

# **Impact of Labour Mobility on the Physical and Mental Health of Skilled Trades Workers**

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We wish to acknowledge this land on which the University of Toronto operates. For thousands of years, it has been the traditional land of the Huron-Wendat, the Seneca, and the Mississaugas of the Credit. Today, this meeting place is still the home to many Indigenous people from across Turtle Island, and we are grateful to have the opportunity to work on this land.

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## Executive Summary

Blue Branch Inc., established in 2016, is a social enterprise focused on labour mobility, working with employers throughout Ontario, with an emphasis on rural communities. Blue Branch leverages solutions which efficiently and effectively connect individuals seeking employment to available opportunities and resources. Through this, Blue Branch demonstrates a dedicated commitment to skilled tradespeople in supporting their journey, the employers they support with high-quality staffing possibilities, and the communities, by lower unemployment and bringing economic stability.

This report evaluates the impact of labour mobility on the physical and mental health of skilled labourers. This report takes an innovative approach to bridge these two scenarios - employers and regions facing labour shortages with people living in areas of high unemployment. By addressing the barriers employees face towards relocating to new communities and helping employers attract qualified labour, this project seeks to overcome the disparities in the labour market in rural communities.

A quantitative study was conducted in 20 months. First, the preparatory period (3 months) comprised Research Ethics Board approval from the University of Toronto and partnering research institutions. Agreement of all required documents, including study protocol, consent forms, survey questionnaire, and email scripts between the parties. Research staff from the University of Toronto carried out the consent and worked with all stakeholders and participants. Participants consisted of both employees and employers affiliated with Blue Branch, who were invited to complete self-administered questionnaires online.

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## Introduction

### Key Components of this Report

The following sections comprise this report:

**Section 1** presents an overview and introduction of the report.

**Section 2** is composed of the relevant literature and background information. This entails, details of demographics and populations prominent, barriers and shortages faced in the field, mental and physical health impacts, and the influence of Covid-19.

**Section 3** comprises the methodology of this project, including the purpose, research questions, and the execution of this study.

**Section 4** presents and demonstrates the quantitative findings.

**Section 5** includes a discussion portion highlighting and analyzing the significant results.

**Section 6** concludes the importance of the study, as well as identifying and proposing actionable recommendations.

## Terminology

*Table 1.*

<b>Labour mobility</b>	is the ability for certified workers, commonly with trade workers, to change both physical and occupational locations to increase job opportunities
<b>Labour recruiter</b>	experts involved in recruiting, screening and attracting applicants for openings in work and placement positions for both public and private employment services.
<b>Migrant worker</b>	an individual who migrates or has migrated within their country of origin or to another country to pursue employment.
<b>Recruitment</b>	refers to the variety of ways, such as advertisement, to seek and recruit employees and available positions for both employers and job seekers.
<b>Skilled Trades</b>	Refers to an occupation that requires skilled labour and knowledge of the subject.

## List of Abbreviations & Acronyms

<b>CBI</b>	Copenhagen Burnout Inventory
<b>Covid-19</b>	Coronavirus disease 2019
<b>ILO</b>	International Labour Organization
<b>NIOSH</b>	National Institute Occupational Safety and Health
<b>OS&amp;OT</b>	Occupational Science and Occupational Therapy
<b>TFWs</b>	Temporary Foreign Workers
<b>UofT</b>	University of Toronto
<b>WHO</b>	World Health Organization
<b>ReSTORE</b>	Rehabilitation Sciences Through Occupational
<b>Research and Engagement</b>	

### About the University of Toronto

The University of Toronto was founded in 1827 and is Canada's top university. The University of Toronto is a global leader in research bringing together top minds from different backgrounds and disciplines to collaborate. Their goal is to prioritize city building, international partnerships and transformative education to strengthen their standing as a globally ranked research powerhouse and leader in research-intensive education.

### *The Department of Occupational Science and Occupational Therapy (OS&OT)*

The Department of Occupational Science and Occupational Therapy at the University of Toronto is a place to learn the knowledge and skills of occupational therapy that will lead to a Master of Science in Occupational Therapy degree. The Department of Occupational Science and Occupational Therapy provides excellence in research and teaching in occupational science and occupational therapy and contributes to the well-being of the population by advancing knowledge regarding engagement in life's occupations. Furthermore, the Department of OS&OT provides graduate and continuing education programs that enable occupational therapists to be leaders in research, clinical practice and the promotion of health and well-being.

### *Temerty Faculty of Medicine*

The Temerty Faculty of Medicine at the University of Toronto overlooks the medical education and rehabilitation sciences departments and programs, including the Department of OS&OT.

### About the ReSTORE Lab

The ReSTORE (Rehabilitation Sciences Through Occupational Research and Engagement) Lab was created in 2021 and is led by Dr. Behdin Nowrouzi-Kia. The ReSTORE lab is a multidisciplinary research group with backgrounds in occupational therapy, occupational health and safety, work disability prevention, work ability and stroke rehabilitation. The mission of the ReSTORE lab is to identify and assess risk and to develop occupation-based interventions to improve mental and physical health in the workplace. Using a biopsychosocial lens, the ReSTORE lab examines work disability as the relationship between personal factors (e.g., mental health) and environmental factors (e.g., systems, policies, and programs) to improve health outcomes.

### *ReStore Lab Members*

Dr. Behdin Nowrouzi-Kia Ph.D. is an Assistant Professor in the Department of OS&OT, where he also holds the inaugural Emily Geldsaler Grant Early Career Professorship in Workplace Mental Health. Through an occupational lens, his research program is a systematic study of occupations in the areas of work disability prevention, return to work, and disability management. This

approach is designed to produce results directly applicable to identifying and assessing risk and developing interventions for preventing or improving high-risk behaviours in the workplace. Dr. Nowrouzi-Kia's work is motivated by efforts in the field of work disability prevention that extends beyond the efforts to prevent or cure diseases from a purely physical perspective toward more holistic approaches.

Dr. Ali Bani-Fatemi is a Research Associate in the Department of OS&OT at the UofT. His research focuses on evaluating the influences of genetic and epigenetic alterations as potential risk factors for suicidal behaviour. Using a biopsychosocial approach, he investigates the socio-cultural and clinical variables that may be related to suicidality. He has expertise in conducting rigorous research and has strong methodological experience in review studies, quantitative methods and analyses.

Dr. Vijay Kumar Chattu is a medical epidemiologist and health policy specialist with vast international experience. He has an MD in Community Medicine, MPH in Health Policy and MPhil in Health Governance. Dr. Chattu specialized in Occupational Medicine at the University of Toronto based at St. Michael's Hospital and is currently working as a Postdoctoral Fellow at the Department of OS&OT and as Senior Research Scientist at ReSTORE Lab. He has an excellent interdisciplinary research track with over 300 publications, and his areas of expertise include mental health, global health, climate change and social determinants of health. He also contributed to the ILO's "Diagnostic and exposure criteria for occupational diseases - Guidance notes for diagnosis and prevention of the diseases in the ILO List of Occupational Diseases (revised 2010) published in February 2022.

Aaron Howe is a graduate student at Columbia University, where he is completing his studies in Clinical Psychology. He has previously worked at the Centre for Addiction and Mental Health on various projects related to investigating epigenetic and genetic mechanisms of suicidal behaviour in adult schizophrenia spectrum patients. Aaron has a passion for studying the intersection between psych neuroendocrinology and evidence-based mental health treatments for children and adolescents. He joined the ReSTORE Lab in March 2022 to contribute to mental health-related projects.

Sharan Jaswal is in her third year at the University of Toronto Scarborough, where she is in the progress of completing a Specialist Program for Psychological and health sciences (co-op). She has interests in research science and occupational science and therapy. In January 2022, Sharan joined the ReStore lab as a Research Assistant, and is working on different research projects.



Christy Tam is a third-year co-op student at the University of Toronto's Scarborough campus, where she is studying under a specialist program in cognitive neuroscience. Her research interests include physical and mental rehabilitation. Christy joined ReSTORE lab as a Research Assistant in the fall of 2022 and is currently assisting the lab with its various project branches.

Bushra Alam is a fourth-year co-op student at the University of Toronto Scarborough, completing her Bachelor of Sciences (BSc) in Human Biology and Health Studies. Her research interests lie in occupational science & therapy, public health, clinical research and mental health research. Bushra joined the ReSTORE lab as a Research Assistant in September of 2022 and is currently supporting/working on various research projects at the ReSTORE lab.

Raabia Khan is a fourth-year co-op student at the University of Toronto Scarborough, completing a double major in Health Studies (Population Health) and Molecular biology, immunology, and disease. Raabia enjoys conducting scientific research, specifically in areas of epidemiology and occupational health. She joined the ReSTORE Lab in September 2022 as a Research Assistant. She wishes to enhance her research skills as well as build new connections by partaking in existing and upcoming research projects at the ReSTORE Lab

## Background Information

### Overview of the Literature

Labour mobility and subsequent workers migration is an increasing trend worldwide, with migrant workers making up a huge quota of economic growth in high-income countries (1). It is a complex process that requires movement between workplaces, occupations, and industries (2). This process also helps individuals find work where they are needed, with the possibility of higher wages and increased productivity when matched with jobs best suited for them.

Globally, international migrants were estimated to be about 281 million in 2020, making up 3.6% of the global population. This estimate is over three times the estimated number in 1970 and 128 million more than in 1990 (3). Almost two-thirds of global migrants were labour migrants, 48 percent were females, and 74 percent were of working age 20-64 years (3,4). Labour mobility is affected by several socioeconomic and personal determinants, such as policies and economic conditions, as well as age, gender, marital status, education, occupation, national origin, and health, respectively (2). There is a paucity of data in the literature about labour mobility and its effect on mental health. Besides, most available data focused on the negative effects of mental health and labour mobility, with few data reported on its positive effects.

### Demographics

#### *Skilled Trade Workers*

In Canada, the median age for apprentice registration is 27 years old (5). There was a significant increase in the average ages of some skilled tradespersons such as cooks, auto technicians, truck and bus mechanics, truck drivers, welders, and heavy-equipment operators from 1996 to 2016, which were above the age of 35 (6). Women are underrepresented in Canada's skilled trade industry compared to men; in 2019, women only accounted for 13.5% of new registrations, and 12.2% were certified (7). While immigration in Canada accounts for 20% of the population, only 8.7% of apprentices are immigrants. Also, the majority of immigrants are registered in a Red Seal Trade, but the value is significantly lower than non-immigrants (79.1%) (5).

#### *Industry*

The skilled trade sectors in Canada, construction, manufacturing, services, and automotive, employ about 20% of Canadians (8). There has been a decrease in the number of skilled trades

workers over the years. In 2019, the annual number of newly certified tradespeople declined by 3.9% (7). This decrease in skilled trades workers in the industry can also be seen in migrant populations, and the proportion of populations migrating to other provinces for work has fallen from roughly 2% in the 1970s to around 1% in 2015 (9).

In Canada, tradespeople in mechanical trades earn the most (\$76,500 in year one), while the electrical trades earn the second highest at \$74,200 in the first year (8). The lowest earning category is hairstylists; their earnings start at \$23,700 and grow only 2.5% annually. From 2022 to 2026, the most in-demand skilled trades professions in Canada are expected to be; industrial electrician, industrial mechanic, cook, painter and decorator, and welder (10).

## Challenges in the field

### *Skilled trade Labour shortages*

In Ontario, there is an ongoing shortage in labour supply, particularly within the skilled trades (10). Between 2020 and 2022, the ratio of unemployed individuals to vacant positions in Ontario decreased from 2.6 to 1.5 (11). The recruitment of skilled workers is expected to be a challenge for nearly 40% of the business, particularly in sectors that rely on skilled labour, such as construction. The field is faced with disparate structures for supporting apprenticeships, an ageing population, and barriers to access opportunities for labour mobility.

Apprenticeship completion in Ontario remains low in ratio to registration (12). Negative stereotypes of inferiority surrounding apprenticeship positions compared to traditional pathways in higher-education institutions may drive the low enrollment of youths in apprenticeship programs (13). Additionally, most high schools focus on supporting more traditional pathways towards universities or colleges, while there is a lack of Ontario Youth Apprenticeship Program coordinators in provincial high schools (14). This scarcity of guidance for youths in the skilled trades may account for their lack of awareness about career prospects, job diversity, federal apprenticeship support, and salary ranges in the skilled trades (15).

Additionally, Canada's ageing workforce also poses a threat to the growth of the country's labour force, with competitive workers becoming harder to retain in work environments as they age (16). Occupational fields that require laborious work and the operation of heavy equipment or machines are particularly susceptible to the negative effects of an ageing population (16). Difficulties with maintaining workers in an ageing population, on top of challenges in introducing new workers to the skilled trades, ultimately contract Ontario's skilled labour market.

Labour mobility can be a force that counteracts Canada's shortage of skilled labour. This is because it allows workers facing economic conditions in their current places of work to pursue

more financially advantageous work opportunities in other regions. However, there remain economic challenges to labour mobility. For example, costly public transit and congested traffic pathways in the Greater Toronto Area mean a more financially demanding commute for workers (17,18). Employers may also find relocation costs for their employees to be too high of a cost. Social exclusion of migrant workers can further threaten workers' sense of belonging post-migration from one region of work to another (19). Subsequently, despite the five largest sectors of trade being a major source of Labour productivity in the trades (16), labour mobility remains a difficult process to undertake for many skilled trade workers

### *Mental and Physical Health*

The World Health Organization (WHO) defines mental health as an integral and essential component of health and as a state of well-being in which an individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and is able to contribute to his or her community (20).

Recurrent labour mobility is linked to mental health disorders such as anxiety, depression, and alcohol-related disorders, as well as other health conditions such as ischemic heart disease, duodenal ulcer, and stroke. Conversely, these conditions have shown an increase in the risk of subsequent labour mobility, thus inferring a bidirectional effect (2). A Swedish study by Liljegren and Ekberg found increased rates of mental health symptoms and burnout following mobility (21). A similar study found that migrant workers had a greater prevalence of depression than non-migrant workers, with remarkably poor mental health among participants >45 years of age. A meta-analysis using the depression subscale of the Symptom Checklist-90-Revised (SCL-90-R) reported that migrant workers had more severe depressive symptoms compared to the general population and social isolation stemming from loss of original social networks was also linked with poor mental health among migrants (22). Alcohol-related disorders were found to be associated with identified work-related stress (1).

Causative factors of depression include working long hours, an unhealthy work environment, poor job satisfaction, social isolation, and poor physical health (22). A similar study found that isolation was associated with anxiety, while enormous amounts of stress and high job demands were associated with depression (22). Poor standard of living, social disparities, bias, and mobile status resulted in more cases of depression and suicidal ideations(22).

### *Covid-19 Impact*

Covid-19 was declared a global pandemic on March 11, 2020, by the World Health Organization (23). The Covid-19 pandemic has had profound and drastic impacts on the global labour market. The pandemic's unprecedented nature led to dramatic unemployment rates for millions of people worldwide, a disproportionately negative impact on labour mobility. Leaders across the globe implemented and mandated restrictions on movement and access, specifically in workplaces. Some services and industries were deemed essential and required on-site attendance for many workers. A large proportion of migrant workers engage in labour mobility and have played a substantial role in working throughout the pandemic and providing essential services. Furthermore, many migrant workers working abroad have faced barriers and challenges in accessing healthcare services and financial security since the Covid-19 crisis. However, the working conditions for these workers have been evident in the increased disposition of infection (24,25). Additionally, the effects of the pandemic have increased specific uncertainties among this working population, such as border closures, quarantine delays, declined renewal status, and restrictive immigration controls, which have led to escalated unemployment rates and low sources of income and retention (26).

The International Labour Organization (ILO) reported that many developing countries that employ migrant workers had faced detrimental shortages in labour mobility. For example, in Malaysia, 50% workforce of several large garment companies comprises garment workers, which have closed due to the demands of the pandemic (27). In a study conducted by the ILO in the early stages of the pandemic, migrant workers were interviewed about their plans to remigrate once there was control over the pandemic. In March and April of 2020, 60% of migrant workers planned to remigrate; however, in a follow-up survey in early 2021, this number dropped to 21% (28). For many migrant workers working abroad, the result of the pandemic often led to the early termination of contracts. This not only led to unemployment but as well as workers being unable to return home. The Migrant Working Group in Thailand reported 700,000 migrant workers faced unemployment once the Covid-19 restrictions were executed. In 2020, it was estimated that more than 2 million Indian migrant workers had to return home due to contract terminations and business closures. Decreased income was also prominent with challenges that arose due to the pandemic. Many migrant workers from Pakistan, Tunisia, Mexico, and other developing countries reported substantial cuts in wages, continued work without pay, working overtime and refused pay, and loss of benefits. The ILO provided actionable recommendations to combat these issues, such as providing migrant workers with covid-19 welfare, implementing guidelines for recruitment and supporting this population during the pandemic, and increase in Occupational safety and health measures for migrant workers (28).

## Diversity, Equity and Inclusion

Women are significantly underrepresented in the Canadian skilled trades sector. Only 2% of Canada's trade sector is composed of females (29). The gender division within the skilled trades results from numerous barriers, including different forms of discrimination, such as not being offered a job because of one's gender (30). In addition, the disparities in female representation may cause fewer opportunities for labour mobility. According to Statistics Canada, 57% of women would not engage in inter-provincial labour mobility due to personal reasons (care for relatives etc.). Further, women are twice as likely to avoid moving for a job if their spouses or children do not want to move compared to men (9). In some rural areas, women have been omitted from accessing labour mobility opportunities because of their "reproductive role" (31). Evidently, gender discrimination and stigmatized gender roles may account for fewer women being able to participate in labour mobility, especially in rural areas and Atlantic regions such as Newfoundland and Labrador (32). Furthermore, despite the interprovincial mobility of many journeypersons being an important mitigating action for Canada's shortage in skilled labour, interprovincial mobility is more common amongst those with higher incomes(33).

The mental health of female migrant workers in Canada is also disproportionately impacted. Canada depends on Temporary Foreign Workers (TFW) to fill the labour shortages in various Canadian sectors. Amongst these TFWs (migrant workers), female migrant workers working specifically as caregivers were exposed to anguish, physical and mental abuse, received inadequate compensation for long working hours and experienced alienation, which are only a few examples of the injustices female migrant workers in Canada have experienced (34)

As the working population ages, the demand for skilled trade employees increases. With Canada's massive skilled labour shortage, it's crucial to tap into underrepresented labour demographics and increase the diversity within the sector (30). In addition to women being underrepresented, the Indigenous population, immigrants and visible minorities are all inadequately represented amongst the construction workforce and journeypersons population. The indigenous population make up only 2.7% of Ontario's construction sector (15). Immigrants, including both females and males, comprise about 5% of the journeypersons sector and the proportion of journeypersons who belong to visible minorities is less than half of the visible minority proportion amongst the Canadian population (33). Moreover, the visible minority Canadian-born population, specifically females, have fewer labour mobility opportunities as they are less able to access even inter-firm job mobility opportunities in contrast to their white peers. Discrimination and immigration background are both some of the many potential factors leading to these discrepancies (35)

More awareness should be raised regarding the underrepresentation of marginalized communities in the skilled trades and their low access to labour mobility. Eliminating the barriers against these marginalized communities is crucial to enforcing diversity, inclusion and equity within the skilled trades, addressing Canada's skilled labour shortage, increasing labour mobility opportunities and improving working conditions for migrant workers.

## Methodology

### Preparatory period and participant selection

The study examined the mental health outcomes among employees and employers in Ontario due to mobile employment and long-distance labour commuting. This study commenced on April 1st, 2021. The first three months were considered the preparatory period wherein the Research Ethics Board (REB) approval was obtained from the UofT and partnering research institutions. During the next 17 months, online surveys were conducted, and collected data were analyzed to assess mental health outcomes in the study participants. Fifty participants were included in this study (47 employees and three employers). These participants were selected through convenience sampling. Convenience sampling (also known as availability sampling) is a specific type of non-probability sampling method that relies on data collection from population members who are conveniently available to participate in the study.

### Data Collection

Blue Branch Inc. invited participants to take part in an online survey using an email script created by researchers from the University of Toronto. Prior to accessing the online survey, the study participants had to complete a consent form. The survey measures were developed by the principal investigator using validated questionnaires and were administered by trained research staff. The survey questionnaire (See Appendix A) was a 38-item questionnaire which helped in collecting demographic data, including gender and sex, age, ethnicity, marital status, educational attainment, years of experience working in their field, the number of years working, hours of work per day and in a week, overtime hours worked, income, and travel time required for work.

The questionnaire also included an inventory of factors experienced as occupational stressors and burnout based on the Copenhagen Burnout Inventory (CBI) (36) and the National Institute for Occupational Safety and Health Generic Job Stress Questionnaire (NIOSH Generic Job Stress Questionnaire) (37). The CBI is a questionnaire with three subdivisions: Personal burnout, work-related burnout, and client-related burnout. Personal burnout is the degree of physical and psychological tiredness and exhaustion suffered by a person. Work-related burnout is the degree of physical and psychological fatigue and exhaustion that is perceived by the person as related to their work, and client-related burnout is the degree of physical and psychological fatigue and exhaustion that is perceived by the person as related to their work with clients (colleagues in this study). NIOSH Generic Job Stress Questionnaire measures the most accepted contributors to

occupational stress: physical environment, role ambiguity/conflict, level of control, administrative and co-worker support, workload, and skill demand. The NIOSH Generic Job Stress Questionnaire was created by the NIOSH and is utilized worldwide for data collection and assessment of occupational stress research. The NIOSH Generic Job Stress Questionnaire was designed to provide a generic questionnaire and scale that could be used across occupations as well as allow collapsing and expansion of scales. The NIOSH Generic Job Stress Questionnaire comprises concepts related to stressors that would be anticipated to take the lead to some form of occupational strain in the worker, as well as factors that may affect the way the worker responds to those stressors. The NIOSH Generic Job Stress Questionnaire was used to determine overall job stress through the following concepts: (i) job satisfaction, (ii) nonwork activities, (iii) social support, (iv) work hazards, and (v) self-esteem<sup>36</sup>. These items are measured on an index scale from 1 to 5.

### Data Analysis

The data were analyzed in SPSS Statistics version 25 to determine the demographic and work-related predictors of stress and burnout using descriptive and inferential statistics. Appropriate checks were made to ensure that assumptions of normality were followed without any violations, apart from the application of quality assurance checks by re-entering 25% of the randomly selected sample. Weighted Cohen's Kappa statistics were used to find out the inter- and intra-examiner variability. The collected data was presented, summarized, and analyzed by using various statistical methods like various graphs and/or diagrams, and tables measures of central tendency (mean, median and mode) and dispersion (range, standard deviation), etc.

## Results

### Overview

Using SPSS Statistics, version 25, descriptive statistical analysis was performed to examine participants' demographic characteristics, smoking, and the importance and availability of the work-related factors that keep employees working in their current position in their current workplace. We achieved the target sample (n=50) by using a mixed sample of employers and employees (three employers and 47 employees).'

### Demographic characteristics of study participants (employers)

All the employers who participated in this study were female, born and raised in the province of Ontario, with an average age of  $48.3 \pm 4.5$  years. The findings showed that all of the participants described their ethnicity as White North American and showed English as their primary language. Out of the three participants, one employer had a college degree while the other two had a university degree. None of the participants described themselves as a smoker.



### Demographic characteristics of study participants

Table 2 shows the socio-demographic characteristics of the employees who participated in this study. The age of study participants ranged from 18 to 74 years, with an average of  $32.7 \pm 13.8$  years. The sample included 10 females (21.3%) and 36 males (76.6%). One participant did not describe their gender and preferred not to answer the gender question. Most of the participants completed high school (n=17; 36.9%), while nine (19.6%) had university graduate degrees, One (2.1%) had a university undergraduate degree, five (10.9%) had a college diploma, and two participants (4.3%) had college certificate. Eight participants (17.4%) were not able to complete high school, and four participants (8.7%) described their education level as others (not specified). Most of the participants were not born or raised in Ontario (n=41) and did not obtain their training in this province (n=30). Nearly half of the study participants (n=25) described English as their primary language. The vast majority of participants did not belong to a union (n=43). Most of the participants did not intend to stay in their current position (n=33). Fifty percent of the participants had an annual income under \$30,000, while only one person indicated an annual income over \$70,000.

### Importance of Work-related factors

To find out the importance of the factors that keep employers and employees working in their current position in their current workplace, we conducted a survey with 20 work-related factors we adopted from a previous questionnaire created by the primary investigator of the study (Dr. Nowrouzi-Kia) (38). Workplace Safety (95%), full-time employment opportunity (95%), career advancement possibility (95%), and income and benefits (94.9%) were found to be the most crucial factors to keep study participants working in their current position at their current workplace. (Figure 1).

### Availability and satisfaction with the work-related factors in the current workplace

Similar to the previous questionnaire, the survey participants were assessed by an 18-factor self-reported questionnaire adopted from another questionnaire that was created by Dr. Nowrouzi-Kia in a previous study (38) to identify the availability and satisfaction with those factors in their current workplace. Workplace safety (40.5%), the current location of the workplace (38.1%), and flexible scheduling for family commitment and effective management (33.3%) were the most common factors that participants believed are available to their satisfaction in their current workplace (Figure 2).

### Burnout

Table 3 shows the level of burnout in the study participants that were analyzed using the CBI (36). Our findings showed that only one participant showed severe personal burnout (average score of 100). Of the few (n=3) participants who experienced high burnout, one had a high score

(average score of 75 to 99) of all three types of burnout (personal, work-related and colleague-related burnout). Fifteen participants experienced moderate burnout (average score of 50 to 74), including personal burnout (n=10), work-related burnout (n=10), and colleague-related burnout (n=8). Only one participant did not experience any personal, work-related, or colleague-related burnout.

Table 2. Demographic characteristics of study participants (n = 47).

	<b>Demographic variables</b>	<b>Frequency (n)</b>	<b>Percent (%)</b>
<b>Gender</b>	Female	10	21.3%
	Male	36	76.6%
	Prefer Not to Answer	1	2.1%
<b>Born and/or raised in Ontario</b>	Yes	6	12.8%
	No	41	87.2%
<b>Spouse born and/ or raised in Canada</b>	Yes	3	6.4%
	No	28	59.6%
	Not Applicable	16	
<b>Born in Canada</b>	Yes	14	29.8%
	No	33	70.2%
<b>Marital Status</b>	Married/Common-law	10	21.3%
	Single	30	63.8%
	Divorced	2	4.3%
	Widowed	1	2.1%

	Separated	4	8.5%
<b>Education Level</b>	College Certificate	2	4.3%
	University graduate degree	9	19.6%
	University undergraduate degree	1	2.2%
	Incomplete high school	8	17.4%
	Completed high school	17	36.9%
	Other	4	8.7%
	College Diploma	5	10.9%
<b>Training Obtained in Ontario</b>	Yes	14	31.8%
	No	30	68.2%
<b>Primary Language</b>	English	25	51.02%
	Arabic	17	34.7%
	Farsi	1	2.04%
	Turkish	1	2.04%
	Spanish	1	2.04%
	Hindi	1	2.04%
	Kurdish	3	6.12%
<b>Ethnicity</b>	White North American	6	12.8%
	Middle Eastern	16	34.0%
	Aboriginal	1	2.1%
	Asian East	2	4.3%
	White European	1	2.1%
	Black Caribbean	3	6.4%
	Black African	3	6.4%
	Asian South	3	6.4%

	Asian Southeast	1	2.1%
	Other	8	17.0%
	Prefer Not to Answer	3	6.4%
<b>Smoking</b>	Non-Smoker	31	68.9%
	Daily Smoker	8	17.8%
	Occasional Smoker	2	4.4%
	Former daily/occasional smoker	4	8.9%
<b>Belong to a union</b>	Yes	2	4.4%
	No	43	95.6%
<b>Intend to stay in current position for the next 5 years*</b>	Yes	11	25.0%
	No	33	75.0%
<b>Gross annual income</b>	Less than \$20,000	11	25.0%
	\$20,000-\$29,999	11	25.0%
	\$30,000-\$39,999	6	13.6%
	\$40,000-\$49,999	4	9.1%
	\$50,000-\$59,999	2	4.55%
	\$60,000-\$69,999	2	4.55%
	\$70,000-\$79,999	1	2.3%
Prefer not to answer	7	15.9%	
<b>Current Employment</b>	Employed in electrical sector	5	11.1%
	Employed in welding sector	3	6.7%
	Employed in others	35	77.8%
	Employed in carpentry sector	2	4.4%

Table 3. Copenhagen Burnout Inventory (n=40)

Type of Burnout	Mean [SD]	Minimum score	Maximum score	Median	Moderate burnout* (n)	High burnout* (n)	Severe burnout* (n)
Personal burnout	43.88[21.89]	0.00	100	45.83	10	3	1
Work-related burnout	34.32 [17.73]	0.00	75.00	37.50	10	1	0
Colleague-related burnout	26.19 [18.57]	0.00	75.00	25.00	8	1	0

*\*In the Copenhagen Burnout Inventory, scores of 50 to 74 are deemed to be 'moderate burnout', 75-99 is deemed to be high burnout, and a score of 100 is deemed to be severe burnout*

*Figure 1. Importance of the work-related factors that participants believe keep them working at their current position in their current workplace*

## IMPORTANCE OF WORK-RELATED FACTORS THAT KEEP PARTICIPANTS WORKING AS THEIR CURRENT POSITION IN THEIR CURRENT WORKPLACE

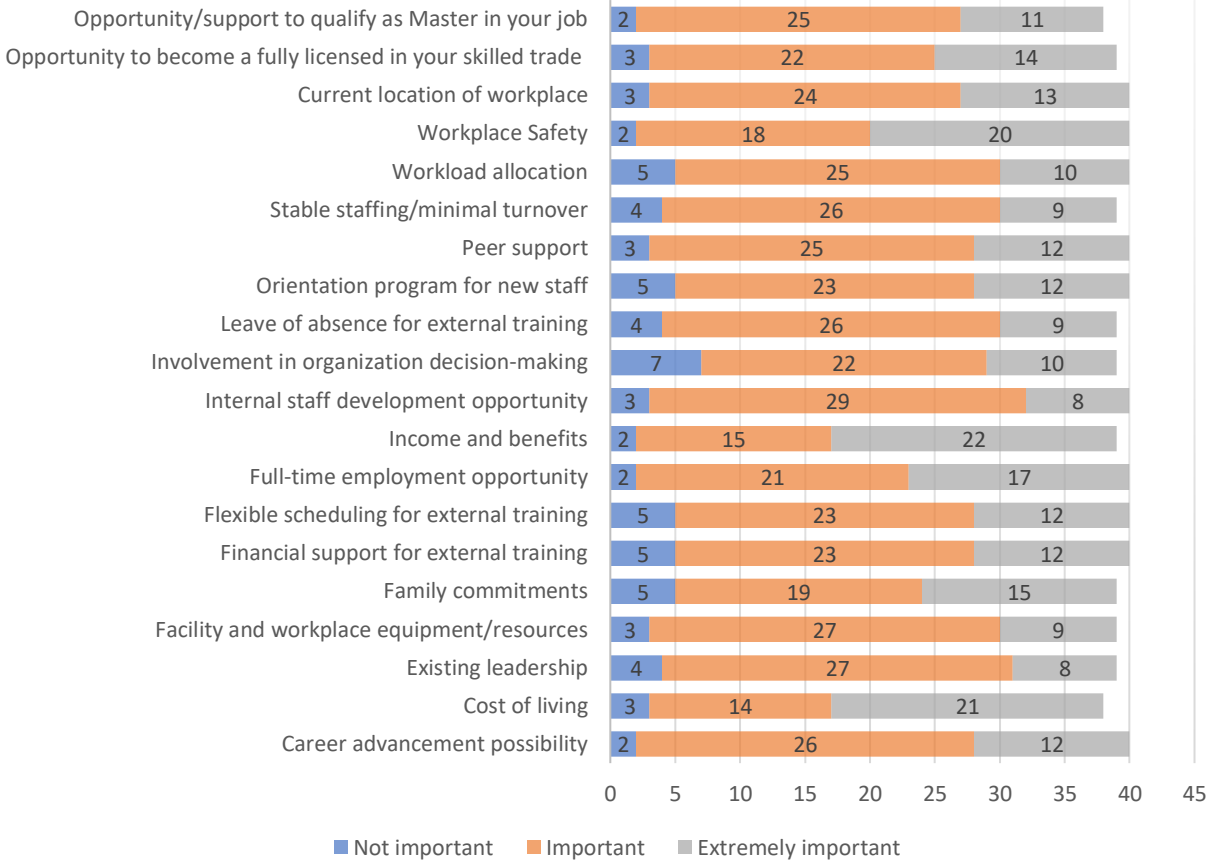
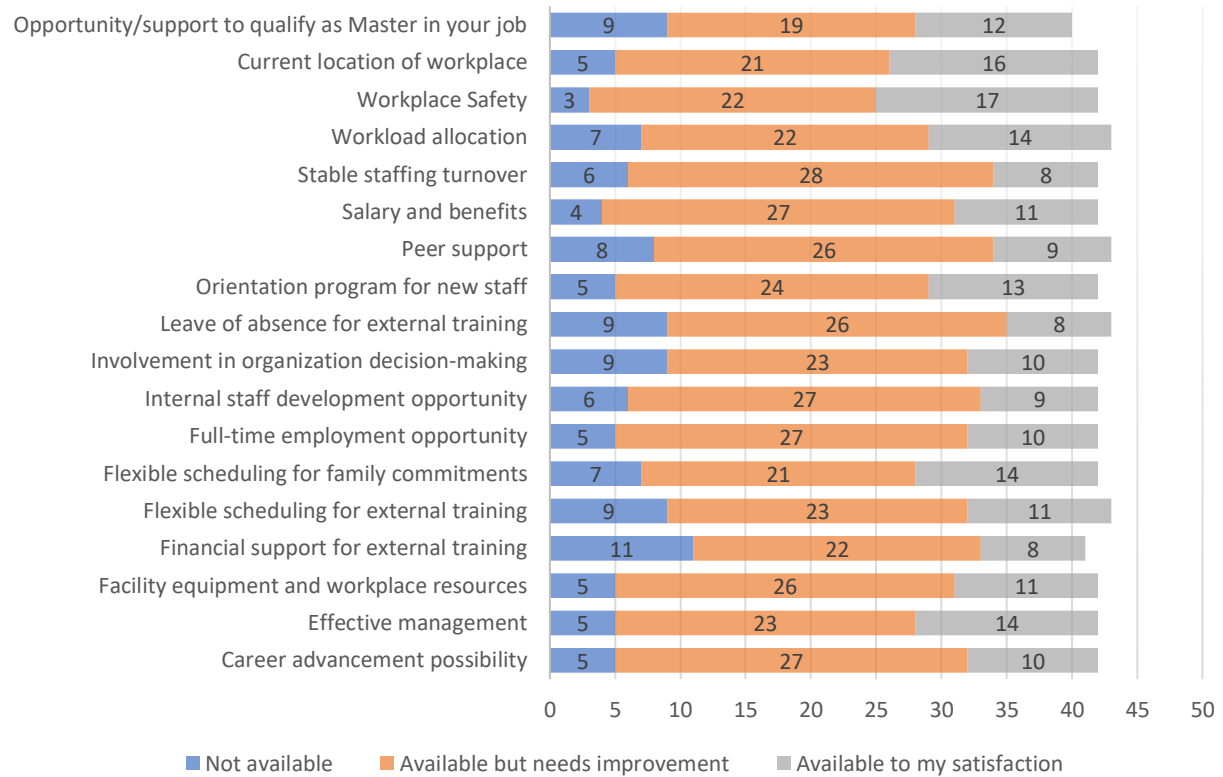


Figure 2. Availability and satisfaction with the work-related factors in the current workplace

## AVAILABILITY AND PARTICIPANTS' SATISFACTION WITH THE FOLLOWING FACTORS IN THEIR CURRENT WORKPLACE.



## Discussion

In this study, we investigated burnout and work-related satisfaction of a mixed sample of employees and employers involved in mobile and long-distance labour commuting. We anticipated that there would be a higher proportion of burnout and work-related stress in this sample due to the long-term physical and mental health effects of long-distance labour commuting documented in the literature (2,39). Our findings supported this hypothesis as we observed a high proportion of participants that were experiencing some form of moderate to severe burnout. However, we did not anticipate that the most common form of burnout that participants would report was personal burnout.

Personal burnout is a state of prolonged stress and exhaustion related to an individual's perception of their personal experience (40). Personal burnout has been associated with work-related stress and has been shown to exacerbate work-related stress in other representative working samples (41,42). The elevated levels of personal burnout observed in our sample may be due to several reasons, including a lack of available workplace resources (43), pre-existing personal emotional and social resources (44), or workplace exhaustion that depletes available resources for personal social roles (41). We did not perform any analyses to measure these characteristics. Compared to other studies, we also found a similar prevalence of severe burnout (2.5%) relative to other working samples (45–48). This suggests that mobile and long-distance labour commuting may not be associated with elevated levels of burnout relative to those living closer to their employment.

For those involved in the construction trades, their workplace-related stress can occur at their employer's workplace but also can happen on the job sites where they perform duties (39). Therefore, the experience of stress can be unique among skilled trades workers as they experience external pressures from different workplace cultures, settings, and social systems (43,44). Construction trades workers also experience stress through difficult physical working conditions, long hours (e.g., disruption of work-life balance), and physical and mental exhaustion (39). Interestingly, those who completed the survey were a majority (59.5%) of low-income earners (earning less than \$40,000) working in the construction trades. This may have exacerbated their experience and perception of personal and work-related burnout due to the devastating effects of financial stress. We did not perform any secondary analyses to determine if there was an association between income level and experience of burnout. Previous research has found that construction trades workers are susceptible to increased levels of personal stress due to the long working hours and the physical conditions of their worksites (39,48).

Based on our findings, there is a critical need to have preventative measures to address burnout in this sample of workers that engage in long-distance labour commuting. Employers can use a few strategies of burnout intervention to reduce work-related stress based on our findings on the importance of work-related factors. Workplace safety, growth, and stability are the characteristics observed to be most important to workers who completed the study. However, a large percentage of study participants did not intend to remain in their current position for the



next 5 years. This juxtaposition is important to evaluate because it appears to suggest that workers are devalued, and their experience of work-related burnout is driving them to consider different forms of employment. A recent study has shown that intervention programs related to workplace safety and personal efficacy (e.g., growth and resource development) through principles of rational emotive theory have been effective (48).

There are a few limitations to this research study. First, the demographics of our sample are diverse, including employers and employees, and may not be generalizable to the skilled trades or the construction industry as a whole. Employers experience different stressors from long-distance labour commuting as they must effectively manage and integrate new employees into their existing workplace culture. On the other hand, employees experience work-related stress through the interaction of available personal and workplace resources. Therefore, these different social system interactions may have complicated our findings. Second, we used convenience sampling to recruit participants from employees and employers in partnership with Blue Branch. This approach may bias our findings as those who engage in work-related stress and burnout research may be at the extremes and may not represent the long-distance labour commuting demographic in Ontario. Third, the scale used to quantitatively measure burnout does not distinguish between physical and psychological fatigue. Therefore, we cannot ascertain which aspects of their current job perpetuate their experience of workplace stress and burnout. Lastly, our findings are cross-sectional and represent only a single time point at the survey completion time. Future studies should examine the trajectory of burnout over time from a naturalistic perspective but also through the administration of a burnout intervention program.

In conclusion, this study emphasizes the need for preventative burnout programs and supportive employer resources for those who engage in long-distance labour commuting. Further study should examine whether there is a predictive role of personal and workplace resources in the experience of burnout in those who engage in long-distance labour commuting.

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## List of Appendices

Appendix A: *Email scripts to invite participants to partake in study*

Appendix B: *Survey Consent Form*

Appendix C: *Questionnaire*

Appendix D: *REB Approval Letter*

## Appendix A: Email Script

### **Email script to be sent by Blue Branch**

Dear Blue Branch member,

We are inviting you to participate in the study entitled “Impact of Labour Mobility on the Physical and Mental Health of Skilled Trades Workers in Ontario, Canada.” evaluating the impact of labour mobility on physical and mental health of skilled labour. The study is being conducted as part of Blue Branch Increasing Employer and Employee Engagement in Labour Mobility project in order to address the barriers that employees face towards relocating to new communities and helping employers attract qualified labour, and also to overcome the disparities in the labour market in rural communities. To learn more about the study and participate, please [click here](#)

Study title: *Impact of Labour Mobility on the Physical and Mental Health of Skilled Trades Workers in Ontario, Canada*

Principal Investigator: Dr. Behdin Nowrouzi-Kia is an occupational therapist and assistant professor in the Department of Occupational Science and Occupational Therapy in the Faculty of Medicine at the University of Toronto.

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Sincerely,

Blue Branch

### **Email reminder script to be sent by the Ontario Electrical League**

Dear Blue Branch member,

Two weeks ago we invited you to participate in a study. If you have already participated in the study, thank you for your contribution. As a reminder, the study is entitled *Impact of Labour Mobility on the Physical and Mental Health of Skilled Trades Workers in Ontario, Canada*. The study is being conducted as part of Blue Branch Increasing Employer and Employee Engagement in Labour Mobility project. To learn more about the study and participate, please [click here](#)

Study title: *Impact of Labour Mobility on the Physical and Mental Health of Skilled Trades Workers in Ontario, Canada*

Principal Investigator: Dr. Behdin Nowrouzi-Kia is an occupational therapist and assistant professor in the Department of Occupational Science and Occupational Therapy in the Faculty of Medicine at the University of Toronto.

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Sincerely,

Blue Branch

## Appendix B: Survey Consent Form

### *Employee Survey Consent Form*



### **Letter of Information and Consent to Participate in a Research Study – Survey Consent**

**Study Title:** Impact of Labour Mobility on the Physical and Mental Health of Workers in Ontario.

**Principal Investigator:** *Behdin Nowrouzi-Kia, Ph.D., OT Reg. (Ont.)*

*Assistant professor,  
Department of Occupational Therapy and Occupational Science, Temerty Faculty of  
Medicine, U of T  
E-mail: [behdin.nowrouzi.kia@utoronto.ca](mailto:behdin.nowrouzi.kia@utoronto.ca)  
Telephone: 416-946-3249*

**Study Sponsor:** *Blue Branch Inc.*

### **CONFLICT OF INTEREST STATEMENT**

The principal investigator, co-investigators, and research staff do not have any conflicts of interest, financial or otherwise, related to this study or its outcome.

#### **Principal Investigator**

Dr. Behdin Nowrouzi-Kia is an occupational therapist and assistant professor in the Department of Occupational Science and Occupational Therapy in the Temerty Faculty of Medicine at the University of Toronto.

#### **Invitation to Participate**

We are inviting you to participate in the study with the above title, evaluating the impact of labour mobility on the physical and mental health of skilled workers (e.g., carpenters, electricians, welders, millwrights, and pipe fitters). This project supports qualified and motivated workers that are living in regions of the province facing high levels of unemployment, where they are unable to find employment opportunities.

Before agreeing to take part in this research study, it is important that you read the information in this research consent form. It includes details we think you need to know in order to decide if you wish to take part in the study. If you have any questions, you may ask the investigator (BNK) or research team member (AB and JL).

#### **Study Purpose**

This project will work with employers and rural communities in Southwestern Ontario, to develop a scalable model for labour mobility that will match employers (in regions facing chronic on-going labour shortages) with employees from areas in Ontario facing high unemployment. The main objective of the study is to advance the knowledge in the area of recruitment and retention and also the mental health of workers in the labour force.

#### **Eligibility**

You are being asked to participate in this study because you are an employee/apprentice, who are from communities, in Ontario, experiencing a high level of unemployment (8% or higher).

#### **Voluntary nature of the study**

You will be asked to complete a questionnaire. The questionnaire will take approximately 20-25 minutes to complete and available online at [redcap.utoronto.ca](http://redcap.utoronto.ca).

Your experiences as a skilled labour employee/apprentice are valuable and important to this study. Your participation is completely voluntary. You may withdraw at any time without penalty. You may skip any question that you are uncomfortable answering. Master lists and any identifying information will be securely stored on the University of Toronto server in Dr. Behdin Nowrouzi-Kia's lab and will be electronically encrypted. All information will be securely kept for five years after study completion and will be properly cleared/purged following this time period.

Based on your responses, the data will be analyzed quantitatively using statistical software such as R and SPSS. The results of this study will be used to inform various stakeholders and be presented in academic conferences and published in peer-reviewed journals.

#### **Risks**

The information disclosed by you will not be shared with Blue Branch and Blue Branch has not access to the identifiable data. As a research team, we take the privacy of you very seriously and will only share a final report that provides the summary findings of the study to Blue Branch. However, there is a minimal risk that emotional distress may be created when answering some of the questions related to your mental health and working in the midst of COVID-19. Please feel free to discuss your reactions to the questionnaires with the research staff. Should you experience distress or discomfort when answering the questions, you can skip the questions or terminate your participation without providing a reason. You may also wish to contact the Employee & Family Assistance Program at your respective workplace location, or your mental health provider should you have one.

#### **Benefits**

There is no intended direct benefit to you for participation in this study. Information learned from this study will allow the researchers to understand and evaluate the demographic and work-related predictors of occupational stress and burnout of skilled labour. The results of this study may be useful for identifying health, social, and economic impacts of skilled labour psychosocial work environment due to the COVID-19 pandemic in Canada. If you are interested in the study's findings, a summary of the findings will be used to generate a report available to the public, where one can be sent to you. Only group information obtained from this study will be reported. Once completed, the findings will also be submitted for publication.

**Participation and Withdrawal**

Your participation in this research study is voluntary. If you decide to participate, you do not have to answer any questions that you don't want to. You may refuse to participate in or withdraw from the study at any time and this will have no effect on your employment. Your work within your company will not be altered or affected in any way by your decision to participate, abstain or withdraw from this study. If you would like to request the withdrawal of your data, please contact Dr. Behdin Nowrouzi-Kia. Information that was collected before you withdrew will still be used by the researchers for the purposes of the study, but no information will be collected or shared after you withdraw your permission.

**Potential Costs and Reimbursement**

In recognition of your time, you will receive a \$20 gift card.

**Obligation**

This study is not mandatory. There are no consequences if you choose not to participate. To reiterate the above-mentioned text, you may stop answering the questions and withdraw at any time.

**Confidentiality**

The University of Toronto researchers (BNK, ABF, and JL) will conduct this study independent of Blue Branch. Blue Branch will receive a final report of the study results that will not identify you (as the study participant) individually. All information about you will be kept confidential to the extent of the law. Signing consent does not waive subject's legal rights nor relieve investigator/sponsor/ institution from legal responsibility. You will be identified only by a unique study ID number, not by identifiers. The investigator responsible for this study or the University of Toronto is not conducting this study to receive commercial benefit. The information that we collect will be kept secure. The data will be summarized along with information obtained from other participants. If the results of the study are published or presented at a scientific meeting, you will not be identified. All individual information will be stored on the University of Toronto server and will not be made available to the public. The data will be encrypted and password-protected that will be stored on the University of Toronto server in Dr. Nowrouzi-kia's lab at 500 University Ave, Toronto, Ontario, Canada. The data will be kept for a period of five years to permit for analyses, preparation of manuscripts for publication and to determine the feasibility of the project.

**Questions**

For any questions about this study, please contact  
Behdin Nowrouzi-Kia, Ph.D., OT Reg. (Ont.)  
Assistant professor,  
Department of Occupational Science and Occupational Therapy, Temerty Faculty of Medicine, U of T  
E-mail: behdin.nowrouzi.kia@utoronto.ca  
Telephone: 416-946-3249

I have read the information presented in the Information Consent regarding the research projected conducted by Dr. Nowrouzi-Kia. I voluntarily consent to participate in this study. I am also aware that I can choose to withdraw my information within one week upon receipt of the de-identified transcript or for a longer period upon my request.

Participant Name: \_\_\_\_\_ Participant signature \_\_\_\_\_

Date: \_\_\_\_\_

*You may email this consent form*

**Contact Information:**



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### *Employer Survey Consent Form*



#### **Letter of Information and Consent to Participate in a Research Study – Survey Consent**

**Study Title:** Impact of Labour Mobility on the Physical and Mental Health of Workers in Ontario.

**Principal Investigator:** Behdin Nowrouzi-Kia, Ph.D., OT Reg. (Ont.)  
Assistant professor,  
Department of Occupational Therapy and Occupational Science, Temerty Faculty of  
Medicine, U of T  
E-mail: behdin.nowrouzi.kia@utoronto.ca  
Telephone: 416-946-3249

**Study Sponsor:** Blue Branch Inc.

#### **CONFLICT OF INTEREST STATEMENT**

The principal investigator, co-investigators, and research staff do not have any conflicts of interest, financial or otherwise, related to this study or its outcome.

#### **Principal Investigator**

Dr. Behdin Nowrouzi-Kia is an occupational therapist and assistant professor in the Department of Occupational Science and Occupational Therapy in the Temerty Faculty of Medicine at the University of Toronto.

#### **Invitation to Participate**

We are inviting you to participate in the study with the above title, evaluating the impact of labour mobility on the physical and mental health of skilled workers (e.g., carpenters, electricians, welders, millwrights, and pipe fitters). This project supports qualified and motivated workers that are living in regions of the province facing high levels of unemployment, where they are unable to find employment opportunities.

Before agreeing to take part in this research study, it is important that you read the information in this research consent form. It includes details we think you need to know in order to decide if you wish to take part in the study. If you have any questions, you may ask the investigator (BNK) or research team member (AB and JL).

#### **Study Purpose**

This project will work with employers and rural communities in Southwestern Ontario, to develop a scalable model for labour mobility that will match employers (in regions facing chronic on-going labour shortages) with employees from areas in Ontario facing high unemployment. The main objective of the study is to advance the knowledge in the area of recruitment and retention and also the mental health of workers in the labour force.

#### **Eligibility**

You are being asked to participate in this study because you are employers who are experiencing chronic labour shortages to fill the remaining workforce compliment that you are unable to find locally.

#### **Voluntary nature of the study**

You will be asked to complete a questionnaire. The questionnaire will take approximately 20-25 minutes to complete and available online at [redcap.utoronto.ca](http://redcap.utoronto.ca).

Your experiences as a skilled labour employer are valuable and important to this study. Your participation is completely voluntary. You may withdraw at any time without penalty. You may skip any question that you are uncomfortable answering. Master lists and any identifying information will be securely stored on the University of Toronto server in Dr. Behdin Nowrouzi-Kia's lab and will be electronically encrypted. All information will be securely kept for five years after study completion and will be properly cleared/purged following this time period.

Based on your responses, the data will be analyzed quantitatively using statistical software such as R and SPSS. The results of this study will be used to inform various stakeholders and be presented in academic conferences and published in peer-reviewed journals.

#### **Risks**

The information disclosed by you will not be shared with Blue Branch and Blue Branch has not access to the identifiable data. As a research team, we take the privacy of you very seriously and will only share a final report that provides the summary findings of the study to Blue Branch. However, there is a minimal risk that emotional distress may be created when answering some of the questions related to your mental health and working in the midst of COVID-19. Please feel free to discuss your reactions to the questionnaires with the research staff. Should you experience distress or discomfort when answering the questions, you can skip the questions or terminate your participation without providing a reason. You may also wish to contact the Employee & Family Assistance Program at your respective workplace location, or your mental health provider should you have one.

#### **Benefits**

There is no intended direct benefit to you for participation in this study. Information learned from this study will allow the researchers to understand and evaluate the demographic and work-related predictors of occupational stress and burnout of skilled labour. The results of this study may be useful for identifying health, social, and economic impacts of skilled labour psychosocial work environment due to the COVID-19 pandemic in Canada. If you are interested in the study's findings, a summary of the findings will be used to generate a report available to the public, where one can be sent to you. Only group information obtained from this study will be reported. Once completed, the findings will also be submitted for publication.

#### **Participation and Withdrawal**

Your participation in this research study is voluntary. If you decide to participate, you do not have to answer any questions that you don't want to. You may refuse to participate in or withdraw from the study at any time and this will have no effect on your employment. Your work within your company will not be altered or affected in any way by your decision to participate, abstain or withdraw from this study. If you would like to request the withdrawal of your data, please contact Dr. Behdin Nowrouzi-Kia. Information that was collected before you withdrew will still be used by the researchers for the purposes of the study, but no information will be collected or shared after you withdraw your permission.

#### **Potential Costs and Reimbursement**

In recognition of your time, you will receive a \$20 gift card.

#### **Obligation**

This study is not mandatory. There are no consequences if you choose not to participate. To reiterate the above-mentioned text, you may stop answering the questions and withdraw at any time.

**Confidentiality**

The University of Toronto researchers (BNK, ABF, and JL) will conduct this study independent of Blue Branch. Blue Branch will receive a final report of the study results that will not identify you (as the study participant) individually. All information about you will be kept confidential to the extent of the law. Signing consent does not waive subject's legal rights nor relieve investigator/sponsor/ institution from legal responsibility. You will be identified only by a unique study ID number, not by identifiers. The investigator responsible for this study or the University of Toronto is not conducting this study to receive commercial benefit. The information that we collect will be kept secure. The data will be summarized along with information obtained from other participants. If the results of the study are published or presented at a scientific meeting, you will not be identified. All individual information will be stored on the University of Toronto server and will not be made available to the public. The data will be encrypted and password-protected that will be stored on the University of Toronto server in Dr. Nowrouzi-kia's lab at 500 University Ave, Toronto, Ontario, Canada. The data will be kept for a period of five years to permit for analyses, preparation of manuscripts for publication and to determine the feasibility of the project.

**Questions**

For any questions about this study, please contact  
 Behdin Nowrouzi-Kia, Ph.D., OT Reg. (Ont.)  
 Assistant professor,  
 Department of Occupational Science and Occupational Therapy, Temerty Faculty of Medicine, U of T  
 E-mail: [behdin.nowrouzi.kia@utoronto.ca](mailto:behdin.nowrouzi.kia@utoronto.ca)  
 Telephone: 416-946-3249

I have read the information presented in the Information Consent regarding the research projected conducted by Dr. Nowrouzi-Kia. I voluntarily consent to participate in this study. I am also aware that I can choose to withdraw my information within one week upon receipt of the de-identified transcript or for a longer period upon my request.

Participant Name: \_\_\_\_\_ Participant signature \_\_\_\_\_

Date: \_\_\_\_\_

*You may email this consent form*

**Contact Information:**

Behdin Nowrouzi-Kia, Ph.D., OT Reg. (Ont.)  
 Assistant professor,  
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Appendix C: Questionnaire



**Impact of Labour Mobility on the Physical and Mental Health of Skilled Trades Workers in Ontario, Canada.**

## Questionnaire Instructions

The questionnaire will take approximately 20-25 minutes to complete and available online [redcap.utoronto.ca](https://redcap.utoronto.ca)

Your participation is completely voluntary. You may withdraw at any time without penalty. You may skip any question that you are uncomfortable answering.

Thank you for your time.

1. What is your gender?

- Female  Male  
 Transgender Female  Transgender Male  
 Gender Variant/Non-Conforming  
 Not listed, *please specify* \_\_\_\_\_  
 Prefer Not to Answer

2. Were you born and/or raised in Ontario?

- Yes  
 No

3. How long have you been living in Ontario?

\_\_\_\_\_ years

4. Was your spouse/significant other born and/or raised in Ontario?

- Yes  
 No  
 Not applicable

5. Were you born in Canada?

- Yes
- No

6. What is your marital status?

- Single
- Married/Common-Law
- Separated
- Divorced
- Widowed

7. Please indicate the highest education you have obtained.

- Incomplete high school
- Completed high school
- College certificate
- College diploma
- University undergraduate degree
- University graduate degree
- Other, ***please specify*** \_\_\_\_\_

8. Was your training obtained in Ontario?

- Yes, ***please specify the community*** \_\_\_\_\_
- No

9. What is your primary language? \_\_\_\_\_

10. What is your age as of your last birthday (in years)? \_\_\_\_\_

11. What is your ethnicity? (Check all that apply)

- Aboriginal
- Asian East
- Asian South
- Asian South East
- Black Caribbean
- Black African
- Black North American
- Indian Caribbean
- Mixed Background
- Asia West
- Other
- Prefer Not to Answer
- White European
- White North American

12. Do you identify as Aboriginal, Métis or Inuit?

- Yes
- No

13. What is your height?

\_\_\_\_\_ Feet (0-9) \_\_\_\_\_ Inches (Please round to the nearest inch)

14. What is your weight (in pounds)? \_\_\_\_\_ lbs

15. Within the past twelve months, has a doctor ever treated you for, or told you that you had, any of the following? Please check all that apply if "Yes".

- |   |  |
|---|--|
| <input type="checkbox"/> Asbestosis   | <input type="checkbox"/> Back problems/injuries  |
| <input type="checkbox"/> Cancer (lung, mesothelioma, gastrointestinal, liver, nasal, or skin) | <input type="checkbox"/> Eye injuries  |
| <input type="checkbox"/> Hand-arm vibration syndrome  | <input type="checkbox"/> Hypersensitivity pneumonitis  |
| <input type="checkbox"/> Acute solvent poisoning  | <input type="checkbox"/> Polymer fume fever  |
| <input type="checkbox"/> Toxic Neuropathy   | <input type="checkbox"/> Pulmonary edema   |
| <input type="checkbox"/> Bronchitis   | <input type="checkbox"/> Metal fume fever  |
| <input type="checkbox"/> Asthma   | <input type="checkbox"/> Insomnia  |
| <input type="checkbox"/> Noise-induced hearing loss   | <input type="checkbox"/> Chloracne and rashes  |
| <input type="checkbox"/> Lung or breathing problems   | <input type="checkbox"/> Contact urticaria   |
| <input type="checkbox"/> Electric shock   | <input type="checkbox"/> Contact dermatitis  |
| <input type="checkbox"/> Electrical burn  | <input type="checkbox"/> Other, please specify _____   |
| <input type="checkbox"/> Knee problems/injury   | <input type="checkbox"/> No, I have not been treated for, or told that I have any of the above |
| <input type="checkbox"/> Fall from height   |  |
| <input type="checkbox"/> Cuts, abrasions  |  |
| <input type="checkbox"/> Chemical burns   |  |

16. Which of the following would you use to describe yourself?

- A daily smoker
- An occasional smoker
- A former daily or occasional smoker
- Non-smoker

17. If you are a current or former cigarette smoker, how many total years have you smoked?

\_\_\_\_\_ years  N/A

18. How often do you have a drink containing alcohol?

- Never
- Monthly or less
- 2 to 4 times a month

- 2 to 3 times a week
- 4 or more times a week

19. How many drinks containing alcohol do you have on a typical day when you are drinking?

- 1 or 2
- 3 or 4
- 5 or 6
- 7 to 9
- 10 or more

20. Please indicate your work experience in years.

\_\_\_\_\_ total years  
\_\_\_\_\_ years in Ontario

21. What is your current employment? **Please check only one.**

- Employed in electrical sector
- Employed in plumbing sector
- Employed in carpentry sector
- Employed in welding sector
- Employed in others, please specify \_\_\_\_\_

22. What is your current employment status? **Please check one.**

- Full-time, permanent
- Full-time, contract
- Part-time, permanent
- Part-time, contract
- Full-time, permanent Owner
- Other, please specify \_\_\_\_\_

23. If you are **not** employed full-time, please indicate why. **Please check all that apply.**

- Need more flexible hours
- Health restrictions



- Travel restrictions
- Family commitments
- Lack of full-time job positions
- Workload is too heavy
- Other, ***please specify*** \_\_\_\_\_

24. In which position are you working? ***Please check all that apply.***

**Electrical sector**

- Licensed Electrician
- Electrical Apprentices
- Electrical Technician
- Electrical Foreperson
- Maintenance Technician
- Electrician Journeyman
- Electrical power supply system technician
- Other, ***please specify*** \_\_\_\_\_

**Plumbing sector**

- Licensed Plumber
- Plumbing Apprentice
- Licensed Journeyman Plumber
- Service Technician
- Other, ***please specify*** \_\_\_\_\_

**Carpentry sector**

- Carpenter's Helper
- Apprentice
- Journeyman
- Master
- Other, ***please specify*** \_\_\_\_\_

**Welding sector**

- Apprentice
- Ironworker
- Pipefitter
- Technician
- Other, ***please specify*** \_\_\_\_\_

25. Do you belong to a union?

- Yes
- No

26. Do you have people that directly report to you?

- Yes
- No

27. Does your schedule often change unexpectedly?

- Yes, often
- Yes, sometimes
- Yes, rarely

28. Please indicate the average number of hours you work per week.

\_\_\_\_\_ hours per week

29. Please indicate the average overtime hours you work per week.

\_\_\_\_\_ hours per week

30. How long have you worked as electrician/plumber/carpenter/welder/other jobs

\_\_\_\_\_ years and/or \_\_\_\_\_ months

31. How long have you worked at your current workplace? \_\_\_\_\_ years and/or \_\_\_\_\_ months

32. If you worked any overtime in the past year, please indicate how you were compensated. **Please check all that apply.**

- Banked hours
- Overtime payment
- No compensation
- Other, **please specify** \_\_\_\_\_

33. Please indicate the usual duration of shift worked in your current position.

- 4 hours
- 8 hours
- Other, **please specify** \_\_\_\_\_

34. Do you intend to stay in your current position for the next 5 years?

- Yes
- No

If No, *please specify why* \_\_\_\_\_

35. Please indicate how important the factors listed below are to keep you working as your current position in your current workplace? **Please check one box in each row.**

		Not important	Important	Extremely important
A	Career advancement possibility	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B	Cost of living	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C	Existing leadership	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D	Facility and workplace equipment/resources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E	Family commitments	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F	Financial support for external training	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G	Flexible scheduling for external training	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
H	Full-time employment opportunity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I	Income and benefits	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
J	Internal staff development opportunity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
K	Involvement in organization decision-making	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
L	Leave of absence for external training	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
M	Orientation program for new staff	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
N	Peer support	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
O	Stable staffing/minimal turnover	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P	Workload allocation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q	Workplace Safety	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
R	Current location of workplace	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
S	Opportunity to become a fully licensed in your skilled trade (For apprentices)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
T	Opportunity/support to qualify as Master in your job	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
U	Other _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
V	Other _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

36. Please indicate availability and your satisfaction with the following factors in your current workplace. **Please check one box in each row.**

		Not available	Available but needs improvement	Available to my satisfaction
A	Career advancement possibility	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B	Effective management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C	Facility equipment and workplace resources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D	Financial support for external training	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E	Flexible scheduling for external training	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F	Flexible scheduling for family commitments	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G	Full-time employment opportunity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
H	Internal staff development opportunity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I	Involvement in organization decision-making	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
J	Leave of absence for external training	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
K	Orientation program for new staff	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
L	Peer support	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
M	Salary and benefits	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
N	Stable staffing turnover	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
O	Workload allocation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P	Workplace Safety	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q	Current location of workplace	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
R	Opportunity/support to qualify as Master in your job	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
S	Other _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
T	Other _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

37. Does your organization have policies targeting **recruitment** of registered electricians/plumbers/carpenters/welders?

- Yes
- No
- Not aware /Don't know

If Yes, *please specify*

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38. Does your organization have policies targeting **retention** of registered electricians/plumbers/carpenters/welders?

- Yes
- No
- Not aware/Don't know

If Yes, *please specify*

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39. Which of the following best describes your **gross** annual income?

- Less than \$20,000
- \$20,000-\$29,999
- \$30,000-\$39,999
- \$50,000-\$59,999
- \$60,000-\$69,999
- \$70,000-\$79,999

- \$40,000-\$49,999
- Prefer Not to Answer

- \$80,000 or more

40. Please indicate the community where your previous workplace was located. (It would be helpful if you provide both the community's name and postal code).

\_\_\_\_\_ AND \_\_\_\_\_  
Name of the community                      Postal code

41. Please indicate the community where your current workplace is located. (It would be helpful if you provide both the community's name and postal code).

\_\_\_\_\_ AND \_\_\_\_\_  
Name of the community                      Postal code



## BURNOUT

	Never/almost never or to a very low degree	Seldom or to a low degree	Sometimes or somewhat	Often or to a high degree	Always or to a very high degree
<b>Personal Burnout</b>					
How often do you feel tired?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
How often are you physically exhausted?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
How often are you emotionally exhausted?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
How often do you think: "I can't take anymore"?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
How often do you feel worn out?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
How often do you feel weak and susceptible to illness?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Work related burnout</b>					
Do you feel worn out at the end of the working day?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are you exhausted in the morning at the thought of another day at work?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you feel that every working hour is tiring for you?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you have enough energy for family and friends during leisure time?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is your work emotionally exhausting?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does your work frustrate you?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you feel burnt out because of your work?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Colleague-related burnout</b>					
Do you find it hard to work with colleagues?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does it drain your energy to work with colleagues?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you find it frustrating to work with colleagues?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



Do you feel that you give more than you get back when you work with colleagues?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are you tired of working with colleagues?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you sometimes wonder how long you will be able to continue working with colleagues?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### JOB SATISFACTION

We would like you to think about the *type of work you do in your job*.

1. Knowing what you know now, if you had to decide all over again whether to take the type of job you now have, what would you decide?

- I would decide without hesitation to take the same job
- I would have some second thoughts
- I would decide definitely NOT to take this type of job

2. If you were free right now to go into any type of job you wanted, what would your choice be?

- I would take the same job.
- I would take a different job.
- I would not want to work.

3. If a friend of yours told you they were interested in working in a job like yours, what would you tell them?

- I would strongly recommend it.
- I would have doubts about recommending it.
- I would advise against it.

4. All in all, how satisfied would you say you are with your job?

- I am very satisfied.
- I am somewhat satisfied.

I am not too satisfied.

I am not at all satisfied.

### MENTAL DEMANDS

Please indicate the degree to which you agree or disagree with the following statements about your job. Please enter the number in the space provided at the end of each statement.

	Strongly Agree	Slightly Agree	Slightly Disagree	Strongly Disagree
1. My job requires a great deal of concentration.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. My job requires me to remember many different things.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. I must keep my mind on my work at all times	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. I can take it easy and still get my work done.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. I can let my mind wander and still do the work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### PHYSICAL ENVIRONMENT

Please indicate whether the following statements about your job are TRUE or FALSE.

	TRUE	FALSE
1. The level of NOISE in the area(s) in which I work is usually high.	<input type="checkbox"/>	<input type="checkbox"/>
2. The level of LIGHTING in the area(s) in which I work is usually poor.	<input type="checkbox"/>	<input type="checkbox"/>
3. The TEMPERATURE of my work area(s) during the SUMMER is usually comfortable.	<input type="checkbox"/>	<input type="checkbox"/>
4. The TEMPERATURE of my work area(s) during the WINTER is usually comfortable.	<input type="checkbox"/>	<input type="checkbox"/>

5. The HUMIDITY in my work area(s) is usually either too high or too low.	<input type="checkbox"/>	<input type="checkbox"/>
6. The level of AIR CIRCULATION in my work area(s) is good.	<input type="checkbox"/>	<input type="checkbox"/>
7. The AIR in my work area(s) is clean and free of pollution.	<input type="checkbox"/>	<input type="checkbox"/>
8. In my job, I am well protected from exposure to DANGEROUS SUBSTANCES.	<input type="checkbox"/>	<input type="checkbox"/>
9. The overall quality of the PHYSICAL ENVIRONMENT where I work is poor.	<input type="checkbox"/>	<input type="checkbox"/>
10. My WORK AREA(S) is/are awfully crowded.	<input type="checkbox"/>	<input type="checkbox"/>

**WORK HAZARDS**

Please answer each of the following questions as they apply to you.

1. Does your job primarily involve providing direct service to specific groups of people or client populations?

YES

NO

	Never	Occasionally	Sometimes	Fairly Often	Very Often
2. How often does your job expose you to verbal abuse and/or confrontations with clients or the general public?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. How often does your job expose you to the threat of physical harm or injury?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. How often have you been physically assaulted within the past 12 months while performing your job?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. How often does your job personally subject you to potential legal liability?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## SOCIAL SUPPORT

	Very Much	Somewhat	A little	Not at All	Don't Have Any Such Person
1. How much do each of these people go out of their way to do things to <i>make your work life easier</i> for you?					
a) Your immediate supervisor (boss)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Other people at work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Your spouse, friends, and relatives	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. How easy is it for you to talk with each of the following people?					
a) Your immediate supervisor (boss)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Other people at work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Your spouse, friends, and relatives	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. How much can each of these people be <i>relied</i> on when things get tough at work?					
a) Your immediate supervisor (boss)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Other people at work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Your spouse, friends, and relatives	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. How much is each of the following <i>willing to listen</i> to your personal problems?					

a) Your immediate supervisor (boss)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Other people at work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Your spouse, friends, and relatives	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Appendix D: REB Approval Letter



UNIVERSITY OF  
TORONTO

OFFICE OF THE VICE-PRESIDENT,  
RESEARCH AND INNOVATION

RIS Protocol  
Number: 41766

Approval Date: 18-May-22

PI Name: Dr Behdin Nowrouzi-  
Kia

Division Name:

Dear Dr Behdin Nowrouzi-Kia:

Re: Your research protocol application entitled, "Impact of Labour Mobility on the Physical and Mental Health of Skilled Trades Workers in Ontario, Canada."

The Health Sciences REB has conducted a Delegated review of your application and has granted approval to the attached protocol for the period 2022-05-18 to 2022-11-29.

This approval covers the ethical acceptability of the human research activity; please ensure that all other approvals required to conduct your research are obtained prior to commencing the activity.

Please be reminded of the following points:

- An **Amendment** must be submitted to the REB for any proposed changes to the approved protocol. The amended protocol must be reviewed and approved by the REB prior to implementation of the changes.
- An annual **Renewal** must be submitted for ongoing research. Renewals should be submitted between 15 and 30 days prior to the current expiry date.
- A **Protocol Deviation Report (PDR)** should be submitted when there is any departure from the REB-approved ethics review application form that has occurred without prior approval from the REB (e.g., changes to the study procedures, consent process, data protection measures). The submission of this form does not necessarily indicate wrong-doing; however follow-up procedures may be required.
- An **Adverse Events Report (AER)** must be submitted when adverse or unanticipated events occur to participants in the course of the research process.
- A **Protocol Completion Report (PCR)** is required when research using the protocol has been completed.
- If your research is funded by a third party, please contact the assigned Research Funding Officer in Research Services to ensure that your funds are released.

Best wishes for the successful completion of your research.