and positively with work performance.	Job task: front-line workers; workplace outcome: job performance	Positive psychological Outcome
The mental health of doctors during the COVID-19 pandemic [52]	Galbraith N, Boyda D, McFeeters D, Hassan T.	Perspective piece/literature search	N.A.	The coronavirus disease 2019 (COVID-19) crisis places additional pressure on healthcare staff and on the healthcare system in general. This research underlines how such pressure brings a greater risk of psychological distress and high levels of work stress for doctors, nurses, and medical staff. Healthcare professionals place high value on provision of training and equipment during such pandemics, effective leadership, and managerial support for clinicians, and their families are also highly protective against negative psychological outcomes.	Job task: healthcare workers Organizational factors: Work related stress	Negative psychological outcome Positive psychological outcome
'Policing' a pandemic: Garda wellbeing and COVID-19 [53]	Rooney L, McNicholas F.	Perspective piece/literature search	N.A.	Studies investigating small-scale epidemics, such as Severe Acute Respiratory Syndrome (SARS), indicate that frontlines staff of an outbreak, when going to work every day, are exposed to an insuperable amount of stress and experience increased psychological morbidities as a result.	Job task: frontline staff Organizational factor: work commute	Negative psychological outcome

Table 1. Cont.

Title	Authors	Type of Study/Methods	Sample (If Available)	Study Setting and Main Results	Occupational Factor Considered	Outcomes
COVID 19 pandemic: Mental health challenges of internal migrant workers of India [48]	Choudhari R.	Narrative review/literature search	N.A.	One of the most vulnerable but neglected communities, the professional community of internal migrant workers, is prone to the development of psychological effects due to the disturbing double impact of the COVID-19 crisis and the related adverse professional scenario.	Workers population: migrant workers	Negative psychological outcome
Multidisciplinary research priorities for the COVID-19 pandemic: a call for action for mental health science [54]	Holmes EA, O'Connor RC, Perry VH, Tracey I, Wessely	Position paper	N.A.	This study concerns the psychological, social, and neuroscientific effects of COVID-19, and the establishment of immediate priorities and long-term strategies for mental health research. Mobilization will now allow us to apply the acquired learning to any future periods of major infection and lockdown, which will be particularly important for front-line workers and for vulnerable groups.	Job task: frontline workers. Workers population: vulnerable groups	Negative psychological outcome
Addressing the mental health concerns of migrant workers during the COVID-19 pandemic: An experiential account [49]	Chander R, Murugesan M, Ritish D, Damodharan D, Arunachalam V, Parthasarathy R, Raj A, Sharma MK, Manjunatha N, Bada Math S, Kumar CN.	Brief report	N.A.	Within India, a large proportion of people migrates (about 5000 migrant workers visited over 140 spots across the city of Bengaluru). The violent epidemic outbreak of SARS-CoV-2 has accentuated discrimination, work-rights exploitation, and job insecurity issues.	Vulnerable population: migrant workers	Negative psychological outcome
Is returning to work during the COVID-19 pandemic stressful? A study on immediate mental health status and psychoneuroimmunity prevention measures of Chinese workforce [55]	Tan W, Hao F, McIntyre RS, Jiang L, Jiang X, Zhang L, Zhao X, Zou Y, Hu Y, Luo X, Zhang Z, Lai A, Ho R, Tran B, HoC, Tam W.	Cross sectional/online survey	673	This study aims to quantify the immediate psychological effects and underlines psycho-neuroimmunity prevention measures of a workforce returning to work during the COVID-19 epidemic (sample: 673; mean age: 30.8; 74.4% male). Results indicate that about 3.8%, 3.7%, 1.5% and 2.3% of respondents reported moderate to severe anxiety, depression, stress, and clinical insomnia, respectively.	Organizational factors: return to work	Negative psychological outcome
Moral and mental health challenges faced by maternity staff during the COVID-19 pandemic [43]	Horsch A, Lalor J, Downe S.	Commentary	N.A.	The current COVID-19 pandemic places maternity staff at risk of engaging in clinical practice that may be in direct contravention with evidence. Research on previous epidemics and pandemics has shown the toll that patient care can have on the mental health of staff, such as elevated levels of psychological distress, insomnia, alcohol, and drug misuse, and symptoms of post-traumatic stress disorder (PTSD), depression, and higher perceived stress.	Job task: healthcare workers	Negative psychological outcome

Table 1. Cont.

Title	Authors	Type of Study/Methods	Sample (If Available)	Study Setting and Main Results	Occupational Factor Considered	Outcomes
Chinese mental health burden during the COVID-19 pandemic [40]	Huang Y, Zhao N.	Cross sectional/online survey	7236	The purpose of this study was to measure Chinese mental health during the COVID-19 pandemic. Data were collected from 7236 participants. Depressive symptoms, anxiety disorders, and poor sleep were assessed. Younger people and healthcare workers were at high risk for mental illness.	Job task: healthcare workers	Negative psychological outcome
Study on the public psychological states and its related factors during the outbreak of coronavirus disease 2019 (COVID-19) in some regions of China [42]	Wang Y, Di Y, Ye J, Wei W.	Cross sectional/online survey	600	The aim of this research is to show how the highly contagious power of SARS-CoV-2 will inevitably lead to depression, anxiety, and work problems for employees. A total of 600 questionnaire participants were psychologically stable. Non-anxiety and non-depression rates were 93.67% and 82.83%, respectively. There were anxiety in 6.33% and depression in 17.17%. Professionals, industrial service workers and other staff had a depression risk of 0.31 times and 0.38 times.	Job task: professionals, industrial service, other personnel	Negative psychological outcome
Aggregated COVID-19 suicide incidences in India: Fear of COVID-19 infection is the prominent causative factor [44]	Dsouza DD, Quadros S, Hyderabadwala ZJ, Mamun MA.	Cross sectional/search on local newspapers	69	This study presents 69 suicide cases due to the current pandemic. The reasons behind the suicide cases are fear of COVID-19 infection, financial crisis, loneliness, social boycott and pressure for quarantine, fear of positive COVID-19, pre- and post- lockdown, work related stress.	Organizational factors: work related stress	Negative psychological outcome
Prevalence of and Risk Factors Associated With Mental Health Symptoms Among the General Population in China During the Coronavirus Disease 2019 Pandemic [45]	Shi L, Lu ZA, Que JY, Huang XL, Liu L, Ran MS, Gong	Cross sectional/online survey	56,679	In China, through use of patient health questionnaires, the health of the population and symptoms of post-traumatic stress disorder, depression, anxiety, insomnia, and acute stress were assessed during the COVID-19 pandemic. Some measures, such as quarantine and delays in returning to work, were also associated with mental health.	Organizational factors: return to work	Mental health
COVID-19 pandemic: every day feels like a weekday to most [56]	Liu T, Meyerhoff J, Mohr DC, Ungar LH, Kording KP.	Cross sectional/online questionnaires	127	Psychological and behavioral changes during the early stages of the epidemic in the United States were examined in a longitudinal observational study, as there is a significant difference between mood and stress levels on weekdays and weekends and this implies a significant reduction of well-being of workers.	Organizational factors: working time	Stress levels and well-being

Table 1. Cont.

Title	Authors	Type of Study/Methods	Sample (If Available)	Study Setting and Main Results	Occupational Factor Considered	Outcomes
COVID-19: Presumed Infection Routes and Psychological Impact on Staff in Administrative and Logistics Departments in a Designated Hospital in Wuhan, China [57]	Luo LS, Jin YH, Cai L, Pan ZY, Zeng XT, Wang XH.	Case control/online questionnaires	18 cases, 18 controls	The purpose of this study is to explore the infection pathways and psychological impact of COVID-19 on staff (sample: 18) from administrative and logistic departments. A total of 88.89% thought have been infected by the working environment in hospitals, 77.78% of staff experienced psychological stress or emotional changes.	Job task: healthcare workers	Negative psychological outcome
COVID-19-Related Factors Associated with Sleep Disturbance and Suicidal Thoughts among the Taiwanese Public: A Facebook Survey [39]	Li DJ, Ko NY, Chen YL, Wang P, Chang YP, Yen CF, Lu WH.	Cross sectional/Online survey	1970	This study aims to analyze factors related to COVID-19 to understand how they are associated with sleep disturbances and suicidal thoughts among members of the public during the pandemic in Taiwan. Being a non-healthcare worker is a potential factor that could predict suicidal thoughts. Results also indicate that insufficient social support is a risk factor for depression, anxiety, and sleep problems among healthcare workers in the COVID-19 pandemic.	Job task: healthcare workers	Suicidal thoughts
Burnout syndrome in Romanian medical residents in time of the COVID-19 pandemic [58]	Dimitriu MCT, Pantea-Stoian A, Smaranda AC, Nica AA,	Narrative review/Literature search	N.A.	This article analyzed the relationship between burnout and activity of doctors in a non-COVID emergency hospital. The results indicate that young doctors (maximum 35 years) and doctors in non-COVID wards are more vulnerable. The existence of clear protocols, practical training, and protection measures reduces stress levels.	Job task: healthcare workers Organizational factors: practical training and protection measures	Negative psychological outcome
Mental health burden for the public affected by the COVID-19 outbreak in China: Who will be the high-risk group? [59]	Huang Y, Zhao N.	Cross sectional/online survey	7236	During the COVID-19 epidemic, it was noted that healthcare professionals were particularly at risk of experiencing psychological problems when they spent too much time thinking about the epidemic. In a sample of 7236 participants, the prevalence of anxiety symptoms and depressive symptoms was significantly higher in participants younger than 35 years. The prevalence of anxiety, depressive symptoms, and poor sleep quality was significantly higher in healthcare professionals. Authors proposed psychological aids.	Job task: healthcare workers	Negative psychological outcome
The relationship between COVID-19 knowledge levels and anxiety states of midwifery students during the outbreak: A cross-sectional web-based survey [60]	Sögüt S, Dolu İ, Cangöl E.	Cross sectional/online survey	972	The purpose of this study is to determine the relationship between the anxiety states in the workplace and knowledge levels of female midwifery students about COVID-19 during the outbreak. Results indicate that anxiety levels of the female students were high among those who visit the hospital during the pandemic and had parents or relatives who had chronic diseases. Female midwifery students had a high level of knowledge regarding COVID-19.	Job task: healthcare workers	Negative psychological outcome

Table 1. Cont.

Title	Authors	Type of Study/Methods	Sample (If Available)	Study Setting and Main Results	Occupational Factor Considered	Outcomes
Psychosocial burden of healthcare professionals in times of COVID-19—a survey conducted at the University Hospital Augsburg [61]	Zerbini G, Ebigbo A, Reicherts P, Kunz M, Messman H.	Cross sectional/questionnaires	111	The purpose of this study is to investigate the work and psychosocial burden of physicians and nurses based on their degree of contact with COVID-19 patients. Results indicate that nurses working in the COVID-19 wards reported higher levels of stress, exhaustion, and depressive mood, as well as lower levels of work-related fulfilment compared to their colleagues in the regular wards.	Job task: healthcare workers	Work-related stress and negative outcome
The psychological impact of COVID-19 pandemic on physicians in Saudi Arabia: a cross-sectional study [62]	Al Sulais E, Mosli M, AlAmeel T.	Cross sectional/online survey	529	The purpose of this study is to evaluate the impact that the SARS-CoV-2 pandemic has had on the workplace and on the psychological well-being of doctors. The study sample was 529 physician. Results indicate that the mostly common feelings reported by the participants during the pandemic were: worry (357, 67.5%), isolation (301, 56.9%), and fear (263, 49.7%).	Job task: healthcare workers	Negative psychological outcome
The Psychological Change Process of Frontline Nurses Caring for Patients with COVID-19 during Its Outbreak [63]	Zhang Y, Wei L, Li H, Pan Y, Wang J, Li Q, Wu Q, Wei H.	Cross sectional/interviews	23	The aim of this research is to identify the psychological change process of the registered nurses (n.23) who worked in the epicenter of the COVID-19 outbreak. The longitudinal study indicates the existence of three stages: early stage (ambivalence), middle stage (emotional exhaustion), and later stage (energy renewal). In addition, the recovery of patients or improvements of their conditions were also positive incentives for nurses.	Job task: healthcare workers	Negative psychological outcome
Generalized anxiety disorder, depressive symptoms and sleep quality during COVID-19 outbreak in China: a web-based cross-sectional survey [64]	Huang Y, Zhao N.	Cross sectional/online survey	7236	The purpose of this paper is to assess the mental health of Chinese workers during the epidemic and explore potential risk factors: healthcare workers and staff are at high risk for poor sleep quality.	Job task: healthcare workers	Negative psychological outcome
Psychological symptoms of ordinary Chinese citizens based on SCL-90 during the level I emergency response to COVID-19 [41]	Tian F, Li H, Tian S Yang J, Shao J, Tian C.	Cross sectional/online survey	1060	This study aims to analyze the psychological symptoms of citizens during the Level I emergency response across China. Analyzes revealed that healthcare workers are part of the high-risk group.	Job task: healthcare workers	Negative psychological outcome
An Integrative Total Worker Health Framework for Keeping Workers Safe and Healthy During the COVID-19 Pandemic [65]	Dennerlein JT, Burke L, Sabbath EL, Williams JAR, Peters SE, Wallace L, Karapanos M, Sorensen G.	Narrative review/literature search	N.A.	The purpose of this study is to promote an integrated Total Worker Health (TWH) approach, funded by the NIOSH, which includes human factors and ergonomic principles, supporting worker safety, health, and well-being during the COVID-19 pandemic. Results indicate that the approach can enhance human factors and ergonomics principles to improve well-being.	Organizational factors: human factor management and ergonomics principles	Wellbeing

Table 1. Cont.

Title	Authors	Type of Study/Methods	Sample (If Available)	Study Setting and Main Results	Occupational Factor Considered	Outcomes
Factors associated with post-traumatic stress disorder of nurses exposed to coronavirus disease 2019 in China [42]	Wang YX, Guo HT, Du XW, Song W, Lu C, Hao WN.	Cross sectional/questionnaires	202	This study aims to analyze the factors potentially involved in the post-traumatic stress disorder level of healthcare workers such as nurses, who are most exposed to COVID-19 in China. Nurses exposed to COVID-19 with job satisfaction and positive coping had low PCL-C scores. Effective and sustainable psychological counseling should be directed particularly to the female nurses in order to reduce the risk of psychological impairment	Job task: healthcare workers Organizational factors: work related stress factors	Negative psychological outcome
Perceived infection transmission routes, infection control practices, psychosocial changes, and management of COVID-19 infected healthcare workers in a tertiary acute care hospital in Wuhan: a cross-sectional survey [66]	Jin YH, Huang Q, Wang YY.	Cross sectional/electronic questionnaires	105	This study aims to explore the perceived pathways of infection, influencing factors, psychosocial changes, and management procedures of COVID-19 infected healthcare workers. Moreover, 88.3% of staff experienced psychological stress or emotional changes during their isolation period, only 11.7% had almost no emotional changes.	Job task: healthcare workers	Negative psychological outcome, quarantine related stress
The impact of having inadequate safety equipment on mental health [67]	Simms A, Fear NT, Greenberg N.	Cross sectional/online survey	3401	The purpose of this study is to evaluate the impact of inadequate safety equipment on the mental health of service staff, in order to better understand the impact on those working under the same conditions in response to COVID-19. Results indicate that psychological health problems are highly correlated with safety equipment perception.	Organizational factors: safety equipment perception	Negative psychological outcome
Academic Emergency Medicine Physicians' Anxiety Levels, Stressors and Potential Stress Mitigation Measures during the Acceleration Phase of the COVID-19 Pandemic [68]	Rodriguez RM, Medak AJ, Baumann BM, Lim S, Chinnock B, Frazier R, Cooper RJ.	Cross sectional/online survey	426	The purpose of this research is to evaluate anxiety and burnout levels, home life changes and stress relief measures of United States academic emergency medicine (EM) doctors (Sample n. 426) during the acceleration phase of the COVID-19 pandemic. Most physicians (90.8%) reported changing their behavior towards family and friends, especially by decreasing signs of affection (76.8%). The most cited measures to alleviate stress/anxiety were increasing personal protective equipment (PPE) availability, offering rapid COVID-19 testing at the physician discretion's, providing clearer communication about COVID-19 protocol changes, and assuring that physicians can take family and self-care leave.	Job task: healthcare workers. Organizational factors: PPE availability, COVID-19 management protocols	Negative psychological outcome

Table 1. Cont.

Title	Authors	Type of Study/Methods	Sample (If Available)	Study Setting and Main Results	Occupational Factor Considered	Outcomes
Mental Health Outcomes Among Frontline and Second-Line Health Care Workers During the Coronavirus Disease 2019 (COVID-19) Pandemic in Italy [69]	Rossi R, Socci V, Pacitti F, Di Lorenzo G, Di Marco A, Siracusano A, Rossi A.	Cross sectional/online questionnaires	681	This cross-sectional study analyzes mental health outcomes among healthcare workers in Italy. A total of 681 respondents (49.38%) endorsed post-traumatic stress symptoms; 341 (24.73%) symptoms of depression; 273 (19.80%) symptoms of anxiety; 114 (8.27%), insomnia; and 302 (21.90%) high perceived stress.	Job task: healthcare workers	Negative psychological outcome
COVID-19 Epidemic Peer Support and Crisis Intervention Via Social Media [46]	Cheng P, Xia G, Pang P, Wu B, Jiang W,	Descriptive study	N.A.	This article describes a support project developed and implemented by a group of mental health professionals (45 members of multidisciplinary healthcare professionals), organized to offer psychological support from overseas to professionals and healthcare workers at the forefront of the COVID-19 outbreak in Wuhan, China. Preliminary anecdotal review suggests that many of those served found the intervention helpful.	Organizational factors: work related stress factors (job support)	Mental wellbeing
Unravelling potential severe psychiatric repercussions on healthcare professionals during the COVID-19 crisis [70]	Anmella G, Fico G, Roca A, Gómez-Ramiro M, Vázquez M, Murru A, Pacchiarotti I, Verdolini N, Vieta E.	Case study/medical records review	1	The authors of this study report the case of a worker, a general practitioner, without a relevant somatic or psychiatric history who had a "brief reactive psychosis" under stressful circumstances derived from COVID-19.	Job task: healthcare workers	Insurgence of a brief reactive psychosis due to Covid-19 exposition
Factors Contributing to Healthcare Professional Burnout During the COVID-19 Pandemic: A Rapid Turnaround Global Survey [71]	Morgantini LA, Naha U, Wang H, Francavilla S, Acar O, Flores JM, Crivellaro S, Moreira D, Abern M, Eklund M, Vigneswaran H, Weine SM.	Cross sectional/online survey	2707	The aim of this research is to understand the risk for burnout in healthcare staff. This is critical to supporting HCPs and maintaining the quality of healthcare during the pandemic. Sample of 2707 HCPs from 60 countries. Fifty-one percent of HCPs reported burnout. Burnout was associated with work impacting household activities, feeling pushed beyond training, exposure to COVID-19 patients, making life-saving decisions. Adequate personal protective equipment (PPE) was protective against burnout.	Job task: healthcare workers Organizational factors: work-family conflict, risk of exposure to COVID-19, PPE availability	Negative psychological outcome and burnout syndrome
Geographical distance to the epicenter of Covid-19 predicts the burnout of the working population: Ripple effect or typhoon eye effect? [72]	Zhang SX, Huang H, Wei F.	Cross sectional/online survey	308	This study underlines how the geographical distance of adults working at the Wuhan epidemic center predicts their burnout-emotional, physical, and mental exhaustion due to excessive and prolonged stress. Preliminary results of a survey of 308 working adults in 53 cities showed working adults' distance to the epicenter of Wuhan had an inverted U-shaped relationship with their burnout.	Organizational factors: working distance	Psychological outcomes

Table 1. *Cont.*

Title	Authors	Type of Study/Methods	Sample (If Available)	Study Setting and Main Results	Occupational Factor Considered	Outcomes
COVID-19 Impact Among Spine Surgeons in Latin America [73]	Guiroy A, Gagliardi M, Coombes N, et al.	Cross sectional/online questionnaires	204	This study investigated how COVID-19 pandemic impacts work performance and mental health of surgeons in Latin America. Twenty-two percent ($n = 45$) of the surgeons referred a mental status compatible with a depression diagnosis, especially for younger surgeons.	Job task: healthcare workers	Psychological outcomes
The distress of Iranian adults during the Covid-19 pandemic—More distressed than the Chinese and with different predictors [74]	Jahanshahi AA, Dinani MM, Madavani AN, Li J, Zhang SX.	Cross sectional/online survey	1058	This study investigated factors associated with mental distress in a sample of 1058 participants. Results showed that Iranian adults who worked from home, at the office, or had not worked during and before Covid-19, all reported lower distress than those who suspended working. In comparison, in China, only individuals who went to workplace reported significantly lower distress than those who suspended working.	Organizational factors: work modality and job task	Psychological outcomes

N.A.= Not available.

4. Discussion

The present narrative review focuses on the workplace related factors able to influence mental and psychological issue in the COVID-19 pandemic scenario. Several occupational factors were found as relevant to exacerbate or moderate the impact of COVID-19 on mental health of workers. What emerged from this review is that intrinsic high risk professional, organizational factors such as work related stress and lack of job support, and higher risk populations such as migrant workers and healthcare workers on the frontline are more likely to develop mental issue in the pandemic scenario.

The present narrative review focused on the workplace related factors capable of influencing to influence mental and psychological issues in the COVID-19 pandemic scenario. Several occupational factors were found as relevant to exacerbate or moderate the impact of COVID-19 on mental health of workers. What emerged from this review is the importance of high-risk professional and organizational factors, such as work-related stress and lack of job support, and the presence of populations at greater risk for mental health problems such as migrant workers. First of all, some helping professions, as in the case of health care professionals, expose workers to develop mental concerns due to their intrinsic higher risk. Most of the analyzed papers focused on the job task of healthcare workers. Moreover, it is noteworthy that some organizational factors can decrease the onset of mental issues, acting as moderators. The most vulnerable categories of workers seems to be front-line workers and health care workers, migrants, and young adult workers. The reduction of working time, the enhancement of smart working, the promotion of safe protocols, and the training and improvement of job/leadership support seems to be related to better performance and well-being. Above all, safety security and protection equipment seems to be highly and positive related to workers well-being and performance (6/42).

4.1. Workplace Related Factors and Mental Health in COVID-19 Pandemic among Healthcare Workers

Studies of other epidemics (SARS, MERS, Ebola) have shown that not only the general public suffers from emotional distress, but also many health professionals and law enforcement agents have faced symptoms of PTSD, depression, anxiety, exhaustion, and burnout at the beginning, during and after the outbreak [75]. Healthcare workers in the case of COVID-19 are more at risk for negative psychological consequences being equally susceptible to transmission due to inadequate individual protection devices (PPE), exhaustion, frustration, burnout, desperation, isolation, discrimination, negative emotion of patients, and distance of families [32]. World public health concerns many factors including the role and responsibility of healthcare professionals, the impact of infections, the impact of economic activities on travel and trade restrictions and the fair care of public welfare and individual rights during pandemics.

To decrease the extent of the psychological consequences, some actions can be taken: avoid intense exposure to COVID-19 media coverage (a phenomenon widely spread on an international scale) and maintain a compassionate and positive lifestyle by providing support to others. To deal with the side effects of the pandemic, resilience training programs should be implemented for healthcare professionals, law enforcement and the general public: (a) balance between family life and work; (b) clear and rapid information on the disease and its consequences on psychological well-being; (c) education and preparation of societies for pandemics and epidemics in the future; and (d) validation and evaluation of the contribution of frontline healthcare personnel [76].

Results from previous research that analyzed the psychological outcomes of epidemics, such as the 2003 SARS epidemic, show that up to 10% of healthcare professionals had SARS-related symptoms of PTSD even three years later [77]. To compare the magnitude, the 2003 SARS epidemic caused 774 victims from November 2002 to July 2003 with 8098 afflicted worldwide [78]. The COVID-19 pandemic caused around 83,947 deaths and infected 1,384,930 individuals in the United States alone from February 2020 to 15 May, 2020 [79]. This comparison highlights the profound impact that the COVID-19 pandemic could have on the psychological health of the entire healthcare sector. In details, eight specific sources of healthcare personnel anxiety related to the COVID-19 epidemic were argued, including (1) availability of appropriate personal protective equipment; (2) exposure to COVID-19

at work and bringing the infection home to family; (3) lack of access to testing if physicians develop COVID-19 symptoms and associated fear of propagating the infection at work; (4) uncertainty that physicians' organization will take care of physicians personal needs if they become infected; (5) access to childcare during increased work hours and school closures; (6) lack of support for other personal and family needs as work demands increase; (7) being able to provide competent medical care if deployed to a new area; and (8) lack of access to up-to-date information and communication [80]. These sources of stress and anxiety do not fall within usual workplace scenario, leading to both burnout, and PTSD. In this way, the healthcare system and patient safety could be adversely affected by the worsening of systemic stressors [81].

4.2. Vulnerable Workers

This review highlighted the importance to properly address the risk in some vulnerable working populations such as migrant workers and frontline workers at higher risk of contagion. The professional community of internal migrant workers is vulnerable and prone to the onset of psychological effects due to a double impact: the COVID-19 crisis and the adverse employment environment [48]. Several factors interact with each other and predispose migrant workers to psychological distress and peri-traumatic symptoms. Possible stressors include susceptibility to new viral infections and the possibility of acting as vectors, pre-existing physical problems, such as professional pneumoconiosis, tuberculosis, HIV infections, pre-existing psychological morbidity, psychosocial factors, such as the absence of family support during the crisis, difficulty following personal safety regulations, isolation, and inability to receive psychiatric support promptly. This professional group appears to be further vulnerable to psychological distress due to factors such as financial constraints related to job loss and the absence or suspension of workplace safety and the basic laws related to occupational risks [48]. A recent study on SARS-CoV-2 compared, in a sample of 2299 respondents (mostly from the Chinese province of Fujian), the levels of fear, anxiety, and depression of social and health workers with those of administrative and managerial workers [82]. The results showed a significant imbalance towards the health figures who are most affected on a psychological level. In fact, the staff who worked in the high-risk wards (direct and prolonged contact with patients with SARS-CoV-2) showed a level of fear ($p = 0.024$), anxiety ($p = 0.005$) and depression ($p = 0.007$) significantly greater than non-clinical personnel and obviously greater anxiety ($p = 0.026$) than low-risk medical personnel. Despite this, stress levels should not be underestimated in any job category.

4.3. Organizational Factors and Target for Intervention

A socioscopic survey (with a valid sample of 673 subjects) administered to workers returning to their duties after the protracted lockdown, showed that 10.8% of respondents are facing a post-traumatic stress disorder, while they reported a low prevalence of anxiety (3.8%), depression (3.7%), stress (1.5%) and insomnia (2.3%) [55]. The World Health Organization (WHO) reiterates the need for those suffering from a mental disorder to have access to work, defining Psychosocial Rehabilitation as "a process that must facilitate individuals who have a damage or a disability due to a mental disorder, to develop all the opportunities to achieve the optimal level of independent functioning in the community". According to the WHO, "psychosocial rehabilitation implies both an improvement of individual skills and the introduction of environmental changes, in order to create the conditions for the best possible quality of life". However, the simple return to work represents only a first short step while a pivotal role will be played by the organization and the company. The survey by Tan and colleagues [59] showed that 95% of the respondent sample was less stressed and troubled if returning to a ventilated, sanitized, and prevention-conscious workplace. According to the results of Tan and colleagues, the factors associated with the severity of psychiatric symptoms in the workforce are marital status, the presence of physical symptoms, poor physical health, and the visualization of the return to work as a health hazard ($p < 0.05$). Consequently, a company that pays attention to the health of its operators will be able to experience a more fluid and simple return [59].

Most of the relevant scientific literature considered in our review has brought greater attention to the negative psychological and medical implications of the current pandemic [52,53,59]. In a smaller number of studies, possible solutions and management strategies applicable in the workplace were also considered. Furthermore, it seems that workplace research has exceeded in analyzing medical and nursing staff rather than companies and organizations broadly. However, the qualitative analysis of this review highlighted some useful exploitable strategies and methodologies in this pandemic. First of all, workplace emergency measures and safety equipment in response to COVID-19 have a positive relation with mental health and work performance of employees [47,67,71]. In addition, Dennerlein and colleagues (2020) highlighted how the Total Worker Health (TWH) approach, which includes human and psychological factors and ergonomic principles, supports workers' safety, health, and psychological well-being during the COVID-19 pandemic [65].

To decrease the extent of the psychological consequences some actions can be taken: avoid intense exposure to COVID-19 media coverage (a phenomenon widely spread on an international scale) and maintain a compassionate and positive lifestyle by providing support to others. To deal with the side effects of the pandemic, resilience training programs should be implemented for healthcare professionals, law enforcement and the general public: (a) balance between family life and work; (b) clear and rapid information on the disease and its consequences on psychological well-being; (c) education and preparation of societies for pandemics and epidemics in the future; and (d) validation and evaluation of the contribution of frontline healthcare personnel [76].

This review has several limitations: studies sometimes do not fully specify the prevention and organization measures adopted in the workplace during the pandemic, so that it is hard to analyze the precise correlation between organizational measures and level of psychological problems. The studies analyzed come from countries with different levels of wealth, healthcare assistance and a different culture, so that the response to stress and crisis can be very different. Moreover, questionnaires and survey used to test the selected population can be very different from each other, even when investigating the same aspects. The selection of the population of each study considered may hide some bias as well as not being fully representative of the whole working population (for example: voluntary questionnaires administered online). Finally, psychological issues experienced by workers during the first state of emergency are subjected to change over time so that some future considerations about workplace organization in the future are difficult to establish.

Despite such limitations, this study has several points of strength. It attempts to connect work-related measures to the mental states of workers and to give some evidence on how organizational and work-related factors can contribute to maintenance or affect psychological well-being. Living and working in the era of COVID-19 is a challenge and supporting stakeholders in organizing the work environment and the safety protocols is a first step to get back to normality. The study identifies and tries to make a risk classification among workers, giving priorities in the interventions to come. Finally, it states out some correlation between work, social environment, and severe psychological diseases, pointing out relevant issues to attend in the field of Public Health. Further researches are needed to clearly understand all of these aspects.

5. Conclusions

Organizational and employment aspects have a considerable impact on psychological health, especially in the context of a global pandemic. The workplace therefore represents an important target towards which efforts should be directed to manage mental health issues related to the COVID-19 pandemic. Mental issues related to the health emergency, such as anxiety, depression, PTSD, suicidal ideas, sleep disorders, and drugs and alcohol addiction are more likely to affect healthcare workers, especially those on the frontline, migrant workers and workers in contact with the public, like the law enforcement. These issues are variously related to the high level of job strain, the fear of being infected and being a vector of the disease towards the family, the discrimination and stigma that may arise. Moreover, job insecurity, adverse employment environment, long periods of quarantine and

isolation, work rights exploitations, and uncertainty of the future worsen the psychological condition, especially in younger people and in those with a higher educational background.

For these reasons, the public health response must address the issue of this so-called psychological pandemic, including support for psychological health, especially for higher risk populations and for those with pre-existing psychological disorders who are particularly vulnerable to pandemic stress.

Possible actions to mitigate the impact of the pandemic on the mental health of workers are the improvement of the infrastructures of workplace, the adoption of correct and shared anti-contagion measures, including regular PPE supply, the implementation of resilience training programs especially for workers with leadership roles. Monitoring mental health in different populations (onset and persistence of symptoms), understanding the different needs, and planning specific actions are also fundamental public health interventions.

In this scenario, promoting the development of reliable preventive approaches is essential. For example, the use of coaching psychology can be considered a valid strategy to lower burnout levels and create a safe environment in which individuals can feel free to discuss their professional development and understand how to improve their resources to overcome obstacles, such as the new challenges caused by the COVID-19 pandemic.

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Exhibit 10

Both Remote and On-Site Workers are Grappling with Serious Mental Health Consequences of COVID-19

Rabah Kamal (<https://www.kff.org/person/rabah-kamal/>) ,

Nirmita Panchal (<https://www.kff.org/person/nirmita-panchal/>) , and

Rachel Garfield (<https://www.kff.org/person/rachel-garfield/>) (<https://twitter.com/RachelLGarfield>)

Dec 22, 2020

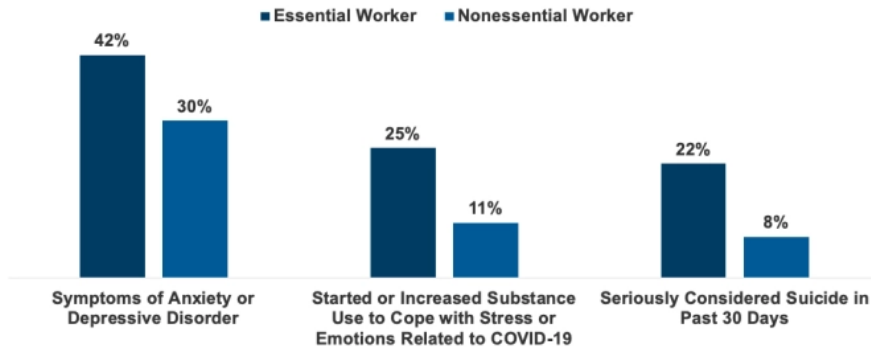


While millions have recently lost their jobs or income and face new stresses, many who have been working during the pandemic also face new pressures. Almost overnight, the COVID-19 pandemic presented many workers with a whole host of concurrent risk factors (<https://nihcm.org/publications/covid-19s-impact-on-mental-health-and-workplace-well-being/>) for poor mental health and substance use problems, including generally high levels of uncertainty and fear, an overload of news and information, changes to workplace processes and demands, changes in household dynamics, financial and job security concerns, potential worsening of existing health conditions, and difficulties linked to caregiving. People working during the pandemic face unique threats to mental health and well being depending on which sector they work in and their potential exposure to the coronavirus. Generally speaking, surveys conducted during the pandemic have found that many workers have been experiencing (<https://www.eaglehillconsulting.com/insights/employee-burnout-on-the-rise/>) burnout (<https://www.flexjobs.com/blog/post/flexjobs-mha-mental-health-workplace-pandemic/>) (which results from chronic workplace stress and can impact an individual's motivation and productivity) and adverse mental health outcomes.

As the pandemic persists, frontline and other essential workers face particular risk of burnout and poor mental health outcomes. Roughly a third (<https://www.kff.org/policy-watch/taking-stock-of-essential-workers/>) of U.S. adults report being essential workers during the pandemic, meaning they are still required to work outside their home during the pandemic, and they are more likely to be Black and low-income than non-essential workers who can work from home. Surveys conducted in June 2020 found that although a substantial share of all adult workers reported symptoms of anxiety or depressive disorder, essential workers reported these adverse effects more often than non-essential workers (42% vs 30%, as shown in Figure 1). Essential workers, compared to non-essential workers, also reported higher rates of substance use (25% vs 11%) and suicidal thoughts (22% vs 8%).

Figure 1

Among Essential and Nonessential Workers, Share of Adults Reporting Mental Distress and Substance Use, June 2020



NOTES: Data is among adults ages 18 and above. Essential worker status was self-reported.
 SOURCE: Czeisler ME, Lane RI, Petrosky E, et al. Mental Health, Substance Use, and Suicidal Ideation During the COVID-19 Pandemic — United States, June 24–30, 2020. MMWR Morb Mortal Wkly Rep 2020;69:1049–1057. DOI: <http://dx.doi.org/10.15585/mmwr.mm6932a1>

KFF

Figure 1: Among Essential and Nonessential Workers, Share of Adults Reporting Mental Distress and Substance Use, June 2020

Research has found that during pandemics, frontline health care providers are at **higher risk of adverse psychological outcomes** (<https://pubmed.ncbi.nlm.nih.gov/33019857>), such as **post-traumatic stress, insomnia, and suicidal ideation**. During the COVID-19 pandemic, resource and staffing shortages (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7173087/>) and disrupted work-life balance have contributed to poor mental health outcomes for health care providers. Caregivers face unique risk of burnout and other adverse mental health outcomes as well, including those working in long-term care facilities and those who are unpaid and caring for family members or other loved ones needing support during the pandemic. Surveys from June 2020 found that 31% (<https://www.cdc.gov/mmwr/volumes/69/wr/mm6932a1.htm>) of unpaid caregivers for adults seriously considered suicide in the past 30 days.

High rates of burnout and adverse mental health impacts are reported among people working remotely during the pandemic. Many workers with the ability to work from home have been doing so during the pandemic. Combined with the closure of schools, daycares, and public spaces, this has left many workers not only newly working from home but also facing new stresses, additional responsibilities at home, and a fading work-life balance. Still many others who live alone shifted to working from home while also socially distancing in isolation, which is linked to poor mental health. Non-probability surveys (<https://learnmore.monster.com/poll-results-from-work-in-the-time-of-coronavirus>) conducted in summer 2020 found that many people working from home reported experiencing burnout, and nearly half (<https://www.hingehealth.com/report-wfh-health-risks/>) of adults working from home experienced stress, anxiety, or depression. Many of these adults reported that these experiences began or worsened after they started working from home.

The pandemic has been disproportionately wearing on women in the workforce and has likely exacerbated existing gender disparities in career and financial opportunities and stability. Data from the Household Pulse Survey have consistently indicated that among adults who worked in the past seven days, a greater share of women than men reported symptoms of anxiety and/or depressive disorder (Figure 2). Other research shows that respondents who are women are more often experiencing adverse mental and physical health [effects](https://leanin.org/article/womens-workload-and-burnout) of the pandemic and that women in the workplace are more likely than men to report not feeling [supported](https://wiw-report.s3.amazonaws.com/Women_in_the_Workplace_2020.pdf) by leadership. Additionally, among parents who work full-time and have partners, mothers more often than fathers are likely to feel [overwhelmed](https://leanin.org/article/womens-workload-and-burnout) and unable to handle their workload. These disparate experiences could have significant long-term consequences for women in the workplace. A McKinsey and LeanIn.org [analysis](https://wiw-report.s3.amazonaws.com/Women_in_the_Workplace_2020.pdf) during the pandemic found that one in four women say they may either leave their job or cut down on their work, noting that working mothers, Black women, and women in leadership roles are uniquely at risk of leaving their jobs or cutting back on work.

Figure 2: Among Adults Who Worked in the Past Seven Days, Share of Adults Reporting Symptoms of Anxiety and/or Depressive Disorder, by Gender

Poor mental health among workers can have serious implications for both worker well being and economic outcomes. Importantly, the pandemic's disparate impact on the mental health and well being of workers of color and working women highlights yet another vulnerability of groups already disproportionately impacted by the pandemic in numerous other ways. Both the human and fiscal impact of the pandemic's toll on worker mental health will be important for employers and legislators to consider in determining the needs of the workforce through the remainder of the pandemic and beyond.

This work was supported in part by Well Being Trust. We value our funders. KFF maintains full editorial control over all of its policy analysis, polling, and journalism activities.

GET THE LATEST ON HEALTH POLICY

Exhibit 11

An analysis of the psychological anxiety factors of construction workers

Yoonseok Shin^{1,a} and Gwang-Hee Kim^{2,b}

1Dept. of Plant & Architectural Engineering, Kyonggi University, Suwon, Gyeonggi 443-760, Republic of Korea

2Dept. of Plant & Architectural Engineering, Kyonggi University, Suwon, Gyeonggi 443-760, Republic of Korea (Corresponding Author)
ashinys@kgu.ac.kr, bghkim@kgu.ac.kr

Abstract

The construction industry is labor-intensive, which means that productivity hinges greatly on the laborer's competence. However, if the construction workers perform their tasks in a state of psychological insecurity, productivity will fall and safety management will also be affected; for this reason, a factor analysis is needed. Therefore, this study aims to analyze particular situation factors that cause psychological anxiety to construction workers. To deduce these factors, a questionnaire survey was conducted. Through this study, it was found that the working environment has the greatest influence on psychological anxiety, and that the situation in which an opening is neglected due to loading and unloading materials was identified as a leading psychological factor of anxiety.

Keywords: Construction workers, Safety psychology, Safety management

Introduction

The construction industry has a high dependence on labor, and its safety management and work efficiency are greatly affected by construction workers' competence[1]. However, construction workers can feel psychologically anxious in particular situations due to the danger of construction work, the complexity of processes and their use of new technologies[2]. As the psychological anxiety of construction workers can be a safety accident factor, a solution needs to be presented through a quantitative analysis[3]. For this reason, particular situational factors that trigger psychological anxiety should be identified. The preventive principle for disasters was applied to the psychological anxiety factors. This study was limited to identifying the psychological factors of construction workers that could cause a safety accident.

Concept of anxiety

Freud(1993) said that anxiety is a synonym for fear. However, there is a difference between fear and anxiety, in that fear is a feeling of being afraid of

something in the outside world, but anxiety is a feeling of being afraid of an internal danger, yet feels the same as the external fear. Based on this theory, anxiety related to internal (personal defect) or external (environmental) factors trigger anxious behaviors by construction workers at work in a particular situation[4].

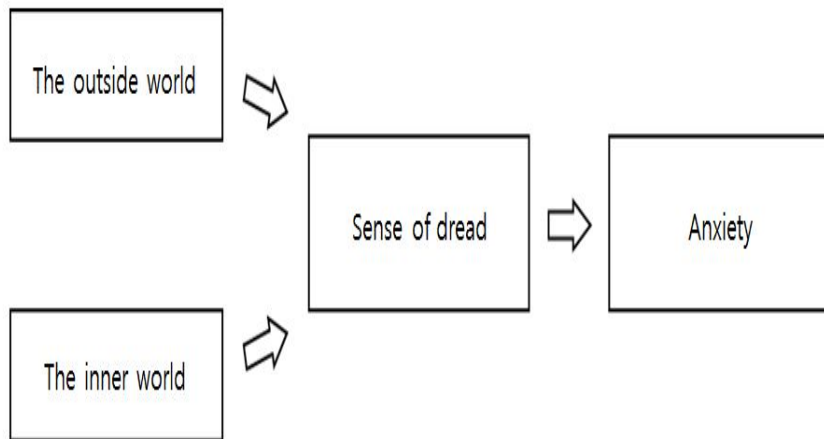


Table 1. Freud's psychosocial theory

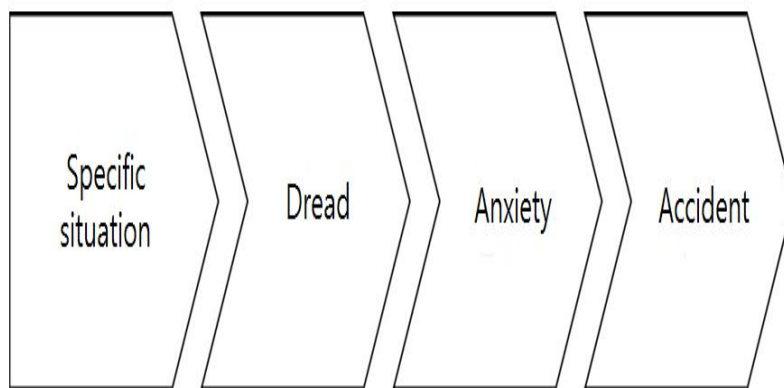


Figure 2. Thinking flow in the application of Freud's theory

Heinrich's domino theory claims that one goes through 5 steps to reach a disaster. Therefore, when a construction worker feels anxious at each step, this accelerates a disaster. Based on this thought, a safety disaster can be prevented by removing the anxiety factors of construction workers at each step by taking an approach to the environmental factors[5].

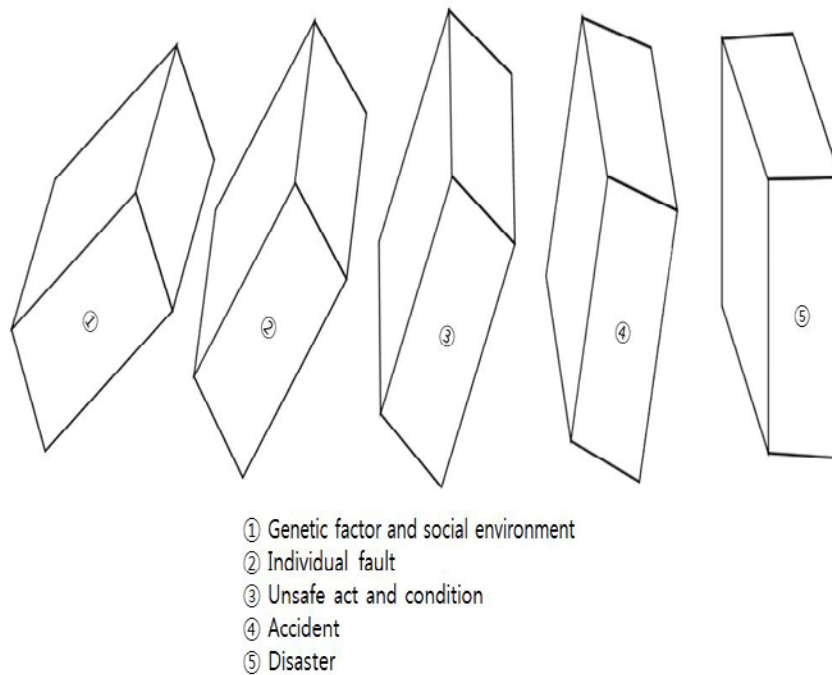


Figure 3. Heinrich's domino theory

Psychological analysis of construction workers

A critical factor in the construction industry is that young workers are trying to avoid construction work, and that skilled workers are becoming aged, while the number of foreign workers has been increasing. The changes in the manpower structure have a psychological impact on construction workers. The results of the survey of the current psychology of construction workers are as follows.

Table 1. Importance of psychological factors

Importance	Psychological factor	Average
1	Working environment	3.69

2	Responsibility	3.45
3	Feeling of affiliation	3.41
4	Achievement	3.33
5	Satisfaction	3.33
6	Possibility of growth	3.18
7	Equal opportunity of promotion	2.94

The most influential factor on psychology was found to be the working environment. Therefore, if the working environment is improved, this has a direct impact on the safety motivation, safety knowledge, stress reaction, and organizational immersion, which results in relieving the anxiety of construction workers.

Analysis of psychological anxiety factors of construction workers

To examine the situations in which construction workers feel anxious, a questionnaire survey was conducted. 132 construction workers in Suwon, Korea were surveyed, and 86 effective questionnaires were collected and analyzed. A 5-point Likert scale was used to evaluate the importance of the factors through average. The results are indicated in the table below.

Table 2. Importance of psychological anxiety factors of construction workers

	Questions	Average point
1.	When the opening is neglected due to loading and unloading	3.56
2.	When the work involves a material that is hazardous to the human body	3.30
3.	When the working process is not appropriate	3.26
4.	When one must make a detour due to materials stacked in the working path	3.19
5.	When the work should be done within a set period of time	3.16
6.	When the equipment needed for a work is obsolete	3.05
7.	When a working path is poor and dangerous	2.93
8.	When noise is louder in a job where cooperation is	2.63

needed		
9.	When noise prevents smooth communication at work	2.53
10.	When materials should be transported through communication by more than 2 people	2.52
11.	When materials beyond one's capacity should be transported by oneself	2.49
12.	When the work should be done for completion after disassembling the safety facilities	2.47
13.	When the materials should be loaded and unloaded upon the manager's instruction	2.44
14.	When the work is done in a place where no light is coming in.	2.23
15.	When the work is done at a height of 2m or higher	1.93

When an opening is neglected due to the loading and unloading got an average of 3.56, the highest in points, followed by work with material that is hazardous to the human body(3.30), and inappropriate working process(3.26). The factors with an average of 3 points or above from 1 through 6 can be considered as making construction workers more anxious compared with the other factors. Therefore, construction managers need to improve these factors more than the other situational factors.

Conclusion

In this study, the psychological anxiety factors were derived. It appears that the working environment can have a significant influence on the psychology of construction workers. In addition, construction workers feel anxious in situations in which an opening is neglected due to loading and unloading. Therefore, prioritized management is required. However, this study is limited in that only the psychological anxiety factors of construction workers were derived and analyzed. In conclusion, concrete plans to manage each factor should be studied in the future.

Acknowledgement

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Exhibit 12



Analyzing psychological conditions of field-workers in the construction industry

Soram Lim ^a, Seokho Chi ^{a,b}, Joon Deuk Lee ^c, Hoon-Jin Lee ^c and Hyunjung Choi^d

^aDepartment of Civil and Environment Engineering, Seoul National University, Seoul, Korea; ^bThe Institute of Construction and Environmental Engineering (ICEE), Seoul National University, Seoul, Korea; ^cDepartment of Psychology, Seoul National University, Seoul, Korea; ^dTrauma Healing Center HumanHeart, Seoul, Korea

ABSTRACT

The Korean construction industry has experienced poor labor productivity and high accident rates. Previous studies have reported that workers' mental health can cause negative impacts on work performance; thus, enhancing workers' psychological conditions would help achieve more productive and safer workplaces. This research aimed to understand the level of psychological conditions of construction field-workers using four categories: (1) stress (occupational stress and stress-coping style), (2) personal temperament, (3) emotional disturbance (depression and trait anxiety), and (4) drinking habits. This research used validated questionnaires commonly used in the field of clinical psychology, surveyed 430 respondents from road, bridge, tunnel, subway, and apartment construction sites in Korea, and analyzed the overall psychological tendency of construction workers with the collaboration of professional clinical psychologists using the Z-test, analysis of variance (ANOVA), and cross-tabulation. The research also investigated how the mental conditions differed according to different working conditions, such as demographic information, employment status, work types, work experience, and wage conditions. The results indicated that construction workers suffer from a high level of stress and showed high inclination for problem-focused coping: impulsive, cautious, and dependent on other people. Two out of five construction workers suffer from depression and experience trait anxiety. More seriously, three out of five workers show alcohol-use problems that require clinical attention. This study also revealed the particular psychological problems that occur under different working conditions. The findings can be used to promote the awareness of the importance of construction workers' mental well-being and to help in setting targets for improvement.

ARTICLE HISTORY

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KEYWORDS

Construction worker; mental health; psychological condition; working condition

Introduction

Since 2010, construction labor productivity per hour in Korea has been lower than the average of all industries' (Figure 1), with the labor productivity in all industries in Korea being ranked 28th out of 34 Organization for Economic Cooperation and Development (OECD) countries in 2012 [1]. Additionally, the accident rate in the Korean construction industry has been continuously increasing during the same period, while it has been decreasing in other industries (Figure 2). The fatality per ten thousand construction workers in Korea was 1.78 in 2012, which was much higher than that in the United States (U.S.) (0.35), Japan (0.20), and the United Kingdom (U.K.) (0.04) [2].

According to the World Health Organization (WHO) [3], mental health problems such as stress, personality disorder, depression and anxiety, and alcohol abuse can affect the ability of individual workers to perform work safely and can cause low productivity. In the construction industry, many

studies have pointed out that the construction workers' mental health is one of the critical factors influencing safety and productivity [4–6]. Occupational stress (e.g. heavy workload, job insecurity), organizational stress (e.g. inefficient communication, interpersonal conflicts, lack of rewards), and working environment-related stress (e.g. inappropriate personal protective equipment, noise, severe weather conditions) can reduce workplace safety and productivity [7–9]. Siu et al. [10] and Haslam et al. [11] investigated and revealed that depression and anxiety were highly related to long-term productivity and safety losses by causing motivation, satisfaction, and emotional problems in workers. Alcohol abuse was also identified as a critical factor that increased misjudgment and high-risk behaviors in workers [12,13].

Although the research findings of the previous studies promoted an awareness of the importance of workers' mental well-being in the construction industry, there has been a lack of studies assessing

CONTACT Seokho Chi  shchi@snu.ac.kr  Department of Civil and Environment Engineering, Seoul National University, 1 Gwanak-Ro, Gwanak-Ku, Seoul 08826, Korea

Present affiliation of Joon Deuk Lee is Department of Counseling Psychology, Hanyang Cyber University, Seoul, Korea and Hyunjung Choi is Chungbuk National University, Cheongju, Korea.



Figure 1. Labor productivity per hour index (2008–2015) [1].

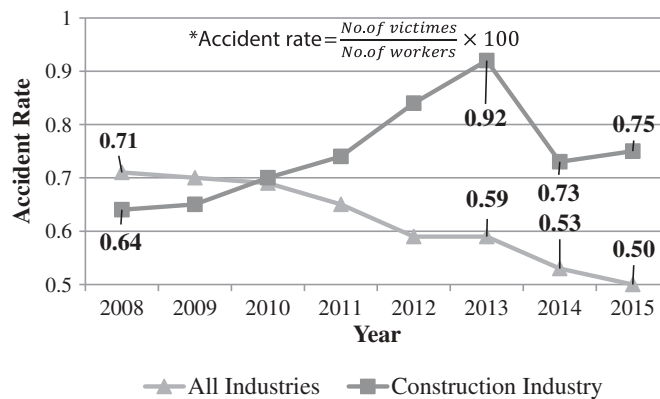


Figure 2. Accident rate in the Korean construction industry (2008–2015) [2].

the mental health conditions of construction workers from the perspective of a professional clinical psychologist. The previous studies in construction mostly used questionnaires self-developed by construction researchers for data collection that were not verified by clinical psychology [7,9,14–19]; thus, reliable measurement and investigation of psychological conditions were limited. Instead of self-developed questionnaires, clinical psychologists commonly use validated questionnaires to assess mental health problems, including stress, personal temperament, emotional disturbance, and drinking habits. Moreover, there is a need to explore how psychological tendencies might be affected by different working conditions of the construction workers (e.g. demographic information, employment status, work types, working experiences, and wage conditions). For instance, job insecurity or the hierarchy between general contractors and subcontractors could lead to the unique mental conditions of workers.

The primary objective of this study is to investigate the psychological conditions of construction workers and analyze the relationship between these psychological conditions and working conditions. Specific research objectives are as follows:

- (1) Understand the level of psychological conditions of construction field-workers in Korea, as measured through: (1) stress (occupational stress and stress-coping style), (2) personal temperament, (3) emotional disturbance (depression and trait anxiety), and (4) drinking habits (alcohol abuse).
- (2) Explain psychological differences in a range of different working conditions, including demographic information, employment status, work types, work experiences, and wage conditions.

Literature review

Relationship between mental health and productivity/safety

Construction workers' mental health is one of the critical factors to productivity and safety losses [4–6]. Previous studies identified that occupational stresses are among the mental health challenges that cause serious productivity and safety problems (Table 1). Goldenhar [14] developed a stress-injury causation model that explained that organizational stresses due to the job demands and lack of supervisor support and training directly or indirectly increased the occurrences

Table 1. Literature review summary on the relationship between mental health and productivity/safety.

Psychological categories	Goldenhar et al. [14]	Campbell [8]	Leung et al. [4]	Abbe et al. [7]	Leung et al. [9]	Bowen et al. [20]	Blackhall and Littlemore [6]	Seo et al. [21]	Siu et al. [10]	Haslam et al. [11]	Boschman et al. [24]	Li and Bai [13]	Biggs and Williamson [12]	Larson et al. [25]
Occupational Stress	*			*			*	*	*	*		*	*	*
Personal Temperament														
Depression	*		*											
Anxiety	*		*											
Drinking Habit					*	*					*			

of near misses and injuries. Campbell [8], Leung et al. [4], and Abbe et al. [7] similarly revealed that a group of stressors, including environmental factors (e.g. noise, inadequate ventilation), organizational factors (e.g. communication problems, interpersonal conflicts), and job-related factors (e.g. heavy workload, lack of participation in decision making, insufficient job control), was highly correlated to safety and productivity performance. Leung et al. [9] and Bowen et al. [20] determined organizational stressors such as unfair rewards, inappropriate safety equipment uses, lack of goal settings, and unsafe physical working environments as the accident drivers. Such occupational stresses not only deteriorate the work performance of individual workers but also hinder cooperative work as a group, which leads to safety and productivity problems on the site [6,21].

Second, personal temperament (i.e. natural predisposition), such as overconfidence, intolerance, and aggression, can control risk-taking behaviors of the workers, causing them to act either safely or unsafely [22]. Leung et al. [4] identified that construction workers with a behavior pattern characterized to be aggressive, impatient, and incapable of relaxing are more vulnerable to stress while causing at-risk behaviors. Seo et al. [21] also revealed that five personal characteristics, called “Big Five (first named by Goldberg [23]),” including neuroticism, extraversion, openness, agreeableness, and conscientiousness, influenced self-perceived fatigue and safety culture on construction sites.

Next, emotional disturbances, such as depression and anxiety, have crucial impacts on productivity and safety [10,11,24]. Siu et al. [10] determined that psychological distress, including depression and anxiety, had a positive correlation with the number of accidents and occupational injuries. Haslam et al. [11] also explained that the depression and anxiety of workers might affect lack of concentration, emotional distress, reduced motivation, and difficulties with decision making and thus emphasized that the workers’ emotional disturbance should be relieved to improve workplace productivity and safety. Depression was even identified as the most serious mental health problem among bricklayers and field supervisors [24].

Last, alcohol misuse can increase the risk of fatalities [13]. According to Biggs and Williamson [12], 59% of Australian construction workers studied suffered from alcohol-related problems, which deteriorated safety cognition and individual safety behaviors. Larson et al. [25] also showed that the construction industry consistently ranked high in heavy alcohol use and the workers in the small-sized companies tended to consume more alcohol than in the large-sized companies.

Although the previous studies discussed above successfully investigated and revealed that the mental health of construction workers was one of the critical factors determining workplace productivity and safety performance, there is a lack of studies

Table 3. Overview of the developed questionnaire.

Psychological categories	Stress	Personal temperament	Emotional disturbance	Drinking habit
Selected psychologies (Measurement)	Occupational stress (KOSS-SF) Stress-coping style (WCC)	Temperament (TCI-RS)	Depression (CES-D-20) Trait anxiety (STAI-T)	Alcohol-use disorder (AUDIT-K)
Number of questions	56 (24 + 32)	81	40 (20 + 20)	10
Analysis method	Compare with other case study (z-Test)		Compare with cutoff scale	
Statistical method	ANOVA		Cross-tabulation	

KOSS-SF: Korean Occupational Stress Scale Short Form

WCC: Ways of Coping Checklist

TCI-RS: Temperament and Character Inventory Revised Short Version

CES-D: Center for Epidemiologic Studies Depression Scale

STAI-T: State-Trait Anxiety Index, Trait Version

AUDIT-K: Alcohol Use Disorder Identification Test in Korea.

Research methodology

The research methodology is summarized in Figure 3. Based on a literature review, the research determined that four categories of psychological conditions (i.e. stress, personal temperament, emotional disturbance, and drinking habit) can influence workers' productivity and safety. The detailed overview of the questionnaire is summarized in Table 3. The research used six different types of questionnaires in Korean that were developed by professional clinical psychologists, verified by previous psychological studies, and commonly used in the field of clinical psychology [31–36] in order to measure psychological conditions of construction workers in the four identified categories. The questionnaires also included introductory questions that ask demographic and job characteristics of the respondents. Next, the authors surveyed target

respondents from five different types of construction projects (i.e. roads, tunnels, bridges, subways, and apartments) and analyzed data to not only identify the level of psychological conditions of construction workers but also investigate differences based on different working conditions.

Survey setup

To set target respondents, purposive sampling, which is a type of non-probability sampling strategy [37], was used since the target respondents of this research were clearly defined as construction field-workers who worked at road, tunnel, bridge, subway, and apartment sites. To attain reliable statistical results, it was important to preset the site conditions. As such, the road construction sites did not include tunnel or bridge sections. The tunnel sites represented ongoing tunnel

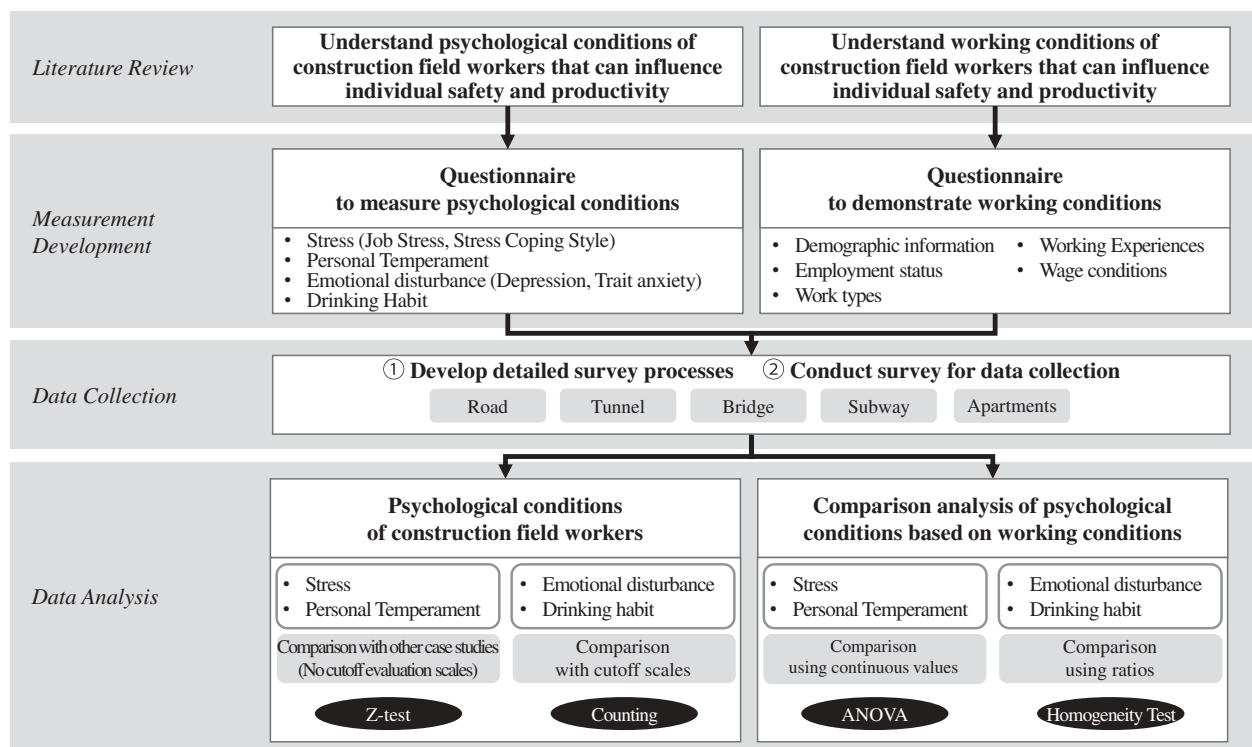


Figure 3. Research methodology.

boring stages. For the bridge construction sites, the length of the bridge needed to be over 1 km. The subway sites met over 1 km underground in length and included more than one station. For the apartment sites, it was determined that each apartment complex needed to accommodate more than 600 households and respondents needed to be working on the main construction stage after earthmoving but before interior and exterior finishes. Additionally, the target construction sites were mainly located in Seoul Metropolitan City, Incheon Metropolitan City, and Gyeonggi Province to minimize geographical effects.

For reliable analyses, we calculated the minimum number of required respondents using G*Power, launched by Heinrich-Heine-Universität Düsseldorf [38]: 304 respondents were required to achieve a significance level of 0.05 and an effect size (f^2) of 0.08 for an F-test. The researchers conducted surveys from April 2014 to June 2014 and collected a total of 430 responses: 59, 73, 51, 64, and 183 from road, tunnel, bridge, subway, and apartment construction sites, respectively. For reliable data collection, the researchers hired a professional survey company and the investigator of the company surveyed each respondent face to face by asking questions one by one and filling in the answers. Among the total 430 responses, we analyzed 59, 62, 44, 62, and 169 responses (total 396 responses) by filtering out samples that had missing values [39]. Around 87.9% of the respondents were from Seoul Metropolitan City, Incheon Metropolitan City, and Gyeonggi Province in Korea, and the remainder were from Gangwon, South Chungcheong, North Jeolla, and South Jeolla Provinces. Based on empirical statistics, the minimum sample size of each group, such as the number of workers who earned over US\$2,500, is recommended to be larger than 13 to be compared in one-way analysis of variance (ANOVA) and satisfy the homoscedasticity hypothesis [40].

Research measurements

The questionnaires' reliability was first checked using Cronbach's alpha as a coefficient of internal consistency (Table 4). When the value is higher than 0.6, it is considered an appropriate threshold for exploratory studies [41]. All questions were scored using a Likert scale from zero or one (not at all) to four or five (very much). Appendix A shows the examples of the survey questionnaire and their measurement scales. Some questions were intentionally scored inversely to check the consistency of responses. The descriptions of each subcategory and subscale of the psychological conditions are summarized in Table 4 [31, 42–46]. The questionnaire was also reviewed by the Institutional Review Board (IRB, Approval No.E1403/001–005) since it dealt with construction individuals' psychological information.

Psychological conditions

Stress: KOSS-SF and WCC. The Korean Occupational Stress Scale Short Form (KOSS-SF), developed by the Occupational Safety and Health Research Institute in Korea [32], was used to investigate the level of occupational stress. It includes seven subscales: job demand, insufficient job control, interpersonal conflict, job insecurity, organizational system, lack of reward, and occupational climate. A larger score means a higher stress (24 questions, total score: 100).

Additionally, the research selected the Ways of Coping Checklist (WCC) to understand stress-coping styles, which refers to personal sensitivity under stressful situations. According to Lazarus and Folkman [47] and Folkman et al. [4], "coping" is defined as cognitive and behavioral efforts to manage internal or external mental challenges; individuals feel differently about the level of stress under the same conditions. The WCC was developed by Folkman and Lazarus [48] to measure individuals' coping styles. Cho [34] transformed this tool to comprise 32 questions to fit into the Korean context based on the factor loading method. It contains four different kinds of coping styles: problem-focused coping, seeking social support coping, emotion-focused coping, and wishful thinking coping styles. The first two styles are considered active coping styles, whereas the latter two are passive coping styles. When someone has a strong problem-focused coping style, the person might try hard to challenge their stressful situations. Conversely, having a seeking social support style means that a person wants to talk to others to solve their problems. Individuals with an emotion-focused coping style try to isolate themselves from stressful emotions, and those with wishful thinking coping styles use imagination without effort or hope for miracles [43].

Personal temperament: TCI-RS. Temperament is defined as the emotional reactions by neurobiological responses to external conditions [49]. It varies under the influence of genetics and is not easily changed during a person's life [44,50]. This research adopted the Temperament and Character Inventory Revised Short version (TCI-RS) developed by Goth et al. [51], which was transformed to the Korean context by Min et al. [31]. The TCI-RS consists of four main subscales (81 questions): novelty seeking, harm avoidance, reward dependence, and persistence.

A person high in novelty seeking is impulsive, quick tempered, exploratory, and curious. They might suffer difficulties in performing structured tasks or following rules. Conversely, someone high in harm avoidance is cautious, apprehensive, pessimistic, and fearful, and would prepare for danger carefully. With high reward dependence, a person tends to be sympathetic, moody, open, and dependent. This person can easily form relationships with others and understands their emotions. If

Table 4. Descriptions and internal consistencies of psychological categories.

Categories	Subcategories	Subscales	Description	Internal consistency (Cronbach's alpha)	
Stress	Job Stress	Job demand	Time pressure, increasing workload, insufficient rest, and multiple functioning	0.69	
		Insufficient job control	Noncreative work, skill underutilization, little or no decision making, and low level of control	0.62	
		Interpersonal conflict	Inadequate supervisor, coworker support, and emotional support	0.69	
		Job insecurity	Uncertainty and undesirable changes of job status	0.59	
		Organization system	Unfair organizational policy and support, inter-department conflict, and limitation of communication	0.67	
		Lack of reward	Unfair treatment and future ambiguity, and interruption of opportunity	0.67	
		Occupational climate	Authoritarian culture, inconsistency of job order, and gender discrimination	0.66	
		Stress-coping style	Problem-focused	Might try hard to change their stressful situation	0.89
	Seeking social support		Want to talk to others to clarify their problems	0.75	
			Emotion-focused	Try to isolate themselves from stressful emotions	0.61
		Wishful thinking	Imagine the end of their stressful situation without efforts or hope for a miracle	0.66	
Personal temperament	-	Novelty seeking	Impulsive, quick tempered, exploratory, and curious → Suffer hardships performing a simple and structured task or following rules	0.84	
	-	Harm avoidance	Cautious, apprehensive, pessimistic, and fearful → Prepare for danger carefully	0.84	
	-	Reward dependence	Sympathetic, moody, open, and dependent → Easily form relationships with other people and understand emotions in others	0.77	
	-	Persistence	Industrious, ambitious, overachieving, and flawless → Once start doing a job, see it through to the end; also have a tendency to stick to their successful experiences	0.85	
Emotional disturbance	Depression	-	How often a person experiences a loss of appetite, irritation, fear, happiness, sadness, and other symptoms	0.88	
	Trait anxiety	-	A disposition to perceiving one's circumstance as a threat on a day-to-day basis, including tiredness, worry, and discomfort	0.89	
Drinking habit	-	Alcohol abuse	Drinking frequency, quantity, alcohol-dependence symptoms, and alcohol-related troubles	0.90	

individuals are high in persistence, they are likely to be industrious, ambitious, overachieving, and flawless. There is a good possibility that these individuals will finish their job. Such people also have a tendency to stick to successful experiences [31,44–46].

Emotional disturbance: CES-D and STAI-T. The Center for Epidemiologic Studies Depression Scale (CES-D), first developed by Radloff [52], has been widely used to measure depression. It explains how a respondent experiences loss of appetite, irritation, fear, happiness, sadness, and other symptoms related to depression. This research adopted the Korean version of the CES-D (20 questions), transformed and verified by Chon and Rhee [35].

Additionally, the research used the State Trait Anxiety Index (STAI-T, or STAI-II, comprising 20 questions) developed by Kim and Shin [36], which is a transformed version of STAI that was originally developed by Spielberger et al. [53]. Trait anxiety explains tiredness, worry, or discomfort that is a disposition to perceive one's day-to-day situation as a mental threat.

Drinking habit: AUDIT-K. The WHO developed the Alcohol Use Disorder Identification Test (AUDIT), and we used AUDIT-K, a version transformed by Kim [33], for the Korean context. AUDIT has been widely employed to identify the alcohol abuse level of various occupations such as police officers [54], mining workers [55], and workers in emergency departments [56]. Additionally, Biggs and Williamson [12] applied and validated it for construction field-workers. AUDIT-K helps determine a person with problematic alcohol use, which has a high probability of developing into alcoholism. AUDIT-K can measure drinking frequency and quantity, alcohol-dependence symptoms, and alcohol-related troubles.

Construction field-workers' working conditions.

Working conditions are important for the systematic analyses of psychological conditions in different circumstances. In particular, this covered: (1) demographic information, (2) employment status, (3) work types, (4) working experiences, and (5) wage conditions. Construction trades included in the work types followed the category of Construction Association of Korea [57].

Data analysis methods

The authors analyzed the collected data to understand construction field-workers' level of psychological conditions (the first research objective) by either comparing relative to other case studies or using evaluation scales. Second, to explain psychological differences in a range of different working conditions (the second objective), ANOVA and homogeneity tests were used for statistical analyses.

Comparisons with other case studies

The measurements to understand occupational stress, stress-coping style, and temperament do not have evaluation scales; they are relative values. It means that there is no lowest and highest score range, and it is difficult to say whether the calculated average score is bad, normal, or good. Thus, the research team compared the construction workers' mental conditions with those experienced by other industry workers (e.g. harsh working conditions: firefighters; normal working conditions: general office workers and Korean adult males).

Firefighting is considered a high-strain job because it entails both physical danger and psychological stress originated by exposures to noxious chemicals, tense environments, and 24-hour shifts [58,59]. According to CareerCast [60], firefighters were ranked as having the most stressful job in 2015, and thus comparison with firefighters' stress level supports comparison to the stress level of construction workers. The firefighters' stress data were provided by Jo [61], who studied distress of 456 firefighters in Korea using KOSS-SF, the same questionnaire used in this research.

The score of stress-coping styles does not signify good or bad, and different people have different coping styles to overcome stressful situations [62]. The comparison between the general population who works indoors and construction field-workers who conversely do more physical outdoor works is thus expected to explain the similarities regardless of job characteristics and dissimilarities according to different working atmospheres. The research compared construction workers' stress-coping styles with those of general office workers as analyzed by Kang [63], who used WCC, the same questionnaire used this study. Since the total score used by Kang was 120, the score was converted into a scale totaling 100 for comparison purposes. More specifically, the subtotals of problem-focused, seeking social support, emotional-focused, and hopeful thinking copings were 60, 20, 32, and 16, respectively, in this study; however, Kang used 30 for each subtotal. Therefore, the score was converted using Equation 1 [32].

$$\text{Converted Score} = \frac{(\text{Obtained Score} - \text{No. of questions})}{(\text{The total score} - \text{No. of questions})} \times 100$$

This research also analyzed the construction workers' personal temperament by comparing it with that of

980 normal Korean male adults measured by TCI-RS, the same questionnaire used in this study [31], since the target population (construction workers) consisted mostly of males (98.2%) in this study.

The averages of the construction field-workers' data were compared with those of other industries' data using a Z-test by considering the sample size. The test statistic, at a 0.05 significance level equation that was used, is as follows:

$$z = \frac{\bar{x}_1 - \bar{x}_2 - 0}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}} \quad 2)$$

Here, \bar{x} is the average stress level, subscription 1 is construction workers (target data), subscription 2 is respondents in the other cases, s is standard deviation of the data, and n is the number of the target population.

The critical point of this one-tailed test at the 0.05 significance level was 1.645. A z-value larger than 1.645 means that the construction workers suffer more than people in the comparison groups; however, if the z-value is smaller than -1.645, the workers in the comparison target tend to suffer more in the given psychological conditions than do the construction workers.

Comparisons with cutoff scales

Since the inventories of depression, trait anxiety, and alcohol abuse provide absolute cutoff scales for evaluation, the results were compared with the provided threshold scores to screen people who experience psychological problems. The cutoff scales of depression are 0–15 (normal), 16–20 (mild), 21–24 (moderate), and over 25 (severe). The cutoff scales of trait anxiety are 0–53 (normal), 54–58 (mild), 59–63 (moderate), and over 64 (severe). The mild, moderate, and severe conditions are regarded as abnormal conditions. The cutoff scales of alcohol abuse are 0–7 (normal), 8–15 (drinking problem), 16–19 (alcohol abuse), and over 20 (alcohol dependence).

ANOVA and homogeneity test

An F-test in ANOVA was used to compare psychological scores with different working conditions because ANOVA is effective for discrete independent variables (i.e. working conditions) and continuous dependent variables (i.e. occupational stress, stress-coping style, and temperament). A prior assumption for ANOVA is equal variance of the comparison target; thus, the results that did not satisfy this assumption were eliminated even if the p -values were significant.

On the other hand, for the depression, trait anxiety, and alcohol abuse groups, the number of respondents was divided into classes according to different severities of symptoms. Therefore, the chi-square test was used with a significance level of 0.05 for homogeneity using

cross-tabulation since both independent (i.e. working conditions) and dependent (i.e. depression, trait anxiety, and alcohol abuse) variables are discrete. Rejecting the hypothesis of homogeneity means that working conditions show a different distribution of disorder. This research also used Fisher's exact test when expected responses of less than five were more than 20% of the total category group cells [64].

Results and discussions

Data distribution

The information on working conditions of the collected data is illustrated in Figure 4. The majority of the respondents were male (98.2%), over 50 years old (50.8%), and married (68.9%). Regarding the educational background, 58.3% of the respondents completed high school. The type of employment included full-time (11.6%), contract (23%), and daily (64.6%) workers. The ratio of general contractors:subcontractors was 15.9:84.1%, and work positions included 31.8% foremen, 52% craftspeople, and 16.2% assistants. The respondents also included a range of different types of workers (e.g. 32.1% carpenters, 14.4% iron workers). The majority of workers fell into the 10–20 years (30.3%) and over 20 years (34.8%) working experience categories. Respondents' working experience on their

present work site varied: 3–6 months (20.2%), 6–12 months (25.8%), and over 1 year (24.2%). Most workers were paid monthly (70.7%) and earned over 2,500,000 Korean won (US\$2,500) per month.

Psychological conditions of construction field-workers

Stress

As shown in Figure 5, using ANOVA ($F = 31.57$, $p = 0.00$) to compare the stress levels of construction workers with different subscales, stress from insufficient job control (49.3) was relatively higher than that of other stress factors, and stresses from interpersonal conflict (37.6) and occupational climate (37.6) were comparatively low. Construction work is normally repetitive, and workers must follow scheduled work routines assigned by supervisors; the job and daily routine are therefore rule-oriented. These conditions may cause high stress due to insufficient job control. However, due to such conditions, construction workers may tend to accept and adapt themselves to less-controllable environments. The construction tasks are also divided by specialties with different business mind-sets: temporary task-based teams, but with the same project goals. This could be the reason for the relatively low stress levels due to occupational climate

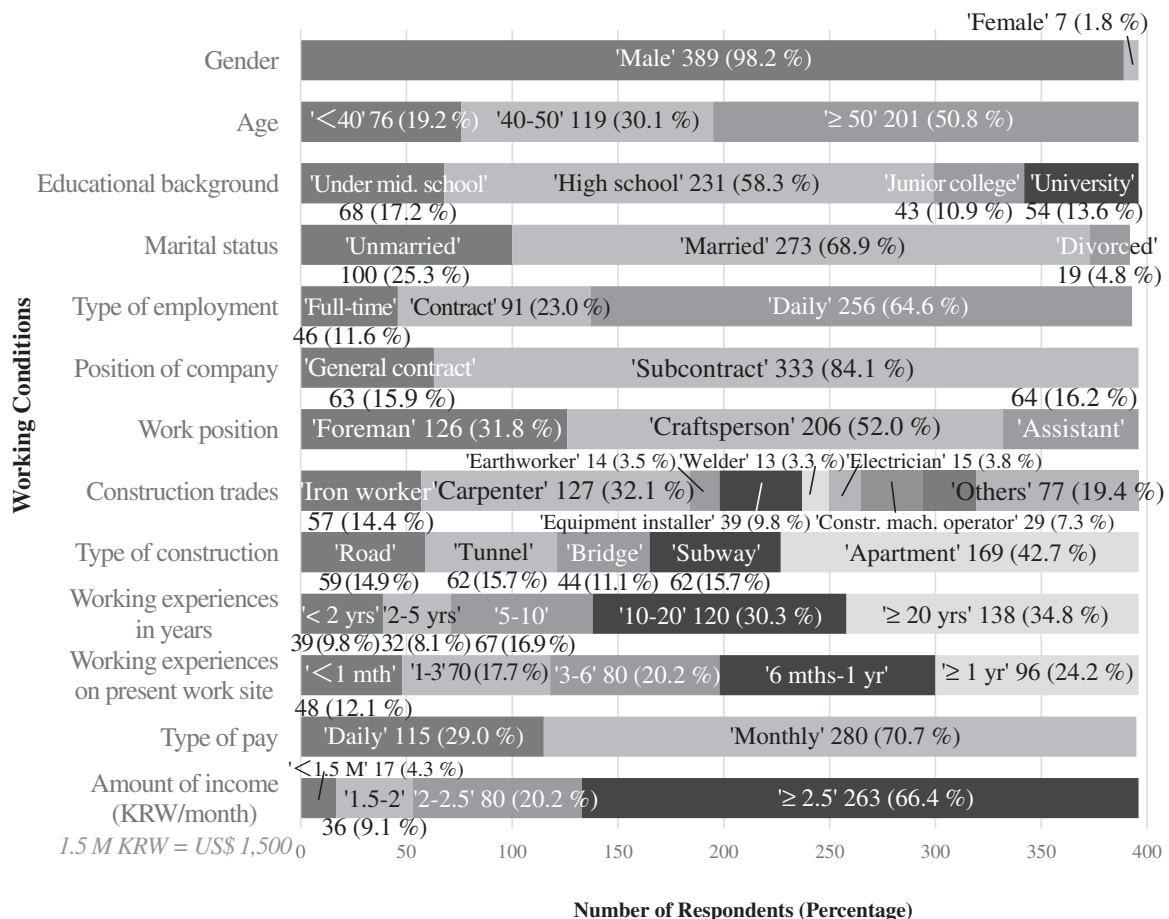


Figure 4. Data distributions.

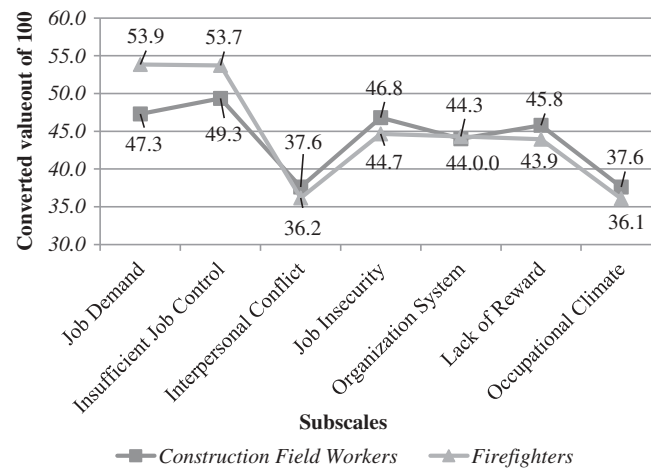


Figure 5. Comparison of job stress between construction field-workers and firefighters.

and interpersonal conflict; construction workers tend to have high social learning behaviors and adapt themselves well to the occupational climate [9].

To understand construction workers' level of occupational stress, we analyzed construction workers' stress levels compared to those of firefighters [20]. As shown in Table 5, the overall stress score of the construction workers showed a similar tendency to that of firefighters when considering that the p -values were not significant. Such similar tendencies indicate that construction workers' stress is as problematic as that of firefighters. Firefighters work under 24-hour shifts and are deployed in emergency situations. For that reason, firefighters usually feel tension, anxiety, and fear but have difficulty in expressing their emotions. In addition, the high probability of receiving severe or fatal injuries during work can increase fatigue [65]. Similarly, construction workers usually start working at daybreak, are exposed to overtime work, and work in physically demanding conditions. They are often pushed to reduce construction schedules and work under urgent as well as a range of risky conditions. Furthermore, the large number of construction accidents can increase tension in construction workers. Such similar working environments might cause similar stress levels for construction workers compared to that of firefighters. Construction workers' stress

caused by job demands and insufficient job control, however, was lower than that of firefighters, with significant p -values. This could be because construction work is normally more controllable in less-dangerous situations than that of firefighting works [61].

When a person seeks an active coping strategy, which consists of problem-focused coping and seeking social support coping styles, they are more likely to be calm and be able to mentally adjust to stressful situations [66]. Construction workers show a more problem-focused coping attitude and seek social support rather than have a passive style; they believe that their situations can be changed (i.e. seeking social support coping) when they plan better and experience more. The construction industry is labor-intensive, and construction work is heavily experience-oriented. Construction workers are also more likely to be risk takers with high work responsibility rather than risk avoiders (i.e. problem-focused coping), and the behavior of such a person is usually more active [43,47]. They are willing to gain more knowledge to overcome problematic situations. Regarding the passive strategies, an emotion-focused coping style was found to be lower in construction workers than the active strategies, but higher than that of the general office worker sample. Under the uncontrollable, changeable, and

Table 5. Comparison of occupational stress scores between construction field-workers and firefighters.

Section	Subscales	Construction field-workers		Firefighters		z	p	
		M	SD	M	SD		C > F ^a	C < F ^b
Occupational stress	Job demand	47.3	17.3	53.9	19.7	-4.83	1.00	0.00*
	Insufficient job control	49.4	15.7	53.7	15.7	-3.83	1.00	0.00*
	Interpersonal conflict	37.6	14.8	36.2	15.7	1.30	0.10	0.90
	Job insecurity	46.8	21.0	44.7	21.6	1.35	0.09	0.91
	Organization system	44.0	14.5	44.3	19.9	-0.24	0.60	0.40
	Lack of reward	45.8	15.7	43.9	18.6	1.47	0.07	0.93
	Occupational climate	37.6	16.2	36.1	20.8	1.11	0.13	0.87
	Average	44.1	10.3	44.7	12.7	-0.73	0.77	0.23

^a Under confidence level = 0.95, significance probability (p -value) < 0.05 means the average of construction field-worker is higher than that of firefighters (C > F).

^b Vice versa (C < F).

* $p < .05$.

Table 6. Comparison of stress-coping styles between construction field-workers and general office workers.

Section	Subscales	Construction field-workers				General office workers				z	p	
		Raw score		Converted score		Raw score		Converted score			C > G ^a	C < G ^b
		M	SD	M	SD	M	SD	M	SD			
Stress-coping style	Problem-focused	45.3	5.5	61.1	11.5	21.2	4.9	63.3	20.4	-1.90	0.97	0.03*
	Seeking social support	13.8	2.0	58.8	13.4	20.4	4.5	59.8	18.5	-0.86	0.81	0.19
	Emotion-focused	9.6	1.7	46.5	14.4	15.9	3.7	41.3	15.4	4.91	0.00*	1.00
	Wishful thinking	16.3	2.6	44.3	12.4	20.3	3.8	59.6	16.0	-15.15	1.00	0.00*

^a Under confidence level = 0.95, significance probability (*p*-value) < 0.05 means the average of construction field-workers is higher than that of general office workers (C > G).

^b Vice versa (C < G).

* *p* < .05

less-predictable outdoor working environments, construction workers want to change the risky conditions and their negative emotional feelings.

As shown in Table 6, construction workers were more likely to use a problem-focused coping style than other strategies. The next preferred coping styles using ANOVA ($F = 169.77$, $p = 0.00$) were seeking social support, emotion-focused coping, and wishful thinking. The general office workers had higher problem-focused coping and wishful thinking styles than construction workers under stressful situations. Seeking social support coping was on a similar level between the two target populations.

Personal temperament

Min et al. [31] suggested that the score range – under 45, 45 to 55, and over 55 years – indicated low, medium, and high temperaments, respectively. Based on this scale, the majority of construction workers showed a low level of novelty seeking (89.4%) and harm avoidance (78.8%), and a considerable number of respondents presented with a low level of reward dependence (58.1%). With regard to persistence, however, almost half of the construction workers (44.2%) indicated low persistence. With regard to personal temperament, a low score indicates that a person is reflective, rigid, loyal, and slow tempered. Such a person tends to follow regulations and act systematically [31]. The low level of novelty seeking found in this study suggests that construction workers have the potential to follow safety rules and work manuals, which are both related to work productivity. When a harm avoidance score is low, a person is confident, carefree, energetic, and daring. Such a person has a tendency to act optimistically in dangerous or changeable working situations. Over-optimism, however, can make a person insensitive to danger [31]. Construction workers who scored low in harm avoidance may respond emotionally well to high-risk situations, being more cautious and apprehensive.

Individuals low in reward dependence are normally susceptible to “rewards” (i.e. feedback from other people in behaviorism), tough-minded, practical, detached, and independent. The low average scores

can indicate that such individuals can not only be insensitive to other people’s changing emotions and independent, but also engage in a low level of emotional exchange with others [31]. The survey results also show the tendency toward low reward dependence. Typical construction projects are undertaken by many daily and part-time workers. In Korea in particular, more than 70% of the work is performed by small and medium-sized companies and the number of part-time workers accounts for approximately 60% of the total construction workers [67]. This may result in a lack of a sense of organizational belonging, leading to low reward dependence. This result can be linked with the survey finding that construction workers emotionally suffer from job insecurity. Finally, the higher the persistence score, the more a person tends to make steady and persistent efforts. This type of person is likely to be industrious, ambitious, over-achieving, and seek perfection [31]; about half of the respondents may pursue these tendencies.

Next, the comparison analysis showed that the average score of the construction field-workers was relatively higher in three subscales – novelty seeking, harm avoidance, and reward dependence – than the general population of adult males in Korea, although the scores were in the low range. The average scores of persistence were similar in the two groups, being at a medium level (Table 7). This comparison indicates that construction workers are more exploratory than reflective, cautious than confident, and sentimental than tough-minded. Both groups show a medium level of persistence. It can be inferred that people who have the personal temperament mentioned above tend to choose the construction industry for their job.

Emotional disturbance

The degree of depression is categorized into four levels using cutoff scores: normal (0–15), mild (16–20), moderate (21–24), and severe (25 or higher) [35,68]. A total of 62.4% of the construction workers were free from depression; however, 37.6% of the total population suffered from depression symptoms. Consistent with clinical practice, the results suggest

Table 7. Comparison of personal temperaments between construction field-workers and Korean adult males.

Section	Subscales	Construction field-workers		Korean adult males		z	p	
		M	SD	M	SD		C > K ^a	C < K ^b
Temperament	Novelty seeking	32.33	9.60	29.59	9.19	4.84	0.00*	1.00
	Harm avoidance	37.38	9.34	33.70	9.99	6.48	0.00*	1.00
	Reward dependence	43.15	7.90	41.95	8.13	2.53	0.01*	0.99
	Persistence	46.08	8.54	46.07	9.73	0.02	0.49	0.51

^a Under confidence level = 0.95, significance probability (*p*-value) < 0.05 means the average of construction field-workers is higher than that of Korean adult males (C > G).

^b Vice versa (C < G).

* *p* < .05

Table 8. Comparison with cutoff scores in depression, trait anxiety, and alcohol abuse.

Sections	Cutoff score		Frequency (%)	Total
Depression	0–15	Normal	247 (62.4%)	396 (100%)
	16–20	Mild	Abnormal 61 (15.4)	
	21–24	Moderate	33 (8.3)	
	25–	Severe	55 (13.9)	
Trait anxiety	0–53	Normal	227 (57.3%)	396 (100%)
	54–58	Mild	Abnormal 77 (19.4)	
	59–63	Moderate	64 (16.2)	
	64–	Severe	28 (7.1)	
Alcohol abuse	0–7	Normal	161 (40.7%)	396 (100%)
	8–15	Problem drinking	Abnormal 152 (38.4)	
	16–19	Alcohol abuse	40 (10.1)	
	20–	Alcohol dependence	43 (10.9)	

that construction workers who have mild depression (15.4%) would benefit from medical help, and, as such, 22.2% of the workers with moderate or severe depression should be diagnosed and treated by psychological specialists (Table 8).

Kim [69] reported the critical points of trait anxiety for adults as 54 (mild), 59 (moderate), and 64 (severe). Using these cutoff scales, the results show that 169 construction workers (42.7%) experienced trait anxiety. Similar to the depression results, 23.3% of the workers were judged as having a moderate or severe condition of trait anxiety and they would benefit from professional treatment.

The fact that construction workers are usually placed in a physically and psychologically demanding condition can cause anxiety and depression [70]. Workers with such mental health issues have a high possibility of causing negative effects with regard to their individual productivity and safety. Depression decreases enthusiasm and makes it difficult for people to adapt themselves to reality or their work environment [71]. A person who has high trait anxiety tends to realize dangers and threats more frequently than does a normal person [72]. Many construction workers suffer from depression and high anxiety, and thus it might be difficult for them to concentrate on their tasks, might be less motivated, and find it difficult to make strategic decisions [11].

Drinking habits

The research adopted the cutoff scales verified by Choi [73], which explained the tendency toward

alcohol abuse in Korea. The survey results explained that Korean construction workers suffer considerably from problematic alcohol usage, which was similarly found by construction research in other countries, including Australia [12] and the United States [13,25]. More than half (59.3%) of the respondents were exposed to alcohol abuse and needed proper treatment. Respondents with problematic drinking conditions (scores 8–15) have a need for medical consultation and advice according to clinical practice recommendations. A total of 10.1% of the workers who had a score of 16–19 fell in the status of alcohol abuse, for which continuous monitoring with consultation is recommended. In addition, 10.9% of the workers scored over 20 points, which indicates a high possibility of alcohol dependence. Problematic alcohol use can lead to absenteeism from work, and workers in this psychological condition are exposed to an accident rate four times greater than that of normal workers [74].

Comparison based on working conditions

To explain the psychological conditions among different working conditions, this research analyzed personal information collected across five categories: (1) demographic information, (2) employment status, (3) work types, (4) work experiences, and (5) wage conditions. The research performed the F-test in ANOVA homogeneity test and post hoc analyses. In

Table 9. Comparisons of psychological conditions based on construction workers' working conditions.

Categories	Demographic information							Employment status	
	Characteristics	Age	Educational background	Marital status	Type of employment	Position of company	Work position		
Stress	<i>p</i> -value	0.00*	0.00*	0.61	0.07	0.86	0.01*	Foreman > Craftspeople, Assistants	
	Job demand	Under 40 > 40s, Over 50	Under middle school > High school University > The others						
	<i>p</i> -value	0.03*	0.33	0.13	0.00*	0.01*	0.00*	0.00*	0.00*
	Insufficient job control	Over 50 > 40s			Daily worker > Full-time worker, Contract worker	General contract > Subcontract	0.32	0.00*	0.00*
	<i>p</i> -value	0.27	0.28	0.92	0.29	0.37	0.2	0.32	0.32
	Interpersonal conflict	Similar			0.09	0.1	0.2	0.2	0.2
	<i>p</i> -value	0.62	0.73	0.03*	0.09	0.1	0.2	0.2	0.2
	Job insecurity			Married > Unmarried	0.26	0.54	0.2	0.03*	0.03*
	<i>p</i> -value	0.45	0.06	0.22	0.26	0.54	0.2	0.03*	0.03*
	Organization system	Similar			0.23	0.36	0.2	0.01*	0.01*
<i>p</i> -value	0.36	0.28	0.6	0.23	0.36	0.2	0.01*	0.01*	
Lack of reward	Similar			0.44	0.05	0.2	0.01*	0.01*	
<i>p</i> -value	0.00*	0.00*	0.62	0.44	0.05	0.2	0.01*	0.01*	
Occupational climate	Under 40 > 40s, Over 50	University > Under middle school Junior college > High school		0.44	0.05	0.2	0.01*	0.01*	
<i>p</i> -value	0.34	0.28	0.29	0.44	0.05	0.2	0.01*	0.01*	
Problem-focused coping	Similar			0.00*	0.21	0.2	0.01*	0.01*	
<i>p</i> -value	0.84	0.28	0.28	0.00*	0.21	0.2	0.01*	0.01*	
Seeking social support coping	Similar			Contract worker > Daily worker	0.65	0.2	0.04*	0.04*	
<i>p</i> -value	0.15	0.58	0.15	Contract worker > Daily worker	0.65	0.2	0.04*	0.04*	
Emotion-focused coping	Similar			0.22	0.39	0.2	0.69	0.69	
<i>p</i> -value	0.21	0.53	0.8	0.31	0.38	0.2	0.16	0.16	
Wishful thinking coping	Similar			0.22	0.76	0.2	0.54	0.54	
<i>p</i> -value	0.00*	0.00*	0.33	0.22	0.76	0.2	0.54	0.54	
Novelty seeking	Under 40 > 40s, Over 50			0.97	0.15	0.2	0.24	0.24	
<i>p</i> -value	0.04*	0.82	0.01*	0.97	0.15	0.2	0.24	0.24	
Harm avoidance	40s > Over 50		Unmarried > Married, Divorced	0.04*	0.44	0.2	0.01*	0.01*	
<i>p</i> -value	0.7	0.82	0.42	0.04*	0.44	0.2	0.01*	0.01*	
Reward dependence	Similar			Full-time worker > Daily worker	0.67	0.2	0.00*	0.00*	
<i>p</i> -value	0.17	0.86	0.4	0.84	0.67	0.2	0.00*	0.00*	
Persistence	Similar			0.84	0.67	0.2	0.00*	0.00*	

(Continued)

Table 9. (Continued).

Categories	Demographic information				Employment status			
	Age	Educational background	Marital status	Type of employment	Position of company	Type of pay	Amount of income	Work position
<i>p</i> -value	0.08	0.4	0.74	0.65	0.77	0.87	0.04*	0.83
Depression	Similar				Similar		Violation of Same	
<i>p</i> -value	0.33	0.1	0.58	0.34	0.09		Variance Assumption	
Trait anxiety	Similar							0.05*
<i>p</i> -value	0.02*	0.56	0.87	0.1	0.01*			High abnormal ratio on the order: Assistants > Craftspeople > Foreman
Alcohol-use disorder	High normal ratio in Over 50				High abnormal ratio in General contract			Significant but no trends
Categories	Work types				Wage conditions			
Characteristics	Construction trades	Type of construction	Working experiences in years	Working experiences on pre-sent work site	Type of pay	Amount of income		
Stress	0.06	0.00* Road, Subway, Apartment > Tunnel	0.03* 2-5, 5-10	0.22	0.87	0.04*	Violation of Same	
<i>p</i> -value	0.03*	0.13	> 10-20, Over 20 years	0.01*		0.00*	0.05	
Insufficient job control	Iron worker, Carpenter, Earthworker > Electrician		0.00* Under 2 yrs > The others	3-6 mths > Under 1 mth, 6 mths-1 yr, Over 1 yr	0.11	0.00*	Under 1.5 M, 1.5-2 > Over 2.5 M	
<i>p</i> -value	0.04*	0.19	0.11	0.1	0.39	0.05	2-2.5 > Over 2.5 M	
Interpersonal conflict	Iron worker > Carpenter, Equipment installer, Welder		Similar			0.12		
<i>p</i> -value	0.24	0.01*	0.73	0.06	0.01*	0.12		
Job insecurity		Road, Subway, Apartment > Tunnel	Similar		Daily > Monthly			
<i>p</i> -value	0.59	0.00*	0.03*	0.02*	0.14	0.00*	1.5-2, 2-2.5 > Over 2.5 M	
Organization system		Road, Apartment > Tunnel, Bridge, Subway	Under 2 yrs > 10-20, Over 20 years	3-6 mths, 6 mths-1 yr > Under 1 mth, Over 1 yr		0.01*	1.5-2, 2-2.5 > Over 2.5 M	
<i>p</i> -value	0.1	0.35	0.05	0.21	0.71	0.01*	1.5-2, 2-2.5 > Over 2.5 M	
Lack of reward	Similar		Similar			0.35		
<i>p</i> -value	0.03*	0.00*	0.01*	0.00*	0.13	0.00*	0.00*	
Occupational climate	Earthworker, Construction machine driver > Carpenter, Electrician	Road > Apartment > Tunnel	2-5 > 10-20, Over 20 years	Significant but no trends	Similar		2-2.5, Over 2.5 M > Under 1.5 M, 1.5-2	
<i>p</i> -value	0.56	0.08	0.08	0.00*	0.32	0.01*	0.01*	
Problem-focused coping	Similar		Over 20 years					
<i>p</i> -value	0.55	0.71	0.96	0.29	0.43	0.01*	0.01*	

(Continued)

Table 9. (Continued).

Categories	Work types		Working experiences		Wage conditions	
	Construction trades	Type of construction	Working experiences in years	Working experiences on present work site	Type of pay	Amount of income
Personal	Seeking social support coping	Similar	Similar			2–2.5, Over 2.5 M > 1.5–2
	<i>p</i> -value	0.26	0.09	0.64	0.55	0.58
	Emotion-focused coping	Similar	Similar			
	<i>p</i> -value	0.04*	0.11	0.22	0.53	0.2
Personal	Wishful thinking coping	Iron worker, Construction machine driver > Carpenter, Electrician	Similar		Similar	
	temperament	Earthworker > Electrician	0.00*	0.06	0.25	0.99
	Novelty seeking	Road > Apartment > Tunnel	Similar		Similar	
	<i>p</i> -value	0.47	0.81	0.22	0.47	0.14
<i>p</i> -value	Harm avoidance	Road > Bridge	Similar		Similar	
	<i>p</i> -value	0.69	0.69	0.55	0.13	0.03*
	Reward dependence		Similar			
	<i>p</i> -value	0.46	0.21	0.64	0.83	0.25
<i>p</i> -value	Persistence	0.00*	Similar	0.83	0.01*	0.01*
	Depression	High abnormal ratio in Road site	High abnormal ratio in 5–10	High abnormal ratio	High abnormal ratio in Daily workers	High abnormal ratio in Under 1.5 M
	Trait anxiety	High normal ratio in Tunnel and Bridge sites	High normal ratio in Over 20 years	0.01*	0.17	0.01*
	<i>p</i> -value	0.07	0.15	High abnormal ratio in 3–6 mths	High normal ratio in Under 1 mth and Over 1 yr	High normal ratio in Over 2.5 M
<i>p</i> -value	Alcohol-use disorder		0.27	0.56	0.11	0.02*
		0.48	Similar			High normal ratio in Over 2.5 M

each category, the analysis shows both differences and similarities in psychological conditions. The p -values of each comparison between four psychological categories (y-axis, total 18 subscales) and five categories of working conditions (x-axis, total 12 characteristics except gender) are shown in Table 9. For the significant p -values (smaller than 0.05), specific findings from the post hoc analyses are also explained in the table. For instance, the p -value between the position of company under the employment status category and insufficient job control under the stress category was 0.01, and the results indicate that general contractors tend to be more stressed than subcontractors due to the insufficient job control.

Demographic information

Demographic information comprised gender, age, educational background, and marital status; however, gender was excluded because most of the respondents were male (98.2%). The younger the construction workers were, the more stresses they experienced due to the job demands and occupational climates. The average scores of novelty seeking were high in the younger age group. The construction industry is a highly experience-oriented industry and requires following work procedures. Workers in the younger group who are relatively less experienced but more socialized might face difficulties in completing their workloads and performing structured tasks. On the other hand, workers over 50 years old who are mostly contracted workers were more stressed from insufficient job control, and their alcohol abuse was the highest of any age groups. The respondents who had university degrees felt more stressed due to job demand and occupational climate since management-level workers who generally have university degrees are responsible for controlling projects and meeting on-time project deliverables. The married workers were more stressed by job insecurity. Other psychological conditions (i.e. stress-coping styles and personal temperaments) showed similar tendencies over the demographic groups.

Employment status

Employment types, company positions, and work positions made up employment status. The stress levels were different for those three subcategories. Daily workers suffered higher stress from insufficient job control since their work is normally passive and repetitive. Contract workers showed a high level of seeking social support coping style; they tend to find solutions during work times by talking with coworkers and managers. Full-time workers showed higher reward dependencies since the hierarchy within the organization is strict and their performances should be directly related to promotion. Regarding company types, general contractors displayed a higher stress

score for stress from insufficient job control than did subcontractors and resulted in higher alcohol dependence. Most of the time, general contractors are in a management level on a jobsite, and thus responsible for control and communication with subcontractors. They also play mediator roles among owners, subcontractors, material suppliers, and other stakeholders, which may place them in more stressful conditions in controlling the job and thus lead to alcohol-dependent situations. With regard to work positions, assistants experienced high stress as a result of the insufficient job control; as Boschman et al. [24] identified, a bricklayer is stressed more by lack of job control compared to a supervisor. Assistants also showed a high level of stress from the organization system due to their simple and routine tasks, and the assistants comprised more numbers of individuals who experienced trait anxiety. They worry more about the work and often feel discomfort being with senior workers. The average score of stress originating from job demand was the highest in foremen because they might need to undertake multiple functions as subcontractors in multiple projects and furthermore feel pressurized to complete their work on time. Foremen showed active stress-coping styles and relatively high levels of reward dependency and persistency; they have a tendency to stick to their previous experiences and make new decisions based on their own. Other occupational stresses, passive stress-coping styles, novelty seeking and harm avoidance in personal temperaments, and depression all represented similar tendencies within the employment status groups.

Work types

Work types covered construction trades and construction types. Survey results indicated that iron workers, carpenters, earthmoving workers, and electricians showed severe psychological stress due to insufficient job controllability, interpersonal conflict, and problems on occupational climate. Iron workers experienced more stresses caused by the insufficient job controls and interpersonal conflicts than other trades, whereas electricians, normally working with high voltage and in danger of being electrocuted, suffered more stress originating from negative occupational climates. Earthmoving workers had a higher level of wishful thinking; when they face challenges in heavily equipment-oriented working environments, they may tend to hope for miracles without making efforts to alter their work plans.

Construction type, such as road, subway, apartment, bridge, and tunnel projects, also led to different mental health problems. Workers in road projects, most of who were the daily-paid workers in this survey, experienced the highest level of psychological problems. They displayed high stress scores (under

severe condition) for stresses originating from job demand, job insecurity, organization system, and occupational climate. The subway site workers' stress increased due to the demanding job, job insecurity, and negative occupational climate due to confined working environments. Respondents who worked on apartment sites suffered from stress as a result of job demand, job insecurity, and occupational climate at the medium level, but they felt higher stress in relation to the organization system than other sites' workers. Workers who built bridges on sites experienced a relatively low level of stress. Additionally, the novelty-seeking tendency was high for road site workers but low for tunnel site workers; road site workers also suffered from high depression. Construction workers within the work type categories showed similar tendencies in stress due to a lack of reward, all types of stress-coping styles except wishful thinking, harm avoidance, reward dependence, and persistence in personal temperaments, trait anxiety, and alcohol abuse.

Working experiences

Working experiences were divided into two subcategories: working years and working months on the present work site. Working years included five selection ranges: under 2 years, 2–5 years, 5–10 years, 10–20 years, and over 20 years. Workers who had less than 2 years of experience showed a higher level of stress due to the insufficient job controls and organization systems, similar to the younger age group. The level of stress increased for respondents with a career of 2–5 and 5–10 years due to the job demands and occupational climates. Over 20-year-experience workers were relatively less sensitive to stress, as Abbe et al. [8] reported, with lower stress levels in job demands, organization systems, and occupational climates. The more experienced the construction workers were, the less stressed they were due to the job demands and occupational climates. With regard to depression, however, workers who had over 20 years of experience had the highest score.

The working experiences on the present work site did not show critical differences in psychological conditions. Similar stress tendencies were found in interpersonal conflict, job insecurity, lack of reward, seeking social support coping, emotion-focused coping, wishful thinking coping, all four temperaments, and alcohol abuse.

Wage conditions

It is easily acceptable that daily-paid workers would feel more stressed by job insecurity than would monthly-paid workers. Moreover, the group of daily-paid workers included many depressed workers at a severe level, similar to the fact that road site workers who were stressed more by job insecurity showed a severe

depression level. This suggested that depression was correlated to stress due to job insecurity.

Workers who earned over US\$2,500 (2.5 million Korean won) per month experienced relatively lower stress than the other wage groups due to more satisfied job controllability, less interpersonal conflict, well-structured organizational system, and satisfaction of rewards. The research set two groups according to the monthly income: a lower group (less than \$1,500 and \$1,500–\$2,000) and a higher group (\$2,000–\$2,500 and over \$2,500). The lower group suffered from depression more, whereas the higher group showed a relatively high active stress-coping style and reward dependence as well as low trait anxiety and alcohol abuse.

The wage groups, however, showed similar tendencies in occupational stress from occupational climate, passive stress-coping styles (including emotion-focused and wishful coping styles), novelty seeking, harm avoidance, and persistence of temperaments.

Conclusions and recommendations

The research first analyzed the psychological conditions of construction field-workers in Korea based on the survey of 430 workers. Korean construction workers showed similar levels of stress to firefighters, and they mainly adopted the problem-focused and seeking social support coping styles. The construction workers exhibited a low level of novelty-seeking, harm-avoidance, and reward-dependence personality traits and a medium degree of persistence. Even with this low-level result, these three temperaments were higher than those found in the average Korean adult male populations.

This research revealed that arduous, large-scale, hierarchical, and dynamically changeable working environments can cause workers to experience stress based on the analysis from the perspective of professional clinical psychologists. The experience-based construction industry leads workers to adopt the problem-focused coping strategies. Low novelty-seeking and harm-avoidance strategies may enable these workers to fit themselves into risky situations. Additionally, it is very critical that two out of five construction workers suffer from depression and experience trait anxiety. More seriously, three out of five workers show alcohol-use problems, which would be consistent with recommended clinical attention.

The study also investigated psychological differences in a range of different working conditions. The more experienced the construction workers were, the less stressed they were due to the job demands and occupational climates. Moreover, assistants comprised more number of individuals who experienced trait anxiety. Many of the subcontractors showed severe psychological stresses due to the

insufficient job controllability, interpersonal conflicts, and problems on occupational climate. The group of daily-paid workers included many depressed workers at a severe level. However, workers over 50 years old with a low level of novelty seeking and harm avoidance, as well as full-time workers and foremen with a high level of reward dependence and persistence, have psychological advantages, enabling them to adapt themselves to changeable project environments.

The results of this study can be used to promote productivity and safety improvement plans by mitigating and reducing stress sources and providing appropriate psychological interventions to address emotional disturbances and alcohol abuse. In other words, both industry practitioners and government agencies such as the Ministry of Employment and Labor need to understand the importance of mental well-being of construction workers. Self-checking tools of the psychological conditions of individual construction workers, daily psychological intervention for workers having difficulties, and clinical training and support are emphasized to be developed and distributed to job sites by government agencies since workers' psychological conditions act as front end for better onsite safety and productivity.

This study also suggests an effective training strategy for new workers. New workers may have a high level of stress due to insufficient job control and unfamiliar organizational systems; lack of active stress-coping styles, including problem-focused coping and seeking social support coping; and more depression caused by harsh working conditions and low income. Thus, employers need to not only establish a communication channel between the new workers and the organization while encouraging them to feel the sense of ownership and responsibility but also provide them with psychological training that will support them to manage and cope with occupational stress. A step-by-step professional training can also help them foster active stress-coping styles.

Nevertheless, the research faced limitations during the study and there remain several opportunities for further research. Unlike the respondents from other construction types, the respondents of bridge construction sites were from two different locations, North Jeollar and South Jeollar Provinces. Although the effect of regional characteristics can be considered, the analysis was more focused on the general tendency and occupational characteristics. Next, the questionnaire used in this study was designed based on the comparisons of normal and abnormal, more relative than absolute, and thus limited to explaining how a certain score demonstrates a certain level of psychological condition more concretely. Additionally, this study did not fully address how onsite safety and productivity can be affected by stress, personal temperament, emotional disturbance, and drinking habits. Future research needs to investigate the relationships among psychological conditions, safety

consciousness, and productivity behaviors for better safety and productivity control on construction sites.

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ORCID

Soram Lim  <http://orcid.org/0000-0001-5405-3392>
 Seokho Chi  <http://orcid.org/0000-0002-0409-5268>
 Joon Deuk Lee  <http://orcid.org/0000-0002-9480-6237>
 Hoon-Jin Lee  <http://orcid.org/0000-0002-7758-4011>

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Exhibit 13

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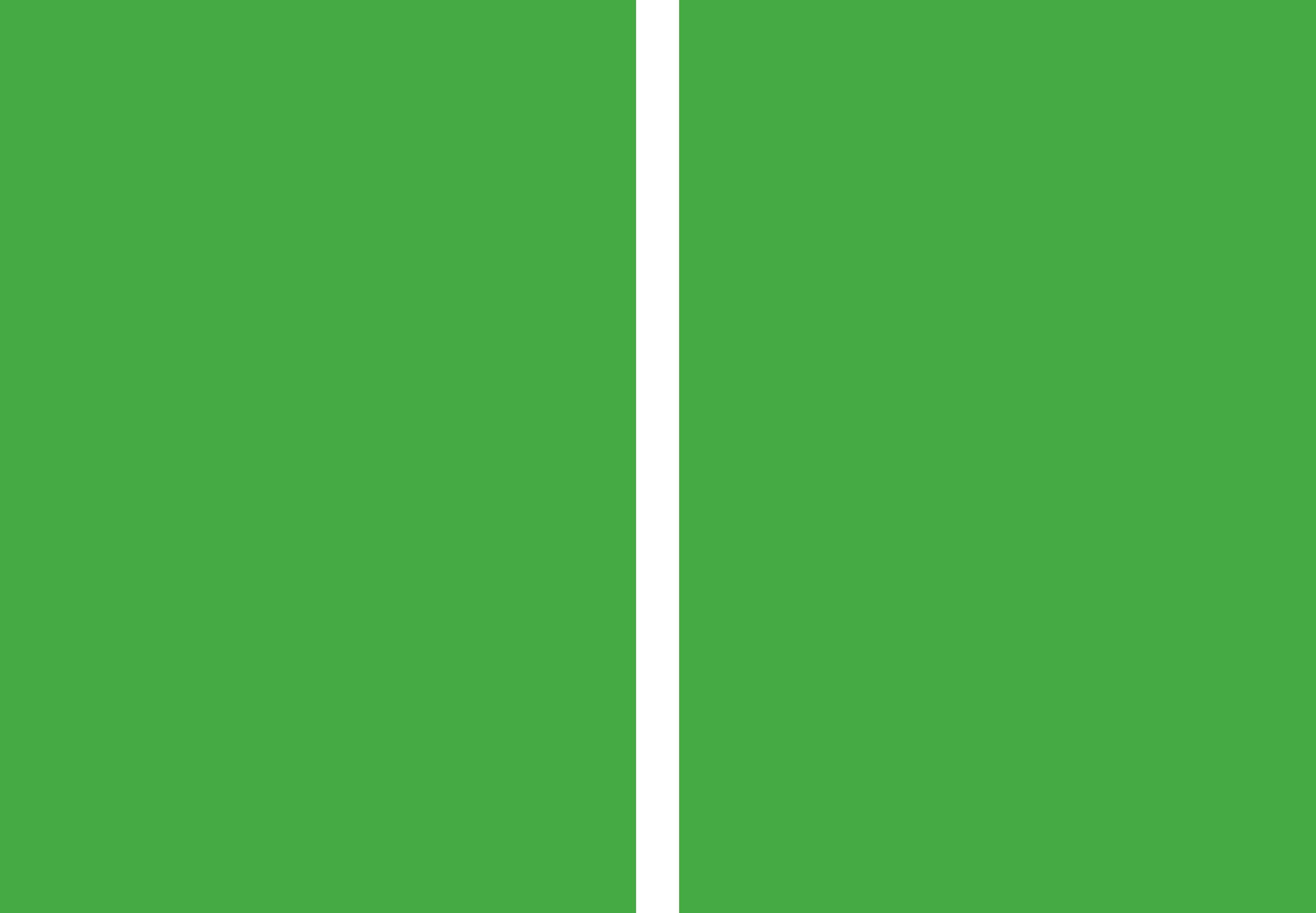


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Information concerning this publication can be obtained from:

Dr Michelle Funk
Mental Health Policy and Service Development Team
Department of Mental Health and Substance Abuse
Noncommunicable Diseases and Mental Health Cluster
World Health Organization
CH-1211, Geneva 27
Switzerland
Tel: +41 22 791 3855
Fax: +41 22 791 4160
E-mail: funkm@who.int

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WHO Editorial and technical coordination group:

Dr Michelle Funk, Ms Natalie Drew, and Dr Benedetto Saraceno of WHO, and Dr José Miguel Caldas de Almeida, of the WHO Regional Office for the Americas/Pan American Health Organization.

Technical assistance:

Dr Thérèse Agossou, WHO Regional Office for Africa; Dr Vijay Chandra, WHO Regional Office for South-East Asia; Dr Hugo A. Cohen, Pan American Health Organization, Mexico; Ms Evelyn Kortum, Occupational and Environmental Health, WHO, Geneva, Switzerland; Dr Catherine Le Galès-Camus, Noncommunicable Diseases and Mental Health, WHO, Geneva; Dr Matt Muijen WHO Regional Office for Europe; Dr Srinivasa Murthy, WHO Regional Office for the Eastern Mediterranean; Mr Hedinn Unnsteinsson, WHO Regional Office for Europe; and Dr Wang Xiangdong, WHO Regional Office for the Western Pacific.

Administrative and secretarial support:

Ms Adeline Loo, Mrs Anne Yamada, and Mrs Razia Yaseen of WHO; Ms Janis Hughes, Professional Translator, Winnipeg, Manitoba, Canada; and Ms Valerie Lenihan, Senior Executive Secretary, Douglas Hospital Research Centre, Montreal, Quebec, Canada.

Layout and graphic design: 2S) graphicdesign

WHO also thanks the following people for their expert opinion and technical input to this module:

Dr Jason M. Andrus	Children's Hospital Boston, Department of Psychiatry, Boston, USA
Mme Louise Blanchette	Responsable du Certificat de Santé mentale, University of Montreal, Quebec, Canada
Dr Daniel B. Borenstein	American Psychiatric Association, Committee on Business Relations, Los Angeles, CA, USA
Ms Patricia Bregman	Disability Law and Policy, Toronto, Ontario, Canada
Dr Mabel Burin	Director, Programa de Estudios de Género y Subjetividad, Universidad de Ciencias Empresariales y Sociales (UCES), Buenos Aires, Argentina
Ms Joannah Caborn	Expert on Psychosocial Issues (Training and Research), Safe Work, International Labour Office, Geneva, Switzerland
Mr Claude Charbonneau	Director, Accès Cible S.M.T., Montreal, Quebec, Canada
Dr Norman A. Clemens	American Psychiatric Association, Committee on Business Relations, University Suburban Health Center, Cleveland, OH, USA
Dr Gabriela Cora-Locatelli	American Psychiatric Association, Committee on Business Relations, Miami Shores, FL, USA
Dr Marc Corbière	Associate Professor, Institute of Health Promotion Research, University of British Columbia, Vancouver, Canada
Dr Marianne Farkas	Center for Psychiatric Rehabilitation, Boston University, Boston, USA
Ms Phyllis Gabriel	Employment Sector, International Labour Office, Geneva, Switzerland
Dr David Gold	Senior Specialist, Safe Work, International Labour Office, Geneva, Switzerland
Dr Beth Goldman	American Psychiatric Association, Committee on Business Relations, Bloomfield Hill, MI, USA
Mr Paul W. Heck	Manager, Global Employee Assistance Services, DuPont, Wilmington, DE, USA
Dr Stephen H. Heidel	American Psychiatric Association, Committee on Business Relations, San Diego, CA, USA
Professor Helen Herrman	Professor, Department of Psychiatry, University of Melbourne, St Vincent's Mental Health Service, St Vincent's Hospital, Fitzroy, Victoria, Australia
Ms Karen Hetherington	Senior Consultant, PAHO/WHO Collaborating Centre, Douglas Hospital Research Center, Montreal, Quebec, Canada
Dr Hwang Tae-Yeon	Director, Department of Psychiatric Rehabilitation and Community, Mental Health, Yongin Mental Hospital, Yongin City, Kyonggi Province, Republic of Korea
Mr Bernard Jacob	Director, Association Interrégionale de Guidance et de Santé, Vottem, Belgique
Dr Jeffrey Paul Kahn	American Psychiatric Association, Committee on Business Relations, New York, NY, USA
Dr Kim Seong-Su	Staff Psychiatrist, Department of Psychiatric Rehabilitation and Community Mental Health, Yongin Mental Hospital, Republic of Korea

Dr Karl Kuhn	Federal Institute for Occupational Safety and Health, Dortmund, Germany
Dr Pirkko Lahti	Executive Director, Finnish Association for Mental Health, Helsinki, Finland
Ms Patricia Larondelle	Conseillère en prévention, Association Interrégionale de Guidance et de Santé, Vottem, Belgique
Dr Lee Dominic T.S.	Department of Psychiatry, Chinese University of Hong Kong, Hong Kong SAR, China
Mrs Laurence F. Lorenzini	Philius Foundation, Carouge, Geneva, Switzerland
Dr Crick Lund	Consultant, Cape Town, South Africa
Mr Carlos R. Martinez	Director of Human Resources, Douglas Hospital, Montreal, Quebec, Canada
Dr John Maynard	Chief Executive Officer, International EAP Association, Arlington VA, USA
Dr Céline Mercier	Director, Information Technology and Research, Lisette-Dupras Rehabilitation Centre, Montreal, Quebec, Canada
Dr Clare Miller	Director, National Partnership for Workplace Mental Health, American Psychiatric Foundation, American Psychiatric Association, Arlington, VA, USA
Dr Alberto Minoletti	Director, Mental Health Unit, Ministry of Health, Santiago, Chile
Mr Rocco Montassano	Sector Chief, Human Resources Department, Douglas Hospital Research Centre, Montreal, Quebec, Canada
Dr Paul Morgan	Director of Strategy and Communications, SANE, South Melbourne, Victoria, Australia
Mr Joab T. Mudzanapabwe	Chief Vocational Counsellor, Vocational Counselling Services, Ministry of Labour, Khomasdal, Namibia
Dr Aldred Neufeldt	Professor, Community Rehabilitation and Disability Studies Program, University of Calgary, Calgary, Alberta, Canada
Mr Ng Eddie	Chairman, Human Capital Management Consulting Ltd , Hong Kong SAR, China
Mr Dominique Norz	Managing Director, Personal Dynamics Co. Ltd, Bangkok, Thailand
Dr Jean-Pierre Papart	Actions en Santé Publique, Versoix, Geneva, Switzerland
Ms Michèle Parent	Vice-President, Disability Risk Management and Health and Wellness, Standard Life Insurance Company, Montreal, Quebec, Canada
Dr Michel Perreault	Researcher, Douglas Hospital, Department of Psychiatry, McGill University, Montreal, Quebec, Canada
Dr Hebert S. Peyser	American Psychiatric Association, Committee on Business Relations, New York, NY, USA
Ms Debora Rabinovich	Researcher Assistant, Douglas Hospital Research Centre, Montreal, Quebec, Canada
Dr Donna M. Robinson	MedConsult Asia, Bangkok, Thailand
Professor David A. Richards	Professor of Mental Health, Department of Health Sciences, University of York, England
Professor Robert Sévigny	Professor Emeritus, Department of Sociology, University of Montreal, Quebec, Canada

Professor Heather Stuart	School of Rehabilitation Therapy, Queens University, Kingston, Ontario, Canada
Dr Zebulon Taintor	Department of Psychiatry, New York University Medical Center, New York, NY, USA
Dr Marcelo Trucco	Medical Director, Hospital del Trabajador, Santiago, Chili
Dr Michel Vézina	Professor, Department of Social and Preventive Medicine, Laval University, Quebec, Canada
Mr Bill Wilkerson	Co-Founder and Chief Executive Officer, Global Business and Economic Roundtable on Addiction and Mental Health, Toronto, Ontario, Canada
Dr Mohammad T. Yasamy	Associate Professor, Department of Psychiatry, Imam Hossein Hospital, Tehran, Islamic Republic of Iran
Dr Shen Yucun	Director, Mental Health Institute, Beijing University, Beijing, China
Mr Gerard Zaugg	Manor, Geneva, Switzerland

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“The development and implementation of a workplace mental health policy and programme will benefit the health of employees, increase productivity for the company and will contribute to the wellbeing of the community at large.”

Table of Contents

Preface	x
Executive summary	2
Aims and target audience	7
1. Work and mental health	9
The changing world of work	10
Understanding mental health problems	12
Mental health problems in the workplace	14
Impact of mental health problems	19
Risk and protective factors for mental health problems	22
2. The role of government	27
Vulnerable populations	27
Policy and legislation	29
Government partners	32
3. Putting in place a workplace mental health policy	33
4. Step I: Analysing mental health issues	35
Making the case	35
Establishing a coordinating process	37
Assessing mental health issues	37
5. Step II: Developing the policy	43
Formulating a vision statement	43
Identifying the values and principles	43
Defining the objectives	44
Consulting key stakeholders	46
6. Step III: Developing strategies to implement the policy	49
Reviewing the options for strategies	49
Finding resources to implement the strategies	60
Developing an implementation plan	61
7. Step IV: Implementing and evaluating the policy	65
Generating support and collaboration	65
Coordinating implementation	65
Training	65
Setting up a demonstration project	66
Evaluating the policy	66
8. Barriers and solutions	69
References	72
Further reading	79

This module is part of the WHO Mental Health Policy and Service Guidance Package, which provides practical information aimed at helping countries to improve the mental health of their populations.

What is the purpose of the guidance package?

The package provides guidance for policy-makers and planners on:

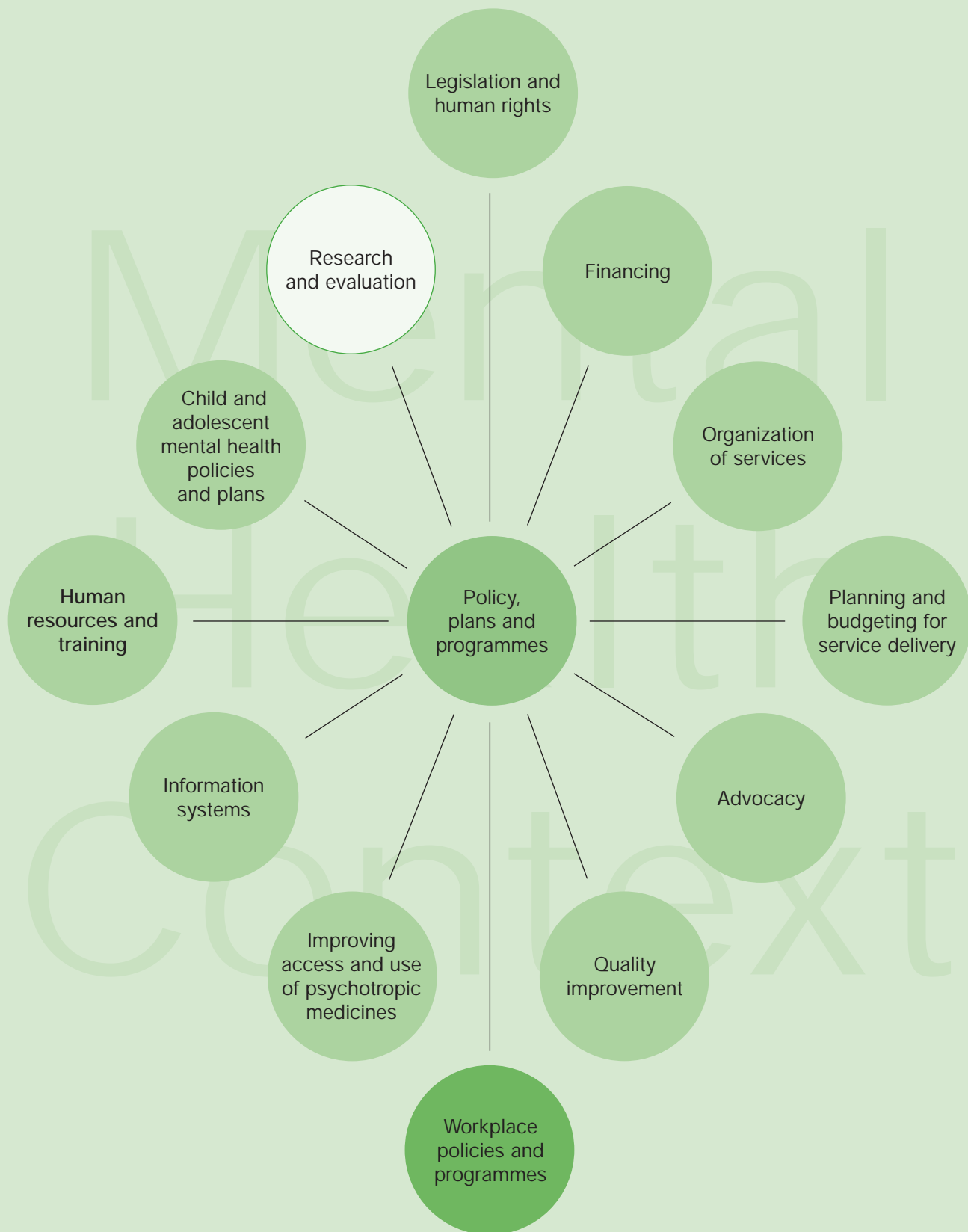
- developing policies and comprehensive strategies for improving the mental health of populations;
- using existing resources to achieve the greatest possible benefits;
- providing effective services to persons in need;
- helping people with mental disorders to reintegrate into all aspects of community life, thus improving their overall quality of life.

What is in the package?

The guidance package consists of a number of interrelated user-friendly modules, designed to address a wide variety of needs and priorities in policy development and service planning. Each module deals with a core aspect of mental health.

The guidance package comprises the following modules:

- > The Mental Health Context
- > Mental Health Policy, Plans and Programmes
- > Mental Health Financing
- > Mental Health Legislation and Human Rights
- > Advocacy for Mental Health
- > Organization of Services for Mental Health
- > Quality Improvement for Mental Health
- > Improving Access and Use of Psychotropic Medicines
- > Planning and Budgeting to Deliver Services for Mental Health
- > Child and Adolescent Mental Health Policies and Plans
- > Mental Health Information Systems
- > Human Resources and Training for Mental Health
- > Research and Evaluation of Mental Health Policy and Services
- > Workplace Mental Health Policies and Programmes



● still to be developed

Who is the guidance package for?

The modules should be of interest to:

- policy-makers and health planners;
- government departments at federal, state/regional and local levels;
- groups representing people with mental disorders;
- representatives or associations of families and carers of people with mental disorders;
- advocacy organizations representing the interests of people with mental disorders, and their families;
- nongovernmental organizations involved or interested in the provision of mental health services.

The present module will be of particular interest to:

- employers;
- employees;
- human resources professionals;
- occupational health professionals;
- mental health professionals;
- trade unions and other employee organizations.

How to use the modules

The modules can be used **individually or as a package**. They are cross-referenced with each other for ease of use. Users may go through the modules consecutively, or may select the specific module appropriate to their particular interest; for example, mental health legislation is dealt with primarily in the module *Mental health legislation and human rights*.

The modules can serve a number of different purposes:

- as a **training package** for all those involved in organizing, delivering and funding mental health services;
- as educational materials in university or college courses;
- as a framework for **technical consultancy** by international and national organizations providing support to countries that wish to reform their mental health policies and/or services;
- as **advocacy tools** for use by consumer, family and advocacy organizations, to increase awareness among politicians, opinion-makers, other health professionals and the general public about mental disorders and mental health services.

Format of the modules

The aims and the target audience of each module are clearly outlined. Guidance is presented in a step-by-step format to make it easier to use. The guidance is not intended to be prescriptive; users are encouraged to adapt the material according to their own needs and circumstances. Practical examples from different countries are used throughout the modules.

All the modules should be read in the light of WHO's policy of providing most mental health care through general health services and in community settings. Mental health is necessarily an intersectoral issue, requiring the involvement of the health, education, employment, housing and social services sectors, and in some cases the criminal justice system. It is also important to engage in serious consultations with consumer and family organizations in the development of policies and the delivery of services.

Dr Michelle Funk
Coordinator,
Mental Health Policy
and Service Development

Dr Benedetto Saraceno
Director
Department of Mental Health
and Substance Abuse

Mental health problems, such as depression, anxiety, substance abuse and stress, are common, affecting individuals, their families and co-workers, and the broader community. In addition, they have a direct impact on workplaces through increased absenteeism, reduced productivity, and increased costs.

Mental health problems are the result of a complex interplay between biological, psychological, social and environmental factors. There is increasing evidence that both the content and context of work can play a role in the development of mental health problems in the workplace.

Key factors include:

- > workload (both excessive and insufficient work);
- > lack of participation and control in the workplace;
- > monotonous or unpleasant tasks;
- > role ambiguity or conflict;
- > lack of recognition at work;
- > inequity;
- > poor interpersonal relationships;
- > poor working conditions;
- > poor leadership and communication;
- > conflicting home and work demands.

The role of government

Governments have a crucial role in promoting mental health, including the mental health of workers, and in ensuring that mental health problems are recognized early and treated effectively. Governments are also usually employers themselves, often employing thousands of people.

Some of the crucial roles of government are:

- > to identify vulnerable populations, such as women, children, the elderly and people with disabilities, promote their access to work, and ensure that they are able to enjoy the same conditions as other groups in the work environment.
- > to establish policy and legislation in key areas, such as prevention of discrimination, income protection, safety and health at work, mental health policy and services, and reduction of unemployment.

Employer, employee and nongovernmental organizations, also have an important role in working with governments to improve the mental health of employees. These partners should advocate for the development of policies and strategies that promote the mental health of employees and prevent and treat mental health problems.

Putting in place a workplace mental health policy

For many businesses, addressing mental health problems at the workplace will begin with the development of a policy. A mental health policy for the workplace helps to define the vision for improving the mental health of the workforce and to establish a model for action. When well formulated, such a policy will also identify and facilitate the agreements needed among the different stakeholders in the workplace. Without policy direction, lack of coordination and fragmentation will reduce the impact of any workplace mental health strategy.

A mental health policy for the workplace can be developed separately, or as part of a broader health and safety policy. Putting the policy in place involves the following steps:

- > Step I. Analysing the mental health issues.
- > Step II. Developing the policy.
- > Step III. Developing strategies to implement the policy.
- > Step IV. Implementing and evaluating the policy.

Step I. Analysing the mental health issues

It is important to make the case for developing a mental health policy in the workplace in order to gain the explicit endorsement and commitment of the employer and other key stakeholders. The employer is more likely to support the development of a policy if its potential cost impact can be demonstrated.

In making the business case, general data showing the link between mental ill-health and reduced productivity and increased costs should be presented. In addition, any readily available data from the workplace itself should be analysed and presented in order to make the business case. A detailed assessment of mental health issues in the workplace, however, may not be possible until the commitment of management has been secured.

A coordinating body, such as a steering committee or working group, should be established to guide the assessment of the workforce, facilitate consultation with the various stakeholders and coordinate the development of the workplace mental health policy. This body should ensure that all key stakeholders are involved in developing the policy.

The workplace mental health policy needs to be based on a comprehensive understanding of the issues, derived from a detailed assessment of the situation. All available relevant information should be assembled. Such information might include: human resources data (e.g. absenteeism records or number of resignations); occupational health and safety data (e.g. accidents or risk assessments), financial data (e.g. the cost of replacing employees who are on long-term disability leave) and health data (e.g. common health problems among the workforce).

It may be necessary to collect new information through, for example, surveys on the incidence and prevalence of mental health problems in the workplace; risk assessments to identify occupational health and safety issues in the work environment; interviews or focus group discussions with key informants, such as employees, their families, managers, and medical personnel within the organization.

Step II. Developing the policy

A workplace mental health policy usually comprises a vision statement, a statement of the values and principles on which the policy will be based, and a set of objectives. These components need not be dealt with sequentially; often they are developed simultaneously.

The vision statement presents a general image of the future of mental health in the workplace. It should set high expectations as to what can be achieved, while at the same time being realistic.

It is often difficult to achieve a common vision among stakeholders who may have diverse interests and perspectives. It is essential that all stakeholders have input to the vision. An active compromise among the majority of stakeholders may be necessary if the policy is to be successfully implemented.

Values and principles form the basis for the development of objectives and strategies. Values refer to judgements or beliefs about what is considered worth while or desirable, and principles refer to the standards or rules that guide actions, and should ultimately emanate from the values.

Workplaces have their own values and culture, which should be reflected in a policy. The values and principles underlying the workplace mental health policy should strike a balance between the various interests of the different stakeholders.

Objectives translate the policy vision into concrete statements of what is to be achieved. Objectives should respond to the identified issues and aim to improve the mental health of the workforce. They should be specific and achievable within a specified timeframe of the policy.

During the process of formulating the vision, values, principles and objectives, it is essential to consult with all stakeholders. Key stakeholders should be identified early and involved in the analysis and assessment of the mental health needs in the workplace. Consultations should continue throughout the process of developing the policy.

Step III. Developing strategies to implement the policy

Once the mental health policy has been developed, strategies are needed to implement it. The strategies are the core of any mental health plan.

The first task is to review the options for strategies, which can be divided into five main categories

- > increasing employee awareness of mental health issues;
- > supporting employees at risk;
- > providing treatment for employees with a mental health problem;
- > changing the organization of work;
- > reintegrating employees with a mental health problem into the workplace.

The specific strategies chosen will depend on the needs of the business and its employees and the resources available.

Next, it is important to ensure that sufficient resources are available to implement the strategies. This requires a clear understanding of both the strategies to be implemented and the associated costs. The resources needed might include additional financing (for example, to establish an employee assistance programme) or the redirection of funds that are currently used elsewhere (for example, negotiating with health clinic staff to conduct a mental health awareness campaign).

Finally, the plan to implement the policy has to be formulated. The plan should outline the objectives, specific strategies to be used, targets to be achieved and activities to be carried out. The timeframe, responsible people, outputs and potential obstacles should be clearly identified.

Step IV. Implementing and evaluating the policy

The main actions in implementing and evaluating a mental health policy in the workplace include:

- > generating support and collaboration;
- > coordinating implementation;
- > training;
- > establishing a demonstration project; and
- > evaluating the outcomes.

The mental health policy needs to be disseminated and communicated to all stakeholders. Many policies fail because they are poorly communicated. Some approaches to communication are listed below.

- > Organize an event to launch the policy.
- > Distribute posters and leaflets outlining the policy.
- > Hold meetings with different groups of employees to explain the policy.
- > Publish the policy on the company's Website.

The implementation process needs to be carefully coordinated and monitored. The plan should be reviewed and updated as necessary.

A process for implementation should be established. An individual, a department or a committee might be given responsibility for the implementation of the plan. Regular reporting to the employer, employees, and funders of the policy should be part of the implementation plan.

It is important to ensure that the people who will be leading the implementation process are properly trained to understand the issues associated with mental health in the workplace. A range of stakeholders may benefit from training at this stage, including:

- > health workers,
- > human resource personnel,
- > managers and supervisors,
- > union delegates,
- > occupational health and safety representatives.

It is often useful to set up a demonstration project to implement a strategy in one part of the company. Such a project can often be implemented rapidly and thoroughly evaluated. The demonstration project may target a particular group of employees (for example, administrative staff) or a specific department.

The demonstration project may also be used as an advocacy tool, to illustrate the value of specific strategies; as a training area for the implementation of the plan; and to provide detailed guidance for other parts of the workplace on implementing specific strategies.

It is important to evaluate the effect of the policy and strategies on individual workers and on the organization. This will also assist in building an evidence base of effective mental health interventions in the workplace. Ideally, the evaluation should be planned when the policy is being developed, and should contain both quantitative and qualitative elements.

Aims and target audience

Aims of the module

The aim of this module is to provide guidance on developing and implementing a mental health policy in the workplace. It is intended as a resource to help employers protect and improve the mental health of their workforce.

Target audience

The primary audience for this module comprises employers, employees, human resources professionals, occupational health professionals, mental health professionals, trade unions and other employee organizations.

However, the focus of the module is on policies and plans within individual workplaces, rather than the broader policy and regulatory context of the country. Other modules in WHO's Mental Health Policy and Service Guidance Package contain guidance on the development of mental health policies, plans and programmes at national level.

How to use this module

The introductory chapters provide the conceptual foundations for the module. Productive employment is important in achieving a decent living standard, social and economic development, and personal fulfilment. Mental health problems in the workplace carry a heavy toll for the individual and his or her family, for the workplace, and for society as a whole.

Practical guidance is provided on formulating a mental health policy for the workplace, and developing a plan and related strategies for its implementation.

The guidance is not intended to be prescriptive, and should be adapted to reflect the context of individual workplaces and the needs of employees and employers. In some workplaces, particularly large ones, the development of a workplace mental health policy will often be a formal activity, led by experts in occupational health and involving a wide range of stakeholders. Smaller workplaces might collaborate to develop a single policy that is relevant to the different businesses.

1. Work and mental health

Work is an essential feature of most people's adult life, and has personal, economic and social value. Work substantially contributes to a person's identity; it provides income for an individual and his or her family, and can make a person feel that he or she is playing a useful role in society. It is also an important source of social support. Participation in work also contributes to the economic and social development of communities.

This module outlines the types of mental health problems that may be encountered in the workplace, together with their consequences and costs, and proposes systematic strategies to prevent and reduce their impact on the person concerned and on the workplace. It does not address in detail the important role of work in maintaining mental health or in rehabilitating workers who have developed mental health problems.

The module makes the case for the development of a mental health policy and strategies within the workplace to promote the mental health of all employees and ensure the early recognition and treatment of mental health problems.

The term *workplace* is used here to refer to any environment where economic activity occurs. It includes large workplaces, employing thousands of people, small and medium-sized workplaces, and homes where individuals or families may work. Workplaces include public, private and nongovernmental organizations; for-profit and not-for-profit undertakings; small and family-based businesses. Mental health issues associated with unpaid work, such as domestic tasks, are not addressed.

The term *employer* refers to the owner of the business or the senior manager, such as a chief executive officer, who is responsible for achieving the objectives of the business. In many countries governments are one of the largest employers, and have the same responsibilities to employees as private for-profit businesses.

The term *employee* refers to a person working for a business. While in some workplaces there is a clear distinction between employer and employee, in small or family businesses a person may be both an employer and an employee. Similarly, in large workplaces, an individual may be both an employee of the business and a manager responsible for achieving organizational objectives and managing other employees.

Mental health can be defined in a number of ways. It is more than the absence of a mental disorder (World Health Organization, 2001). It includes concepts such as subjective well-being, perceived self-efficacy, autonomy, competence, and the achievement of one's intellectual and emotional potential.

People who are mentally healthy may occasionally have symptoms of emotional distress, but they are appropriate and in proportion to the situation. Mental health involves a wide range of emotions, thoughts and behaviours. With good mental health, people feel well, and can tolerate reasonable amounts of pressure, adapt to changing circumstances, enjoy rewarding personal relationships and work according to their abilities. A person's mental health is affected by individual factors and experience, social interactions, the environment, and societal and cultural norms and expectations (World Health Organization, 2004b). A key component of an individual's mental health is the ability to adequately fulfil his or her roles, including capacity to work.

Work is important for mental health and indeed the right to work in just and favourable conditions and with protection from unemployment is enshrined in the United Nations Universal Declaration of Human Rights (Article 23). Work produces personal and health benefits, while the absence or loss of work can potentially damage a person's mental health (Huxley, 2001).

Work affects a person's mental health, while in turn an employee's mental health affects the workplace.

Work substantially contributes to a person's identity; it provides income for an individual and his or her family and can make a person feel that he or she is playing a useful role in society.

Mental health is more than the absence of a mental disorder.

Work is important for mental health.

The changing world of work

The nature of work is changing rapidly. Factors such as the globalization of markets, urbanization and migration, and advances in information technology have an impact on the nature of work and on the health – including mental health – of employees.

Most working people are found in low- and middle-income countries, where workplaces are often smaller, working conditions more stressful and occupational health protection weaker than in high-income countries. Unfortunately, most of the evidence on mental health problems in the workplace has been derived from high-income countries. Nevertheless, some of this evidence is also applicable to developing countries and can be used to inform the development of workplace mental health policies in low- and middle-income countries.

Globalization

Total world economic activity has increased with the liberalization of trade and the elimination of barriers to the transfer of capital and goods between countries (Rantanen, 1999). Globalization refers to the progressive integration of economies and societies. Globalization is not a new phenomenon. Indeed the International Labour Organization was formed in 1919 in recognition of the need to ensure that the integration of national economies is based on social justice.

Globalization affects individuals, families and the society generally. It has the potential to promote development and increase the wealth of the community by improving the national economy. In some developing countries, large multinational companies have introduced occupational health services (Lehtinen, 2001). Changes in the workplace that increase the income of employees, facilitate access to education and training, and improve working conditions will have a positive effect on the mental health of employees.

However, globalization may also have a negative impact on employment and working conditions. For example, the growth of large multinational companies has been accompanied by greater decentralization, outsourcing and flexible work environments, with wide variations in the conditions of work and in exposure to occupational hazards (Rantanen, 1999).

Globalization has also led to the emergence of new industries. In Central America, for example, “maquiladora” or the assembly industry has emerged. In this industry, 90% of employees are women or children, and workplaces are often characterized by unstable jobs, low wages, long working hours, sexual harassment, temporary contracts and subcontracting (Gutierrez, 2000). While these new industries make an important contribution to the national economy, such working conditions are likely to have a negative impact on the mental health of employees and their families.

Urbanization and migration

The need to find work has also resulted in many workers moving to other countries with a stronger employment sector or better working conditions. The International Labour Organization estimates that there are about 120 million workers living outside their country of origin, representing 3% of the global labour force. While migration can have a positive effect on the mental well-being of an employee, it can also cause stress through an increased risk of exposure to poverty and exploitation, difficulties in integrating into a new community, and the loss of family and other social support networks.

The nature of work is changing rapidly.

In some developing countries, large multinational companies have introduced occupational health services.

ILO estimates that there are approximately 120 million workers living outside their country of origin, representing 3% of the global labour force.

Information technology

Advances in information and communication technology affect the traditional relationship between workers and the workplace. Information and communication technology can allow work to be performed in different physical locations. Workers may therefore be located geographically distant from the traditional workplace. Such developments create new challenges for employees. While some may enjoy the freedom associated with working at home, for many the isolation and loss of social support associated with working alone causes stress and increases the risk of developing a mental health problem.

Moreover, contrary to expectations raised 15–20 years ago, improvements in technology have not resulted in shorter working weeks, reduced stress and increased leisure activities. Instead, an increasing number of employees are working more than ever. Boundaries between home and work can become unclear, compromising the conventional separation between work and the private sphere (Kanter, 1977). A landmark study of 31 500 workers in Canada (Duxbury & Higgins, 2001) found that technology was one of the key reasons that one in four Canadians were working more than 50 hours a week, and accounted for nearly all the unpaid overtime worked at home.

Small and medium-sized workplaces

Small and medium-sized workplaces remain common. In the European Union, for example, 100 million of the estimated 140 million employees work in small or medium-sized workplaces or are self-employed (Rantanen, 1999). In Kenya, small workplaces (less than 50 employees) employ over 4.2 million people (Karanja et al., 2003).

Working conditions in small and medium-sized businesses vary considerably. Many such businesses are family-based and frequently operate outside regulatory frameworks increasing the likelihood of psychosocial hazards. In a study in Kenya of 100 employees working in small workplaces, 60% reported exposure to psychosocial hazards such as long working hours and wages not paid on time (Karanja et al., 2003). Exposure to physical, biological, mechanical and chemical hazards is likely to have consequences for employees' mental, as well as physical, health.

Advances in information and communication technology affect the traditional relationship between workers and the workplace.

In the European Union, 100 million of the estimated 140 million employees work in small or medium-sized workplaces or are self-employed.

Box 1. The Tokyo Declaration

The Tokyo Declaration (1998) was adopted as a consensus statement by occupational health experts from Europe, Japan and the USA at a conference sponsored by Tokyo Medical University and attended by 29 experts. The Declaration acknowledged the economic and technological changes in the workplace that are contributing to stress among employees.

It noted that changes to workplaces include: *"...restructuring, mergers, acquisitions and downsizing, the frantic pace of work and life, the erosion of leisure time, and/or the blending of work and home time. Most of these developments are driven by economic and technological changes aiming at short-term productivity and profit gain... Production practices are increasingly 'leaner'. New employment practices such as use of contingent workers are increasingly adopted. Concurrently, job stability and tenure is decreasing... New management models are introduced ... This rapid change, combined with both over- and under-employment, is likely to be highly stress provoking."*

Specific proposals for healthy work environments were made, including:

- > implementation of strategies to prevent stress-related injury and illness;
- > surveillance at individual workplaces and monitoring at regional and national levels in order to identify the extent of work-related stress health problems and to provide baselines against which to evaluate efforts to improve the situation;
- > education and training of occupational and other key professional groups to facilitate their participation in testing and developing programmes to reduce the impact of work-related stress and to evaluate the outcome of such approaches;
- > development of valid and reliable methodologies for research;
- > creation of a clearing house for relevant information;
- > addressing the stress-related consequences of unemployment on the individuals concerned and on their families and the communities in which they live, by minimizing unemployment and underemployment, minimizing overemployment, promoting "the healthy job" concept, and humanizing organizational restructuring.

(Tokyo Declaration, 1998)

Understanding mental health problems

The term *mental health* problem is used to describe symptoms associated with a mental disorder, but which are not of sufficient severity to be diagnosed as a mental disorder. For example, stress results in a number of symptoms associated with mental disorders, including distress and feelings of not coping. However, these are not usually of such severity that a mental disorder can be diagnosed. While mental health problems can cause significant suffering for individuals and their family, and have a negative impact on work performance, they do not necessarily lead to the development of a mental disorder.

Mental disorders are clinically significant conditions characterized by altered thoughts, emotions or behaviour with associated distress or impaired functioning (World Health Organization, 2001). The *ICD-10 classification of mental and behavioural disorders: clinical descriptions and diagnostic guidelines* (World Health Organization, 1992) provides a comprehensive list of mental and behavioural disorders, categorized as follows:

- > organic mental disorders (e.g. dementia);
- > psychoactive substance use (e.g. harmful use of alcohol);
- > schizophrenia and associated disorders (e.g. delusional disorders);

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Mental disorders are clinically significant conditions characterized by altered thoughts, emotions or behaviour with associated distress or impaired functioning.

- > mood disorders (e.g. depression, bipolar affective disorder);
- > neurotic, stress-related and somatoform disorders (e.g. anxiety disorders);
- > behavioural syndromes (e.g. eating disorders);
- > disorders of adult personality (e.g. paranoid personality disorder);
- > mental retardation;
- > disorders of psychological development (e.g. autism);
- > child and adolescent disorders (e.g. conduct disorders).

In this module, the term mental disorder is used to refer to clinical syndromes, as classified by ICD-10. However much of the text uses the broader term mental health problem, to include not only diagnosable clinical syndromes, but also symptoms of emotional distress, which may not be of sufficient severity to warrant a diagnosis of a mental disorder, but nevertheless result in substantial personal suffering and distress and reduce productivity.

Prevalence and burden

At any given time, 450 million people are suffering from some form of mental or brain disorder. In order of prevalence, 121 million people suffer from depression, 70 million from alcohol-related problems, 50 million from epilepsy, 37 million from Alzheimer disease and 24 million from schizophrenia (World Health Organization, 2001). Between 10 and 20 million people around the world have attempted suicide, with an estimated 815 000 people committing suicide each year (World Health Organization, 2002).

A number of international reports have raised awareness of the global burden of mental disorders (World Bank, 1993; Murray & Lopez, 1996a, 1996b, 2000; World Health Organization, 2001). According to estimates for the year 2000, mental and neurological disorders accounted for 12.3% of disability-adjusted life years (DALYs) (the sum total of years of healthy life lost from a combination of premature death and disability). In addition, mental disorders accounted for 6 of the 20 leading causes of disability worldwide for the age group 15-44 years, the most productive section of the population (World Health Organization, 2001).

While proportionally the burden is greater in developed countries (21.4%), including those with formerly socialist economies (16.4%), developing countries are greatly affected and are likely to see a disproportionately large increase in the burden attributable to mental disorders in the coming decades because of aging populations, social problems and civil unrest (World Health Organization, 2001).

People with mental disorders are commonly seen in primary care settings; almost a quarter of people attending primary care services have a mental disorder (World Health Organization, 2001). The most common mental disorders in primary care are depression, anxiety and substance abuse, either alone or in combination with a physical disorder.

Stigma

In addition to the obvious suffering caused by mental disorders there is a hidden burden of stigma, discrimination and human rights violations. Many people have misconceptions about mental health problems; for example, they may believe that there is no treatment for mental health problems, that mental health problems are caused by personal weaknesses, or that people with mental disorders are incapable of making decisions for themselves and of running their own lives. These stigmatizing attitudes can result in discrimination in the workplace, such as the unfair denial of employment opportunities, as well as restricted access to services, health insurance or housing.

At any given time, 450 million people are suffering from some form of mental or brain disorder.

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In addition to the obvious suffering caused by mental disorders there is a hidden burden of stigma, discrimination and human rights violations.

In countries that have comprehensive income assistance programmes for people with disabilities, many people with a mental health problem receive income in lieu of employment. To qualify for these programmes, people need to demonstrate that they are unable to work. While income protection against the financial consequences of ill health is important, many more people with mental health problems would be able to participate in the workforce if effective treatment and support were available and appropriate accommodations were made at the workplace.

Families also incur social costs, such as the emotional strain of looking after a disabled family member, diminished quality of life, social exclusion, stigmatization, loss of future opportunities for self-improvement, and loss of leisure and personal time. Carers are often at increased risk of developing a mental health problem.

Mental health problems in the workplace

While it is difficult to know exactly how many employees have a mental health problem, the figure is likely to be significant. In the United States, for example, 18.2% of employed people had evidence of a mental disorder which had impaired their work performance within the previous 30 days (Kessler & Frank, 1997). In a study in Germany, incapacity for work due to mental health problems accounted for 5.9% of lost workdays and appeared to be increasing (Liimatainen & Gabriel, 2000).

The disabling effects of mental health problems vary according to the type and severity of the problem, and also to other factors such as the availability of social support. The following section briefly describes some of the mental disorders and mental health problems that may be found in the workplace.

Depressive disorders

Depression is one of the most common mental disorders found in the general community and in the workplace. Depression is characterized by sadness, fatigue, a loss of interest in most activities, and lack of energy. Other features, such as insomnia (or hypersomnia), loss (or gain) of appetite, a tendency to blame oneself, and difficulty concentrating are often present. In its most serious forms, it can lead to suicidal thoughts and eventually to suicide (World Health Organization, 2001). Depression can be difficult to diagnose and can manifest as physical symptoms, such as headache, back pain, stomach problems, or angina.

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Box 2. What is depression?

Depression is a mood disorder that is typically characterized by a lowered mood and a loss of interest or pleasure in usually enjoyable activities. While occasionally lowered mood is normal, depression is distinguished by its severity, persistence, duration and the presence of particular symptoms, such as sleep disturbances. Common emotional, behavioural and physical symptoms include:

- > markedly depressed mood,
- > loss of interest and enjoyment,
- > reduced self-esteem,
- > pessimistic view of the future,
- > ideas or acts of self-harm or suicide,
- > disturbed sleep,
- > disturbed appetite,
- > decreased libido,
- > reduced energy,
- > reduced concentration and attention.

Depression varies in its severity and the pattern of symptoms. For many, individual symptoms will be of short duration and disappear spontaneously. For others, symptoms persist, with an increasing sense of hopelessness and despair and sometimes suicidal thoughts. With proper treatment, most people recover.

Source: Hunt et al., 1995

It has been estimated that 5.8% of men and 9.5% of women will have a depressive episode in any 12-month period. If current trends are maintained, depression will be the second most important cause of disability by the year 2020. In the 15–44 year age bracket, depression is already the second highest cause of morbidity, accounting for 8.3% of the global burden of disease in that age group (World Health Organization, 2001).

In the United States, it has been estimated that between 1.8% and 3.6% of workers suffer from depression (Goldberg & Steury, 2001). Studies also suggest that the average annual costs, including medical, pharmaceutical and disability costs, for employees with depression may be 4.2 times higher than those for an average employee who receives health benefits (Birnbaum et al., 1999).

Bipolar affective disorder is a disorder in which a depressive illness exists together with episodes of mania, characterized by elated mood, increased activity, overconfidence and poor concentration. It is much less common than depression alone (the point prevalence is estimated at 0.4%) (World Health Organization, 2001), but is associated with significant impairment of work performance and disability.

Substance use

The use of psychoactive substances is a major problem for the workplace. Substances include alcohol, opioids such as heroin, cannabinoids such as marijuana, sedatives and hypnotics, cocaine, other stimulants, hallucinogens, tobacco and volatile solvents. Substance misuse can lead to intoxication, dependence and psychosis (World Health Organization, 2001).

Alcohol is the most commonly used substance in most regions of the world, although prevalence varies. Alcohol is a major contributor to disease burden, accounting for 1.5% of all deaths and 3.5% of the total disability-adjusted life years (World Health Organization, 2001).

It has been estimated that 5.8% of men and 9.5% of women will have a depressive episode in any 12-month period (WHO, 2001).

Inappropriate use of alcohol and drugs is manifested by increased absenteeism, decreased productivity, a marked increase in accidents, thefts, and an increased propensity towards aggressive behaviour, including violence at work and at home.

It is difficult to obtain reliable statistics on the use of alcohol and drugs in the workplace. The statistics vary according to the definition used, and the “acceptability” or “tolerance” of alcohol use in different workplaces and communities. It is generally believed that the figures used are underestimates.

In the United States, 23% of employees in a manufacturing plant admitted to drinking alcohol during working hours at least once (Grube et al., 1994). In Thailand, substance abuse is viewed as the primary issue in 18% of problems in the workplace (EAP Seminar, 2002). In Chile, 30% of employees who had experienced a severe work-related accident had used either alcohol or drugs in the 48 hours prior to the accident (Trucco et al., 1998).

Anxiety disorders

While some anxiety is normal, and moderate levels can even improve a person’s performance, people with anxiety disorders have specific and recurring fears that they recognize as irrational, unrealistic and debilitating. Severe anxiety can impair a person’s ability to understand new information, plan activities or undertake complex tasks (Treatment Protocol Project, 2000).

Box 3 gives some examples of common anxiety disorders and their symptoms.

The use of alcohol and drugs in the workplace is manifested by increased absenteeism, decrease in productivity, a marked increase in accidents, thefts, drug trafficking, and an increased propensity towards aggressive behaviour, including family violence.

Severe anxiety can impair a person’s ability to understand new information, plan activities or undertake complex tasks.

Box 3. Examples of common anxiety disorders

Panic disorder	Recurrent attacks of severe anxiety (panic) which are not restricted to any particular situation or set of circumstances, and which are therefore unpredictable. Dominant symptoms vary from person to person, but sudden onset of palpitation, chest pain, choking sensation, dizziness and feelings of unreality are common. There is also invariably, a secondary fear of dying, losing control, or going mad.
Agoraphobia	Interrelated and often overlapping cluster of phobias embracing fears of open spaces, leaving home, entering shops, crowds and public places, of traveling in trains, buses or planes. Agoraphobia is extremely incapacitating, with some sufferers becoming completely housebound.
Social phobia	Social phobias are centered around a fear of scrutiny by other people in comparatively small groups (as opposed to crowds), leading to avoidance of social situations. They may be discrete (ie. restricted to eating in public, to public speaking, or to encounters with the opposite sex) or diffuse, involving almost all social situations outside the family circle. Social phobias are usually associated with low self-esteem and fear of criticism.

Generalized anxiety disorder

The essential feature of this disorder is anxiety, which is generalized and persistent but not restricted to any particular environment. Dominant symptoms are highly variable and include continuous feelings of nervousness, trembling, muscular tension, sweating, lightheadedness, palpitations, dizziness, and epigastric discomfort. Fears that the sufferer or a relative will shortly become ill or have an accident are often expressed, together with a variety of other worries and forebodings.

Obsessive-compulsive disorder

This disorder is characterized by recurrent obsessional thoughts or compulsive acts. Obsessional thoughts are ideas, images or impulses that enter the individuals mind again and again. Compulsive acts or rituals are stereotyped behaviours that are repeated again and again. They are often viewed by the individual as a means of preventing some objectively unlikely event, often involving harm to or caused by himself or herself.

(WHO, 1992)

Anxiety disorders are common. In Australia, for example, 9.7% of the population reported symptoms of an anxiety disorder. Anxiety disorders were more common in women and in people aged 18-55 years (Henderson et al., 2000).

The indirect costs of generalized anxiety disorder, in terms of factors such as labour turnover, substance abuse and loss of efficiency, exceed the direct costs of treatment (Federal Institute for Occupational Health and Safety, 2003).

Work-related stress

Stress is a pattern of emotional (e.g. anxiety, depression), cognitive (e.g. poor concentration), behavioural (e.g. increased alcohol use) and physical (e.g. increased blood pressure, headaches) reactions to adverse conditions and is characterized by high levels of arousal, distress and feelings of not coping (European Commission, Employment & Social Affairs, 1999). Stress is not usually classified as a mental disorder, although it can precipitate both physical and emotional problems.

Pressure at work can be positive for employees; a lot depends on the nature, intensity and length of the pressure, the degree of control of the situation that an individual feels he or she has, the individual's response, and the existence or absence of protective factors. For example, a worker who is exposed to continued pressure over a long period (excessive workload for a number of months), who feels unable to control the situation (fears losing the job) and has minimal support at work and at home is at risk of the negative consequences of stress.

It has been estimated that work-related stress negatively affects at least 40 million workers in 15 countries of the European Union, costing 20 billion euros annually (European Commission, Employment & Social Affairs, 1999). This survey revealed that 45% of workers had monotonous tasks; 44% did not rotate tasks; 50% had short, repetitive tasks; 35% had no influence on task order; 28% had no influence on work rhythm; 54% reported working at very high speed, and 56% worked to tight deadlines.

Stress is a pattern of emotional, cognitive, behavioural and physical reactions to adverse conditions and is characterized by high levels of arousal, distress and feelings of not coping.

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In the United States, the percentage of workers who describe themselves as “never having the time to complete one’s task” has increased from 40% in 1977 to 60% in 1997 (Theorell, 1999) and the average working time lost due to stress has risen by 36% since 1995. Elkin and Rosch (1990) estimated that in 1990, 54% of the 550 million working days lost annually, could be attributed to stress.

One major source of stress for employees is exposure to critical incidents, such as assaults, sexual or psychological harassment, and accidents. Acute stress disorders and post-traumatic stress disorder are potential consequences of critical incidents that need to be managed. Post-traumatic stress disorder, in particular, can lead to personal distress, significant disability and reduced work performance.

There is an increasing awareness of the impact of bullying or psychological harassment in the workplace. Psychological harassment can include daily humiliations, subtle criticisms, inappropriate remarks concerning a person’s physical or psychological attributes, sexual advances, and inappropriate and unrealistic demands that undermine a person’s dignity; it can affect physical and mental health.

One consequence of long-term exposure to stress may be burnout. The use of the expression burnout has become increasingly popular around the world to describe the result of a long-term exposure to a work situation that is beyond the person’s capacity to cope. The term was coined by Freudenberger (1974) to refer to exhaustion of aid workers; the notion has now been broadened to include all types of workers.

Burnout is characterized by feelings of intense fatigue, a sense of isolation and loss of control, as well as a feeling of accomplishing nothing at work. It is often accompanied by insomnia, headaches, gastrointestinal symptoms, a variety of muscular and joint pains, and lapses in memory.

There have been few studies on the prevalence of burnout in the workplace; however those that have been conducted suggest that it is common. For example, in Finland 7% of the population experienced severe burnout, while 50% reported some burnout symptoms (Liimatainen, 2000).

Psychotic disorders

Psychotic disorders are associated with marked behavioural problems and abnormal thinking. Schizophrenia is a severe psychotic disorder characterized by distortions in thinking and perception with associated inappropriate emotions. Symptoms can include disturbed behaviour, strong false beliefs (delusions), hallucinations and disturbed thought processes. Typically it commences in late adolescence or early adulthood. The course is variable; for some people it will be chronic or recurrent with residual disability (World Health Organization, 2001).

The point prevalence for schizophrenia is estimated to be 0.4%, i.e. at any point in time, 0.4% of the world’s population have schizophrenia (World Health Organization, 2001).

Lack of employment is a major problem for many people with psychotic disorders (World Health Organization, 2001). In the United Kingdom, for example, more than 50% of people with schizophrenia were classed (although not necessarily correctly) as permanently unable to work and only 1 in 8 was employed (Patel & Knapp, 1997). The lack of access to employment can exacerbate a vicious cycle of poverty and worsening mental health.

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Schizophrenia is a severe psychotic disorder, characterized by distortions in thinking and perception with associated inappropriate emotions.

Lack of employment is a major problem for many people with schizophrenia.

Mental retardation

Mental retardation is defined in the International Classification of Diseases as “a condition of arrested or incomplete development of the mind characterized by impairment of skills ... which contribute to the overall level of intelligence, i.e. cognitive, language, motor and social abilities” (World Health Organization, 1992). Increasingly the term intellectual difficulties or disabilities is used instead of mental retardation. Mental retardation can occur with or without another mental or physical disorder. It has multiple causes, including genetic factors, brain injury and infection.

People with mental retardation may be especially vulnerable in the workplace. Only a small proportion of people with mental retardation who are able to work are employed. The employment opportunities that do occur tend to be in low-paid jobs, in small workplaces, where they may be vulnerable to exploitation, with an increased risk of developing other mental health problems.

While some countries have legislation that protects the rights of people with mental retardation, individuals may experience difficulties in asserting these rights because of their limited cognitive abilities.

Co-morbidity

Mental and physical health problems are inter-related. For example, people with certain physical disorders, such as hypertension, epilepsy, diabetes, cancer, human immunodeficiency virus (HIV) infection, and tuberculosis, or who have had a myocardial infarction or stroke, have a high prevalence of depression (World Health Organization, 2003a). Such depression not only worsens the individual’s suffering, but also results in lower adherence to medical treatment.

There has been growing evidence over the past 20 years of the impact of stress on physical health. For example, acute emotional or physical stress activates the sympathetic nervous system and results in increased heart rate and blood pressure. Chronic stress may result in long-term circulatory changes.

There is also a strong association between chronic pain and mental disorders (Dersh et al., 2002a) and chronic work-related musculoskeletal pain and mental disorders (Dersh et al., 2002b).

Different mental health problems themselves often occur together. For example, people with anxiety are frequently also depressed. Similarly, many people with substance use problems also have depression or anxiety.

Impact of mental health problems

Epidemiological surveys and clinical studies in Europe and elsewhere indicate that work and employment play an important role in relation to mental health (Liimatainen & Gabriel, 2000; World Health Organization, 2003a, 2004a). However, this role is not fully understood and, as a result, not properly managed in relation to the protection and promotion of good mental health (Cox et al., 2004).

The workplace can contribute positively to a person’s mental health, may exacerbate an existing problem, or may contribute to the development of a mental health problem. The failure to prevent, recognize and treat mental health problems in the workplace has an impact on employers, employees and their families, and the community generally.

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The failure to prevent, recognize and treat mental health problems in the workplace has an impact on employers, employees and their families, and the community generally.

Employers

Mental health problems have an impact on employers and businesses directly through increased absenteeism, reduced production, increased costs, and reduced profits. They also affect employers indirectly through factors such as reduced morale of staff.

> Increased absenteeism

In many developed countries, 35–45% of absenteeism from work is due to mental health problems (World Health Organization, 2003a). In the United Kingdom, for example, mental health problems are the second most important reason for absence from work, accounting for between 5 and 6 million lost working days annually (Liimatainen & Gabriel, 2000). A study in the United States found that an average of 6 working days per month per 100 workers were lost as result of mental disorders (Kessler & Frank, 1997). A Canadian university has reported that absences for psychological reasons increased 400% between 1993 and 1999 (Université Laval, 2002).

> Decreased productivity

Even if an employee is not absent from work, mental health problems can cause a substantial reduction in productivity. For example, in the United States, the number of “cutback” days (on which less work is done than usual) attributable to a mental disorder averaged 31 per month per 100 workers (Kessler & Frank, 1997). In annual terms, this represents 20 million working days on which employees are not fully productive because of a mental health problem (World Health Organization, 2003a).

In a large financial services company in the USA, depression resulted in an average of 44 working days for each employee with depression lost because of short-term disability compared with 42 days for heart disease, 39 days for lower back pain, and 21 days for asthma (Conti & Burton, 1994).

> Increased costs

In the United States, each worker with depression costs his or her employers approximately US\$3000. The majority of costs for employers are related to absenteeism and loss of productivity rather than treatment (Harnois & Gabriel, 2000).

The Association of Canadian Insurance Companies estimates that 30–50% of disability allowances are paid for mental health problems and that such problems are the leading cause of long-term absence from work. The experience of many employers is that, once an employee has been absent for three months for mental health reasons, it is very likely that the absence will last more than one year (Harnois & Gabriel, 2000).

The cost of mental disorders at a Canadian University, including the salary insurance and replacement of staff, amounted to C\$3 million for the year 2001 (Université Laval, 2002).

It is estimated that stress-related absences cost between 4 and 5 billion pounds each year in the United Kingdom (Mentality, 2003).

> Indirect costs

There are many indirect costs of mental disorders in the workplace, related to poor work performance, reduced morale, high staff turnover, early retirement and work complaints and litigation (see Box 4). These indirect costs can be difficult to quantify.

In many developed countries, 35–45% of absenteeism from work is due to mental health problems.

In the USA, each worker with depression costs his or her employers approximately US\$3000.

Box 4. Indirect costs of mental health problems in the workplace:

Indirect costs may be a result of:

- > poor performance at work;
- > staff illness and shortages that can threaten the quality of service or product supplied;
- > reduced morale among staff;
- > high staff turnover (costs of recruitment, induction and training);
- > early retirement;
- > management time to deal with issues associated with mental health problems;
- > providing temporary cover for colleagues;
- > complaints and possibly litigation associated with mental health problems;
- > cost to governments of health care and rehabilitation

Source: Mentality (2003)

Employees and their families

For individuals, mental health problems can lead to a reduced quality of life, as well as having significant economic and social effects. Absence from work is likely to affect the person's income. In combination with the costs of health care, this may cause significant financial hardship for employees with mental health problems. Many workers, particularly those in low-paid employment or small workplaces, do not have insurance that covers the cost of ill-health or absence from work. These employees are often not able to access the health services they need to treat their mental health problem, and may not be able to afford the time off work required for recovery.

In addition, individuals with mental health problems often experience stigma and discrimination (World Health Organization, 2001). The financial and personal burden of having a mental health problem can create a negative cycle that, without effective treatment, may lead to a worsening of the mental health problem.

Families also experience the impact of mental health problems. They may have economic difficulties related to the reduced income and increased health care costs, the stress of coping with altered behaviour, disruption to the household routine, and restricted social activities (World Health Organization, 2001).

The community

The cost of mental health problems to the overall community includes the cost of treatment, particularly when this includes hospitalization. The most important component of the cost of treating depression is hospitalization, accounting for around half of the total in the United Kingdom and three-quarters in the United States (Berto et al., 2000). In addition, other costs to the community include those related to the loss of productivity, loss of lives, consequences of untreated illnesses (for example, increased numbers of people in prison), social exclusion and human rights abuses.

Mental health problems in the workplace adversely affect the national economy. In the European Union, for example, it is estimated that the cost of mental health problems in the workplace may amount to 3-4% of the gross national product (GNP) (Limatainen & Gabriel, 2000).

Many workers, particularly those in low-paid employment or small workplaces, do not have insurance that covers the cost of ill-health or absence from work.

Mental health problems in the workplace adversely affect the national economy.

Risk and protective factors for mental health problems

Risk factors increase the likelihood that a mental disorder will develop or that an existing disorder will become worse. In contrast, protective factors reduce the risk of mental health problems or reduce the effect of risk factors (Commonwealth Department of Health and Aged Care, 2000). While protective factors are associated with better mental health, there is not always clear evidence of a causal relationship.

Examples of protective factors for mental health are:

- > good social skills,
- > secure and stable family life,
- > supportive relationship with another adult,
- > sense of belonging,
- > positive work climate,
- > opportunities for success and recognition of achievement,
- > economic security,
- > good physical health,
- > attachments and networks within the community,
- > access to support services.

Individual risk factors

Mental health problems are the result of a complex interplay between biological, psychological and social factors (World Health Organization, 2001). An understanding of these factors has influenced the development of effective treatments.

- > *Biological factors.* Mental health problems are associated with biological factors, such as genetic characteristics and disturbance in neural communications (WHO, 2001).
- > *Psychological factors.* Individual psychological factors are associated with the development of mental health problems. For example, children who are separated from their primary caregiver or deprived of nurturing for extended periods of time have a greater risk of developing a mental or behavioural disorder either in childhood or later in life. Similarly, mental or behavioural problems can occur as a result of failing to adapt to a stressful life event.
- > *Social factors.* Social factors, such as urbanization, poverty and technological change, have been associated with the development of mental health problems. The costs of treatment and lost productivity associated with a mental health problem contribute significantly to poverty, while features associated with poverty, for example inadequate housing and malnutrition, also contribute to the development of mental health problems.

Social support, such as from colleagues, joint problem-solving and assistance from superiors play an important role in both the perception of stressors and the impact of stress on mental health outcomes (Kortum & Ertel, 2003).

Risk factors increase the likelihood that a mental disorder will develop.

Mental health problems are the result of a complex interplay between biological, psychological and social factors.

Organizational risk factors

There is evidence that the poor organization of work plays a significant role in the development of mental health problems. The factors most frequently associated with mental health problems in the workplace include the following.

> Content of work

Workload. Excessive workload has been associated with mental health problems. The workload for an individual may be more than he or she can reasonably manage (too many things to do in too little time without enough resources) or it may be qualitatively excessive, in terms of its difficulty or complexity (Pérusse, 1984). Similarly, too little work or the underuse of a person's skills can also cause stress.

Participation and control. Employees who are unable to influence or adjust their work are likely to experience stress (European Commission, Employment and Social Affairs, 1999). For example, employees may be unable to participate in decisions that affect how they carry out their work, or to choose how to accomplish it (Comité de la Santé mentale du Québec, 1988). Insufficient participation in decisions related to work can lead to depression, poor physical and mental health, alcohol abuse, and low self-esteem (Karasek & Theorell, 1990).

Job content. The content of the employee's tasks is also important to his or her mental health. Monotonous, understimulating or meaningless tasks, lack of variety, and unpleasant tasks increase the risk of mental health problems (World Health Organization, 2004a).

> Context of work

Role in organization. Both role conflict and role ambiguity increase the risk of mental health problems. Role conflict occurs when an individual faces what appear to be incompatible demands from employers or colleagues. Role ambiguity arises when an employee feels unsure of what is expected, either because of lack of information or because of a breakdown in communication with employers (Maslach et al. 2001).

Reward. Reward is the "status" (perception of worth) that the individual feels at work. While reward may be linked to salary, it more broadly refers to the respect and esteem in which the person is held in the workplace. This also includes the presence of adequate social support at work (Karasek & Theorell 1990). Lack of recognition at work is associated with reduced motivation, psychological distress and increased incidence of cardiovascular disease (Siegrist 1996).

Equity (fairness). Employees may feel that they are not being justly or equitably treated. Workload, salary and promotions often affect the perception of equity. The manner in which decisions are made (including downsizing) will also affect employees' sense of justice or equity. Employees may not have been consulted or informed about changes made in the workplace. Positive feelings of equity and fairness lead to increased satisfaction and motivation as well as commitment to work (Brockner & Greenberg, 1990).

Interpersonal relationships. The quality of interpersonal relationships is important to mental health. Inadequate, inconsiderate or unsupportive supervision, poor relationships with co-workers, bullying, harassment and isolation increase the risk of a mental health problem (World Health Organization, 2004a). There is also some evidence of a relationship between supervisory style (e.g. authoritarian,

Excessive workload has been associated with mental health problems.

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laissez-faire) and employee satisfaction (Blais, 2003).

Working environment. The physical working environment includes: (a) physical factors such as noise, pollution, and light, and (b) working hours. Irregular and excessive working hours can affect the circadian rhythms, and may lead to physical (insomnia, gastrointestinal problems) and behavioural (overeating, excessive alcohol use) problems. Excessive working hours often lead to decreased efficiency (Université Laval, 2002).

Workplace culture. The organizational culture of the workplace – communication, leadership and clarity of role and structure of the workplace – can affect mental health (World Health Organization, 2004a).

Home-work interface. Tensions between home and work have consequences for a person's mental health. Conflicting demands of work and home, a lack of support in the workplace for personal commitments, or a lack of support at home for work commitments can increase the risk of developing a mental health problem. (World Health Organization, 2004a)

These factors are summarized in Table 1.

Box 5. Improving the motivation of employees

Improving the content and context of work is likely both to have an impact on the mental health of employees and to improve their motivation. A recent review of factors affecting attitudes and motivation (Maslach et al., 2001) found that achievement, recognition, work itself, responsibility, advancement and growth were the most important factors leading to job satisfaction, whereas difficulties related to company policy, supervision, relationships with supervisors, work conditions, salary, and relationships with peers were among the most significant factors leading to job dissatisfaction.

The impact of risk factors varies across different workplaces, occupational groups and cultures. Table 2 summarizes the results of a study of the risk factors for mental health problems among a total of 3142 managers, nurses and paramedical staff, and professionals in four organizations. While overwork was a factor contributing to stress among all three occupational groups, the pressure associated with decision making was a factor for nurses and paramedical staff, while professionals and managers identified poor relationships with superiors.

Table 2. Risk factors by category of employment

Managers	Nurses and paramedical staff	Professionals
Overwork	Overwork	Overwork
Low recognition	Low recognition	Low recognition
Poor relationships with superiors	Sustained mental effort	Poor relationship with superiors
Sustained mental effort	Pressure re impact of decisions	Sustained mental effort
Low participation in decisions	Role conflict	Low participation in decision making
Role conflict	Non-secure environment	Competitive climate
Low advancement possibilities	Requirements of working with patients	Information not clear
Competitive climate	Work/family conflict	Insufficient information to do work

Tensions between home and work have consequences for a person's mental health.

The impact of risk factors varies across different workplaces, occupational groups and cultures.

Table 1. Factors associated with the development of mental health problems in the workplace

Work content	
Workload	Excessive workload Insufficient work
Lack of participation and control	Inability to participate in decision-making Inability to choose how to complete work
Job content	Monotonous tasks Unpleasant tasks Aversive tasks
Work context	
Role in organization	Role conflict Role ambiguity
Lack of reward (recognition)	Lack of recognition of work (e.g. through salary) Low status Inadequate social support in the workplace
Inequity (lack of fairness)	Perception that workplace is not just or equitable (e.g. in terms of workload, salary, or promotion) Poor management of organizational change (e.g. downsizing)
Poor interpersonal relationships	Unsupportive supervision Poor relationships with colleagues Bullying, harassment or violence Isolated or solitary work
Working environment and conditions	Inadequate physical environment (e.g. noise, pollution, light, danger) Irregular working hours (e.g. shift work or excessive working hours)
Workplace culture	Poor communication Poor leadership Lack of clarity about workplace objectives and structure
Home-work interface	Conflicting demands at home and at work Lack of support for home at work Lack of support for work at home

Key points: Work and mental health

- > Mental health problems in the workplace are common.
- > They affect individuals and their families, businesses and communities.
- > An understanding of the protective and risk factors for mental health problems in the workplace is essential.

2. The role of government

Governments have a critical role in promoting mental health, preventing mental health problems in the community, and ensuring that mental health problems are recognized early and treated effectively.¹ Workplaces are important targets for government promotion and prevention activities. In addition, governments are usually employers themselves, often employing thousands of people.

At the national level, there is considerable variability in the administrative structures that oversee mental health issues in the workplace. However, in most countries the ministries of health and of labour will play a key role.

The ministry of health is usually responsible for formulating the country's mental health policy, proposing a framework for promoting the mental health of the population, and organizing and delivering mental health services. Ideally, the mental health policy should refer specifically to the interface between work and health, including mental health (World Health Organization, 2005).

Usually, the ministry of labour will have responsibility for issues associated with health and safety in the workplace. This may include not only regulation and monitoring of health and safety in the workplace, but also income protection for injured or disabled workers. In some countries, there may be a specific unit or programme dealing with several aspects of employment and disabilities.

In many countries, traditional healers are an important part of the health system. Where appropriate, labour laws and regulations should acknowledge their role and promote communication and collaboration between them and the workplace.

Vulnerable populations

The burden of mental health problems does not affect all sections of society uniformly. In the workplace, particular population groups may be at increased risk of developing a mental health problem. At the same time, these groups may experience additional barriers in accessing the required services.

Women

Women comprise over 40% of the global labour force. They also represent 70% of the world's poor, earn on average two-thirds of the income of men, and spend twice as much time as them on unpaid work (International Labour Organization, undated). In addition, in some countries women's access to education is restricted, which can result in their being employed in hazardous, low-paid jobs. This, in turn, can increase the risk of their developing a mental health problem. Exposure to sexism, racism and poverty is linked to mental health vulnerability (Harrell, 2000; Diaz et al., 2001), and this should be considered when mental health policies are being developed for the workplace.

Besides being paid proportionately less and having poorer working conditions than their male counterparts, women remain largely responsible for raising children and managing the household. Dual role burdens disproportionately affect women, who still take on the majority of unpaid caregiving (Luxton & Corman, 2001; Rao & Kelleher, 2003). Attempting to juggle these multiple responsibilities can create stress and contribute to the development of a mental health problem.

¹ The key issues associated with mental health promotion and prevention are discussed in two recent WHO publications (World Health Organization, 2004b; 2004c).

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Besides being paid proportionately less and having poorer working conditions than their male counterparts, women remain largely responsible for raising children and managing the household.

Women frequently manage the financial and emotional burden of looking after an elderly parent. This contributes significantly to absenteeism in the workplace. For example, it has been estimated that, in the United States, one in five employees takes leave of absence (or even leaves work completely) in order to deal with responsibilities for parents. The aggregate cost of such caregiving, as measured in lost productivity, is estimated at more than US\$11 billion a year (Lewis & Cooper, 1999).

Children

Children represent a significant proportion of the workforce. There are an estimated 211 million children aged between 5 and 14 years engaged in economic activity globally. Of these, 8.4 million are involved in the worst forms of child labour – trafficking, forced and bonded labour, armed conflict, prostitution, pornography and illicit activities (International Labour Office, 2002a).

Children are especially vulnerable in the workplace. Between 15% and 20% of all children and adolescents are likely to have a mental health problem (Bird, 1996; Verhulst, 1995). The stresses associated with working may increase a child's risk of developing a mental health problem, in both the short and the long term.

The needs of children at work are discussed in more detail elsewhere. Further information can be obtained from the International Labour Organization (www.ilo.org) or UNICEF (www.unicef.org).

People with disabilities

People with disabilities, including mental disabilities, are often denied opportunities for meaningful employment, and so remain trapped in a cycle of marginalization, social exclusion and poverty.

Unemployment among people who are disabled is far higher than among other individuals of working age, and many disabled people who want to work are unable to do so (International Labour Office, 2002b). For example, in the European Union, 52% of people with disabilities are economically inactive compared with 28% of non-disabled people. Disabled people also work fewer hours and earn lower wages than non-disabled people (European Commission, Employment and Social Affairs, 2001).

People with mental disorders have the lowest rate of employment of any group with disabilities (The President's New Freedom Commission on Mental Health, 2003). This is despite evidence that the majority want to work and could work, if assistance was provided. People with mental disabilities are frequently discouraged because of limited opportunities to obtain work, insufficient incentives for employers to employ people with mental disabilities, financial penalties of employment, stigma and discrimination, such as beliefs that people with mental health problems are not productive (World Health Organization, 2001).

In some countries, people with mental disabilities have benefited from the development of labour cooperatives that have provided opportunities for employment and training. For example, in Côte d'Ivoire a chicken farm was established to provide employment for people with mental disabilities. Despite early resistance from the local community, the farm grew to become important economically for the region and to provide employment opportunities for other members of the community (World Health Organization, 2001).

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Policy and legislation

Many improvements in the management of mental health problems in the workplace have resulted from legislative changes, often accompanied by relevant policy initiatives. Governments have a crucial role in providing a policy and regulatory framework that promotes the mental health of workers and ensures that workers with mental health problems have access to effective treatments.

Antidiscrimination legislation

Activities of the United Nations have emphasized the right of disabled people to have the same opportunities as other citizens, including participation in economic activities such as work. The introduction of antidiscrimination legislation in some countries has been one of the most important legislative approaches to improving mental health in the workplace.

In 1993, the United Nations General Assembly adopted the Standard Rules on the Equalization of Opportunities for Persons with Disabilities (United Nations, 1993). The resolution identified a number of issues that need to be addressed to attain equal opportunities for disabled people, including: awareness-raising; medical care; rehabilitation; support services; employment; income maintenance and social security; family life and personal integrity; culture; recreation and sports; and religion.

The International Labour Organization's Declaration on Fundamental Principles and Rights at Work, adopted in 1998, commits governments, employers and workers' organizations to uphold principles and rights in four areas, including the elimination of discrimination in the workplace.

Many countries have legislation that prohibits discrimination against people with mental health problems. The effectiveness of these laws depends on (1) the underlying model of disability and whether it is inclusive of mental health problems; (2) the concept of equality, for example whether the law relates only to employment or also promotes access to education and training; and (3) the location of the legal provisions (i.e. whether provisions appear in criminal, constitutional, civil, labour or social welfare law) (International Labour Office, 2002a).

Some countries have broadened their antidiscrimination laws to include people with mental health problems. In the United States, for example, the Americans with Disabilities Act of 1990 prohibits employers from discriminating in any aspect of employment because of a job applicant's or employee's disability, including one caused by a mental disorder.

In the United Kingdom, the Disability Discrimination Act of 1995 makes it unlawful for employers to discriminate against people with a mental disorder and requires employers to make reasonable adjustments to the workplace to ensure that people with disabilities have the opportunity to work (Mentality, 2003).

National laws can use a variety of mechanisms to promote the employment of people with disabilities, including the following (International Labour Office, 2002b):

- > quota schemes, which require businesses of a certain size to employ a specified proportion of people with a disability;
- > equity or nondiscrimination laws, which make it unlawful for people to discriminate on the basis of mental health problems;
- > job retention laws, which require employers to retain people who become disabled while employed.

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Many countries have legislation that prohibits discrimination against people with mental health problems.

National laws can use a variety of mechanisms to promote the employment of people with disabilities

Income protection

Employees need to be protected against the cost of illness or disability. This should include protection against both the cost of treatment and the loss of wages when the person is unable to work. Many countries do not provide such protection.

Financing for mental health care should be based on three principles:

- > People should be protected from catastrophic financial expenditure by minimizing their out-of-pocket expenses for mental health care.
- > The healthy should subsidize the sick, through strategies such as prepayment schemes that include mental health problems.
- > The well off should subsidize the poor.

See the module on *Mental health financing* (WHO, 2003b) for more details.

Many employees, particularly those in small businesses, the self-employed, migrant workers, and casual and part-time workers, do not have access to income protection for absences from work due to ill health. Such people are at risk of extreme financial hardship if mental health problems impair their ability to work. Governments and employers need to work together to ensure that all workers are sufficiently protected against the risk of mental health problems.

Safety and health at work

Other legislative and policy provisions have focused on the obligations of the employer to provide a safe working environment. A range of international standards and guidelines commit countries to develop safe workplaces.

The International Labour Organization's SafeWork programme promotes safe working environments. Its primary objectives are to (1) increase the worldwide awareness of the scope and impact of work-related accidents, injuries and diseases; (2) promote the protection of all workers; and (3) enhance the capacity of its Member States and industry to design and implement effective prevention policies and programmes.

Worker safety has also been addressed through national laws. For example, in the United Kingdom, the Health and Safety Act (1974) and the Management of Health and Safety at Work Regulations (1999) require employers to provide a safe environment and to assess and control risks to worker safety (Mentality, 2003). The Occupational Safety Act (1958) and the Occupational Health Care Act (1987) in Finland make employers responsible for providing a safe workplace, as well as support and assistance for people with disabilities (Liimatainen, 2000).

Mental health policy and services

Many employees with mental health problems rely on the mental health services provided by government, nongovernmental organizations, or the private sector for the treatment of mental health problems. It is important that the services provided are accessible and that they provide high quality care. The 2001 *World Health Report* (World Health Organization, 2001) contained ten recommendations for action, which are summarized in Box 6.

Employees need to be protected against the cost of illness or disability.

A range of international standards and guidelines commit countries to develop safe workplaces.

Many workers with mental health problems, particularly low paid workers, those working in small workplaces and those working in the informal sector rely on the mental health services provided by government, non-governmental organizations or the private sector for the treatment of mental health problems.

Box 6. Recommendations for mental health care from *The World Health Report 2001*

- > Provide treatment in primary care.
- > Make psychotropic medicines available at all levels of health care.
- > Give care in the community.
- > Educate the public about mental health.
- > Involve communities, families and consumers in developing policies, programmes and services.
- > Establish national policies, programmes and legislation on mental health.
- > Develop human resources to provide specialist care.
- > Link with other sectors to improve mental health.
- > Monitor community mental health.
- > Support more research into the biological and psychosocial aspects of mental health.

WHO's Mental Health Policy and Service Guidance Package provides guidance to governments, policy-makers, mental health professionals, advocacy organizations and other stakeholders on improving the mental health of populations, using existing resources to achieve the greatest benefits, providing effective services to those in need, and assisting the reintegration of those with mental health problems into all aspects of community life, including employment.

Unemployment

Unemployment and associated factors, such as poverty and low education, are associated with a higher prevalence of mental disorders (World Health Organization, 2001) Unemployed people have more symptoms of depression than employed people, and people who have lost a job are twice as likely to be depressed as people in employment (World Health Organization, 2003a) In one study, people who were unemployed had twice the risk of depression of people who were employed (Dooley et al., 1994).

While unemployment has well known and significant effects on health and psychological well-being, insecure jobs also appear to have health consequences. Even if the effects on individuals are not as serious as unemployment – and this is yet to be demonstrated – the overall effect of precarious employment appears to be negative (Quinlan, 2001/2002). Temporary workers (employees with short-term and insecure contracts) report more difficult work situations than permanent employees. The insecurity of their working conditions creates feelings of insecurity concerning their future.

Government policies that promote employment and reduce unemployment are likely to have a positive effect on mental health in the community.

Unemployment has well known and significant effects on health and psychological well being.

Government policies that promote employment and reduce unemployment are likely to have a positive effect on mental health.

Box 7. Governmental approaches to enhancing mental health in the workplace: Thailand

In Thailand, a memorandum of understanding has been developed by the Ministry of Labour and Social Welfare and the Ministry of Public Health to promote mental health and well-being in the workplace. Both ministries have recognized the importance of multidisciplinary cooperation in enhancing current practices and standards of prevention, promotion, treatment and recovery programmes.

The Thai Health Promotion Association, a state agency with the goal of promoting health among the Thai population, was founded in 2001 and funded with 2% of tobacco and alcohol taxes. The agency is working on several projects related to mental health in the workplace.

Source: Dominique Norz, personal communication, 2004

Government partners

Employer, employee and nongovernmental organizations have an important role in working with governments to improve the mental health of employees. For example, the Central Organization of Finnish Trade Unions (SAK) has argued for preventative measures to reduce burnout and for a reduction in working hours (Liimatainen, 2000). Union activities to help address these issues have included training, legal support and negotiations with employers (Vezina & Cousineau, 1998).

Employer, employee and nongovernmental organizations should advocate for the development of policies and strategies that promote the mental health of employees and prevent and treat mental health problems.

Employer, employee and nongovernmental organizations have an important role in working with governments to improve the mental health of employees.

Box 8. Finnish National Workplace Programme

In Finland, the National Workplace Programme, made up of representatives from the Central Labour Market Organization, the Confederation of Employers, and the Health Division of the Ministry of Social Affairs and Health, has an overall goal to boost productivity and the quality of working life. As of 2000, the programme was involved in some 300 projects and 500 workplaces (Liimatainen & Gabriel, 2000).

Further information

More detailed guidance for countries on the development and implementation of policies and legislation for mental health is available in other modules of the Mental Health Policy and Service Guidance Package (World Health Organization, 2005).

Key points: The role of government

- > Governments have a crucial role in promoting the mental health of employees and in ensuring that mental health problems are treated effectively.
- > In the workplace, women, children and people with disabilities require special consideration.
- > Policy and legislation can contribute positively to the mental health of the workforce.
- > Government, employer, employee and nongovernmental agencies are important partners in the promotion of employees' mental health and the prevention and treatment of mental health problems.

3. Putting in place a workplace mental health policy

For many businesses, addressing mental health problems at the workplace will begin with the development of a policy. A mental health policy for the workplace defines the vision for improving the mental health of the workforce and establishes a model for action. When well formulated, such a policy will also identify and facilitate the agreements needed among the different stakeholders in the workplace. Without policy direction, lack of coordination and fragmentation will reduce the impact of any workplace mental health strategy.

A mental health policy for the workplace can be developed separately, or as part of a broader health and safety policy. Developing a mental health policy within such a wider policy framework will ensure that the broader determinants of mental health are considered. However, in practice, the decision about where mental health policy should be located will depend on the context of the workplace.

The decision to develop a workplace mental health policy may be a result of many different factors, including evidence of the impact of mental health strategies on productivity, an understanding of the importance of addressing mental health issues in the workplace, and the need to comply with regulations.

Chapters 4–7 provide guidance on developing a workplace policy on mental health. The first step is to analyse the mental health issues in the workplace. Key activities include: making the case to employers about the importance of mental health; establishing a coordinating process; and assessing the needs to be addressed in the policy.

The second step is to develop the policy. This involves formulating a vision statement; identifying the values and principles that will underlie the policy; defining the objectives of the policy; and consulting with key stakeholders.

The third step is to develop prevention and intervention strategies for the workplace. This involves reviewing the options for strategies; finding resources to implement the strategies; and developing an implementation plan.

The final step is to implement and evaluate the policy. For this, it is necessary to generate support and collaboration; coordinate implementation; train key personnel; establish demonstration projects; and evaluate the outcomes.

While these steps are presented in a sequential manner, the practice is often more complex. The guidance should be adapted to meet the needs of specific workplaces.

A mental health policy for the workplace defines the vision for improving the mental health of the workforce and establishes a model for action.

4. Step I: Analysing mental health issues

The first step in developing a workplace mental health policy is to analyse the mental health issues in the workplace. This requires a number of actions including developing a business case, establishing a coordinating process, and systematically assessing workplace needs.

Making the case

It is important to make the case for developing a mental health policy in the workplace in order to gain the explicit endorsement and commitment of the employer and other key stakeholders. This is vital for the actual development and acceptance of a workplace mental health policy. The employer is more likely to support the introduction of a policy if you can demonstrate that it will have a positive impact on the workplace, will be financially viable, and will be beneficial to work outcomes, that is, increase profits, efficiency or improve the product. Employers are often motivated to address mental health issues in the workplace when they understand the link with productivity. Other stakeholders may be more interested in improving the health of employees or in creating better working conditions.

In making the business case, general data showing the link between mental ill-health and reduced productivity and increased costs should be presented. In addition, any readily available data from the workplace itself should be analysed and presented. It is useful to outline the major mental health issues in the workplace, though a detailed assessment may not be possible until the commitment of management has been secured. The purpose of a workplace mental health policy and the anticipated benefits should also be outlined.

While the strategy used to communicate the benefits of a workplace mental health policy will depend on the workplace and the audience, it will often be useful to do so in writing. A brief report may be an effective way of communicating with an employer, while a pamphlet could be given to employees.

It is essential to generate and demonstrate broad support for the policy from all stakeholders. Employers are unlikely to be convinced of the benefits of the project if there is opposition from employees.

Box 9 illustrates and provides examples of arguments for a mental health policy in the workplace.

The employer is more likely to support the introduction of a policy if you can demonstrate that it will have a positive impact on the workplace, will be financially viable, and will be beneficial to work outcomes.

It is essential to generate and demonstrate broad support for the policy from all stakeholders.

Box 9. Arguments for improving mental health in the workplace

Example 1: “Good health equals good business”

There are too few employers who act on the maxim that “good health equals good business” – and even fewer who recognize the importance of mental health. But there are compelling business arguments for a positive, inclusive approach to mental health issues in the workplace:

- > gaining important skills;
- > reducing absence;
- > creating better work relations;
- > enhancing productivity and motivation;
- > employing the best person for the job;
- > retaining knowledge and skills;
- > fostering acceptance and diversity;
- > making your workplace more efficient.

Adapted from: *Mind out for mental health promotion campaign*. (National Institute for Mental Health, undated)

Example 2: Retention, retention, retention

Inadequate management of mental illnesses can result in a myriad of business costs, including absenteeism, disability payments, medication costs, accidents, and recruitment expenses. In addition, there are indirect expenses such as lost productivity, replacement payroll, training expenses, and time spent administering disability claims.

If an employee experiencing symptoms of mental illness does not get timely managerial support and medical attention, the outcome is likely to be negative and costly. Consider the following scenarios:

- > An employee returns to full-time work after a “breakdown”; unable to make the transition, he has a relapse, and goes on to long-term disability status.
- > An employee’s performance slips; thinking that she is no longer up to the job, the manager demotes her.
- > Unable to concentrate because of intrusive thoughts, and too fearful to talk to the employer, an employee quits without explanation.
- > An employee acts inappropriately, e.g. accusing someone of spying or handling company funds recklessly. Although this behaviour is out of character, no one recognizes the signs of illness, and the person is fired.

Each of the situations above could have had a positive outcome, rather than a negative one, if management had recognized, and addressed, the underlying mental health issue.

Adapted from Canadian Mental Health Association, 2002.

Example 3: Treating depression increases productivity

A recent study undertaken in the USA has demonstrated that high quality care for depression can improve productivity at work and lower rates of absenteeism.

A two-year programme to treat employees suffering from depression at 12 primary care practices nationwide resulted in an average 6% improvement in productivity at work, or an estimated annual value of US\$1491 per depressed full-time employee. The programme also reduced absenteeism by 22% over two years, saving the companies an estimated US\$539 for each full-time employee with depression.

Source: Rost K. et al. (2004)

Establishing a coordinating process

It is important to establish a coordinating body, such as a steering committee or working group, to guide the assessment of the workforce, facilitate consultation with the various stakeholders, and coordinate the development of the workplace mental health policy. The coordinating body can also educate key stakeholders about workplace mental health issues, ensure their support, and obtain practical assistance for the assessment of workplace needs. For example, the medical service may provide information on health service use; the human resources department may agree to review sick leave trends; a trade union representative may have information on what is happening in other workplaces. The coordinating body should ensure that all stakeholders have a clear understanding of their roles and responsibilities. It is important to include worker representatives in such a committee.

What form the coordinating body will take will depend on the workplace. In some places there may be an existing committee, such as an Occupational Health and Safety Committee, that could coordinate the development of a workplace mental health policy. In other workplaces, a new committee or working group may need to be established.

Whatever the form of the coordinating body, it should ensure that key stakeholders are involved, possess the necessary mandate to develop and implement a workplace mental health policy, and include the key agents who will be required to implement the strategies.

The coordinating body can educate key stakeholders about workplace mental health issues, ensure their support, and obtain practical assistance for the assessment of workplace needs.

The coordinating body should ensure that key stakeholders are involved, possess the necessary mandate to develop and implement a workplace mental health policy, and include the key agents who will be required to implement the strategies.

Box 10. Developing a wellness committee

The National Managers Council in Canada has developed a number of tools to assist federal public service managers. One of these tools – *My millennium: my well-being: a managers' guide* – provides guidance on promoting wellness among employees.

The guide encourages the creation of wellness committees. The purpose of the committees is “to promote and support strategies related to the physical and social environment, help practices and personal resources that lead to improved physical, social, emotional, mental and spiritual well-being of employees, both in the workplace and in their private lives.”

The committee usually consists of a coordinator, who acts as chair, and representatives of each department in the organization.

Adapted from Human Resources Development, Canada, 2000

Assessing mental health issues

The workplace mental health policy needs to be based on a comprehensive understanding of the issues. For example, it is important to understand what factors may be contributing to employee stress (or satisfaction), and what effects are being seen in the workplace, e.g. increasing levels of absenteeism or an excessive number of early retirements.

In assessing the issues, it is important to use information that is already available to the workplace. This can then be supplemented by collecting new information.

The workplace mental health policy needs to be based on a comprehensive understanding of the issues.

Assemble available information

Many workplaces routinely collect a range of data that may be useful for assessing mental health issues. The data available may include:

- > human resources data, e.g. absenteeism records and resignations;
- > occupational health and safety data, e.g. accidents or risk assessments;
- > financial data, e.g. the cost of replacing employees who are on long-term disability leave;
- > health data, e.g. common health problems among the workforce.

In some workplaces, claims for mental health problems are managed by insurance companies. These companies probably routinely collect information that could contribute to the assessment. For example, they may be able to provide anonymous information on the number and types of claims for mental health issues, as well as on the cost of claims.

Using available information is an efficient method of assessing mental health issues. It is important to ensure that all the available data are identified before deciding what new information should be collected. The type and range of data available will vary between workplaces. In some workplaces, detailed information will be available from a number of different sources, while in others only limited or incomplete data may be available.

> Evidence from other workplaces

Evidence may also be available from other workplaces involved in similar work. In addition, government departments, industry organizations or trade unions may have information from similar workplaces. A review of the literature may also provide relevant information.

Collect new information

Once the available information has been gathered, it might be necessary to collect new information. Possible approaches include conducting a survey, undertaking a risk assessment, and interviewing key stakeholders.

> Surveys

Surveys on the incidence and prevalence of mental health problems in the workplace often produce useful information. For example the National Workplace Survey, conducted in Canada in 1992, covered 3500 workplaces and a range of issues, including psychosocial concerns and stress (Craig et al., 1994). In this study, 22% of the companies reported having policies to deal with harassment while only 6% reported programmes to deal with the issue.

Surveys are carried out using a tool or questionnaire to identify the issues or measure the symptoms of a mental disorder. A questionnaire may be developed specifically for a particular workplace or a standard one may be used, depending on the type of information required. The approach will depend on what is being measured and the characteristics of the workplace. Technical advice from an expert in psychological assessment may be required. There are also textbooks that provide a useful overview of measures suitable for use in the workplace (Fields, 2002; Cook et al., 1981).

Many workplaces routinely collect a range of data that may be useful for assessing mental health issues.

Using available information is an efficient method of assessing mental health issues.

Evidence may be available from other workplaces involved in similar work. In addition, government departments, industry organizations or trade unions may have information from similar workplaces.

Additional information can be gathered through surveys, risk assessments and interviews with key stakeholders.

Surveys are carried out using a tool or questionnaire to identify the issues or measure the symptoms of mental disorder.

The approach will depend on what is being measured and the characteristics of the workplace.

Box 11. Examples of organizational and psychological assessment scales

The Job Content Questionnaire, developed by Karasek (1985), assesses motivation and job satisfaction, and measures the difference between the psychological demands placed on the individual and the decisional latitude available.

Many organizations use the Index of Psychological Stress, developed by Cooper et al. (1988). This index measures organizational issues such as job content, interpersonal relations, conflict resolution, etc. It also addresses personal characteristics that may affect the development of stress reactions, such as personality type and extent to which available support is used.

The General Health Questionnaire (GHQ) (Goldberg, 1978) has been used in many workplaces to measure psychiatric symptoms among employees. For example, a Swedish study used the GHQ to investigate whether employees who were psychologically distressed over-reported their work demands or under-reported the level of control they had at work (Waldenström et al., 2003).

The Occupational Stress Index (OSI) (Osipow & Spokane, 1987) can be tailored to specific occupations, and allows comparisons between occupations regarding the level of stress experienced by workers. This measure comprises 65 items rated on five scales: role overload, role insufficiency, role ambiguity, role boundary, responsibility and physical environment (Spokane & Ferrara, 2000).

The Motivational Supervisory Style Questionnaire (Blais, 2003) assesses different supervisory styles. It consists of 24 items on six scales: competence, control, *laissez-faire*, incompetence, autonomy, and involvement. Participants assess each item by indicating how frequently they think their immediate supervisor acts with them.

This is not an exhaustive list of assessment scales. The scales listed are not specifically endorsed by WHO.

> Risk assessment

Risk assessments are often used to identify occupational health and safety issues in the workplace. A risk assessment is “...a careful examination of what, in your work, could cause harm to people” (Health and Safety Executive, 1998). While risk assessments were developed to identify physical hazards in the work environment, they can also be used to identify mental health hazards. Table 3 outlines a five-step approach to risk assessment.

Workplaces often use risk assessments to identify occupational health and safety issues in the workplace.

Table 3. Risk assessment

Step 1	Identify the hazard. Explore the work environment. Use information from research or rapid assessment to identify particular hazards, such as a stressful working environment or high levels of drug or alcohol use.
Step 2	Decide who might be harmed and how. Is the hazard general for all workers or are workers undertaking specific activities (for example, administrative staff who interact frequently with the public) or certain categories of workers (for example inexperienced or young workers) at particular risk?
Step 3	Evaluate the risks and decide whether existing precautions are adequate. Is it possible to eliminate the risk or does the risk need to be managed? Can work be reorganized to reduce the risk (for example, improving the waiting procedure for the public to reduce the amount of verbal and physical abuse towards front-line staff) or support services made available (such as training or counselling)?
Step 4	Record the findings. It is important to record the findings, in order to evaluate the interventions later.
Step 5	Review the assessment and revise if necessary.

Source: Health and Safety Executive, 1998

> Interviews

Conducting interviews or focus group discussions with key informants can provide a lot of information about the workplace. Information can be sought from employees, their families, managers, medical personnel within the organization, human resources officers, etc. Such interviews will also assist in understanding the cultural context for mental health within the organization.

Interviews with employees can determine the expectations of staff and their satisfaction with current services. For example, a study on employee perspectives of the role of supervisors in preventing workplace disability after accidents interviewed 305 employees. The study found that interpersonal factors, such as empathy and support, were as important as physical accommodations in facilitating the return of workers after injury (Shaw et al., 2003).

Depending on the nature of the workplace and the culture of the employees, it may be appropriate to interview families. Family members are often in a unique position to identify the impact of work on the mental health of the employee and can often suggest creative and innovative strategies to address the issues.

When deciding whether to interview employees and their families, it is important to consider issues of confidentiality. Employees should be told how the information they provide will be used. Information about a person's mental health should not be disclosed to anyone, including the employer. Similarly, interviews with families should be conducted with close attention to ethical issues, such as obtaining the consent of the employee and the family and ensuring confidentiality.

Mental health issues can also affect employers. It is important to interview them regarding their own mental health needs as well as those of employees.

Conducting interviews or focus group discussions with key informants can provide a lot of information about the workplace.

Depending on the nature of the workplace and the culture of the employees, it may be appropriate to interview families.

Employees should be told how the information they provide will be used. Information about a person's mental health should not be disclosed to anyone.

Box 12. Assessing mental health issues in the workplace

The following hypothetical case study demonstrates how a combination of assessment techniques can be used to understand mental health issues in the workplace.

In a business employing 10 000 workers, the Occupational Health and Safety Committee explored the issues to be addressed in a mental health policy. Existing data indicated that over the past five years there had been a significant increase in both absenteeism and staff turnover rates compared with rates found in similar industries.

Interviews were conducted with staff and managers. Changes in the production process that had been introduced a few years previously were identified as a significant cause of stress in the workplace. In addition there were communication difficulties between management and staff. A workplace risk assessment was conducted. Again production processes and communication issues were identified as risks to the psychological welfare of staff.

Randomly selected staff were then asked to complete a survey to assess symptoms of stress: 73% of staff reported some symptoms of stress, while 34% were very stressed. Managers had higher stress levels than employees working in the production area.

This information was used in the development of the mental health policy and selected strategies.

Box 13. Assessing and managing stress in a department store

A department store in the United Kingdom has adopted an innovative approach to the management of stress. This approach provides practical help and guidance to staff and management through a combination of interactive workshops led by occupational health advisers, and a comprehensive assessment of the sources and effects of pressure facing people in business.

The programme has evolved over the past 10 years to reflect the changing needs of the staff and the business. The emphasis has moved from training staff to manage pressure, to the broader issues of individual well-being and motivation.

The cornerstone of the strategy is a flexible half-day workshop on well-being and motivation, which uses the pressure management indicator (PMI) to identify key issues facing staff in different parts of the business. This information is used to shape interventions for the individual, the store, and the business. Employees attending the workshop receive an individual pressure profile, which enables them to make personal changes in their lives and, for the few people who report clinical levels of ill-health, prompts them to seek professional help.

The results for the PMI are aggregated to ensure confidentiality and analysed to show the key issues facing staff and the effects on their well-being. This analysis provides a clear assessment of training and development needs, as well as identifying where the sources of pressure should be addressed. The occupational health team combines the data collected from workshops with the qualitative information from the occupational health advisers to build a picture of the key issues facing the business, and links this to ongoing organizational development.

Adapted from: *Mind out for mental health promotion campaign*. (National Institute for Mental Health)

Key points: Analysing mental health issues

- > It is important to identify the mental health issues within the workplace, their impact and cost, and the potential benefits of a workplace mental health policy, to mobilize broad stakeholder support when making the case for developing a workplace mental health policy.
- > Information can be extracted from existing data, and surveys or interviews can be used to collect new information.

5. Step II: Developing the policy

A workplace mental health policy usually comprises a vision statement, a statement of the values and principles on which the policy will be based, and a set of objectives. These components need not be dealt with sequentially; often they will be developed simultaneously.

The policy should be developed only after comprehensive consultations with employees. In some workplaces, a committee or working group may be made responsible for developing the policy. Elsewhere, a health professional might be given responsibility for coordinating the development of the policy. Whichever mechanism is used, it is essential that all stakeholders are involved in the process.

Formulating a vision statement

The vision statement presents a general image of the future of mental health in the workplace. It should set high expectations as to what can be achieved while at the same time being realistic. In its final formulation, the vision statement should incorporate the main elements of a workplace mental health policy, and indicate the intended outcome of the policy within a few years. The vision statement should make clear the overall orientation of the policy (World Health Organization, 2005).

For example, the vision may be: "to promote a positive working environment where employers and employees collaborate to achieve the goals of the business; promote the physical and mental health of all employees; and welcome diversity by providing opportunities for people with mental disabilities to participate in the workplace".

It is often difficult to achieve a common vision among stakeholders who may have diverse interests and perspectives. Different stakeholders may interpret the mental health needs in the workplace differently or be seeking different outcomes. For example, employers may be aiming for improved productivity, while unions may be interested in improved working conditions. It is essential that all stakeholders have input to the vision. An active compromise among the majority of stakeholders may be necessary if the policy is to be successfully implemented. Even if a common vision is achieved, stakeholders may disagree on the actions needed to attain it (Castra, 2003).

Identifying the values and principles

Values and principles form the basis for the development of objectives and strategies. Values refer to judgements or beliefs about what is considered worth while or desirable, and principles refer to the standards or rules that guide actions, and should emanate from values (World Health Organization, 2005).

Countries, regions and social groups all have their own values regarding mental health (World Health Organization, 2003b). Workplaces have their own values and culture, which should also be reflected in the policy. The values and principles underlying the workplace mental health policy should strike a balance between the various interests of the different stakeholders. For example, while employers may value productivity and increased profits, workers are more likely to value improved health. Discussion is needed on which values and guiding principles should inform the policy.

The policy should be developed only after comprehensive consultations with employees.

The vision statement presents a general image of the future of mental health in the workplace.

An active compromise among the majority of stakeholders may be necessary if the policy is to be successfully implemented.

Values and principles form the basis for the development of objectives and strategies.

Defining the objectives

Objectives translate the policy vision into concrete statements of what is to be achieved. Objectives should respond to the identified issues and aim to improve the mental health of the workforce. They should be specific and achievable within a specified timeframe.

Possible objectives may be: to educate all staff about mental health issues; to reorient the workplace to minimize the negative impact of stress on the mental health of employees; or to provide treatment for people with a mental disorder. Objectives can also respond to the needs of the business: e.g. to improve productivity by reducing absenteeism related to mental disorders; or to comply with safety regulations by conducting regular mental health risk assessments.

Box 14 contains a mental health charter that was developed in Canada. The charter identifies four principles and four objectives to promote mental health in the workplace.

Objectives translate the policy vision into concrete statements of what is to be achieved.

Box 14. The Charter on Mental Health in the Knowledge Economy

Clear and present danger

- > Depression and heart disease are on a course to become the leading causes of work years lost in the global economy by 2020 through human disability and premature death.

Principles of action

- > The mental health of the working population and their families [is] important to the successful workings of the 21st century economy.
- > Mental illness and addictions, therefore, are a business issue with a direct link to the capacity of people at every level of every organization to do what employers need them to do in an information or knowledge economy.
- > The capacity of the work force to think, to be creative, to have productive relationships and to be innovative is vital to any corporation's competitive success.
- > Economic and social investments will help contain the rise of mental disorders and their impact on economic performance.

Corporate objectives

Four objectives constitute a pathway to promote and protect mental health of the work force of the knowledge economy:

1. To prevent mental disability by promoting the earlier detection and treatment of mental health problems at work.
2. To reduce absenteeism and downtime costs by neutralizing or eliminating the known top 10 sources of workplace stress.
3. To improve substantially the awareness, knowledge and understanding of addiction and mental health issues among executives, managers, employees and co-workers.
4. To support public and corporate education to eliminate stigma, a significant barrier to the identification and treatment of these conditions and therefore the costs which they generate.

Reproduced from *Global Business and Economic Roundtable on Addiction and Mental Health*, November 2002
(www.mentalhealthroundtable.ca/jan_2003/charter_discuss_roundtable.pdf.)

Box 15. Workplace policies

Example 1

Policy statement

The business recognizes that stress can be brought about by excess pressure at work or from domestic situations, and can result in poor work performance and deteriorating physical and mental condition. It is committed to working towards a healthy organization, which places high value on both physical and mental health and therefore seeks to eliminate stress by:

- > ensuring that managers regularly carry out a risk assessment of employee workloads, job design, etc., so as to ensure that pressure is at a level that stimulates and challenges rather than overloading and demoralizing;
- > training staff to recognize indicators of occupational stress in both themselves and their colleagues;
- > allowing all staff easy access to available staff support services;
- > communicating clearly with staff, particularly on issues such as organizational change;
- > providing services in the least stressful way possible.

Adapted from: *Mind out for mental health promotion campaign*. (National Institute for Mental Health)

Example 2

Vision

The business will improve its efficiency by promoting the mental health of all employees and responding rapidly to the needs of employees who develop a mental health problem.

Values and principles

- > Employees are the most important asset of the organization: the business should provide support services for employees.
- > The efficiency of the business will be improved if employees have good emotional health. Programmes should address the mental health of all employees.
- > People should have access to treatment for mental health problems. It is cost-effective for a business to ensure the early treatment of employees with depression.

Objectives

- > To decrease absenteeism as far as possible, by eliminating organizational factors that contribute to poor mental health.
- > To improve the productivity of the business by providing better emotional support to employees after critical incidents.
- > To minimize the disability of workers by ensuring that depression is recognized early and effective treatment made available.

This is a hypothetical example of a workplace mental health policy

Consulting key stakeholders

Key stakeholders should be identified early and involved in the analysis and assessment of the mental health needs in the workplace. Consultations should continue throughout the process of developing the policy.

The people to be consulted, and the approach, are likely to change as the process continues. For example, in the early stages you may choose to consult with a few representatives of the different stakeholders, to gain their support and obtain an initial impression of the issues. However, as the assessment goes into more detail, or when you are distributing information, it is likely to be important to involve a larger number of stakeholders.

In the workplace, the key stakeholders include employees and their families, the employer, trade unions and insurance companies.

Box 16. Developing a quality circle

The Association Interrégionale de Guidance et de Santé (AIGS) has 650 employees. In each department of the organization, quality circles have been created to monitor and improve mental health at the workplace. A quality circle involves groups of employees who meet regularly to discuss and monitor the welfare of employees, and who encourage organizational processes that promote mental health. The quality circle is a dynamic system that allows the workplace to adapt according to feedback from employees. While quality circles deal with many topics, they are particularly concerned with the quality of services, quality of life at work, communication and participation, working relationships, team spirit and motivation.

Source: Bernard Jacob, personal communication, 2004.

Employees and their families

Employees are the consumers of mental health programmes, and it is essential that they are actively engaged at the beginning of the process. Lack of control and influence are independent risk factors for stress (Department of Health, 2001) and the participation and inclusion of employees should be a fundamental principle of any mental health programme in the workplace.

Employees can be consulted formally or informally, individually, in groups, or through a collective organization, such as a union or staff association. Where they are well developed, employee assistance programmes (EAPs) could take on this role. The method and type of consultation will depend on its purpose and the organizational culture.

An extra effort may be needed to reach some types of employees, such as those who work irregular hours, part-time or casual employees, those who speak a different language from the majority, and those who work in isolated locations. It is essential that the consultation involves all employees and it is often necessary to develop specific strategies for groups that are difficult to reach.

Examples of consultation approaches are:

- > holding meetings with groups of employees;
- > disseminating information and inviting feedback;
- > circulating a questionnaire to employees;
- > arranging face-to-face interviews with randomly selected employees;

Consultation should continue throughout the process of developing the policy.

Employees are the consumers of mental health programmes, and it is essential that they are actively engaged at the beginning of the process

It is often necessary to develop specific strategies for groups that are difficult to reach.

- > attaching information to employees' salary advice;
- > establishing an information hotline;
- > creating an information booth in a public area of the business (such as near a cafeteria).

Usually more than one consultation strategy will have to be used to ensure that all employees are involved.

Some employees may be afraid that the information they disclose will affect their employment. For example, they may fear that, if they disclose that they are feeling stressed, they will be demoted or sacked. Indeed, in some workplaces the disclosure of a mental health problem may result in discrimination against the employee. It is important to ensure that information disclosed by employees is kept confidential, and that employees are able to provide information anonymously.

Some employees may be afraid that the information they disclose will affect their employment.

Box 17. Assessing burnout among employees in Denmark

An assessment of the workplace needs for mental health can be done at the same time as consultation with employees to develop an appropriate programme to address needs.

A Danish programme is undertaking an empirical study of the prevalence of burnout among 2000 employees from different human service occupations. The study includes both a survey and meetings with employees to discuss psychosocial aspects of their work environment. The programme is also consulting with employees and developing interventions with the participating businesses to increase the well-being of employees, reduce absenteeism, and cut the number of resignations.

Source: Federal Institute for Occupational Safety and Health, 2003

Employers

There will often be existing formal processes for consultation with employers and managers; for example, there may be an occupational health and safety committee that has representatives of the employers. Alternatively, a discussion paper could be developed for the board of directors, or individual interviews conducted with the employers. Again the strategy used should reflect the structure of the business and the purpose of the consultation.

Employee organizations

Many workplaces will have trade unions or other employee organizations (such as staff associations). Employee organizations can be powerful supporters (or opponents) of workplace mental health policies. They often have substantial influence within an organization and may have resources that can be used to fund specific strategies. Consultation with such groups is essential not only in gathering information about the mental health needs of the workers, but in gaining support for the development and implementation of the mental health policy.

Insurance companies

The employers may have mandated an insurance company to cover financial claims related to disability arising in the workplace, including those related to mental health issues. This may include income replacement for the disabled employee in the short or long term.

Insurance companies may be interested in contributing to the development of a workplace mental health policy to help reduce the costs of claims for mental health problems.

Key points: Developing a mental health policy for the workplace

- > A workplace mental health policy comprises a vision statement, values and principles and a set of objectives.
- > The vision statement represents a general image of the future of mental health in the workplace.
- > Values are judgements or beliefs about what is worth while or valuable while principles refer to the standards or rules that guide actions.
- > Objectives translate the policy into concrete statements of what is to be achieved.
- > All stakeholders should be consulted when a workplace mental health policy is being developed.

6. Step III: Developing strategies to implement the policy

Once the mental health policy has been developed, strategies to implement the policy are needed. These are the core of any mental health plan. This step has three key tasks: reviewing the options for strategies; finding resources to implement the strategies; and developing an implementation plan.

Reviewing the options for strategies

To maximize the effectiveness of the policy, a number of different strategies should be developed. Strategies can be divided into five main categories: (1) increasing employee awareness of mental health issues; (2) supporting employees at risk; (3) providing treatment for employees with a mental health problem; (4) changing the organization of work; and (5) reintegrating employees with a mental health problem into the workplace. The specific strategies adopted will depend on the needs of the business and its employees and the resources available.

Increasing awareness of mental health

Mental health strategies in the workplace can focus on increasing managers and employees' awareness of mental health issues. For example, Health Canada has developed an information pamphlet on balancing work and home. This pamphlet provides practical ideas, such as: allowing flexible working hours; exploring alternative working arrangements, e.g. working from home or job-sharing; reassessing employee workloads to reduce job demands; and building social support in the workplace. The pamphlet can be accessed at:

http://www.hc-sc.gc.ca/hecs-sesc/workplace/pdf/workplaceJug_en.pdf

Other examples of employee awareness and education strategies include:

- > distributing leaflets challenging the myths associated with mental illness;
- > running workshops on looking after emotional well-being;
- > putting up posters in the workplace on mental health issues;
- > training supervisors to understand mental health issues in the workplace;
- > sponsoring a staff social group to encourage the development of supportive environment in the workplace;
- > establishing a library of resources with books, videos, etc. on mental health issues that employees can borrow;
- > running team-building workshops.

Box 18 provides some examples of strategies that aim to increase employees' awareness of mental health issues in the workplace.

The specific strategies adopted will depend on the needs of the business and its employees and the resources available.

Mental health strategies in the workplace can focus on increasing the employees' awareness of mental health issues.

Box 18. Strategies to increase employee awareness of mental health issues in the workplace

Example 1: “My millennium: my well-being”

“My millennium: my well-being” is a millennium project organized by a national human resources working group in Canada.

The goal of the project is to provide employees with tools and opportunities to improve their individual well-being in five aspects: physical, emotional, spiritual, intellectual and social.

The project consists of a toolkit focusing on individual well-being and opportunities for group activities. The kit is made available as pamphlets, through intranet or local work sites, and via Internet.

The kit includes a wide range of material on each dimension and is very user-friendly. Each section contains questionnaires, tests, quizzes, tips, definitions, activities and proposals. Some of the subjects are as follows:

- > **Physical:** improving your physical well-being, e.g. exercise, nutrition, sleeping habits, releasing stress from the body.
- > **Emotional:** developing positive emotions, e.g. humour, assertiveness, forgiveness, dealing with anger.
- > **Spiritual:** having a sense of connection to something larger than oneself, e.g. a sense of meaning and purpose, inner reflection and personal values.
- > **Intellectual:** keeping one’s mind active, alert, open, curious, and creative; continuous learning activities.
- > **Social:** spending time with family and friends, recreational activities, activities with work colleagues; balancing the demands of life is one of the challenges to maintaining a good sense of social well-being.

The kit provides guidance not only for employees but also for managers. The guide underscores the reason for the existence of the project, i.e. to deal with an “unprecedented number of stress-related maladies”, and points to the fact that we need a “healthy, productive and sustainable workforce to deliver quality service and maintain a competitive advantage”. It defines the programme as an essential element of a recruitment and retention strategy.

A **manager’s guide** shows how managers can support their employees’ development and a workplace well-being initiative. The project includes a checklist of concrete ways to achieve this and encourages and helps managers to establish a wellness committee in the workplace.

Source: Human Resources Development, Canada, 2002

Example 2: SOLVE

SOLVE is an interactive educational programme designed to assist in the development of policy and action to address psychosocial issues in the workplace.

Stress, alcohol and drug use, violence (both physical and psychological), HIV/AIDS and tobacco use can all lead to health-related problems for the worker and lower productivity for the enterprise or organization. Taken together they represent a major cause of accidents, fatal injuries, disease and absenteeism at work in both industrialized and developing countries. SOLVE focuses on prevention by translating concepts into policies and policies into action at the national and enterprise levels.

There are numerous interrelationships between stress, alcohol and drug use, violence, and HIV/AIDS. Any one of these psychosocial problems may be a causal factor for the others. Psychosocial problems linked to these factors can initiate or exacerbate an increasingly damaging cycle that affects the individual, the organization or enterprise, and society as a whole.

Through educational courses, SOLVE encourages senior executives, directors of human resources, occupational safety and occupational health professionals, employers' and workers' representatives and others to develop a comprehensive policy for their respective workplace. This policy should incorporate issues such as prevention, non-discrimination, social support, worker involvement, the provision of training and information and the provision of treatment and rehabilitation. The policy should call for an occupational safety and health management system to assure smooth development, implementation and evaluation. For workers and supervisors, SOLVE provides for action through education and training translating policy into action at the shop-floor level.

In summary, SOLVE combines economic and social objectives by stressing win-win, low cost, practical solutions that meet the needs of both industry and workers.

For more information see: www.ilo.org/safework/solve

Source: International Labour Office, 2004

Providing support to employees at risk

Some employees are more vulnerable to mental health problems than others. This vulnerability may be due to individual factors (for example they may be nearing retirement, have a physical health problem or be using alcohol in problematic ways), or organizational factors (for example, their work may be particularly stressful).

Workplace support strategies can target specific workers or groups of workers. Some examples are:

- > establishing a support group for working mothers;
- > improving the recognition of depression among employees with physical health problems;
- > providing support for employees who are nearing retirement to make the transition easier;
- > providing counselling for employees who have been exposed to a stressful event;
- > introducing brief interventions for employees with hazardous drinking patterns;
- > enhancing social support networks for isolated workers.

Support can also include the use of screening tools for mental disorders, such as depression. In this way, employees who have a mental disorder can be identified early and referred for treatment. Inclusion in screening programmes for mental disorders should be voluntary, and due consideration should be given to the privacy of the employee and the need to ensure that screening does not result in discrimination. Screening programmes should be undertaken under the supervision of qualified mental health professionals.

Box 19 describes two different strategies that were developed to assist specific groups of employees at risk: older employees in a Finnish company and employees with substance abuse problems in the mining industry in the USA.

Some employees are more vulnerable to mental health problems than others.

Workplace support strategies can target specific workers or groups of workers

Box 19. Examples of strategies for supporting employees at risk

Example 1. Health checks for older employees

A company in Finland is a supplier of fibre and paper technologies in the forestry industry. It has a workplace mental health programme that places particular emphasis on the needs of workers over the age of 45, by providing medical checks and monitoring work stress. This special attention to the needs of older workers has resulted in fewer early retirements and improved operating results.

Source: Liimatainen, 2000

Example 2: Substance use and the mining industry

The United States Department of Labor, Mine Safety and Health Administration and the National Mine Health and Safety Academy have developed a safety manual on coping with substance use in the mining industry. The manual provides useful information for employers on the scope of substance abuse in the workplace and strategies to deal with the problem. These strategies include training supervisors and employees in the issues and providing individual support for workers with substance abuse problems.

Source: US Department of Labor, 1991

Providing treatment for employees with mental health problems

Treatment services should be available for employees with mental health problems. Large companies may have their own health service. The capacity of such health services to respond to mental health problems in the workplace should be assessed, and if necessary additional training and education provided. Information about mental health training programmes for health professionals can be obtained from ministries of health, professional organizations or local mental health services.

Smaller workplaces may need to rely on health services in the community to provide treatment for employees with mental health problems. Generally primary health care professionals will provide these services.

The availability and cost of health services for mental health problems vary considerably. Where possible, employers should help employees obtain treatment by, for example, posting a list of health providers on a notice board, providing health insurance that includes coverage for mental health problems, or negotiating special rates for employees with local health services. Employers may also need to advocate with health providers and governments, for example, to ensure that treatment for mental health problems is available at primary care level (World Health Organization, 2003b).

Confidentiality is an important consideration in the treatment of mental health problems in the workplace. Many employees do not seek treatment for a mental health problem because they fear that it will affect their employment. Health providers treating employees must adhere to the usual principles of confidentiality: information should be disclosed only with the consent of the employee and any obligatory exceptions to this (for example, legal obligations to disclose information) should be explained to the person before treatment begins.

Treatment services should be available for employees with mental health problems.

Many employees do not seek treatment for a mental health problem because they fear that it will effect their employment.

Box 20. Providing treatment for employees with mental health problems

Example 1. Improving recognition and treatment of psychosocial disorders in France

A French company improved the recognition and treatment of psychosocial disorders by providing training for the in-house medical service in mental health and the Mini International Neuropsychiatric Interview. A conference was held for employees on psychosocial issues and individual follow-up appointments with physicians were arranged. The service is available to more than 140 000 employees within the business, as well as employees from smaller, associated businesses.

Source: Federal Institute for Occupational Safety and Health, 2003.

Example 2. Treatment for sick physicians and nurses in Spain

A project in Spain is providing treatment and support for physicians and nurses with mental health problems and addictive behaviours. The project aims to raise awareness of mental health problems among physicians and nurses, provide treatment, and support return to work. In four years, 415 people have been treated and almost three-quarters have returned to work.

Source: Federal Institute for Occupational Safety and Health, 2003

In many large workplaces, employee assistance programmes (EAPs) provide treatment and referral for employees with mental health problems. An EAP is:

“...a work-based intervention programme aimed at the early identification and/or resolution of both work and personal problems that may adversely affect performance. These problems may include, but are not limited to, health, marital relationships, family, financial, substance abuse, or emotional concerns. The specific core activities of EAPs include: (1) expert consultation and training in the identification and resolution of job performance issues related to the aforementioned employee’s personal concerns; (2) confidential and timely problem assessment, diagnosis, treatment, or referral to an appropriate community resource; (3) the formation of internal and external relationships between the workplace and community resources not available within the scope of the EAP.” (Employee Assistance Professional Association, 1996).

In the United States, EAPs are available in 25% of large companies (with more than 5000 employees) and cover approximately 12% of the workforce. In the United Kingdom, the number of EAPs have grown by 40% since 1995 and by 2000 covered approximately two million employees in more than 775 organizations (Arthur, 2000).

There are three models for EAPs: internal programmes, external programmes, and programmes that use both internal and external resources (Beaudoin 1986). While external programmes offer greater confidentiality to employees, they have been criticised for their lack of integration with an organization’s broader occupational health and safety processes (Kirk & Brown, 2001). Internal programmes tend to have closer connections to employers and organizational processes. While most EAPs involve the traditional face-to-face counselling relationship, a small but increasing number of companies (mostly in the United States) are using the Internet as part of their EAP programme (Raber, 1999).

In many large workplaces, employee assistance programmes provide treatment and referral for employees with mental health problems.

The establishment of a successful EAP requires the following (Raber 1999):

- > a coordinating committee with representatives of all stakeholders;
- > support from the management of the organization;
- > close involvement and participation of union representatives;
- > training of supervisors in problem detection and management, as well as in how to make referrals;
- > confidentiality for employees;
- > promotion of the existence of the EAP and information on how to access it;
- > written policies and procedures; and
- > free (or affordable) access to the EAP for employees.

There is some evidence that EAPs are effective, although research has tended to focus on comparing different characteristics of EAPs – for example, the impact of offering follow-up (Foote & Erfurt, 1991) – or comparing the effects of an EAP intervention with other forms of support or treatment (Walsh et al., 1991).

The cost of EAP programmes varies depending on the general labour costs in the country and the scope of activities provided by the programme. In the United States, for example, EAP programmes cost on average US\$27.69 per employee per year for internal programmes and US\$22.19 for external programmes (French et al., 1999).

Box 21. Supporting health workers

A large hospital in the USA has established a support team for health workers that includes four psychiatrists. The services are offered to any hospital employee who provides direct clinical care to patients. The programme combines important elements of an employee assistance programme with those of an ombudsman's office, and provides a safe, confidential environment for communication and problem solving. Issues addressed may be work-related, personal, or both. A forum is provided in which the employee can voice concerns, evaluate situations, thoughts, and feelings, receive feedback, and make decisions accordingly.

The support team is also actively working to prevent distress in health care workers, by giving talks and facilitating group meetings on such topics as dealing with difficult patients, compassion fatigue (caregiver burnout), professional boundaries, and self-care.

Source: Dr Jason Andrus, Office of Clinician Support, Children's Hospital of Boston, personal communication.

Changing the organization of work

Mental health strategies in the workplace can also address organizational factors. Examples of such strategies are given below (Department of Health, 2001; Mentality, 2003):

- > **Redress the effort/reward balance:** e.g. ensure that staff feel valued, promote positive messages related to work performance, ensure equity in remuneration, and involve staff in discussing what sort of rewards they would value.
- > **Improve communications and staff involvement:** e.g. ensure effective communication strategies particularly during times of change and consult regularly with staff in planning and decision-making.

Mental health strategies in the workplace can also address organizational factors.

- > **Enhance social support:** e.g. promote supportive management practices, develop peer support programmes, ensure appraisal processes are positive, provide opportunities for social networks to develop in the workplace, develop effective policies to deal with harassment and bullying.
- > **Increase job control and latitude for decision-making:** ensure task variety, provide opportunities for people to have some choice in how they perform their work, and encourage staff input into policies and procedures.
- > **Assess job demands:** e.g. review staff workloads regularly, encourage staff not to work long hours, implement flexible working hours, and ensure people take regular breaks.
- > **Clarify job role:** e.g. ensure workers have a clear understanding of their role, and reduce role ambiguity and role conflict.
- > **Review the work environment:** e.g. create a productive work environment by reducing excessive noise, ensuring adequate lighting, etc.
- > **Clarify organizational structure and practices:** e.g. provide clear information about the structure, purpose and practices of the organization, ensure that selection, training and staff development activities are appropriate, and match employees skills, knowledge and abilities to the needs and nature of their job.

Box 22. Changing the organization of work to improve mental health

Example 1. Improving organizational climate

In July 2003, a large psychiatric hospital in Canada undertook to measure its organizational climate. A committee consisting of representatives of senior management, human resources, line managers, employees and union representatives developed questionnaires with the help of an outside company. Over a period of 15 days, self-administered questionnaires were sent out to 1246 employees. Replies were anonymous and confidential. Almost half of the employees completed the questionnaire, which covered the following themes:

- > motivation and satisfaction at work;
- > work conditions;
- > interpersonal and professional relations between colleagues;
- > interpersonal and professional relations with the immediate superior;
- > training and development of personnel;
- > performance evaluation;
- > information and internal communications;
- > quality of services and satisfaction;
- > values and feelings of belonging;
- > impact of computers at work.

The average reported level of satisfaction with the organizational climate was 6.0 (out of a possible 10), while the degree of satisfaction with work was 6.8. Generally managers tended to be more satisfied (8.1/10) than people working in auxiliary services (5.7) or those assigned to patient care (6.7).

These findings were presented to discussion groups, which met 4 months after the questionnaires were returned, and an action plan was developed to respond to priority areas.

Source: Douglas Hospital, Montreal, 2003.

Example 2. Identifying and addressing organizational hotspots for stress

In 2002, a leading telecommunications company developed a three-tiered approach to stress in the workplace, combining elements of prevention, treatment and rehabilitation. The strategy included:

- > Primary level: minimizing workplace stress through effective job and workplace design.
- > Secondary level: identifying organizational “hotspots” for stress and providing individuals with personalized assessment and advice.
- > Tertiary level: providing remedial support to those suffering from stress and helping them to get back into the workplace.

In addition, an online assessment tool was made available to all staff, which identified health issues and likely sources of stress.

The strategy has significantly reduced the number of employees experiencing mental health problems, as well as the number of absences and early retirements.

Source: Incomes Data Service, 2004.

Reintegrating employees with mental health problems into the workplace

Returning to work is often an important component of an individual's recovery from a mental health problem. The workplace can play an important role in ensuring a successful return. In addition, people with mental health problems are an important part of the human capital needed for a successful business. Facilitating their return to work will ensure that their knowledge and skills are not lost to the workplace.

People with disabilities, including disabilities associated with mental health problems, may also require special accommodations in the workplace in order to function effectively (Bond & Meyer, 1999; Fabian et al., 1993; McDonald-Wilson et al., 2002). Employers and people with disabilities need support to ensure that feasible workplace accommodations are provided when the demand is reasonable (McDonald-Wilson et al., 2002). Fabian et al. (1993) suggest a number of accommodations, in which the most important strategies for helping people on the job are: (1) providing orientation and training to supervisors to provide necessary assistance; (2) modifying work schedules and time; and (3) providing orientation and training to co-workers. Other accommodations may include flexibility in working hours so that people can keep medical appointments, or allowing workers who have a dry mouth (caused by medication) to drink water in their workspace (Bond & Meyer, 1999).

In many countries, employers have a legal obligation to facilitate the return to work of people with a mental health problem. Training for employers (including managers) can improve their understanding of mental health problems and help them provide appropriate accommodations.

Some accommodations or adjustments that might be considered are listed below.

Flexible working hours

Many people with mental health problems would benefit from a policy that allows them to work flexible hours when required. This would allow the worker, for example, to communicate more easily with a helping professional by telephone or to attend an appointment.

Returning to work is often an important component of an individual's recovery from a mental health problem.

People with disabilities, including disabilities associated with mental health problems, may require special accommodations in the workplace in order to function effectively.

In many countries, employers have a legal obligation to facilitate the return to work of people with a mental health problem.

The medication used to treat some mental disorders may occasionally affect concentration or punctuality. For example, some medications may make it more difficult for a person to get up early in the morning. This effect is often worse when the person first takes the medication or when the dosage is increased. Workplaces can support employees by allowing some flexibility in their working hours.

It may also be useful to develop a policy to handle predictable and unpredictable absences of people with a mental health problem. In all instances the best results are obtained when employees are given a sense of overall control over the way they manage time and do their job.

Box 23. Working time experiments

The European Social Fund financed a research and development project called “Flexibility through six-hour shift”. The model was based on work done by Professor Paavo Seppänen in 1967. Seppänen suggested that, to promote both effectiveness and human considerations, productive organizations should operate for 12 hours, in two six-hour shifts, rather than the usual eight hours. In the project the model was applied in eight small private firms and carried out on a shop floor for machine-bound work. Arrangements were agreed between the employer and the employees and, in most cases, wages remained the same. Every firm in the study benefited in some way: production costs and absenteeism decreased, and productivity and flexibility increased.

Between 1996 and 1998, 20 municipalities participated in an experiment on shorter working time; 1300 permanent employees reduced their working hours by an average of 20%, resulting in an average work week of 30 hours. The average wage loss was 7%. Some 600 new part-time employees were hired at the normal part-time wage to compensate for the loss of hours. The experiment was carried out primarily in female-dominated health and social services such as child-care, home care, dental care and physiotherapy. Working time was reduced either daily or weekly. Some services benefited from the new working time arrangements: the availability of services improved and the hours that services were available was extended. However, the research showed that the benefits of shorter hours were most visible in the improved quality of life and wellbeing of employees and in reduced stress.

Source: Liimatainen, 2000.

Education

It is important that employers and employees understand mental health problems, and that opportunities are available to discuss common myths and stereotypes. Information and education should generally be provided to all employees. Special attention should be paid to ensuring the confidentiality of an employee who has had a mental health problem and is returning to work. Some may not want to disclose their mental health problems to their colleagues, and the timing of education and information sessions on mental health issues should not inadvertently reveal health information about an employee without consent.

It is important that employers and employees understand mental health problems, and that opportunities are available to discuss common myths and stereotypes

Box 24. Educating managers in Sweden

A programme in Sweden had aimed to improve mental health by educating managers, focusing on demand and control at work, improving social climate, making goals clear, and slowing down the pace of work. The evaluation demonstrated improvements in the health of employees, reduced tension and better decision making.

Source: Federal Institute for Occupational Safety and Health, 2003

Using selected co-workers as mentors

Employees with a mental health problem may require additional support in the workplace. The designation of a suitable co-worker who is appropriately informed and trained may give better results than support offered by a supervisor or an outside person (Banks et al., 2000).

The role of a mentor includes listening, providing information, enhancing motivation, and offering advice that may lead to improved work performance (Cullen & Barlow, 1998). It is important that the mentor fosters autonomy and respects the lifestyle, viewpoints and values of the person being assisted (Houde, 1995).

Confidentiality

It is useful for workplaces to have a policy on confidentiality, and to ensure that it is well publicized and understood by employees. While employers and co-workers may be required to assist a colleague who is returning to work, they do not need to know the details of the person's problems. Information about an employee's mental health problems should only be released with his or her consent.

Job content

Clear communication with employees regarding the content of their job is essential. Rearranging responsibilities within the group may be beneficial.

It may be useful for the company to establish formal links with organizations that provide information, advice and help for people with mental health problems. For example, there may be a local community health or community mental health service through which links can be established. It may also be appropriate to invite representatives from the health service to participate in implementing the strategies.

The designation of a suitable co-worker who is appropriately informed and trained may give better results than support offered by a supervisor or an outside person.

Information about an employee's mental health problems should only be released with his or her consent.

Clear communication with the employee regarding the content of their job is essential.

Box 25. Examples of reasonable accommodations for people with mental health problems

Changes in communication

- > Arrange for all work requests to be put in writing for a library assistant who becomes anxious and confused when given verbal instructions.
- > Train a supervisor to provide positive feedback along with criticisms of performance, for an employee re-entering the work force who needs to be reassured of his or her abilities after a long psychiatric hospitalization.
- > Allow a worker who personalizes negative comments about his or her work performance to provide a self-appraisal before receiving feedback from a supervisor.
- > Schedule daily planning sessions with a co-worker at the start of each day to develop hourly goals for someone who functions best with a clear time structure.

Modifications to the physical environment

- > Provide room dividers for a data entry operator who has difficulty maintaining concentration (and thus accuracy) in an open work area.

Job modifications

- > Arrange for someone who cannot drive or use public transport to work at home.
- > Restructure a receptionist job by eliminating lunchtime switchboard duty.
- > Exchange problematic secondary tasks for part of another employee's job description.

Schedule modification

- > Allow a worker with poor physical stamina to extend his or her schedule to allow for additional breaks or rest periods during the day.
- > Allow a worker to shift his or her schedule to attend psychotherapy appointments.

Source: Mancuso, 1990.

Selecting strategies

The strategies to be implemented in the workplace will depend on the nature of the workplace, the mental health issues identified and the resources available. Issues such as the acceptability of the strategy to employees and the sustainability of the intervention are also important.

While some workplaces may invest in many different strategies simultaneously, many will need to begin more slowly, with only one or two strategies. The decision about whether to focus on education, employees at risk, treatment services, the organization of work, or the reintegration of employees with mental health problems needs careful consideration of the evidence and consultation with all stakeholders.

Box 26 describes some hypothetical workplace strategies, based on the vision and objectives of the mental health policy described in Box 15.

Box 26. Developing strategies

Vision

The business will improve its efficiency by promoting the mental health of all employees and responding rapidly to the needs of employees who develop a mental health problem.

Objective 1: To decrease absenteeism as far as possible by eliminating organizational factors that contribute to poor mental health.

Strategies

- > Develop a process to measure workload and review the workload of all employees.
- > Implement procedures to review employee performance.
- > Develop a staff recognition programme to reward employees who perform well.

Objective 2: To improve the productivity of the business by providing better emotional support to employees after critical incidents.

Strategies

- > Introduce an employee assistance programme.
- > Provide training for employees on the psychosocial issues associated with critical incidents.

- > Develop an aggression prevention programme (incidents of aggression from customers were the most common critical incidents identified in the assessment of employee needs).

Objective 3: To minimize the disability of employees by ensuring that depression is recognized early and effective treatment made available.

Strategies

- > Develop information leaflets for employees.
- > Ensure that health clinic staff attend a seminar to help them recognize the signs of depression.

This is a hypothetical example to illustrate strategies that can contribute to achieving the objectives of a mental health policy in the workplace

Finding resources to implement the strategies

It is important to ensure that sufficient resources are available to implement the strategies. This requires a clear understanding of both the strategies to be implemented and the associated costs.

The resources needed might include additional financing (for example, to establish an EAP) or the redirection of funds that are currently used elsewhere (for example, negotiating with health clinic staff to conduct a mental health awareness campaign).

Financing for mental health strategies in the workplace can come from a variety of sources:

- > A proportion of an existing budget for employee health services can be dedicated to mental health strategies

It is important to ensure that sufficient resources are available to implement the strategies.

- > A proportion of the savings associated with improvements in workplace efficiency resulting from a mental health programme can be used to fund that programme.
- > Savings in insurance costs as a result of improved employee health can be redirected to the mental health programme.
- > Grants may be available from employer or employee organizations to implement a mental health programme.
- > Assistance may be available from the government, a nongovernmental organization, or an external donor to implement a programme.

In some situations, it may be appropriate to require employees to make a small contribution towards the cost of the strategies.

Developing an implementation plan

The final task is to formulate a plan to implement the policy. The plan should outline the objectives, specific strategies to be used, targets to be achieved, and activities to be carried out. The time frame, responsible people, expected outputs and potential obstacles should be clearly identified.

The following questions should be considered in putting together the plan:

- > What specific activities are needed to implement each strategy?
- > Who will take responsibility for each activity?
- > How long will each strategy and activity take?
- > Which activities can be done simultaneously and which depend on the completion of another activity?
- > What outputs are expected from each activity?
- > What are the potential delays or obstacles?

While this may seem a complex list of issues, the process allows the objectives and the strategies to be brought together within a single planning framework.

Table 4 sets out a hypothetical example of an implementation plan for a mental health awareness campaign in a workplace.

Table 4. A hypothetical component of an implementation plan

Objective: To reduce employee sick leave by increasing awareness of mental health issues in the workplace and improving self-care

Strategy 1: Implement a mental health awareness campaign for all employees

Target: 50% of employees will have attended an mental health awareness workshop within one year

Work content	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	
Review mental health awareness campaigns in similar businesses	X	X									
Develop a proposal for a mental health awareness campaign, including required resources and expected costs		X	X	X							
Appoint a coordinator for the workshop					X						
Develop material for workshops						X	X	X			
Market workshops to all employees									X		
Commence workshops										X	
Evaluate effectiveness of workshops										X	

	Nov	Dec	Responsible person	Output	Potential obstacles
			Occupational health and safety officer	Recommended model for workshops	Unable to obtain information from other businesses
			Occupational health and safety officer	Proposal developed	No agreement from employer as resources are not available
			Human resources	Coordinator recruited	Difficulties in recruiting appropriate person
			Coordinator	Information developed	Difficulty in obtaining required information
			Coordinator	Information distributed	Difficulties in circulating information to some employees
	X	X	Coordinator	Service available	Employees do not attend workshops
	X	X	Coordinator	Evaluation report	Evaluation data not available. Participants do not complete evaluation forms

Key points: Developing strategies to implement the policy

- > To maximize the effectiveness of a policy, a number of different strategies should be used.
- > Information about mental health issues should be provided to all employees.
- > Strategies should be developed to reduce the likelihood that employees at risk develop a mental health problem.
- > Treatment services should be available for people who have a mental health problem.
- > Changes to the organization of work can improve the mental health of employees.
- > Strategies can be developed to help people with mental health problems to reintegrate the workplace.

7. Step IV: Implementing and evaluating the policy

The main actions in implementing and evaluating a mental health policy include: generating support and collaboration; coordinating implementation; training; establishing demonstration projects; and evaluating the outcomes.

Generating support and collaboration

The mental health policy needs to be disseminated and communicated to all stakeholders. Many policies fail because they are poorly communicated (World Health Organization, 2005). Some approaches to communication are listed below:

- > Organize an event to launch the policy.
- > Distribute posters and leaflets on the policy.
- > Hold meetings with different groups of employees to explain the policy.
- > Publish the policy on the company's Website.

These activities can also be used to generate support and funding for the strategies. It is essential to have the support of key people within the company to advocate for the policy and ensure sufficient funding for its implementation.

If the consultation process has been effective, then there should already be a number of opinion leaders within the business who are ready to publicly support the policy. Such expressions of support can help to reduce the stigma associated with mental health problems. If respected people in the business speak openly about mental health, employees may be encouraged also to openly acknowledge the issues.

Coordinating implementation

The implementation process needs to be carefully coordinated and monitored. The plan should be reviewed and updated as necessary.

A process for implementation needs to be established. An individual, a department or a committee might be given responsibility for the implementation of the plan. Regular reporting to the employer, employees, and funders of the policy should be part of the implementation plan. For example, requiring a report 12 months after the start of activities provides an opportunity to document the achievements, monitor implementation, and review the plan.

Training

It is important to ensure that the people who will be leading the implementation process are properly trained to understand the issues associated with mental health in the workplace. Training requirements should be outlined in the implementation plan.

A range of stakeholders may benefit from training at this stage, including:

- > health workers,
- > human resources personnel,
- > managers and supervisors,
- > union delegates,
- > occupational health and safety representatives.

Training can often be provided by external organizations or (if the workplace is large)

The mental health policy needs to be disseminated and communicated to all stakeholders.

It is essential to have the support of key people within the company to advocate for the policy and ensure sufficient funding for its implementation.

The implementation process needs to be carefully coordinated and monitored.

Training can often be provided by external organizations or (if the workplace is large) might be conducted within the company.

might be conducted within the company. The content of the training programme will depend on the type of business and the priorities identified in the mental health policy. However, it should include an overview of mental health issues in the workplace, an outline of the major mental health issues faced by employees, and the key initiatives that have been included in the mental health policy and plan.

Training will often need to be carried out regularly, to ensure that new employees receive information about mental health issues and to update all employees' knowledge. These training needs should be documented in the implementation plan.

Setting up a demonstration project

It is often useful to set up a demonstration project to implement a strategy in one part of the workplace. Such a project can often be implemented rapidly and the outcomes thoroughly evaluated (World Health Organization, 2005). The demonstration project may target a particular group of employees (for example, administrative staff) or a specific department.

The demonstration project may also be used: as an advocacy tool, to illustrate the value of specific strategies; as a training area for the implementation of the plan; and to provide detailed guidance for other parts of the workplace on implementing specific strategies. For example, it may be easier to develop and test a workload assessment process in only one area of the workplace, rather than in multiple areas simultaneously. As the process is refined, it can be expanded to include the whole organization. Managers may be more easily convinced of the benefits of measuring staff workload once they observe the effects in another area of the workplace.

Evaluating the policy

It is important to evaluate the effect of the policy and strategies on both individual workers and on the organization. This will also assist in building an evidence base of effective mental health interventions in the workplace.

Ideally, the evaluation should be planned when the policy is being developed, and key baseline information collected before implementation starts. In this way, it will be possible to measure changes that occur following implementation. However, sometimes an evaluation is requested after the strategies have been implemented. This has implications for the design of the evaluation.

The evaluation should contain both quantitative and qualitative elements. For example, information may be collected about the rates of absenteeism in a department as well as about the context of the workplace, reasons for absenteeism, and how the policy has been implemented. Both types of information are needed to understand whether strategies have been successful.

Given the complexity of programme evaluation, technical assistance may be required for its design and conduct. Generally, an evaluation will incorporate one or more of the following approaches (Atkins & Weiss, 2002).

- > A **needs-based evaluation** addresses the relevance of the policy. Selected strategies for the target population are evaluated by assessing the underlying theory or model on which the policy is based. Much of the information collected in these early stages will be useful in describing the relationship between the needs of the employees and the organization and the strategies developed.

It is often useful to set up a demonstration project to implement a strategy in one part of the workplace.

It is important to evaluate the effect of the policy and strategies on both individual workers and on the organization.

The evaluation should contain both quantitative and qualitative elements.

- > **Formative or process evaluation** is usually done in the implementation phase and generates feedback that will be useful in guiding policy development. Key information includes what activities have occurred, where, with whom and how frequently. For example, how many leaflets on workplace stress have been distributed? How many staff have attended a mental illness awareness education programme? How many departments have reviewed their performance appraisal process?
- > **Summative evaluation** assesses whether specific goals and objectives have been achieved. Depending on the goals of the policy, factors such as absenteeism, employee satisfaction, and productivity could be measured.

A formative evaluation generates feedback that will be useful in guiding policy development.

There are different ways of measuring policy outcomes. The most powerful is an experimental design, in which two groups are compared – one to which the policy has been applied and one to which it has not (see Box 27). Quasi-experimental designs, in which one group is assessed before and after implementation of the policy, is frequently used in real situations. In this approach, the evaluator can control only some of the dependent variables.

Box 27. Evaluating change: a hypothetical example

Before implementation (pre-test)

A survey of 400 workers at a large manufacturing plant found that 56% of the workforce reported at least two symptoms of stress.

Implementation

The results were discussed at a senior executive meeting. The occupational health and safety committee was given the task of developing a mental health policy. Following extensive consultation, three strategies were implemented to reduce employee stress in one section of the manufacturing plant, representing 200 workers (intervention group): (1) an employee stress awareness programme; (2) a system to measure employee workload; and (3) a strategy to improve communication between management and employees.

After implementation (post-test)

Twelve months after the policy was implemented, the survey was repeated. This time, only 22% of employees in the intervention group reported at least two symptoms of stress, while 60% of employees in the control group reported at least two symptoms. It thus appeared that the strategies had been effective.

The main goal of the summative evaluation is to inform decision-makers about the effectiveness of the programme. The report will need to be written in a language that is easily understood by the various decision-makers in the organization.

Further information on evaluation is given in the module *Research and evaluation for mental health* (World Health Organization, forthcoming).

Key points: Implementing and evaluating the programme

- > It is necessary to generate support and collaboration to ensure the successful implementation of the programme.
- > Implementation needs to be coordinated.
- > Key staff may need to be trained to facilitate the implementation process.
- > Setting up a demonstration project, which can be rapidly implemented and evaluated is often useful.
- > The evaluation should begin at the commencement of the programme.
- > The evaluation can include needs-based evaluation, formative evaluation and summative evaluation.

8. Barriers and solutions

In trying to introduce mental health policies and plans to a workplace, a number of barriers may be encountered. However, solutions can usually be found. Some examples are given below.

> *Employers believe that profits are higher when employees work excessive hours, and that responding to mental health issues will cost too much money.*

One of the principal barriers to the development of a mental health policy and plan for the workplace is the belief that it will negatively affect the profitability of the business. Employers may not understand the relationship between their employees' mental health and productivity.

There are a number of ways of overcoming this barrier. Demonstrating to employers that addressing mental health issues that can improve productivity is often helpful. Employer organizations can play a key role in educating employers about mental health. For example, they can include a speaker on mental health issues at an employers' forum. Linking mental health issues to employers' legal obligations may also help; for example, mental health issues could be included in health and safety risk assessments.

> *The workplace is too small.*

Employers with only a few employees may see the value of addressing mental health issues in large workplaces, but not understand that it is also important for small businesses. Often small workplaces do not employ occupational health experts or health professionals, and do not have anyone with the expertise to respond to mental health issues.

Small workplaces are likely to rely on existing health services within the country. Employers with small businesses can develop links with mental health services in the community in order to, for example, obtain information on mental health issues or refer employees with mental health problems for treatment. If available services are inadequate, employers can be powerful advocates for the development of mental health services. Collective employer organizations may also be able to assist, by making available expertise to different workplaces.

> *There is resistance among stakeholders.*

Many stakeholders may be resistant to the development of a mental health policy and associated strategies. They may be unaware of the impact of mental health issues in the workplace or unwilling to make changes in the workplace. Effective information and consultation with all stakeholders throughout the process is essential. Key opinion leaders can also be useful. For example, a respected person within the workplace could discuss mental health issues at an open forum. In addition, demonstration projects within the workplace can illustrate the impact of strategies.

> *Stakeholders do not believe that interventions will be effective.*

Some stakeholders may not believe that interventions for mental health problems in the workplace will be effective. Key opinion leaders, such as medical staff, may be able to convince them of the importance of addressing mental health issues. External experts may also be useful. The module Mental health advocacy (World Health Organization 2003c) provides more detailed guidance on sensitizing stakeholders in mental health issues.

> *Insufficient resources.*

Resources available to implement mental health strategies may be very limited. It may therefore be necessary initially to consider strategies that require few resources, while working to sensitize all concerned to mental health issues. It may be possible to redirect some resources from other areas, or to find funding from external donors. Many governments have funds available for occupational health and safety initiatives, particularly for small workplaces. Nongovernmental organizations may also be able to assist.

> *Employers may be afraid of the consequences of addressing mental health issues.*

They may be concerned about unforeseeable consequences that could have a negative impact on the business. For example, they may believe that talking about mental health will cause mental health problems among employees, or that raising awareness will result in an increase in absenteeism or claims for compensation.

One approach to overcoming this obstacle is to provide relevant up-to-date information to employers. In some workplaces, addressing mental health might reduce the cost of worker insurance. Using other workplaces that have addressed mental health issues as examples can be useful. It is also important to emphasize that mental health issues can be addressed over time, providing an opportunity to sensitize employees and monitor the impact of change.

> *Stigma.*

The impact of the stigma associated with mental health issues is substantial and should not be underestimated. Employers and employees may not want to explore the issues because of myths and stereotypes. They may believe, for example, that mental health problems are caused by personal weaknesses or that people with mental health problems never recover.

It is important to educate the workforce about mental health. Few strategies will be successful unless the workforce understands mental health problems, their impact on the workplace, and the fact that they can be treated.

> *Employers do not want to employ people with mental health problems.*

Some employers may resist employing people with mental health problems. Employers need to be aware of any legislation that prevents them from dismissing employees because of a mental health problem or discriminating against people with disabilities when recruiting. It is also important that employers understand the important contribution that people with mental health problems can make to the workplace.

> *Employees do not attend activities.*

In some workplaces, employees may not attend the activities offered as part of a mental health plan. This may be because they feel the activities are not appropriate or because of the stigma associated with mental health problems. Potential solutions include an analysis of the workplace need for mental health activities and consultation with employees. It is also important to educate employees about mental health issues so that they feel comfortable participating in the activities.

Table 5 summarizes the main obstacles and some solutions.

Table 5. Obstacles to the introduction of a mental health policy in the workplace and some solutions

Obstacles	Possible solutions
Concern that mental health policy will reduce profits	<ul style="list-style-type: none"> > Provide information to employers on mental health and productivity > Encourage employer organizations to become involved in mental health activities
Belief that the workplace is too small for a mental health policy	<ul style="list-style-type: none"> > Encourage employer organizations to provide assistance to small workplaces > Encourage links between small workplaces and primary health care services
Resistance from stakeholders	<ul style="list-style-type: none"> > Provide information to stakeholders > Use influential people in the workplace to champion mental health > Arrange demonstration project
Insufficient resources	<ul style="list-style-type: none"> > Develop low-resource strategies > Explore opportunities for redirecting resources from other activities > Explore opportunities for external funding
Employers are afraid that focusing on mental health problems will have unforeseeable consequences	<ul style="list-style-type: none"> > Provide relevant information on the impact of mental health issues in the workplace. > Provide evidence of effective mental health interventions > Show how other businesses have successfully implemented mental health programmes > Introduce activities slowly
Stigma: some employers and employees may feel that employees with mental health problems are weak, unreliable, potentially dangerous and less productive than other employees.	<ul style="list-style-type: none"> > Show evidence that challenges the myths of mental illness. > Invite a speaker who has had experience of a mental illness to speak with staff to educate the workforce
Employers do not want to employ people with mental health problem	<ul style="list-style-type: none"> > Provide information to employers on mental health problems > Make sure that employers know about their legal responsibilities > Use experiences from other businesses to illustrate positive impact of employing people with mental health problems
Employees do not attend activities	<ul style="list-style-type: none"> > Make sure that the activities reflect employees' concerns > Involve employees in the planning of activities > Ensure that information about the programmes is distributed to employees > Ensure that employees are given the time to attend the programme

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Organizations

Association Interrégionale de Guidance et de Santé, rue Vert-Vinâve 60, 4041 Vottem, Belgium; www.aigs.be

Center for Psychiatric Rehabilitation, Boston University; 940 Commonwealth Avenue West, Boston, MA 02215, USA <http://www.bu.edu/cpr/>; email: psyrehab@bu.edu

Chair in Corporate Occupational Health and Safety Management, Laval University, Quebec, Canada; Pavillon Palasis-Prince, local 2326, Québec, Canada, G1K 7P4 <http://cgsst.fsa.ulaval.ca/>

European Agency for Safety and Health at Work; Gran Via 33, E-48009 Bilbao, Spain <http://osha.eu.int>

European Foundation for the Improvement of Living and Working Conditions; Loughlinstown House, Shankill, Co. Dublin, Ireland. <http://ideas.repec.org/s/fth/eurofo.html>

Global Applied Disability Research and Information Network on Employment and Training (GLADNET); Cornell University, Ithaca, NY 14853, USA <http://www.gladnet.org/>; email: info@gladnet.org

International Association for Psychosocial Rehabilitation Services (IAPSRS), 601 North Hammonds Ferry Road, Suite 3, Linthicum, Maryland 21090, USA; Rose Hill Center, 5130 Rose Hill Blvd, Holly, MI 48442, USA www.iapsrs.org

International Labour Office, 4, route des Morillons, CH-1211 Geneva 22, Switzerland; <http://www.ilo.org/>

National Partnership for Workplace Mental Health; American Psychiatric Foundation 1000 Wilson Blvd. Suite 1825, Arlington, VA 22209-3901, USA <http://www.workplacementalhealth.org>

Virginia Commonwealth University; VCU- Rehabilitation Research and Training Center on Workplace Supports and Job Retention, 1314 West Main Street, P.O. Box 842011, Richmond, VA 23284-2011 <http://www.worksupport.com/topics/employment.asp>

World Federation for Mental Health; 2001 N Beauregard Street, Suite 950, Alexandria, Virginia 22302-0810, USA <http://www.wfmh.org/>

World Psychiatric Association; Dept. of Psychiatry & Behavioral Sciences, Metropolitan Hospital Center, New York Medical College, 1901 First Avenue, Suite 4M-3, New York, NY 10029, USA <http://www.wpanet.org/>

Exhibit 14

How anxiety can affect our attention and concentration at work and what to do about it

by Stewart Geddes



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One place where you need to be able to concentrate, take in information, and decide the best course of action with a clear head, is in the working environment. Anxiety at work can be a huge obstacle to attention and concentration. There are so many ways anxiety can take you out of the present moment and leave you knocking around in your own head.

Anxiety can affect both productivity and your dealing with other people. Here are some of the main ways:

The effect on productivity

Anxious about things outside your control

If you are a worrier, intrusive thoughts about future events can be all-consuming. With worry, the need for control and certainty is key. In a busy working environment, however, certainty can be in short supply. Much of what we have to deal with in our day to day working lives is ambiguous. We cannot predict how a project will go, or what pressure will be involved. We cannot foresee all the obstacles we may encounter, or how our managers or our team will react.

In the absence of certainty, an anxious mind will try and run through every conceivable possibility, in order to be ready for every eventuality. This can be exhausting and really affects attention and concentration, as the “what if” thoughts take over.

A better solution: To reduce the role of worry in our working lives, we need to become more tolerant of uncertainty. We must learn to become more accepting that uncertainty is a

natural part of life. We cannot avoid it, and the time we use trying to counter it, seems like valuable time wasted.

A study at Cornell University found that 85% of what people worry about never comes to pass. Of the 15% that did go as predicted, 79% of the participants found that they either handled the problem better than they would have thought, or they learned a valuable lesson from the outcome.

So, instead of the constant 'what ifs', figure out what is in your control, and put your focus into that.

Avoidance and procrastination

Anxiety can affect our ability to tackle a job head on. If we fear a job is too large, or difficult, we may put off starting it. This can become procrastination, where we will find a way to distract ourselves. Or possibly we might start an easier, lower priority job, to make ourselves feel like we are being productive. Our priority work, however, remains unstarted, and now we have less time.

A better solution: This one is about trusting our own ability to understand what needs to be done, and our ability to get it finished. Once it is started and we get our teeth into it, the job begins to get more manageable. Starting is half the battle.

Look back on the evidence of other jobs you have done. This one is no different. It is important to believe that you have the ability to figure out anything that comes your way. That might be on your own, or enlisting the help of others.

Task-switching

Excessive worry can make you jump from one thought or subject to the next. It can make focusing on one job very difficult. If there are 4 tasks to do in the day, worrying you won't get them done may cause you to flick between the four, without getting much traction on any of them. Not being able to pay attention to one job will slow you down, thus raising your anxiety, and so the cycle continues.

A better solution: Stop starting, and start finishing, as the great Lean statement goes. And it's pretty accurate and helpful. Try and put aside everything except the job you are currently working on. As it will be difficult to focus your attention for long periods of time, try working in 25-minute bursts with 5-minute breaks. Set shorter goals, with tasks that are quite small, but where you can still get through the work.

The effect on conversations and meetings

Thinking about what might go wrong ahead of time

If you are talking to a colleague or manager, and they are giving you information on an upcoming task or project, anxiety can play havoc with your ability to pay attention and take everything in. You might hear one part, and then go off in your head imagining the worst-case scenarios, or trying to solve problems that do not exist yet. All the while, you have mentally checked out of the conversation you are currently in. The conversation that has information that you need, with possible solutions, ideas, or people that may be able to help.

A better solution: This type of thinking can actually make us appear spaced out, or not paying attention. It is important to be aware that this is how anxiety tends to affect you in conversation. Stay focused on the person you are talking to and what they are saying. In order to stay focused and take the important information in, repeat back to them a summary of what they have said, for clarification for both of you. Do not let yourself drift off into negative thoughts.

Worrying what people are thinking of you

Fear of embarrassment or judgement can be a huge factor in anxiety, and social anxiety in particular. When we are constantly worried about what people think of us, it can really hamper how we operate in work.

Anxiety about what you may be asked in a meeting, and how you will look when trying to answer, can have you caught up in your thoughts. Your focus will be on internal cues, and what how people must be able to see how anxious you look. You may find it hard to concentrate and listen to what is being said.

If you are talking to a colleague or manager, this worry about what they think of you can have you in a spin. Rather than listening to what they have to say, your focus may be on how you are being perceived. You may worry about saying the right thing, or making a good impression, rather than listening, which in turn can leave you with your mind going blank when you need to talk.

A better solution: Instead of this internal examination, look out into the meeting, or at the person you are talking to. Focus on what is being said, so if you are asked a question, you might be better placed to hear, and answer it. If you fear people are staring at you, look around and see if this is true. Never let your head tell you something without any evidence.

Help information

If you need help please talk to friends, family, a GP, therapist or one of the free confidential helpline services. For a full list of national mental health services see yourmentalhealth.ie.

- Samaritans 116 123 or email jo@samaritans.org
- Pieta House National Suicide Helpline 1800 247 247 or email mary@pieta.ie – (suicide prevention, self-harm, bereavement) or text HELP to 51444 (standard message rates apply)
- Aware 1800 80 48 48 (depression, anxiety)

If living in Ireland you can find accredited therapists in your area here:

- iacp.ie
- iahip.org
- counsellingdirectory.ie

Support Our Campaign

The Amplify Our Voice campaign will fund our website's growth, and will help us collectively Turn Up the Sound in Ireland, and create a space for all of us to share, find support, and be inspired.

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The Little Book of Sound

Designed to share ideas on how to use 'being sound to ourselves and to those around us' to help our minds and our society – and a little on the science that supports why it's so important!

[FIND OUT MORE](#)

Article by Stewart Geddes

Stewart Geddes is a Counsellor and Psychotherapist based in South and West Dublin. He specialises in anxiety and how it affects our working lives. He worked for 17 years in multinational companies in the professional arena, and now helps young professionals recognise, understand, and overcome their anxiety. You can find him at themoodlab.ie, on [facebook](#), or [twitter](#).

Exhibit 15

Why Anxiety Is the Number One Productivity Killer

“Anxiety in the workplace is becoming pervasive – why organizations should care about it.



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By Gustavo Razzetti

August 27, 2018

Anxiety in the workplace is becoming pervasive.





[40 percent](#) of America's employees experience persistent stress or excessive anxiety in their daily lives. 72 percent of them says it interferes with their lives and performance.

[Globally](#), anxiety is the sixth-leading cause of disability (and growing).

I've seen this trend growing firsthand. When facilitating team development workshops, anxiety has made it at the top of the list—it's the most pressing emotion people want to get rid of.

However, anxiety is not an emotion but [an experience](#)—it harms our ability to be in control making us feel paralyzed.

Anxiety clouds our judgment—it's a disorienting experience when facing a threat we can't understand. On the contrary, fear is an *emotional* response to a danger that we are aware of.

Stress and fear can be either positive or negative—you can turn them into fuel. However, there's no such a thing as positive anxiety. That's why it needs to be confronted if we want to neutralize it.

How is anxiety affecting you and your team?

An Emotional Toll on Productivity

Productivity is not just about doing more things in less time; it's also about doing the right things right.

Anxiety doesn't just affect performance; it hurts engagement and passion—it's hard to enjoy your job if you are not present.

According to the Anxiety and Depression Association of America, it's taking a toll on the 'anxious' individual and beyond. It affects:

- Workplace performance (56%)
- Relationships with coworkers and peers (51%)
- Quality of work (50%)
- Relationships with superiors (43%)

Anxiety is *emotional anticipation*—it's the thought of something going wrong in the future. Health professionals use the term 'anxiety' to describe a persistent fear or a chronic sense of worry, the sources of which seem *unclear*.

The problem is that most organizations don't encourage people to address anxiety. More than 60% of employees suffering from it have NOT discussed it with their bosses.

Avoiding the conversation makes things worse.

1. Lack of executive presence

Engaging with the 'here and now' is one of the two most significant [trends in leadership development](#). Unfortunately, senior managers have a hard time being present.

Executives' difficulty to focus on the '[here and now](#)' hurts their ability to really listen to and understand what's going on with their teams. The distracted mindset of team leaders makes people more anxious.

2. Unsafe culture

People don't address anxiety issues because they fear their boss would retaliate. They are afraid they would interpret it as a lack of commitment, label them as

weak, or laugh at them. The lack of a [safe culture](#) doesn't promote open conversations—it creates more anxiety too.

3. Ongoing speculations

Lack of transparency fuels rumor and speculation. Our brain [likes certainty](#) over waiting—when we don't know something, it tends to fill the void with hypotheses. That's the problem when organizations lack clear and ongoing communication—speculations make people more worried.

4. Personal anxiety

Organizations hire professionals, but people have personalities too. They bring their anxious-self to the workplace every day. Very few companies are aware of which employees suffer from this chronic condition. Or, even worse, how they can help them.

5. Modern distractions

Social media, technology notifications, back-to-back meetings, email, you name it. When external stimuli are driving our focus and priorities, it's hard not to become anxious. Rather than thinking on what's going on now, our mind wanders to what's coming up next.

Dismantling the Anxiety Bomb

This productivity killer won't go away—ignoring it can make things worse. You have to act before it explodes. Like wildfires, anxiety can quickly get out of control.

Here are some ways to get you started. Remember, negative behaviors take time to build. Neutralizing anxiety takes time and consistency. There are no shortcuts here.

1. Increase Awareness

Notice anxiety: every time you feel anxious, ask yourself why? Capture what's going on post-its. Keep them in front of your working space. From time to time observe the narrative. What's the story? What are the recurring themes, moments or stimuli that are driving your anxiety?

Notice your breath: Anxiety shortens our breath. It can be subtle or too evident, depending on how much it affects you. Either way, becoming more aware of your breath is a powerful first step to recover control of your mental health.

Play with your visual focus: Stress and anxiety [affect your vision](#). On the other hand, playing with your visual focus can help you relax. When you are feeling

Improve your breathing: To move from noticing to actually increasing your breathing cycle, you have to lengthen the breath in and out time. The 4–7–8 technique is one of the most common ones. Learn how to practice it (and other breathing methods) [here](#).

Stretch your body: Pain is a signal. Notice the parts of your body that are tense due to your stress or anxiety. When you in a meeting you can stretch your neck or legs without bothering anyone and still be present in the meeting. Body awareness is an effective way to regain control of your mind.

No phone rule: Silencing our devices is not enough. Most people leave visual notifications on and get distracted during meetings. Having a phone box is an easy way for people to put their devices away and focus their attention.

Declutter your working space: Make a regular practice of cleaning your desk, inbox or calendar from time to time. Decluttering removes more than distractions and anxiety—there's nothing more energizing than throwing 'stuff' away.

Have a break: Your brain, just like your body, needs to pause from time to time. Formal breaks can help you recharge, relax, prepare for what's next or have some time to reflect and think. Block your calendar to protect your [personal pause](#).

Alternate your body position: Seating is not the new smoking; standing still is. The solution is not standing up or seating or walking all the time. The answer is finding balance—you need a little bit of each. Switch your body position throughout your working day.

Take it easy: If your job throws you lemons, smile back. Don't take yourself or your job too seriously. Humor is the most effective tool to decompress and let go of steam.

3. Try New Behaviors

Walking Meetings: Going out for a walk to discuss a pressing issue or get someone else's feedback is more energizing than being in a conference room. Walking meetings are calmer, provide perspective, and eliminate the usual distractions. Learn more [here](#).

Check-in rounds: Understanding what's got your team's attention at the beginning of a meeting helps to let go of anxiety and drives focus too. [Read more](#) about how to incorporate check-in rounds.

Meditate: Meditation is an effective way of calming your mind. However, it's harder than most people think—that's why most people quit. It requires much more than an app to remind you about meditation. I recommend finding a meditation group or instructor to get you familiarized with the technique. Practice with someone else before flying solo.

Anxiety Parties: Google has specific meetings to discuss people's tensions to alleviate both individual and collective anxiety. It includes capturing everyone's biggest anxious questions in private, ranking them in order of severity, and then finding common threads. The most significant realization is that most of the times, [anxieties are baseless](#).

Shorten your meetings: Being over-booked or double booked fuels more anxiety. Everyone can benefit from having fewer or shorter meetings. [Learn more](#) about the 'prune and grow' approach to cut down our addiction to meetings.

Remove unnecessary tasks: Trying to do more than it's possible, drives frustration and anxiety. Remove meaningless tasks that add not value—let your team decide the meaningless activities they want to remove. Free up everyone's calendars so that they can focus on things that matter.






The above suggestions will help you get started. Experiment and see what works better for you and your team.


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Exhibit 16

A systematic review of the prevalence of anxiety symptoms during coronavirus epidemics

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Marianne Lucena da Silva¹,
Rodrigo Santiago Barbosa Rocha² ,
Mohamed Buheji³, Haitham Jahrami^{4,5}
and Katiane da Costa Cunha⁶

Abstract

Coronavirus pandemics causes systemic and mainly pulmonary changes. We assessed the prevalence of generalized anxiety disorder (GAD) in pandemic survivors and the general population. Papers indexed by MEDLINE/PubMed, The Cochrane, Embase, Lilacs, Scielo, Psycinfo, and Pepsic databases were searched to April 2020, using GAD and Coronavirus (CoV) infection as keywords. Sixteen studies with 25,779 participants in eight countries were included. A 46% pooled prevalence of anxiety symptoms (95% CI 33.9–58.2%) was found with significant evidence of between-study heterogeneity ($Q = 154953$, $I^2 = 99.99\%$, $p < 0.001$). Age and sex were not found to be significant moderators for anxiety symptoms. Intervention programs for anxiety symptoms are highly recommended.

Keywords

anxiety, betacoronavirus, coronavirus, nervousness, psychological stress

Introduction

Understanding the anxiety and psychological changes in periods of outbreaks of respiratory infections is important for the adoption of measures related to behavioral variations such as those that occurred during the pandemic period of the coronavirus Severe Acute Respiratory Syndrome (SARS-CoV) in 2009 (Liao et al., 2014) and now during the new Coronavirus (2019-nCoV) (Rastegar et al., 2020).

The new Coronavirus (2019-nCoV), initially identified in December 2019 in China, in the city of Wuhan, province of Hubei (Holshue et al., 2020), spread rapidly across all countries, becoming an emergency of international concern on January 30, 2020 (Rehman et al., 2020)

by causing systemic and, mainly, pulmonary changes with characteristics of severe respiratory failure. The continuous spread of the epidemic together with the isolation measures

¹Federal University of Goiás, Jataí, Goiás, Brazil

²Pará State University, Belém, Brazil

³International Institutes of Inspiration Economy, Riffa, Bahrain

⁴Ministry of Health, Kingdom of Bahrain, Manama, Bahrain

⁵College of Medicine and Medical Sciences, Arabian Gulf University, Kingdom of Bahrain, Manama, Bahrain

⁶Pará State University, Marabá, Brazil

Corresponding author:

Rodrigo Santiago Barbosa Rocha, Centre for Biological and Health Sciences, Pará State University, Tv Perebeui 2623, Belem, 66113-200, Brazil.

Email: rodrigo.santiago.rocha@uepa.br

imposed by the governments and the sanitary conditions, aggravated the health condition of the populations (Bao et al., 2020). The Coronavirus Disease (COVID-19) pandemic has not only affected the physical health of infected patients but also the psychosocial health of the uninfected world population, increasing depression, stress, and anxiety (Xiao et al., 2020).

Anxiety occurs from the moment that sensations and changes on homeostasis are perceived, including those related, in some situations, to diseases of infectious origin. Generally, these perceptions occur correctly in individuals, however, in some situations, these perceptions become excessive and the possibility of severe complications to the individual arises. This experience has become constant in recent times, especially in the events imposed by the presence of COVID-19 (Asmundson, 2020).

In confinement situations, self-protection and family protection mechanisms are common, which can lead to an individual's frustration, accompanied by fear, anxiety and anguish, factors that can affect the individual's homeostasis (Matias et al., 2020)

Public health management is an important point related to the installation of anxiety, seen as capturing decisions such as risk communications, vaccines, hygiene practices, social isolation can trigger symptoms in society can lead to success or failure of the measures taken by government officials (Adalja et al., 2020). Accurate information and available sources have importance for the global resolution of the epidemic, mismatched information with fear and anxiety (Corbett et al., 2020).

Exposure to and repeated surveillance of social media is one of the factors that can increase levels of anxiety and psychosocial problems during the outbreak of COVID-19, especially with conflicting and incorrect information. Governments should be alert to minimize anxiety in the population. China's government, for example, has provided communication channels for mental health services (Gao et al., 2020; Wang and Di et al., 2020). Therefore, governments should be concerned about disseminating effective methods of awareness of the disease,

regarding prevention, dissemination and clinical characteristics, to provide financial subsidies for the present and the future of the population, so that the impact on anxiety during COVID-19 (Wang and Di et al., 2020).

Anxiety during pandemic situations can confuse common symptoms, such as muscle pain, cough, and fever, with symptoms presented by those who were infected, resulting in increased levels of anxiety and stress, especially in vulnerable populations, such as pregnant women (Corbett et al., 2020), students (Cao et al., 2020) and in some professions as teachers (Liu, 2020). There are two possible explanations for this situation: some people tend to be isolated and for fear of being infected go to the doctor's office; others, in any type of sign, seek medical attention outside social isolation and become exposed to infection (Adalja et al., 2020).

High levels of stress can generate behavioral changes that can be characterized by excessive hand washing, social withdrawal, and panic, which can result in negative consequences for the person and society such as excessive and inadequate use of the families' financial budget and the scarcity of resources (Asmundson, 2020; Corbett et al., 2020).

On the other hand, the low level of anxiety can also compromise the safety of the population, the same occurrence during H1N1 epidemic in 2009 when, due to the low risk of infection, people minimized the importance of handwashing and governments did not concern about vaccination campaigns, a fact that may have contributed to viral spread (Wheaton et al., 2012).

The high levels of anxiety can impair the support of the health teams in face of COVID-19 because by being on the "frontlines" in the "fight" against the virus on order to reestablish the health of the population, many health professionals are getting sick, so the fear of being infected and transmitting this disease to other co-workers and to the family itself has increased the level of anxiety in this population. As many teams were removed due to contamination, young professionals without adequate experience were included in the "fight" against COVID-19, many of them

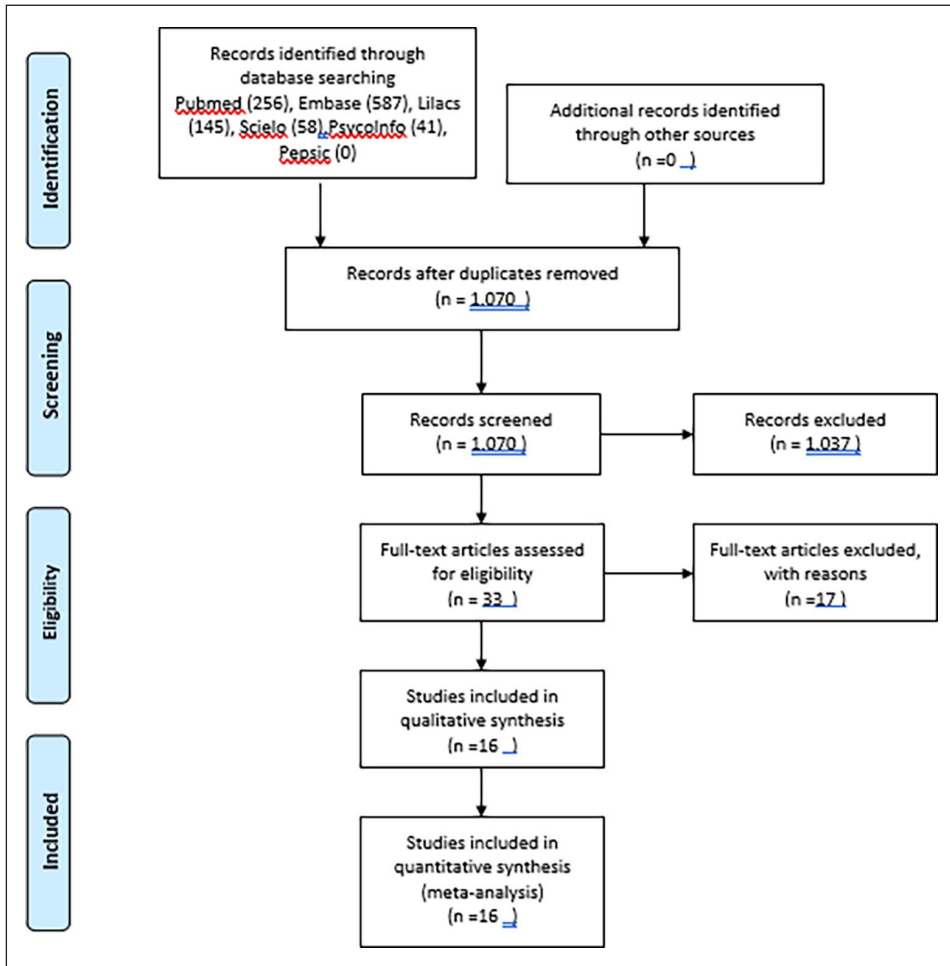


Figure 1. Study flow diagram.

discrepancies. Regarding data extraction, the three independent researchers (CR, JR, and ML) used a form which was intended to record: study data (authors, journal name, country and study scenario, year of publication), methodological information (objective of the study, design, size of the total sample, aspect or variable of quality of life, exercise practice and instruments used to evaluate them).

Quality assessment

We used the Newcastle–Ottawa scale to assess the quality of the included studies. Relevant

organizational websites including the Joanna Briggs Institute publish a Reviewers' Manual, which is designed to support individuals who are undertaking systematic reviews following JBI methodologies and methods (Munn et al., 2015). This checklist contains 9 questions, which we divided into 3 domains: participants (questions 1, 2, 4, and 9), outcome measurement (6 and 7), and statistics (3, 5, and 8). A study was rated as having high quality when the methods were appropriate in all 3 domains. Quality assessment was also performed by two independent reviewers and any uncertainties were resolved by consulting a third reviewer.

Data analysis

For the prevalence estimates of the included observational studies, a random-effects meta-analysis model was used according to DerSimonian and Laird (2015), assuming that the effect of interest is the same in all studies and that the differences observed between them are only due to sampling errors (variability within studies). The heterogeneity of the estimates of the sample size effect throughout these studies was quantified by the I^2 statistic. The heterogeneity between the studies was assessed by Cochran's Q test and I^2 statistics. Based on the possibility of varying the estimates of the prevalence of anxiety according to the types of populations involved, as professionals of the medical team, patients with SARS-CoV and the population in general, subgroup analyzes were used to assess whether the anxiety in each of the populations influenced the joint estimation. The results are presented in a forest plot with 95% confidence intervals (95% CI) or scattered plots with point estimates and 95% CI. Sensitivity analysis was performed to determine A leave-one-out sensitivity analysis was performed by iteratively removing one study at a time to confirm that our findings were not driven by any single study (R Core Team, 2018). Meta-regression technique was applied to analyze covariates of anxiety; we have used two covariates, mean age and proportion of male sex. Subgroup analysis was applied to analyze the factorial population of the study (Balduzzi et al., 2019; Barendregt et al., 2013).

Results

Selection and evaluation of studies

The initial search identified 1087 studies with a generalized anxiety disorder (GAD) related COVID-19 outbreak. Seventeen duplicate studies were removed yielding a total of 1070 studies. After title and abstract analysis, we excluded 1037 studies which were ineligible based on inclusion criteria, the present systematic included a total of 16 studies (Figure 1).

Characteristics of the included studies

16 studies were included, 10 from China, one from the USA, one from India, two from Hong Kong, one from the Kingdom of Saudi Arabia, and one from Korea. The total population corresponded to 25779 participants, with 7027 medical health jobs, 16203 general population, and 1887 patients with SARS-CoC. All respondents were under 18 and approximately 7789 were male (some studies were unclear).

Prevalence of anxiety symptoms

Meta-analytical pooling of the point estimates of anxiety symptoms were 46% (95% CI 33.9% – 58.2%), with statistically significant evidence of between-study heterogeneity ($Q=154953$, $I^2=99.99\%$, $p<0.001$) shown in Figure 2. Sensitivity analysis indicated that no study influenced the pooled prevalence results by more than 2%. The subgroup analysis of the study population revealed that 52,6% of the general population (95% CI 42.0–63.2%) had a higher prevalence of anxiety symptoms, followed by medical health workers corresponding to 49.9% (95% CI 15.4–84.4%) and, finally, infected patients with 8.0% (95% CI –4.0–20.0%), shown in Figure 3. Meta-regression covariate analyses were conducted for age and gender. The results indicated that neither age ($\beta=-0.027$, $p=0.060$) nor sex ($\beta=0.406$, $p=0.562$) were significant moderators of the prevalence of anxiety symptoms.

The methodological quality of the selected studies

The quality of the studies was analyzed by the Newcastle-Ottawa Scale. The Newcastle-Ottawa Scale is graduated by a system with stars graduation that goes from 0 to 9 delimited in three domains: selection, comparability, and outcome. Higher grades represent better quality.

The studies considered to be of excellent quality were those with high scores in all three domains. In Table 1 the studies by Wang and Zhao et al. (2020), Alnajjar et al. (2016), Mo et al. (2020), Wang C et al. (2020), Cao et al.

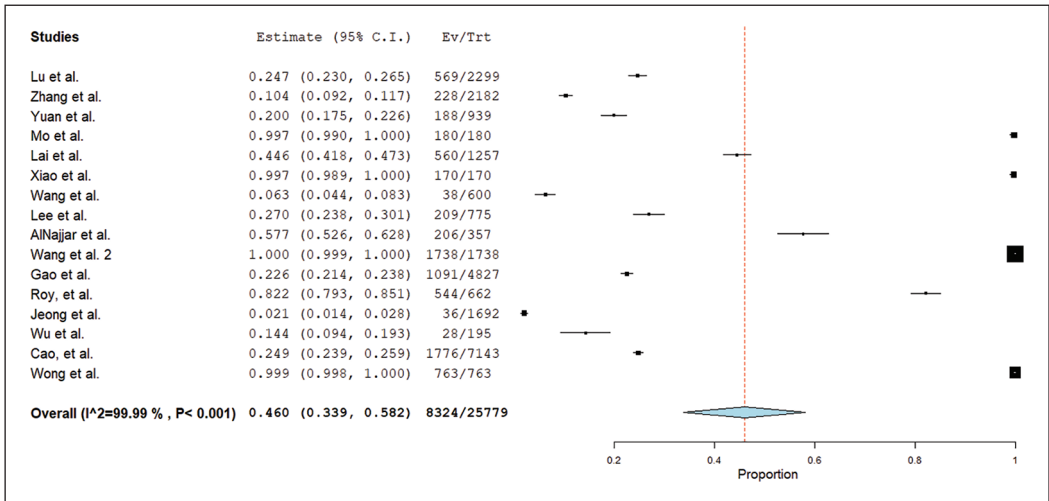


Figure 2. Overall prevalence of anxiety symptoms.

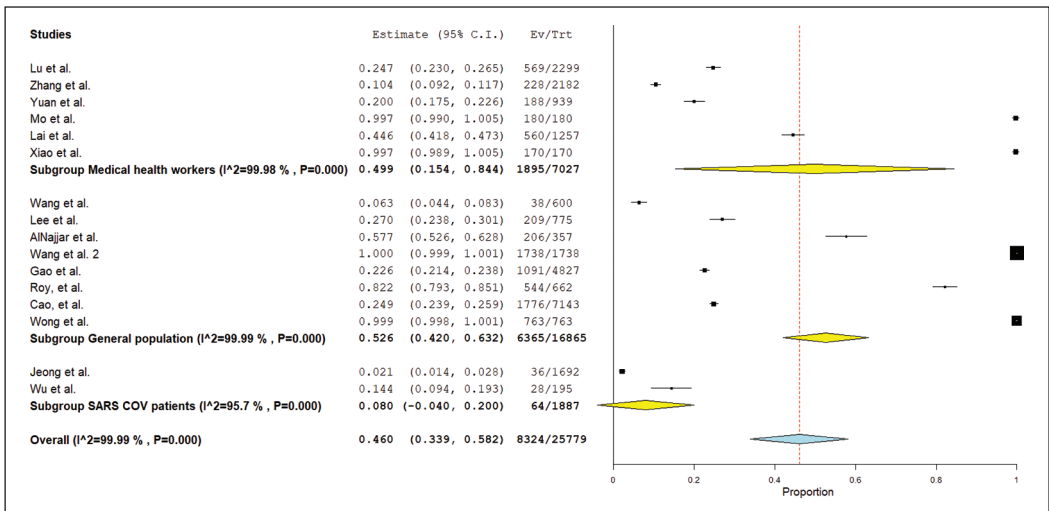


Figure 3. Prevalence of anxiety symptoms according to the type of population investigated.

(2020), Zhang et al. (2020), Jeong et al. (2020) e Lai et al. (2020) obtained excellent methodological quality when submitted to Newcastle-Ottawa Scale evaluation.

The study bias risk was analyzed by the Critical Appraisal Checklist for Analytical Cross-Sectional Studies, the scale consists of 7 questions: 1. Where the criteria for inclusion in the sample clearly defined? 2. Were the study

subjects and the setting described in detail? 3. Was the exposure measured validly and reliably? 4. Were objective, standard criteria used for measurement of the condition? 5. Were confounding factors identified? 6. Were strategies to deal with confounding factors stated? 7. Were the outcomes measured validly and reliably? 8. Was an appropriate statistical analysis used? The answers by analytical cross-sectional

Table 1. Study bias risk included according to JNI critical appraisal checklist for analytical cross sectional studies.

Author	Year	Were the criteria for inclusion in the sample clearly defined?	Were the study subjects and the setting described in detail?	Was the exposure measured in a valid and reliable way?	Were objective, standard criteria used for measurement of the condition?	Were confounding factors identified?	Were strategies to deal with confounding factors stated?	Were the outcomes measured in a valid and reliable way?	Was appropriate statistical analysis used?
Wang and Zhao et al.,	2020	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Roy et al.,	2020	Yes	Yes	No	Yes	Yes	No	No	No
Alhajjar et al.,	2016	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Mo et al.,	2020	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
C. Wang et al.,	2020	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Lee et al.,	2020	Yes	Yes	No	Yes	No	No	No	No
Yuan et al.,	2020	Yes	No	Yes	Yes	No	No	Yes	Yes
Xiao et al.,	2020	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Cao et al.,	2020	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Zhang et al.,	2020	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Gao et al.,	2020	Yes	Yes	Yes	Yes	No	No	Yes	Yes
Jeong et al.,	2016	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Lai et al.,	2020	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Wong, Gao, Tam	2007	Yes	Yes	No	Yes	No	No	No	No
Lu et al.,	2020	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Wu, Chan, Ma	2005	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes

studies Critical Appraisal Tool Answers were: Yes, No, Unclear, or Not/Applicable (Table 1).

According to a risk analysis by the JBI Critical Appraisal Checklist for Analytical Cross-Sectional Studies, all studies describe a description of the inclusion criteria, however, the studies by Roy et al. (2020) and Yuan et al. (2020) does not describe in detail, for example, the resources of the sample, in addition to not using validated measures to analyze the variables related to anxiety. All studies have defined standards for measuring anxiety. The studies by Lee et al. (2014), Yuan et al. (2020), Gao et al. (2020), and Wong et al. (2020) did not identify the confounding factors and none of the studies used strategies to deal with confounding factors. As for the statistical analysis of the studies by Roy et al. (2020), Lee et al. (2014) and Wong et al. (2020) did not use adequate statistical analysis methods but were kept in the study by the relevance of the same.

Discussion

The main findings of the study report that the pandemic caused by the new Coronavirus and previously by other viral infections brought anxiety to the population, whether related to social isolation or the lockdown determined by governments; for fear caused by the severity of the disease, risk of crisis, the economic and financial impact on families or even fear about life. Our findings confirm that a significant proportion of the population are vulnerable to mental health problems yet, in the vast majority of cases, individuals in social isolation have no access to mental healthcare (Matias et al., 2020). The only resource is people themselves using self-help, self-medication and self-care. During prolonged COVID-19 isolation, an in-built system of homeostasis helps rebalance activity, thought and feeling.

In this systematic review with meta-analysis, we found 16 studies that analyzed anxiety during COVID epidemics. We divided the articles evaluating the anxiety of health workers, including 6 studies; the general population,

including 8 studies; and patients with COVID including 2 studies.

In this review, we identified that 46% of the entire population, including survivors and the general population, suffers from the perception of increased anxiety, either due to the fear of being infected and not having a hospital bed available for treatment or the fear of infecting other people, such as experienced by health professionals who are increasingly isolated and end up adopting measures that can compromise health and interpersonal relationships, on the other hand, people infected with Coronavirus have lower levels of anxiety.

Several factors can increase anxiety rates, including personality and genetics, past traumas and substance abuse that can be identified in several ways such excessive worry, sleep disorders, muscle pain, indigestion (McAlonan et al., 2007), these signs could be confused with COVID-19, these signs can identify anxiety (Aggarwal et al., 2020).

It is important to emphasize that anxiety disorder, in addition to its high prevalence, is characterized by excessive anxiety and worries, in combination with psychological and somatic disorders such as autonomic changes, agitation, fatigue, concentration problems, irritability and sleep problems (Borza et al., 2017), as identified in our systematic review.

In some cases, panic disorder can also be found, characterized by anxiety attacks that result in fear or worry negatively impacting life in society. Anxiety disorders are considered less serious psychiatric disorders because patients do not lose their sense of reality. However, the symptoms can be associated with social and functional deficiencies and contribute independently to the reduction of quality of life and to a longer duration of absence, a fact than can compromise the structures of the work teams, especially in the healthcare area that are overload (Lee et al., 2014).

Several scales were used to investigate different levels of anxiety, some of them valid and used before the new Coronavirus pandemic such as Generalized Anxiety Disorder (DAD), Clinical Anxiety Scale (CAS), BECK Anxiety

Scale and others with variations elaborated and proposed for the current context on the new Coronavirus (Hahad et al., 2020). In this meta-analysis, it was possible to observe that 18% of the articles used not validated scales, a fact that can reduce the quality and increase the bias of the studies, however, these studies were maintained due to the relevance of them and because everyone explained in detail how they would use the assessment tools.

A study by Huang and Zhao (2020), in a population of 7236, investigated anxiety and depression and identified that the younger population has a higher risk of triggering events related to anxiety when compared to the elderly, just as the health professionals can present events related to sleep disorders. Our findings demonstrate that the articles generally portray anxiety conditions in different populations, especially health professionals and the elderly population, but make little reference to youth populations.

The social isolation triggered in pandemic situations contributes significantly to the appearance of anxiety symptoms that, in general, can be confused with symptoms related to diseases such as COVID-19. Eminent risk of death and fear of hospitalization are conditions that can further worsen the mental health of the isolated population. The limitations of our systematic review and meta-analysis involve the lack of studies in more regions of the planet, most studies are concentrated in China and part of Europe since in some places the peak of the disease has not yet been reached and studies have not yet been carried out, which may limit the generalization of results and this limitation can be revealed because COVID-19 has been occurring for approximately 6 months and in some parts of the world the peak of the disease has not yet been reached, allowing the accomplishment of few studies so far. Studies with anxiety scales that have not yet been validated were included, although they are detailed in the studies, a fact that may generate a risk of bias in these studies. Another limitation is due to the presence of different types of population, such health professionals, survivors, and populations

in general, and when dividing into subgroups, a small number of specific studies were found for the populations studied.

The implications of this review are large for public mental health, the main implication is that with the anticipated elevated rates of stress or anxiety; efforts for screening and intervention are needed. In this journal, Matias et al. (2020) have pointed out that a significant proportion of the population live alone and are vulnerable to mental health problems yet, in the vast majority of cases, individuals in social isolation have no access to mental healthcare. The only resource is people themselves using self-help, self-medication and self-care.

As new measures and impacts are introduced during the pandemic different approaches need to be taken. Co-occurring psychological problems also needed to be levels of loneliness, depression, harmful alcohol and drug use, and self-harm or suicidal behaviours are also anticipated to rise, this calling for global wide action plans.

In countries and populations already heavily affected by the pandemic, issues of service access and continuity for people with developing or existing mental health conditions are also now a major concern, along with the mental health and well-being of “frontline” workers.

Conclusion

The findings of this systematic review and meta-analysis demonstrate that during pandemics the prevalence of anxiety symptoms affects approximately half of the population. Future studies using improved methods are needed to identify, prevent, and treat mental health problems during pandemics. In most cases, the only resource is people themselves using self-help, self-medication and self-care. An in-built system of homeostasis can help rebalance activity, thought and feeling.


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ORCID iD

Rodrigo Santiago Barbosa Rocha  <https://orcid.org/0000-0001-5964-946X>

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Exhibit 17

Both Remote and On-Site Workers are Grappling with Serious Mental Health Consequences of COVID-19

Rabah Kamal (<https://www.kff.org/person/rabah-kamal/>) ,

Nirmita Panchal (<https://www.kff.org/person/nirmita-panchal/>) , and

Rachel Garfield (<https://www.kff.org/person/rachel-garfield/>) (<https://twitter.com/RachelLGarfield>)

Dec 22, 2020

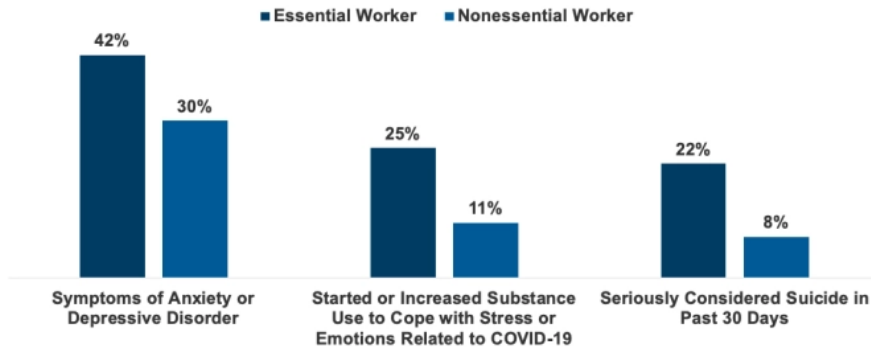


While millions have recently lost their jobs or income and face new stresses, many who have been working during the pandemic also face new pressures. Almost overnight, the COVID-19 pandemic presented many workers with a whole host of concurrent risk factors (<https://nihcm.org/publications/covid-19s-impact-on-mental-health-and-workplace-well-being/>) for poor mental health and substance use problems, including generally high levels of uncertainty and fear, an overload of news and information, changes to workplace processes and demands, changes in household dynamics, financial and job security concerns, potential worsening of existing health conditions, and difficulties linked to caregiving. People working during the pandemic face unique threats to mental health and well being depending on which sector they work in and their potential exposure to the coronavirus. Generally speaking, surveys conducted during the pandemic have found that many workers have been experiencing (<https://www.eaglehillconsulting.com/insights/employee-burnout-on-the-rise/>) burnout (<https://www.flexjobs.com/blog/post/flexjobs-mha-mental-health-workplace-pandemic/>) (which results from chronic workplace stress and can impact an individual's motivation and productivity) and adverse mental health outcomes.

As the pandemic persists, frontline and other essential workers face particular risk of burnout and poor mental health outcomes. Roughly a third (<https://www.kff.org/policy-watch/taking-stock-of-essential-workers/>) of U.S. adults report being essential workers during the pandemic, meaning they are still required to work outside their home during the pandemic, and they are more likely to be Black and low-income than non-essential workers who can work from home. Surveys conducted in June 2020 found that although a substantial share of all adult workers reported symptoms of anxiety or depressive disorder, essential workers reported these adverse effects more often than non-essential workers (42% vs 30%, as shown in Figure 1). Essential workers, compared to non-essential workers, also reported higher rates of substance use (25% vs 11%) and suicidal thoughts (22% vs 8%).

Figure 1

Among Essential and Nonessential Workers, Share of Adults Reporting Mental Distress and Substance Use, June 2020



NOTES: Data is among adults ages 18 and above. Essential worker status was self-reported.
 SOURCE: Czeisler ME, Lane RI, Petrosky E, et al. Mental Health, Substance Use, and Suicidal Ideation During the COVID-19 Pandemic — United States, June 24–30, 2020. MMWR Morb Mortal Wkly Rep 2020;69:1049–1057. DOI: <http://dx.doi.org/10.15585/mmwr.mm6932a1>

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Figure 1: Among Essential and Nonessential Workers, Share of Adults Reporting Mental Distress and Substance Use, June 2020

Research has found that during pandemics, frontline health care providers are at **higher risk of adverse psychological outcomes** (<https://pubmed.ncbi.nlm.nih.gov/33019857>), such as **post-traumatic stress, insomnia, and suicidal ideation**. During the COVID-19 pandemic, resource and staffing shortages (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7173087/>) and disrupted work-life balance have contributed to poor mental health outcomes for health care providers. Caregivers face unique risk of burnout and other adverse mental health outcomes as well, including those working in long-term care facilities and those who are unpaid and caring for family members or other loved ones needing support during the pandemic. Surveys from June 2020 found that 31% (<https://www.cdc.gov/mmwr/volumes/69/wr/mm6932a1.htm>) of unpaid caregivers for adults seriously considered suicide in the past 30 days.

High rates of burnout and adverse mental health impacts are reported among people working remotely during the pandemic. Many workers with the ability to work from home have been doing so during the pandemic. Combined with the closure of schools, daycares, and public spaces, this has left many workers not only newly working from home but also facing new stresses, additional responsibilities at home, and a fading work-life balance. Still many others who live alone shifted to working from home while also socially distancing in isolation, which is linked to poor mental health. Non-probability surveys (<https://learnmore.monster.com/poll-results-from-work-in-the-time-of-coronavirus>) conducted in summer 2020 found that many people working from home reported experiencing burnout, and nearly half (<https://www.hingehealth.com/report-wfh-health-risks/>) of adults working from home experienced stress, anxiety, or depression. Many of these adults reported that these experiences began or worsened after they started working from home.

The pandemic has been disproportionately wearing on women in the workforce and has likely exacerbated existing gender disparities in career and financial opportunities and stability. Data from the Household Pulse Survey have consistently indicated that among adults who worked in the past seven days, a greater share of women than men reported symptoms of anxiety and/or depressive disorder (Figure 2). Other research shows that respondents who are women are more often experiencing adverse mental and physical health effects (<https://leanin.org/article/womens-workload-and-burnout>) of the pandemic and that women in the workplace are more likely than men to report not feeling supported (https://wiw-report.s3.amazonaws.com/Women_in_the_Workplace_2020.pdf) by leadership. Additionally, among parents who work full-time and have partners, mothers more often than fathers are likely to feel overwhelmed (<https://leanin.org/article/womens-workload-and-burnout>) and unable to handle their workload. These disparate experiences could have significant long-term consequences for women in the workplace. A McKinsey and LeanIn.org analysis (https://wiw-report.s3.amazonaws.com/Women_in_the_Workplace_2020.pdf) during the pandemic found that one in four women say they may either leave their job or cut down on their work, noting that working mothers, Black women, and women in leadership roles are uniquely at risk of leaving their jobs or cutting back on work.

Figure 2: Among Adults Who Worked in the Past Seven Days, Share of Adults Reporting Symptoms of Anxiety and/or Depressive Disorder, by Gender

Poor mental health among workers can have serious implications for both worker well being and economic outcomes. Importantly, the pandemic's disparate impact on the mental health and well being of workers of color and working women highlights yet another vulnerability of groups already disproportionately impacted by the pandemic in numerous other ways. Both the human and fiscal impact of the pandemic's toll on worker mental health will be important for employers and legislators to consider in determining the needs of the workforce through the remainder of the pandemic and beyond.

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GET THE LATEST ON HEALTH POLICY

Exhibit 18

Mobile Work and Mental Health

A Preliminary Study of Fly-in Fly-out Workers in the Alberta Oil Sands

OCTOBER 2021 (rev. Nov 10, 2021)

Sara Dorow (Professor, Sociology, University of Alberta)

Valerie O’Leary (Former Executive Director, Critical Incident Stress Management for Communities – Fort McMurray)

Carla Hilario (Assistant Professor, Nursing, University of Alberta)

Nicola Cherry (Professor, Preventive Medicine, University of Alberta)

Ashley Daigle

Griffin Kelly

Kelsey Lindquist

Maria Mosquera Garcia

Ivan Shmatko



TABLE OF CONTENTS

EXECUTIVE SUMMARY	4
KEY FINDINGS.....	5
KEY RECOMMENDATIONS.....	8
1. INTRODUCTION: MENTAL HEALTH AND FIFO WORK.....	11
2. METHODOLOGY.....	17
THE SURVEY.....	17
INTERVIEWS	18
TIMING OF THE STUDY AND OTHER CONTEXTUAL FACTORS	18
3. DEMOGRAPHICS: OVERVIEW OF SURVEY PARTICIPANTS.....	20
AGE, GENDER, AND ETHNICITY	21
MARITAL AND FAMILY STATUS	23
PRIMARY RESIDENCE	24
INCOME AND EDUCATION	24
EMPLOYMENT AND JOB CHARACTERISTICS	26
ROTATIONS AND SHIFTS.....	32
4. HEALTH, MENTAL HEALTH, AND STRESS	33
GENERAL HEALTH AND MENTAL HEALTH	34
STRESS.....	35
SIGNIFICANT LIFE EVENTS	41
PARTICULAR EVENTS: THE OIL BUST, THE WILDFIRE, AND COVID-19.....	42
DIAGNOSED LONG-TERM HEALTH CONDITIONS.....	44
WORKPLACE SICKNESS AND INJURY	47
5. WORKING CONDITIONS IN THE OIL SANDS.....	50
WORKPLACE TIES AND SOCIALITY - AT SITE AND IN CAMP	51
SENSE OF EFFICACY AND CONTROL.....	54
WORKPLACE MORALE, RESPECT, AND DISCRIMINATION	56
EMPLOYER COMMITMENT TO WELLBEING	59
6. FIFO AND MENTAL HEALTH: DISTANCE, CAMP, AND TRAVEL	63
DISTANCE AND TIME AWAY FROM HOME AND FAMILY.....	64
WORK CAMP LIVING	66
TRAVEL AND COMMUTING	70
7. WORK-LIFE IM/BALANCE.....	74
EFFECTS OF ROTATION SCHEDULE	76
TRANSITIONING BETWEEN WORK AND HOME.....	78
RELATIONSHIPS AT WORK AND AT HOME	81

8. HEALTH AT WORK AND AT HOME: COMPARING RELATIONSHIPS, BEHAVIOURS, AND SELF-WORTH.....	82
RELATIONSHIPS	83
EXERCISE, DIET, AND TOBACCO, DRUG AND ALCOHOL USE	87
SLEEP, REST, AND ENERGY	92
MENTAL HEALTH AND SELF-WORTH	95
9. ACCESS TO AND USE OF HEALTH SERVICES	100
HEALTH CARE USE AND PROVISION	101
USE OF MENTAL HEALTH SERVICES	104
A CULTURE OF WORK BEFORE HEALTH.....	109
10. RECOMMENDATIONS AND NEXT STEPS.....	111
KEY MENTAL HEALTH ISSUES IDENTIFIED BY WORKERS	112
RECOMMENDED EMPLOYER PROVISIONS – WORKERS’ PERSPECTIVES	113
RECOMMENDATIONS – POLICY AND PRACTICE	114
RECOMMENDATIONS – FURTHER RESEARCH	121
REFERENCES.....	123
APPENDIX I: GLOSSARY	136
APPENDIX II: QUESTIONNAIRE.....	138
SECTION 1 - BACKGROUND QUESTIONS (DEMOGRAPHICS)	138
SECTION 2 - ABOUT YOUR WORK	141
SECTION 3 – YOUR COMMUTING SITUATION.....	143
SECTION 4 - CAMP EXPERIENCES.....	144
SECTION 5 - WORKPLACE EXPERIENCES.....	146
SECTION 6 - HEALTH AND MENTAL HEALTH	149
SECTION 7 - USE OF SERVICES	160
SECTION 8 - NEEDS AND RECOMMENDATIONS.....	162

EXECUTIVE SUMMARY

Fly-in fly-out (FIFO) work is an integral part of various industries around the world. The oil sands industry of northeast Alberta has relied heavily on a FIFO workforce (including drive-in drive-out) since the early 2000s. Workers arrive from other places in Alberta and across Canada for rotations of 6 to 21 days, living in work camps while working 10- or 12-hour shifts at nearby worksites.

Impacts of this type of mobile work—long commutes, camp living, distance and time away from family, and intensive and demanding work—on the mental health and wellbeing of FIFO workers are increasingly studied in other places, such as Australia, yet remain sorely underexamined in Canada. This is a notable gap, given that 1) FIFO workers and the construction trades are shown to have high incidences of stress, depression, anxiety, and suicide (Parker et al. 2018); 2) work is the number one source of stress for Canadians (Shepell and the Mental Health Commission of Canada 2018); 3) mental health is the number one type of workplace disability (Employment and Social Development Canada 2016).

The Mobile Work and Mental Health (MWMH) study provides preliminary, broad-ranging research on the wellbeing of FIFO workers in the oil sands. The project adopted a social determinants of mental health framework and a mixed-methods approach: an extensive in-person questionnaire (n=72) composed of both closed- and open-ended (objective and subjective) questions, and a set of in-depth follow-up interviews (n=15). Research took place between December 2019 and June 2020, allowing us to capture some early experiences of the COVID-19 pandemic.

Most participants in the study were white males and contract workers, many of whom were working maintenance and shutdowns. Most had worked on and off in the oil sands for 6 or more years and were residents of central or southern Alberta, with 20% coming from other provinces.

Findings of the MWMH project echo previous research findings in this and other FIFO contexts (Angel 2014b; Parker et al. 2018; Bowers et al. 2018), helping us better understand issues of wellbeing among FIFO workers generally. Given the demographics of our participants, our findings also shed light on the experiences of some overlooked members of the workforce: *contract workers* and *trades women*. Contract workers comprise a major share of the oil sands FIFO workforce yet are not often included in oil industry research studies. In addition, the percentage of women in the study (31%) was double that found in the oil sands trades workforce, allowing for important analysis of gendered phenomena. While the number of racialized non-white participants, both Indigenous and non-Indigenous, was lower than is found in the oil sands workforce, we note throughout the report where findings suggest particular impacts on these workers.

Results of the study indicate *significant general and mental health challenges among this population; high stress stemming from FIFO work, a demanding and unpredictable work environment, and discrimination and harassment; and a work culture of mistrust regarding employer commitment and support for mental health and wellbeing*. Our recommendations point to needed improvements in the health and privacy of camp and worksite conditions, more flexible rotational schedule options, broader and more flexible availability of trusted mental health and anti-discrimination training and resources, and areas for further research.

Oil sands and other FIFO-reliant industries, as well as government bodies and community and labour organizations, need to act immediately and on many fronts to better understand, prevent, and provide resources and support for mental health challenges faced by mobile workers and their families.

KEY FINDINGS

DIRECT IMPACTS OF FIFO CONDITIONS

- *Distance and time away from home/family is the most stressful of FIFO conditions*, with 87% of participants reporting some (43%) or a lot (44%) of stress stemming from distance. The difficulty of establishing and maintaining relationships with family, feelings of loneliness, and the inability to be at home for family events or emergencies are significant stressors among FIFO workers.
- *Camp living is also stressful*, with 77% reporting some (46%) or a lot (31%) of stress stemming from camp living. Wellbeing in camp is most affected by isolation, a feeling of “entrapment” (58% disagreed that they are free to do what they want in camp, and 39% had never left camp while on rotation), poor morale (52% disagreed that morale in camp is good), limited or unhealthy food options, and difficulty maintaining healthy eating, exercise, and sleep habits. Half of the participants reported difficulty falling asleep (57%) and never or only occasionally waking up feeling rested in camp (49%); this is compared to 29% and 11%, respectively, when at home.
- Two-thirds (69%) of respondents report some or a lot of stress from *travel/commuting*, with one-third (32%) rating travel as difficult; they cite unpredictable conditions (weather, cost, schedule) and long and tiring journeys. Travel was more stressful for workers living outside of Alberta, on night shift, and/or on a “short-off” rotation (1-3 days off, versus 6-14).
- Two-thirds (66%) of respondents agreed that they were able to *balance the demands of work and personal life*, although this was notably lower among those who had worked for a longer period in the oil sands and those with short-off (1-3 days off) rotational schedules, as well as for supervisors. Workers on short-off rotations (correlated in our survey population with working intensive shutdown maintenance projects, living in Alberta, and less likely to have children) were in contact with family and friends less frequently when in camp than those on long-

- off rotations (6-14 days off). Supervisors and those working continuously (versus on and off) in the oil sands were more likely to still have work on their minds when they went to bed or returned home.
- *Transitioning* between work and home (on and off rotation) is an important facet of FIFO work-life im/balance and wellbeing. Participants who rated transitioning home as difficult (39%) cited fatigue and role transition. One-third (29%) rated the transition back to work as difficult, with those in more unpredictable circumstances (working on and off and/or at a higher number of sites) more likely to do so; this is probably due to the challenges of constantly adjusting to new work environments, including after an extended absence.
 - In terms of effects of specific events, most of the interviewees—all of whom participated in the study after the onset of the *COVID-19 pandemic*—reported being affected by its early months. Workers reported disrupted travel, prolonged stays, variable compliance with safety protocols in camps, concerns with high contact among highly mobile workers, and fears of further layoffs. With regard to the economic downturn, three-quarters of survey participants indicated being affected by layoffs, intensified demands, and/or constant uncertainty.

HEALTH MEASURES AND BEHAVIOURS

- Participants' ratings of *general mental health* and *daily stress* are worse than is found in the population. About half rated their mental health as very good or excellent (46%) or rated most days as somewhat or very stressful (51%).
- Nearly half (46%) of survey participants had *diagnosed long-term health conditions*, with half of these (51%) describing their conditions as mental or both mental and physical. These proportions are higher than is reported in the general population.
- *Work-related stress* is worse than has been found in the general population. More than three-quarters (78%) reported stress from work, with one-third (29%) reporting a lot; stress from financial concerns, which are highly related to work situation, was reported by 77%, with 35% indicating *a lot*. Respondents were split in their assessments of daily stress in the workplace (with roughly one-third agreeing, disagreeing, or being neutral). However, and consistent with the literature, *higher levels of daily workplace stress and work-related stress were correlated with health problems*: presence of a diagnosed long-term health condition and use of mental health services.
- Supervisors, women, racialized non-white people, those without spouses, people in their 30s, and people working continuously emerged as populations with worse mental health and/or more stress.
- Workers reported *poorer eating habits, poorer sleep, less energy, more exercise, and less drug and alcohol consumption at work (on rotation)* compared to when home (off rotation), with some *important gender differences*. Women were significantly more likely to use pain relievers both at home and at work and, most

notably, to have difficulty falling or staying asleep (41% nearly every day) when staying in camp.

- In terms of self-worth and psychosocial wellbeing, participants reported *taking less interest or pleasure in doing things and more frequently feeling down or distressed at work*, compared to when at home, with women more likely to feel down or distressed at home than men, but less likely to feel like a failure.
- Consistent with the broader literature, participants that reported *thoughts of harming themselves were almost all men* (1 in 7 male participants). Several participants had lost colleagues to suicide.

ACCESS TO AND USE OF HEALTH SERVICES

- More than one-third of participants (35%) had *sought help for their mental health (counselling, medication, and/or information)* in the past year – twice as high as reported in the general population. This is concerning on its own but even more so given that people, and especially men, tend to underreport use of mental health services. The most frequent reasons cited for seeking help were family and relationship issues, anxiety, depression, trauma, and general mental health.
- The majority (76%) of participants had access to healthcare services while on rotation (on site and/or in camp). *However*, more than half of those with access indicated they would *not use these services; this was especially true for healthcare offered on site, where 57% of participants with access to these services indicated they were “not likely” to use them*. Workers indicated concerns that known or suspected medical issues would have negative consequences, such as layoffs, lost time, or loss of respect from employers and crew members.
- Almost one-quarter of participants (22%) indicated *not receiving health care when needed in the past year*, citing lack of time, inconvenience, bad experiences, no funds, and/or not receiving help when requested. Nearly 80% of participants reported *working when sick* and one-third reported *not taking time off work for an injury*. Many pointed out that they were “there to work,” and some indicated that taking time off was frowned upon given project deadlines and added pressures on work crews.

WORK CULTURE

- Survey participants reported and commented on a *culture of “work before health.” Over 40% of participants disagreed that there is good communication at work about psychological safety, that employers are committed to minimizing stress, and that management values wellbeing as much as productivity*. Comments indicated that this is exacerbated by mistrust around the safety of reporting health issues at work, a culture of presenteeism, and being in “full work mode” when away from home on rotation.
- Most workers reported trusting individual relationships and social ties at work, often with workmates, but *mixed experiences of general morale at the worksite*.

- Almost half (46%) *reported discrimination at work*, with women significantly more likely to do so (68%). The most frequent forms of discrimination were sexism (mentioned by two-thirds of female participants), favouritism (e.g., nepotism, regional affiliation, job title), height, and racism.
- Almost half (48%) indicated they would feel somewhat or not at all comfortable seeking help for mental health, with stigma, fear of professional consequences, and lack of information among the top explanations.

KEY RECOMMENDATIONS

POLICY AND PRACTICE

Policies and practices aimed at improving mental health and wellbeing among FIFO workers require an expanded understanding of the "workplace", sustained multi-stakeholder collaboration, education and communication tied to policy and action, concerted efforts to improve organizational culture, and review of key legislation.

INSIDE THE WORKPLACE, key recommendations include:

- Better and more consistent quality of food, privacy/safety, and cleaning in *work camps*, along with a relaxing of regulations, more health services, and appropriate staff to ensure all of the above.
- *Rotation and travel schedules* that more flexibly accommodate distance and family situations, prioritize schedules with six or more days at home, and establish minimum time buffers between beginning/end of work rotations and long journeys. Offer consistent coverage of travel costs.
- *Manage work schedules* (hours, and day/night shifts) to reduce fatigue and stress.
- Enhance or establish *trusted (i.e., third-party) mental health supports*, including regularly available counselling on site/in camp (including drop-in supports), mental health first responders, stress management workshops, wellness activities as part of paid work time, increased EFAP sessions, peer support programs (e.g. Mates in Construction), and anti-stigma back-to-work supports for psychosocial injury.
- Ensure *safe, third-party reporting mechanisms* for psychological safety issues—including gendered and racialized harassment and bullying—and for punishing these forms of health and safety violation.
- Investigate and adopt *alternative forms of mental health resource delivery* that take into account FIFO realities of distance, travel, etc.
- Enhance *mental health training and education* across all ranks and activities in the workplace, including regular communication about mental health issues and resources, anti-discrimination and anti-bullying training, developmental training for supervisors, and suicide prevention awareness and training.
- Create mechanisms to *manage stressful operator-contractor relations*.

- *Concerted efforts to change organizational culture around mental health, such as adopting industry-wide tools and standards, mechanisms for monitoring mental health, creating multi-stakeholder task forces and worker-led teams, and conducting regular research and review of best practices for preventing and addressing mental health challenges for FIFO workers.*

OUTSIDE THE WORKPLACE, key recommendations include:

- *Alberta Government funding and leadership for psychological safety and mental health, focused on independent training for workers, OHS training materials on psychological safety, and worker peer-support, anti-discrimination, and suicide prevention programs that take into account the conditions of FIFO work.*
- *Alberta Government review of OHS, Worker's Compensation, employment legislation, and health services to identify gaps in supports for FIFO and other interjurisdictional workers. Mandate minimum mental health payments in employee support programs.*
- *Union and community organization leadership in prioritizing information and training on mental health and in identifying and developing responses to policy gaps affecting FIFO workers.*
- *Efforts across all stakeholders to develop means for communicating with and receiving systematic information from employers about FIFO and mental health, and to help develop trusted third-party health services and options.*

FURTHER RESEARCH

Canada is falling behind in conducting research on FIFO workers and their mental health and wellbeing. Our findings suggest that more basic and systematic research data are needed, including:

- Comparative studies of mental health among FIFO and non-FIFO workers; of FIFO population in different contexts; of mental health policies and practices across companies; of operations, contract workers, and non-oil FIFO employees (such as camp staff)
- Impacts of rotational schedules and rotational phase
- Cumulative effects, using longitudinal research methods
- Worker perspectives on what is needed, including perspectives from especially affected sub-populations (e.g., women, racialized non-white workers, supervisors)
- Masculinity and the gendered dynamics of FIFO work, resource industry work cultures, and OHS training and practices
- The roles that employers, supervisors, unions, and health and safety associations can and do play in supporting mental health of FIFO workers and preventing and responding to discrimination and bullying
- Legislative and interjurisdictional “cracks” in supports for FIFO workers and their families

- Organizational culture around FIFO and mental health
- Effects on families, and interactive effects between individual worker and family mental health
- Various modes of delivering mental health supports for FIFO workers
- Impacts and inequalities for specific groups; women, racialized non-white workers, supervisors, those working continuously, and those working in more precarious FIFO work.

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1. INTRODUCTION: MENTAL HEALTH AND FIFO WORK

Fly-in fly-out (FIFO) arrangements (which we take to include drive-in drive-out and bus-in bus-out) involve workers traveling hundreds or thousands of kilometers away from their homes on work rotations of one or more weeks. Fort McMurray and the surrounding Athabasca Oil Sands of northeast Alberta have relied heavily on this type of work since the early 2000s. In 2014, prior to the oil downturn, there were more than 50,000 rotational mobile workers from across Canada staying in 120 work camps in the Athabasca Oil Sands region (Regional Municipality of Wood Buffalo 2015)—an area of boreal forest some 140,000 square kilometers in size under which lie the world’s third largest petroleum deposits (in the form of bitumen). While the number of FIFO workers has subsided in recent years, and workers are more often coming from less-distant locations, the industry continues to rely on a FIFO workforce of tens of thousands of people. Research demonstrates that resource and industrial construction workers take on mobile and FIFO work for a number of reasons, including financial incentives and limited job choices at home or in their trade; at the same time, financial and family strains can contribute to feeling forced to exit or re-enter FIFO work (Construction Sector Council 2007; Dorow and Mandizadza 2018; cf Nichols Applied Management 2018).

While there is a growing literature on FIFO work, its lived complexity is under-recognized and under-researched (Langdon et. al 2016), especially in Canada. The mental health and wellbeing of FIFO workers is one notable gap. While government, industry, and academic research on the impacts of FIFO conditions on the health of workers has been growing in Australia (see, for example, Parker et al. 2018; Chen et al. 2003; Gardner et al. 2018), it is almost altogether missing in Canada, where the oil and gas industry emphasizes health and safety (see, for example, <https://www.capp.ca/explore/health-safety>) but has given limited attention to researching and promoting mental and psychological health; the construction industry, trades associations, and unions have been somewhat more proactive (Buildforce Canada 2019; Saskatchewan Construction Safety Association 2021; Canadian Labour Congress 2017; O’Reilly 2020; Samra 2017).

There is great value in identifying which work-related conditions and factors pose especially salient risks to FIFO workers’ mental health (Parker et al. 2018: 70). Psychological health problems and illnesses are the number one cause of disability in Canada (Employment and Social Development Canada 2016), and mental illness among Canada’s working population is only expected to increase in both prevalence and cost (Mental Health Commission of Canada 2011). Forms of psychological distress are known to be especially acute in construction and other male-dominated industries (Roche et al. 2016; BuildForce Canada 2019). Poor mental health and high stress are known to stem from social and organizational conditions both at and beyond the workplace (Pajovic and Shuey 2021). Workplace constraints and resources play a key role in shaping rates and levels of psychological distress, while also being modulated by

and intertwined with outside factors ranging from public health policy to family life circumstances (Marchand et al. 2006, 2015). What's more, healthy workplaces are directly tied to higher productivity and profitability (Kelloway and Day 2005; Deloitte Insights 2019). As a result, employers and employees are showing increased awareness of workplace wellbeing (Moss 2020; Samra 2017).

The realities of FIFO work—including time and distance from family, the isolation of camp living, and demanding rotational schedules and work hours—can intensify and complicate the layers of individual, workplace, and broader societal conditions that interact to shape wellbeing, leading to high levels of anxiety, depression, burnout, and psychological distress (Parker et al. 2018). While FIFO can have positive lifestyle, career, and family benefits (Misan and Rudnik 2015), its overall mental health impacts can be quite negative and need to be better understood.

The Mobile Work and Mental Health (MWMH) study begins to address the gap in research on the wellbeing of FIFO workers in Canada. The study is based on an extensive questionnaire (n=72) and a subset of qualitative interviews (n=15) with FIFO workers in the oil sands industry of Alberta.

Almost all of the participants were tradespeople working for or as a contractor. While a majority had worked on and off in the oil sands, including doing the intensive and crucial work of maintenance shutdowns (turnarounds), they had been doing so for a long time: 75% of the sample had worked in the oil sands 6 or more years. As is found in the oil sands FIFO population, the majority were white, male, and Alberta-based, although importantly, the study attracted about twice the proportion of females found in the construction and oil sands workforce. The vast majority earned between \$65,000 and \$200,000 per year, with women twice as likely as men to be earning under \$100,000.

Our study *sheds light on the wellbeing of FIFO workers in the oil sands*. While the MWMH project is not based on a representative or large sample, our findings echo many of those found in major studies of the FIFO workforce (both operational and contracted) in Australia. In addition, the MWMH project *responds to a dearth of literature on FIFO trades women and begins to fill an important gap in understanding the wellbeing of contract workers*, including those who have worked shutdown and maintenance and who have worked contract jobs in the oil sands for a number of years. Research in the oil sands industry itself tends to focus on the “regular” operational FIFO workforce. However, contract workers not only make up the majority of the oil sands workforce but also regularly work side-by-side with operational workers. Previous research has shown contract workers—who tend to have less job security and autonomy while carrying heavy workloads (cf Saxinger 2016)—to have the poorest mental health among FIFO workers (Parker et al. 2018: 16, 33). Research has also shown that trades women face mental stresses associated with sexual harassment and gender discrimination as well as barriers to entering and maintaining FIFO-based trades work (Kelly 2020; Nagy and Teixeira 2019; Pirotta 2009).

Surveys were conducted from December 2019 to April 2020, and interviews in May and June of 2020. This report is based predominantly on survey material, with interview material used selectively to extend understanding of phenomena arising from the survey. While survey administration was drawing to a close just as COVID-19 started, interviews included reflections on the early impacts of the pandemic.

The project was co-led by Dr. Sara Dorow, a sociologist with 12 years of experience conducting research in the oil sands region, and Valerie O’Leary, a critical incident stress management practitioner with 15 years of experience responding to community and workplace stress and trauma, including five years working directly with mobile workers in the oil sands. Throughout the report, we integrate reflections from Valerie based on her extensive firsthand knowledge.

The aims of the project were to:

- **gain understanding of mental health and wellbeing among FIFO workers in relation to experiences of travel and rotation, camp life, and distance and time away from home and family;**
- **identify the interrelated facets of rotational mobile work that produce, intensify, or mitigate ongoing mental health challenges for workers;**
- **consider the role that demographic, employment, and workplace characteristics play in FIFO-related mental health impacts;**
- **identify prevention and support measures for affected individuals, families, and worksites.**

The Alberta oil sands industry cites FIFO as a solution to meeting the labour needs of remote projects, ensuring worker safety and performance, and responding to workers’ desire for families to remain in home communities (Oil Sands Community Alliance 2018). However, research to date shows that this solution poses challenges to individual, family, workplace, and community wellbeing, including through increased pressures on health and social service systems (Parker et al. 2018; Donatelli et al. 2017; Dorow and O’Shaughnessy 2013).

Recent research, most notably in Australia, indicates that stress, depression, fatigue, sleep loss, and related psychological, emotional, and physical health challenges stem from a range of factors associated with FIFO rotational work in the resource and mining sectors. These include frequency and length of periods away from families and social networks, long and/or complex commutes, jarring adjustments between on- and off-rotation, the isolation and regimentation of camp living, extended and nonstandard working hours, and emotional and physical exhaustion (Parker et al. 2018; Mclean 2012; Torkington et al 2011; Carter and Kaczmarek 2009; Gardner et al 2018; Straughan, Bissell, and Gorman-Murray 2020; Wright and Griep 2019; Bowers et al. 2018). The

changing market conditions (“boom and bust”) and 24/7 demands of resource industries bring additional elements of uncertainty and stress to trades workers (Mayes 2020; Straughan et al. 2020; Dorow and Mandizadza 2018).

Importantly, these factors create “social isolation, stress and poor help-seeking behaviours” (Mclean 2012:126) as well as high levels of psychological distress and burnout (Parker et al. 2018), all of which are associated with higher rates of stress leave-taking, drug use, and suicide (Angel 2014a; Vojnović 2014; CBC 2015; Bilsker and White 2011). In comparing FIFO workers to both a benchmark group of non-FIFO workers and the general population in Australia, Parker et al. (2018: 113-116) found the FIFO group to have significantly higher levels of anxiety, depression, burnout, and psychological distress; emotional wellbeing was similar to that of the non-FIFO benchmark group, but worse than in the population. The effects of organizational characteristics of FIFO on mental health also depend on the different social positioning of workers, including and especially along lines of gender in what is a male-dominated industry (Dorow and Mandizadza 2018; Pirota 2009; Gardner et al. 2018; Angel 2014a; Kelly 2020), with additional effects on gendered familial roles and relationships (Baker and Ciuk 2015; CBC News 2017; Mayes 2020; Meredith et al. 2014; Straughan et al. 2020). Mental health impacts intersect with and are exacerbated by workplace discrimination and bullying (Miller et al. 2020).

In the case of Fort McMurray and the oil sands specifically, we must add individual and collective strain in the wake of the 2015 downturn, the devastating wildfire of 2016, and the onset and ongoing impacts of COVID-19 that started in March 2020. The pandemic forced even stricter isolation measures on workers at camps, and caused new layoffs, schedule changes, and travel disruptions (Amnesty International 2020; Krugel 2020; Mason 2020; Tuttle 2021). At the same time, COVID-19 may have forced new attention to health risks for this population, in part because of the ways FIFO and other mobile workers were adversely affected (Neis et al. 2021). Finally, we need to take into consideration policy changes, especially to the Occupational Health and Safety Act and Workers’ Compensation Act. In 2020, amendments to the Acts via Bill 47 reshaped the work environment of Alberta workers. Implications of this for oil sands FIFO workers are briefly discussed in our concluding recommendations (Section 10).

The MWMH project yielded rich preliminary results that echo findings in other countries (notably Australia). Throughout, we attempt to compare our results to previous findings and, where possible, to the general population.

Our results point to some clear areas of concern regarding the mental health of FIFO workers. We found *poor general health and mental health, including among particular subgroups; barriers in the work culture and working conditions to accessing and providing care; and high levels of stress associated with key conditions of FIFO work—distance and time away from home and family, camp living, and to some degree, travel and commuting*. Our results also suggest *correlations between high levels of work stress and the prevalence of both diagnosed long-term conditions and mental health help-*

seeking. The MWMH project also revealed a disturbing *lack of trust in organizational and employer support* for the health and mental wellbeing of oil sands workers.

The final section of the report provides a preliminary set of recommendations for policy and practice and points to areas for further research on FIFO-related mental health and wellbeing. These are shaped in part by workshops and written feedback gathered from a diverse set of stakeholders in August 2021. Our thanks to the sixteen people from industry, community, and government who participated; their insights and questions were very useful in crafting the final draft of the report.

The report is organized into the following sections, each of which begins with its own summary of section highlights:

1. **INTRODUCTION: MENTAL HEALTH AND FIFO WORK**
2. **METHODOLOGY**: provides an overview of the Social Determinants of Mental Health conceptual framework and the mixed-methods approach, including the survey components, development of the interviews, and how key timing and other contextual factors affected the study.
3. **DEMOGRAPHICS: OVERVIEW OF SURVEY PARTICIPANTS**: outlines characteristics of the participants involved in the survey, including comparisons to previous studies such as the Regional Municipality of Wood Buffalo project accommodation census (RMWB 2012) and the Oil Sands Community Alliance (OSCA) survey of the oil sands operations-related rotational workforce (Nichols Applied Management 2018).
4. **HEALTH, MENTAL HEALTH, AND STRESS**: builds on the previous section with a profile of the reported general physical and mental health of participants, including stress factors, significant life events, diagnosed long-term health conditions, and workplace sickness and injury. The oil downturn, the 2016 Fort McMurray wildfire, and COVID-19 are considered among recent impactful events.
5. **WORKING CONDITIONS IN THE OIL SANDS**: outlines findings from the survey regarding workplace conditions that impact participants' mental health and wellbeing, including workplace ties and sociality; sense of efficacy and control; workplace morale, respect, and discrimination; and employer commitment to wellbeing.
6. **FIFO AND MENTAL HEALTH: DISTANCE, CAMP, AND TRAVEL**: encompasses facets of FIFO as social determinants of mental health, laying out how distance and time away from family and home, camp living, and travel and commuting impact FIFO workers in relation to their individual, family, and workplace health.
7. **WORK-LIFE IM/BALANCE**: provides workers' assessments of work-life balance and addresses how rotation schedule, transitioning between work and home, and relationships at work and home impact FIFO workers.

8. **HEALTH AT WORK AND AT HOME: COMPARING RELATIONSHIPS, BEHAVIOURS, AND SELF-WORTH:** compares FIFO workers' health-related experiences and behaviours between work and home, including exercise and diet; tobacco, drug, and alcohol use; sleep and rest; and depression and self-worth.
9. **ACCESS TO AND USE OF HEALTH SERVICES:** outlines health care access and provision for FIFO workers, (under-)use of those services, and type and frequency of use of mental health supports among participants.
10. **RECOMMENDATIONS AND NEXT STEPS:** suggests practices and policies that could prevent or mitigate the negative mental health issues associated with FIFO work, including suggestions from MWMH participants, and points to areas for further research.

Many existing studies of mental health and wellbeing among FIFO workers utilize a psychological distress model to measure mental health. As described in the next section, our study draws from a more comprehensive and holistic social determinants of mental health mode accounting for contextual factors such as job conditions, broader social and economic relationships, and factors of race, gender, and citizenship status. The MWMH study thus addresses how FIFO conditions interact with and/or contribute to workers' health challenges, the interconnected nature of physical and mental health, and the relationship between new and pre-existing health conditions. We believe these findings are relevant for service providers and policymakers in a range of contexts where there are high incidences of mobile, remote, and volatile work, including the communities in which workers live.

Insights from Valerie O'Leary (Critical Incident Stress Management-Fort McMurray)

In my years of working in crisis and trauma response in the oil sands and elsewhere, I have noticed that there is a growing awareness regarding the correlation between physical and mental health within the workplace. Unfortunately, it is not always being addressed in the oil sands. I do recognize how it would be more difficult to identify because of the vast number of employees, the long shifts and rotations, and employees fearing they will lose their jobs if they should admit they are struggling. The workplace can be a key location for activities designed to improve wellbeing among employees and help build personal psychological body armor through workplace wellness programs. Conducting annual Stress Management/Mental Wellness workshops can help identify those at risk and connect them to treatment before it turns into something less manageable.

2. METHODOLOGY

We adopted a *Social Determinants of Mental Health* (SDMH) model, which considers the production and prevention of mental health issues within socio-economic context. SDMH considers health and wellbeing across multiple scales, including the individual lives of workers, the structured arrangements of their work, and the impacts of institutions, policies, and practices beyond the workplace (World Health Organization 2014; Tausig and Fenwick 2011; Marmot et al. 2008). Work stress is thus connected not only to job conditions and employment relations (Muntaner et al. 2010; Wilkinson and Marmot 2003) but also to family, race, gender, and citizenship status (Tausig and Fenwick 2011; Poland et al. 2008; Hilario et al. 2018). Importantly, SDMH moves us beyond an individual- and incident-based model to one that considers more sustained and preventative mental health supports in the lived context of FIFO work. Holistic, systemic analyses of the various social and economic conditions of mobility that interact to shape mental health can help to promote wellbeing for workers (Langdon et al. 2016).

Our utilization of a sequential mixed-methods approach—a survey, followed by interviews—is in keeping with a SDMH conceptual framework, as it focuses on “real-life contextual understandings, multi-level perspectives, and cultural influences” (Creswell et al. 2011: 4). We started with a questionnaire to gather broader baseline data and then extended our findings through interviews about lived experience. This report is largely based on the results of the questionnaire, with some supporting analyses drawn from interview material.

THE SURVEY

The survey component of the study took a broad view of the issues, informed by questions found in extant studies such as the Canadian Community Mental Health survey, the Oil Sands Community Alliance Operational-Related Rotational Workforce Study, an Alberta Government OHS Survey, and several studies conducted in Australia with FIFO workers (see Appendix: Survey Questionnaire). It used a combination of closed- and open-ended (objective and subjective) questions about demographics, general health, employment situation, travel/commuting, camp experiences, workplace experiences, mental health and stress, health behaviors (including comparisons between work and home), access to and use of health services, and needs and recommendations around mental health.

Surveys were conducted from December 2019 to April 2020. They were administered face to face by members of the research team, mostly through telephone or online video chat (such as Zoom), with some 25% occurring in person (in Fort McMurray and Edmonton, Alberta). With participants' permission, surveys were recorded to ensure accuracy for open-ended responses. The survey usually took between 60 and 90 minutes to complete.

While the original plan was to conduct surveys in work camps, our attempts to partner with industry were unsuccessful; we were unable to secure permission and support from oil sands companies or work camp operators. We therefore recruited through multiple means: direct (e.g. at Fort McMurray airport), social media, non-profit and labour groups, word of mouth, and a variety of provincial and national mental health and trades organizations. Despite a less systematic approach than desired, recruitment yielded a diverse set of participants and a rich data set, albeit few participants directly employed by operators (the operational workforce).

INTERVIEWS

Following the completion of the survey phase, and based on initial analyses of results, we sampled a subset of participants for follow-up interviews. (All survey participants were asked if they were open to being contacted for a follow-up interview, and all but a few agreed.) The interview sample was selected based on a matrix of characteristics: gender, home location, job title, family situation, and reported mental health. Our aim was to gather more nuanced understanding of a range of initial findings from the questionnaire.

Interviews were conducted in May and June 2020 using a semi-structured approach. They explored camp living and morale, work-life im/balance, rotation and shift, and oil sands work culture, and served to place experiences of health in a more detailed understanding of individual work history and family situation. Since the COVID pandemic had begun, we also asked about impacts of COVID on work, family, and FIFO conditions. (See a summary of COVID-related findings from our interviews in Section 4.)

TIMING OF THE STUDY AND OTHER CONTEXTUAL FACTORS

The timing and context of any study is important to understanding results. In the case of the MWMH project, reluctance on the part of oil sands companies and camp operators to partner with us posed challenges for recruitment. We were able to recruit just three-quarters of the number of survey participants originally planned (72 rather than 100), and unable to attract many from the operational workforce. And as with any non-randomized voluntary sample, we might have attracted people whose backgrounds or experiences increased their likely interest in a survey on mobile work and mental health. In addition, several key facets of timing shaped the who and what of the project:

- **Economic Downturn:** when we conducted research in late 2019 and early 2020, the oil sands industry had been in an economic downturn for five years. This had several implications, including a reduced FIFO workforce, fewer FIFO workers coming from longer out-of-province locations, and the general stress of uncertainty about continued job prospects—including a number of participants who had been laid off or unable to find a new contract. This most likely contributed to a relatively high number of survey participants from Alberta (80%), and to participants' characterizations of a stressful organizational culture.

- Shutdown/Maintenance: Our research occurred between intensive shutdown periods, which means we were contacted by a number of participants who were just coming off of a maintenance turnaround or, later, heading into one.
- Big-Impact Events: As we completed our surveys and started our interviews in March and April 2020, the pandemic was just beginning. We thus heard initial experiences and reflection regarding its impact. In addition, we knew that many of our participants would likely have experienced the Fort McMurray wildfire of spring 2016.

3. DEMOGRAPHICS: OVERVIEW OF SURVEY PARTICIPANTS

Highlights

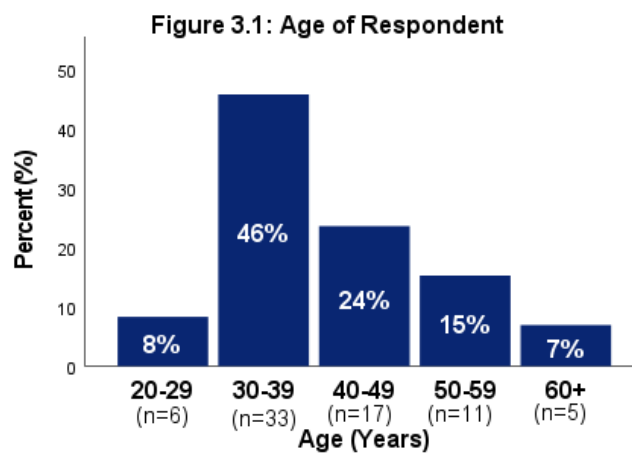
- The majority of survey participants (n=72) were people in the trades working on and off for contractors, had been working 6-20 years in the oil sands, had worked at more than 5 job sites, and were members of a labour union. Most worked maintenance and construction.
- Participants were almost evenly split between those working “short-off” (1-3 days off) and “long-off” (6-14 days off) rotations, with a variety of day, night, and combined shifts.
- Most (80%) resided in Alberta, with others coming from British Columbia, Manitoba, Ontario, and several Atlantic provinces.
- While most participants were white males, the survey attracted a higher percentage of women (31%) than is found in the workforce. Of those participants identifying with a non-white racial or ethnic group (17%), half were Indigenous.
- Almost two-thirds of participants were married or in common law relationships and almost half had children. Most were in their 30s and 40s.
- Most participants earned between \$65,000 and \$100,000 (42%) or between \$100,000 and \$200,000 (43%) per year, but with a significant gender skew: women were more than twice as likely as men to be earning under \$100,000/year.
- One-third rated their job security as bad or very bad, and two-thirds had experienced a major change in their job situation in the past 12 months.

In this section we provide a snapshot of the characteristics of those who participated in the MWMH survey. While there is little comparable data in Canada on the demographics of the rotational FIFO workforce, where possible we provide reference to similar, comparative studies, such as the Regional Municipality of Wood Buffalo project accommodation census (RMWB 2012), and an Oil Sands Community Alliance (OSCA) survey of the oil sands operations-related rotational workforce (Nichols Applied Management 2018), with some reference as well to the largest such study to date in

Australia (Parker et al. 2018). It is important to note that the RMWB survey occurred during an economic boom, and thus captured information on a large number of people, including more short-term construction workers; the OSCA occurred during a downturn and did not include contract workers. We also refer to some statistics found in studies of oil and gas and the construction trades in Canada. In subsequent sections of the survey, we provide comparisons to findings from studies of FIFO work and mental health in other contexts, most notably Australia.

AGE, GENDER, AND ETHNICITY

Participants ranged in age from 22 to 64, but nearly half (46%) were 30-39 years old.

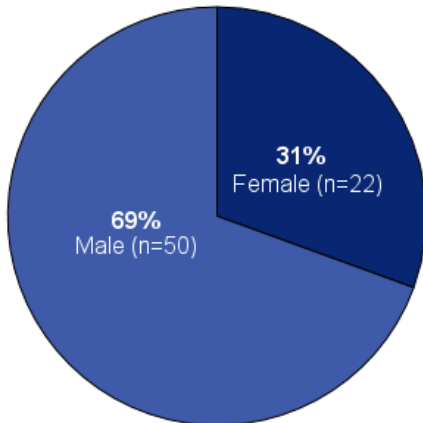


Source: Survey Data, Q. 1.1. (N=72)

This profile is similar to that found in Parker et al.'s Australian study (average age 41) but slightly younger than in previous studies in the oil sands. OSCA's Oil Sands Operations-Related Rotational Workforce Study (Nichols Applied Management 2018) found that approximately half (47%) of operations-related rotational workers were over the age of 44 (Nichols Applied Management), an increase in age since their 2007 study (when only 27% of respondents were over the age of 44). They suggest that this increase in age of workers could relate to type of occupation, the phasing out of physically intensive construction jobs (primarily filled by younger workers) and the shift towards operations jobs (less physically intensive). Note that the majority of MWMH participants were not working directly for an operator and a number were working on-and-off (including turnaround maintenance, or shutdowns).

The resource industry and construction trades are traditionally male-dominated fields. The demographics of our participants reflect this, yet we attracted a higher proportion of females than is found in the workforce: 31% of participants identified as women, and 69% of participants identified as men. The OSCA report found 15% of operations

Figure 3.2: Gender of Respondent

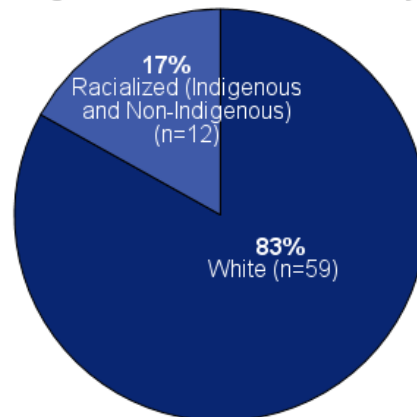


Source: Survey Data, Q 1.2. (N=72)

rotational workers are women (Nichols Applied Management 2018), the 2012 RMWB report found 17% women among the work camp population, and PetroLMI (2018) reported 22% in the oil and gas sector in Canada (Jaremko 2018); Parker et al.'s (2018) sample was 83% male. Some 13% of employees in the construction industry in Canada are women, with only 4.7% of construction tradespeople being female (Frisa 2021). The overrepresentation of women in the MWMH Survey provides an important opportunity to explore gender and health among FIFO workers in the oil sands.

A majority of participants (83%) identified as white. This is comparable to the 2012 RMWB census of project accommodations, which found 80% identified as Caucasian. Half of the non-white MWMH participants (8.5%) identified as Indigenous. This is slightly higher than the overall workforce - Indigenous workers made up 5% of the overall provincial labour force in 2016 (Government of Alberta 2017) - but is lower than in the OSCA report (13%) (Nichols Applied Management 2018).

Figure 3.3: Ethnic or Racial Identity



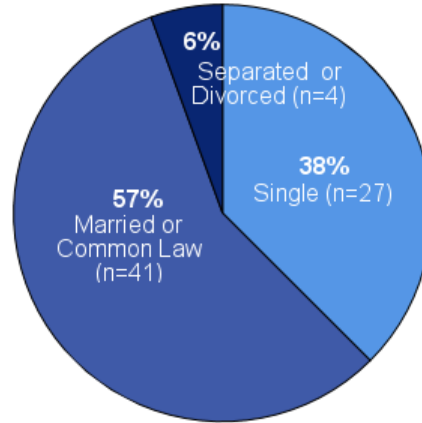
Source: Survey Data, Q1.3. Of Racialized participants, six identified as Indigenous, and six identified as members of an other racialized group, via Q 1.10.

Finally, almost all (90%) of our participants were born in Canada, all were citizens, and most used English in their daily lives.

MARITAL AND FAMILY STATUS

Almost two-thirds of participants were married or in common law relationships. This is lower than in the OSCA report, which found that 71% of oil sands operational workers were married (Nichols Applied Management 2018), but slightly higher than in the 2012 RMWB Census, where 51% of the work camp population reported being married/common-law. In their large Australian study, Parker et al.'s survey participants were 75% married/partnered. Note that consistent with previous research (Cherry et al. 2018), there was a clear gender skew in the MWMH sample: 64% of males and 41% of females reported being married/common-law.

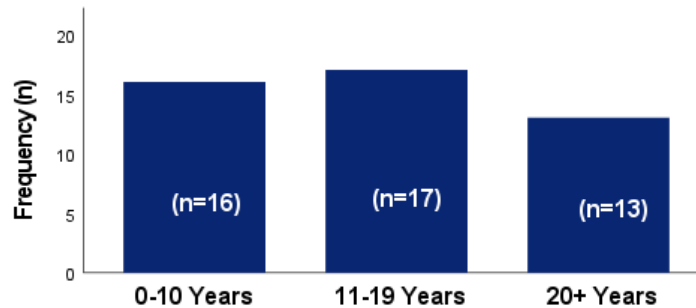
Figure 3.4: Marital Status of Respondent



Source: Survey Data Q1.4. (N=72).

Almost half of the participants (47%) had children, with most reporting 1-3 children. More than two-thirds of participants' children were dependents under 20 years of age.

Figure 3.5: Ages of Children

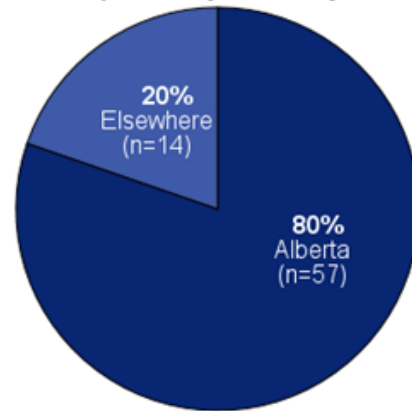


Source, Survey Data Q.1.5A, (N=33, only includes respondents with at least one child, per Q1.5; Missing/Valid Skip=39). Includes multiple responses.

PRIMARY RESIDENCE

The survey attracted a high number of Alberta-based FIFO workers: 80% of respondents lived in Alberta when not working in the oil sands. This included some people originally from out of province who had moved to Alberta to be closer to work. While a couple of Alberta-based workers lived in Fort McMurray, we know from the survey that most traveled to work from in or around the two main urban centers in Alberta (Calgary and Edmonton). Those coming from outside of Alberta (20%) were from British Columbia, Manitoba, Ontario, New Brunswick, Nova Scotia, and Newfoundland and Labrador.

Figure 3.6: When you finish a work rotation, to what place do you usually return?



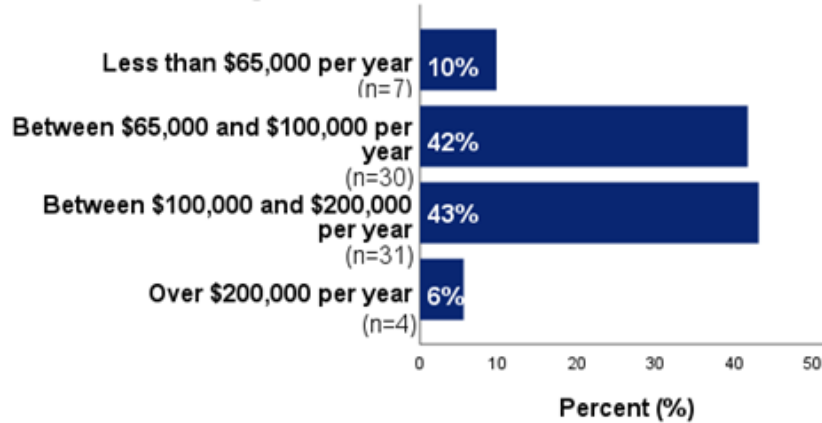
Source: Survey Data, Q.1.11, (N=72, missing=1)

The OSCA study reported that 66% of workers came from Alberta, and the majority of those lived in Edmonton (25%) or Calgary (22%) (Nichols Applied Management 2018). The proportion from Alberta was even lower in the RMWB 2012 census: 49%. The higher percentage of Alberta-based workers in our study can be explained by recruitment issues but also by the economic downturn, which has led to less reliance on out-of-province FIFO workers.

INCOME AND EDUCATION

The vast majority of our respondents earned between \$65,000 and \$200,000 per year. However, there was a *highly significant gender skew in income*: 86% of females earned under \$100,000 per year, compared to 36% of males. This difference cannot be explained by level of education or years of experience in the oil sands, for which there were no notable gender differences. Other factors might contribute; on average, women had fewer years' experience in their field than men, and as discussed in this report, most female participants report forms of gendered discrimination including being passed over for promotions. Lower average income for women might also help explain why *women were much more likely to be involved in paid work outside of the oil sands*: 62% of females, compared to 20% of males.

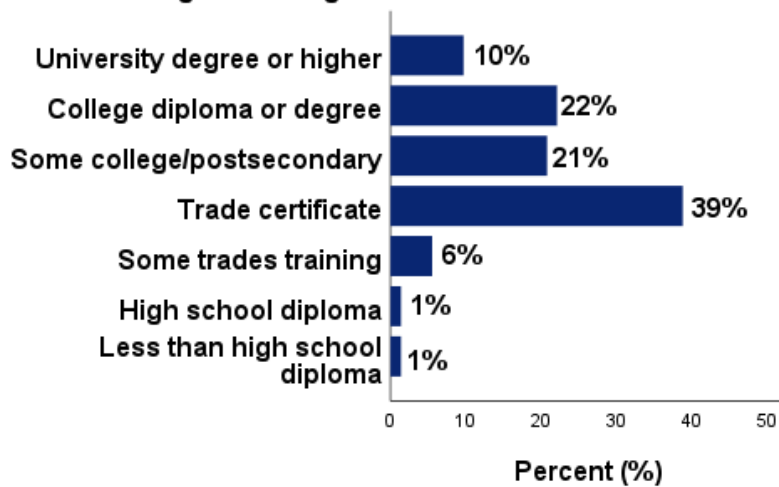
Figure 3.7: Individual Annual Income



Source: Survey Data Q1.6. (N=72).

With regard to education, 39% of survey participants' highest level of education was a trades certificate, 43% had some college or a college diploma, and another 10% had a university degree or higher. This is similar to average education levels found in the OSCA study, but higher than found in the RMWB 2012 census report (which would have captured a higher percentage of short-term construction workers including day labourers). Education levels in Australian FIFO samples are higher (Parker et al. 2018).

Figure 3.8: Highest Level of Education

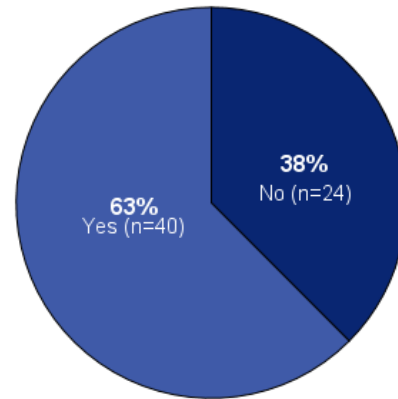


Source: Survey Data, Q 1.7. (N= 72).

EMPLOYMENT AND JOB CHARACTERISTICS

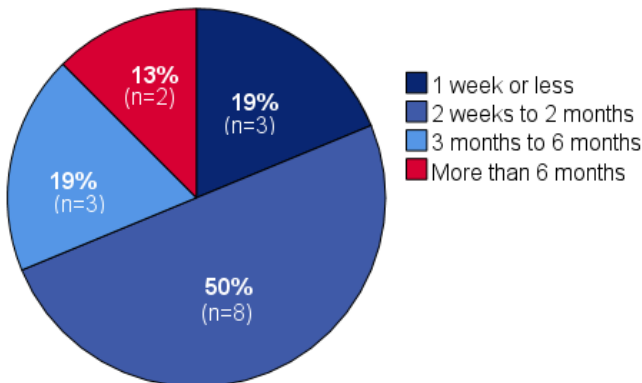
Some two-thirds of our respondents were employed at the time the survey was conducted. The relatively high percentage that were currently unemployed (38%) is a reflection of job losses but also of the nature of their employment: as seen below, more than 80% of our participants were working for or as a contractor, and as we learned during survey administration, many were working shutdown maintenance periods. Two-thirds of those who were unemployed had been so for two months or less. At the time of the survey, a number of our participants had just lost a job and/or were on the cusp of starting another.

Figure 3.9: "Are You Currently Employed"



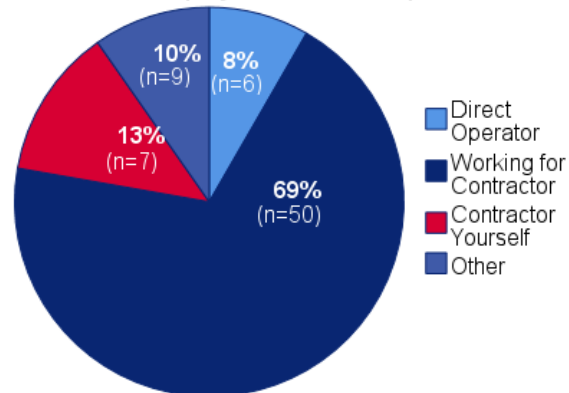
Source: Survey Data, Q 2.0. (N=72, missing=8).

Figure 3.9a: Time Unemployed



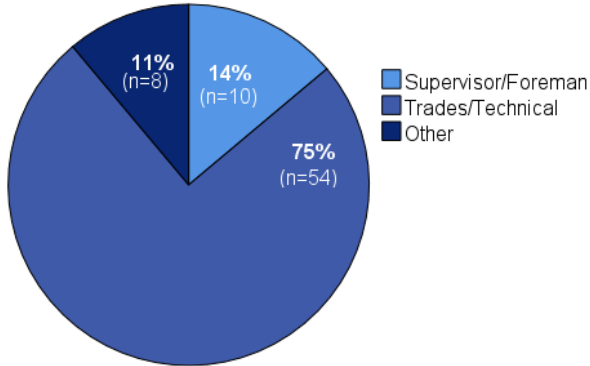
Source: Survey Data, Q2.0A. (N=16). Note: Only includes respondents who reported unemployment via Q 2.0.

Figure 3.10: Respondent's current (or most recent) employment relationship



Source: Survey Data Q 2.1, (N=72)

Figure 3.11: Current (or Most Recent) Job Title

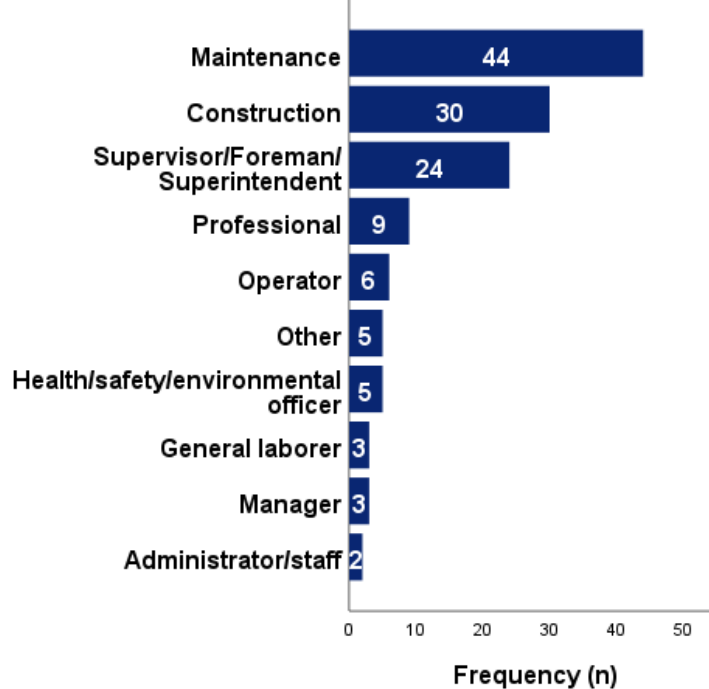


Source: Survey Data, Q. 2.3, (N=72).

When asked for their current job title, 75% of participants identified as working in the trades or technical fields, with 14% indicating supervisor/foreman. All of the latter (n=10) were male, indicating a clear gender skew.

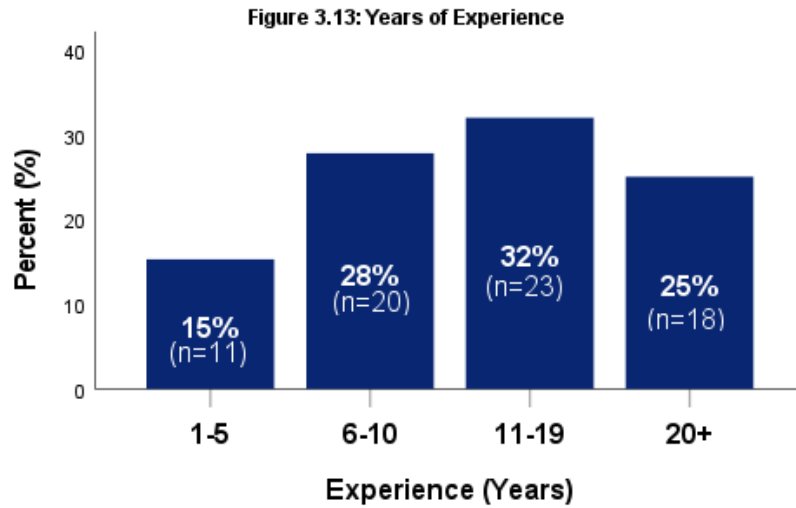
In terms of occupation, participants could choose as many as applied. Maintenance and construction were the most frequent choices. The main gender difference here was around maintenance work: 46% of women chose this, compared to 68% of men. (As seen below in subsequent data, this is related as well to men being more likely to have worked on and off, more job sites, and for a shorter period of time with their current employer.) Note that on the occupation question, some women (n=4) did indicate supervisor/foreman/superintendent as one role they had held.

Figure 3.12: Occupation



Source: Survey Data, Q 2.2. (N=72). Note: Because respondents were able to select multiple responses, totals will not add up to 72.

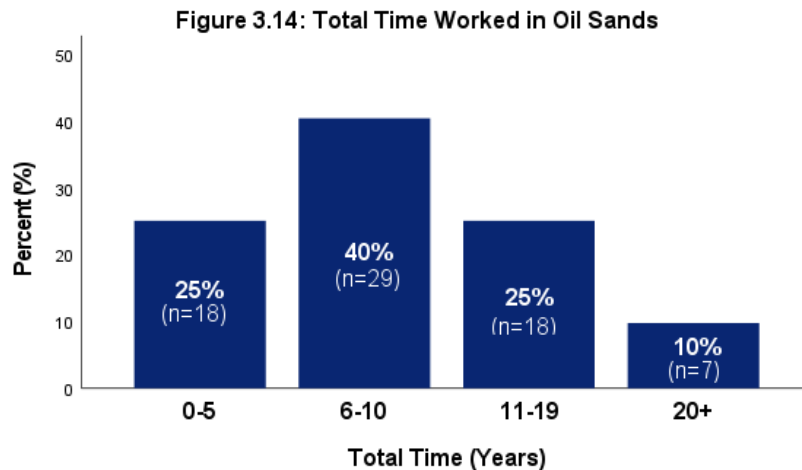
Participants' years of experience in their particular occupation ranged from 1 to more than 20 years, with the largest percentage having 11-19 years of experience. There was a significant gender difference here: 32% of female participants had 1-5 years' experience, compared to 8% of male participants.



Source: Survey Data Q. 2.4, (N=72). Experience refers to approximate years in the workforce, not necessarily in oil sands. See Figure 3.14 for comparison.

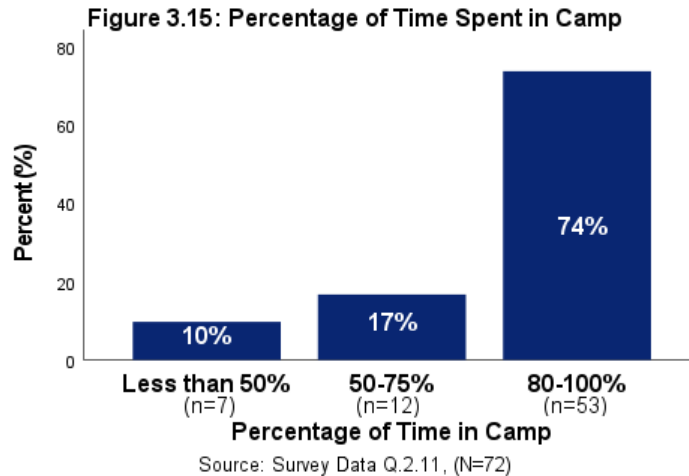
In terms of years worked in the oil sands, some 40% had worked in the oil sands industry for 6-10 years, with no notable gender differences. These findings are notably different from the RMWB 2012 census, in which 63% of work camp dwellers had worked less than five years;

again, this is most likely an effect of the construction boom at the time. The distribution of years of experience in the OSCA operational workforce study (Nichols Applied Management 2018) is more similar to the MWMH study.



Source: Survey Data Q. 2.10, (N=72).

Camp stays were the norm for our participants, with three-quarters (74%) indicating that they had stayed in camp for 80-100% of their working time in the oil sands.



Importantly, the MWMH survey also asked about whether participants had worked continuously or on and off in the oil sands industry, and the length of time they had worked with their most recent employer. As seen here, some two-thirds had worked on and off and had worked for their current or most recent employer for five years or less—with 38% having worked for their current employer for less than one year. These statistics reflect the high percentage of participants working on contract and working in maintenance.

Figure 3.16: If more than one year, have you worked...

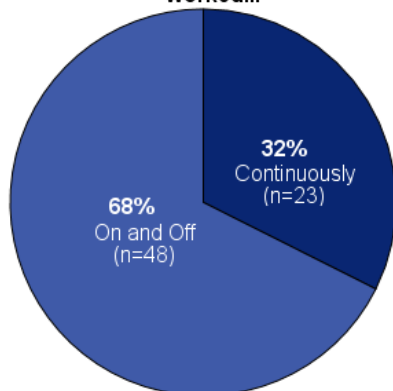
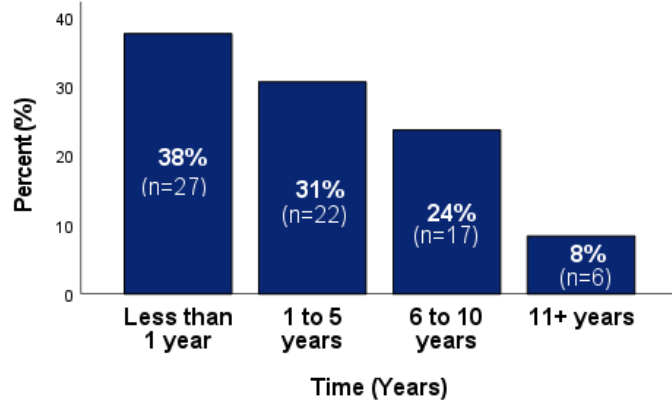
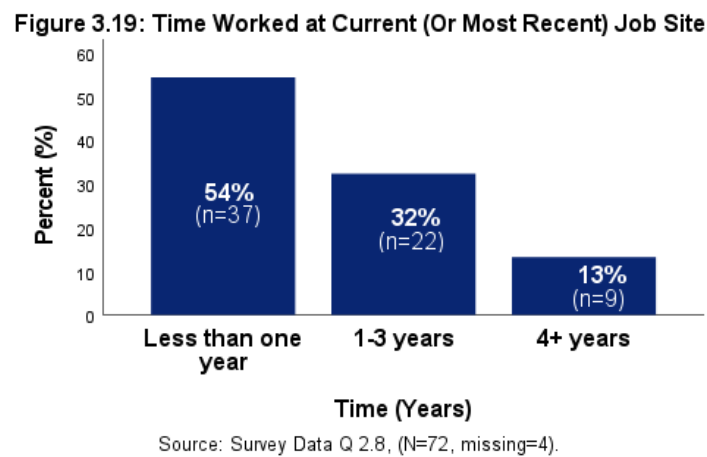
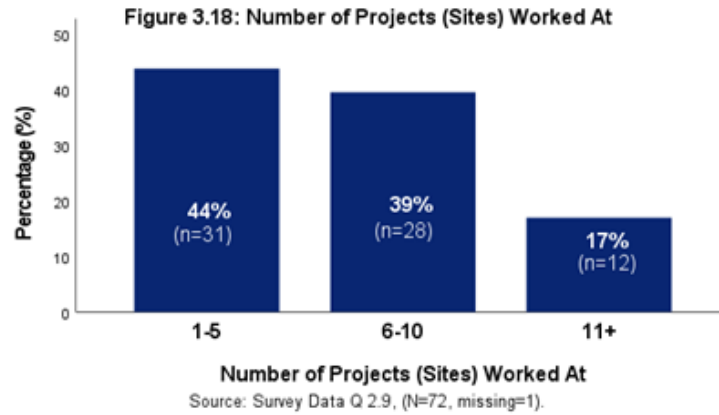


Figure 3.17: Time with Current (Or Most Recent) Employer

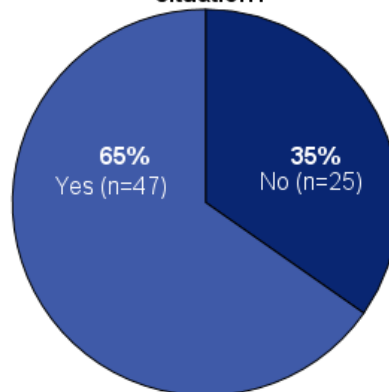


The on-and-off and changeability of contract and maintenance employment also means that workers are mobile not only between work and home but across job sites. Over half of our participants had worked at 6 or more job sites, and over half had worked at their current site for less than one year.



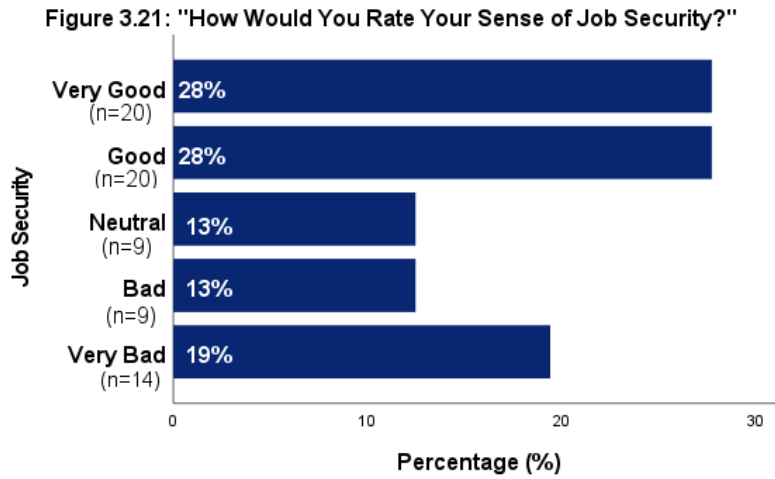
The contingent nature of work for our participants is also evident in experiences of major changes in their job situations. A surprising two-thirds indicated having experienced such a change in the past year.

Figure 3.20: In the past 12 months, have you experienced any major changes in your job situation?



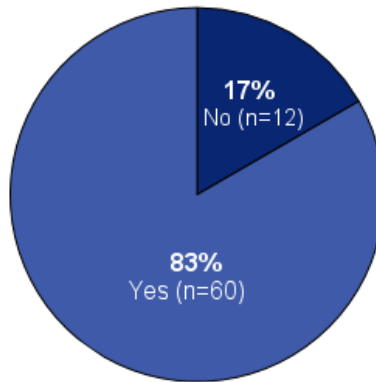
Source: Survey Data Q.2.14, (N=72).

Just over half (56%) of our participants rated their job security as good or very good. At the same time, however, one-third rated it as bad or very bad.



Finally, the vast majority of our participants (83%) indicated being a member of a labour union.

Figure 3.22: Currently a Member of a Labor Union?

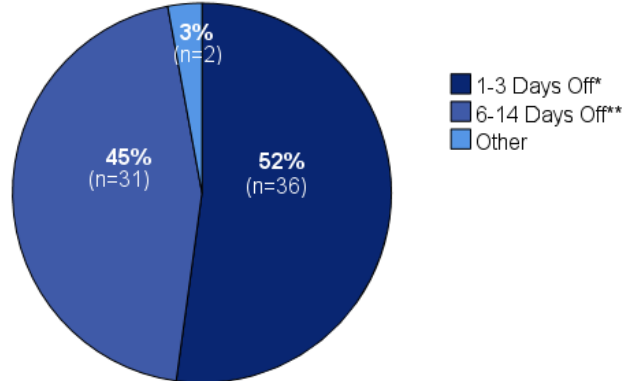


Source: Survey Data Q 2.6, (N=72).

ROTATIONS AND SHIFTS

Rotation schedule along with type and length of work shift are key components of FIFO work in the oil sands. We asked our participants to give us their current or most recent work rotation, and then re-coded their answers according to “short-off rotations” of 1-3 days off (with work stints of 6-18 days) and “long-off rotations” of 6-14 days off (with work stints of 7-18 days).¹ As seen here, our participants were almost equally split between these two categories of rosters.

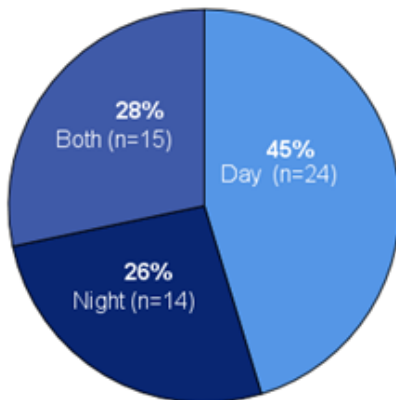
Figure 3.23: Current Work Schedule and Rotation



Source: Survey Data Q.2.15, (N=72, missing=3). Shift rotations are organized by number of days on plus number of days off, for example: 6+2 = six days of work followed by two days off. *6+1, 12+2, 11+3, 14+3, 18+3; **7+7, 14+14, 10+10, 11+9, 14+7, 15+6, 20+10, 20+8, 18+10)

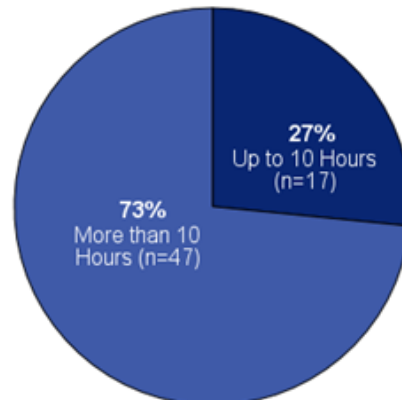
Among the MWMH participants who provided shift information, the highest proportion was working day shift, with the remainder working nights or a combination of day and night shifts. Some three-quarters (73%) were working shifts of 10 or more hours.

Figure 3.24: Shift Schedule



Source: Survey Data Q 2.15, (N=72, missing=19).

Figure 3.25: Shift Length



Source: Survey Data Q 2.15, (N=72, missing=8)

¹ This slightly differs from the approach taken by Parker et al. (2018), who considered rotations (rosters) by “ratio”, i.e. time for “recovery” relative to time worked.

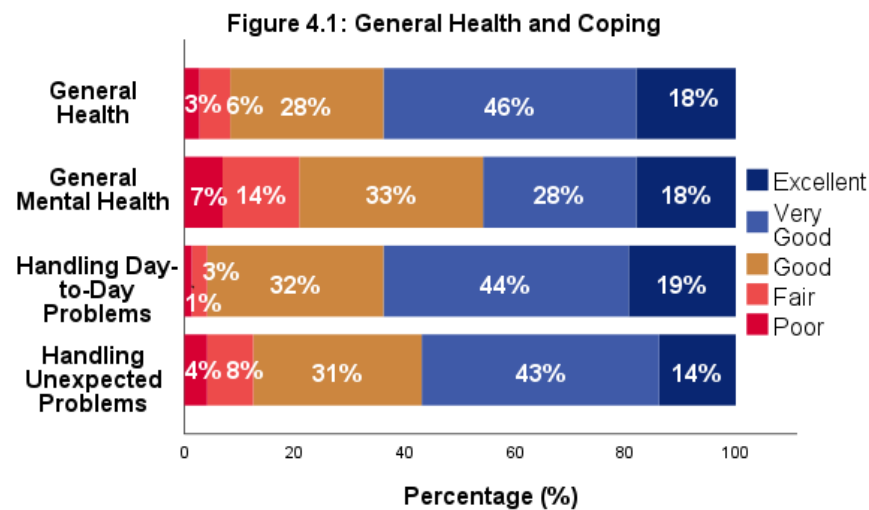
4. HEALTH, MENTAL HEALTH, AND STRESS

Highlights

- Participants' reported mental health and levels of daily stress were significantly worse than is found in the general population.
- Daily stress was significantly higher among racialized people and women.
- Nearly 80% reported "somewhat" or "a lot" of stress from both work and financial concerns, with one-third agreeing that most days at work are stressful.
- Supervisors' wellbeing is notably poor: they reported worse general mental health and stress, citing high work demands and the stress of managing work crew safe and healthy.
- Almost half reported diagnosed long-term health conditions, with non-white participants and those working on and off being more likely to do so.
- Higher levels of work-related and daily work stress were correlated with having a diagnosed long-term health condition and seeking help for mental health issues.
- Cumulative effects are suggested: people who had worked continuously in the oil sands reported worse mental health, and people who had worked a longer time for their current employer reported higher daily stress and higher job stress.
- Some two-thirds of respondents reported significant life changes affecting their health in the last 5-10 years; 76% indicated having been affected by the economic downturn, and 68% by the 2016 wildfire.
- Participants interviewed in the early months of COVID-19 pointed to growing anxieties stemming from unpredictable travel, new rounds of layoffs, increased workloads, and work and camp conditions conducive to transmission.
- Nearly 80% reported working when sick and one-third reported not taking time off work for an injury. 33% reported difficulty carrying out their work due to health issues.

GENERAL HEALTH AND MENTAL HEALTH

The MWMH survey asked participants about their general health in order to better contextualize mental health and stress related to FIFO work (Section 5). Of the four general reported health measures among our survey population, general mental health stands out: only 46% reported it to be very good or excellent, and 21% reported it to be fair or poor. *This is notably worse than in the general population, two-thirds (67%) of whom report their general mental health to be very good or excellent, and only 6% as fair or poor* (Statistics Canada 2020b; Government of Canada 2006; Grey Bruce 2017; cf Bowers et al. 2018).



Source: Survey Data, Q 1.13_1, 1.13_2, 1.13_3, 1.13_4. (N=72).

The following groups of people were likely to report *poorer* general mental health:

- single or divorced/separated (as opposed to married)
- without children (compared to those with)
- working continuously (rather than on and off) in the oil sands
- supervisors
- people in their 30s.

There is overlap between supervisors and people in their 30s in the study population. As seen in subsequent sections, these are two groups for whom a series of stressors and mental health issues arose. Impacts of working continuously are also found throughout the study, suggesting cumulative effects.

There were no significant differences between men and women in these general health measures, but gender differences did arise in more specific measures of stress and wellbeing, as seen below. (Women in Canada overall tend to report poorer mental health – CCHS 2018.)

Not surprisingly, job security was related to ability to handle unexpected problems and day-to-day demands. Research indicates connections between perceived job insecurity and mental health issues such as depression and anxiety (Kim et al. 2021; Watson and Osberg 2018), with links to suicide (Bilsker and White 2011). In our study, the poorer the rating participants gave to their job security, the poorer the rating they assigned to their ability to handle unexpected problems and day-to-day demands (cf Probst et al. 2007).

A social determinants of mental health approach calls our attention to contextual relationships between the workplace and life outside. Workers' comments on their negative ratings of mental health or their ability to handle problems and demands echoed what we found more broadly in the study: a complex combination of work and life issues.

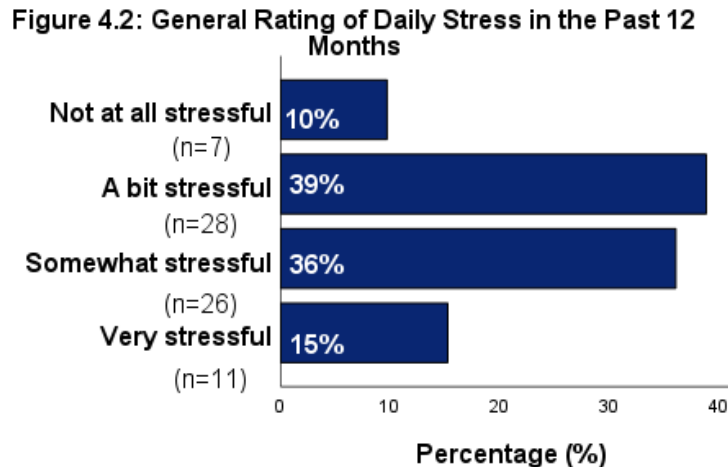
- Workers said that relationship stresses and social disconnection were caused or deepened by the isolation and distance from home. One dubbed his broken relationship to his partner a “victim of Fort McMurray” and another pointed out that he was just a “visitor” when he returned home. Another listed off work, money, greed, and sleeplessness as weighing on him.
- As has been found in other studies, the realities of FIFO distance and back-and-forth take a toll on mental health, but *where* this occurs can vary (Dorow and Mandizadza 2018; Parker et al. 2018). For example, one participant said of his mental health, “excellent when home and fair when up there”; another flipped this, saying that he felt alienated when back home and unable to control anything.

These connections are explored further in Sections 6-8.

STRESS

The survey also asked about general stress during most days over the past 12 months. Stress is a distinct and correlate measure alongside mental and physical health. Stress is a response to conditions, including conflict between external demands and amount of control, that effects mental health as it increases (www.ccohs.ca/oshanswers/psychosocial/stress.html). While generalized stress can stem from many corners, work is a key source of stress with long-term implications for a range of mental health disorders as well as numerous physical health issues (Pajovic and Shuey 2021; Crompton 2011; Goh et al. 2016). In the case of FIFO work, interrelations between work and not-work (home, camp) make it important to both discern different sources of stress *and* consider their overlap. It is also important to consider specific and differential effects on different subpopulations (note that stressors related to specific facets of FIFO are discussed below in Sections 6 and 7).

Half (49%) of survey participants indicated that most days over the past year had been “somewhat” or “very” stressful. *This is quite a bit higher than reported in the general population, where only around 20% report most days as “quite a bit” or “extremely” stressful (Chireh and D’Arcy 2018; Grey Bruce 2017).*²



Source: Survey Data, Q6.7. (N=72)

General daily stress was significantly higher among racialized people, women, people in their 30s, and supervisors. This echoes other findings regarding mental health among these groups (Statistics Canada 2020b; St-Pierre et al. 2019). Supervisors, for example, may face more complex demands and longer working hours, leading to inter-role conflict (e.g., with family) (Schieman et al., 2006) and difficulty coping (Ipsos 2017).

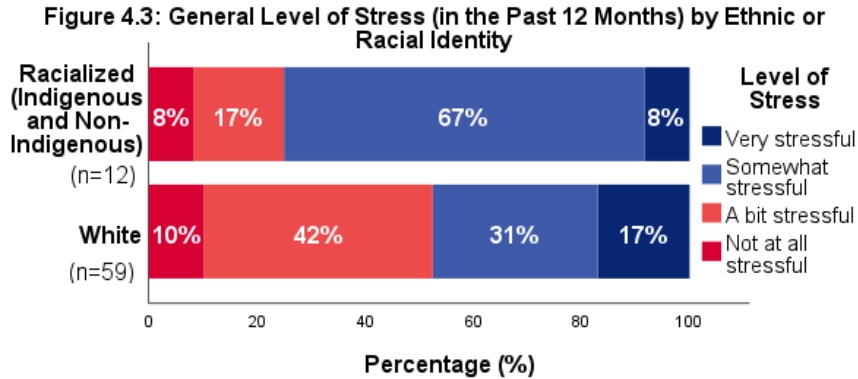
² Different scales were used in the comparison data. Even taking these into account, the percentage experiencing more than a bit of stress appears to be higher in the FIFO study.

As the following comments from anonymized participants show, **supervisors' experiences with stress** stem from responsibility for overseeing demanding work, keeping crews safe, and trying to help workers with mental health needs with too little support from employers. They often carry these burdens back home with them.

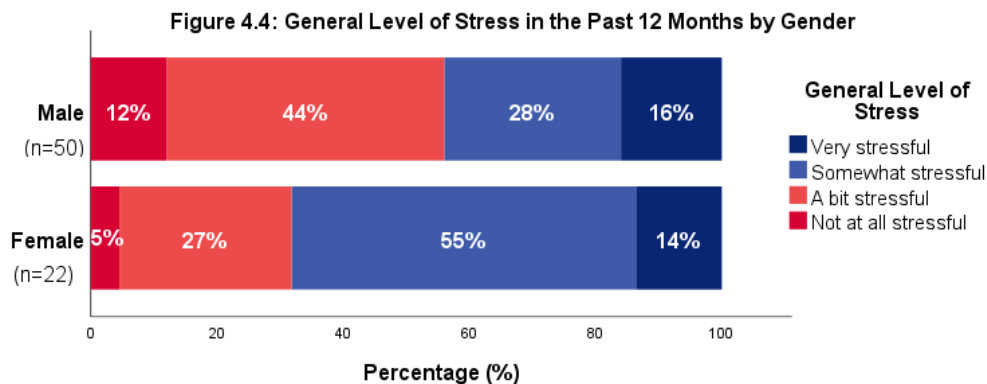
Trevor is a foreman *"responsible for setting up the night and the day shift for success."* Since he became a supervisor, he also works when home (off rotation) to make sure that he *"didn't leave them in a bad situation"* and that everything is *"done properly."* Trevor thinks that the work he performs as a supervisor is *"more mentally taxing"* than when he was a laborer. As a foreman, Trevor has *"a lot of OHS responsibilities"* that he says are *"always on my mind,"* particularly when new people are joining the crew. Trevor defines the work that he does as *"dangerous because we use a lot of high-pressure washing, you can cut really bad, we had a few guys cut their feet."*

Kyle is also a supervisor. Oftentimes, he feels that he is *"expected to deliver on the mental side"* of the *"extremely physically taxing"* work that his trade is exposed to. As a result, taking care of his crew *"completely wipes me out."* The *"stress levels and anxiety are always the worst aspects"* of his job, and he carries these back home. Kyle thinks that his tension levels come from multiple sources of high expectation: his own, his employer's, and the site's. Having experienced the loss of two of his crewmates and friends, he tries to make sure to build confidence with his team to support them if they are struggling with life's harsh circumstances. He has advised them to seek help if they need to be heard: *"Don't ever think that you have to contain this stuff within yourself because it will stew and it will consume you, and it will destroy you."* However, he feels *"at a bit of a loss for what to do to help people."* Kyle puts pressure on himself because he *doesn't "want to fail"*; he does everything he possibly can to ensure that nobody gets hurt. He says he cares deeply, even if his *"company might not."*

As a supervisor, Brian is also concerned for the people that he works with, aware that *"everybody loses if someone gets hurt."* Brian seeks to *"draw the best out of people,"* considering that *"people are different."* He works closely with people with mental health conditions and aims to find ways to support them. However, he is a bit frustrated that employers *"put the onus on us"* supervisors to create a mentally healthy environment when mental health issues need to be addressed at a broader institutional level.



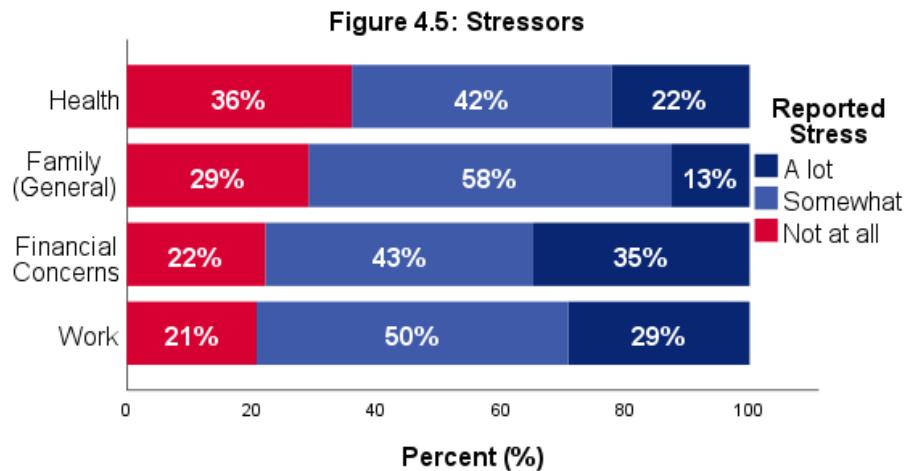
Source: Survey Data, Q 1.3; 6.7. (N=72, missing=1).



Source: Survey Data, Q1.2; 6.7. (N=72)

Higher levels of stress among racialized workers can be explained in part by a higher proportion of long-term health diagnoses, as discussed below. In the case of both racialized workers and women, we must take into account parallel health disparities found in the general population (Pederson et al. 2010; Siddiqi et al. 2017) as well as other conditions of work, including discrimination and harassment. Female participants often commented on the generalized stress that stems from being the only woman (or one of very few women) in camp or on a worksite, which means being under scrutiny and constantly on vigil in the face of sexual harassment (Kelly 2020).

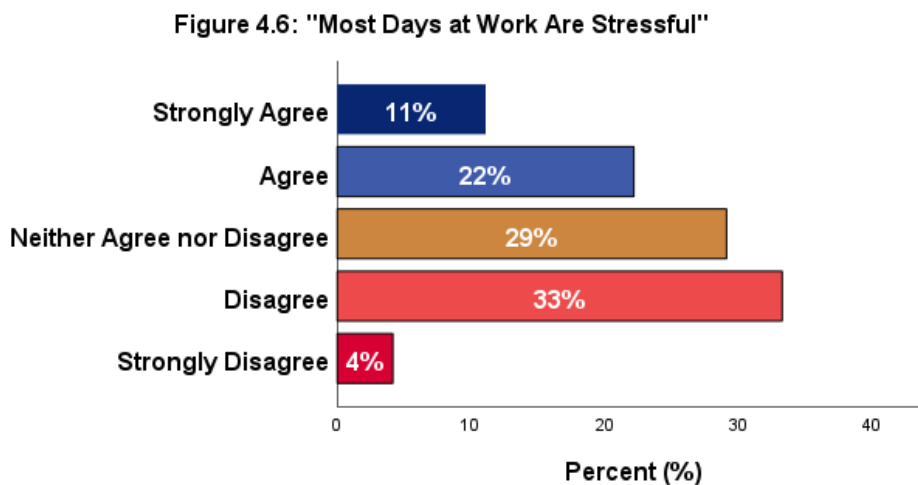
The survey also asked about stress stemming from specific facets of people’s lives. As might be expected, there was a high correlation between family stress and having children—although how this is exacerbated by FIFO conditions is worthy of further study in Canada. (Note that stressors stemming directly from FIFO conditions, including distance from family, camp living, travel, and rotational schedule, are discussed in Sections 6 and 7.)



Source: Survey Data, Q 6.13_5, 6.13_3, 6.13_2, 6.13_1. (N=72).

Stresses from work and from financial concerns were the most acute, with nearly 80% of participants indicating “somewhat” or “a lot” (as opposed to “not at all”). Reported stress from work in the MWMH survey seems to be higher than found in surveys of the general population (Szeto and Dobson 2013; Pajovic and Shuey 2021; Employment and Social Development Canada 2016). Financial concerns are exacerbated by job insecurity (including fear of redundancy) and the cost of commuting (cf Ryser et al. 2016) and directly contribute to ill mental health for FIFO workers (Parker et al. 2018: 18, 76).

The survey also asked about stress experienced in the workplace. Our participants were almost evenly split between agreeing and disagreeing that “most days at work are stressful.”



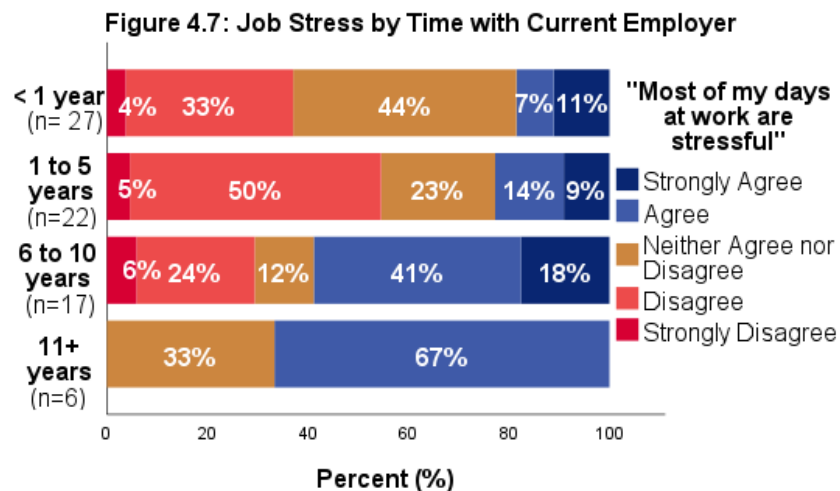
Source: Survey Data, Q 5.1_7. (N=72).

Workplace stress is reported by Canadians as the primary cause of mental health problems (Shepell and the Mental Health Commission of Canada 2018) and, in general, higher work-related stress is associated with likelihood of seeking treatment and being treated for mental disorders (Szeto and Dobson 2013). In the MWMH study, *levels of work-related and daily work stress were correlated with both diagnosed long-term health conditions and help-seeking for mental health issues.*

Higher daily stress at work was found among two groups:

- People in their 30s and 40s
- People who had worked a longer time for their current employer.

With regard to the latter, the percentages agreeing/strongly³ that most days at work were stressful ranged from 18% among those who had worked one year or less with their current employer to 67% of those who had worked more than eleven years for their current employer.⁴ This was one indication among several in the study of potential cumulative mental health effects from FIFO work in the oil sands.



The following groups were more likely to report stress from family (generally): people with children, people working continuously, and supervisors. In addition, participants' comments regularly connected family stress to the financial stress and uncertainty of work in a changing resource economy. As qualitative research shows, concern over the ability to provide for family is exacerbated by how much people give up in order to enter FIFO work (Parker et al. 2018; Dorow and Jean 2021).

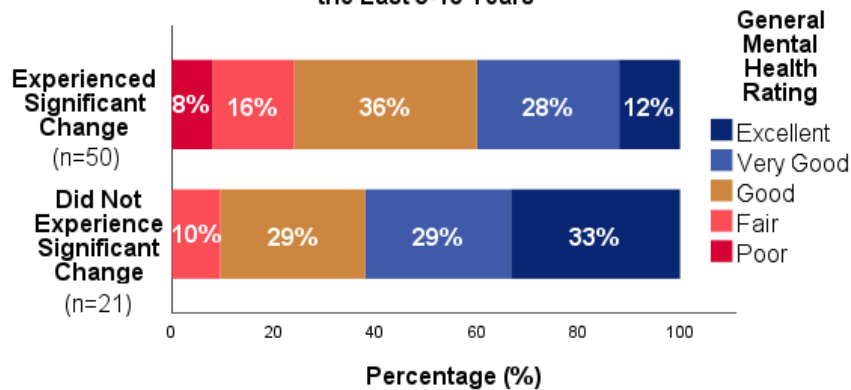
³ Throughout the report, we use “agree/strongly” or “disagree/strongly” when combining values from each end of the scale, i.e., to mean “agree or strongly agree” or “disagree or strongly disagree.”

⁴ Note that some survey respondents used their length of time working with the union as “length of time with current employer.”

SIGNIFICANT LIFE EVENTS

Mental health is often highly correlated with significant life events, and that bears out in this study. Some two-thirds of respondents (n=50) reported experiencing significant life changes affecting their health during the last 5 to 10 years. This is higher than in some other studies (El-Hajj and Benhin 2021). Challenging life events are correlated with mental health: 62% of those who did *not* report such an event rated their mental health as very good or excellent, compared to 40% of those who *did* report such an event.

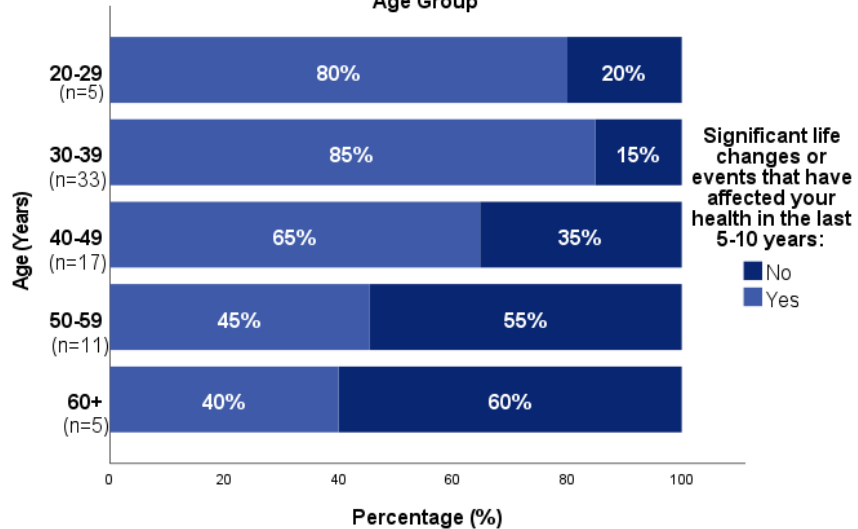
Figure 4.8: General Mental Health by Significant Life Changes or Events in the Last 5-10 Years



Source: Survey Data, Q 1.13_2, 6.3. (N=72, missing=1)

Significant life events affecting health were more likely to be reported not only by some of the same groups reporting poorer mental health—*single and divorced/separated, childless, and 30-39 year olds*—but *also by women and racialized people*. 80% of 20-29-year-olds and 85% of 30-39-year-olds reported such events. These age groups may be more likely in general to be open about such events and their impacts. This is also often a time in the life course of more changes in work, education, and family situation.

Figure 4.9: Experience of Significant Life Changes or Events in the Last 5-10 Years by Age Group



Source: Survey Data, Q 1.1; 6.3 (N=71, missing=1)

PARTICULAR EVENTS: THE OIL BUST, THE WILDFIRE, AND COVID-19

Specific events and changes in economic, environmental, and social conditions can have a strong impact on workers' wellbeing. The survey asked FIFO workers if and how they had been affected by the downturn in the oil markets over the last several years and/or by the wildfire that devastated Fort McMurray and nearby communities in 2016. (The pandemic did not begin until we were almost done administering the survey.)

Some three-quarters (76%) of respondents indicated that the downturn had affected them. When invited to indicate how they had been affected, participants pointed most often to the stress and anxiety accompanying job loss, potential job loss, or new uncertainties with the conditions of contract work. They pointed to less work available, more work expected, greater uncertainty, and decreased wages (often through re-negotiated contracts or collective agreements). Some had been "pushed back into" FIFO work due to job losses in their home communities. Others did not know when they might get another contract; one currently unemployed trades woman was on the edge of losing her house as a result. A couple of people with homes in Fort McMurray had experienced irreversible loss in property value.

Kristy experienced a major change in her work life when she **lost her permanent job** and moved to being an outage (shutdown) worker in the oil sands. Becoming a *"transient worker"* during shutdowns has affected Kristy's mental and physical health in different ways. Kristy dislikes the *"uncertainty"* of the shutdown lifestyle: *"you feel kind of certain that you're going to have a job in the spring, but you are never sure. . . And sometimes, they call you at really weird times that you're not expecting, and just expect you to drop your life, and just go to work for eight weeks, [...] and isolate yourself into camp without warning."* On top of that, Kristy thinks that the *"changes in the pace of work"* from full-time work to the outage work increased her sense of anxiety. Kristy perceives that the work she performs during the shutdowns needs to be *"done really fast, and it's pushed hard there."*

As for the wildfire, 68% said it had affected them—most who said "no" indicated they were not working in the oil sands at the time. Those who were affected mostly spoke of disruptions to work, evacuation experiences, the devastating losses experienced by co-workers and friends in Fort McMurray, the chaos when evacuees were temporarily sheltered in nearby work camps, and frustration with communication and management decisions. Some spoke of this as a "collective trauma"—one that intersected with the already challenging anxieties of the downturn—and others pointed to the high stress for family members back home as they watched events unfold from afar.

The COVID-19 pandemic unfolded as we moved into the interview phase of the MWMH study. While its impacts are changeable and ongoing, we summarize here what we learned from interviews about the many ways that the early months of COVID-19 affected FIFO workers in the oil sands.

FIFO workers interviewed in **the early months of the COVID-19 pandemic** (April and May 2020) referred to the onset of a *“fear driven-atmosphere”* in their working lives. As Kyle put it, *“Everybody is just, kind of scared [...] You got children and young families and they have to go home on their days off and still isolate. They can’t see their kids.”* In camp, they were asked to *“wear a mask and sanitize hands and, we all keep our six feet rule. I take my vitamins, and if anyone coughs, I run away, screaming [...] Everybody’s so panicked, like they just, they do not want anybody anywhere near.”* If someone did get sick, then *“it’s like, ‘you’re gonna sit in camp for two weeks”* and isolate, unpaid; in some cases, as Tara pointed out, *“you can sign a waiver and go home and self-isolate for 14 days.”*

Stresses around changing schedules and travel conditions were also high. Caught in changes around both, Trevor missed the beginning of his shift as a foreman; and then once he was back at work, he ended up staying more than two months— away from his wife and young children back in Atlantic Canada—due to cancelled flights and the need to quarantine. He and others described arduous new journeys; as Brian put it, *“some people, they’re living in Montreal and they’re able to come to work but [now] it’s like two days of flying to get to Fort McMurray.”*

Going home was also stressful because of the uncertainty of returning to work. Contract workers were especially affected by the layoffs induced by COVID and the economic downturn. Chuck said it was *“stressful, going home, ‘cuz the whole time you’re kind of wondering if you’re gonna get a call in, like ‘yeah, no, don’t bother coming back’.”* Kyle was worried about *“lots of friends who are contractors who may not survive these last four months, ‘cuz they just don’t have work for them.”*

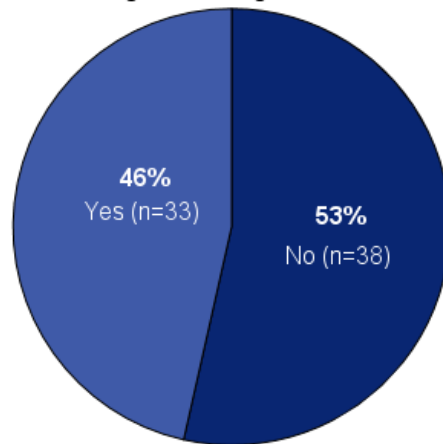
Layoffs also brought added stresses to those still working. Kyle, a supervisor, felt fortunate to have a job but was experiencing a *“completely new and foreign kind of stress [under COVID]. We’re being told to deliver the same quality and the same timelines, with no people [...] And it’s not even as much directly from the client anymore, it’s from our, our own contractors. A lot of us have sort of stood up and said, ‘Well no, this can’t be done’ and we’re basically just being told, like, ‘Do it or there’s a hundred people behind you that’ll do it for you’.”*

There were some possible upsides stemming from the pandemic. Tara mentioned increased attention to mental health in the wake of the pandemic, and others were hopeful that new schedules might stick. As Trevor put it, *“They’re looking at moving to the 14 and 14, which would be good. It would cut out three extra flights a year, which is a lot of money. I have more time at home because you lose two days automatically from traveling.”*

DIAGNOSED LONG-TERM HEALTH CONDITIONS

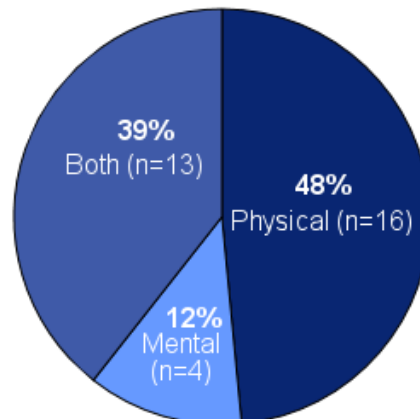
As we might expect, there was a correlation between significant life events and diagnosed long-term health conditions, both of which also correlated with reported difficulty handling unexpected or difficult problems. Just under half of survey participants (n=33) reported a diagnosed long-term (LT) health condition. Of these, about half were described as physical health conditions, and the other half as mental health conditions or both (physical and mental). These percentages are higher than has been found in surveys of the general population. Fourteen percent of Canadians ages 12 and older report a diagnosed mental health condition (Statistics Canada 2020b), and 17-21% of people in the workplace do so (Ipsos 2017; Canadian Centre for Occupational Health and Safety); 44% of the population reports at least 1 of 10 common chronic illnesses (Public Health Agency of Canada 2019).

Figure 4.10: Diagnosed Long-term Health Condition



Source: Survey Data, Q 6.4. (N=71, missing=1)

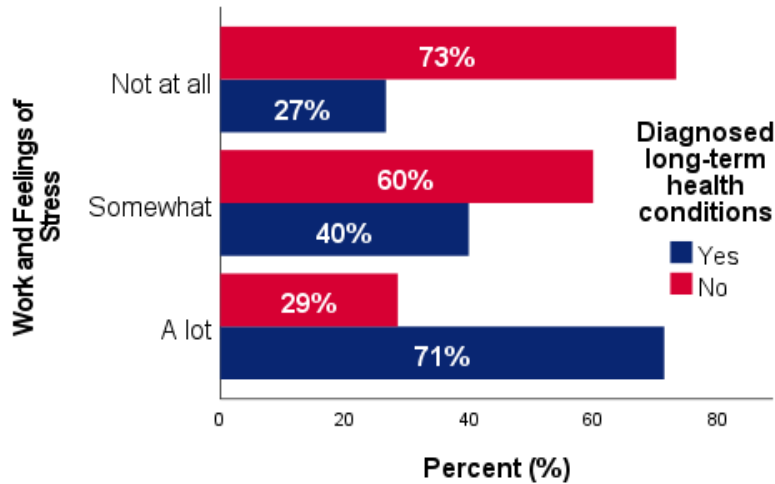
Figure 4.10a: If Diagnosed with a long term health condition, would you describe it as...



Source: Survey Data, Q 6.4A. (N=33, includes only respondents with diagnosed long-term health conditions, per Q6.4.)

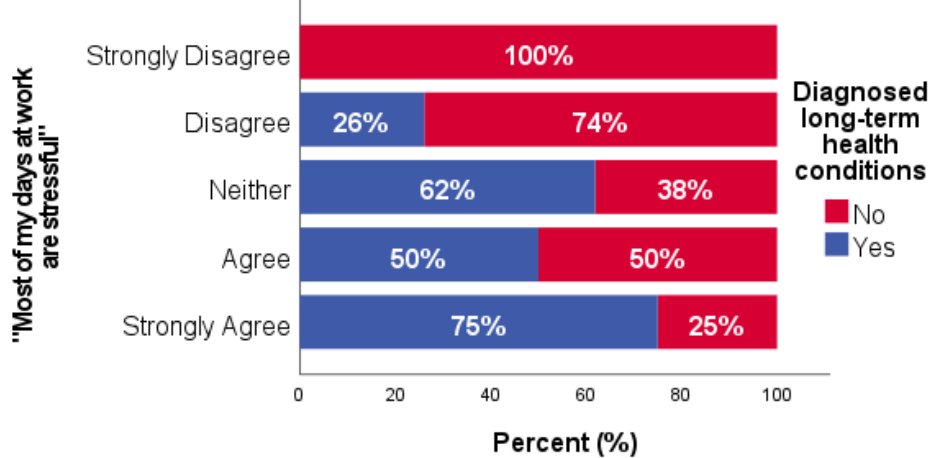
Echoing the literature (Ohrnberger et al, 2017), higher levels of work-related and daily on-the-job stress were correlated with having a diagnosed long-term health condition.

Figure 4.11: LT Health Diagnosis by Amount of Work Stress



Source: Survey Data, Q. 6.13_1, 6.4. (N=72, missing=2).

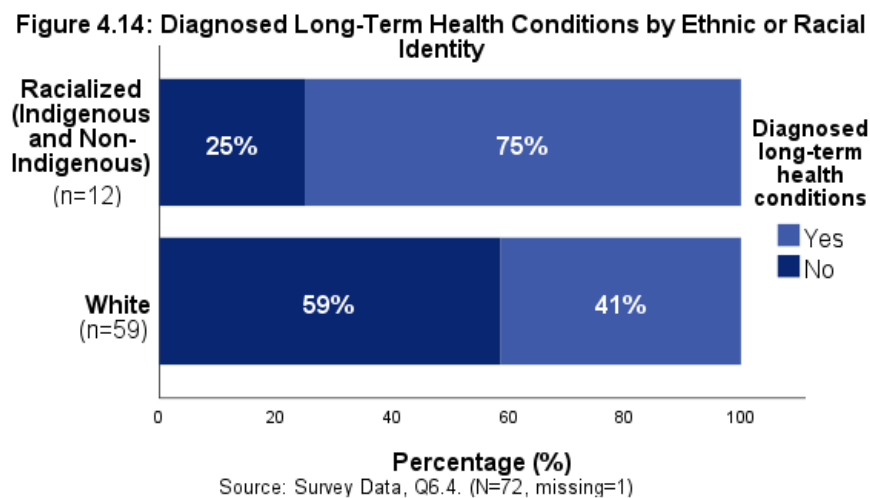
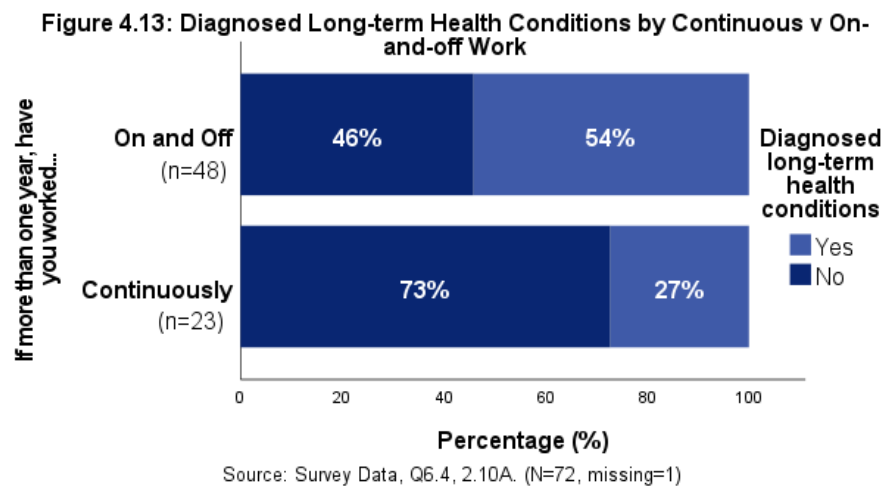
Figure 4.12: LT Health Diagnosis by Daily Stress at Work



Source: Survey Data, Q. 6.4, 5.1 7. (N=72).

What's more, our data suggest a relationship between levels of work stress and *type of LT diagnosis*. Participants reporting a lot of stress were more likely to describe their LT condition as "both" physical and mental, pointing to possible compounding health effects of work stress in the oil sands. (Note: correlations between stress emanating from FIFO conditions and diagnosed long-term conditions were not strong.)

Diagnosed LT conditions were significantly more likely to be reported by people *working on and off* and people who identified as *racialized non-white*. 75% of the latter group reported diagnosed LT conditions. This is consistent with studies that show racial inequalities in health and health care in Canada (Pederson et al. 2010; Siddiqi et al. 2017); it is also important to note that racialized participants were more likely to be working on and off (rather than continuously) in the oil sands, indicating compounded precarity in their job situation. Job precarity and insecurity can contribute to long-term health issues, with some evidence for the reverse being true (De Witte et al. 2016; Burgard 2020).



Type of diagnosed LT condition in relation to demographic and work characteristics is also worth noting:

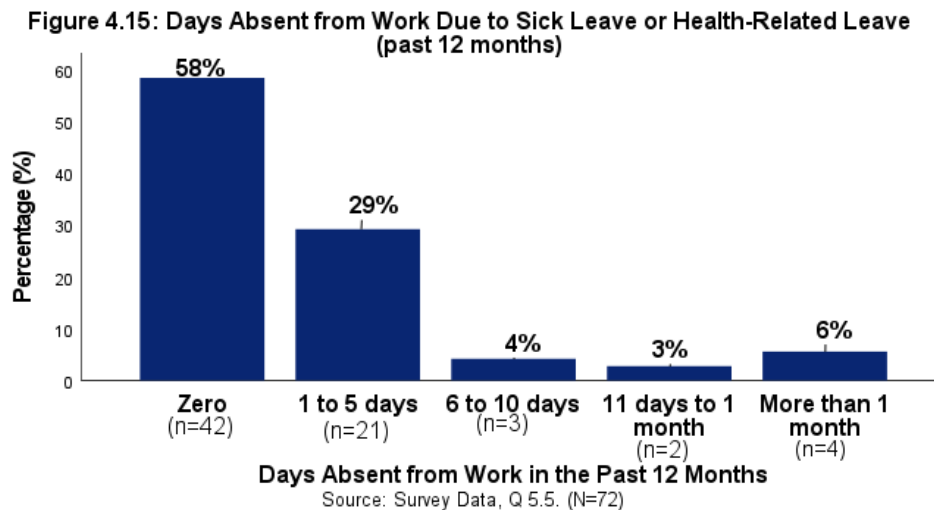
- People in their 30s, and supervisors, were more likely to report their conditions as “both” physical and mental; 66% of supervisors with a diagnosed LT condition did so, compared to 39% in the sample overall.

- People working on and off were more likely to report a physical health issue (rather than mental health or both). Physical health may be a factor contributing to the need or desire to work on and off.
- People reporting low job security were more likely to report a mental health issue only. Not surprisingly, our findings suggest a two-way street: while mental health challenges may be an effect of job insecurity, in some cases struggles with mental health had contributed to difficulty in maintaining steady work (cf Kim et al. 2021; Burgard 2020).

WORKPLACE SICKNESS AND INJURY

Finally, we consider effects of sickness and injury on work and ability to work. These are important for understanding “presenteeism” (an expectation of coming into work despite being sick), in/ability to carry out work, and mutual impacts of mental and physical health (Centre for Addiction and Mental Health 2020b).

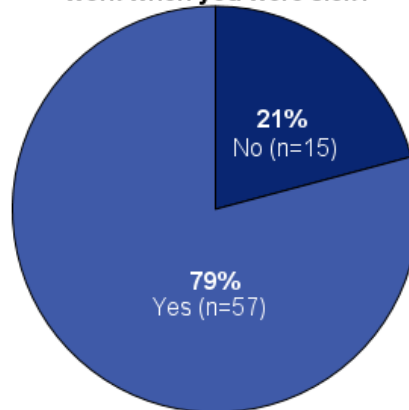
Among the MWMH participants, almost 60% of respondents had taken zero days of sick leave in the last year.



Racialized workers were more likely to have been absent from work more than five days over the past year, compared to the survey sample overall; this finding is consistent with the disproportionate number of racialized workers reporting a diagnosed LT health condition.

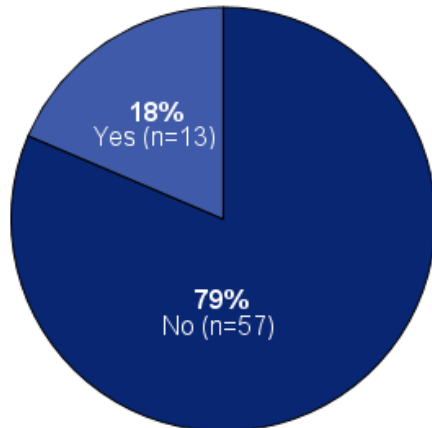
At the same time, nearly 80% of participants reported working when sick and one-third reported not taking time off work for an injury. Female participants were more likely to report taking time off for an injury.

Figure 4.16: Over the past 12 months did you work when you were sick?



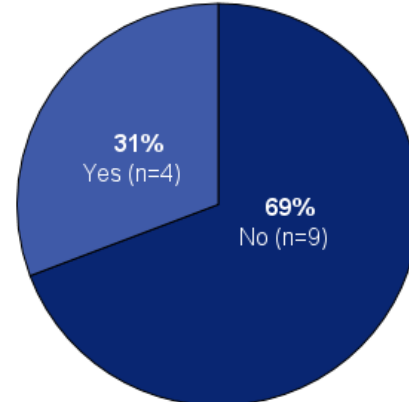
Source: Survey Data, Q 5.6. (N=72)

Figure 4.17: During the past 12 months, were you injured at work?



Source: Survey Data, Q 6.6. (N=70, missing=2).

Figure 4.17a: If Yes, did this result in time off work?

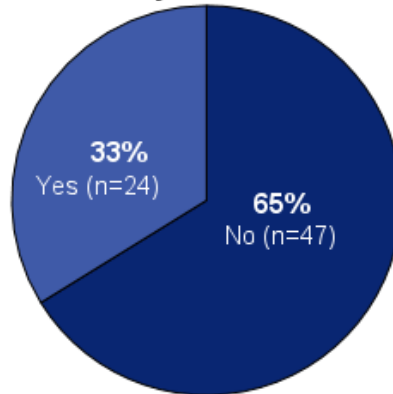


Source: Survey Data, Q 6.6A. N=13. Note: Only includes participants who reported an injury at work in Q 6.6.

When asked about working when sick, many respondents answered “of course” or something similar and then rattled off a list of viruses and injuries they had simply worked through. Some indicated that this was just “part of the job” given the physical work, long hours, being in close quarters with so many other people in camp, and expectations—of employers, and of themselves—that they are “there to work.” These conditions of FIFO work in the oil sands, combined with job insecurity, seem to contribute to this “presenteeism” (Centre for Addiction and Mental Health 2020b; Reuter et al. 2019 The relationship of this finding to a culture of non-reporting is discussed below in Section 9.

These trends are especially notable given that *one-third of respondents reported difficulty carrying out work due to health issues.*

Figure 4.18: Because of any physical or mental health issues, do you have any difficulty carrying out your work?



Source: Survey Data, Q 6.5 (N=72, missing=1).

The following subgroups were more likely to report such difficulties:

- working for a contractor
- lower rated job security and lower income
- working dayshift only
- in their 20s and 30s
- higher educational attainment.

These last two categories may be due to willingness and comfort around disclosure, although other findings suggest that people in their 30s were especially experiencing stress and poor health.

Insights from Valerie O’Leary (Critical Incident Stress Management-Fort McMurray)

When responding to sudden deaths on site, co-workers would often tell me they felt guilty, admitting they knew the individual was not well. Although they would suggest to the person that they seek medical attention, the worker would say they would see a doctor when off shift, they didn’t want to create more work for co-workers, the job needed to get done), or they couldn’t afford to miss work because they didn’t have sick days.

5. WORKING CONDITIONS IN THE OIL SANDS

Highlights

- In terms of *social relationships*, a majority of participants reported having trustworthy and affirming relationships at work and interacting with people (usually workmates) in camp. However, levels of social interaction were curtailed as workers more frequently moved across work sites.
- In terms of *sense of efficacy and control* at work, participants were mixed in how free they felt to decide how they carried out their work, and 64% felt there was constant time pressure. Those on short-off rotations (1-3 days off) and with a shorter tenure with their current employer felt less free—most likely these are people in more precarious contract work and/or working shutdown maintenance. Supervisors felt more decision-making freedom but also more time pressures.
- Almost all (86%) indicated no control over rotation and work schedules.
- In terms of *worksite morale*, less than half of respondents found it to be good (42%) or felt they received the respect they deserved (49%). More intensely negative rating of worksite moral was correlated with lower job security, lower income, and working night shift.
- Women (68%, compared to 36% of men) and Alberta-based workers were likely to report *discrimination*. Comments on discrimination pointed to sexism and sexual harassment; favouritism; height; and racism.
- In terms of *employer commitment to wellbeing*, over 40% of participants disagreed that there was good communication about psychological safety, that employers were committed to minimizing stress, and that management valued wellbeing as much as productivity.
- People reporting higher work stress or poorer mental health, and racialized non-white workers, were especially likely to poorly rate employer commitment to wellbeing.
- Results of the survey on employer commitment to wellbeing are a crucial component of a key finding of the study: a culture where health concerns are seen to take a backseat to productivity, timelines, and financial pressures for both employers and employees.

Working conditions and environment are an important social determinant of mental health and wellbeing. Wellbeing describes the quality of working lives. It has profound implications for workers' mental and physical health (Schulte and Vainio 2010; Tausig 1999) and influences productivity both on individual and societal levels (Fisher 2014; Schulte and Vainio 2010). Wellbeing at work depends on the work environment: the social organization of work, management styles, a culture of respect, interpersonal relationships with other workers and supervisors (sociality and psychosocial factors) and the quality of those relationships, job security, pay, hours of work, and other related factors (Utriainen, Ala-Mursula and Kyngäs 2015; Schulte and Vainio 2010; Wilkinson and Marmot 2003; Employment and Social Development Canada 2016; Canadian Centre for Occupational Health and Safety 2018; Kelloway and Day 2005).

Wellbeing at work has also been proven to depend on subjective factors like workers' perception of success at their job, experience of supportive and fair leadership, and the ensuing motivation, engagement, and productivity, or lack thereof (Fisher 2014; Utriainen, Ala-Mursula and Kyngäs 2015). Within the FIFO work context, researchers have found low morale, a perceived lack of employer support, inter-worker conflict, and bullying and discrimination (Miller et al. 2020; Parker et al. 2018; Ryser et al. 2016). In one of the most extensive studies of FIFO and mental health to date, Parker et al. (2018) found that satisfaction with personal relationships both on and off site had a significant effect across all mental health measures (23).

To understand workplace conditions and wellbeing, the survey asked about on-the-job stress, sociality (social connections and interactions), individual sense of autonomy and control, workplace inclusivity and respect, and work-life balance. We especially focus here on aspects of wellbeing related to the conditions of FIFO work, although in the lived experiences of workers, these overlap with characteristics of oil sands workplaces and work culture. The final two sections address findings regarding employer commitment to, and workplace culture around, health and wellbeing. This is important, given that the mental strain of high job demands can be mitigated by resources and supports (Parker et al. 2018; Bakker & Demerouti, 2007).

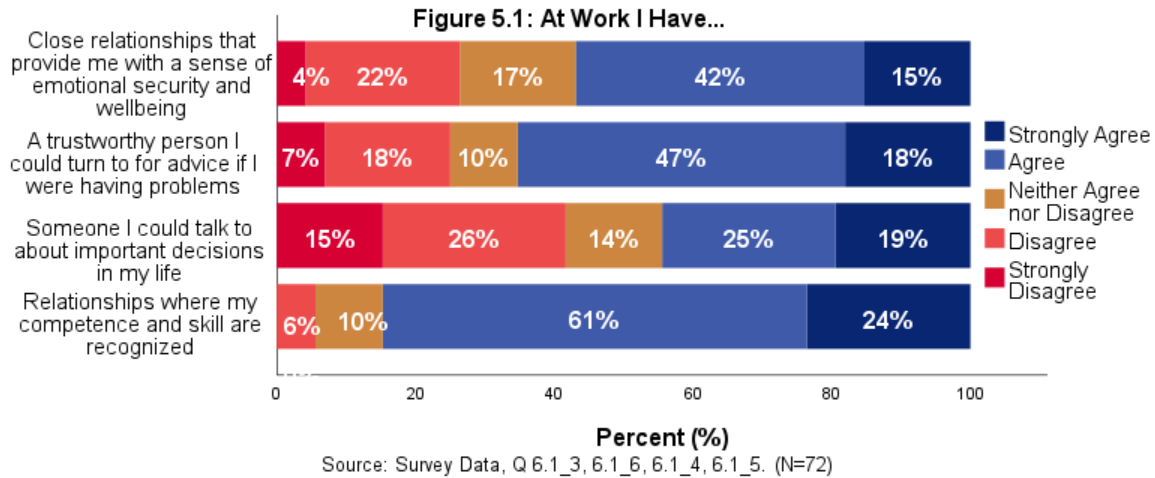
WORKPLACE TIES AND SOCIALITY - AT SITE AND IN CAMP

Social ties and social interactions—including the degree to which they promote help-seeking—are important for both promoting mental health and buffering against negative mental health (Kawachi and Berkman 2001; Parker et al. 2018). The survey asked about closeness of participants' workplace relationships, and also about degrees of interaction with workmates and in camp. Isolation and disengagement have been found to be a key factor in FIFO worker mental health (Parker et al. 2018: 16, 123).

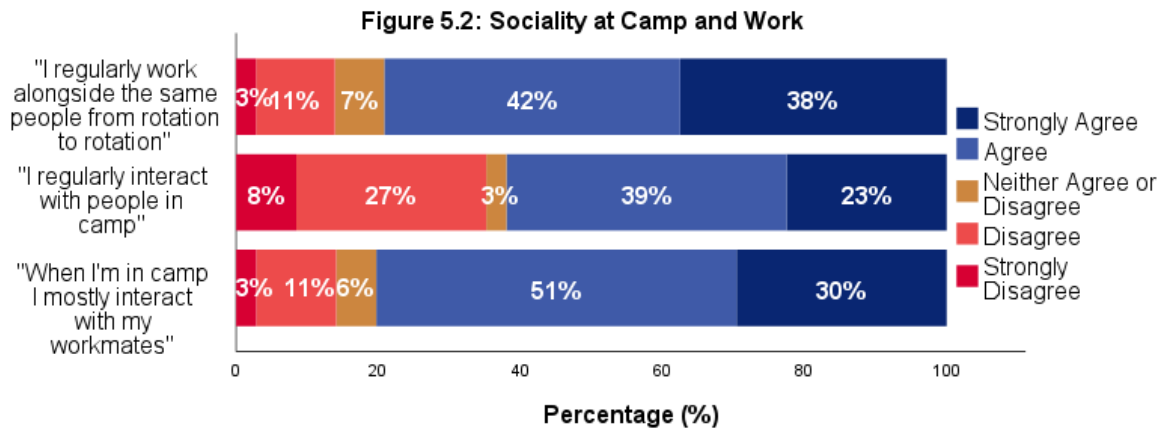
Just over half (57%) of participants agreed/strongly to having relationships at work that provided a sense of emotional security and wellbeing, with a similar percentage (65%) agreeing/strongly that they had someone to turn to for advice. Someone with whom they

could discuss important life decisions was less common, with 44% agreeing/strongly and 40% disagreeing/strongly.

What stands out is having relationships where competence and skill are recognized: 85% agreed/strongly. Subjective comments from participants expressed a great deal of pride in the skills they were able to exercise on the job and thus contribute toward a successful project (cf Construction Sector Council 2007). However, as discussed below, this individual recognition of skill did not necessarily translate to an overall sense of respect (these are compared to home-based relations in Section 8.)



Levels and types of social interaction are related to FIFO conditions: the degree and intensity with which people work alongside the same individuals and crews from rotation to rotation, the fact of living in camp for intense periods of time, and frequency of turnover and movement across sites (more common for contract workers) (cf Sellenger Centre 2013). More than three-quarters of the sample indicated mostly working alongside the same people from rotation to rotation. The chances of this depend on the stability of work situation and regularity of rotation schedule. For example, participants who had worked a longer time with the same employer, or who had worked continuously in the oil sands (rather than on and off), were more likely to report working alongside the same people across rotations.

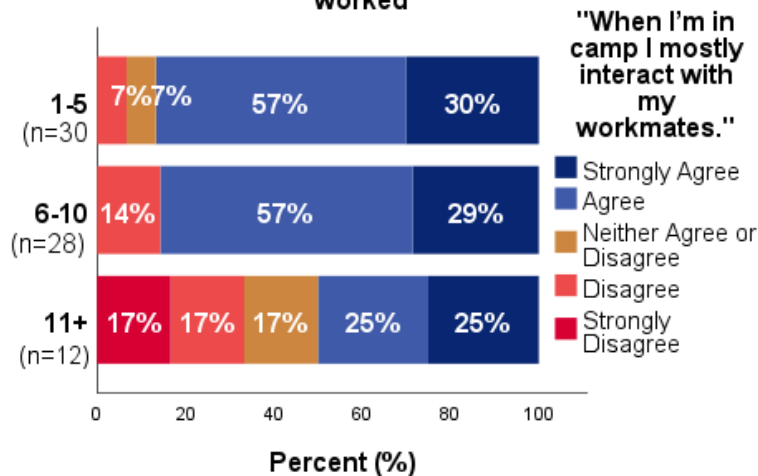


Source: Survey Data, Q 5.1_4, 4.1_5, 4.1_6. (N=72)

While not directly part of paid work, staying in camp is inseparable from “being at work” (Dorow and Jean 2021). The survey found that almost two-thirds (62%) of participants agreed/strongly that they regularly interacted with people in camp. There was a strong likelihood (with 86% agreeing/strongly) that interactions in camp were with workmates. Even among those who *disagreed/strongly* that they interacted regularly with people in camp, three-quarters of them (n=24) reported that when they did, they mostly interacted with workmates (n=18). Some also commented on interacting with camp staff on a fairly regular basis.

Levels of social interactions can be shaped not only by FIFO rotational mobility, but also by movement across sites and projects within the oil sands. The more sites survey

Figure 5.3: Interaction with Workmates by Number of Sites worked

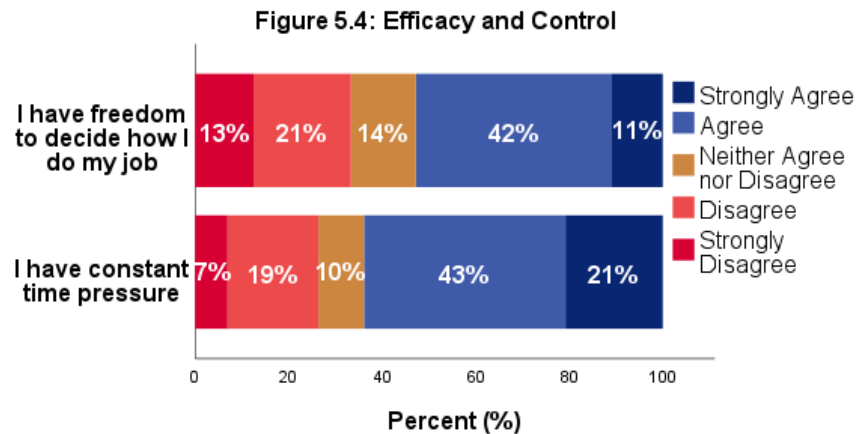


Source: Survey Data, Q. 2.9, 4.1_6. (N=70, missing=2)

respondents had worked at, the more likely they were to disagree/strongly that they interacted with workmates in camp. Note that a higher number of sites worked is also a proxy for certain types of intensive work, such as maintenance shutdowns, and our study included a relatively high number of these workers.

SENSE OF EFFICACY AND CONTROL

Another factor affecting wellbeing stems from individual sense of autonomy, efficacy, and control in the workplace, all of which relate to experiences of time pressure. As multiple studies show, heavy job demands accompanied by the lack of autonomy and control in the workplace may result in mental strain and stress for workers (Häusser et al. 2010; Johnson and Hall 1988; Karasek 1979; Bakker & Demerouti, 2007), with negative consequences for mental health.



Source: Survey Data, Q 5.1_1, 5.1_2. (N=72).

Only about half of the participants agreed/strongly that they had the freedom to decide how to do their jobs. However, this varied by demographics and working conditions. Some groups were *more* likely to indicate feeling freedom in how they did they work:

- supervisors
- those with long-off rotations, e.g. 7 and 7, or 14 and 7
- day and split shift workers
- workers with longer tenure with their current employer.

Time pressures are closely related to autonomy and control. Two-thirds of respondents agreed/strongly that they felt constant time pressures in their work. Supervisors reported relative freedom in their work but also pointed to time pressures that undermined their sense of control (cf CCOHS 2018; Bowen et al. 2014; Pinto et al. 2014). Some supervisors indicated putting this on themselves, and others resignedly said it came with the territory. In both cases, they commented on the stresses of managing a crew, responding to unpredictable demands, and being “in the middle” between upper management (often managers working for the operator) and people on the ground.

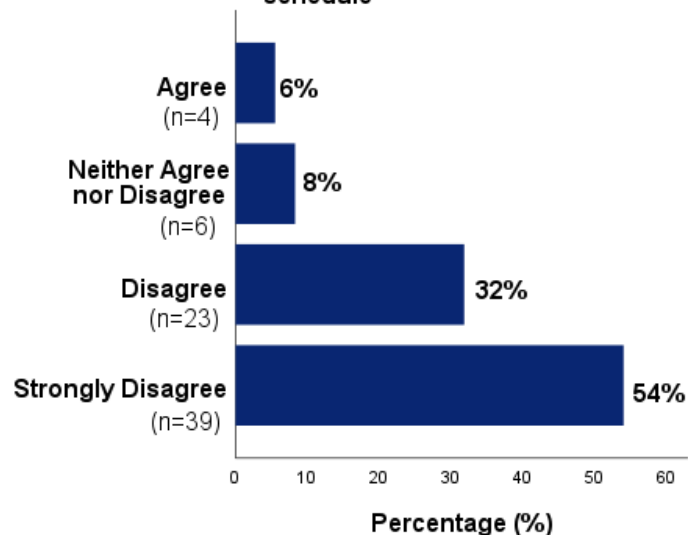
Insights from Valerie O’Leary (Critical Incident Stress Management-Fort McMurray)

Over the years, some managers/supervisors have reported that they felt stuck “being in the middle” when it comes to operations. Staying neutral can be a challenge between contractor and operator, and I often heard about some kind of disconnect between head office and the employees with boots on the ground. It might be helpful for head office personnel to visit site quarterly and meet with employees.

Another important job characteristic associated with time pressures is number of sites worked: the more sites participants worked, the higher the reported pressures. Note that a higher number of sites worked is also a proxy for certain types of intensive work, such as maintenance shutdowns, and goes hand in hand with the stresses of project-based work (Pinto et al. 2014).

One area in which workers clearly feel they have little control is *rotation and schedule*. Workers almost unanimously dismissed this as simply something one had to accept. “It is what it is” was a common refrain, even though research suggests it can make a real difference to levels of psychological distress (Parker et al. 2018). This feeling extended to the general volatility of work in the resource sector, which was understood to be an inevitably stressful facet of work conditions that one simply had to accept.

Figure 5.5: "I have some control over my work rotation and schedule"

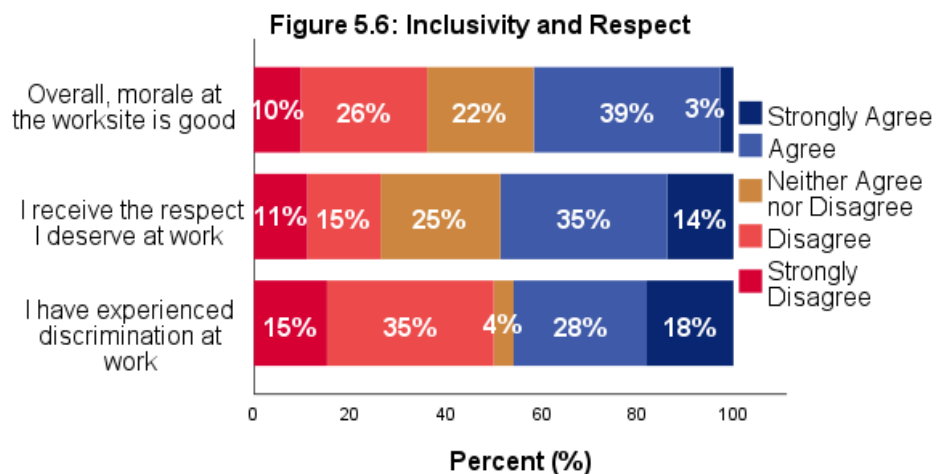


Source: Survey Data, Q 5.1_3. (N=72)

WORKPLACE MORALE, RESPECT, AND DISCRIMINATION

Inclusion, respect, and job morale are crucial for workers and their mental health. As social beings, people want to belong to the group and be recognized as its valuable members (Yuen and Binning 2008). Not feeling respected or treated equally may translate into negative mental health outcomes and disengagement from work (Smith, Tyler and Huo 2003; Kelloway and Day 2005). This may further lower morale and worsen social cohesion in the workplace, further damaging workers' mental health. In addition, respect and equal treatment from supervisors are crucial to workers. Studies show that perceived disrespectful and unfair treatment may lead to increased stress, absenteeism, and feelings of illness (Crompton 2011; Yuen and Binning 2008).

The survey asked a suite of questions related to perceptions of workplace morale, respect, and discrimination.



Source: Survey Data, Q 5.1_8, 5.1_5, 5.1_10. (N=72)

Only 42% of respondents agreed/strongly that morale at the worksite was good. In keeping with some of the other findings regarding workplace experiences, particular groups were more likely to give a negative rating to worksite morale:

- people with lower job security
- people making under \$65,000 per year
- night shift workers (some 57% disagreed/strongly)
- Alberta-based workers

The down-rating of worksite morale among those with lower job security and income can be explained by their relatively precarious position and possibly also by differential treatment. In fact, multiple studies show that workers who are paid less often feel demoralized and reduce their efforts on the job (Breza, Kaur, and Shamdasani 2018). The same applies to job insecurity (Asfaw and Chang 2019; Probst et al. 2007; Dekker and Schaufeli 1995). Regarding shift, other research has shown more dissatisfaction and stress among night shift workers (Parker et al. 2018). Differences between workers

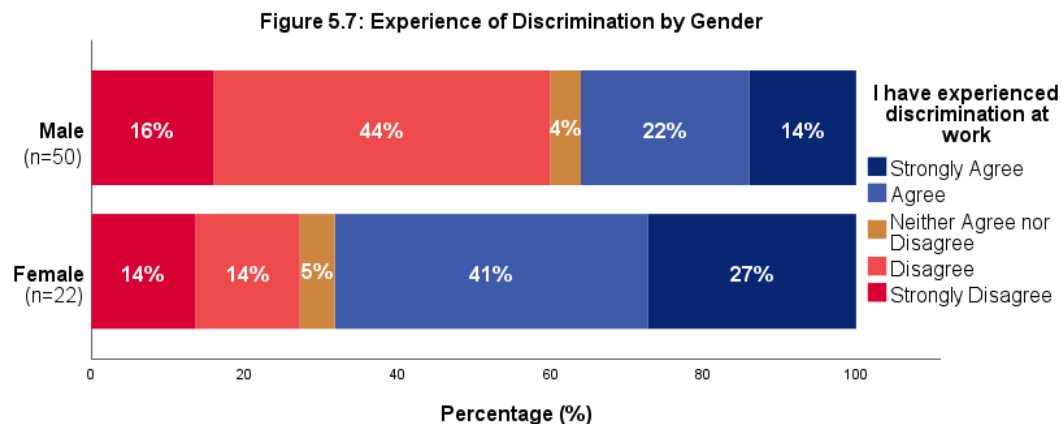
based in and outside of Alberta require further exploration, although this may have to do with other working conditions such as rotation schedule.

Only about half of the participants agreed/strongly that they received the *respect* at work that they deserved; this is lower than found in some other studies (Samra 2017). Certain groups stand out as especially aggrieved: single people and people in their 30s. Night shift workers were also much more likely to rate respect negatively.

Findings on *discrimination* help to fill out this picture in important ways. Nearly half of the survey respondents indicated they had experienced discrimination. This is more than *four times higher* than reported in the general working population in Canada (Ipsos 2017).

Two groups in particular were likely to report discrimination:

- women
- Alberta-based workers



Source: Survey Data, Q 1.2, 5.1_10 (N=72).

Other groups likely to report discrimination were people in their 20s and people with higher education, i.e., groups that might be more acculturated to identifying and naming discrimination (Cardarelli, Cardarelli, and Chiapa 2007; Chou and Choi 2011). When asked to comment, participants mostly referred to the following issues:

- sexism and sexual harassment (discussed by *two-thirds* of female participants)
- favouritism (e.g. nepotism, regional affiliation, job title or trade)
- height (being “too short” or “too tall”)
- racism.

Most notable in the study is gender discrimination and harassment, which has a direct effect on job satisfaction and mental health (Bowling and Beerh 2006) and is a continuing problem in the construction and resource extraction industries (Kelly 2020; Laplonge 2016; Nagy and Teixeira 2019; O’Shaughnessy 2011; Pirotta 2009). One

female participant's description of the range of stereotypes women encounter was echoed by a number of women in the study:

"Sexism. Like, you know, if I'm a girl at work, 'obviously' I want to sleep with one of the guys. Or I'm a girl, so 'obviously' I'm not good enough to do a job or I'm not strong enough to do a job."

Another participant pointed to the "bad old boys' network" by which she was overlooked for promotion or overtime hours even when she had clear seniority.

*Female participants offered understanding of their **experiences of gender discrimination and harassment** while working FIFO in the oil sands:*

Eileen commenced working in the oil industry in the late 70's. At that time, "women weren't very welcome"; previous to the late 80's, there were not even any women's bathrooms. "They didn't really have facilities to cater to women at that time". Nowadays, Eileen doesn't experience the same level of discrimination. However, she finds that discrimination against women has not disappeared.

Kristy is younger than Eileen, having entered the industry less than ten years ago. She thinks that women are still entering "in the land of men" when they go to work. Although, nowadays people "can't openly be sexist" against women, Kristy is sure that "every woman has faced some level of discrimination" in the oil sands. Women are assigned "tasks like cleaning up and stuff, and never asking the men to do it." In the oil sands "people have had issues being pregnant and being accommodated for the pregnancy because the companies don't wanna keep you on [because] they have to pay for your work out of their own pocket."

Marge has been in the industry for more than twenty years. She feels upset because "men still don't treat women with respect on the job, and most men don't even want you there." Marge thinks that women face a "lot of challenges" in camp, "the old-school mentality that women are not supposed to be on the job" is still shaping interactions among workers. Marge perceives that most men in this context believe that women are "supposed to be home" and "not supposed to make as much money as men."

It is not clear why Alberta-based workers were more likely to report discrimination, but it might be a combination of issues: women were disproportionately based in Alberta, as were men of colour; experiences with height-based stereotypes came up repeatedly among Alberta-based men; and for some, a sense of regional favouritism was at play. One male respondent said:

"I am fairly white-bread, but at the end of the day the oil sands is run by several small groups in other provinces. You have to be in the clique. If you don't fall in line you can ruin your career relatively easily."

Note that workers based elsewhere sometimes referred to Alberta workers as “entitled,” indicating complex readings and experiences of favouritism. Favouritism included a few complaints by white workers of reverse racism or by men of reverse sexism. Other issues included health, income, and language. We were most surprised by the concerns about height-based discrimination, mentioned by 6 respondents.

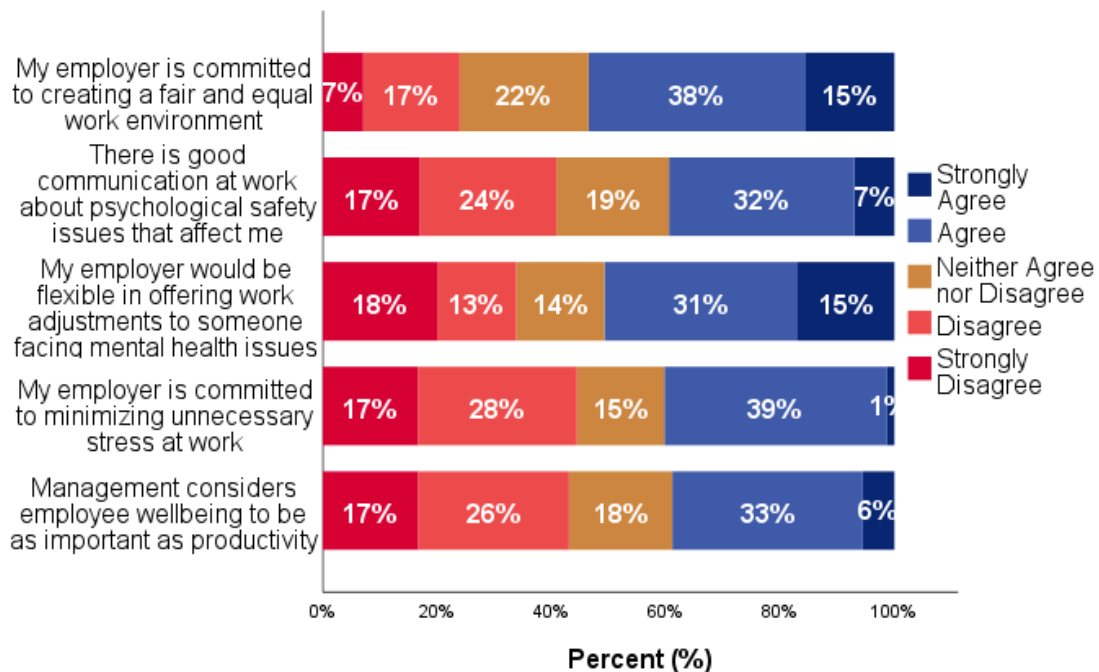
EMPLOYER COMMITMENT TO WELLBEING

A final and highly informative set of questions asked participants to rate their employers’ commitment to wellbeing in the workplace. Such commitment is directly correlated with workers’ experiences and perceptions of wellbeing. As research shows, perceptions of unfair treatment by organizations and supervisors can have a direct effect on mental health, burnout, and productivity (Ambrose and Schmike 2009; Stansfeld and Candh 2006; Cropanzano and Wright 2011). By the same token, support from managers and the organization can reduce strain and stress, including by creating an atmosphere in which workers feel it is safe to raise health concerns (Viswesvaran et al. 1999; Chiaburu and Harrison 2008; Mullen 2005); this is all the more important in male-dominated workplaces, where masculinist notions of resilience or competitiveness might preclude raising or addressing psychosocial health (Seaton et al. 2019).

Parker et al. (2018) point out that there is little to no research on the link between a “safety culture” and mental health. In the oil sands, reports on health and safety are only beginning to pay attention to mental health. Participants in our survey noted a strong safety culture—whether in organizational practice and/or lip service—alongside a perceived low commitment to mental health.

In the areas of workplace communication about psychological safety, employer commitment to minimizing stress, and management valuing wellbeing as much as productivity, a high percentage of our participants—*over 40% in each case—disagreed/strongly*, and a very low percentage (7%, 1%, 6%) strongly agreed. Overall, these findings indicate lower ratings of the working environment than found in other studies (Samra 2017).

Figure 5.8: Employer Commitment to Wellbeing



Source: Survey Data, Q 5.4_1, 5.4_2, 5.4_3, 5.4_4, 5.4_5. (N=72, except "My employer is committed..." (n=71), "My employer would be flexible" (n=65), and "There is good communication..." (n=71)).

As discussed elsewhere in this report, these findings are especially notable given recent changes to Alberta’s OHS Act with respect to psychological safety and wellbeing. See Section 10 for further discussion of Bill 47.

Some aspects of *work situation* made a difference in perceptions and evaluations of employer care:

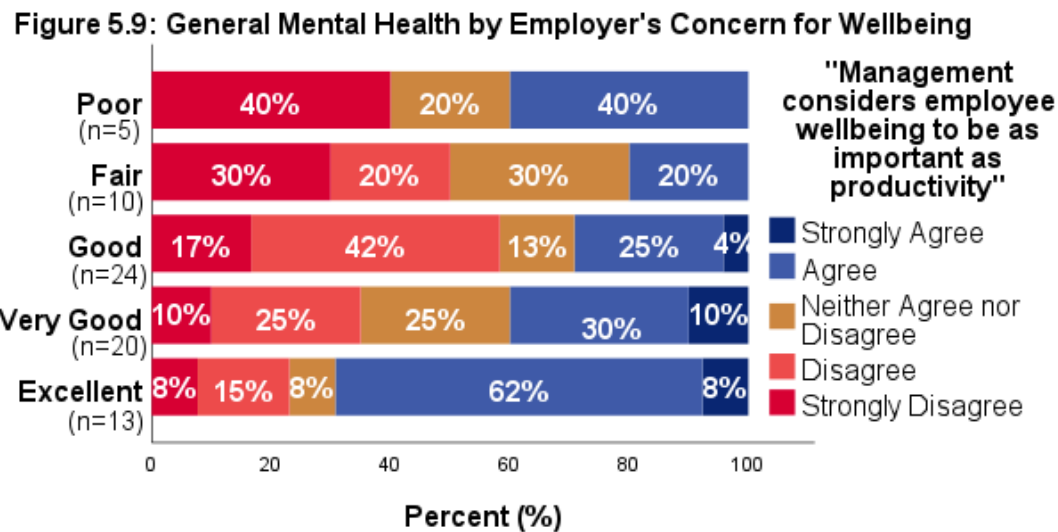
- Trades/technical workers (compared to supervisors and others) were less likely to agree that their employer would be flexible in offering work adjustments for mental health, *suggesting a perceived differential power relation in receiving accommodation.*
- Those who had worked with their current employer for less than one year were less likely to agree that there is good communication at work about psychological safety issues—*indicating possible cracks in early training, information, and trust in the workplace.*

Interest in wellbeing within the organization and among leadership also makes a difference. Low ratings of employer commitment to minimizing stress at work were, as we might expect, correlated with workers’ ratings of stress stemming from the conditions of camp and work.

- 65% of those who agreed/strongly that most day at work were stressful disagreed/strongly that their employer was committed to minimizing stress (compared to 45% in the sample as a whole).
- Non-white participants were significantly more likely to disagree/strongly (67%, compared to 41% among white participants); this may be related to the higher co-occurrence of reported health challenges among racialized participants but also to discrimination.

And finally, negative assessment of employer interest in wellbeing is correlated with *individual health*. This finding underscores the importance of workplace supports to worker wellbeing.

- People who rated their general mental health positively also tended to indicate that management cared about wellbeing as much as productivity, whereas those with poorer general mental health tended to disagree.
- Low ratings of employer commitment to minimizing stress were correlated with lower ratings of individual mental health.



Correlations between perceptions of employer supports and individual health become even more apparent among those reporting *significant life events* and *diagnosed long-term health conditions*, although in these cases we would need to know more to understand what is, potentially, a bidirectional cause and effect. Those reporting significant life events or diagnosed LT conditions were more likely to downgrade employment commitment to mental health: 56% and 58%, respectively, disagreed/strongly that employers value wellbeing as much as they value productivity; 56% and 57%, respectively, disagreed/strongly that employers are committed to minimizing stress; and 43% and 59%, respectively, disagreed/strongly that employers would be flexible in offering work adjustments for mental health issues.

Type of diagnosed long-term health condition makes a difference to how respondents perceive employer commitment to wellbeing. Those reporting a *mental health* condition were especially likely to give lower ratings to employer communication about psychological safety and commitment to a fair and equal work environment.

Overall, these correlations suggest that perceptions and experiences of employers' lack of commitment to wellbeing directly contribute to stress and negative health. They also suggest that those with health issues might be more acutely aware of, and/or may have more directly encountered, employer responses to health needs.

Our findings regarding employer commitment to wellbeing are highly relevant to a larger result of the study: a work culture where health concerns are seen to take a backseat to productivity, timelines, and making money—for both workers and employers. This is further discussed in Section 9.

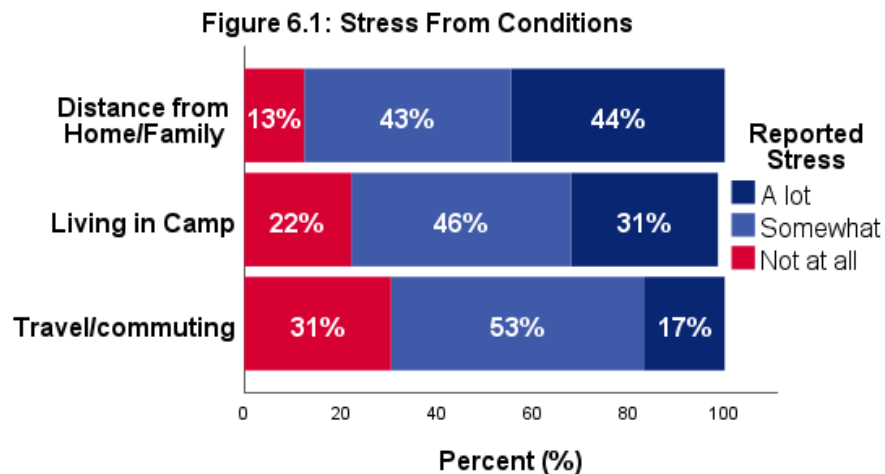
6. FIFO AND MENTAL HEALTH: DISTANCE, CAMP, AND TRAVEL

Highlights

- Nearly 90% of respondents reported some or a lot of stress stemming from *distance and time away from home and family*, citing relationship strain, loneliness, and difficulty being home for events or emergencies.
- Distance stress increased the more time workers spent with family when off rotation, which is, in turn, an effect of family situation (having children and/or married or common law).
- Some 77% reported some or a lot of stress from *camp living*. A majority disagreed that morale in camp is good or that they can do what they want in camp. Some results suggest camp living has cumulative negative effects on individuals.
- Camp conditions contributing to poor wellbeing include isolation, limited and/or unhealthy food options, restrictive regulations (including ability to leave camp), and an unhealthy environment.
- Almost half of participants agreed that they were satisfied with the facilities in camp, but this varied by employment conditions.
- 70% of respondents indicated experiencing stress from *travel*, but with only 17% rating this as intense. Key stressors include unpredictable travel conditions (cost, weather) and long and tiring journeys.
- Workers on short-off rotations (1-3 days off, as opposed to 6-14), living outside of Alberta, and night shift workers were more likely to rate travel back and forth as difficult.
- Initial findings suggest traveling by air (as opposed to driving) can contribute to reduced travel stress, but this must be considered in relation to rotation and shift schedules.

In this section, and against the backdrop of the previous sections, we present findings on health and wellbeing as they directly relate to the conditions of FIFO work, i.e., we consider facets of FIFO as social determinants of mental health. As Parker et al. (2018: 70) point out, what needs unpacking is the “black box” that connects the characteristics of FIFO work to its impacts. Previous research on FIFO workers shows that shift rosters and social isolation (Bowers et al. 2018, Chen et al. 2003, Wong et al. 2002), extended working hours (Donatelli et al. 2017), living in remote locations (Commission for Occupational Safety and Health 2019), and difficulties balancing time away with family time (Gardner et al. 2018) often lead to anxiety, depression, emotional strain, increased stress, and fatigue among FIFO workers.

We consider the mental health impacts of three main aspects of FIFO work: distance and time away from family/home, living in camp, and travel/commuting. Two-thirds to more than three-quarters of our participants indicated experiencing somewhat to a lot of stress from all three of these facets of FIFO work. We discuss each of these three facets in more detail below, considering not only *who* is affected but also how these factors relate to individual, family, and workplace health.



Source: Survey Data, Q 6.13_7, 6.13_6, 6.13_8. N=72, except "Living in Camp" (N=72, missing=1).

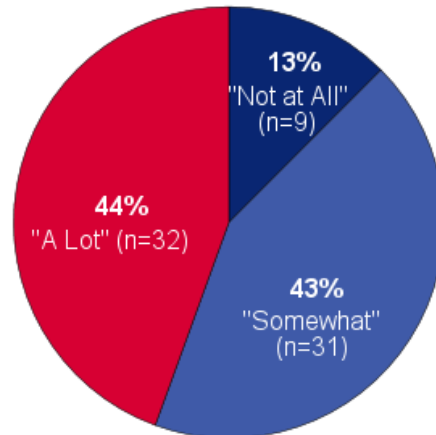
DISTANCE AND TIME AWAY FROM HOME AND FAMILY

Nearly 90% of respondents reported some or a lot of stress stemming from distance and time away from home and family, with nearly half reporting “a lot.” *This was a generalized stress* across the MWMH sample, with no notable differences by sub-population. Comments from participants indicate three important drivers of this stress (cf Parker et al. 2018; Dorow and Mandizadza 2018; Sellenger Centre 2013):

- the *difficulty of establishing and maintaining relationships* with family, partners, and friends;
- *loneliness*;
- the *inability to be or get home* for family crises and “*missing out*” on events.

Importantly, distance from family also arose in participants' comments on stress from *health*, with a number of participants concerned about being far from family who had medical needs. Others remarked on the stress of FIFO on the health and wellbeing of family members (cf Government of Australia 2015).

Figure 6.2: Reported Stress from Distance/Time Away



Source: Survey Data, Q. 6.13_7. (N=72).

Insights from Valerie O'Leary (Critical Incident Stress Management-Fort McMurray)

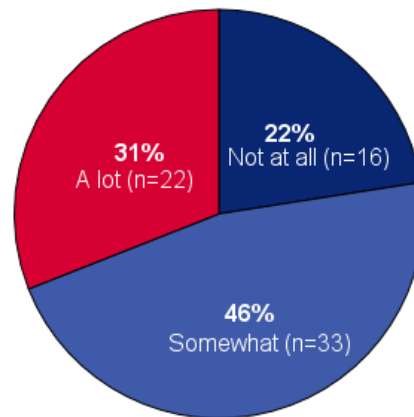
Through numerous conversations with new employees in camps, I often heard "this is harder than I thought" when talking about rotational work and being away from home, away from family and friends. It is a culture shock and while some adapt quickly, others struggle.

Three-quarters (75%) of our participants reported being in contact with friends or family at least daily when away on rotation, with no relationship to level of stress. However, results suggest a possible relationship between stress and the *intensity* of family contact when home. Almost half (44%) of those who noted a lot of stress from distance from family spent *all* of their time when home with family, compared to just 20% of those who indicated either "somewhat" or "not at all" for stress from distance from home/family. This is related to family situation, since amount of time spent with family off rotation was, in turn, highly correlated with having children and/or being married or common law. The nature of the intensity and quality of family ties as they relate to distance-related stress requires further attention and study.

WORK CAMP LIVING

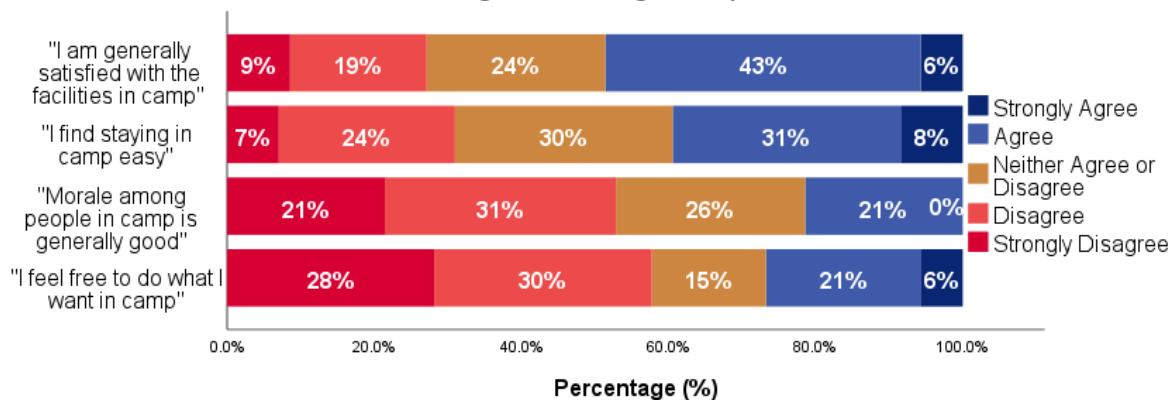
Over three-quarters (77%) of survey participants reported *some or a lot of stress* from camp living. This was a generally distributed stress, in that there were almost no differences among subpopulation groups, with two exceptions: *having children* and *longer years working in the oil sands* were correlated with higher levels of reported camp stress. The latter, along with qualitative comments from participants, suggests a cumulative effect from the grind of camp living.

Figure 6.3: Reported Stress from Living in Camp



Source: Survey Data, Q 6.13_6. (N=72, missing=1)

Figure 6.4: Rating of Camp



Source: Survey Data, Q 4.1_1, 4.1_3, 4.1_4, 4.1_7. (N ~72; "I am generally satisfied..." (n=70), "I find staying in camp easy" (n=71), "Morale among people..." (n=70), and "I feel free..." (n=71)).

Stress and ease of camp living are shaped by both physical and social aspects of camp. Almost half of participants agreed/strongly that they were satisfied with the facilities in camp, but again, this varied by employment conditions: those who were *unemployed*, *had worked at more job sites*, and *had worked a longer time with their current employer* were more likely to be dissatisfied. These factors further emphasize the need to examine how stress and dissatisfaction from camp living and other FIFO conditions are cumulative and/or tied to precarity and uncertainty in job situation.

Workers had lots to say about the material and social conditions of camp. Their subjective comments indicate that several of the most impactful aspects of camp are:

- isolation
- food
- restrictive environment
- unhealthy environment.

As found in much research, camp living can be lonely, isolating, and incite a feeling of entrapment, which in turn can lead to poorer mental health and poorer health habits, including higher alcohol consumption (Parker et al. 2018; Dorow and Jean 2021; Straughan et al. 2020). Parker et al. (2018: 124) found lack of autonomy at work (when on rotation) to be a significant negative predictor of depression, anxiety, and burnout among FIFO workers.

With regard to food, participants pointed to a lack of healthy options, monotony, concerns with hygiene, and individual dietary needs that could not be met in camp. As one participant put it, “camp with lousy food makes it a lot harder.” Another said that one thing she would definitely change about camp is “the cleanliness in the kitchen and a proper well-balanced diet.”

Other problems with physical amenities included shared bathrooms and lack of accommodation of night shift workers (e.g., quiet during the day when they are trying to sleep). One worker summarized the combination of things that make camp difficult:

“The food is terrible, especially lunches. Suppers aren’t so bad except they seem to have just one spice. With the size of bed and bathrooms, all together this makes for bad morale.”

Some people pointed to how the downturn and cost cutting had made morale and amenities even worse:

“People are away from families and homes, and again, in the last few years, because of the downturn, they don't go out of their way to make camps bearable. Food has gone downhill. Their attitude is ‘if you don't like it, piss off’.”

We should also note that a minority indicated liking camp because they didn’t have to cook or make their bed.

In their comments, workers often tied health-related stress to camp living. There were concerns about weight gain and the difficulty of maintaining an exercise regime when in camp, but also challenges in managing specific health conditions—such as diabetes, blood pressure, and high cholesterol—in the context of camp. Participants indicated that the inability to accommodate dietary needs contributed to stress and anxiety.

Ulises suffers from diabetes. He feels stressed finding ways to meet his health needs within *“the rigidity of camp life.”* Oftentimes, he misses out *“on meals and didn’t eat at all because it was better than being sick.”* Ulises also has a digestive condition that makes him feel *“violently sick”* if he eats the pre-packaged food and the *“dumped oil vegetables”* that are served in some camps. So far, any accommodations he has sought have been refused. Ulises thinks that *“they could be more flexible with the meal guidelines or providing options”* for people with particular health conditions. However, the environment in camp is so *“rigid and inflexible on my meals, even though there’s medical reasons for it. . . I found that extremely frustrating.”*

Participants often referred to a generalized malaise and disaffection in camp. A majority of respondents disagreed/strongly that first, morale in camp is good and second, that they can do what they want in camp. They were concerned about the negative environment among people “stuck” together far from home in an institutional environment for extended periods of time. Representative comments from participants included:

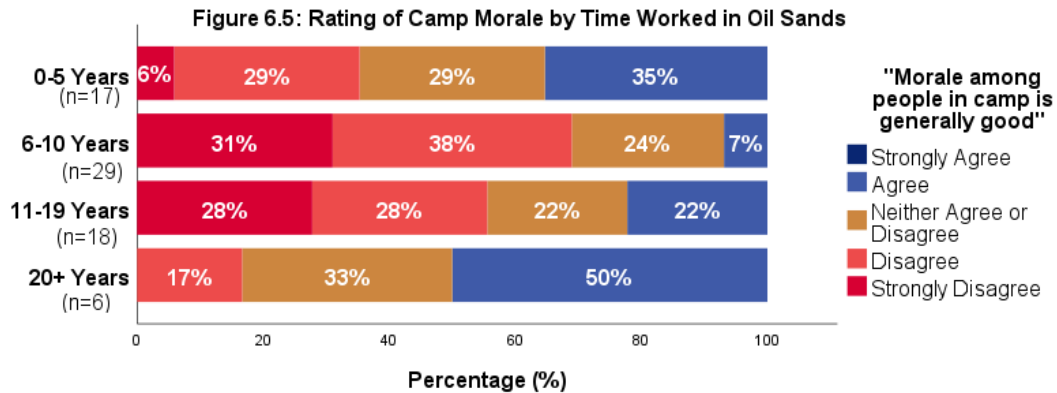
“Such a melting pot of people who somehow agree on complaining.”

“In the beginning it's okay but as time goes on you can really feel it. People get angry quickly, get in a fit, get into it with security.”

“Everybody hates camp, you’re away from home, nobody wants to be there.”

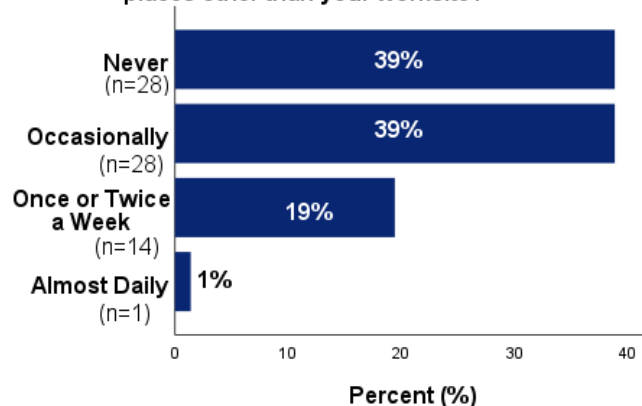
FIFO workers thus seem to limit social interactions in camp for a couple of related reasons. They might lack the time and energy for socializing after long workdays and/or develop a kind of “familiarity fatigue” as they work and live alongside the same people. At the same time, they might deliberately aim to avoid the negative culture (moodiness, bad morale, drugs, harassment). Such avoidance can compound isolation and a feeling of being stuck (Dorow and Jean 2021).

Particular groups were especially likely to report negatively on the atmosphere in camp, including racialized workers, people in their 30s and 40s, and those working in the oil sands between 6 and 19 years (with overlap among the last two groups). These findings suggests that cumulative stresses should be examined for how they might be compounded by factors such as age, race, and gender.



Our findings show that the feeling of being institutionalized was reinforced by the inability to leave camp (cf Parker et al. 2018: 34). As seen here, over three-quarters of our survey participants never or only occasionally left camp when on rotation.

Figure 6.6: "How often do (or did) you leave camp to visit places other than your worksite?"



While formal camp policies sometimes prohibit leaving camp, workers also noted:

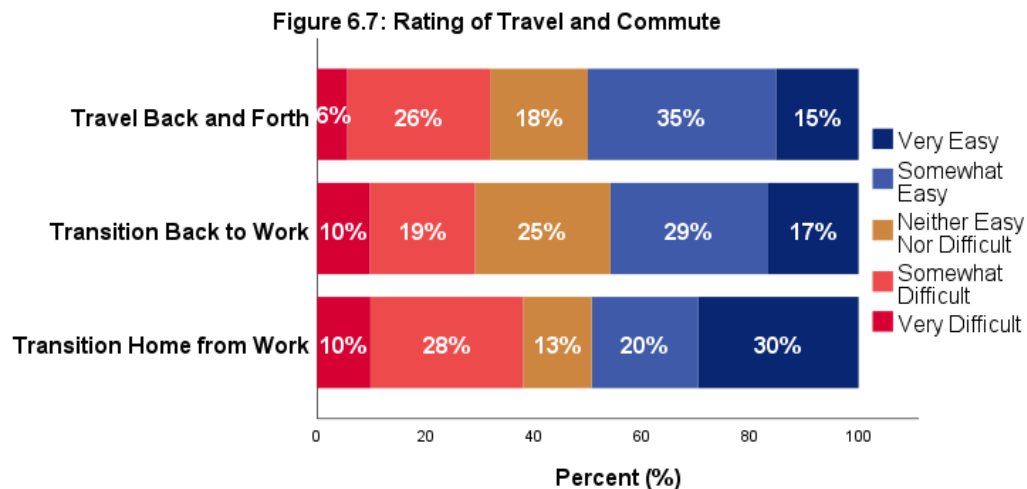
- being too far from town
- a culture that discouraged leaving camp (e.g., need to ask permission, and don't want to risk extra scrutiny)
- lack of transportation (with some noting the cancellation of shuttles into town since the downturn).

Long uninterrupted stints in camp can also contribute to a sense of isolation. More than one-third (36%) of our respondents had experienced at least one stay of three months or more during their time working in the oil sands. This is found across different types of work but is especially common on extended shutdown maintenance projects.

The feeling of institutionalization that emerges out of camp living can, along with other aspects of FIFO work, contribute to severe negative mental health outcomes (Parker et al. 2018). Several of our respondents knew people who had committed suicide in camp. As one of them pointed out, returning to camp can be very difficult because of the reminder, on each return, of that experience and what led to it.

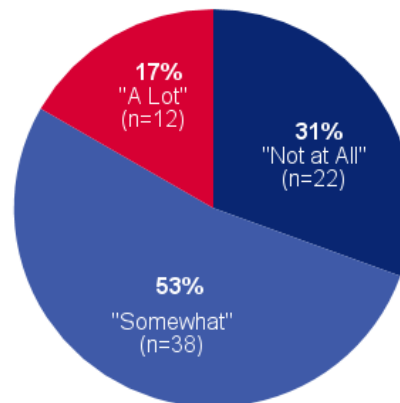
TRAVEL AND COMMUTING

About one-third of respondents characterized travelling back and forth as somewhat/very difficult (transitioning between work and home is discussed in Section 7). Twice that proportion (70%) indicated experiencing *stress* from travel, but with only 17% rating this as intense. Participants referred to the stress of unpredictable travel conditions (cost, weather), long and tiring journeys, and sometimes, compressed transition time (cf Ryser et al. 2016). Some of the more seasoned FIFO travelers downgraded the stress, citing that they were “used to it” and went on autopilot when traveling.



Source: Survey Data, Q 3.3_1, 3.3_2, 3.3_3 (N=72, except "Transition Home from Work" (n=71).

Figure 6.8: Reported Stress -Travel and Commute

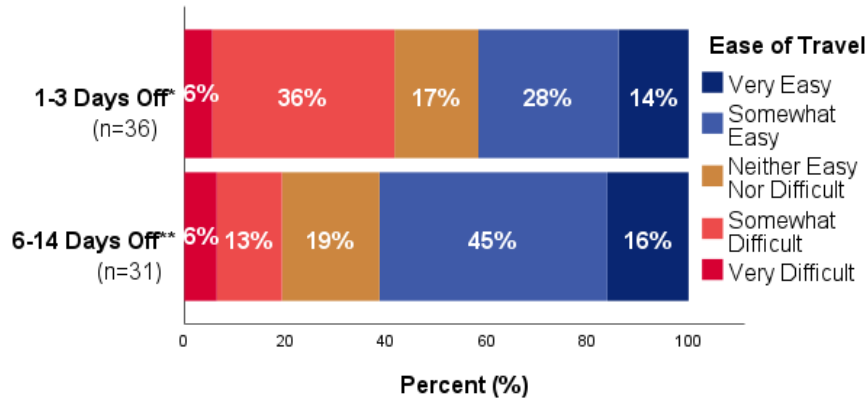


Source: Survey Data, Q 6.13_9. (N=72)

Several groups were more likely to rate travel as somewhat or very difficult:

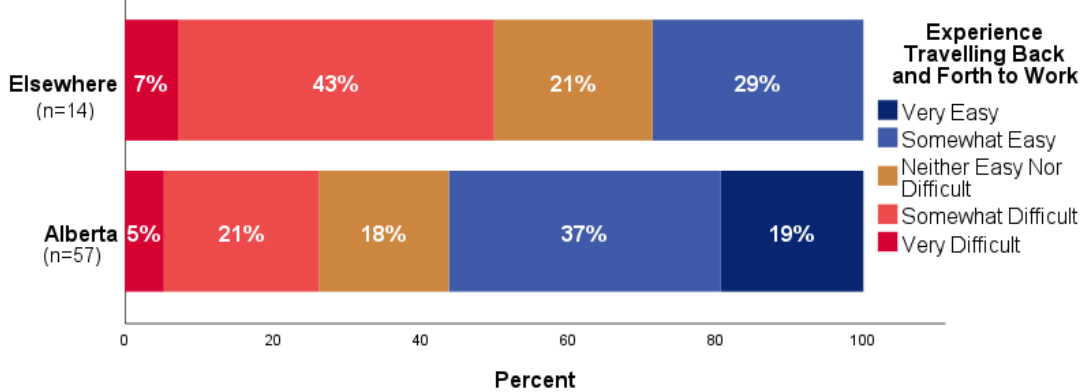
- workers on short-off rotations (42%, compared to 19% for long-off rotations)
- workers living outside of Alberta (more than 50% rated travel as somewhat or very difficult compared to 26% of Alberta-based workers)
- night shift workers (57% rated travel as somewhat or very difficult).

Figure 6.9: Ease of Travel Back and Forth to Work by Rotation Schedule



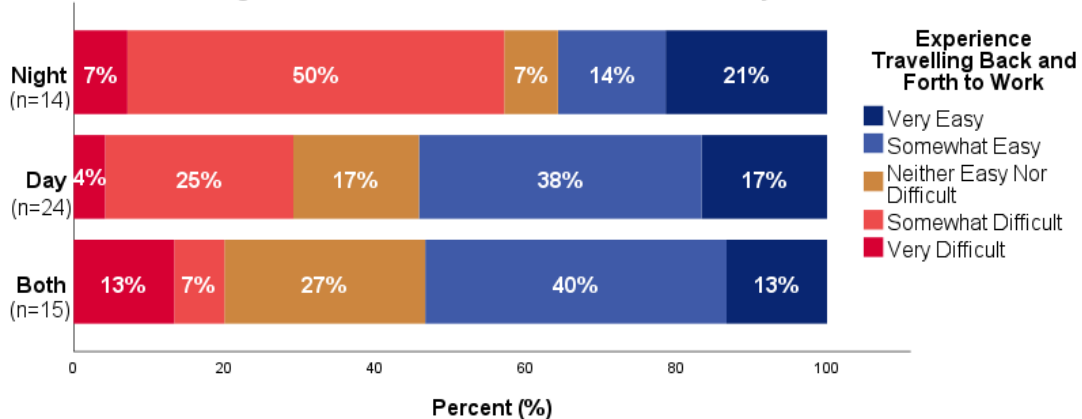
Source: Survey Data, Q 2.15, 3.3_1. (N=69, missing=2). Shift rotations are organized by number of days of work plus number of days off, for example: 6+2= six days of work followed by two days off. *6+1, 12+2, 11+3, 14+3, 18+3. **7+7, 14+14, 10+10, 11+9, 14+7, 15+6, 20+10, 20+8, 18+10.

Figure 6.10: Ease of Travel Back and Forth to Work by Geographic Home



Source: Survey Data, Q 1.11, 3.3_1. (N=72, missing=1)

Figure 6.11: Ease of Travel Back and Forth to Work by Shift



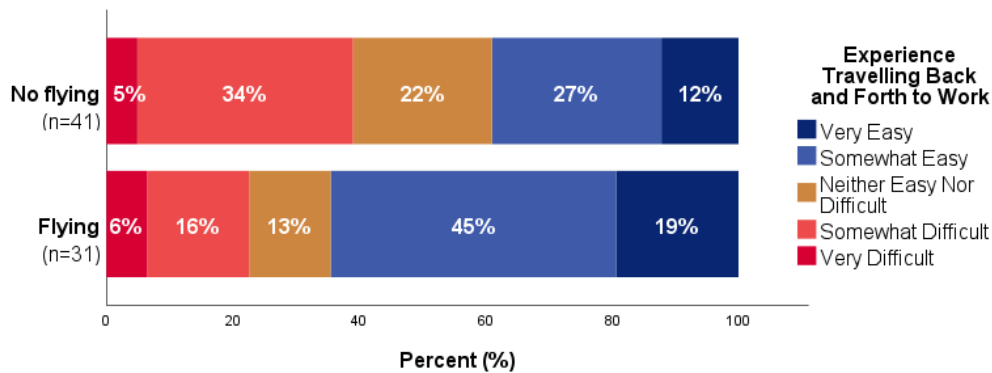
Source: Survey Data, Q. 2.15, 3.3_1. (N=72, missing=19)

These are all important for different reasons. Workers on short-off rotations often describe the rush and stress of trying to get home and back; workers outside of Alberta have longer or more complex journeys; and night shift workers are often going directly from travel to a work shift or from a work shift to travel (cf Parker et al. 2018; Parkes 2010). These findings are, however, qualified by considering not just travel itself, but the psychosocial transition between work and home, discussed below in Section.

FIFO OR DIDO – DOES FLYING MAKE A DIFFERENCE TO STRESS AND WELLBEING?

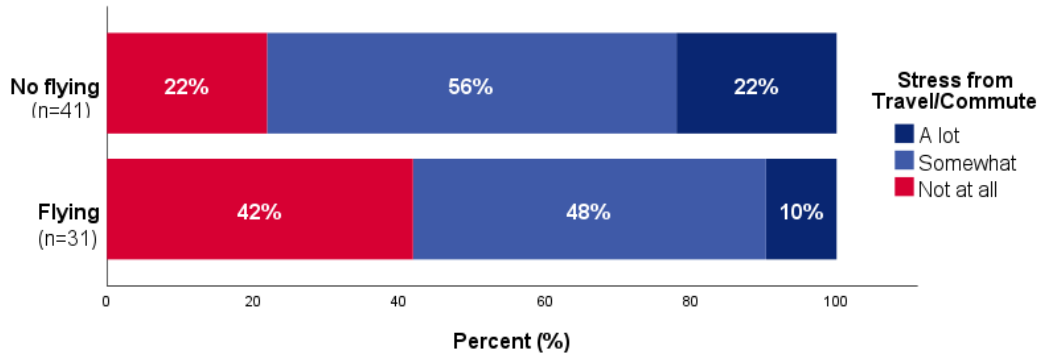
The survey asked how workers got from their front door to the work camp. Participants described everything from hopping in their truck and going door-to-door, to complex routes involving driving, flying, shuttling, and taking a cab. When re-coded as flying or not flying, 43% of survey respondents reported flying as part of the journey, and 57% did not. Here we take a closer look at the challenges and health effects of FIFO commuting as correlated with flying or not. Whether people fly or not makes a difference in how they rate their health, stress, and wellbeing, with *people who fly being healthier and more satisfied*—but as discussed below, flying is also a proxy for other facets of fly-in fly-out and drive-in drive-out work.

Figure 6.12: Difficulty Travelling Back and Forth to Work by Air Travel



Source: Survey Data, Q 3.1, 3.3_1. (N=72)

Figure 6.13: Reported Level of Stress from Travel/Commute by Air Travel



Source: Survey Data, Q 3.1, 6.13_9. (N=72)

The group not flying was also more likely to report poor general health and to have diagnosed long-term health conditions. They were also more generally dissatisfied: more intensely negative about camp life, camp facilities, and job morale. As indicated, this group is mostly Alberta-based and tends to be on short-off rotations, and thus is more likely to be working maintenance shutdowns. Their positioning within the oil sands FIFO workforce and the implications of this for mental health deserve further attention, especially given that contract work, job insecurity, and short-off rotations significantly increase indicators of psychological distress (Parker et al. 2018).

7. WORK-LIFE IM/BALANCE

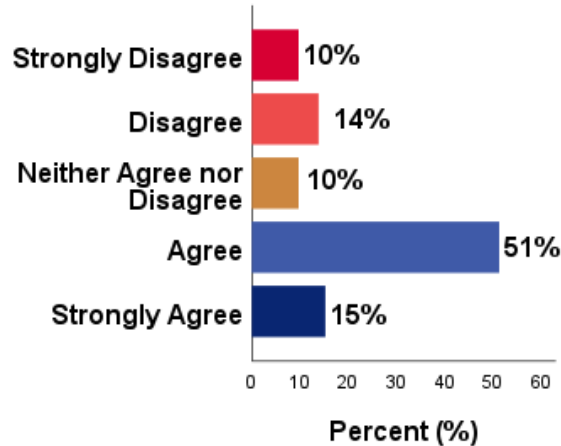
Highlights

- Two-thirds agreed that they were able to reasonably balance the demands of work and personal life. Those *less likely* to indicate work-life balance were in less secure, more disruptive, and more compressed rotational work; had worked longer in the oil sands; and/or were supervisors.
- Long-off rotations seem to have some positive effects, which must also take into account family situation and type of work.
- *Transitioning back home* after a rotation was especially difficult for people in mid-life with families, and Alberta workers making squeezed commutes.
- *Transitioning back to work* was especially difficult for those in less predictable work circumstances, i.e., those working on and off and those who had worked at a higher number of sites.
- In terms of “carrying” work home, supervisors and those who had been working continuously in the oil sands were more likely to have work on their minds when back home.

As indicated in Section 6, distance and time away from family is one of the most stressful aspects of FIFO work. Work-life balance is thus especially challenging and complex for FIFO workers, with direct consequences for health and wellbeing for themselves and their partners and families (Parker et al. 2018; Ferguson 2011; Dorow and Mandizadza 2018; Straughan et al. 2020; Sellenger Centre 2013). In general, work-family imbalance or disintegration is found to be a top contributor to mental disorders, regardless of gender (Wang et al. 2007).

When asked about their ability to balance work and life, two-thirds of respondents agreed/strongly.

Figure 7.1: "I am able to reasonably balance the demands of work and personal life"



Source: Survey Data, Q 5.4_6. (N=72).

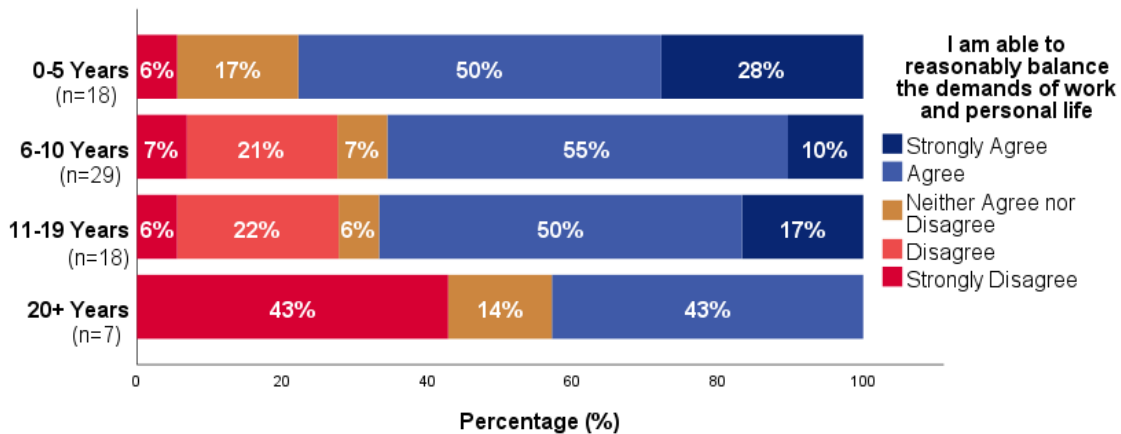
However, this varied in important ways by the conditions of work, demographics, and employment relations. The following groups of workers were *less* likely to indicate the ability to balance:

- workers with short-off rotations (e.g. 12 and 2, or 6 and 1)
- people who had worked more sites (over 40% of those who had worked 11+ sites disagreed/strongly)
- people who had worked a longer period in the oil sands
- workers on day shift
- supervisors
- workers based in Alberta.

Once again, findings suggests the need for further study of the negative assessment of work-life balance that accompanies two overlapping issues: 1) less secure, more disruptive, and more compressed rotational work (which can affect social ties and morale both at work and at home – see Sellenger Centre 2013); 2) increased length of time working in the industry. Given that insecurity and the need to continue FIFO work are also negatively associated with partner wellbeing (Parker et al. 2018: 168), these cumulative effects may very well go beyond the individual worker.

Supervisors are another group with a consistent series of stresses, in their case related to high-demand work and work-home spillover.

Figure 7.2: Work-Life Balance by Years Worked in Oil Sands



Source: Survey Data, 2.10, 5.4_6. (N=72)

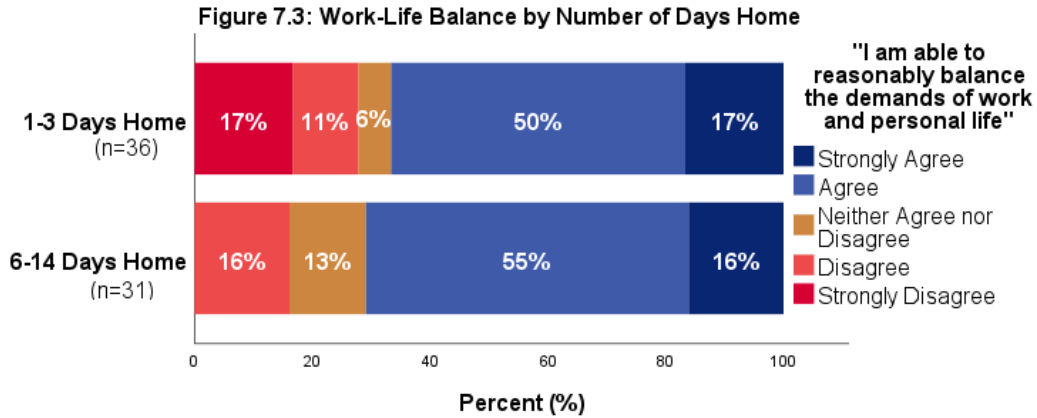
Below we consider in more detail the effects on work-family balance of rotational schedules and continuous versus on-and-off employment relations.

EFFECTS OF ROTATION SCHEDULE

While the survey did not ask direct questions about degree of stress related to rotation, it did gather information on rotation schedules and invite participants to comment on the relative pros and cons of those schedules. This is an important facet of FIFO because it affects how often workers travel home, how long they can be home, and how much time they have to “decompress.” At the same time, it is an aspect of working conditions over which they feel they have little control (see Section 5).

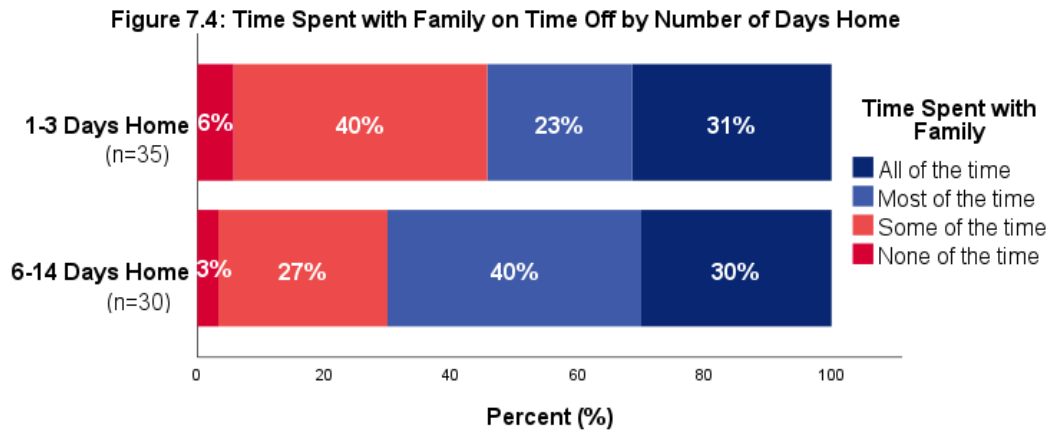
Other research indicates mixed results regarding the effects of rotation schedules (also called rosters) on family and social life for FIFO workers. Parker et al. (2018) find that rotations involving an imbalance—longer time on site and shorter time at home—have worse effects on wellbeing. The MWMH study also finds short-off rotations to be slightly more difficult, but that this must be considered in relation to other conditions such as working on-and-off and working periodic maintenance. While most studies look at how long the work side of the rotation is, we coded them according to number of days off (1-3 versus 6-14), in keeping with studies that consider time for recovery (Parker et al. 2018).

It is important to note that those with longer times off (i.e., “regular” schedules usually associated with longer-term work) were more likely to be in their 30s or 40s, and in a married or common law relationship. Those on short-off rotations tended to be in Alberta—a group that was more often working periodic shutdown maintenance jobs and was also significantly more likely to feel they had no control over their schedule. While those on long-off rotations were a bit more positive about their ability to balance work and life, these must be further studied in relation to family situation, and in relation to the stress associated with constant, repeated rotations and work-home transitions.



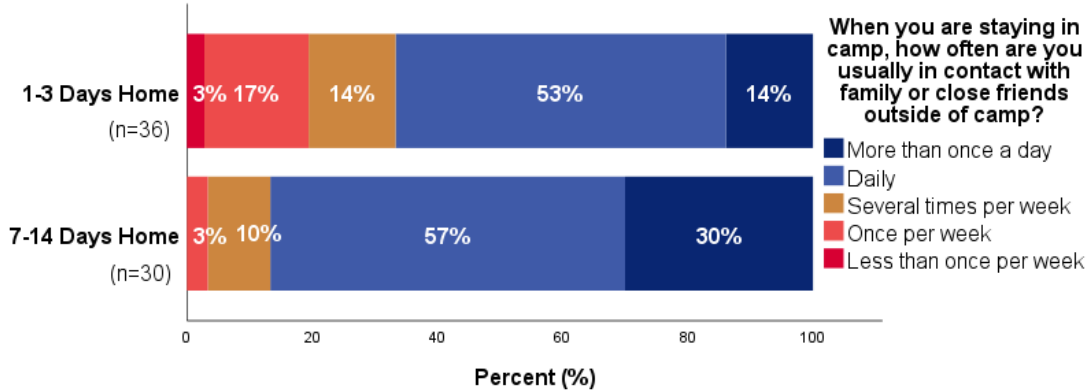
Source: Survey Data, Q 2.15, 5.4_6. (N=72, missing=5)

Those on long-off (6-14 days home) rotations were more likely to report spending most or all of their time off with family, and to more frequently contact family when in camp. This is probably an effect of family situation (being married/common law and/or having children) but might also be related to the nature of the work associated with different rotations: those on short-off-time rotations are more often staying in camp in between rotations, working intensive maintenance shutdowns, and perhaps at home for longer periods in between contracts.



Source: Survey Data, Q 2.15, 3.4. (N=72, missing=7)

Figure 7.5: Frequency of Contact with Family In Camp by Rotation Schedule



Source: Survey Data, Q 2.15, 4.5. (N=72, missing=6)

Interestingly, some of the participants on short-off rotations were positive about being able to spend many months in a row at home in between contracts. At the same time, they were negative about the downward pressures on relationships during their absences of two or more months, absences also marked by heavy work demands and time pressures. They rated distance from home and family as especially stressful.

“I manage the work-life balance pretty well, but if issues arise... I have had mental health issues in the past, and it gets harder to balance given how much effort you have to put in.”

As indicated below, they also faced stresses around transitioning between work and home.

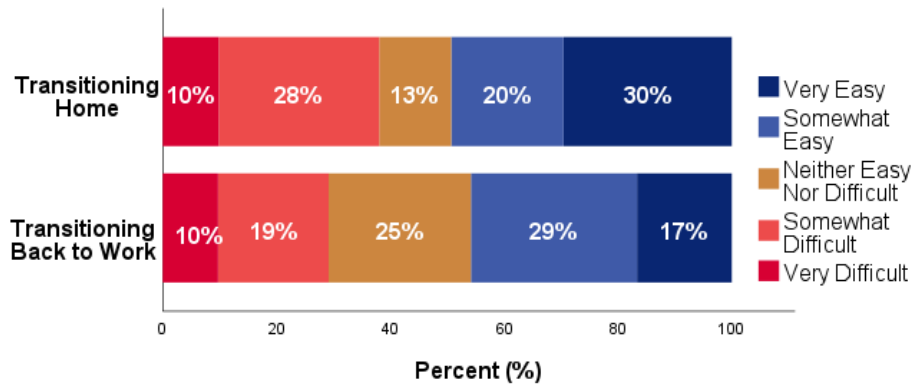
TRANSITIONING BETWEEN WORK AND HOME

We know from the literature on FIFO that the ease or difficulty of transitioning back and forth between work and home is an important facet of work-life balance (Parker et al. 2018; Dorow and Jean 2021; Straughan et al. 2020). As seen below, findings from the MWMH study suggest that while transitioning back home is somewhat more difficult than transitioning back to work, workers rated both transitions about the same. These findings are worthy of more study; Parker et al. (2018: 16) found (among a largely operational rotational workforce) that workers felt somewhat worse transitioning back to site than when transitioning home. What’s more, family wellbeing can be negatively impacted during phases when FIFO workers leave and return home (Parker et al. 2018; Dorow and Mandizadza 2018), as all parties adjust to the changed family configuration and role expectations.

Insights from Valerie O’Leary (Critical Incident Stress Management-Fort McMurray)

Throughout my several years of visiting camp as a critical incident responder, difference in stress levels between those employees who work manageable shifts and those who work short shifts have always been obvious. What has remained a constant factor is the need for the first day home to be a day of rest due to exhaustion. It is almost impossible for family to understand camp life and how exhausting it can be. Maybe we need a brochure for family members outlining common effects on employees, on what to expect and how to support them.

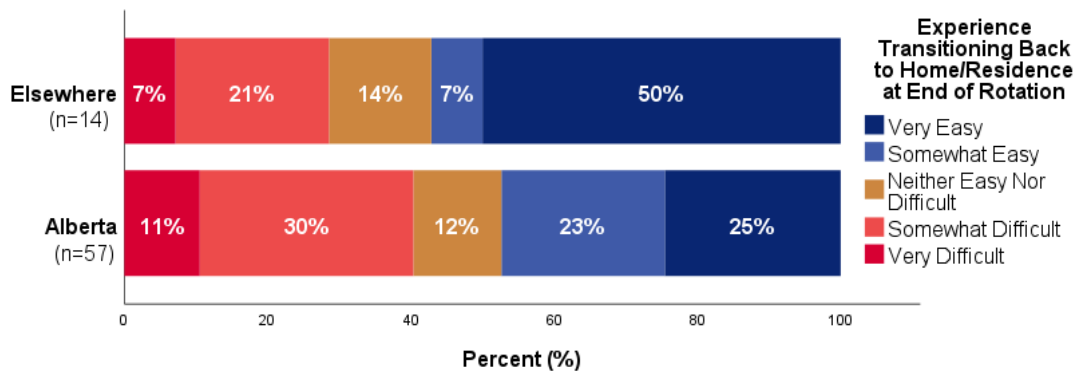
Figure 7.6: Transitioning Between Home and Work



Some 38% rated *the transition home* as somewhat or very difficult, commenting on issues such as fatigue and role transition. The following groups were more likely to do so:

- people in their 40s and 50s
- Alberta-based workers.

Figure 7.7: Difficulty Transitioning Home by Geographic Residence



The finding regarding age may be related to where people are in their life course: people in their 40s and 50s were more likely to spend most or all of their time with family when back home. As for Alberta-based workers, this may be a function of working shutdown schedules and/or short-off rotations. Parker et al. (2018) found that while the accumulated effects of fatigue from demanding work schedules and travel are found across all FIFO rotational workers, i.e., both contract and operations personnel, the return home can be made more difficult by squeezed commutes and rotations with shorter periods at home (cf Parker et al. 2018).

In the MWMH study, Alberta-based workers were often driving back and forth during a window of just 2-3 days. They described trying to make the 4-7 hour commute each way (e.g., to Edmonton or Calgary), even if it meant just one day with family. Some spoke of how important this was to maintaining relationships, but also how impossible and exhausting it was to sustain. These findings underscore that when it comes to work-family balance, FIFO workers find themselves between a rock and a hard place.

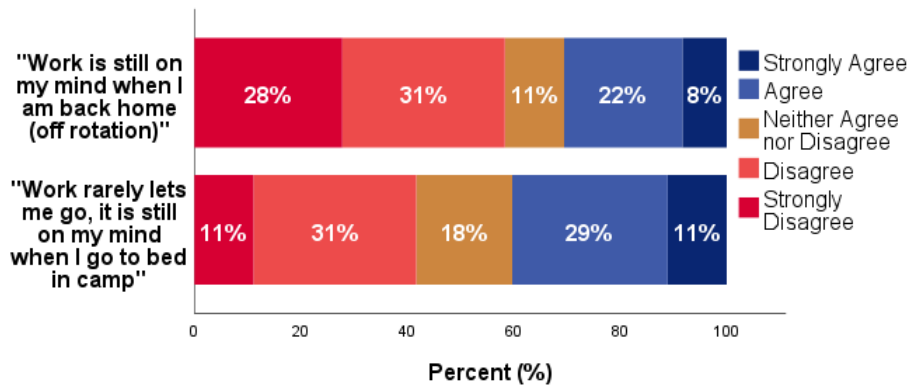
The *transition to work* mode painted a slightly different picture, with 29% rating it as somewhat/very difficult. Other studies have found that workers cite sadness, dread, and anxiety in returning to another rotation (Parker et al. 2018: 16; Dorow and Mandizadza 2018; Straughan et al. 2020). In the MWMH study, two groups were more likely to assess the transition back to work as difficult:

- those working on and off
- those who had worked at a higher number of sites (with overlap between this and the above group).

Challenges for these groups are most likely associated with adjusting to work after a longer time away and/or of having to continually adjust to different work situations. Consistent with previous findings, comments from workers point to the “anticipatory” stress of getting ready for another long stint away after time at home with family.

One final measure of work-life balance is the degree to which people “carry” work with them beyond the workplace (Brown and O’Hara 2003; Gorman-Murray and Bissell 2018). Some 30-40% of workers agreed/strongly that they did so.

Figure 7.8: Carrying Work Beyond the Workplace



Source: Survey Data, Q 5.1_6, 5.1_9. (N=72).

Importantly (and perhaps unsurprisingly), *supervisors* were considerably more likely to still have work on their minds when they went to bed, as were those who worked the *day shift* (with some overlap in these two groups). Those working *continuously* were more likely to have work on their minds when back home, suggesting another kind of cumulative stressor on work-life balance for FIFO workers, including operations employees. Accumulated stresses for supervisors are important not only for them individually but for their proven role in supporting workplace mental health and work-family balance (Babic et al. 2020; Hämmig 2017).

RELATIONSHIPS AT WORK AND AT HOME

Given the back-and-forth lives of FIFO workers between intensive periods of time at work and at home, one important facet of work-life balance to consider is the nature and strength of relationships across these domains. Understanding differences and similarities across work and home are of deep importance to understanding mental health. As seen in the next section, FIFO workers have much stronger relationships at home than at work, with important gender differences. This is notable, given that the MWMH study found no gender differences in other measures of work-life balance.

8. HEALTH AT WORK AND AT HOME: COMPARING RELATIONSHIPS, BEHAVIOURS, AND SELF-WORTH

Highlights

- Participants reported stronger relationships of trust and support at home than at work, especially with regard to reliable help with important decision-making.
- There are some possible gender differences in relationship strength, reliability, and recognition across home and work. Women were twice as likely to strongly agree that they have a trustworthy person at work (27% compared to 14% of men). At the same time, women more intensely agreed that their competencies were recognized at home (68% strongly agreed compared to 42% of men).
- Nearly half (46%) of the respondents reported overeating or having a poor appetite a couple of times or more per week when at work and staying in camp, compared to half this proportion (22%) when at home.
- Participants reported alcohol and drug use as a way to escape from camp routines and restrictions when home. Participants tended to consume more frequently at home, especially alcohol (44% at home compared to 12% when in camp) and cannabis (29% at home compared to 4% at work). Frequencies at work are very likely underreported. Women were more likely than men to report using pain relievers and to do so more frequently both at work and at home.
- There was a significant distinction between home and work with regard to tiredness or lack of energy. Over half (56%) reported having little energy a couple of times a week or more when at work, versus 31% at home.
- Participants reported relatively poor sleep and rest when on rotation, staying in camp, with over half (57%) having difficulty falling or staying asleep a couple of times per week or more. This was significantly worse for women.
- Taking interest and pleasure in life was higher at home than at work. Thoughts of self-harm were much more common in men than women.

Research shows that FIFO workers often experience the sense that they live parallel lives between work and home, i.e., they have different “work” and “home” selves (Dorow and Mandizadza 2018; Saxinger 2016; Angel 2014b). At the same time, the stresses from each carry over into the other (Straughan et al. 2020). This raises the question of how different conditions between work and home might affect health and wellbeing as well as health behaviors. By the same token, the nature of FIFO work may have equally (or all-encompassing) negative or positive effects on both work and home.

However, no research exists comparing health behaviors and conditions at work and home among FIFO workers. We present here the results of a novel subsection of our survey that asked participants a series of parallel questions regarding relationships and health-related behaviors when at work versus when at home. This allows us to compare factors such as social support, diet, sleep, and alcohol and drug use. These findings provide a broader context for some of the mental health findings of the study, build on the focus on workplace conditions in Section 5, and suggest areas for further research.

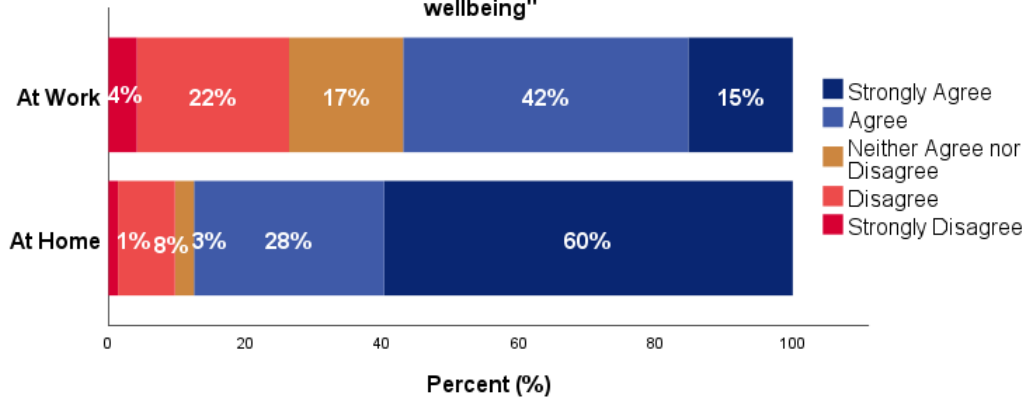
Insights from Valerie O’Leary (Critical Incident Stress Management-Fort McMurray)

Over the years of responding to critical incidents on site, I have had many employees come to see me about something unrelated to the incident. Many times, it had to do with relationship issues at home and that their partners didn't understand how exhausting the rotations were. Upon returning home, they felt that their partners would place a high demand on taking care of household duties.

RELATIONSHIPS

First, we compare human relationships and support between home and work. Research pretty consistently finds that close relationships contribute to psychological health and wellbeing (Stansfeld et al. 2013). Over half (57%) of participants agreed/strongly that they have close relationships that provide **a sense of emotional security and wellbeing** at work, while 88% agreed/strongly that they have such relationships at home. Notable here is a substantial difference in the *intensity* of close relationships, with 60% of respondents strongly agreeing that they had close relationships at home, compared to 15% at work.

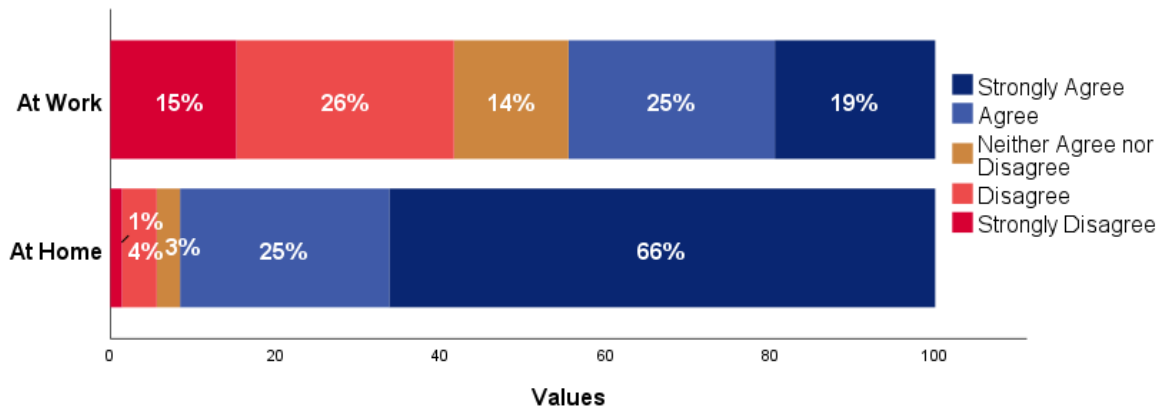
Figure 8.1: "I have close relationships that provide me with a sense of emotional security and wellbeing"



Source: Survey Data, Q 6.1_3. (N=72)

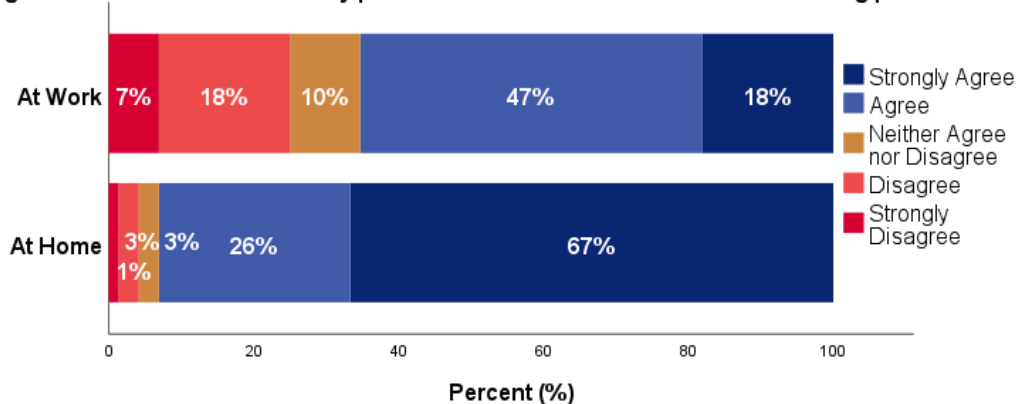
Relationships were further explored in questions about close confidantes, i.e., **people one could turn to when making an important decision** or when seeking advice in the face of problems. In both cases, the vast majority (more than 90%) of participants felt they had such a person at home, with half that proportion (44%) feeling they did at work. Of particular interest for the purposes of this study is the ambivalence workers felt about the ability to talk to someone at work about important life decisions.

Figure 8.2: "There is someone I could talk to about important decisions in my life"



Source: Survey Data, Q 6.1_4, 6.2_4. (N=72; "At Work" (n=72), "At Home" (n=71)).

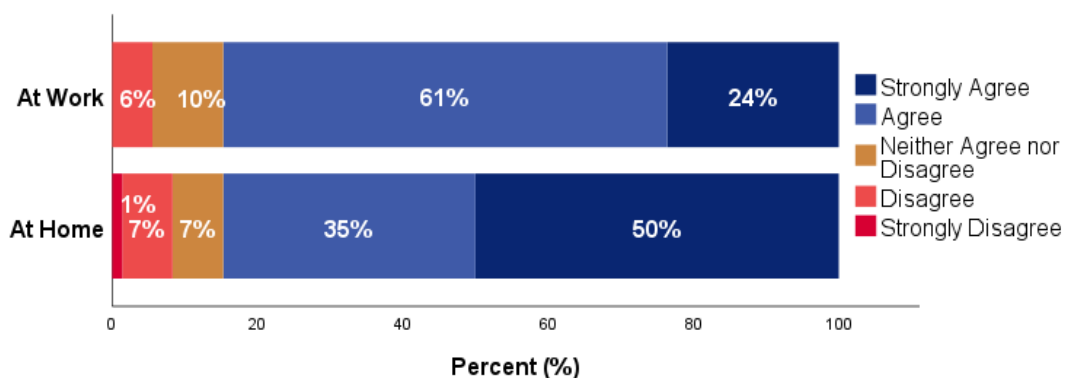
Figure 8.3: "There is a trustworthy person I could turn to for advice if I were having problems"



Source: Survey Data, Q 6.1_6, 6.2_6. (N=72)

The survey also compared **recognition of competence and skill**. An almost equal percentage (85%) of participants agreed/strongly that their competence and skill were recognized at home and at work, but the strength of that relationship was notably stronger at home (50% strongly agreed, compared to 24% at work). This was something of a surprising result. We expected participants to feel validated at work for their technical skills, especially given how many indicated enjoying the work itself. This less enthusiastic rating of recognition at work might be related to aspects of oil sands work culture described by participants (see Section 9).

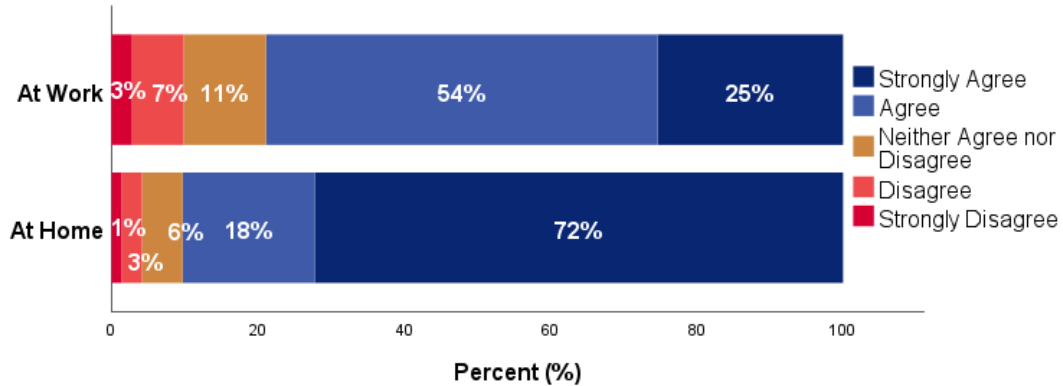
Figure 8.4: "I have relationships where my competence and skill are recognized"



Source: Survey Data, Q 6.1_5, 6.2_5. (N=72)

Findings were similar with regard to having **people one can count on in an emergency**, with participants feeling more intensely confident in the context of home. Importantly, this question prompted commentary from a number of participants regarding emergencies at home that required them to leave camp quickly. The remote location of the camps, and in some cases uncertainty about employer support for a quick return home, created stress for workers. Some workers indicated that drive-in jobs can help create a sense of control and choice in these situations.

Figure 8.5: "There are people I can count on in a personal emergency"



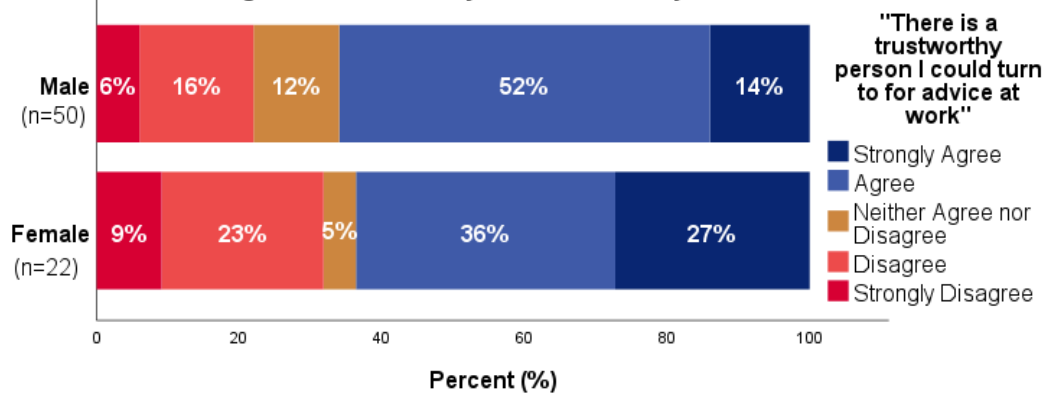
Source: Survey Data, Q 6.1_7, 6.2_7. "At Work" (n=71), "At Home" (n=72).

NOTE: we added the word "personal" to the survey after the first set of surveys, realizing that this needed to be distinguished from work-related emergencies (such as an injury-related stoppage).

GENDERED DIMENSIONS OF RELATIONSHIPS AT WORK AND AT HOME

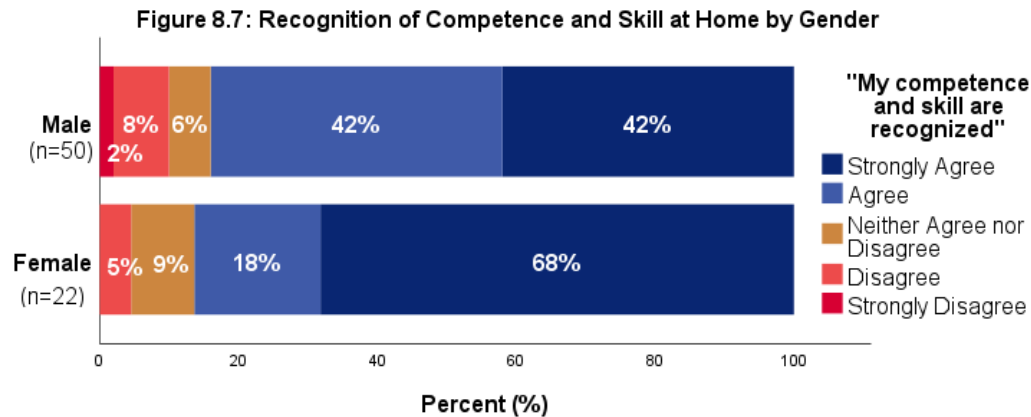
There are some notable *gender differences* in relationship strength, reliability, and recognition across home and work. Female participants were more likely to strongly agree that they have a trustworthy person at work (27% versus 14% of men). Research suggests that women in the trades may actively seek to establish protective relationships with male co-workers or superiors in order to deflect gendered harassment or to receive professional help (Kelly 2020). At the same time, men may either under-report close relationships at work or be subject to a masculinized culture of competitiveness in the oil sands (Dorow 2015; Miller 2004; O'Shaughnessy 2011), which can disrupt close relationships and emotional intimacy (Filteau 2014; Parker et al. 2018).

Figure 8.6: Trustworthy Person at Work by Gender



Source: Survey Data, Q 1.2, 6.1_6. (N=72).

In addition, female participants were more adamant about having relationships at home where their skills were recognized (68% of women strongly agreed v. 42% of men). In interviews, we heard from women about the recognition and admiration they receive from their children about their skill, as well as a sense of accomplishment in providing for family. This seemed to be a source of confidence and purpose that connected work and home (see Alksnis et al. 2008; Horrell et al. 1990).



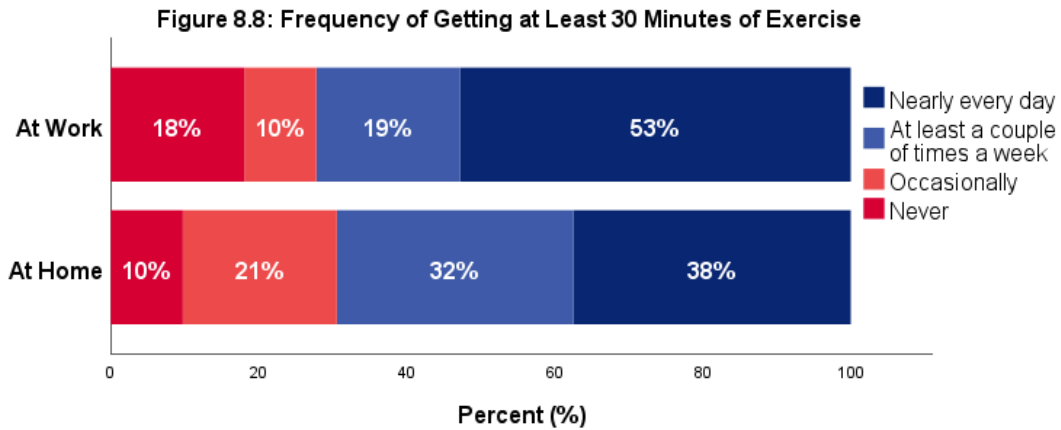
Source: Survey Data, Q 1.2, 6.2_5. (N=72)

EXERCISE, DIET, AND TOBACCO, DRUG AND ALCOHOL USE

Exercise, diet, and consumption of substances like alcohol and tobacco have a well-established and bi-directional link to mental and physical health. Individuals who regularly exercise report significantly better mental health (Chekroud et al. 2018) and are generally at a lower risk of cardiovascular disease, diabetes, and several cancers (Penedo and Dahn 2005; Saunders et al. 2020). Regular exercise also improves mood and helps to mitigate depression, anxiety, and stress (Martland et al. 2020; Penedo and Dahn 2005; Saunders et al. 2020). Alcohol consumption not only exacerbates mental health issues but stems from issues such as loneliness, work-life conflict, and repeated psychological transitions between work and home, as Parker et al. (2018: 21) found to be the case among FIFO workers. The use of psychoactive substances is also linked to numerous physical diseases (e.g., cardiovascular diseases, cirrhosis of the liver, lung cancer, hepatitis C) as well as multiple negative effects on mental health, including depression and anxiety (Jané-Llopis and Matytsina 2006). The same pattern applies to diet – food consumption has a direct impact on both physical and mental human health (Ventriglio et al. 2020).

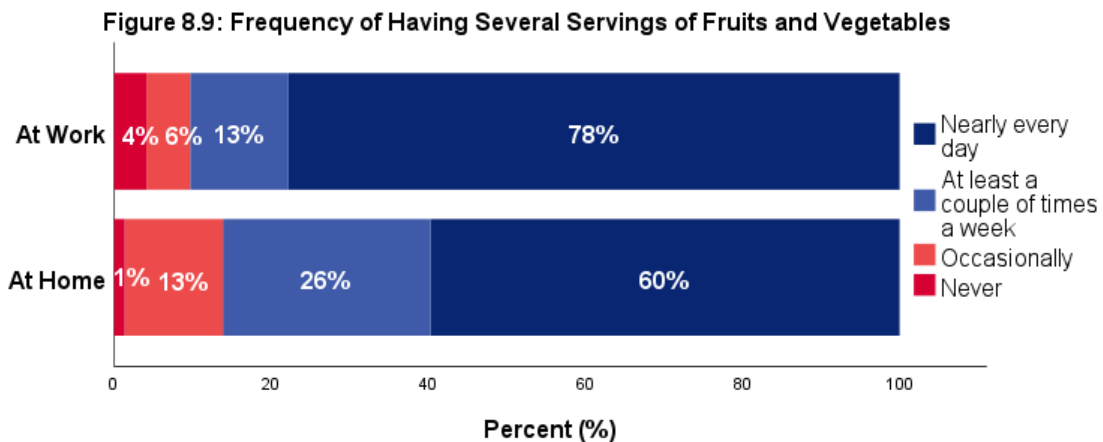
Given the above-mentioned links, we asked participants about their personal care and health routines and compared these between work and home. “Work” in this section refers to camp, as this is where workers access food and exercise facilities—although some workers, depending on their particular type of work, referred to getting exercise while working at site. Tobacco and drug use take place both at camp and on site.

In terms of **exercise**, participants tended to report slightly higher frequency at camp/work. In follow-up qualitative comments, we learned that many participants are tired when they get home, trying to rest, recover, and adjust to the routine and habits of their family. Some indicated getting regular exercise in the course of their work. In general, rates of exercise were lower than the 150 minutes/week recommended by Canadian Physical Activities Guidelines, especially when at home.



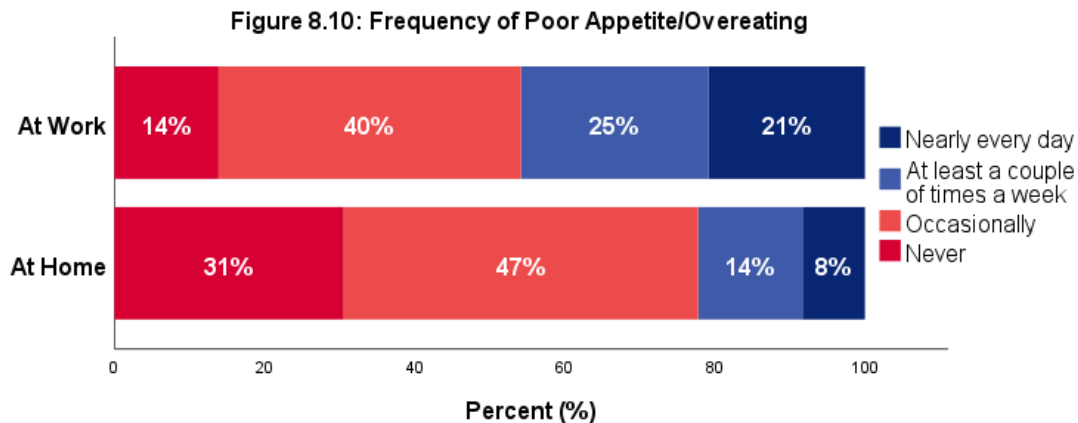
Source: Survey Data, Q 6.8_1, 6.9_1. (N=72)

The routine of camp seems to allow more frequent access to a balanced diet, complaints about food quality and monotony notwithstanding (see Section 6 above). Respondents report more regularly **eating fruits and vegetables** in camp, compared to home.



Source: Survey Data, Q 6.8_4, 6.9_4. (N=72)

However, eating patterns complicate this picture. Nearly half (46%) of the respondents reported **overeating or having a poor appetite** at least a couple of times per week when at work and staying in camp, compared to half this proportion (22%) when at home. People talked about the monotony of work and the comfort of eating as one perk in the day, or of the heavy offerings in the dining hall with constant access to “treats.”



Source: Survey Data, Q 6.10_4, 6.11_4. (N=72)

While there were not significant gender differences for this question, women did tend to report more frequent eating challenges than men when in camp, while eating much better at home. A quarter (26%) of men reported overeating or having a poor appetite at least a couple of times per week while at home (with qualitative comments indicating that overeating was more common), compared to just 14% of women. This may be due to gendered messages about dieting and weight control (Cusack 2000; Siegel and Sawyer 2019; Szymanski and Feltman 2015) and or to gendered roles: women might more often be preparing meals for themselves and/or their families.

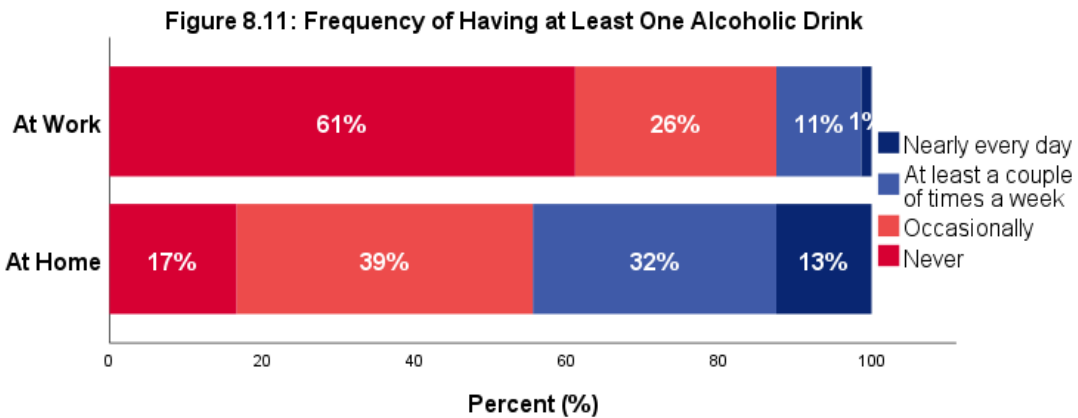
As indicated above, these issues are further complicated for individuals with dietary restrictions or medical conditions that impact their eating patterns, such as allergies, IBS, and diabetes. Participants with such conditions reported struggling with the limited options of camp food, leaving some to rely on food brought from home and stored in personal mini fridges for the duration of their stay. One person reported needing to drive (more than 10 hours) rather than fly so they could transport all the food items needed.

With regard to **alcohol and drug use**, a similar pattern emerges regarding workers' wanting to unwind and have a break from camp routines and restrictions when home. Survey results suggest that participants tend to consume more at home. This was especially true for alcohol consumption. While only 12% of respondents indicated consuming alcohol a couple of times a week or more when on rotation, 44% reported doing so when at home. This seems to be somewhat higher than average in the Canadian population (Statista 2021).

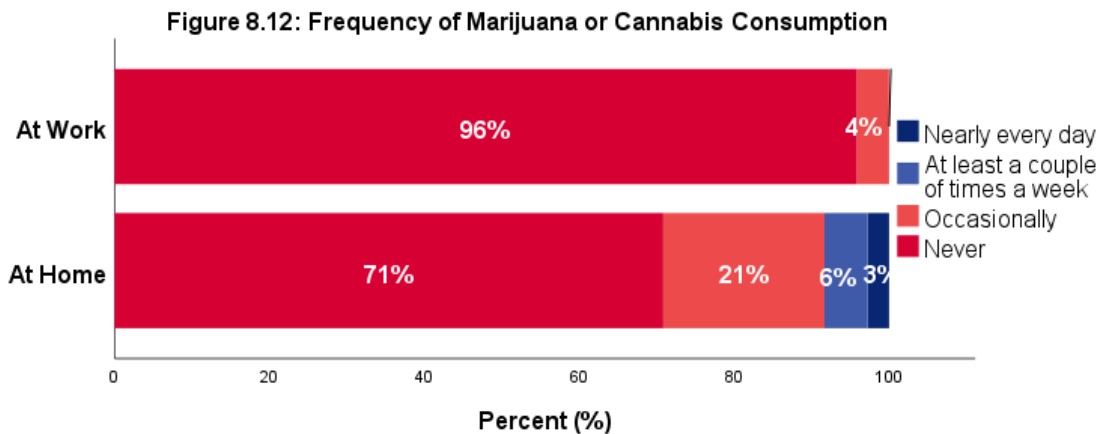
Only 4% of participants reported ever using cannabis at work, while 29% reported occasional or more frequent use when at home; the latter is consistent with findings in the population (Health Canada 2020). There was a very low reported usage of illegal drugs in both settings.

Conditions of employment and camp living most likely shape responses regarding alcohol and drug use at work. Stringent work and camp policies, including regular searches and ready dismissal if banned substances are found, contribute directly to

lower usage when on rotation. Access to alcohol can be limited when in camp (e.g. “dry” camps). In addition, cannabis is not a drug of choice at work because it stays in the system, and there is regular testing. Finally, and perhaps most importantly, these factors most likely contributed to underreporting of drug and alcohol use in our survey (cf. Aquilino 1994; Feunekes et al. 1999; Boniface et al. 2014; Northcote and Livingston 2011). Subjective comments from MWMH participants make it clear that alcohol and drugs are commonly used in camp and sometimes on the work site.



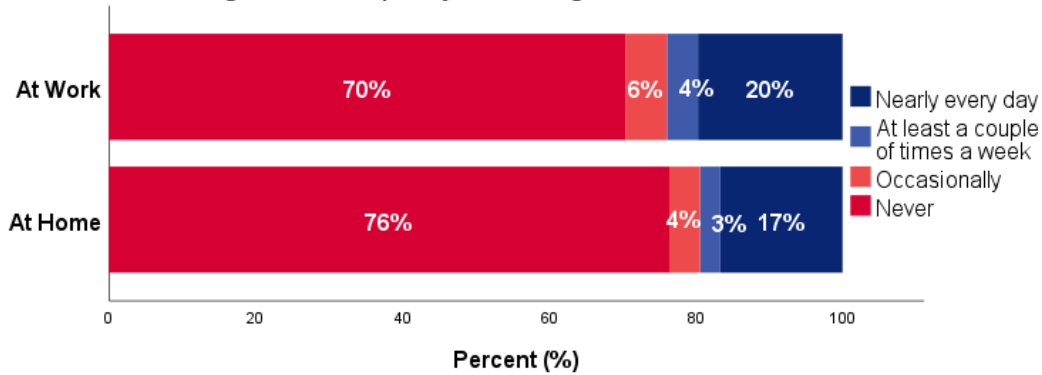
Source: Survey Data, Q 6.8_7, 6.9_7. (N=72). Note: "Alcoholic Drink" includes Beer, Wine, or any other Liquor.



Source: Survey Data, Q 6.8_6, 6.9_6. (N=72)

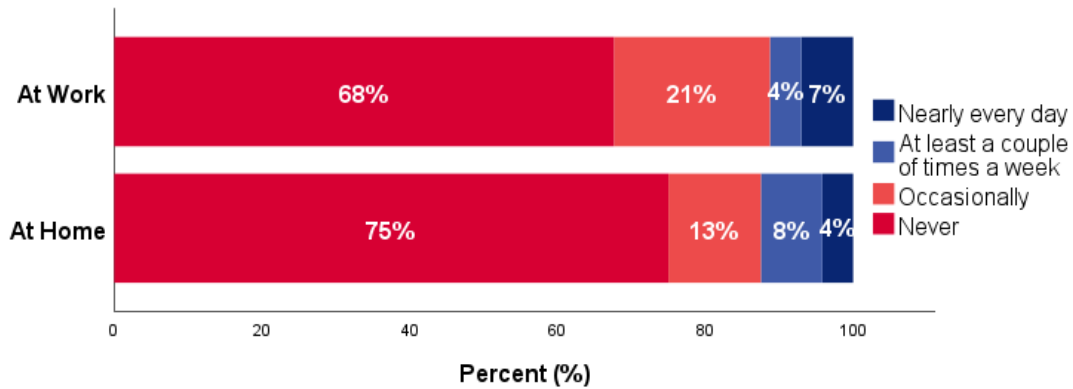
Tobacco smoking habits were about the same across home and work, with 20-24% smoking at least a couple of times a week. There is a higher proportion of smokers overall in the study population than in the general population, where 17% are current smokers and 12% smoke daily (Grey Bruce 2017).

Figure 8.13: Frequency of Smoking Tobacco Products



Source: Survey Data, Q 6.8_5, 6.9_5. "At Work" (n=71), "At Home" (n=72).

Figure 8.14: Frequency of Using Pain Relievers



Source: Survey Data, Q 6.8_8, 6.9_8. "At Work" (n=71), "At Home" (n=72).

Use of **pain relievers** was also similar across work and home, but with some important gender differences. Women were more likely than men to report using pain relievers, and to do so more frequently, both at work and at home. 45% of women used them at work occasionally or more (v. 26% of men); and at home, 36% of women reported using them occasionally or more (v. 20% of men). There might be an element of gendered identity or performance at play here. Men may be underreporting use of pain relievers at work in a culture where one is supposed to “tough out” pain; within this same culture, women in the trades might medicate at a higher rate in order to be able to help prevent any signs of “weakness.” It is difficult to know without further study.

In connection to pain relievers and substance use, the survey did not include a question about the use of sleeping pills. This is unfortunate given the importance of sleep disruption that emerged in other questions and should be studied further. In their major study, Parker et al. (2018: 175) found FIFO workers to use tranquilizers or sleeping pills four times more often than the benchmark (non-FIFO) group.

SLEEP, REST, AND ENERGY

Sleep and rest are foundational to health. Sleep disruptions are associated with numerous adverse short- and long-term consequences: memory disorder, increased receptivity to stress, hypertension, cancer, diabetes, and cardiovascular diseases (Medic et al. 2017). Multiple studies show that quality and quantity of sleep are linked to mental health (Robillard et al. 2016; Steptoe et al. 2008), levels of productivity (Magnavita and Garbarino 2017) as well as mood and wellbeing (Totterdell et al. 1994; Triantafyllou et al. 2019). Sleep disturbance and energy loss are signs of depression (Health Canada 2002). Sleep is also foundational to the quality of social interactions (Totterdell et al. 1994), which, among other things, may have a further impact on mental health. Lack of sleep also reduces human motivation for physical activities (Axelsson et al. 2020) and is detrimental to the ability of people to focus and be attentive (Lowe et al. 2017). Combined, those outcomes of sleep deprivation may lead to an increased risk of mental illness, physical injuries, and even death.

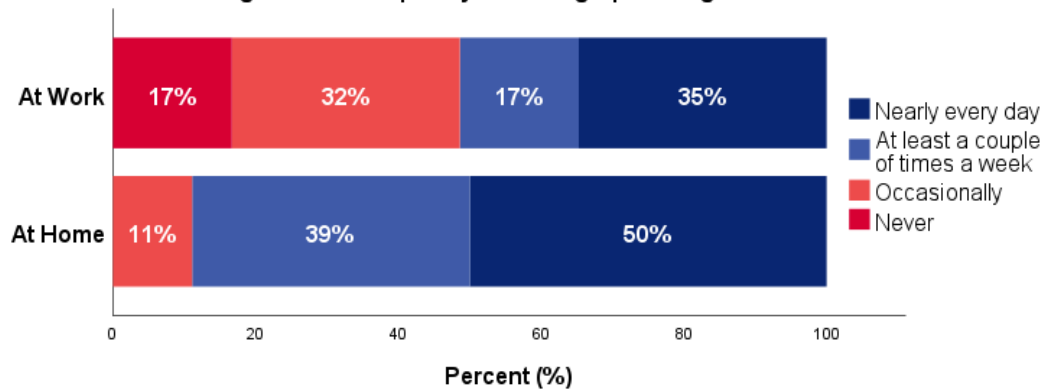
At the same time, lack of sleep and fatigue are associated with work environment: weak social supports, job control, and organizational justice, as well as high work demands and job strain (Linton et al. 2015).

Sleep is of particular importance in camp as an indicator of quality of wellbeing. Research from other countries shows that FIFO workers often lack in both quality and quantity of sleep (Barnes et al. 1998; Muller et al. 2008). In comparing FIFO and non-FIFO workers, Parker et al. (2018: 15) found sleep quality to be significantly worse among the former. This can lead to fatigue, which increases the risk of work-related accidents and injuries (Muller et al. 2008; The Sellenger Centre for Research in Law, Justice and Social Change 2013).

It is important to note that demanding work conditions also leave little time for restorative practices or sleep among FIFO workers in the oil sands. With average 12-hour shifts plus time to prepare and commute to the work site, the workday can top out at 13, 14, or more hours, leaving workers with only 10 hours to unwind, call home, eat, shower, and sleep. This leaves a palpable “time squeeze” (Dorow and Jean 2021).

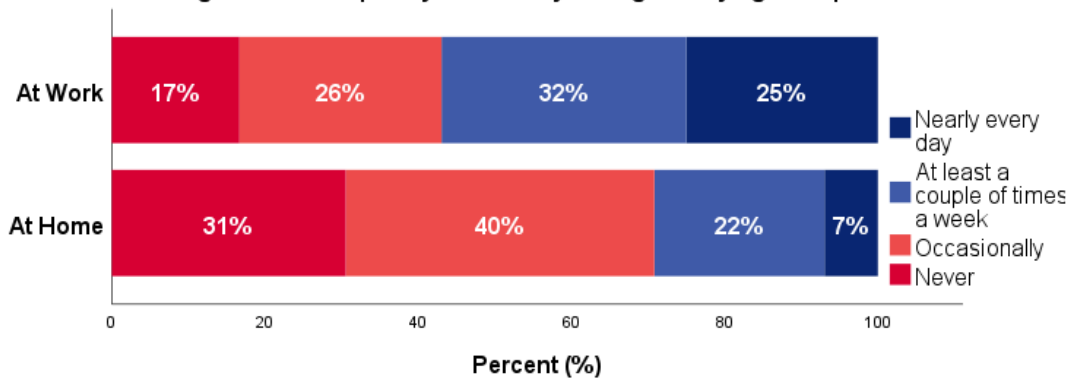
In our survey, almost 90% of participants reported waking up **feeling rested** at least a couple of times a week or more when at home, with just 52% feeling rested at that rate when at work and staying in camp; 17% (1 in 6) reported never waking up rested when in camp (compared to 0% at home). While these rates are similar to those found in the population, the differences between workday and non-workday sleep are starker in our sample than has been found in the population (ResearchCo 2021). Even more notably, 57% of participants report having **difficulty falling or staying asleep** a couple of times or more per week when in camp, versus half that proportion at home (29%). One in four (25%) people report having such difficulty *nearly every day* in camp. This is notably higher than found in the general population, where 11.3% of men and 16.75% of women report difficulty going to or staying asleep “most of the time” (Statistics Canada 2013).

Figure 8.15: Frequency of Waking Up Feeling Rested



Source: Survey Data, Q 6.8_2, 6.9_2. (N=72)

Figure 8.16: Frequency of Difficulty Falling or Staying Asleep

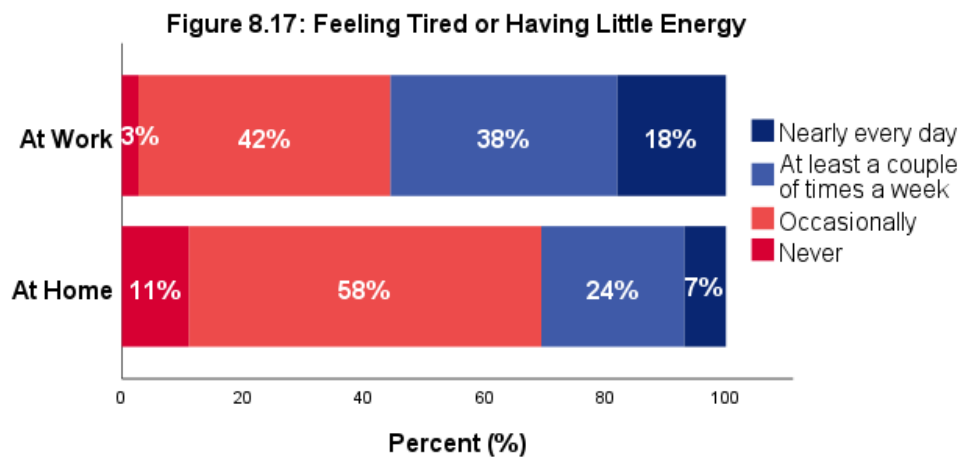


Source: Survey Data, Q 6.8_3, 6.9_3. (N=72)

Insights from Valerie O’Leary (Critical Incident Stress Management-Fort McMurray)

Most camps I have slept in were quiet, but my sleeping patterns were almost always disturbed. Sleep deprivation is not only physically and mentally unhealthy, but the risk factor of errors at work goes up 28%. According to a sleep study conducted by the University of Oxford, 17 hours without sleep is equivalent to a .08 blood alcohol level. One camp I stayed in addressed this and had door hangers in each room on tips for a better sleep. Brilliant! Most suggestions were common sense but when you are exhausted, it’s difficult to think clearly and this became a friendly reminder.

Not surprisingly, there was also a significant distinction between home and work when it came to reported **tiredness or lack of energy**. Over half (56%) of survey participants reported having little energy a couple of times a week or more when at work, versus 31% at home. The frequency of this difference is striking: the proportion who report feeling tired *nearly every day* when at work is more than double the proportion reporting this at home. This difference is bigger than we might have expected, given what we know from qualitative findings: people are still tired when they get home from work, which is compounded by a new sets of demands (family time, errands, house maintenance), and a minority are also letting off steam and partying. Straughan et al. (2020: 212) argue that exhaustion circulates between FIFO workers' home and work environments; home is not "away" from the work site, but rather, they come together through the transfer of exhaustion.

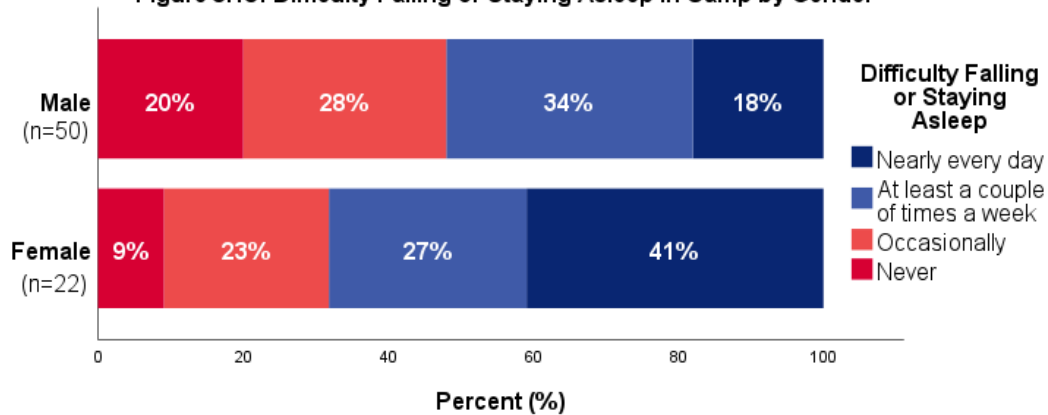


GENDER DIFFERENCES IN SLEEP AND ENERGY

While sleep and rest are worse among women in the general population (Statistics Canada 2013; ResearchCo 2021), our findings appear to be especially stark. Women in the MWMH survey reported a significantly higher frequency of difficulty falling or staying asleep, especially at work (41% "nearly every day" at work v. just 18% of men). There is a parallel difference for "waking up feeling rested," but not to the same degree (38% of men report doing so every day at work, compared to 27% of women).

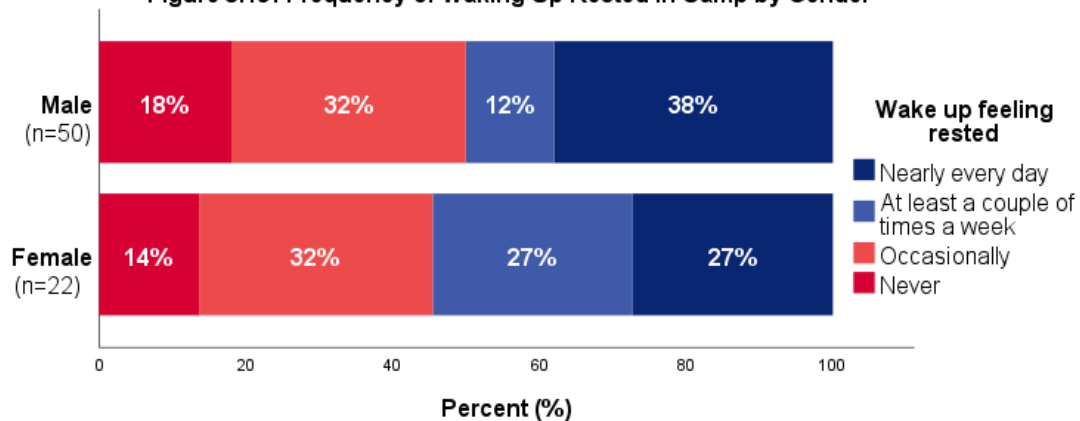
Differences in sleep between women and men when at home are negligible, *suggesting that FIFO conditions are harder on women's sleep and rest*. Research indicates that fatigue and sleep disturbance are a sign of social environment, including bullying (Linton et al. 2015). Female FIFO workers may be hyper-conscious of their environment while at camp, especially with reported instances of assault and break-ins of camp rooms (Kelly 2020; Ryser et al. 2016); these experiences can be heightened by camp conditions, such as staying in a shared "Jack and Jill" room versus a private room or being in a mixed wing as opposed to a women-only wing.

Figure 8.18: Difficulty Falling or Staying Asleep in Camp by Gender



Source: Survey Data, Q 1.2, 6.8_3. (N=72)

Figure 8.19: Frequency of Waking Up Rested in Camp by Gender



Source: Survey Data, Q 1.2, 6.8_2. (N=72)

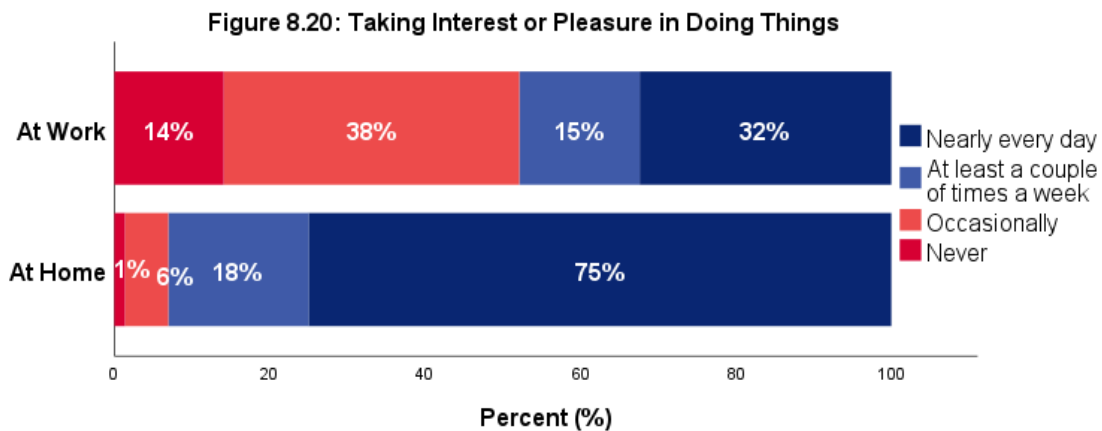
MENTAL HEALTH AND SELF-WORTH

While the physical health habits described above clearly impact mental health, and vice versa (Churchill and Farrell 2017; Choi et al. 2019; Totterdell et al. 1994), the survey also asked direct questions about mental health habits and attitudes, from the ability to enjoy things to thoughts of hurting oneself, at work versus at home. Loss of interest in activities, inability to concentrate, and feelings of hopelessness, unworthiness, or guilt are all signs of depression (Health Canada 2002).

We begin with questions that gaged level of ability to **concentrate and take interest** in activities. While participants' ability to concentrate on things like reading or watching a show did not differ much between home and camp, there was quite a stark difference reported in "taking interest or pleasure in doing things." Almost all (93%) of the MWMH FIFO workers reported taking pleasure in activities a couple of times or more per week when at home, versus half that proportion (47%) at work/in camp. The frequency is equally notable, with three-quarters of people reporting such pleasure at home on an almost daily basis versus only one-third at work. These numbers are *high compared to*

the general population, where 12% report little interest or pleasure in doing things on most working days (Ipsos 2017). This compares to *half* (52%) of our participants.

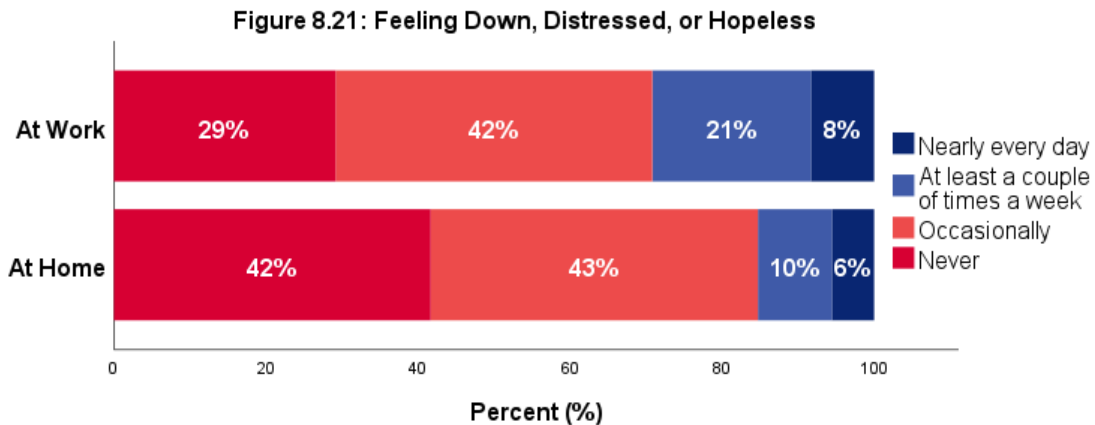
The enjoyment and passion participants expressed for working in their trade seems to be obscured here. This may be because participants interpreted the question about taking interest or pleasure in the context of camp living (which many find monotonous and prison-like), and/or pleasure from work was dampened by other stressful experiences. It would seem that the overall environment contributes to lowered levels of interest or pleasure while on work rotation, but this disconnect deserves further study.



Source: Survey Data, Q 6.10_1, 6.11_1. "At Work" (n=71), "At Home" (n=72).

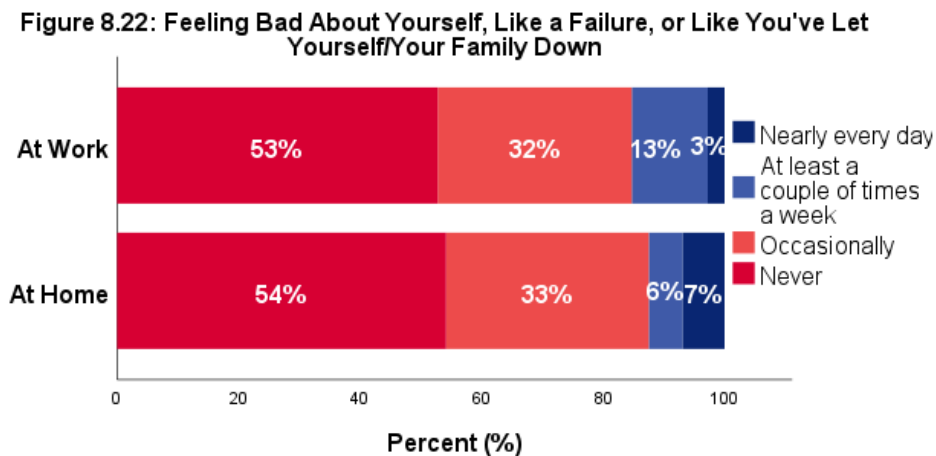
While the survey found a tendency to report more frequent experiences of **hopelessness** when at work (29%, versus 15% when at home), most participants reported only occasionally or never having such feelings at both work and home. Nonetheless, this appears higher than in the general working population, where 11% report feeling down, distressed, or hopeless on a majority of working days (Ipsos 2017).⁵ We know from our participants' feedback that the increased likelihood of feeling down at work comes in part from distance from family, the struggle of managing familial or intimate relationships across distance, camp conditions, and tiredness from work.

⁵ Based on differing scales of measurement.



Source: Survey Data, Q 6.10_2, 6.11_2. (N=72)

As our survey moved into assessment of more extreme feelings of **depression, failure, or despair**, reported differences between work and home diminished. This may be because such experiences are more generalized, i.e., they are part of daily life regardless of context. This finding, however, emphasizes the need to examine how conditions of FIFO work dis/allow the continuity of care and mental health interventions across work and home (cf Donatelli et al. 2017), and to assess the degree to which employers are prepared to respond to the socio-spatial realities of their workers.

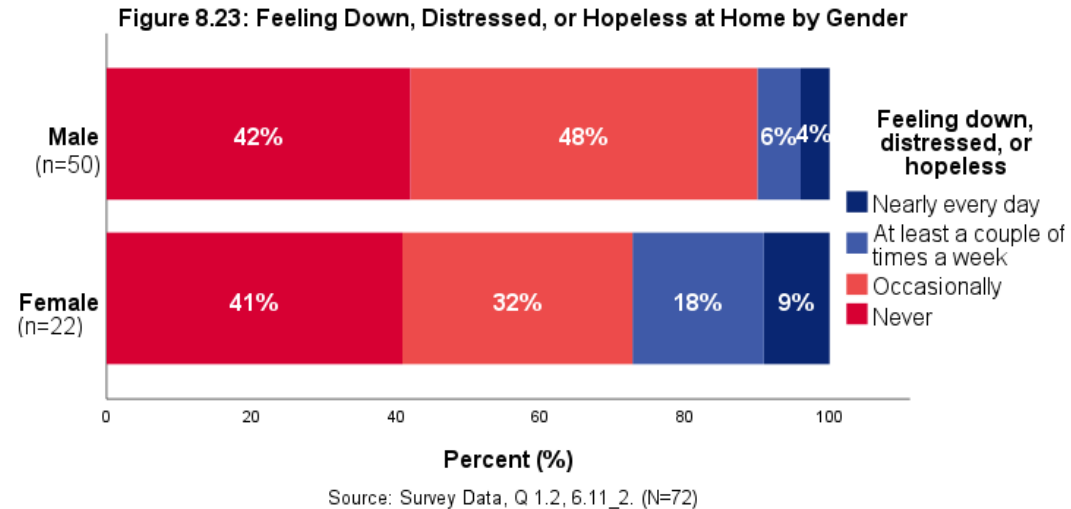


Source: Survey Data, 6.10_5, 6.11_5. (N=72).

One in ten of our participants reported having **thoughts of hurting themselves**. This appears consistent with the adult population, and is consistent across work and home, pointing to a segment of the workforce with pressing mental health needs. It is important to note that lack of access to meaningful relationships or of a sense of affirmation at camp-based work can elevate feelings of distress or crisis (cf Parker et al. 2018). In addition, the disruptions of FIFO work might impact ongoing forms of care or access to resources (see Section 9).

GENDER DIFFERENCES – MENTAL HEALTH

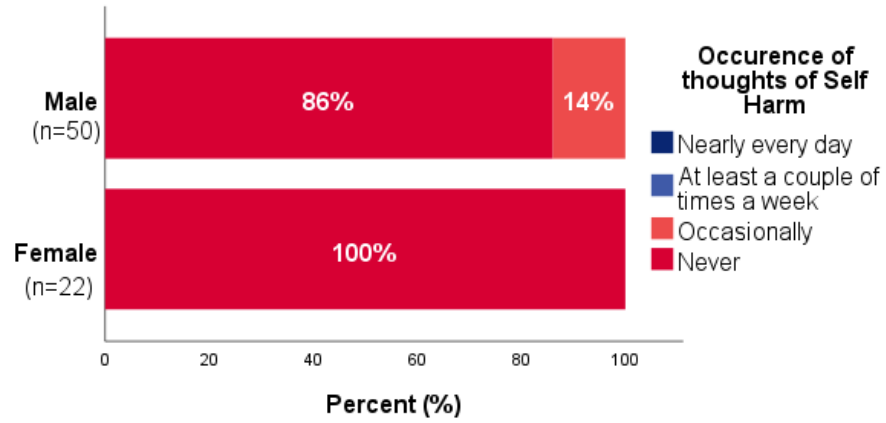
There are some notable *gender differences* in these preliminary findings regarding mental health. Women reported a higher frequency of feeling down, distressed, or hopeless at home: 27% a couple of times a week or more, in comparison to just 10% of men. While such discrepancies are found in the population, our findings warrant further study, given that women showed the same work attachment as men, reported higher social connections at home, and reported similar frequencies of hopelessness at work.



This finding may be related to results regarding feeling like a failure: 18% of men reported having such feelings at least a couple of times a week when at work, compared to 9% of women. This is reversed for feelings at home: 18% of women feel bad, like a failure, or that they have let themselves or their family down, versus 10% of men. Gendered differences in family roles and responsibilities might be at play (see Dorow and Mandizadza 2018). Again, further research is needed to corroborate and explore these findings.

Consistent with the literature is our finding regarding thoughts of hurting oneself. All participants who reported such thoughts at work were men (1 in 7), and all but one who reported such thoughts at home were men. Research finds that men, particularly young men, working in construction trades are at higher risk for suicide, and that these rates are influenced by unstable work and lower levels of training and income (Graham and Pinto 2021; King et al 2019; Milner et al 2014; Roberts et al 2013); Alberta has one of the highest rates of suicide in Canada (CBC 2015).

Figure 8.24: Occurrence of Thoughts of Self Harm at Work by Gender



Source: Survey Data, Q 1.2, 6.10_7. (N=72).

9. ACCESS TO AND USE OF HEALTH SERVICES

Highlights

- Three-quarters of participants indicated having a regular health care provider, with racialized non-white participants significantly less likely to have one.
- Three-quarters indicated having access to health care while at work (on site or in town), *but with a strong likelihood they would not use these services—especially on site, and especially among workers in more precarious circumstances* (lower income, currently unemployed).
- Respondents explained their avoidance as a lack of trust in confidentiality, with concern that known or suspected health issues could lead to repercussions such as a negative reputation, a layoff, or not being called back for the next job.
- Half of the participants (49%) indicated some or no comfort with seeking mental health supports, citing stigma, personal discomfort, fear of professional consequences, and lack of information.
- One-third (35%) had sought some kind of help for mental health issues in the past year; likelihood of doing so was highly correlated with reported amount of work stress.
- Almost all were aware of mental health services available through work, with some skepticism about trusting the privacy or sincerity of these resources.
- Findings regarding under-use of health supports reflect concerns about a culture of work before health.

Access to and use of health services is an important issue for FIFO workers, given the contextual factors of geographic mobility and a masculinist work culture (Parker et al. 2018; Vojnovic et al. 2014; Donatelli et al. 2017). The survey included a section on oil sands workers' attitudes toward, access to, and use of health services. This set of questions raised a crucial finding, which we also discuss: *an occupational culture that socializes and pressures workers to put productivity over their health, and to avoid reporting or using services at work*. Stigma and masculine norms around mental health

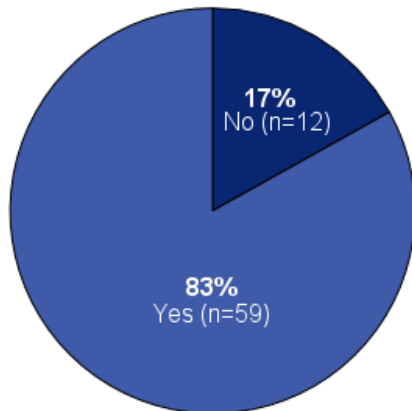
intensify this problem (Parker et al. 2018: 28; Bowers et al. 2018), as does fear of retribution (Sellenger Centre 2013). Crucially, disengagement has been linked to suicidal risk and intent among FIFO workers (Parker et al. 2018: 123).

Access to health care is a key concern for mental health. Canadians who are without a regular health care provider are significantly more likely to report unmet or partially met mental health needs than those with a provider (Statistics Canada 2019).

HEALTH CARE USE AND PROVISION

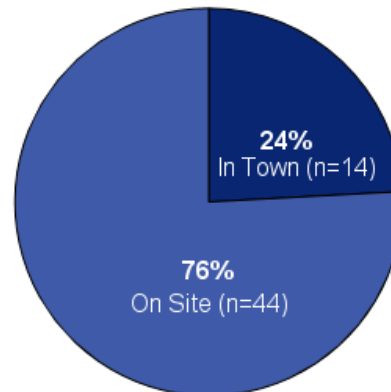
The survey asked about use of healthcare services *when at work/in camp*. The majority of respondents indicated having such an option. Of these, most (76%) had access on the worksite, where services ranged from first aid to a health center with nurses and health practitioners; some mentioned an EMT or a helpline. The other quarter were in situations where they could use health services in town, most often the emergency room or drop-in clinic. Some workers, when in a camp close enough to town, used services both on site and in town.

Figure 9.1: Access to Immediate Health Care Services While at Work or Camp



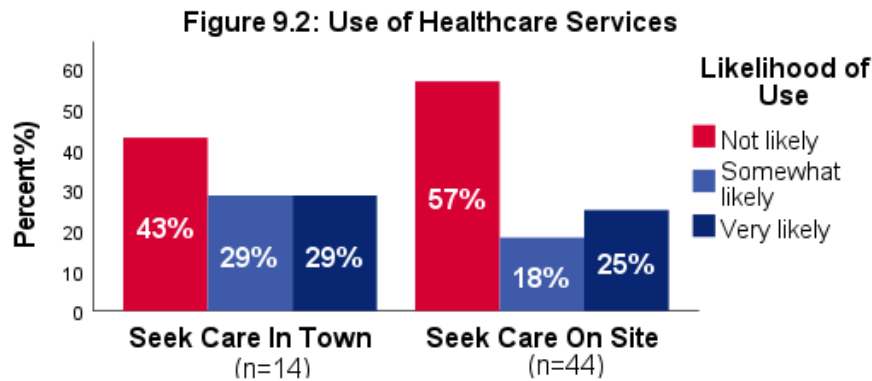
Source: Survey Data, Q 7.2. (N=72, missing =1).

Figure 9.1a: Location of Immediate Health Care Services



Source: Survey Data, Q 7.2. (N= 58). Note: Only includes respondents with access to healthcare when at work or camp, per Q.7.1.

However, more than half of survey participants indicated they would *not* be likely to use any of these services. *It was especially those with on-site options that indicated such reluctance, with 57% indicating they would not be likely to use health services available to them when at work.* Reasons for this avoidance varied. Some workers indicated they would only use any medical service if they absolutely had to, or that for anything short of an emergency they would wait until back home to deal with it. A number also mentioned that health services on site were geared toward emergencies and not ongoing health issues or prevention.



Source: Survey Data, Q 7.2B. (N=58).

Notably, the most prevalent and often the most vehement reason for not using services was to *avoid the gaze of the employer*. Some mentioned that they would go into town rather than on site—even if a health center was available on site, and even if they had to pay out-of-pocket in town—for the sake of privacy. As one worker put it, “No one will know you have gone.” At the same time, a few workers had had negative experiences with medical treatment in town and said they wouldn’t go again.

A number of participants discussed concern that lack of confidentiality at on-site health services could lead to repercussions, including negative reputational implications, the “headache” (for themselves or others) of cases where a health issue would become a formal “incident” (workplace injury), or worse yet, being laid off or not called back for the next job. This concern was probably deepened in our survey by the high representation of contract workers.

“I try not to use the medic on site. If you do use the medic on site, it becomes an incident. Even if it was a cold, there’s a lot of paperwork. The employer doesn’t enjoy that. It’s known that if you go to the medic and it wasn’t serious your chances of being laid off go up.”

“They can use it to run you off of site. I’ve seen other people go to the doctor for a problem and not be allowed back on site.”

Particular groups of people were more likely to indicate they *would* use health care services at work (if available):

- workers on long-off rotations
- racialized workers.

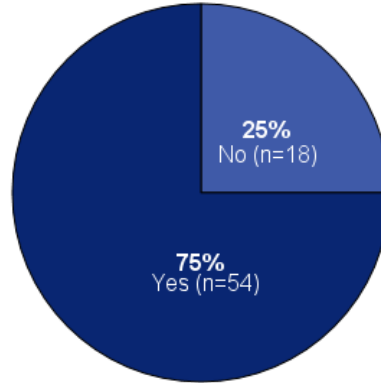
And some other groups were likely *not* to:

- workers in lower income categories
- workers currently unemployed.

Given mistrust of the consequences of health care reporting, it stands to reason that workers in more precarious positions would be reluctant to use health services at work. Perhaps racialized non-white workers were likely to use such services given the prevalence of long-term health conditions and lack of a regular health care provider.

Three-quarters (75%) of respondents indicated that they had a *regular health provider*. This is lower than the 86% reported in the general population (Statistics Canada 2020a).

Figure 9.3: Access to a Regular Health Care Provider



Source: Survey Data, Q 7.1. (N=72)

When asked why they did not have a regular provider, respondents pointed to issues of location and mobility, as well as direct avoidance:

“There’s no health service back home.”

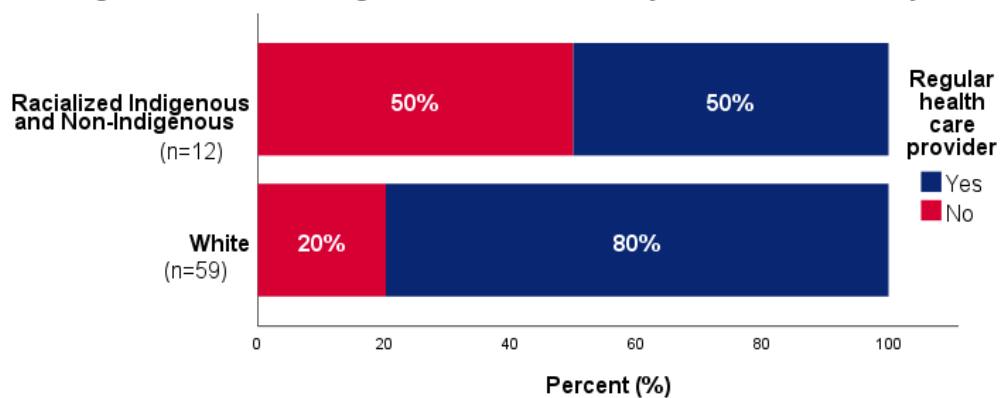
“I’m never in one place long enough.”

“I don’t trust what they give for medication.”

“I only go if something is broken.”

One group that was significantly likely to report *not* having a regular health care provider was racialized workers. These are concerning findings, given that these workers are also more likely to report long-term health issues (see Section 4).

Figure 9.4: Access to a Regular Healthcare Provider by Ethnic or Racial Identity



Source: Survey Data, Q 1.3, 7.1. (N=72, missing=1)

The survey also asked if participants felt that at any time in the past year they had not received health care when needed. Twenty-two percent said “yes,” pointing to infections, injuries, a dental problem, a cardiovascular issue, digestive issues, vaginal health, a chronic cough, and in several cases, mental health issues. When asked *why* they did not receive care, these participants indicated:

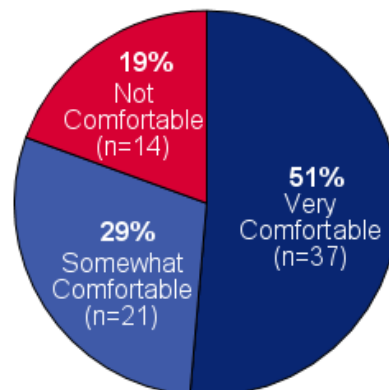
- not having time (including the extra time to go into town)
- inconvenience (for self and/or employer), with possible repercussions
- previous experiences with poor care
- not having the funds or coverage
- requesting but not getting help.

Taken together, these results are cause for concern for the health of contract workers but also for all workers, given that the health of contract FIFO workers has a direct impact on the oil sands workforce as a whole. It is also concerning when we consider that accessing both physical and mental health services can be lifesaving. One participant described a health issue that was caught “just in time” by a site doctor.

USE OF MENTAL HEALTH SERVICES

The survey inquired about people’s general comfort with seeking help for mental health, and also about actual supports accessed in the last year. Mental health continues to be under-discussed in the workplace (Employment and Social Development Canada 2016), which in turn undermines awareness and use of mental health resources, especially in male-dominated work environments (Parker et al. 2018; Roche et al. 2016). What’s more, perceived unmet needs and barriers to care are key to understanding help-seeking (Meadows et al. 2002).

Figure 9.5: In general, how comfortable would you be seeking formal support for mental health?



Source: Survey Data, Q 7.4. (N=72).

While most people indicated they would be comfortable seeking supports for mental health, comments on why people would be hesitant to do so were informative, echoing concern throughout the survey that it was not safe to reveal mental health struggles or conditions. The most common reason cited for discomfort were:

- stigma (n=9)
- personal discomfort and awkwardness (n=8)
- fear of professional consequences (n=7)
- uncertainty about how to do so, lack of information (6)
- can deal with it independently (n=6).

Stigma is a known barrier to mental health support and responsiveness in the workplace (Szeto and Dobson 2010), including in FIFO resource industries (Kalaf 2014; CCOHS n.d.).⁶

A number of participants said that “this is the oil sands – you don’t talk about that,” with some linking this silence to a male- and white-dominated workplace where the “general consensus is that mental health is for the weak.”

“I got a problem, I’m gonna deal with it, but certainly not at work here. If you got problems at work, you might not work. So you don’t want to be the problem, especially in a minority and the brown guy, the black guy or the woman. You know, you’ve got some sort of disability or an indigenous person that, you know, you don’t want to be the problem at work.”

“It’s hush-hush to talk about mental health, it’s not seen as tough. The type of people that go up there, there’s a masculinity thing. No one really talks about it - and so it’s taboo. Being away from family, being in a rough environment, the people around you affect you.”

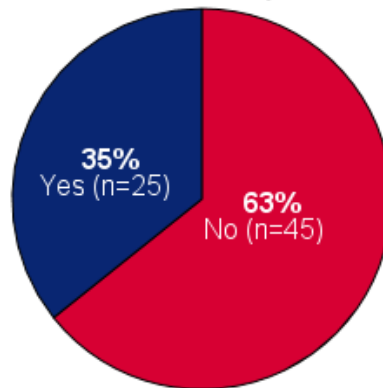
“I never did [before] because I’m stubborn, but now I’m reaching out. There’s lots of stress up there but lots of workers don’t want to acknowledge or admit it. The mentality is of a man who toughs through it. The boomers who are tough and the younger generation trying to impress; guys in middle trying to just get through it.”

The survey then asked more specifically about help or services participants had sought for challenges with emotional or mental health over the last year. In total, some 25 individuals, or 35% of the sample, had accessed information, medication, and/or counselling for mental health during the past year (some had accessed other resources, such as yoga or massage). This is slightly lower than found by Parker et al. (2018) in

⁶ We did not find significant gender differences in reported comfort seeking mental health support. This might suggest that there is a generalized cultural milieu that overrides the gender differences often found in research (Statistics Canada 2020).

Australia, where just over half indicated accessing mental health supports, and seems to be *twice the proportion of people reporting so in the general population* (Szeto and Dobson 2013; Statistics Canada 2020b). This can be interpreted both positively (a higher percentage is in fact receiving support) and negatively (a higher percentage is in need of support).

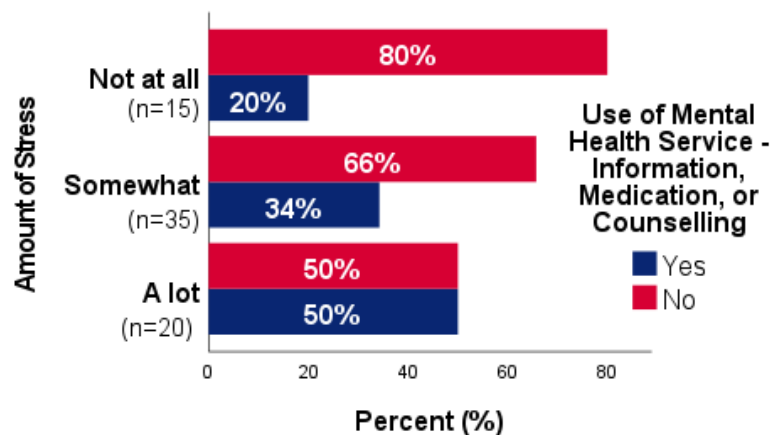
Figure 9.6: Help Sought in the Last Year (Mental Health Counselling, Medication, and/or Information)



Source: Survey Data, Q 7.5 (N=72, missing=2). "Other" (n=2) not included, but refers to seeking support outside of Information, Service, and Counselling, such as physical massage.

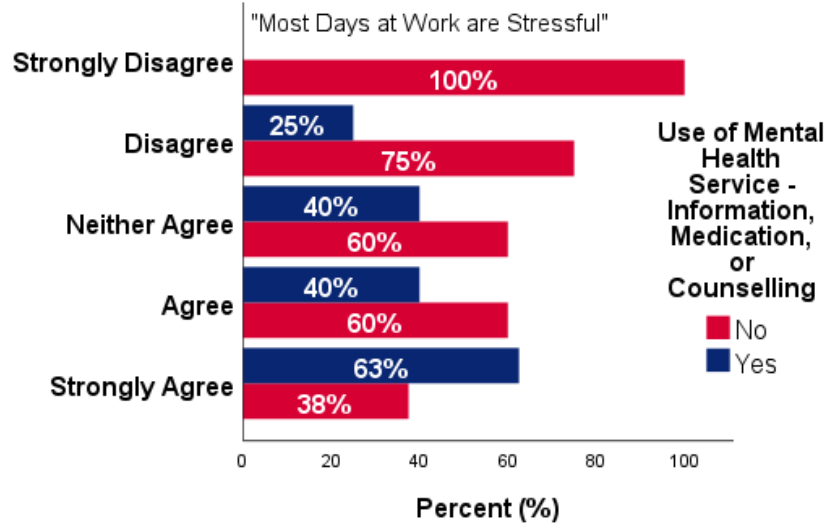
Echoing the research literature, higher intensities of work stress were correlated with seeking/needing mental health supports (Szeto and Dobson 2013).

Figure 9.7: Use of Mental Health Supports by Amount of Work Stress



Source: Survey Data, Q.7.4, 6.13_1. (N=72, missing=2).

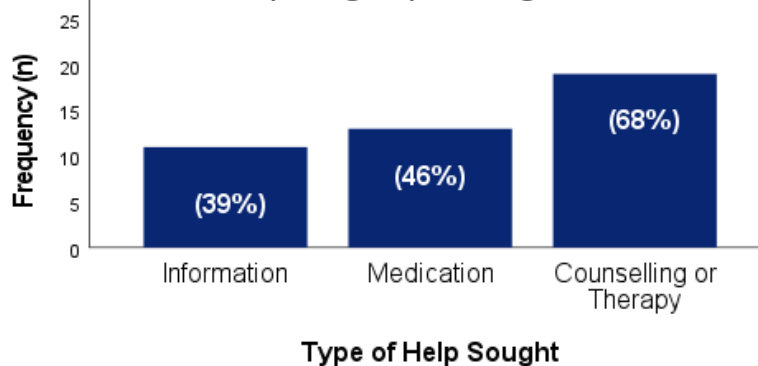
Figure 9.8: Use of Mental Health Supports by Daily Stress at Work



Source: Survey Data, Q.5.7_7, 7.4. (N=72, missing=2).

Most of the participants that reported help-seeking (n=22) had sought *medication and/or counselling*; 68% of those who sought help used counselling or therapy, 46% reported using medication, and 39% sought information (with overlap across categories of use). In Canada as a whole, counselling is found to be the mental health care need most likely to be reported, and the least likely to be met (Sunderland and Findlay 2012). And as is found in the general population, females were more likely to seek help than males: 27% of female participants sought medication compared to 14% of males, and 36% of female sought counselling or therapy compared to 22% of males; cf Statistics Canada 2020b).

Figure 9.9: Type of Help Sought Among Those Reporting Help-Seeking



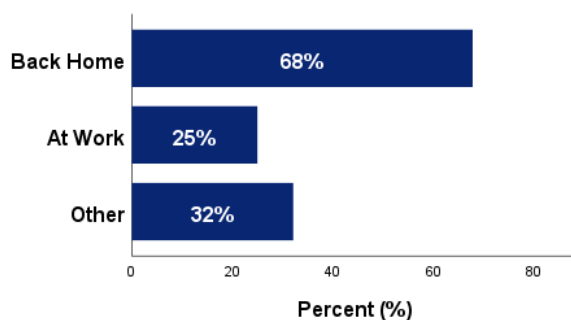
Source: Survey Data, Q. 7.5A. (N=28). Note: only includes respondents who reported using any form of help. Additionally, because respondents could select multiple responses, totals will not add up to 100%.

The kinds of *issues for which people seek mental health help* is important, and so we asked participants if they were comfortable briefly describing the issues for which they sought help. Twenty-six out of 28 shared this information with us. The most common mental health struggles were (with some multiple answers):

- family/relationship issues (n=7)
- anxiety (n=6)
- depression (n=6)
- trauma (n=5)
- general mental health (n=5)
- stress (n=3)

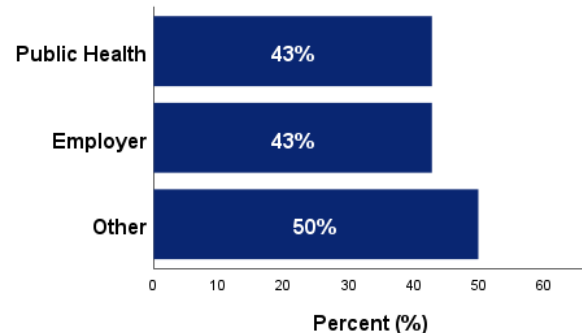
Most participants who accessed services did so back home, as opposed to at work, although participants named a number of “other” forms of access such as online, by phone, or through other institutions. Their mental health services were covered by a mix of employer-provided benefits and public health, but with half indicating that coverage came, at least in part, from elsewhere; unions and out-of-pocket were the most common “other” sources.

Figure 9.10: Where Were Mental Health Services Received?



Source: Survey Data, Q 7.5A. (N=28). Note: Only includes respondents who reported seeking help/support in any capacity. Additionally, because respondents could select more than one answer, totals will not equal 100%.

Figure 9.11: Who Provided the Services?



Source: Survey Data, Q 7.5B. (N=28). Note: Because participants could select multiple responses, totals will not add up to 100%.

Finally, all survey participants were asked if they knew about *services currently available through their work* in support mental health and wellbeing, and if so, what these were. Over 90% were aware of such services (and all 28 respondents who had accessed help in the last year were among this 92%), better than reported in some other FIFO studies (Sellenger Centre 2013). MWMH participants referred to:

- EFAP (Employee Family Assistance Program)
- Union
- Mental Health Helpline (1-800 number)

Others mentioned nurse practitioners at site, family doctors, and private psychologists. Participants mentioned challenges in accessing services (e.g., they were only available in the home office, not locally on site) and in getting reluctant workers to take advantage of them. Responses to this question showed a range of perspectives, from enthusiasm

about services available to skepticism about the quality and sincerity of employer offerings.

“There's a pamphlet somewhere. . . my employer provides information at the beginning of every job, so it's there and it's known. But whether people take that up is up to them.”

A CULTURE OF WORK BEFORE HEALTH

The oil sands is well known for a “safety culture” that emphasizes safety training, injury prevention, protective equipment, and safe work habits. Responses to the survey indicate that workers feel this safety culture exists alongside *a work culture that puts productivity, industry timelines, and work dedication ahead of health and wellbeing, including mental health and psychological safety* (cf Angel 2014b), with variation across employers and the quality of relationship between contractor and operator. There are several key facets of this culture, as described by participants across our study:

- industry productivity and individual income above all else
- mistrust of employer support (fear of being let go)
- lack of attention to mental health issues.

The above issues, in turn, contribute to

- a reluctance to report health issues or seek help.

Recognizing and addressing this reality is important if oil sands work is to meet workplace health regulations, taking into account Alberta's *Occupational Health and Safety Act*, which is responsible for the prevention of workplace injuries and ill health including psychological safety, and the *Workers' Compensation Act*, which regulates how workers who received injuries on the job must be compensated. Changes to these regulations in recent years might directly or indirectly reinforce the above-mentioned attitudes and dispositions of the work culture (see also Section 10).

Workers pointed to multiple ways in which this culture manifests itself:

- direct messages from supervisors and workmates
- informal narratives about expectations of workers
- lack of attention and responsiveness to health and wellbeing
- pressures to comply in order to be retained, re-hired, considered for better perks (e.g. overtime), and/or promoted – i.e. to “prove” oneself

Quotes from participants illustrate this range of issues:

“Lots of times you're feeling under the weather. This work is demanding on the body. Technically you could be considered ill but you're going to go to work. You lose income if you rest, it's frowned upon by the employer, and there's stress on the crew if they're down a guy.”

“Taking time off work when you’re sick is the fast track to being laid off.”

“You work through being sick. If you don’t show, your foreman will call you and bully you into showing up.”

“They advise you not to come in if sick but they don’t like it because they are looking for man hours. You’ll get laid off first if you do report.”

“Just go to work. You’re in camp, as long as you can pick your head up I don’t see the excuse. You’re away from your family, get paid. I tell the guys the same thing, make all the money you can.” (a supervisor)

“In management, you have to be sick enough to be taken out by ambulance to report in.”

Some aspects of this culture can be traced to characteristics of the resource extraction industry such as rapidly changing market conditions, tight timelines, and male-dominated work (Collinson 1998; Mayes 2014; Saxinger 2021; Straughan, Bissell and Gorman-Murray 2020). The construction industry has also been shown to perpetuate a culture of working to tight deadlines, long hours, and “proving” oneself, which are in turn linked with occupational stress and ill health (Bowen et al. 2014). Finally, and importantly for the purposes of this study, this culture appears to be perpetuated and reinforced by FIFO conditions:

- being a “captive” workforce while at work, on rotation
- being in full “work mode” when away from home and family
- spreading of sickness from travel and close quarters.

One participant summarized: “When you go to camp, you are there to make money. So it defeats the purpose if you don’t work; everybody gets sick up there because of the nature of the work, and it’s not optional.” In this same vein, a number of participants, including and especially supervisors, spoke to the pressures to meet deadlines and budgets that trickled down to them as contractors from the direct operator companies.

It is perhaps not surprising, then, that nearly 80% of participants reported working when sick and one-third reported not taking time off work for an injury (see Section 4). Many tied working while sick to this same organizational culture: not reporting and “manning up”; expectations (on the part of both employers and workers) that one has to be quite sick to not work; mistrust in employer support for people with health issues or injuries; and working through sickness because working and making money is the only reason you’re far from home for one or more weeks.

While this culture may be especially tied to the precarity and contingency of contract work, other research suggests that it may be more widespread (Angel 2014b; Barnetson and Matsunaga-Turnbull 2018; Parker et al. 2018).

10. RECOMMENDATIONS AND NEXT STEPS

Highlights

- When asked, participants identified the following as *key factors of FIFO work contributing to poor mental health and wellbeing*: feelings of loneliness, isolation and being trapped; separation from family and relationships at home; camp conditions and atmosphere; job uncertainty/finances; masculine culture; substance abuse/addiction; and general morale. These echo the findings of the report overall.
- *Workers were most in favour of the following recommendations*: family counselling and referral, activities promoting workplace mental health, massage, stress management information, and nutritional audits.
- Based on study findings overall, *our recommended changes to FIFO conditions* include better food, privacy, cleaning, and staffing, and more relaxed rules in *work camps*; more flexible and balanced *rotation schedules*; and more time between *travel* and start/end of work rotation.
- Regarding *work conditions and culture*, recommendations include managing work schedules and operator-contractor relations to reduce stress and establishing third-party reporting mechanisms.
- Recommended *mental health supports* include alternative modes of delivery; third-party mental health and counselling supports; enhanced mental health training across all levels and activities in the workplace; concerted efforts to change organizational culture around mental health.
- *Government should provide* funding and training materials for the above activities, prioritize a worker-driven approach, and review legislation that overlooks or disadvantages FIFO workers. *Unions and non-profit organizations* should prioritize mental health training and supports for workers and contribute to policy development.
- *Further research* is needed in a number of areas, including: comparative and longitudinal studies of mental health among FIFO workers and their families; policy implications and best practices; issues such as cumulative effects and organizational culture; and implications for specific populations such as women, supervisors, Indigenous and racialized workers, and precariously employed FIFO workers.

The findings of the MWMH project lead to a number of recommendations for practices, policies, and further research that could prevent or mitigate the negative mental health issues associated with FIFO work. Our recommendations are based on overall results of the study, including survey questions that directly invited participants to share what they saw as key mental health issues for the FIFO workforce, to rate a series of suggested changes, and to offer recommendations of their own. In addition, we refer to outcomes and recommendations found in other related research, discuss related legislative issues, and integrate feedback provided by small groups of stakeholders (from industry, government, labour, and community) on a draft of the report. The recommendations consider the multiple, interrelated levels of social determinants of mental health, aiming for systemic forms of change.

There is, in short, a crucial and pressing need to provide regular and multiple opportunities to both discuss and address mental health, to identify and change the characteristics of oil sands FIFO work that contribute to negative mental health and wellbeing, and to proactively establish preventative measures.

KEY MENTAL HEALTH ISSUES IDENTIFIED BY WORKERS

Workers were asked in an open-response format what they saw as the key issues affecting mental health for oil sands FIFO workers. Their responses, coded thematically and listed below in order of frequency of mention, echo the findings of the study overall:

- loneliness/isolation/feeling trapped
- separation from family and relationships at home
- camp conditions
- job uncertainty/finances
- masculine culture
- substance abuse/addiction
- general morale

Detailed comments from participants also reinforced the importance of considering the *interactive and compounded effects of the conditions of FIFO work on mental health*. Loneliness and isolation, for example, are related to distance from family and home as well as the “prison-like” physical and social atmosphere of camp. Results also show that the masculinist culture of work and “toughing it out,” combined with camp conditions, can compound isolation for women, deepen a culture of “no complaint”, and contribute to serious relationship and health issues and possible suicide.

“Literally everything - the travel, the stress at work, camp, being away from your family is probably the biggest one. I’ve seen guys who are completely broken. The work has broken them, became addicted to drugs, alcohol. They are trying to do what’s best for their family, but the wife left them, the kids don’t talk to them. We’re not all bad guys. We’re trying to do our best, it’s all hard. We don’t always

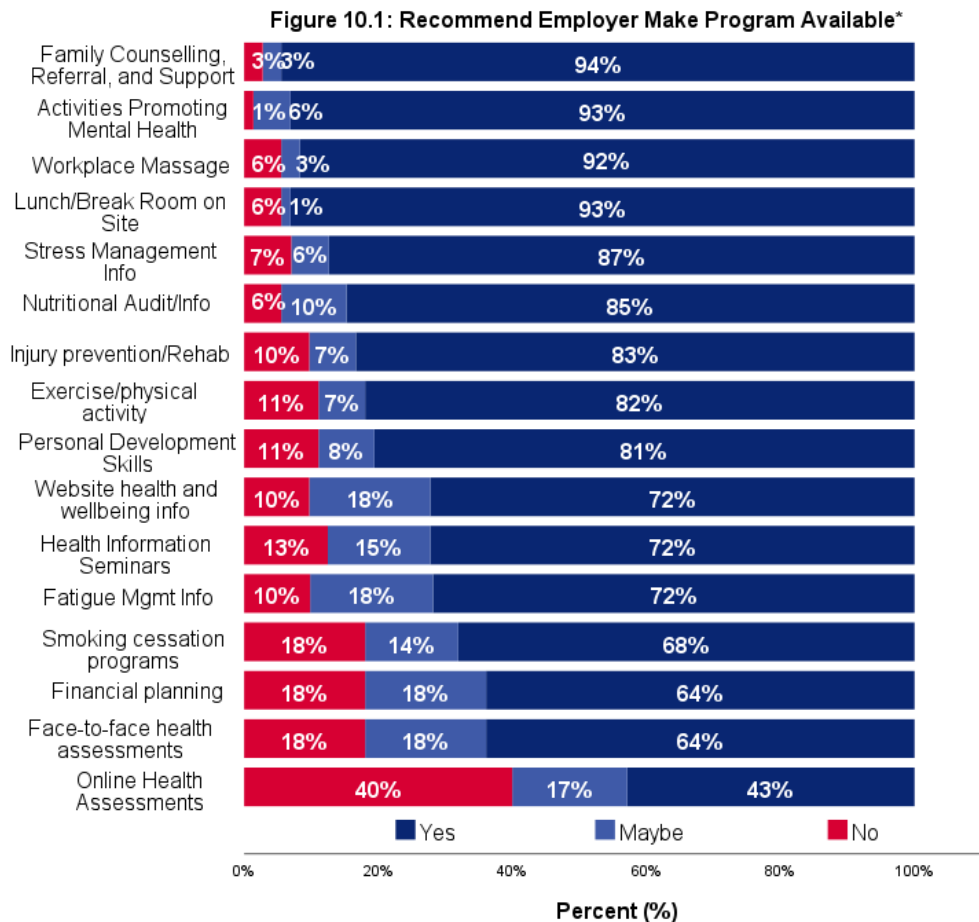
want to leave [home], but if there is no work anywhere else, *you don't do what you want, you do what you have to.*"

"Sure, there's a downturn, but they are still making record profits while workers are hurting. There was a guy on my crew who was so stressed from working and travelling all the time, going through a divorce, and he killed himself."

This open-ended question also brought forward a stressor that had been muted (and probably under-reported) in earlier parts of the survey: *the prevalence of substance abuse and addiction*. As one participant put it, "Money, addiction, and relationships. It's the amount of hours and amount of money made. If you don't have goals then it leads to addiction and gambling."

RECOMMENDED EMPLOYER PROVISIONS – WORKERS' PERSPECTIVES

As seen in the following figure, the last set of questions in the survey posed a series of services and asked respondents if they would recommend that these be made available by employers – no, maybe, or yes.



Source: Survey Data, Q 8.2_1-8.2_16. (N=72, except "Fatigue Management Info" (n=71), "Online Health Assessments" (n=70), and "Stress Management" (n=71). *Legally required, but not accessible.

NOTE: since a lunch/break room is mandated, most respondents indicated they already had access to one; however, in a few situations, workers indicated they were not in fact being provided a lunch/break room or it was difficult to access when out at site.

Workers were also asked to offer suggestions for changes in employment practices and conditions that might improve mental health and wellbeing. These are integrated into the next section.

RECOMMENDATIONS – POLICY AND PRACTICE

Our recommendations are derived directly from the findings of the study while also shaped by important input from several other sources: our participants' recommendations, our respective experiences working with FIFO oil sands workers over a number of years, insights from the research literature, and input from industry, government, labour, and community participants at two workshops held in August 2021.

We organize recommendations by policies and practices needed “inside” and “outside” the workplace to speak to *employers and employees* as well as *government, unions, industry groups, and community organizations*. In doing so, we want to note three important overarching issues:

- FIFO and other forms of employment-related geographical mobility require expansion of the concept of “the workplace” in human resources policies, employment law, and occupational health and safety (Neis and Lippel 2019; Gesualdi-Fecteau et al. 2019). The stresses emanating from work camp life (not considered part of the workplace yet managed by employers through contracts), travel (which may or may not be covered by compensation or treated as work time), and family relationships across distance and time (which EFAP may not be equipped for) are three important examples.
- Many of the urgent issues around mental health for FIFO workers in the oil sands require *multi-stakeholder engagement over the long term*. While some of the issues below can be readily solved through a short-term change in policy or practice (e.g., by camp operators or employers), many of them require concerted, collaborative, ongoing commitment—as called for by the Mental Health Commission of Canada (2021), the Centre for Addiction and Mental Health (2020), and others.
- In the context of Alberta, recent changes to the Occupational Health and Safety Act (OHS) Act and the Workers' Compensation Act via Bill-47 have re-shaped worker-employer relations, making it harder for workers to refuse unsafe work (Hiebert and Green 2021); receive compensation if harmed at work, including by psychological injuries; be reinstated at work after an injury (Foster and Barnetson 2020b; Province of Alberta 2020). The expanded attention given to psychological safety via changes to the OHS Act in 2018 may be undermined by Bill-47. This is a concern for employers, employees, government, labour, and community organizations alike.

FOR ACTORS “INSIDE” THE WORKPLACE

This first set of recommendations focuses on changes to working conditions which, if enacted by employers, could directly reduce stress, prevent mental health problems, promote wellbeing, and increase psychosocial health and safety.

WORK CAMPS

- Provide *healthier and higher-quality food*, and on a more consistent basis (rather than quality going up and down with the price of oil). Conduct nutrition audits that take into account diverse dietary needs.
- Enhance *privacy, comfort, and safety* of accommodations, e.g., through more sound-proof construction, no shared bathrooms, blackout curtains, night shift-only wings, option of women-only wings. (Note: Parker et al. 2018 also recommend permanent rooms for operational workers.)
- Ensure and enforce more consistent *hygiene* across all camps, seasons, and economic conditions.
- Make *rules more flexible* for a balance of safety with autonomy and morale, i.e., relax rules around when camp residents can eat and sleep, strict dress codes, and leaving camp, and potentially drinking (there are differing perspectives on the efficacy of “dry” camps) (cf Ryser et al. 2016). (Note: Parker et al. 2018 find that more autonomy can lead to less drinking).
- Increase camp staff and maintain a *consistent staff-resident ratio* across time to help create better material and social conditions for both oil workers and camp staff (cf Ryser et al. 2016)
 - more social and physical activities—look to best practices, such as in Australian work camps
 - more support services, including counseling, addiction help, and anti-discrimination supports
 - more preventive opportunities like a regulated RMT massage therapist.

ROTATIONS

- Provide/mandate more *flexibility* with rotations to accommodate distance, family situation, etc.
- Prioritize/reward rotational schedules that provide for *more time at home* and/or that are more evenly balanced, such as 7 and 7, 14 and 14.
- For shutdown schedules, mandate a *limit for the number of weeks* in a row that are worked.

TRAVEL

- Develop and follow guidelines for *minimum time lags* between beginning/end of rotation work schedule and long travel (especially driving) journeys.

- Allow enough time for both travel and time back home through appropriate management of rotations (see above).
- Support this through extra night in camp, etc. as needed.
- Cover *travel costs*, in part or in whole, to help ensure safe choices for travel.

WORK DEMANDS

- *Manage rotations and schedules to reduce stress* and fatigue from prolonged working hours and/or extended contracts. This may include having on-call workers or crews for contingency situations (e.g., when a demanding eight-week shutdown contract turns into ten or twelve or more weeks).
- Build in reasonable and accessible times and places (break rooms, bathroom facilities) for *breaks* during the workday that are inclusive of all genders.
- Create mechanisms for reviewing and responding to stress-inducing *relations between operators and contractors*, including deadline pressures, the supervisor “squeeze”, and an atmosphere of constant uncertainty. (See “organizational culture” below.)

MENTAL HEALTH SUPPORTS

The Centre for Addiction and Mental Health (2020b) emphasizes the need for *mental health supports tailored to the particular needs of a work context*. We provide here a non-exhaustive list of recommendations for enhancing the wellbeing of FIFO workers in the oil sands and elsewhere in Canada. Survey participants, stakeholder workshop attendees, and extant research (Parker et al. 2018; Ryser et al. 2016; Angel 2014b) all emphasize the need for a *suite of programs*—available on site, in camp, for families, and online—that promote mental health and wellbeing.

- Provide *counselling* that is regularly available on site/in camp, including through drop-in sessions (by appointment only is prohibitive).
- Provide *wellness activities* as part of paid work time to build social cohesion and mutual support in the workplace (Seaton et al. 2019).
 - These must recognize that the oil sands is a male-dominated workplace, and thus provide activities that take into account and raise awareness about the impacts of a masculinist work culture on all genders.
- Offer *stress management workshops* on a regular basis. *Such workshops are also crucial for helping in early identification of individuals at risk*.
 - This should include workshops for supervisors tailored to the particular stresses they face in the oil sands and in managing and supporting FIFO workers.
- Adopt and support robust programs like Mates in Construction (used in Australia and now in Newfoundland and Labrador) for *relationship-building and suicide prevention* (cf Neis and Neil 2020). (Note: Parker et al. 2018 find that proactive relationship-building both on and off site is beneficial to mental health).

- Enhance and enforce *zero tolerance policies* for discrimination, harassment, and bullying, connecting policy-on-paper to proactive training and programming.
- Create and have clear mechanisms for *punishing violations* of psychological safety (such as laid out in the Alberta OHS Act), including acts of retaliation (cf Barnetson and Matsunaga-Turnbull 2018).
- Create strong anti-stigma back-to-work supports for workers on leave for any kind of injury or illness, including any absence related to psychosocial injury or mental illness (cf Centre for Addiction and Mental Health 2020a,b; Barnetson and Matsunaga-Turnbull 2018; Samra 2017).
- Increase the number of *EFAP sessions* available to workers and their families, for more sustained and trusted access and use (cf Samra 2017).
- Enhance *supports for families* of FIFO workers that take into account absences, extra stresses, etc. (cf Langdon et al. 2016).
- Create and support trusted *arm's-length, third-party health services and resources*, including *Mental Health First Responders* in camp/on site.
- Investigate and *utilize alternative forms of delivery* (e.g., online, and using social media) for HR mental health supports and counselling—including family counselling across distance—to enhance attractiveness, trustworthiness, and effectiveness, especially given frequent mobility and travel (cf Samra 2017; Donatelli et al. 2017).
- Create *worker-led teams* to guide programming and resources that promote mental health and to recommend preventative changes in the workplace.
- Provide safe, third-party mechanisms for *reporting issues affecting psychological safety and mental health* (including discrimination, harassment, bullying, and excessive work demands) (cf Angel 2014b; Barnetson and Matsunaga-Turnbull 2018; Szeto and Dobson 2010).

MENTAL HEALTH TRAINING AND EDUCATION

Changes in practice and policy must address both action and awareness. We offer here a number of recommendations regarding training, education, and communication – all of which are, in concert with action, crucial to shifts in organizational culture. In all cases, what is needed is worker-focused approaches to psychosocial occupational health and safety (Barnetson and Matsunaga-Turnbull 2018).

- Engage in regular, proactive, de-stigmatizing, and clear communication and education about *mental health and psychosocial safety*—building it into orientations, toolbox talks, etc.—including *mental health supports available to workers* (cf Parker et al. 2018).
- Build up and integrate anti-discrimination and anti-bullying training, prevention, and accountability at all levels—from workers to CEOs—especially around racist and sexist forms of *discrimination* (cf Szeto and Dobson 2010).
- Provide *stress management information* through multiple modes (in person and virtually).

- Develop *ongoing developmental training for supervisors* on mental health in the workplace, including a focus on the particular role they play in reducing harm and promoting wellbeing amidst the specific stressors of oil sands FIFO work (cf Samra 2017).
- Review and adopt best practices in suicide prevention awareness and training (cf Neis and Neil 2020).

ORGANIZATIONAL CULTURE AND PLANNING

Many of the above recommendations are only as effective as changes made to work culture, by which we mean both the everyday environment in the workplace *and* the broader organizational commitment to mental health and wellbeing of the workforce. The latter in fact underpins the former. Changes in organizational culture that allow flexibility and balance in work-home life are essential to improving mental health; “perks” like improved food are not a lasting solution (Samra 2017; Parker et al. 2018).

As the MWMH study so clearly shows, there is a strong perception in the oil sands FIFO workforce that it is not safe to report mental health issues (or health issues generally) and that employers do not necessarily care about mental health. While this may be pronounced among contract workers, it is an equally important consideration for operations FIFO workers. Angel (2014b) also found that FIFO oil sands workers feel like a “cog in the wheel”; Barnetson and Matsunaga-Turnbull (2018) found that workers in Alberta are afraid to exercise their workplace health and safety rights.

- Adopt *workplace-wide and industry-wide tools and standards* for mental health and psychological health and safety.
 - The Centre for Addiction and Mental Health (2020a) provides recommendations for leaders with regard to mental health promotion, starting with 1) *creating a long-term organization-wide mental health strategy* and 2) *instituting mandatory mental health training for leadership*.
 - The Mental Health Commission of Canada (2021) has created a National Standard of Canada for Psychological Health and Safety in the Workplace (<https://www.mentalhealthcommission.ca/English/what-we-do/workplace/national-standard>).
- Build in mechanisms for regular mental health monitoring that developmentally shape practices, policies, and programs. Regularly review progress. This is recommended by the Centre for Addiction and Mental Health (2020a,b). See also Angel (2014b), who outlines a *Mobile Worker Wellbeing Assessment Tool* (analogous to an environmental assessment tool) that focuses on the unique circumstances of FIFO workers and their work environment.
 - Conduct thorough review of the safety of camps and work sites for women and racialized non-white people.
- Create a *task force* of operators, contractors, workers, and OHS associations to examine and address the impact of operator-contractor relations on supervisor

- and worker wellbeing, and to examine how operators and contractors can partner on mental health and psychological health and safety practices for FIFO workers.
- Create worker-lead teams to guide programming and promotion of mental health and to recommend workplace prevention of psychosocial harm.
 - Support regular research and review of best practices on mental health and wellbeing in the industry, including what can be learned from other sectors that rely on a non-residential workforce (cf Langdon et al. 2016).

FOR ACTORS “OUTSIDE” THE WORKPLACE

Government, unions, and community organizations must contribute to ensuring the wellbeing of FIFO workers. We provide here a starting list of recommendations.

TRAINING AND EDUCATION

- Government should fund *independent psychological OHS education* for workers, including worker Joint Health and Safety Committee representatives (cf Barnetson and Matsunaga-Turnbull 2018).
- Government should fund the *creation of workplace OHS training materials* that balance physical safety with psychological safety and mental health.
- Unions and community organizations should prioritize information and training on mental health that takes into account the *specific impacts of FIFO work*. Unions should also help lead the creation of worker-led teams to recommend changes promoting mental health.
- All should develop internal training on *how to talk to employers* about the mental health impacts of FIFO.

POLICY

- Government must *review OHS, Worker’s Compensation, and employment law* to ensure inclusion of non-resident and interjurisdictional workers (cf Neis and Lippel 2019). This should include a broad re-review of the impacts of Bill C-47.
- Mandate *minimum mental health payments and resources* in employee support programs.
- Provincial governments should work with each other and the federal government to identify supports and agreements for providing *interjurisdictional and long-distance health services and counselling*.
- Unions and community organizations should help identify and develop *responses to gaps in policy with regard to FIFO workers*.

PROGRAMS

- Government and unions should provide funding and support for the creation of *worker support and suicide prevention programs* such as Mates in Construction.
- All parties can contribute to mandating the availability of *arm’s length, third-party health services*.

Insights from Valerie O’Leary (Critical Incident Stress Management-Fort McMurray)

As a Crisis and Trauma responder to all companies, most of my work in Fort McMurray revolved around responding to issues out at site, sometimes for one shift or having to stay at camp and on site for numerous days. From my observation, I found these FIFO workers face a higher variety of psychosocial stressors on the job.

This research has captured and confirmed many of my observations while working on site, but it has also highlighted other areas that need to be addressed in order to achieve a healthier workplace. Work and working conditions are essential contributors to physical and mental health wellbeing.

*The Safety Culture in the oil sands industry is apparent and is taken very seriously—as it should be in this hazardous environment—but **there is a huge disconnect when it comes to safety and mental health**. If an employee is mentally struggling, they might not be able to concentrate on their work, which now creates a hazard.*

This work context also shapes individuals' exposure to a wide array of physical, environmental, and psychosocial factors that can influence health. Employees have spoken to me about psychosocial stressors including job strain, job insecurity, and negative spillovers from work to other areas in their life, causing hardship or leading to risky behaviours such as drinking, drugs and/or cheating on a spouse.

*One of my biggest concerns when responding to the oil sands after a critical incident are the **supervisors**, or people placed in charge to oversee everyone affected. Many times, they were directly involved but were also put in the position of being caregiver of a crew of 10 - 100 people. These supervisors did not have time to grieve or process what had happened as they were too busy helping others. While some would say “this isn’t my first rodeo,” others admitted how difficult it was to put their own emotions aside to help others.*

*Over the years, as I watched and listened to oil sands workers, I found myself reflecting on my own experience of **camp**. Each camp is different; some were good and some not so good. One minor flaw I perceived that could easily be changed is the lighting in the camp rooms, as most rooms were dark and dreary. Even with all the lights on and blinds open, I personally found it very depressing to go back to my room after a 12-hour shift. I must admit, I enjoyed the food most of the time but enjoyed it too much. Unfortunately, the choices were not the healthiest and I never saw options for people with dietary restrictions.*

*The last thing I would say that could potentially help new workers in the industry is to **partner them up** with an employee who has been there for 5+ years. New workers are lost, do not know what to expect, and can find rotational work harder than they imagined. Having a peer to help them navigate this new lifestyle, the financial do's and don'ts, and having a trusted peer to talk to when things are difficult could make a world of difference and save them (and the company) from hardship down the road.*

RECOMMENDATIONS – FURTHER RESEARCH

There is much work to be done on mental health in the workplace in Canada. Samra (2017: 42) argues that not enough progress has been made on measurements, data sets, and assessment tools regarding the impacts of mental health, the “business case” for mental health, and mental health and work-life relations.

The mental health of FIFO workers—along with the health of their family members and work cultures—is one important piece of this puzzle.

The findings of the MWMH study are not drawn from a random sample of workers. With a mobile population working in a remote setting, a larger representative study would require co-operation from and across industry, contractors, sector-specific organizations (such as PetroLMI and BuildForce Canada), and labour and community organizations. Indeed, our overarching recommendation is that there be *collaborative efforts to gather more systematic research data on the mental health and wellbeing of workers*.

Below we list 1) key issues and 2) key subpopulations for further research on the mental health and wellbeing of Canada’s FIFO workforces.

KEY ISSUES FOR FURTHER RESEARCH

- Comparative studies of mental health among FIFO and non-FIFO workers (cf Parker et al. 2018)
- Comparative studies of mental health among FIFO workers in different geographical and national contexts
- Comparative studies of mental health policies across companies working in the oil sands
- Cumulative effects of FIFO work on mental health that take into account subfactors such as attrition, continuous versus on-off work, geographical distance, etc.
- Conditions of FIFO work that lead to clinical depression and suicide (cf Miller et al. 2020)
- Masculinity and gender dynamics of the work culture and “safety culture,” and implications for harassment and discrimination (cf Angel 2014b)
- Impacts of different rotational schedules on wellbeing
- Impacts of different phases of the rotational cycle (cf Korneeva and Simonova 2020)
- Interactive effects of job in/security and FIFO
- Comparative studies of operations and contract FIFO workforces, and of non-oil FIFO workers (such as camp staff)
- Relationships between operations and contract workers in relation to FIFO
- Aspects of organizational culture affecting FIFO worker mental health; FIFO as focus of approaches to mental health in organizational culture

- Building cultures of trust around mental health in highly mobile and uncertain work contexts such as the oil sands
- Role of employers, supervisors, unions, and home communities in supporting mental health of FIFO workers
- FIFO worker perspectives on, and worker-driven responses to, mental health
- Tracking when and how mental health of FIFO workers and their families fall between jurisdictional cracks (cf Neis and Lippel 2019)
- Effects of FIFO on family members, and interactive effects with mental health of workers
- In/effectiveness of various alternative delivery modes for mental health resources and supports for FIFO populations

KEY SUBPOPULATIONS

Our findings point to at least several subpopulations of interest. We note that while some of these groups tend to be named as important target populations for bolstering an aging workforce (e.g., in the construction sector), successful recruitment and retention of workers depends on robust attention to mental health costs and needs.

- Women in the Trades – preliminary findings from the MWMH study include discrimination and harassment, income disparities, single status, lone parenthood, and a number of health and wellbeing issues, most notably sleep disruption in camp, higher use of painkillers, and more stress at home.
- Racialized Non-White Workers – preliminary findings from MWMH indicate concentrations of long-term health conditions, on-and-off work, discrimination, and lack of access to health care.
- People Working Continuously in FIFO Jobs and/or Working Long-off Rotations – preliminary findings from MWMH suggest cumulative/compounded effects of FIFO work and camp living.
- People Working More Precarious FIFO Jobs (contractors, on-and-off, and often on shorter-off rotations) – preliminary findings from MWMH suggest intensified financial stress, as well as fatigue and stress from transitioning between work and home and dealing with constant change in work situation.
- Supervisors – preliminary findings from MWMH include compounded stress and work-life imbalance.

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APPENDIX I: GLOSSARY

Bill C-47 – “Ensuring Safety and Cutting Red Tape Act” of 2020 that amended Alberta’s Occupational Health and Safety Act, Radiation Protection Act, and Workers’ Compensation Act

Closed-ended questions – survey research questions that pre-set the range of possible responses (e.g. A, B, C, or D; or a scale from “strongly agree” to “strongly disagree”) without the possibility of adding comments (see *open-ended questions* below)

Contract workers – workers hired on contract (directly or, more often, through a contracting company) to perform specific tasks in the industry for a short period of time; many contract workers do such work on a regular basis

Critical Incident – a sudden and unexpected event that may have a powerful traumatic effect, often with physical and emotional loss (harm, injury, or death) that overwhelms people’s coping capacity

Demographics – statistical data referring to a population or its subgroups

Fly-in Fly-out (FIFO) – work arrangements in which workers commute long distances from their place of residence on rotational schedules (usually involving one week or more at a time away from home); for the purposes of our study, this includes Drive-in Drive-out (DIDO)

Long-off Rotation – rotation schedule that entails 6-14 days off (and 7-18 days on); one of two categories into which we re-coded our survey participants’ rotation schedules (see *short-off rotations* below)

Occupational Health and Safety (OHS) – refers to health, safety, and wellness in the workplace, including the regulations, laws, practices, and activities aimed at making the workplace better for workers and at preventing injury, illness, and fatality

Open-ended questions – survey research questions that invite participants to express their response in their own words rather than selecting one of a range of pre-set responses (see *closed-ended questions* above)

Operations workforce – workers who are directly hired on a more permanent basis by oil sands operators (i.e., companies that directly own and operate resource extraction companies)

Shift Work – work performed by different groups of workers on a set schedule, and often over a 24-hour period; usually includes day, evening, and night shifts

Short-off Rotation – rotation schedule that entails 1-3 days off (and 6-18 days on); one of two categories into which we re-coded our survey participants’ rotation schedules (see *long-off rotations* above)

Shutdown/Turnaround – periods of two months or more in which industrial facilities are shut down in order to perform full maintenance and testing

Social Determinants of Mental Health – an approach to conceptualizing and researching mental health that emphasizes the contextual layers—individual, workplace, employment and social policy, family and social life, place and region—that shape mental health and wellbeing

Trades – skilled work learned through a structured program of on-the-job and, often, college training in a specialized trade in construction or manufacturing

Work Camp – a structure with facilities for temporarily housing and feeding workers while they are working at nearby project sites; in the oil sands, work camps can range from housing a few dozen people to housing thousands of people

Work-Life Balance – how people manage time and demands of both paid work and life outside of work (family, leisure, etc.), or act to minimize conflict between them

APPENDIX II: QUESTIONNAIRE

SECTION 1 - BACKGROUND QUESTIONS (DEMOGRAPHICS)

I would like to start by asking you a few background questions. As a reminder, our study will never make available information about individual participants. *You can also reply “don’t know” or “prefer not to answer” to any question throughout the survey.*

1. Please tell me your age.
2. What is your gender?
3. How would you describe your ethnic or racial identity?
4. What is your current marital status?
 - a. single
 - b. married or common law (and not separated)
 - c. separated/divorced
 - d. widowed
 - e. don’t know (DK)
 - f. prefer not to answer (PNA)

4A. **If single**, would you say you are in a long-term relationship?
5. Do you have children or other dependents?

5A. **If yes**, what are their ages?
6. Is your individual annual income:
 - a. less than \$65,000 per year
 - b. between \$65,000 and \$100,000 per year
 - c. between \$100,000 and \$200,000 per year
 - d. over \$200,000 per year
 - e. DK
 - f. PNA
7. What is the highest level of formal education that you have? (*more than one may apply*)
 - a. Less than high school diploma
 - b. High school diploma
 - c. Some trades training
 - d. Trade certificate
 - e. Some college/postsecondary
 - f. College certificate/diploma
 - g. University degree or higher

- h. other: _____
- i. DK
- j. PNA

8. Were you born in Canada?

8A: **If no,**

- i. How many years have you been in Canada?
- ii. Anything else you would like to add about your status in Canada?

9. What language do you most commonly use at home in your everyday life?

- a. English
- b. French
- c. Other: _____
- d. DK
- e. PNA

10. Do you identify with any Indigenous group or groups?

10A: **If yes,** with which group or groups do you identify? [*indicate all that apply*]

- a. First Nation
- b. Metis
- c. Inuit
- d. DK
- e. PNA

11. When you finish a work rotation (during your time off), to what place do you usually return? Do you normally return to:

- a. Fort McMurray / Regional Municipality of Wood Buffalo?
- b. Another place in Alberta?
- c. Elsewhere in Canada?

i. which province?

- d. Outside of Canada?

i. which country?

- e. Other: _____
- f. PNA

11c.i. **If elsewhere in Canada,** which province or territory?

11d.i. **If outside of Canada,** which country?

12. Is this also your place of permanent residence (i.e. your home address)?

12A. If no, is your place of permanent residence (i.e. your home address) in:

- a. Fort McMurray / RMWB
- b. Elsewhere in Alberta
- c. Elsewhere in Canada
- d. Outside of Canada
- e. PNA

12.c.i. if elsewhere in Canada, which province or territory?

12.d.i. if outside of Canada, which country?

13. The next set of questions focuses on your health and wellbeing. For each statement, I will ask you to finish the sentence with Excellent, Very Good, Good, Fair, or Poor. It is also fine if you indicate that you don't know, or prefer not to answer.

	1= Excellent	2= Very Good	3= Good	4= Fair	5= Poor	Don't know (DK)	Prefer not to Answer (PNA)
a. In general, my health is...							
b. In general, my mental health is...							
c. I rate my ability to handle unexpected and difficult problems (i.e. a family or personal crisis) as...							
d. I rate my ability to handle the day-to-day demands in my life (i.e. work, family and volunteer responsibilities) as...							

SECTION 2 - ABOUT YOUR WORK

0. Are you currently employed?

0A – **If yes**, is your current employment in the oil sands?

1. How would you describe your current (or most recent) employment relationship?

Are/were you:

- a. A direct employee of an oil sands site operator
- b. Working for a contractor
- c. A contractor yourself
- d. other: _____
- e. DK
- f. PNA

2. What is your current (or most recent) job title?

3. Which of the following categories best describe(s) your occupation?

(you may choose as many as apply)

- a. operator
- b. supervisor/foreman/superintendent
- c. manager
- d. professional (e.g. engineer/technician)
- e. construction
- f. health/safety/environmental officer
- g. maintenance
- h. general labourer
- i. administrator/staff
- j. other: _____
- k. DK
- l. PNA

4. Approximately how many years of experience do you have doing this kind of work?

5. Do you have any other paid work in addition to your job in the oil sands?

5A: **If yes**, what other kind of work do you do?

6. Are you currently a member of a labour union?

7. About how long have you worked for your current (or most recent) employer?

8. About how long have you worked at your current (or most recent) job site?

9. About how many different projects (sites) in the oil sands have you worked at?

10. Altogether, how long have you worked in the oil sands (in this and previous jobs, if any)?

10.A. **If more than one year**, have you worked:

i. continuously *OR ii.* on and off?

11. Roughly what percentage of that time (working in the oil sands) have you stayed in camp?

12. What would you say are your main reasons for taking work in the oil sands?

13. How would you rate your job security?

- a. very good
- b. good
- c. neutral
- d. bad
- e. very bad
- f. DK
- g. PNA

14. In the last twelve months or so, have you experienced any major changes in your job situation?

14A. **If yes**, do you mind telling me what changes you experienced?

15. What is your current work schedule and rotation?

16. How does this rotation and schedule compare to others you have had?

17. At what point are you in your current rotation?

18. How often do you take a formal vacation?

19. When is the last time you took formal vacation days of more than one week?

- a. In the last month
- b. In the last six months
- c. Six months to one year ago
- d. More than one year ago
- e. DK
- f. PNA

SECTION 3 – YOUR COMMUTING SITUATION

1. How do you normally travel back and forth for your work rotations?

If this is a combination of ways, please refer to all that apply. *(for example, private vehicle, bus, taxi, airplane to nearby airstrip, airplane to Fort McMurray airport, other)*

Please describe your travel route/routine, door to door.

2. Who currently makes your travel arrangements?

- a. employer
- b. yourself
- c. other: _____
- d. DK
- e. PNA

3. For the next set of statements, I'm going to ask you to rate on a scale from very easy to very difficult—you can reply “very easy” “somewhat easy” “neither easy nor difficult” “somewhat difficult” or “very difficult.” You can also indicate that you don't know, or prefer not to answer.

How would you rate your experience of...

	1= very easy	2= somewhat easy	3= neither easy nor difficult	4= somewhat difficult	5= very difficult	DK	PNA
a. Travelling back and forth to work?							
b. Transitioning back to work when you first start a new rotation?							
c. Transitioning back to your home/residence at the end of your rotation?							

3.A. If easy/difficult for transitioning back to work, can you briefly tell me what makes this easy/difficult?

3.B. If easy/difficult for transitioning back home/off work, can you briefly tell me what makes this easy/difficult?

4. When off rotation, roughly how much of your time is spent with family?
- a. All of the time
 - b. Most of the time
 - c. Some of the time
 - d. None of the time
 - e. DK
 - f. PNA
5. When is the last time you saw your family?

SECTION 4 - CAMP EXPERIENCES

1. For the following series of statements, please indicate the degree to which you agree or disagree. Like the earlier question, the five choices are “strongly agree” “agree” “neither agree nor disagree” “disagree” and “strongly disagree.” You can also indicate if you don’t know or prefer not to answer.

	1= strongly agree	2= agree	3= neither agree nor disagree	4= disagree	5= strongly disagree	DK	PNA
a. I find staying in camp easy.							
b. I would rate the camp where I currently stay (or most recently stayed) better than previous ones.							
c. I am generally satisfied with the facilities in camp.							
d. Morale among people in camp is good.							

e. I regularly interact with people in camp on a daily basis.							
f. When I'm in camp I mostly interact with my workmates.							
g. I feel free to do what I want in camp.							
h. I have relatives or friends in the oil sands region (outside of workmates) that I spend time with during my work rotation.							

1Ai. To briefly follow up, what would you say are the 1 or 2 best aspects of staying in camp, if any?

1Aii. What would you say are the 1 or 2 worst aspects of staying in camp, if any?

2. What is the longest continuous period of time you have ever spent in camp?

3. In the camp where you currently stay (or most recently stayed), how often do (or did) you leave to visit places other than your worksite (e.g. Fort McMurray or other nearby community)?

- a. almost daily
- b. once or twice a week
- c. occasionally
- d. never
- e. DK
- f. PNA

4. Does the site at which you work have policies that limit your ability to leave camp when on work rotation?

4A. If **yes**, can you tell me what those policies are?

5. When you are staying in camp, how often are you usually in contact with family or close friends outside of camp?

- a. more than once a day
- b. daily
- c. several times per week
- d. once per week
- e. less than once per week
- f. DK
- g. PNA

SECTION 5 - WORKPLACE EXPERIENCES

1. For the next set of statements, please indicate the degree to which you agree or disagree that the statement accurately describes your (most recent) work situation. This is once again on a five-point scale of responses: “strongly agree” “agree” “neither agree nor disagree” “disagree” and “strongly disagree.”

	1= strongly agree	2= agree	3= neither agree nor disagree	4= disagree	5= strongly disagree	DK	PNA
a. My job allows me freedom to decide how I do my job.							
b. I have constant time pressure.							
c. I have some control over my work rotation and schedule.							
d. I regularly work alongside the same people from rotation to rotation.							

e. Considering all my efforts and achievements, I receive the respect I deserve at work.							
f. Work rarely lets me go, it is still on my mind when I go to bed in camp.							
g. Most of my days at work are stressful.							
h. Overall, morale at the worksite is good.							
i. Work is still on my mind when I am back home (off rotation).							
j. I have experienced discrimination at work.							

1A: IF 'agree' or 'strongly agree' on item J: You indicated that you have experienced discrimination at work. Would you mind naming the kind of discrimination you have encountered?

2. What, if anything, do you find most enjoyable about your work?
3. What, if anything, do you find least enjoyable about your work?
4. For the next set of statements, using the same scale as above, please indicate the degree to which you agree or disagree that each statement accurately describes your experience with your current (or most recent) employer.

	1= strongly agree	2= agree	3 = neither agree nor disagree	4= disagree	5 = strongly disagree	DK	PNA
a. Management considers employee wellbeing to be as important as productivity.							
b. My employer is committed to minimizing unnecessary stress at work.							
c. My employer would be flexible in offering work adjustments to someone facing mental health issues.							
d. There is good communication at work about psychological safety issues that affect me.							
e. My employer is committed to creating an inclusive, equitable environment at work.							

f. I am able to reasonably balance the demands of work and personal life.							
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5. Over the past 12 months, approximately how many days in total were you absent from work due to sick leave or health-related leave?

6. Over the past 12 months did you work when you were sick?

Before we move on to the next section, which focuses on health,

I want to check if you would like to take a break?

SECTION 6 - HEALTH AND MENTAL HEALTH

1. For this first set of statements, I am going to ask you to think about your life when you are at work (i.e., when you are on your work rotation and staying in camp). For each statement, please indicate the degree to which you agree or disagree (strongly agree, agree, neither, disagree, or strongly disagree).

	1= strongly agree	2= agree	3= neither agree nor disagree	4= disagree	5= strongly disagree	DK	PNA
a. On a typical workday out at site, I regularly interact with co-workers.							
b. There are people who enjoy the same social activities I do.							

c. I have close relationships that provide me with a sense of emotional security and wellbeing.							
d. There is someone I could talk to about important decisions in my life.							
e. I have relationships where my competence and skill are recognized.							
f. There is a trustworthy person I could turn to for advice if I were having problems.							
g. There are people I can count on in an emergency.							

2. I will now ask you to switch to thinking about when you are *not* at work, i.e. when you are back at your residence/home (off rotation). For each statement, please indicate the degree to which you agree or disagree (strongly agree, agree, neither, disagree, or strongly disagree).

	1= strongly agree	2= agree	3= neither agree nor disagree	4= disagree	5= strongly disagree	DK	PNA
a. On a typical day off work, I regularly interact with friends or family.							
b. There are people who enjoy the same social activities I do.							
c. I have close relationships that provide me with a sense of emotional security and wellbeing.							
d. There is someone I could talk to about important decisions in my life.							
e. I have relationships where my competence and skill are recognized.							
f. There is a trustworthy person							

I could turn to for advice if I were having problems.							
g. There are people I can count on in an emergency.							

3. Thinking back over the last five to ten years of your life, would you say you have experienced any significant life changes or events that have affected your health?

3A. **If yes**, are you comfortable briefly naming the change(s)? (

4. Do you have any diagnosed long-term health conditions?

(These are defined as conditions expected to last or have already lasted 6 months or more, and that have been diagnosed by a health professional.)

4A. **If yes**, would you describe the condition as:

- a. physical
- b. mental
- c. both
- d. something else
- e. DK
- f. PNA

5. Because of any physical condition, mental conditions, or health problem, do you have any difficulty carrying out your work?

6. During the past 12 months, were you injured at work?

6A. **If Yes**, did this result in time off work?

7. Thinking about the amount of stress generally in your life for the past 12 months, would you say that most of your days are...

- a. Not at all stressful
- b. A bit stressful
- c. Somewhat stressful
- d. Very stressful
- e. DK
- f. PNA

8. For the next set of statements please indicate the frequency of the experience or activity over the last several months. Please answer with regard to when you were on rotation, and staying in camp. I will ask you to indicate “nearly every day, at least a couple of times a week, occasionally, or never”; please just answer whichever is closest. Please remember that you may also indicate that you don’t know or prefer not to answer.

Over the last several months, when on work rotation and staying in camp, how often did you....

	Nearly every day	At least a couple of times a week	Occasionally	Never	DK	PNA
a. Get at least 30 minutes of exercise?						
b. Wake up feeling rested?						
c. Have difficulty falling or staying asleep?						
d. Have several servings of fruit and vegetables?						
e. Smoke any tobacco products (cigarettes, cigars, pipes)? (Do not include electronic cigarettes, herbal cigarettes, bidis, or cannabis).						
f. Use marijuana or cannabis?						
g. Have at least one alcoholic drink, such as						

beer, wine, or any other liquor?						
h. Use any pain relievers? (By pain relievers, we mean products that contain opioids, such as codeine or morphine, or related drugs. Most of these products require a prescription, although some codeine products are available without a prescription, for example, Tylenol #1 or 222s. We are not asking about over the counter pain relievers such as Aspirin, Advil, regular Tylenol, etc)						
i. Consume unprescribed drugs (drugs that are considered illegal)?						

9. For the next set of statements please indicate the frequency of the experience or activity over the last several months. Please now answer with regard to when you were at home, or off work. I will ask you to indicate “nearly every day, at least a couple of times a week, occasionally, or never”; please just answer whichever is closest. Please remember that you may also indicate that you don’t know or prefer not to answer.

Over the last several months, when off work or at home, how often did you....

	Nearly every day	At least a couple of times a week	Occasionally	Never	DK	PNA
a. Get at least 30 minutes of exercise?						
b. Wake up feeling rested?						
c. Have difficulty falling or staying asleep?						
d. Have several servings of fruit and vegetables?						
e. Smoke any tobacco products (cigarettes, cigars, pipes)? (Do not include electronic cigarettes, herbal cigarettes, bidis, or cannabis).						
f. Use marijuana or cannabis?						
g. Have at least one alcoholic drink, such as beer, wine, or any other liquor?						

<p>h. Use any pain relievers? (By pain relievers, we mean products that contain opioids, such as codeine or morphine, or related drugs. Most of these products require a prescription, although some codeine products are available without a prescription, for example, Tylenol #1 or 222s. We are not asking about over the counter pain relievers such as Aspirin, Advil, regular Tylenol, etc)</p>					
<p>i. Consume unprescribed drugs (drugs that are considered illegal)?</p>					

Would you like a break?

10. For the next set of statements please indicate the frequency of the experience or activity over the last several months. Please answer with regard to when you were on rotation, and staying in camp; just like above, we will then follow up by asking you about when you were not in camp, i.e. off rotation. I will ask you to indicate “nearly every day, at least a couple of times a week, occasionally, or never”; please just answer whichever is closest. Please remember that you may also indicate that you don’t know or prefer not to answer.

Over the last several months, when on work rotation and staying in camp, how often did you...

	Nearly every day	At least a couple of times a week	Occasionally	Never	DK	PNA
a. Take interest or pleasure in doing things?						
b. Feel down, distressed, or hopeless?						
c. Feel tired or have little energy?						
d. Have poor appetite or overate?						
e. Feel bad about yourself, or that you are a failure, or have let yourself or your family down?						
f. Have trouble concentrating on things, such as reading, or watching a show?						
g. Have thoughts of hurting yourself?						

11. For the next set of statements please indicate the frequency of the experience or activity over the last several months. Please answer with regard to when you were at home or off work. I will ask you to indicate “nearly every day, at least a couple of times a week, occasionally, or never”; please just answer whichever is closest. Please remember that you may also indicate that you don’t know or prefer not to answer.

Over the last several months, when off work or at home, how often did you...

	Nearly every day	At least a couple of times a week	Occasionally	Never	DK	PNA
a. Take interest or pleasure in doing things?						
b. Feel down, distressed, or hopeless?						
c. Feel tired or have little energy?						
d. Have poor appetite or overate?						
e. Feel bad about yourself, or that you are a failure, or have let yourself or your family down?						
f. Have trouble concentrating on things, such as reading, or watching a show?						
g. Have thoughts of hurting yourself?						

12. We just talked about feelings that occurred to different degrees over the past several months. Overall, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?

- a. Not difficult at all
- b. Somewhat difficult
- c. Very difficult
- d. Extremely difficult
- e. DK
- f. PNA

13. I'm now going to ask about stress in your day-to-day life over the last several months. Thinking about that, to what degree would you say each of the following contributes to feelings of stress you may have? Please respond "not at all, somewhat, or a lot."

	1= Not at all	2= Somewhat	3= A lot	DK	PNA
a. Work					
b. Financial Concerns					
c. Family					
d. Time pressures					
e. Health					
f. Living in Camp					
g. Distance from Home/Family					
h. Peer pressures					
i. Travel/commuting					

13A. Are there any other contributing factors you would add (that aren't in the list above)?

13b. Any comments you would like to make on how these factors contribute to stress?

14. Sometimes events can also contribute to stress. If you were working in the oil sands several years ago, in what ways did the *economic downturn* that started in 2015, and/or the *wildfire* of 2016, affect your wellbeing?

SECTION 7 - USE OF SERVICES

1. Do you have a regular health care provider? By this, we mean one health professional that you regularly see or talk to when you need care or advice for your health.

1A. **If no**, can you briefly explain why you do not have a regular health care provider?

2. When you are on rotation (at work and in camp), is there a place or person that you go to when you need immediate care for a minor health problem?

2A: **If yes**, where or who is that?

2B: **If yes**, how likely are you to use the services of that place/person?

- a. Very likely
- b. Somewhat likely
- c. Not likely
- d. DK
- e. PNA

3. During the past 12 months, was there ever a time when you felt that you needed health care, but you did not receive it?

3A. **If yes**, thinking of the most recent time you felt this way, what kind of health issue was it?

3B. Still thinking about this same event, why didn't you get care?

4. In general, how comfortable would you be seeking formal support for mental health (if you needed it)?

- a. very comfortable
- b. somewhat comfortable
- c. not comfortable
- d. DK
- e. PNA

4A. **If somewhat or not**, can you briefly explain why?

5. During the past 12 months, did you receive any of the following kinds of help

because of challenges with your emotional wellbeing or mental health?

(refer to as many as apply)

- a. Information (about these issues, treatments or available services)
- b. Medication
- c. Counselling, therapy, or help for problems with personal relationships
- d. Other type of help _____
- e. DK
- f. PNA

If YES,

5A. Where did you receive these services? (*You might have more than one answer.*)

- a. back home
- b. at work
- c. other _____
- d. DK
- e. PNA

5B. **Who** provided the services? (*You might have more than one answer.*)

- a. employer
- b. public health service
- c. other _____
- d. DK
- e. PNA

5C. If comfortable sharing, can you briefly describe for what kind of issue(s) you sought these services?

6. Do you know of services currently available through your work in support of mental health and wellbeing?

6A: **If Yes,** If so, what are they?

SECTION 8 - NEEDS AND RECOMMENDATIONS

1. What do you see as the key issues affecting mental health of oil sands workers like you (rotational workers staying in camp)?

1.A. What changes in employment practices or conditions do you think would help to ease these effects, i.e., improve wellbeing?

2. I am going to name a series of activities. For each of them, *please indicate whether you think it should be included in your employer's workplace health and wellbeing program*. Your response will help identify areas of interest and need. Please respond "yes" "no" or "maybe" – and please feel free to comment on each of your answers.

I.	Exercise/physical activity sessions	Yes	No	Maybe
II.	Fatigue management information sessions	Yes	No	Maybe
III.	Financial planning support	Yes	No	Maybe
IV.	Health assessments – 'face-to-face'	Yes	No	Maybe
V.	Health assessments – 'online'	Yes	No	Maybe
VI.	Health information seminars/workshops	Yes	No	Maybe
VII.	Injury prevention/rehabilitation services	Yes	No	Maybe
VIII.	Lunch/break room at the worksite	Yes	No	Maybe
IX.	Activities that promote good mental health	Yes	No	Maybe
X.	Personal development opportunities for life skills	Yes	No	Maybe
XI.	Smoking cessation programs (Quit smoking program)	Yes	No	Maybe
XII.	Stress management programs and strategies	Yes	No	Maybe
XIII.	Website with health and wellbeing information	Yes	No	Maybe
XIV.	Workplace massage	Yes	No	Maybe
XV.	Nutritional information or audit	Yes	No	Maybe
XVI.	Family counseling referral and support	Yes	No	Maybe
XVII.	Any other services you would like to see? _____			