

WEBINAR

Mental and Physical Health of Remote Workers: Recommendations for Post-COVID-19 Office Work

Dr. Phil Bigelow & Kim Meszaros | November 25, 2022

MENTAL AND PHYSICAL HEALTH OF REMOTE WORKERS: RECOMMENDATIONS FOR POST-COVID-19 OFFICE WORK

Presented by:

Phil Bigelow, Associate Professor, School of Public Health Sciences

Kim Meszaros, Ergonomics Research Coordinator, CRE-MSD, Department of Kinesiology & Health Sciences

Territorial Acknowledgement

We acknowledge that we are living and working on the traditional territory of the Attawandaron (also known as Neutral), Anishinaabe and Haudenosaunee peoples. The University of Waterloo is situated on the Haldimand Tract, the land promised to the Six Nations that includes six miles on each side of the Grand River.



Centre of Research Expertise
for the Prevention of
Musculoskeletal Disorders

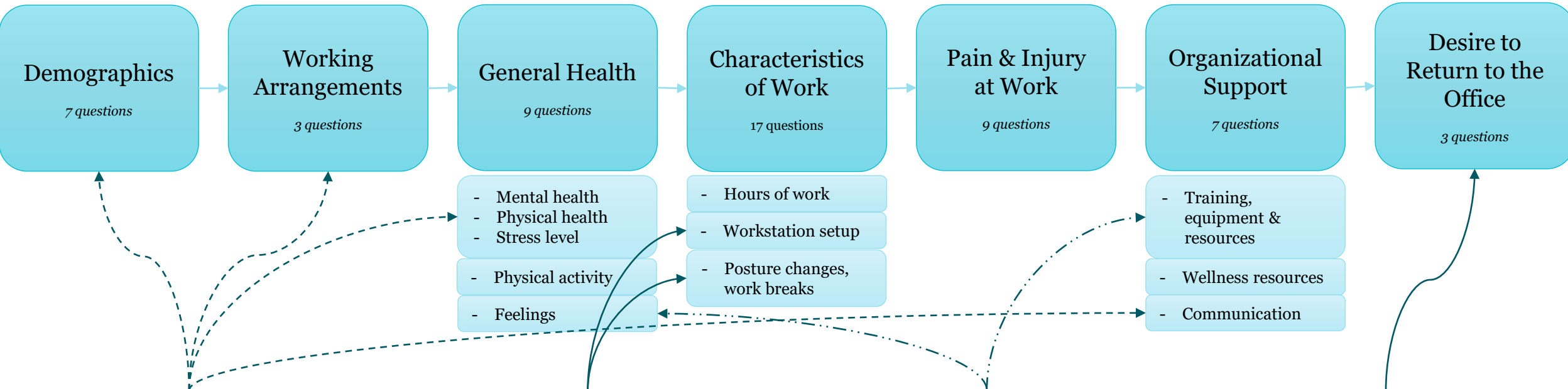
Outline

1. Study Motivation & Methods
2. Sample Characteristics
3. Analyses and Findings
4. Recommendations

Study Motivation

- Surveys conducted at the beginning of the pandemic
 - Hackney et al., 2020; Gerding et al., 2021; Babapour, 2021
- Ontario Health & Safety system was interested in understanding current state of teleworkers
- Holistic approach
 - Physical factors associated with remote set up, discomfort and injury
 - Psychosocial factors, mental health, stress levels
 - Organizational factors
- Identify considerations for integrating workers back to the office

Survey Structure



CISWP Survey (2020)
 Hackney et al. (2020). Brief Report on Initial Key Findings of National Survey on the Impact of Working from Home on Physical and Mental Health of Canadians. *Canadian Institute for Safety, Wellness, & Performance (CISWP)*.

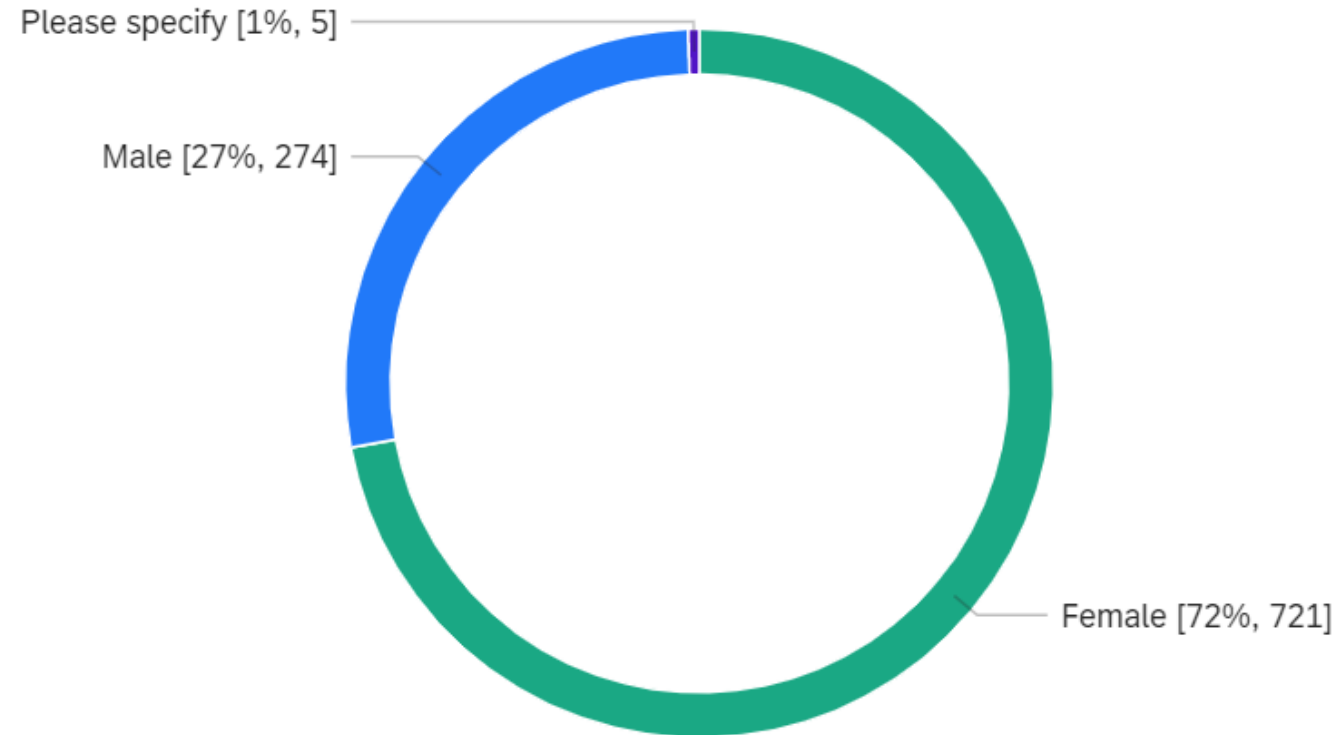
University of Cincinnati Survey (2021)
 Gerding et al. (2021) An assessment of ergonomic issues in the home offices of university employees sent home due to the COVID-19 pandemic. *Work*. 68(4):981-992.

Personal Support Worker Survey (2018)
 Denton et al. (2018) Personal support workers' perception of safety in a changing world of work. *Safety In Health*, 4(1).

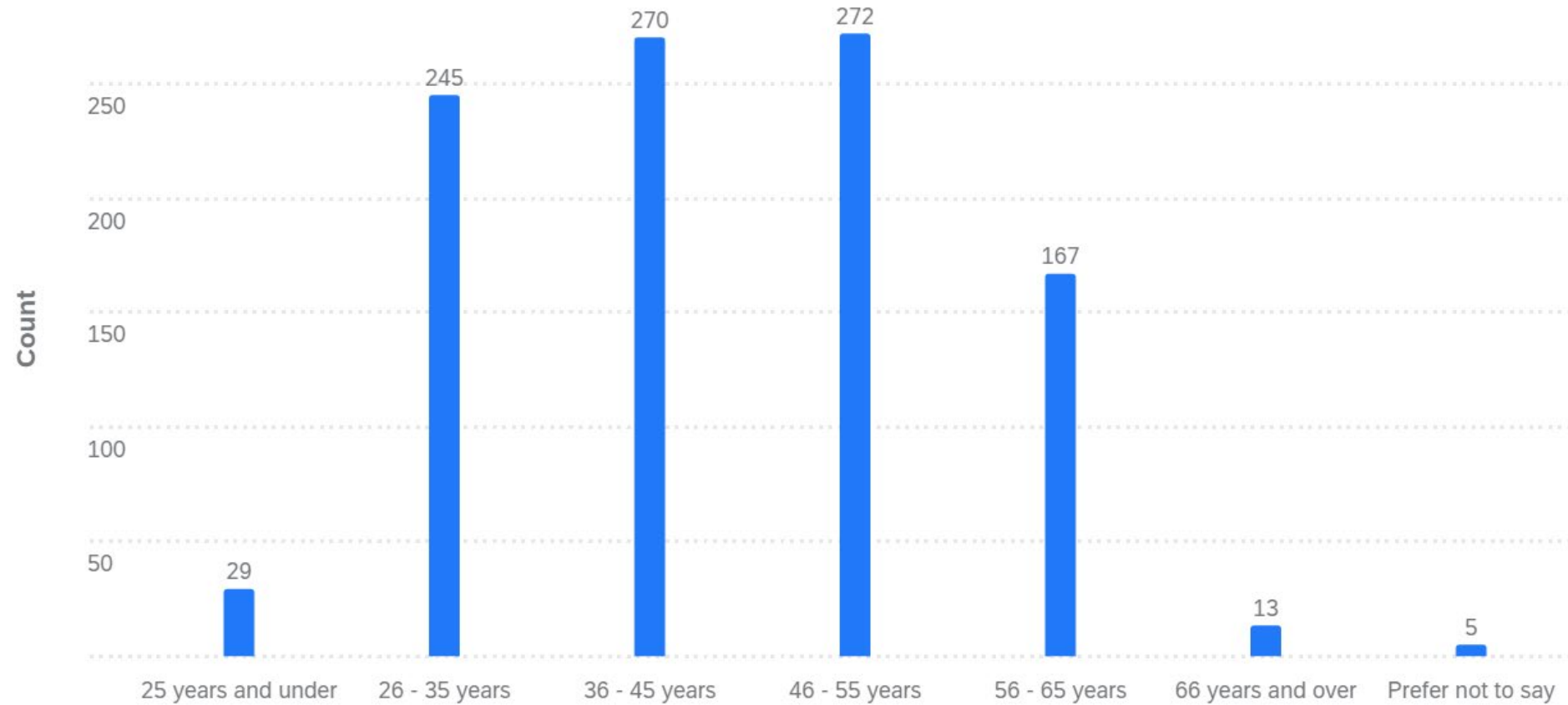
West Sweden Public Service Survey (2021)
 Babapour (2021) Transitioning Out of the Pandemic: Expected Work Environment Challenges and Opportunities in a Hybrid Work Era. *CRE-MSD Webinar*.

STUDY SAMPLE: DEMOGRAPHICS & WORKING ARRANGEMENTS

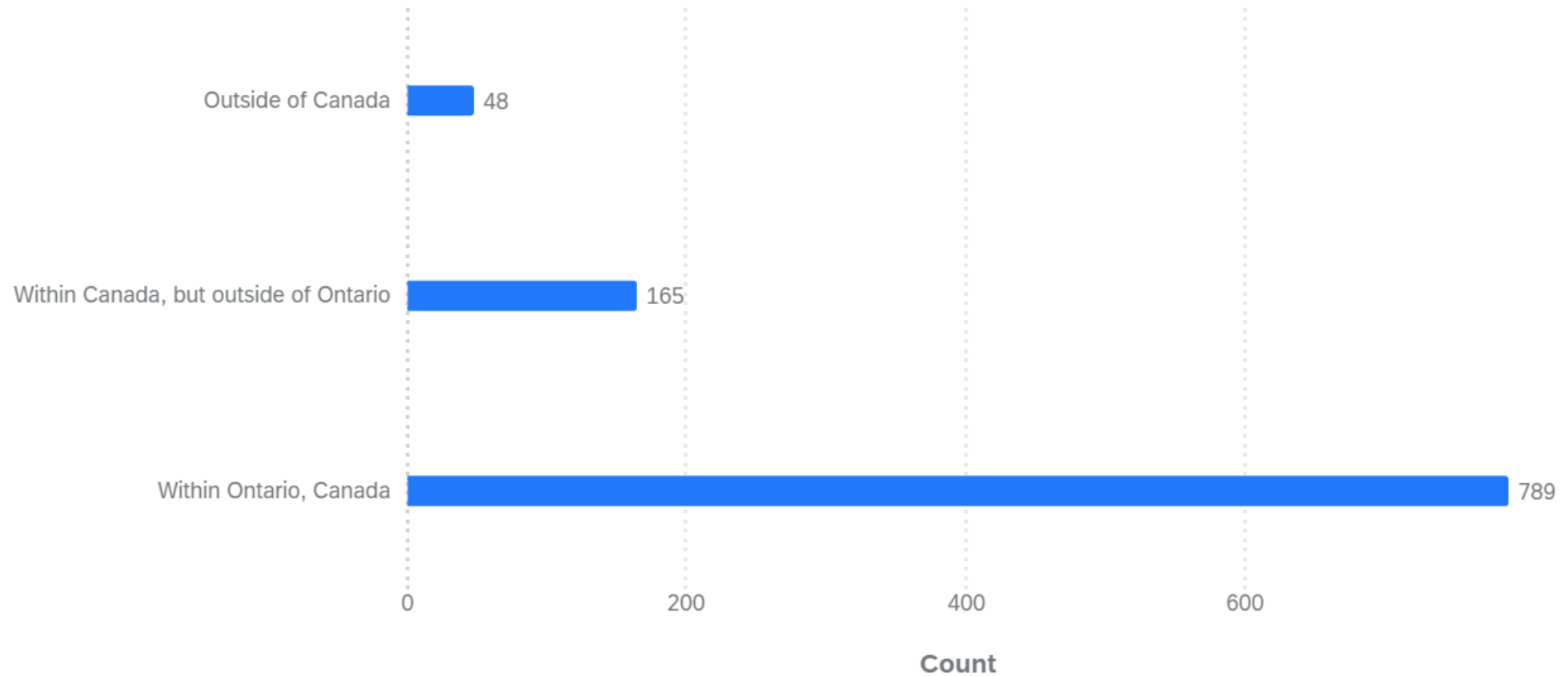
Survey Demographics - Gender



Survey Demographics - Age Group



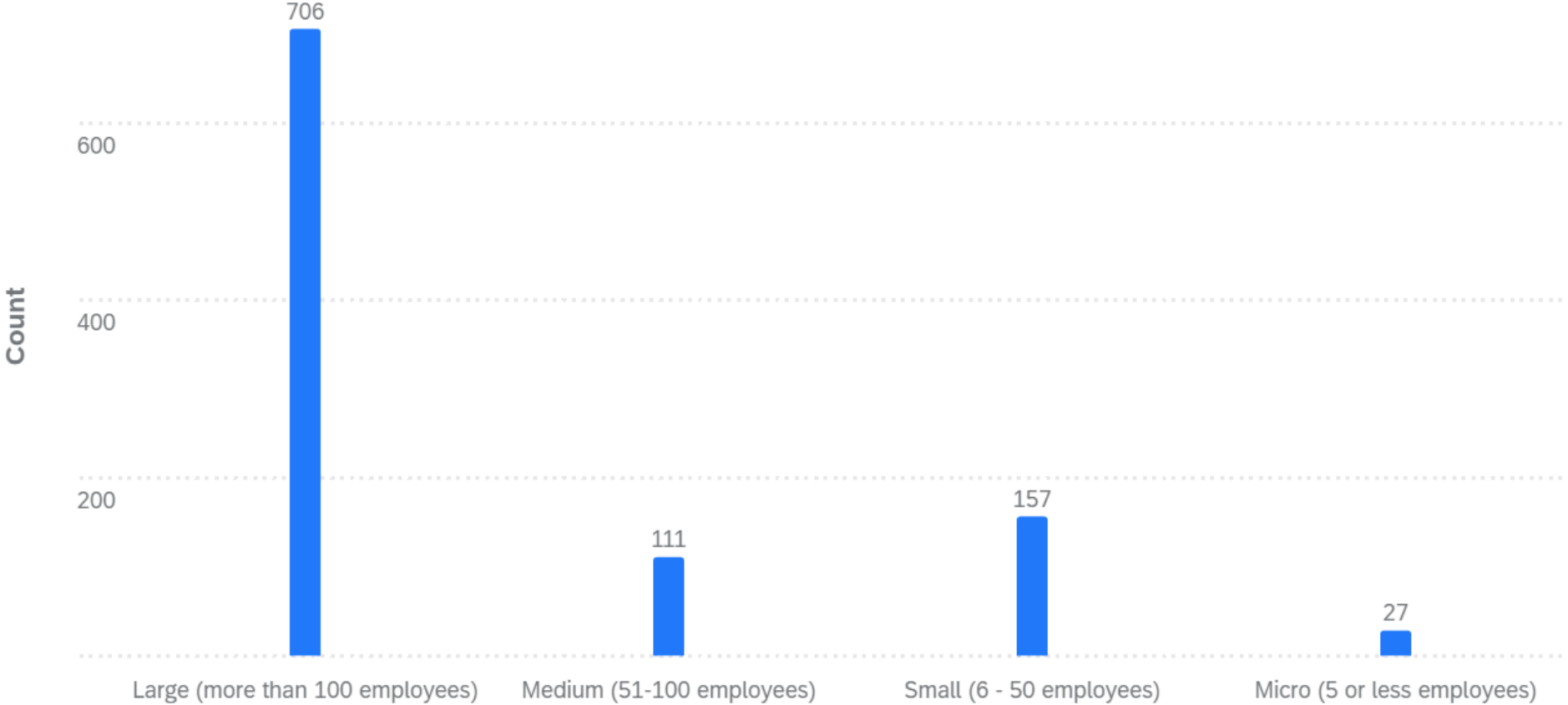
Survey Demographics - Location



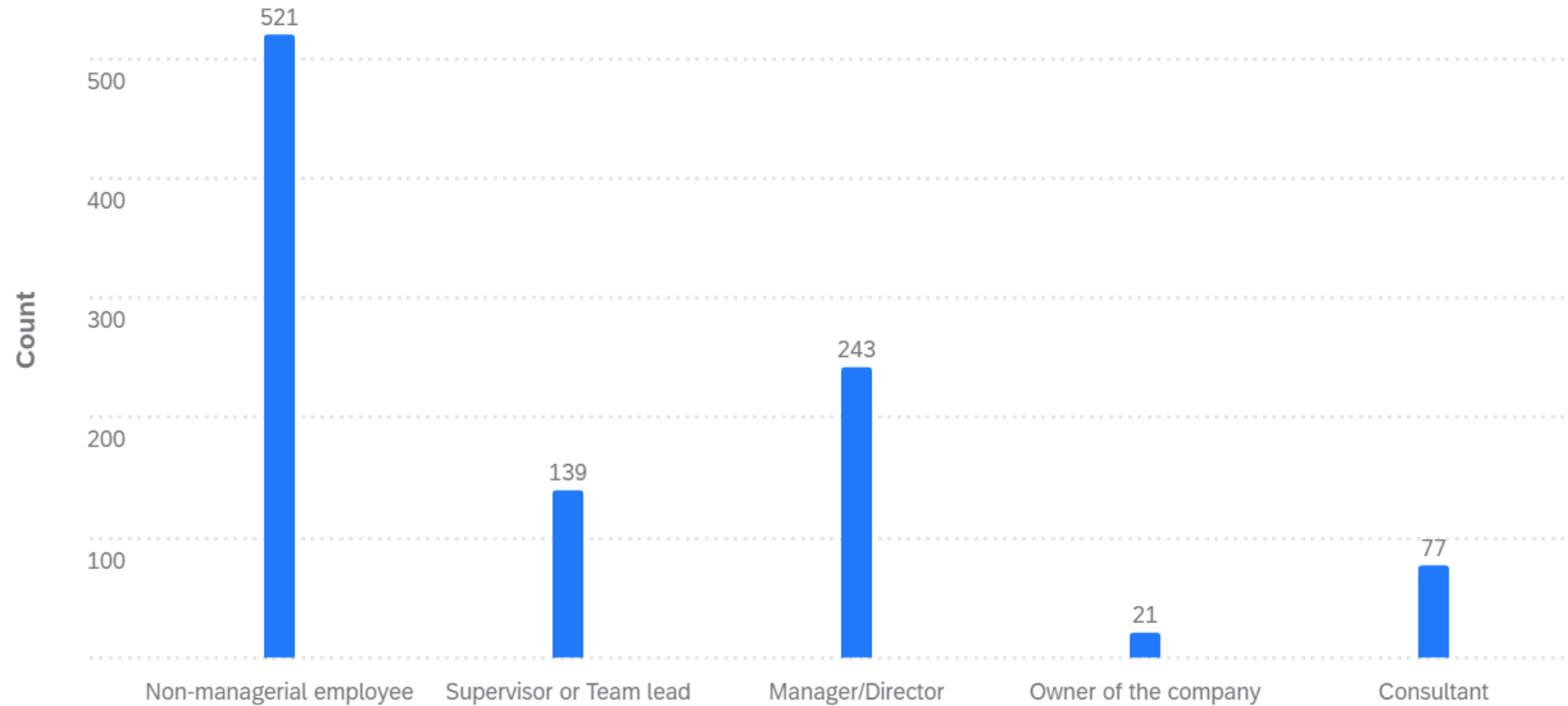
Survey Demographics - Industry

Industry	Respondents
Education and Training	23%
Healthcare and Social Assistance	17%
Public Administration and Safety	15%
Professional, Scientific and Technical Services	10%
Financial and Insurance Services	5%
Other	30%

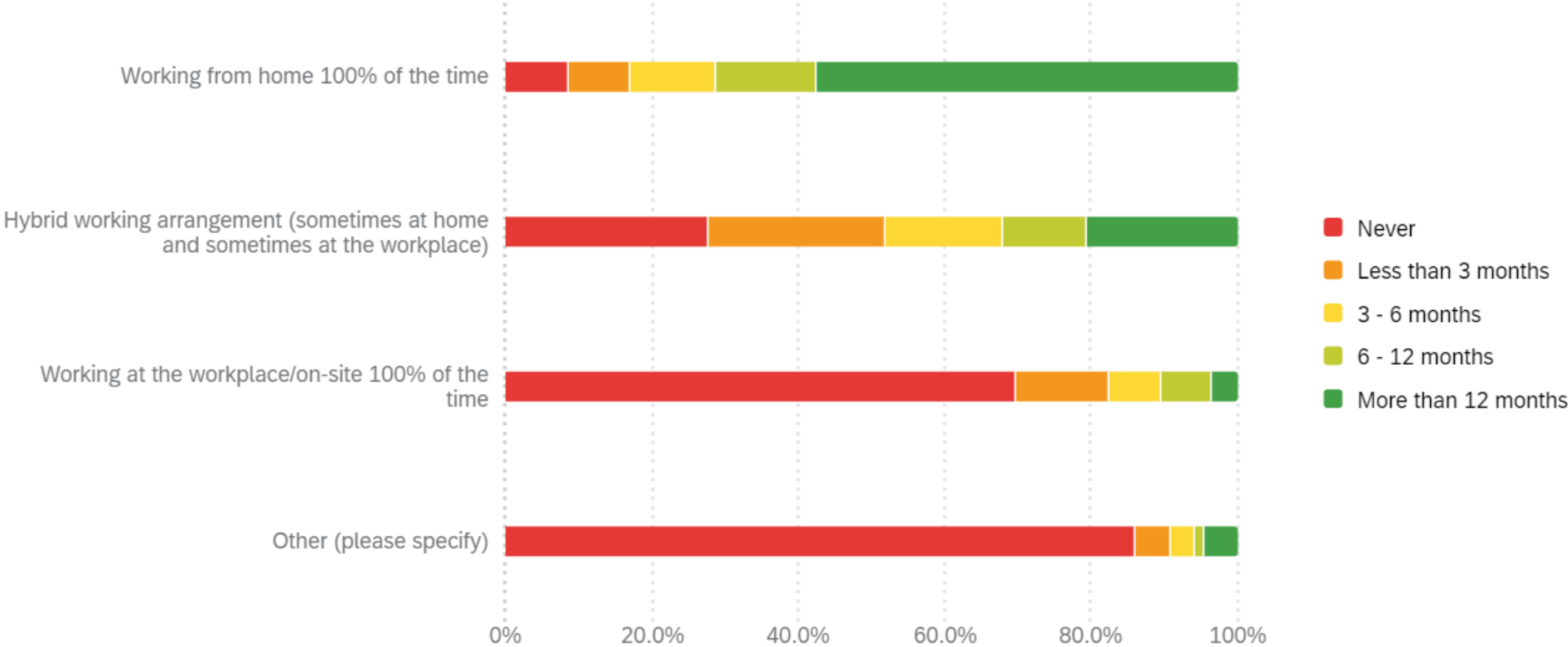
Survey Demographics - Company Size



Survey Demographics - Main Role/Position

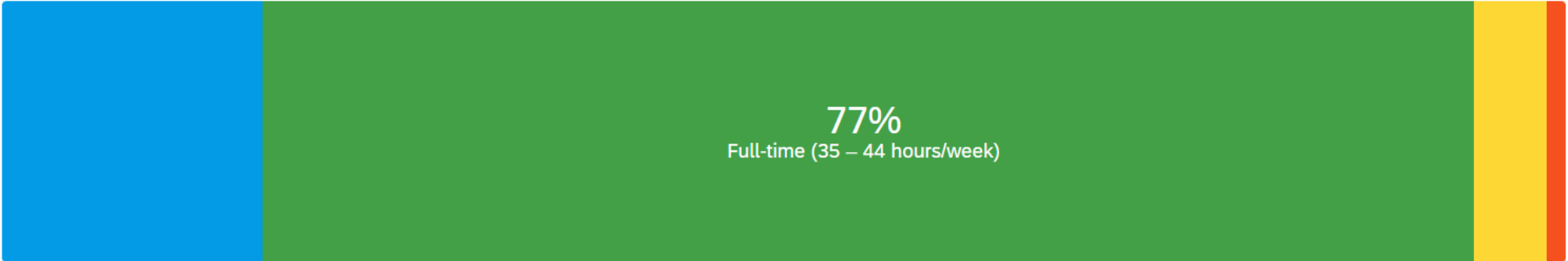


Working Arrangements During the Pandemic

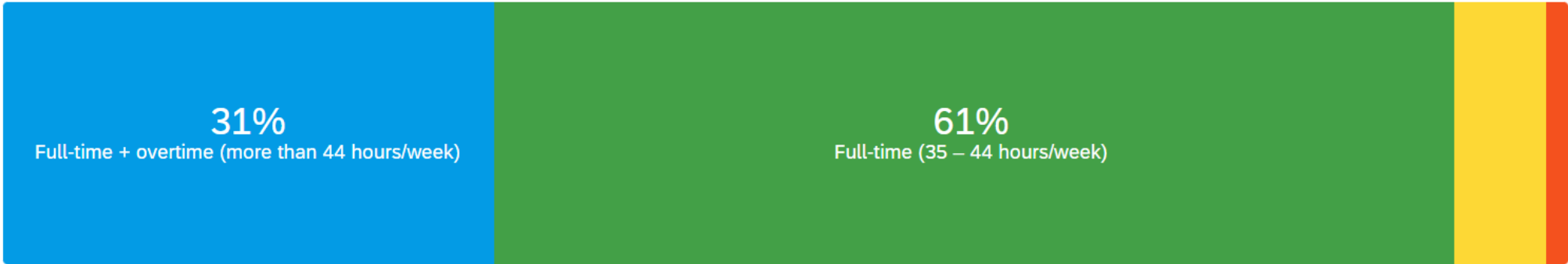


Hours of Work

Before
Pandemic

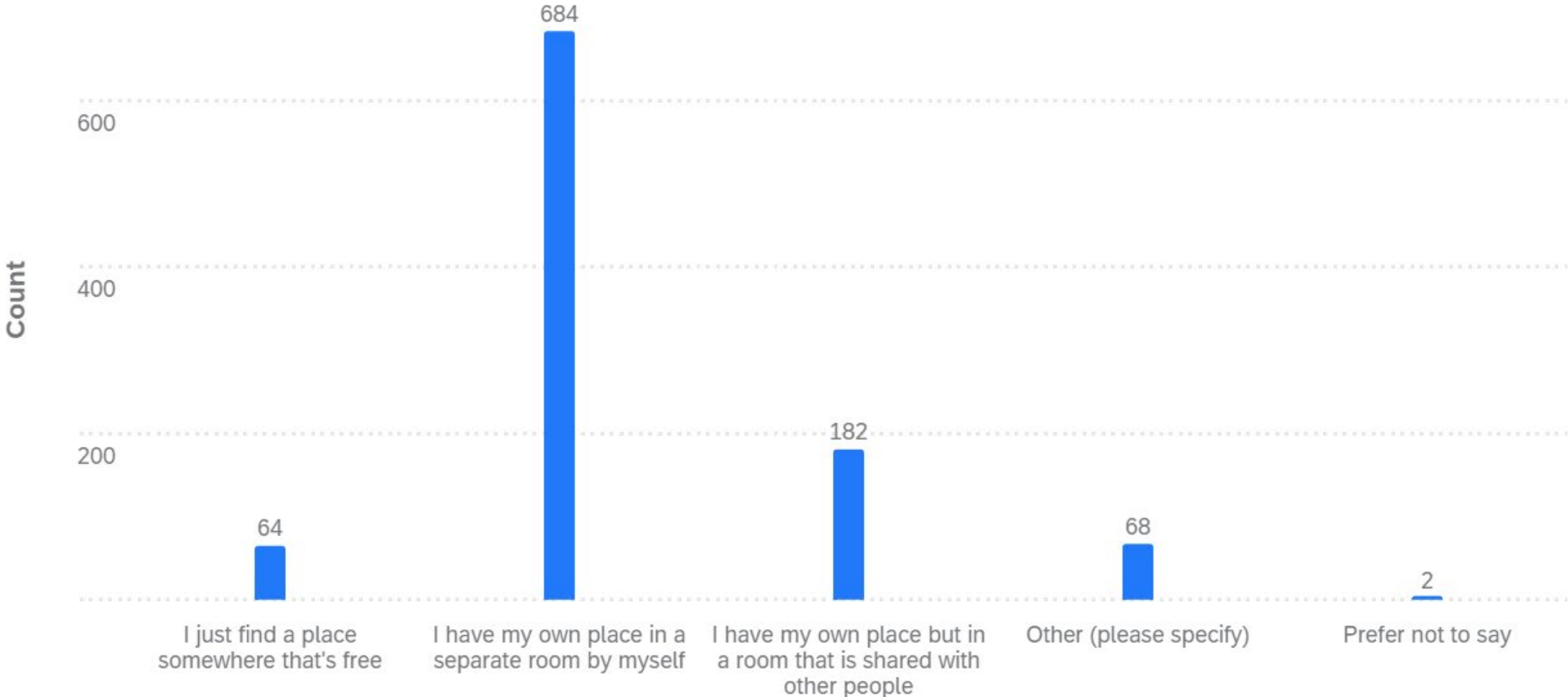


During
Pandemic

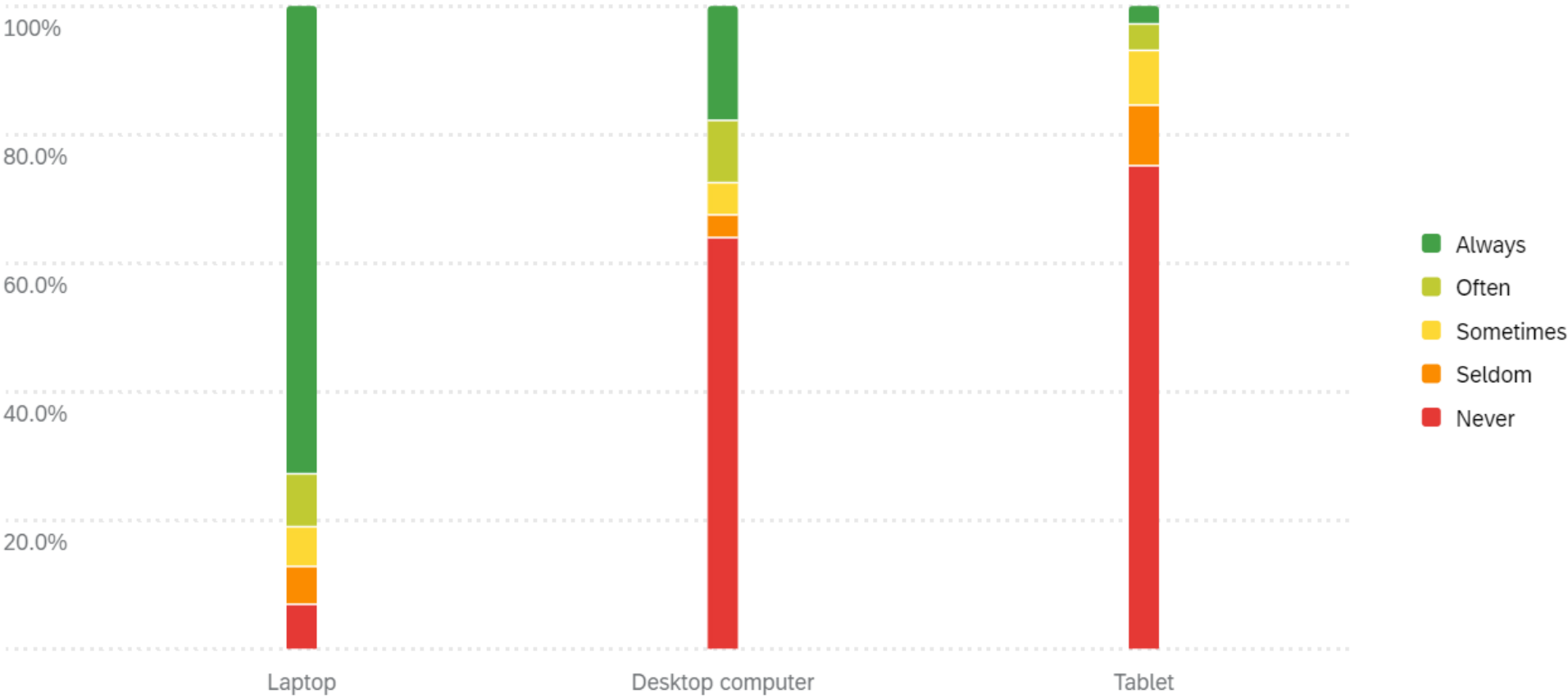


■ Full-time + overtime (more than 44 hours/week) ■ Full-time (35 – 44 hours/week) ■ Part-time (less than 35 hours/week) ■ Casual (no regular hours)

Remote Office Environment



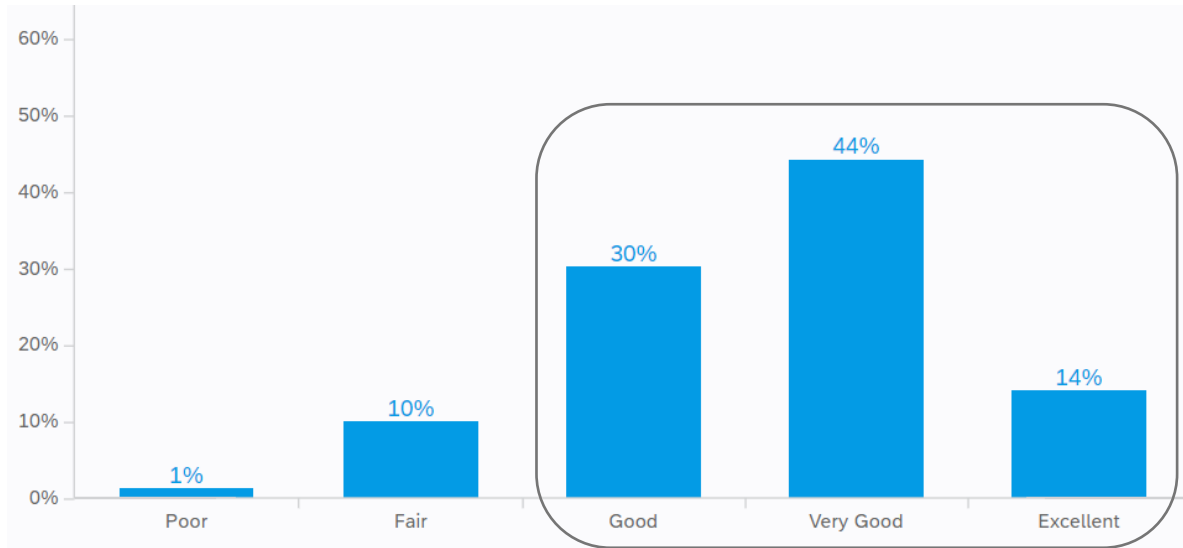
Teleworking Devices Used



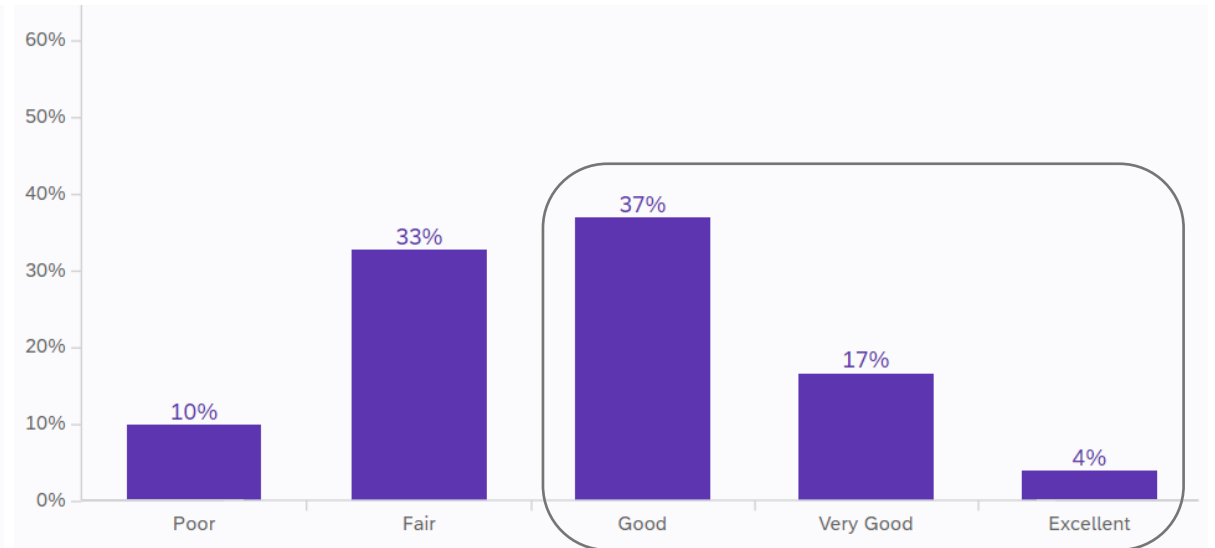
GENERAL HEALTH

Self-Reported Mental Health

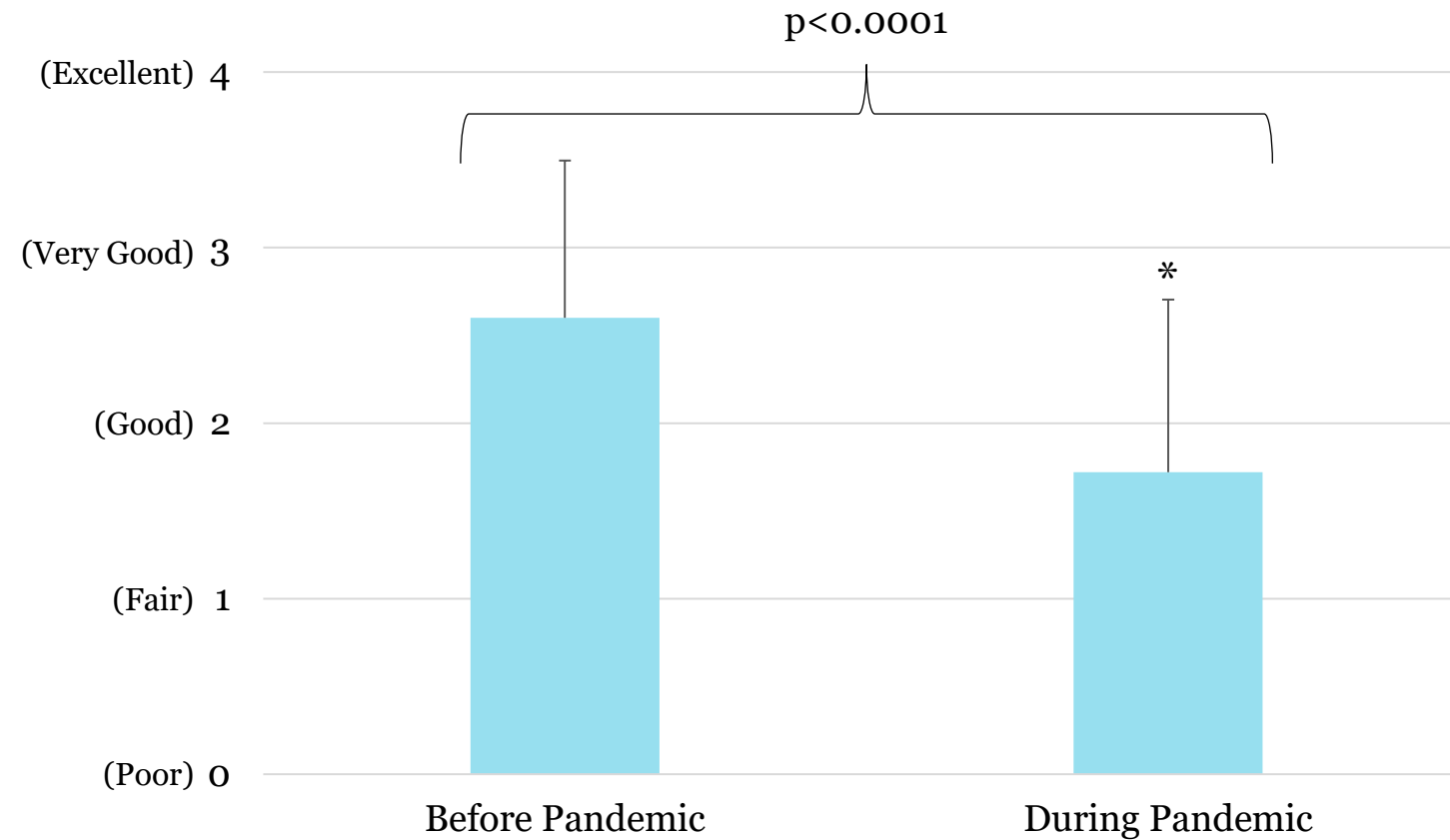
BEFORE PANDEMIC



DURING PANDEMIC



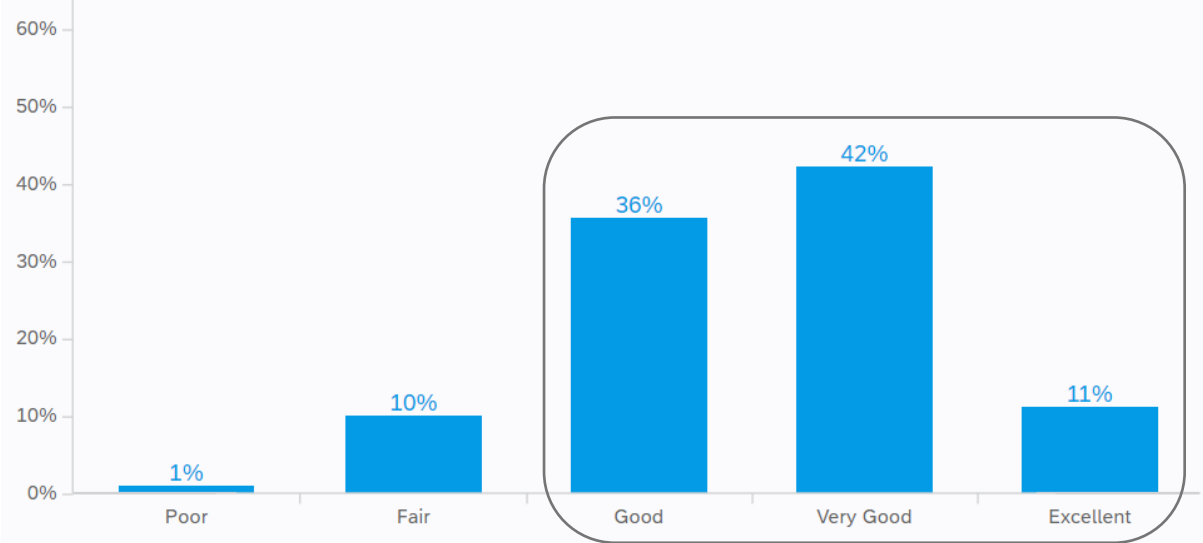
Self-Reported Mental Health



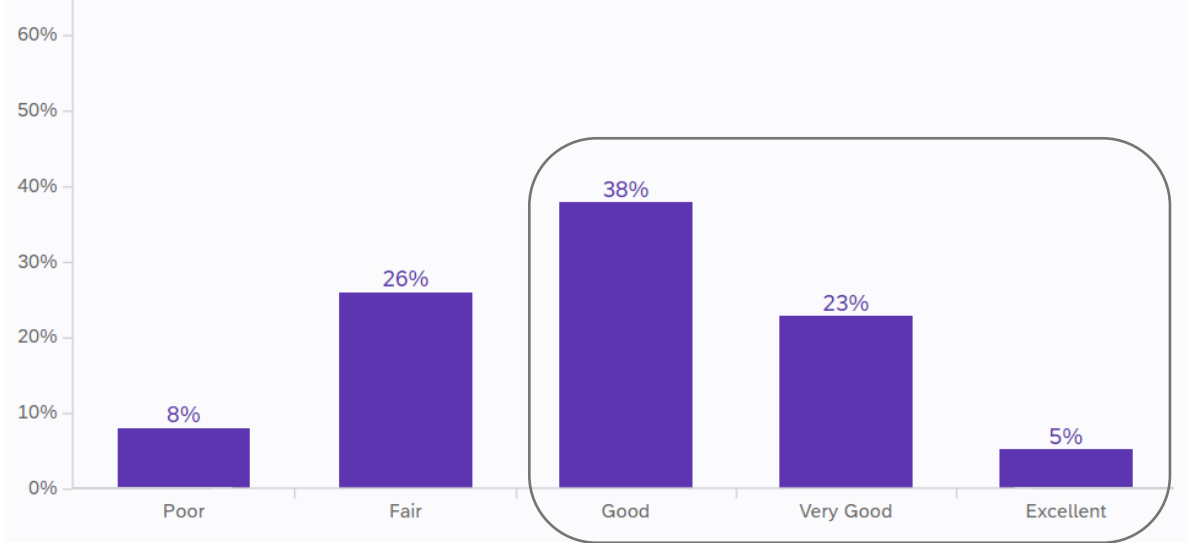
n=1000

Self-Reported Physical Health

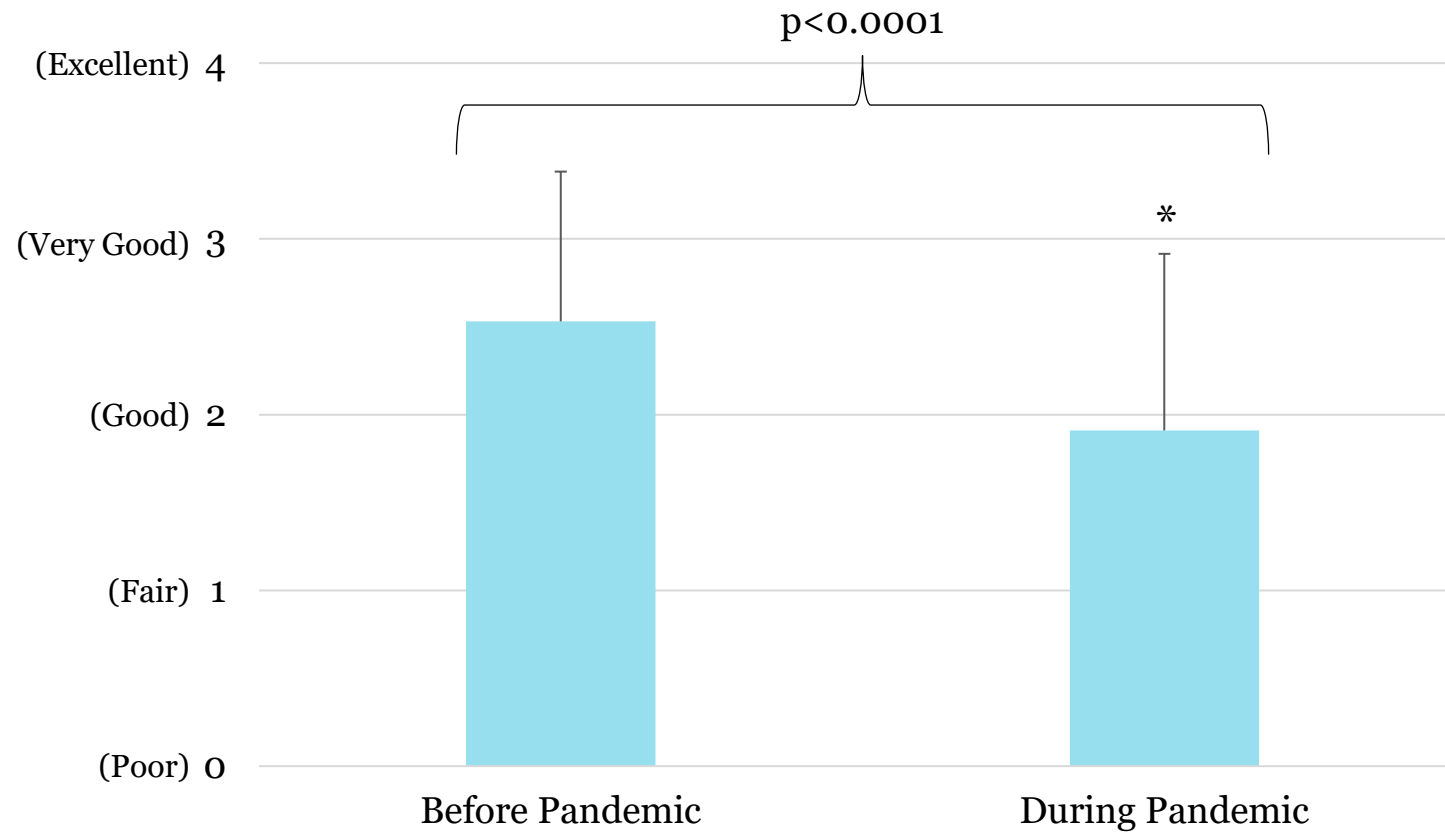
BEFORE PANDEMIC



DURING PANDEMIC



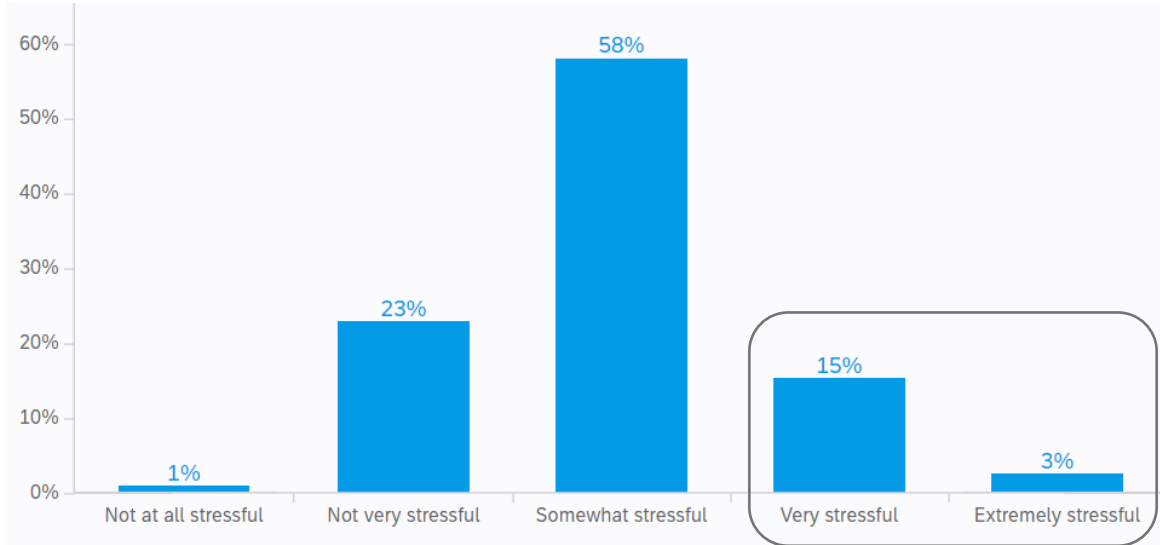
Self-Reported Physical Health



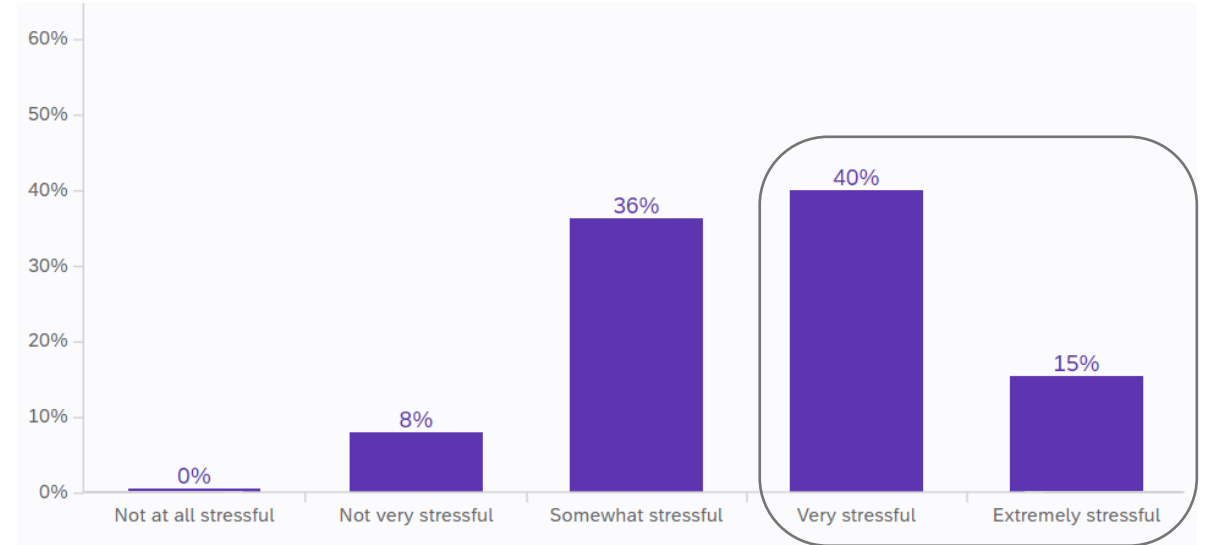
n=1000

Self-Reported Stress Levels

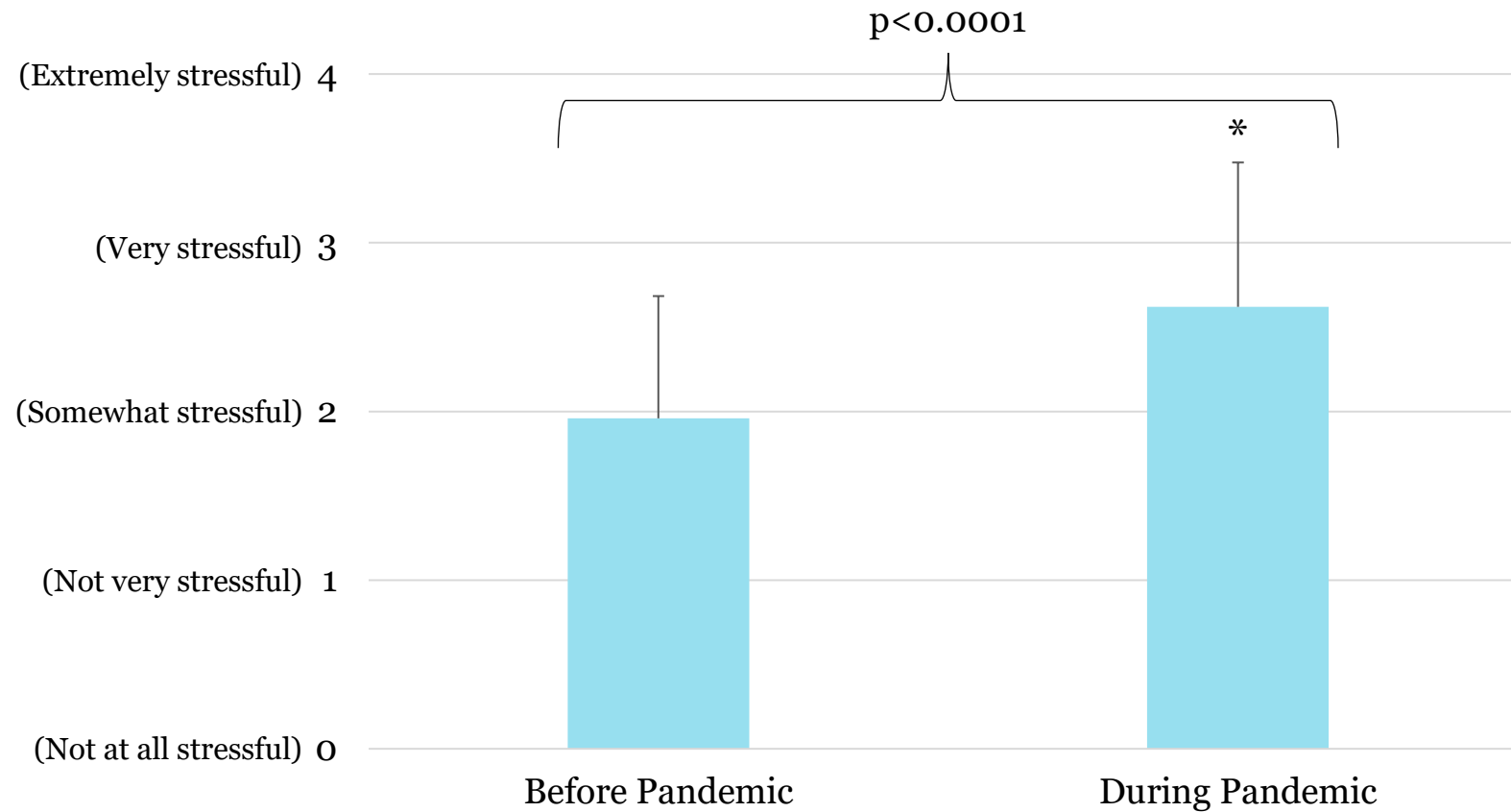
BEFORE PANDEMIC



DURING PANDEMIC



Self-Reported Stress Levels

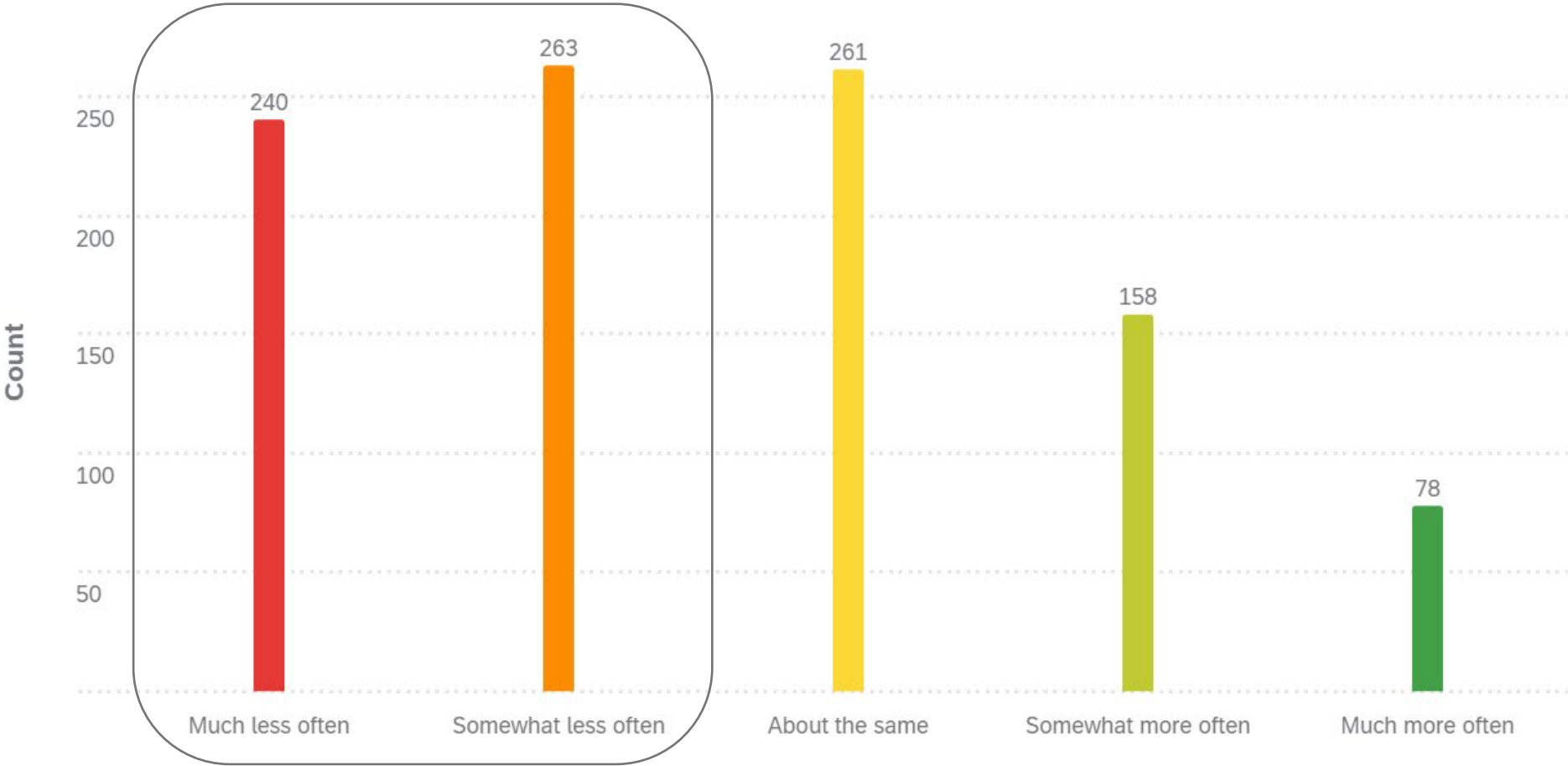


n=1000

Stress Related Symptoms and Impact Pre and During Pandemic

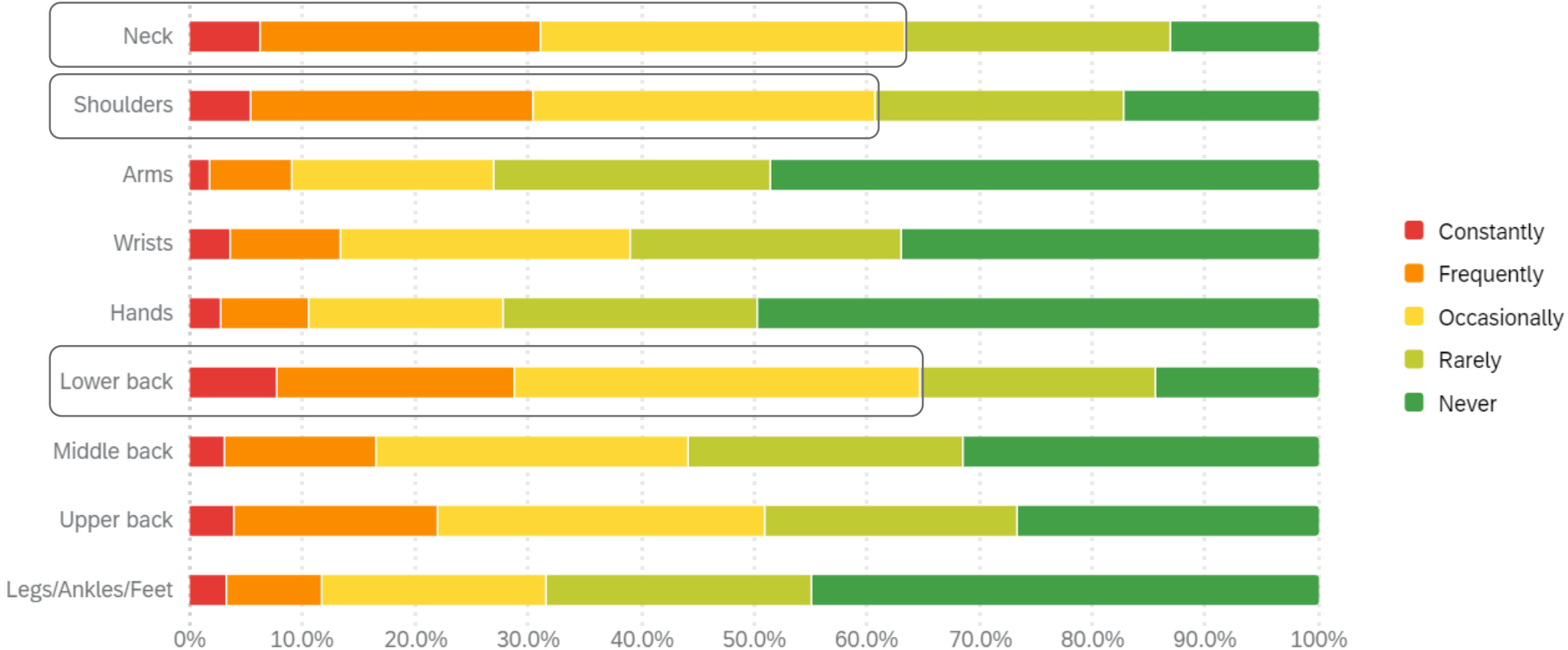
Physical Feelings & Psychosocial Factors	Before Pandemic Average	During Pandemic Average	Result	P-value
Exhausted at the end of the day (n=1000)	2.14	2.47	↑	<0.0001
Headaches or migraines (n=1000)	1.29	1.47	↑	<0.0001
Able to sleep through the night (n=1000)	2.73	2.38	↓	<0.0001
Energized when working (n=1000)	2.5	1.97	↓	<0.0001
Burnt out from work (n=1000)	1.77	2.24	↑	<0.0001
Difficulty concentrating (n=1000)	1.63	2.16	↑	<0.0001
In control of your life (n=1000)	2.78	2.15	↓	<0.0001
Anxious and/or fearful (n=1000)	1.52	2.08	↑	<0.0001
Irritable and tense (n=999)	1.63	2.1	↑	<0.0001
Dizzy (n=1000)	0.61	0.77	↑	<0.0001
Like you can do things as well as most other people in your position (n=999)	3.07	2.70	↓	<0.0001

Physical Activity Levels Compared to Before the Pandemic

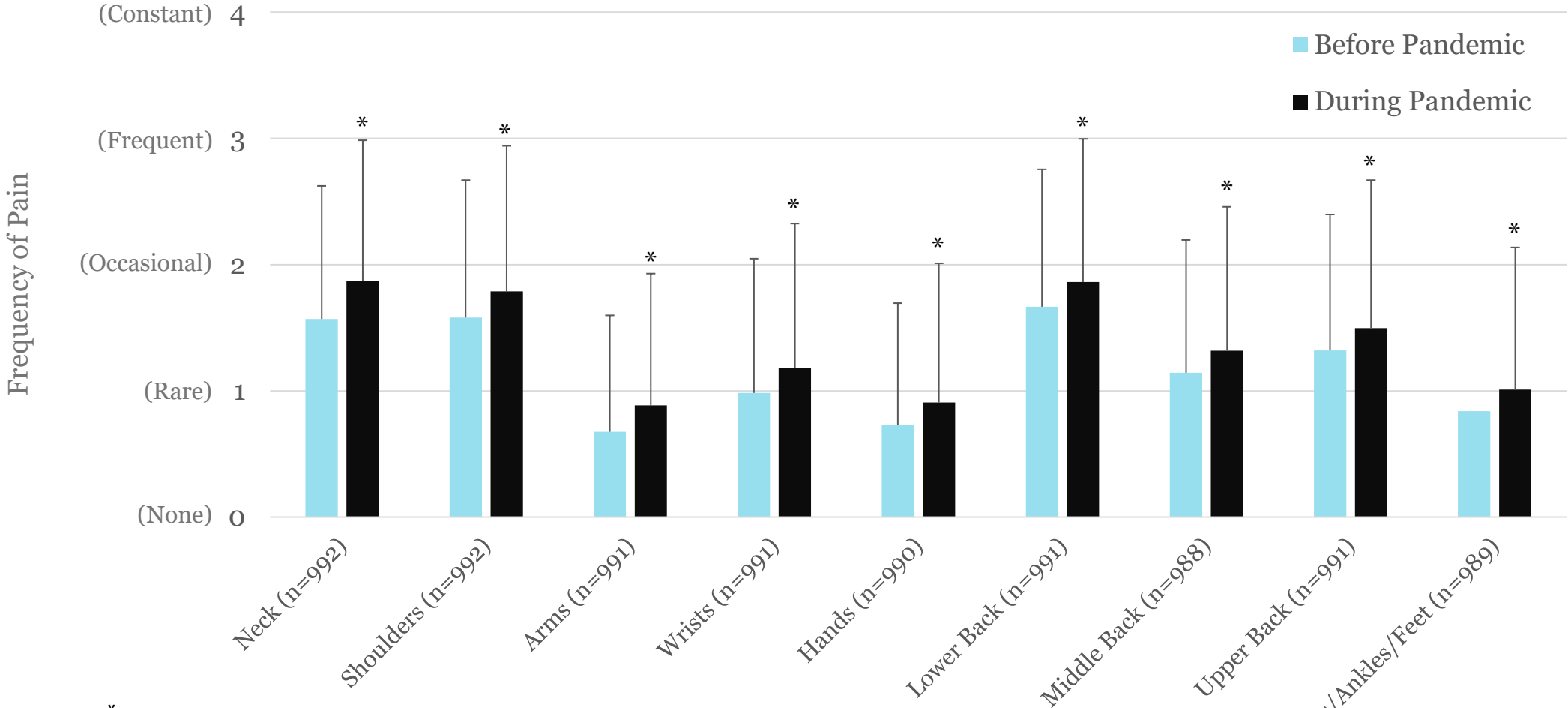


PAIN & INJURY AT WORK

Reported Pain when Teleworking during the Pandemic

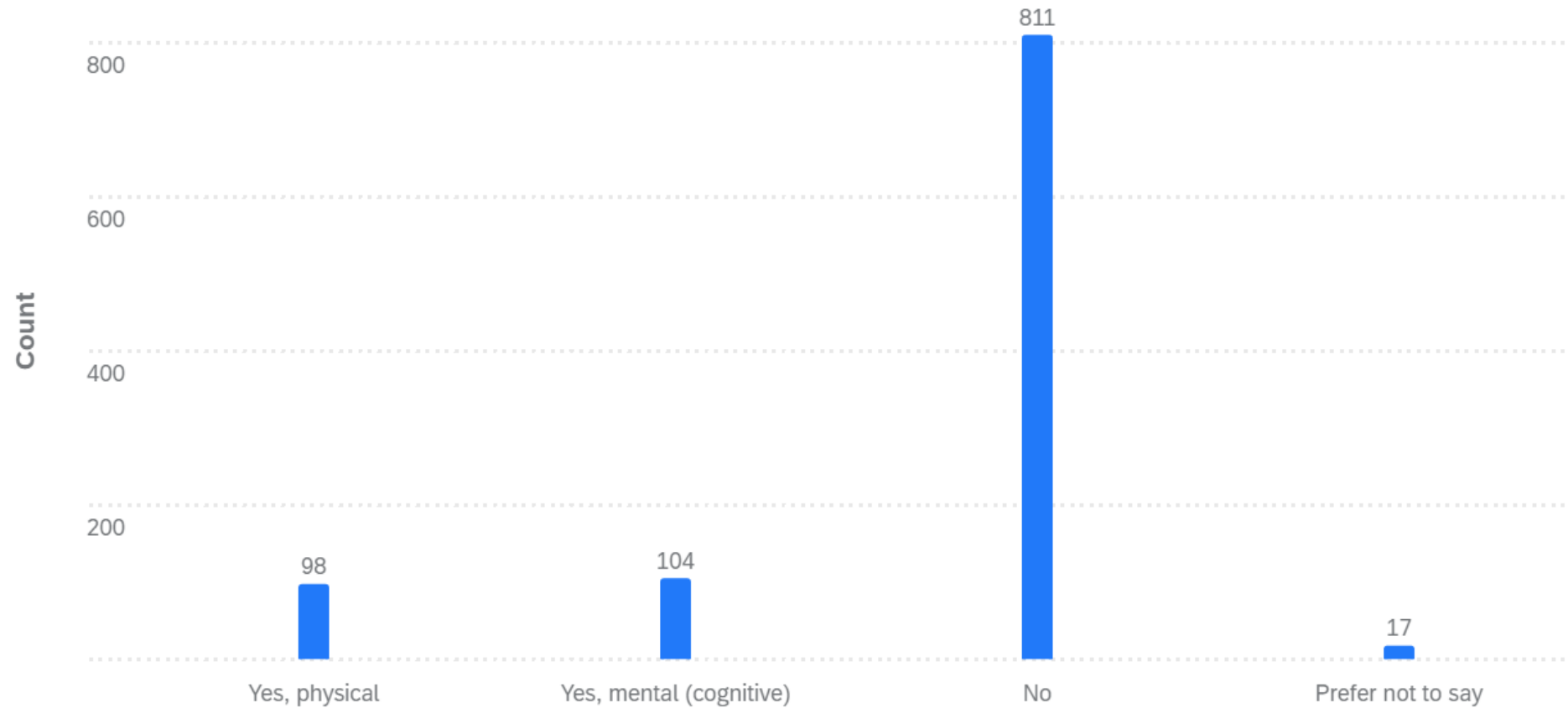


Comparison of Pain Frequency Before & During Pandemic

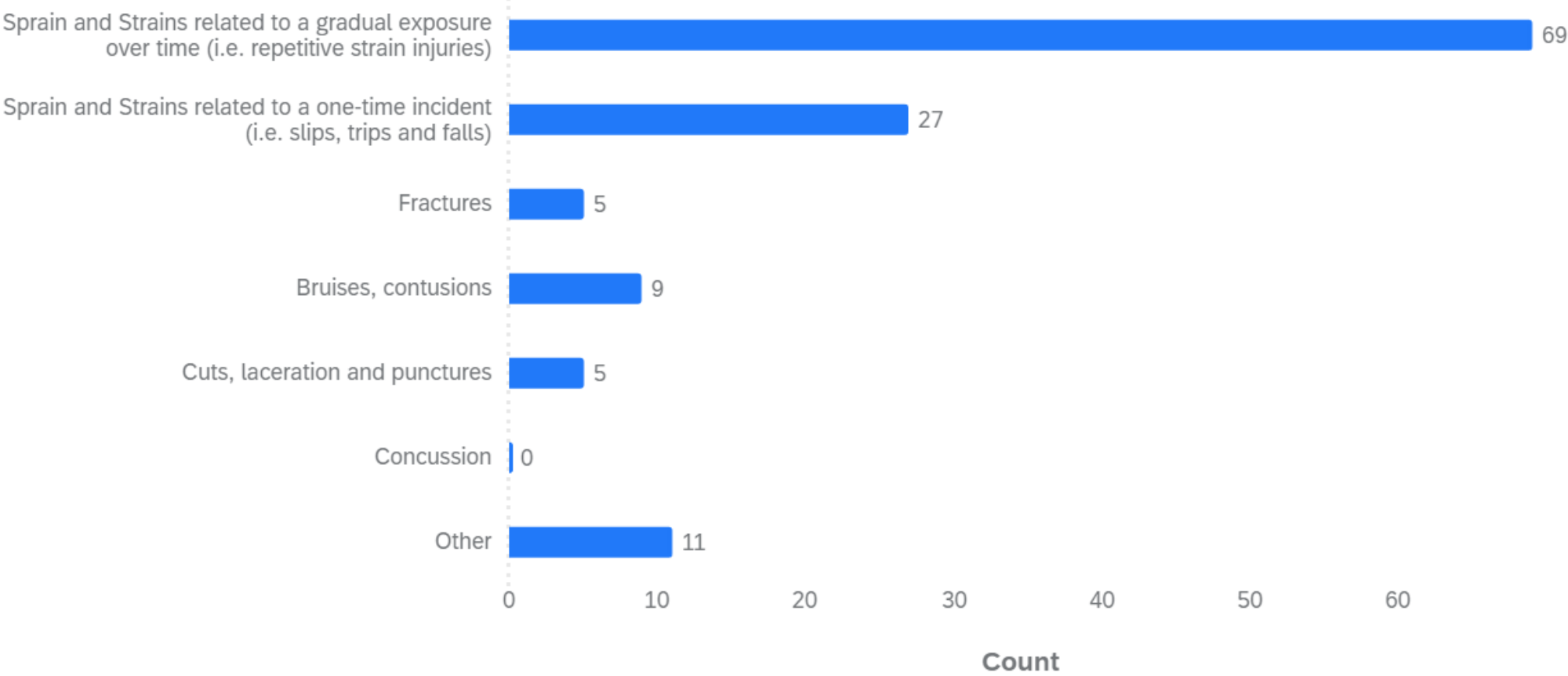


p<0.0001*

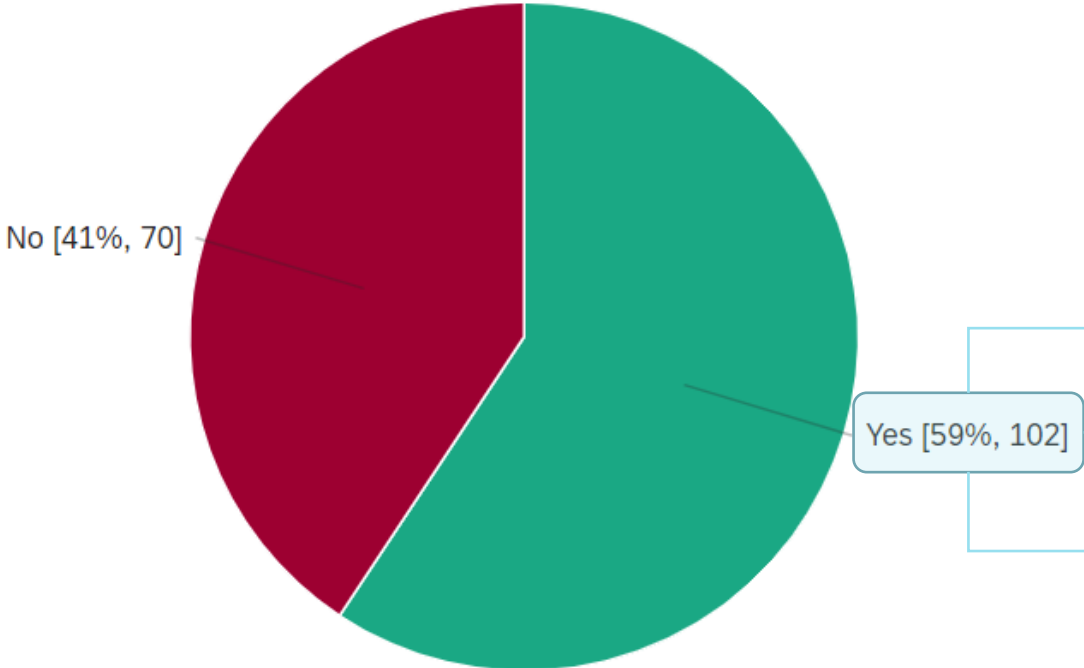
Self-Reported Injuries/Disorders During the Pandemic



Types of Physical Injuries



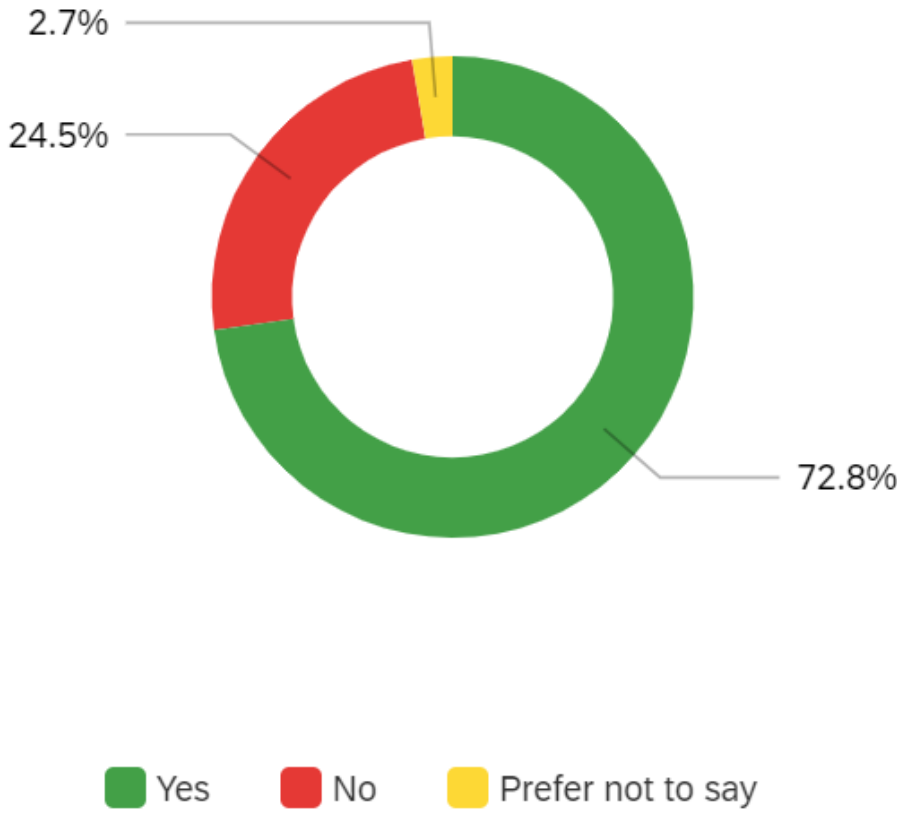
Was the Injury Reported to the Employer?



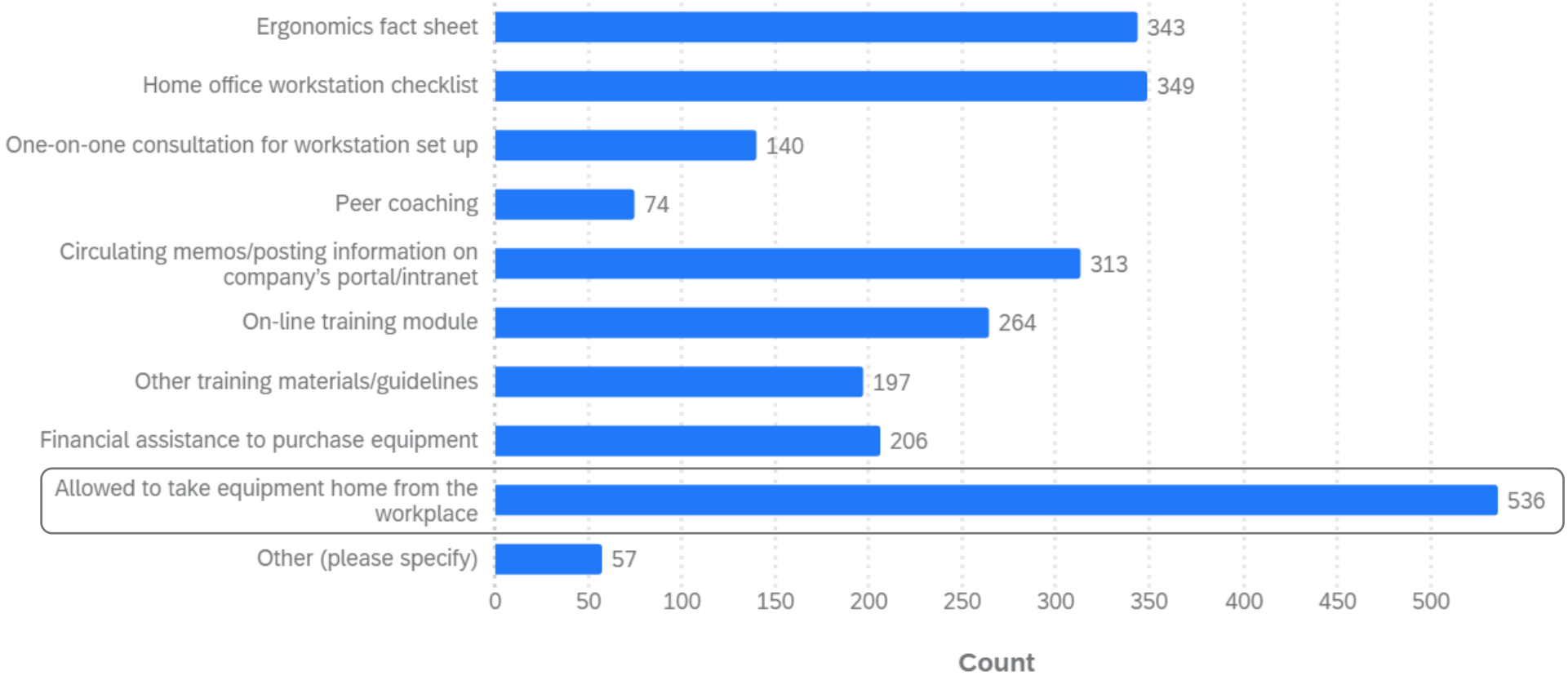
Type of Injury/ Disorder	Reported to Employer	Claim Submitted	Claim Rate
Physical Only	40 (39%)	28	70%
Mental/Cognitive Only	44 (43%)	28	63%
Both Physical & Mental/Cognitive	18 (18%)	13	72%
TOTAL	102 (100%)	69	

ORGANIZATIONAL SUPPORT AND WORK ORGANIZATION

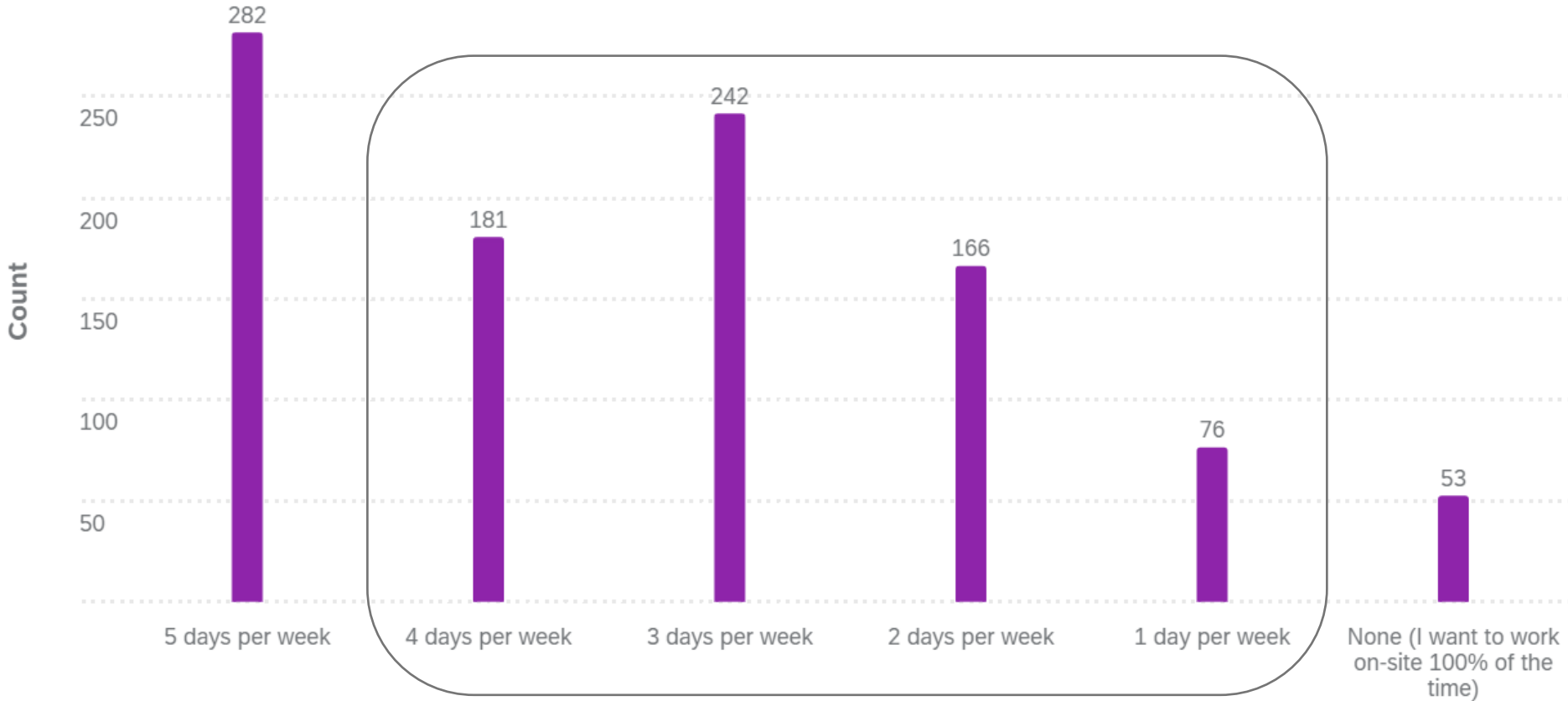
Was Support Provided by Employer?



What type of support was provided by the Employer?



Preferred Work Arrangement Post-Pandemic



RESEARCH QUESTION #1

What work from home factors are associated with mental health?

Organizational Support Factors Associated with Mental Health

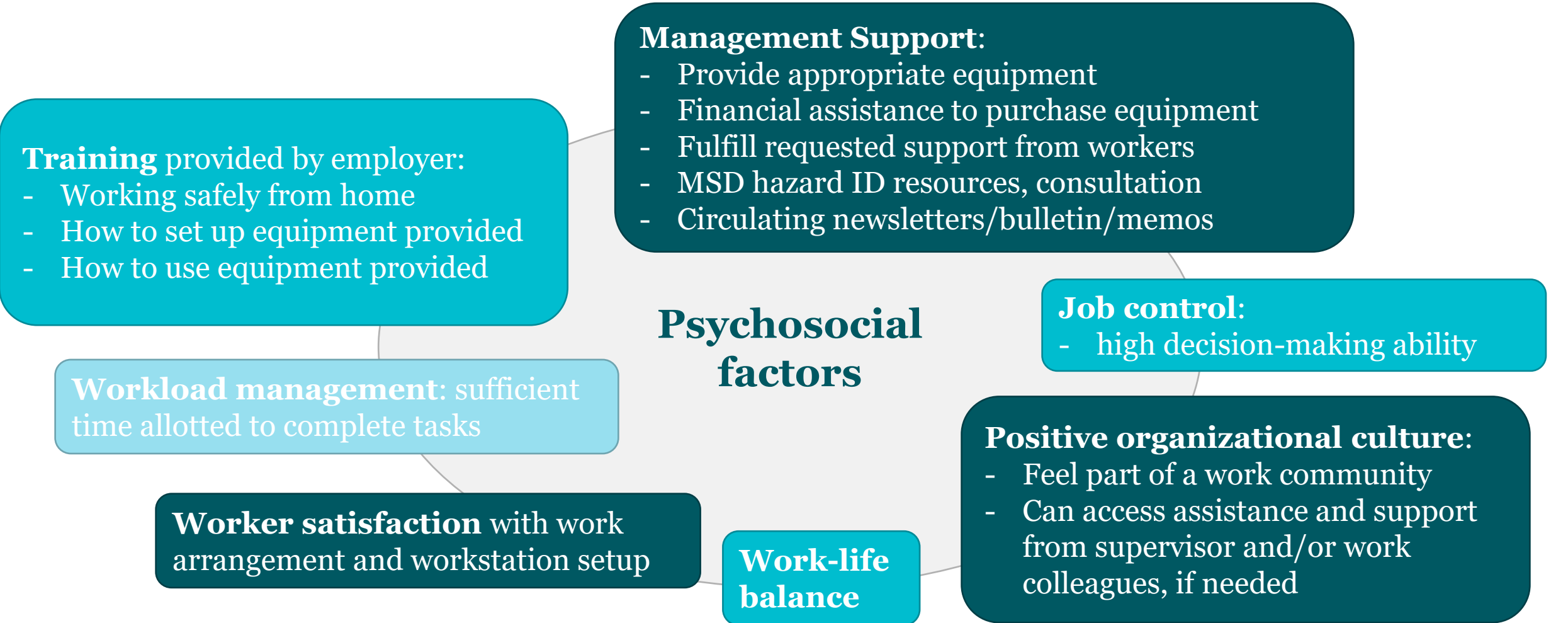
	Factor Description	Pearson Correlation	P-value
Organizational Culture	Experienced feeling part of a work community (n=1000)	0.224	<0.0001
	Received support from supervisor, if needed (n=1000)	0.104	0.0010
	Received support from my work colleagues, if needed (n=1000)	0.138	<0.0001
Management Support	Received adequate training about working safely from home (n=727)	0.171	<0.0001
	Employer provided the appropriate equipment (n=1000)	0.098	0.0020
	Employer provided me with training on how to use the equipment (n=999)	0.095	0.0027
	Received training on setting up workstation (effectively/ergonomically/to prevent body discomfort) (n=1000)	0.131	<0.0001
	Requested support (i.e. training, equipment, resources, etc.) from employer was fulfilled (n=393)	0.156	0.0019

Psychological and Psychosocial Factors Associated with Mental Health

Factors Associated with Worsening Mental Health	Pearson Correlation	P-value
Stress level (n=1000)	-0.427	<0.0001
Exhausted at the end of the day (n=1000)	-0.410	<0.0001
Headaches or migraines (n=1000)	-0.226	<0.0001
Burnt out from work (n=1000)	-0.412	<0.0001
Difficulty concentrating (n=1000)	-0.436	<0.0001
Anxious and/or fearful (n=1000)	-0.501	<0.0001
Irritable and tense (n=1000)	-0.470	<0.0001
Dizzy (n=1000)	-0.115	<0.0001
Demands of work interfere with home and family life (n=1000)	-0.184	<0.0001
Insufficient time to complete work tasks (n=1000)	-0.142	<0.0001

Factors Associated with Improving Mental Health	Pearson Correlation	P-value
Energized when working (n=1000)	0.340	<0.0001
Able to sleep through the night (n=1000)	0.218	<0.0001
In control of your life (n=1000)	0.474	<0.0001
Like you can do things as well as most other people in your position (n=999)	0.288	<0.0001
Satisfaction with working arrangement (n=1000)	0.249	<0.0001
Satisfaction with home workstation set up (n=1000)	0.194	<0.0001
Large degree of influence on decisions affecting work (such as scheduling, organizing etc.) (n=1000)	0.186	<0.0001
More comfortable home workstation compared to pre-pandemic workstation setup (n=999)	0.150	<0.0001

Psychosocial Factors Associated with Mental Health



Individual, Physical Setup and Work Organizational Factors Associated with Mental Health

Factor Description	Pearson Correlation	P-value
Self-reported physical health (n=1000)	0.457	<0.0001
↑ Engagement in physical activity compared to before the pandemic (n=1000)	0.132	<0.0001
Pain/Discomfort (across all body areas)	Ranged between: -0.073 to -0.188	<0.0001
Age (n=1000)	0.165	<0.0001
Home workstation allows changing from sitting and standing to do work (n=999)	0.164	<0.0001
↑ Frequency of movement (posture change) during the workday (n=1000)	0.082	0.0098
↑ Duration of active breaks to move during the workday (n=1000)	0.100	0.0016

Predictors of Positive Mental Health

Type of Factor	Description	Coefficients B (Std. Err.)	P-value
Individual	Self-reported physical health	0.339 (0.049)	<0.0001
Psychosocial	Feeling in control of your life	0.203 (0.057)	<0.0001
Psychosocial	Stress level	-0.218 (0.063)	0.0006
Psychosocial	Insufficient time to complete work tasks	0.129 (0.043)	0.0031
Psychosocial	Anxious and/or fearful	-0.140 (0.056)	0.0127
Individual	Engagement in physical activity compared to before the pandemic	-0.078 (0.036)	0.0331
Psychosocial	Feeling part of a work community	0.100 (0.049)	0.0422

RESEARCH QUESTION #2

What factors are associated with pain in the top 3 body areas when working from home?

1. Lower Back
2. Neck
3. Shoulders

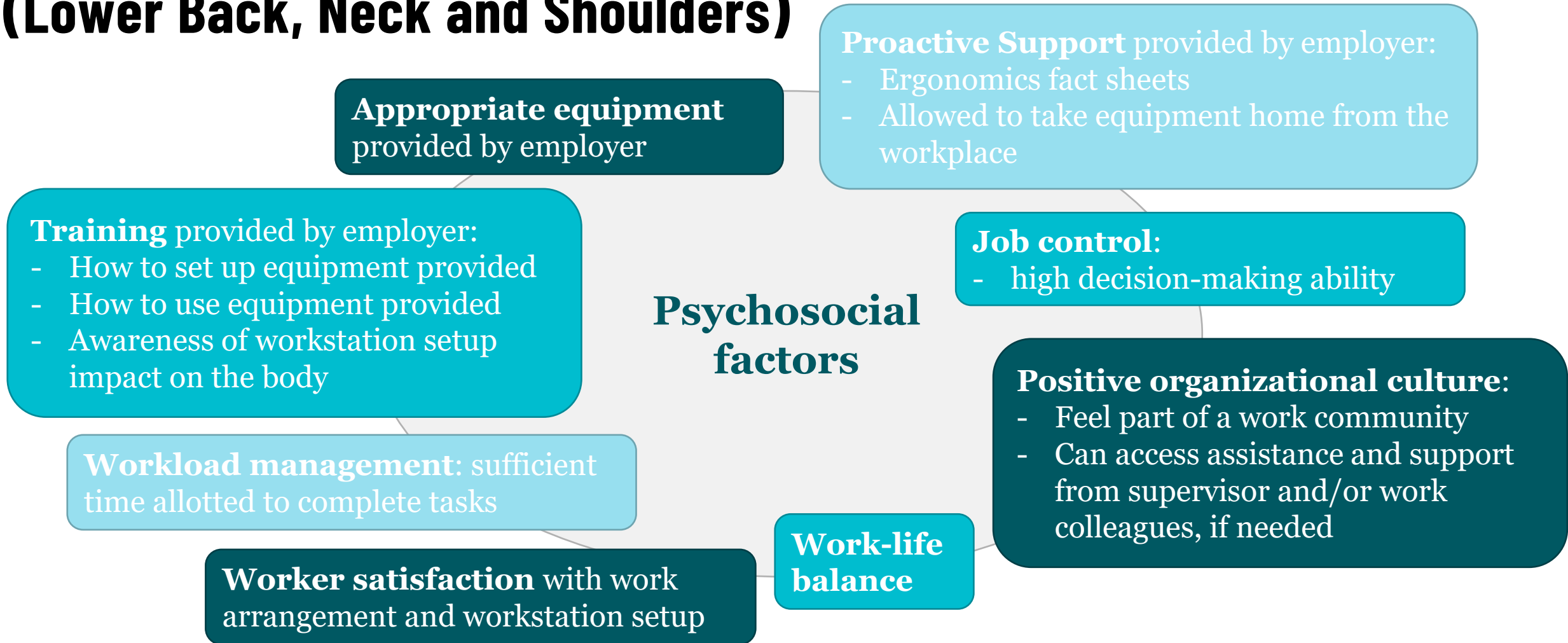
Factors Associated with REDUCING Lower Back Pain

Question Theme	Workstation Factor	Pearson Correlation	P-value
Laptop Use	External keyboard (n=913)	-0.084	0.0116
	External mouse (n=914)	-0.069	0.0363
	Stand-alone monitor (n=913)	-0.071	0.0316
	Laptop riser (n=914)	-0.077	0.0195
Type of Chair	Office chair (n=977)	-0.119	<0.0001
Chair Adjustability	Seat height (n=828)	-0.071	0.0410
	Backrest angle (n=829)	-0.080	0.0210
	Ability to adjust chair to support the way you would like to sit (n=829)	-0.160	<0.0001
Lumbar support	Presence of lumbar support (n=980)	-0.108	0.0007
Posture	Back in contact with the back of the chair (n=980)	-0.124	<0.0001
Type of Workstation	Traditional desk (n=977)	-0.081	0.0109
Work Pacing & Breaks	↓ duration of work prior to taking a break (n=979)	-0.079	0.0135
	↑ frequency of movement (posture change) during the workday (n=980)	-0.129	<0.0001
	↑ duration of active breaks to move during the workday (n=980)	-0.197	<0.0001

Factors Associated with INCREASING Lower Back Pain

Question Theme	Workstation Factor	Pearson Correlation	P-value
Type of Chair	Kitchen/dining chair (n=977)	0.138	<0.0001
	Couch, sofa or recliner (n=976)	0.159	<0.0001
	Bed arm/body cushion support (n=976)	0.117	<0.0001
Posture	Upper body (trunk) twisted or bent sideways (n=980)	0.215	<0.0001
	Neck bent forward (flexed) (n=980)	0.271	<0.0001
	Neck bent backwards (extended) (n=980)	0.083	0.0094
	Neck twisted or bent sideways (n=980)	0.186	<0.0001
Type of Workstation	Make-shift desk (e.g. kitchen table) (n=971)	0.159	<0.0001
	Not on a work surface (e.g. your lap) (n=971)	0.142	<0.0001

Common Factors Associated with REDUCING Pain in Top 3 Body Areas (Lower Back, Neck and Shoulders)



Common Factors Associated with Pain in Top 3 Body Areas (Lower Back, Neck and Shoulders)

↓ PAIN

Sitting in an office chair:

- Backrest angle adjustability
- Able to adjust your chair to support the way you would like to sit
- Back in contact with the back of the chair

Work pacing & breaks:

- ↑ frequency of posture changes
- ↓ duration of work before taking a break
- ↑ duration of active breaks to move during the workday

Physical Setup & Work Organization factors

↑ PAIN

Sitting in household furniture:

- Kitchen/dining chair
- Bed arm/body cushion support

Temporary work surfaces:

- At a make-shift desk (e.g., kitchen table)
- Not on a work surface (e.g., your lap)

Working in non-optimal postures:

- Upper body (trunk) twisted or bent sideways
- Neck flexed or extended
- Neck twisted or bent sideways

CONCLUSION & RECOMMENDATIONS

Conclusion

- Compared to pre-pandemic:
 - Self-reported mental and physical health has worsened during the pandemic
 - Higher frequency of pain/discomfort across all areas of the body

- Similar trends for workstation setup and body discomfort were identified compared to previous studies on working from home, in earlier stages of the pandemic.

- Analysis indicates:
 1. Self-reported mental health was primarily impacted by psychosocial and individual factors
 2. Various types of factors were associated with lower back, neck and shoulder pain

Recommendations for Employers

Protect remote workers by setting the foundation for positive mental and physical health.

1. **Management commitment and leadership**

- Outline organizational commitment to protecting remote workers in company policies
- Develop clear expectations around working remotely (i.e., work hours, tasks, deadlines, etc.)
 - Include workers in the process to assist with decision-making, when possible
- Focus on creating positive organizational culture
 - Engage remote workers and encourage open communication
 - Supportive work community
- Provide workers with the supports required to perform their tasks safely
 - i.e., equipment, training, resources, etc.

Recommendations for Employers

2. Develop a plan to support remote workers



- **Train employees on:**
 - Awareness of musculoskeletal disorder (MSD) hazards and psychosocial factors when working remotely
 - Reporting hazards and symptoms (i.e., pain/discomfort) identified
 - Controlling hazards through optimal set up and best practices
- **Create a process for hazard identification, assessment and control**
 - MSD hazard identification checklist (i.e., [WSPS Home Office Workstation Checklist](#))
 - Reference the [Quick Start Guideline – Office](#) to identify and control MSD hazards
 - Establish process for implementing controls, such as equipment and training on work methods
 - Need help? Consider virtual ergonomics assessment for in-depth analysis and recommendations

Recommendations for Remote Workers

For anyone working remotely:

- Respect boundaries for work hours and personal time
- Contribute to a supportive work community
 - Support peers when possible and ask for assistance when needed
 - Participate in open communication
- Reference resources for optimal set up and use equipment as recommended to complete tasks safely
 - [Quick Start Guideline – Office](#)
- Apply best practices and work methods
 - Include regular breaks, movement and physical activity into the workday
- Report hazards and symptoms (i.e., pain/discomfort) early to allow for intervention

Quick Start Guideline: Office



Introduce regular breaks and pauses into work. Stretching can help too.

STEP 1: Set Chair Height
Knees and hips should be at 90° angles (thighs horizontal; lower legs vertical). Feet should be flat on the floor.

STEP 2: Set Chair Settings
Adjust backrest and seatpan such that the low back is well supported and there is no contact between the seat pan and back of the knees.

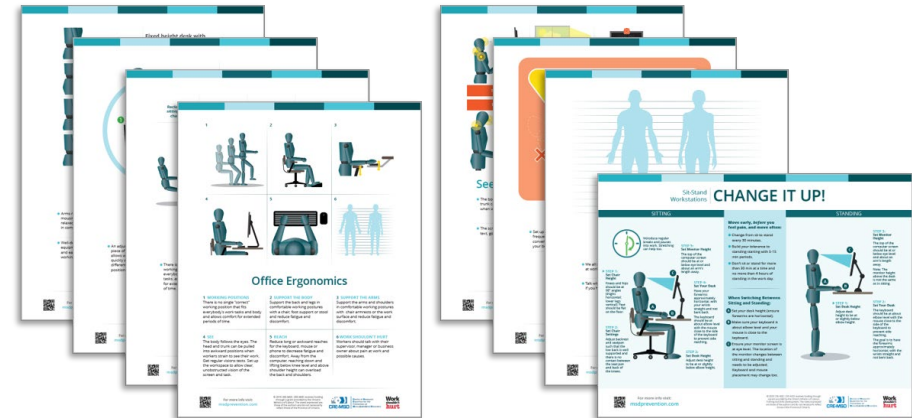
STEP 3: Set Desk Height
Adjust desk height to be at or slightly below elbow height.

STEP 4: Set Your Desk
Have your forearms approximately horizontal, with your wrists straight and not bent back. The keyboard should be at about elbow level with the mouse close to the side of the keyboard to prevent side reaching.

STEP 5: Set Monitor Height
The top of the computer screen should be at or below eye level and about an arm's length away.

- Free, online resource, 8-poster series
- Provides guidance on setting up a computer workstation and best practices

<https://www.msdpredvention.com/Quick-Start-Guideline-Office.htm>



Poster 1: Support the Body

- Well-designed, ergonomic chair
 - Critical for full-time, seated office and computer work
 - Adjustable features to fit the worker and support the body
- Provide support to the lower extremities



① BACK (LUMBAR) SUPPORT

② FOREARM SUPPORT

③ THIGH SUPPORT

④ SPACE BEHIND KNEES

⑤ ELEVATED FOOT REST

**Support: Reduce fatigue
by supporting your body!**

Free Resources

- **Musculoskeletal Disorder (MSD) Prevention Guideline for Ontario**
(www.msdpreservation.com)
- **Guarding Minds at Work.** Simon Fraser University & Canadian Centre for Occupational Health and Safety (CCOHS)
(www.guardingmindsatwork.ca)
- **13 Psychosocial Factors for Psychological Health and Safety in the Workplace.** Canadian Mental Health Association Kelowna
(<https://cmhakilowna.com/13-factors>)
- **Healthy and Safe telework: Technical Brief.** Geneva: World Health Organization and the International Labour Organization, 2021
(<https://www.who.int/publications/i/item/9789240040977>)

THANK YOU!

Dr. Phil Bigelow: pbigelow@uwaterloo.ca

Kim Meszaros: kmeszaros@uwaterloo.ca