

# BMJ Open Immigrant status, gender and work disability duration: findings from a linked, retrospective cohort of workers' compensation and immigration data from British Columbia, Canada

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## ABSTRACT

**Objectives** To compare differences in work disability durations of immigrant men and women injured at work to comparable Canadian-born injured workers in British Columbia, Canada.

**Methods** Data on accepted workers compensation claims and immigration status from 1995 and 2012 were used to compare the number of work disability days paid at the 25%, 50% and 75% for immigrant and Canadian-born injured workers stratified by gender and recency of immigration.

**Results** Immigrant workers comprised 8.9% (78 609) of the cohort. In adjusted quantile regression models, recent and established immigrant women received 1.3 (0.8, 1.9) and 4.0 (3.4, 4.6) more paid disability days at the 50% of the disability distribution than Canadian-born counterparts. For recent and established immigrant men, this difference was 2.4 (2.2, 2.6) and 2.7 (2.4, 4.6). At the 75%, this difference increased for recent immigrant men and established immigrant men and women but declined for recent immigrant women.

**Conclusions** Injured immigrants receive more work disability days than their Canadian-born counterparts except for recent immigrant women. Both immigrant status and gender matter in understanding health disparities in work disability after work injury.

**Keywords** work disability, immigrant health; linked administrative data.

## INTRODUCTION

The occurrence of work-related injuries and illnesses differentially affects immigrant workers compared with native-born workers.<sup>1-4</sup> In Canada, the proportion of work-related injuries requiring medical attention was substantially higher among recent immigrants (less than 5 years in Canada) than Canadian-born workers (90% vs 65%).<sup>1</sup> Other jurisdictions including in the USA and the European Union find higher occupational injuries among immigrants.<sup>3,5</sup> Reasons for more injuries among immigrant workers

## Strengths and limitations of this study

- A major strength of this study is the use of detailed and comprehensive workers' compensation claims data linked to immigration data to construct a retrospective cohort of workers in British Columbia with a compensated work-related injury between 1995 and 2012, by immigration status.
- Novel data linkage allowed for a large sample size with the ability to control for a rich set of confounders known to be associated with immigration status and work disability duration.
- There is, however, potential for residual confounding from unmeasured variables.
- Limited scope as worker's compensation claim data were available up until 2012.

include the nature of their work that is often concentrated in precarious and physically demanding occupations with higher occupational risks,<sup>6,7</sup> as well as a lack of appropriate or tailored occupational health and safety training.<sup>8</sup>

The focus on the prevalence and predictors of work injuries among immigrants often neglects differences related to disability duration, defined as time from injury to return to work. A few studies have examined disability duration focused on groups defined by race or ethnicity. For instance, two separate US studies found that Hispanic male workers experienced longer work disability than non-Hispanic white workers.<sup>9,10</sup> This was further supported in research on foreign workers, defined as Chinese, Indian or Malay ethnicities, compared with native workers in Singapore.<sup>11</sup> In Canada, Premji<sup>12</sup> and Côté *et al*<sup>13</sup> found that a lack of language proficiency resulted in miscommunication between immigrants and key return to work actors that

negatively impacted access to compensation benefits and services and ultimately timely return to work.

The preceding studies investigating differences in injury risk and disability duration for immigrant workers have not included sex-based and gender-based analyses, despite the highly gendered nature of work, injury and disability. The growing body of evidence on gender and sex differences in disability duration has predominately been in non-immigrant populations with mixed or null findings by gender/sex.<sup>14–16</sup>

The lack of evidence on gender/sex in relation to immigrant status, and disability duration is a key policy and practice gap given the labour force composition in many countries.<sup>17</sup> For example, immigrant workers represent over 20% of the Canadian labour force, and the employment rate in 2017 for immigrant men and women (25–54 years) was 86.5% and 72%, respectively, increasing as length of time in Canada increased.<sup>18</sup> Apart from employment rates, immigrants' labour market entry and experience differ significantly from Canadian-born workers. In particular, immigrants tend to work in positions that are not commensurate with their experience and are characterised by lower earnings and part-time or temporary schedules.<sup>17</sup> Gaps in labour market outcomes are typically wider for immigrant women who cluster in women dominated sectors despite the fact that roughly half of immigrant women have high levels of education.<sup>18 19</sup> Immigrants are also less likely to have employer-sponsored health benefits and paid sick leave<sup>20</sup> with some evidence suggesting that immigrant women are less likely to receive compensation benefits for similar injuries as men.<sup>21</sup>

Research aimed at explaining immigrant's employment outcomes points to a number of labour market barriers including lack of language proficiency and Canadian work experience, non-recognition of foreign credentials and fewer social networks to help with integration.<sup>22 23</sup> These barriers tend to intersect simultaneously but also transcend immigrant women more acutely than their male counterparts. For example, Creese and Wiebe's study<sup>24</sup> of interviews with well-educated men and women from Sub-Saharan Africa found that while men and women had difficulty securing a job, women were the most disadvantaged, unable to even access survival employment because demand for Canadian work experience, Canadian accents and Canadian credentials were preferred by employers across occupational groups.

Emerging evidence also points to the role of settlement agencies in channelling immigrant women into lower quality and more precarious labour in Canada. Funding constraints and high workloads in these agencies combine to construct immigrant women as cheap labour by offering employment-related programmes that reinforce traditional gender roles or subsidised, unskilled positions with employers with whom they have pre-existing relationships.<sup>25 26</sup> This type of low quality and precarious employment comes with increased exposures and occupational risks and the potential delayed reporting of injuries or

for more serious injuries with longer disability durations. Finally, many immigrant women have limited opportunities to learn English on arrival to a new country due to competing demands such as childcare responsibilities.<sup>27</sup> Lower language proficiency can present challenges when communicating about a work injury including accessing appropriate health and rehabilitation care, and navigating compensation benefits, with implications for prolonged recovery.

The objective of the current study was to examine gender/sex differences in disability duration among immigrant versus Canadian-born workers with an accepted workers' compensation claim for a work-related injury in the Canadian province of British Columbia. To the best of our knowledge, gender and sex differences in disability duration by immigrant status have not yet been examined in the Canadian context and have received relatively little attention in the work and health literature. We hypothesised that immigrant workers would experience longer work disability durations than Canadian-born workers, but that immigrant women would experience the longest durations across all groups, after adjusting for confounders.

## METHODS

### Data sources

Individual-level data from British Columbia's workers' compensation system (WorkSafeBC) and the Government of Canada's Citizenship and Immigration Canada (CIC) Permanent Residents file were linked to construct a retrospective cohort of workers in British Columbia with a compensated work-related injury between 1995 and 2012, by immigration status. Immigrants included those economic and family class and refugees, but did not include temporary foreign workers or workers whose immigrant or refugee claim had not been accepted. During the study period, WorkSafeBC provided workers' compensation coverage for approximately 94% of the provincial workforce.<sup>28</sup> Compensation claims data included information on work characteristics (eg, occupation and industry of employment at time of injury), type of injury (eg, strain/sprain, acute), sociodemographic factors (eg, age, gender/sex) and the number of short-term disability days paid.<sup>29</sup> The CIC Permanent Residents file is a repository of individuals granted permanent residence in Canada since 1985 and was used to identify immigrant workers with a workers' compensation claim and to characterise recent-immigrant and established-immigrant workers.<sup>30</sup> These records include information on immigration class, country of birth, landing date and age and gender/sex (if missing from the compensation record). Data were provided by Population Data BC (Redacted). Ethical approval for the research project was obtained from (Behavioural Research Ethics Board at the University of British Columbia).

### Study sample

The study sample included all accepted workers' compensation, short-term disability claims (at least one full day

off work) for a work-related injury between 1 January 1995 to 31 December 2012 based on availability of data. The sample was restricted to injured workers between the ages of 15–64 years at time of injury and for whom data on gender/sex were available through a combination of the claims and immigration records.

### Study variables

Immigration status, the primary explanatory variable, was defined as recent immigrant (<10 years in Canada) or established immigrant (≥10 years in Canada) at the time of the injury claim, or Canadian-born (no record in the CIC file). Gender/sex, the primary effect modification variable, was defined as women and men. While gender and sex are distinct constructs, they are also significantly and complexly inter-related. For the purposes of this research, we used the sex variable recorded in the workers' compensation claims data as indicative of the biological construct for men and women as well as being highly correlated with the social construct of gender for women and men. In sum, this study investigated 'gender/sex' effect modification but for ease of communication will refer to women and men.

The primary outcome variable was disability duration, defined as the total number of days the worker was unable to work due to their injury and received wage replacement benefits paid by the workers' compensation system. Injured workers were followed from the first disability payment and censored at 260 days to reflect a standard 5 day work week within one calendar year.

Based on seminal work by Krause *et al*<sup>31</sup> and availability of variables in the linked administrative database, we identified and included six potential confounders of the relationship between immigration status and disability duration: age (<35 years vs 35–64 years) and occupation (Statistics Canada's Standard Occupational categories)<sup>32</sup> at time of injury, injury type (acute (eg, fracture, concussion) versus strain (eg, back strain)) defined using the International Classification of Diseases V.9CM coding,<sup>33</sup> injury year grouped into six 3 year categories, and prior claim(s) (yes/no) in the past 2 years.

### Data analysis

Descriptive statistics (proportions) were performed for the characteristics of the study sample by immigration status.  $\chi^2$  tests were used to determine if there were differences in proportions between immigration status and confounding variables with respect to disability duration.

Quantile regression models were used to examine the main relationship between immigration status and disability duration at the 25th, 50th and 75th percentiles of the distribution of disability days. Quantile regression is appropriate for skewed distributions such as that found for disability days<sup>34</sup> and has been used in similar studies using administrative data.<sup>16 35 36</sup> The first model adjusted for gender/sex and age and subsequent models adjusted for occupation, injury type, injury year and prior claims, respectively. The final models were stratified by gender/

sex to investigate interaction effects. All analyses were conducted using Stata V.14 SE.<sup>37</sup>

### Patient and public involvement

No patients or members of the public were involved in the design, conduct, or dissemination plan for this study.

## RESULTS

Table 1 shows the distribution of study variables by gender and immigrant status. Overall, the final study sample included 883 830 accepted, short-term disability claims representing 516 354 unique injured workers. A total of 91.1% of included claims were among Canadian-born workers, 5.3% among recent immigrant workers and 3.6% among established immigrant workers. The majority of claims were among men compared with women, including among Canadian-born (70.5%), recent (73.4%) and established immigrant (64.1%) workers. A higher proportion of claims were among older (35–64 years) versus younger workers (<35 years) but this difference was even greater within the established immigrant worker group. Acute injuries were more common than strain injuries across gender/sex and immigration status, except among recent immigrant men with slightly more strain (52.3%) than acute (47.7%) injuries. The distribution of occupations at the time of injury was different for men and women. Reflecting labour force distribution, claims for women were more common in healthcare and sales/services occupations at the time of injury, while claims for men were more common in trades/transportation and processing/manufacturing occupations, regardless of immigration status. Men were more likely to have had a prior workers' compensation claim in the 2 years before the study injury claim than women, with the highest proportion among Canadian-born men (25.1%).

### Gender/sex, worker immigration status and disability duration

In the final adjusted quantile regression models (table 2), compensation claims for work-related injuries were associated with longer disability durations for both recent and established immigrant workers compared with Canadian-born workers at the 25th, 50th and 75th percentiles of the distribution of disability days, increasing from approximately one additional day at the 25th percentile to four to six additional days at the 75th percentile. However, in the models stratified by gender/sex, the relationship between immigrant status and disability duration was stronger for recent immigrant men (6.0 days, 95% CI 5.1 to 6.5) than recent immigrant women (0.1 days, 95% CI –1.3 to 1.6) at the 75th percentile. Similar longer disability durations were found for established immigrant men and women, with a slightly longer duration for established women (75th%, 6.0 days, 95% CI 4.5 to 7.5) than established men (75th%, 5.3 days, 95% CI 4.2 to 6.5). Across gender/sex, recent and established immigrants had longer disability durations than Canadian-born workers, although recent

**Table 1** Sociodemographic characteristics of workers with accepted short-term disability compensation claims for work-related injuries between 1995 and 2012, by immigrant status

Variables	Immigrant Worker claims n=78 609 (8.9%)				Canadian-born worker claims n=805 221 (91.1%)	
	Recent* n=46 882 (5.3%)		Established† n=31 727 (3.6%)		Men	Women
	Men	Women	Men	Women	Men	Women
	34 407 (73.4%)	12 475 (26.6%)	20 324 (64.1%)	11 403 (35.9%)	567 349 (70.5%)	237 872 (29.5%)
<b>Age</b>	%‡	%	%	%	%	%
Younger (<35 years)	38.9	33.6	5.9	5.8	42.5	32.9
Older (35–64 years)	61.1	66.4	94.1	94.2	57.5	67.1
<b>Occupation</b>						
Management	1.3	1.4	1.9	1.5	1.2	2.3
Business	3.8	3.6	4.2	3.9	3.0	6.1
Natural/App. Sci.	1.4	0.8	1.6	0.3	1.5	0.5
Health	1.5	19.7	2.7	32.8	1.5	20.5
Social Science	0.6	3.2	0.8	4.8	0.8	5.8
Art/Culture	0.5	0.8	0.5	0.5	0.8	1.7
Sales/Service	17.3	42.3	18.5	41.5	12.6	40.7
Trades/Transp.	35.5	4.1	44.7	3.8	47.3	6.1
Primary	3.1	2.1	2.9	1.1	5.7	1.9
Process/Manuf.	21.2	11.0	20.9	8.8	13.0	4.9
Unspecified§	13.8	11.0	1.3	0.9	12.5	9.3
<b>Nature of injury</b>						
Strain	52.3	40.3	45.2	32.4	44.8	32.9
Acute	47.7	59.7	54.8	67.6	55.2	67.1
<b>Injury year</b>						
1995–1997	20.8	16.4	2.9	1.8	19.3	15.0
1998–2000	18.4	18.1	8.2	5.8	18.1	17.1
2001–2003	16.6	17.0	16.8	13.5	17.3	17.1
2004–2006	16.0	15.9	22.4	20.8	17.3	17.1
2007–2009	15.6	17.1	25.3	27.7	15.7	17.8
2010–2012	12.5	15.4	24.3	30.3	12.3	15.9
<b>Previous claim(s)¶</b>						
Yes	19.9	14.3	22.1	20.3	25.1	19.5
No	80.1	85.7	77.9	79.7	74.9	80.5

\*Recent=less than 10 years in Canada.

†Established=10 years or more in Canada.

‡Column percentages.

§Prior to 1997 and between 1999 and 2000, there were a large proportion of claims that had unspecified occupation due to system/classification scheme changes. These unspecified categories were retained in the data analysis.

¶Previous claims in the past 2 years.

\*\*\*P&lt;0.05, \*\*p&lt;0.01, \*\*\*p&lt;0.001.

immigrant women had disability durations closer to that of Canadian-born women.

### Robustness of model findings

Models based on subsets of the claims cohort investigated the robustness of the final model findings to various study inclusion criteria, including subcohorts limited to more recent claims from 2004 to 2012 only, to acute injuries of fractures only, and to the first claim only per worker. In all of these models of the relationship between immigration status and disability duration stratified by gender/sex, both established and recent immigrants had longer disability durations than Canadian-born workers at the 25th, 50th, and 75th percentile of the distributions

(table 3 provides results for the 50th percentile for these models). Similar to the overall findings, recent immigrant women tended to have disability durations closer to Canadian born women at all points of the distribution for the model of 2004–2012 claims only (eg, 1.5 additional days at the 50th percentile, 95% CI 0.6 to 2.3) and for the model of first claims only (eg, 1.4 additional days at the 50th percentile, 95% CI 0.9 to 1.8). However, this was not the case for the model of fractures only where recent immigrant women had longer disability durations compared with Canadian born women and durations that were more similar to established immigrant women and to their male counterparts (eg, 15.3 additional days 95% CI 8.0 to 22.7).

**Table 2** Differences in disability duration (days) for workers' compensation injury claims among immigrant and Canadian-born workers, 1995–2012, adjusted\* quantile regression models

<b>Claims for women (n=260 253)</b>			
	<b>25th Percentile days (95 CI)</b>	<b>50th Percentile days (95 CI)</b>	<b>75th Percentile days (95 CI)</b>
<b>Worker immigration status</b>			
Canadian-born	Reference	Reference	Reference
Recent immigrant (<10 years)	0.6 (0.5 to 0.8)	1.3 (0.8 to 1.9)	0.1 (–1.3 to 1.6)
Established immigrant (10+ years)	1.2 (1.0 to 1.3)	4.0 (3.4 to 4.6)	6.0 (4.5 to 7.5)
<b>Claims for men (n=620 111)</b>			
Canadian-born	Reference	Reference	Reference
Recent immigrant (<10 years)	0.9 (0.8 to 1.0)	2.4 (2.2 to 2.6)	6.0 (5.1 to 6.5)
Established immigrant (10+ years)	0.9 (0.8 to 1.0)	2.7 (2.4 to 3.0)	5.3 (4.2 to 6.5)
<b>All claims (n=883 830)</b>			
Canadian-born	Reference	Reference	Reference
Recent immigrant (<10 years)	0.9 (0.8 to 0.9)	2.2 (1.9 to 2.4)	4.3 (3.5 to 5.1)
Established immigrant (10+ years)	1.0 (0.9 to 1.1)	3.2 (2.9 to 3.4)	5.8 (4.8 to 6.7)

\*Adjusted for gender, age at injury, occupation, injury type, injury year and prior claim in last 2 years.

## DISCUSSION

This study examined the relationship between worker immigration status and work disability by gender/sex, for workers with an accepted, short-term disability claim in the Canadian province of British Columbia. In models adjusted for sociodemographic, work and injury characteristics, we found that immigrants had longer work disability durations compared with Canadian-born workers and that the difference was greatest at the 50th and 75th percentiles of the disability duration. We also found that the relationship between worker immigration status and disability duration varied by gender/sex. In particular, recent immigrant women had disability durations closer to Canadian-born women at all points of the disability duration, with the exception of models specific to fractures only where differences in disability durations were the greatest for immigrants compared with

Canadian-born workers regardless of the point on the distribution, immigration status or gender/sex.

The findings of this study are consistent with prior studies that examined disability duration by ethnic minority groups<sup>9 10</sup> that often constitute the majority of immigrant worker populations in high income countries such as Canada. Longer disability durations following a workplace injury may be partially explained by a higher degree of vulnerability among immigrant groups compared with Canadian-born workers.<sup>38</sup> Often, immigrant workers experience deskilling when their foreign education and credentials are not recognised in Canada.<sup>39 40</sup> Long-term deskilling can keep immigrants in a perpetual cycle of low-waged, low-skilled employment positions characterised by dangerous and hazardous work conditions<sup>6 41</sup> that they are unlikely to report out of fear of employer reprisal and economic vulnerability. It is also

**Table 3** Differences in disability duration (days) at the 50th percentile for workers' compensation injury claims among immigrant and Canadian-born workers, adjusted\* quantile regression models for different study inclusion criteria

<b>Claims for women</b>			
	<b>2004–12 Claims (n=134 776)</b>	<b>Fracture only claims (n=10 726)</b>	<b>First claim only (n=159 747)</b>
<b>Worker immigration status</b>			
Canadian-born	Reference	Reference	Reference
Recent immigrant (<10 years)	1.5 (0.6 to 2.3)	15.3 (8.0 to 22.7)	1.4 (0.9 to 1.8)
Established immigrant (10+ years)	4.1 (3.4 to 4.8)	15.2 (7.8 to 22.5)	2.4 (1.8 to 3.0)
<b>Claims for men</b>			
	<b>2004–12 Claims (n=284 929)</b>	<b>Fracture only claims (n=44 598)</b>	<b>First claim only (n=325 999)</b>
Canadian born	Reference	Reference	Reference
Recent immigrant (<10 years)	2.3 (1.9 to 2.7)	15.6 (12.5 to 18.8)	2.2 (2.0 to 6.9)
Established immigrant (10+ years)	2.7 (2.3 to 3.1)	11.4 (7.6 to 15.2)	2.5 (2.2 to 2.9)

\*Adjusted for gender, age at injury, occupation, injury type, injury year and prior claim in last 2 years.



plausible that immigrant workers delay seeking time off work, healthcare, or work accommodations for cumulative injuries or chronic illness due to employment vulnerabilities that ultimately results in more severe injuries and disability when they finally reach the point of seeking workers' compensation benefits for short-term disability.

Evidence from other jurisdictions suggests that immigrants experience higher rates of more severe injuries due to the nature of their work that can prolong time off work.<sup>42–44</sup> For instance, emergency room admissions in Italy showed a higher risk of hospitalisation for work-related incidents among immigrants compared with native Italians, suggesting more severe, traumatic injuries.<sup>43</sup> Although the current study was unable to measure injury severity in the compensation claims data, the analyses limited to fractures only showed significantly longer disability durations among immigrant workers for this very specific acute injury regardless of gender/sex for both recent and established immigrant workers. These longer durations may be explained by more severe fractures, differential access to work accommodations and health services following injury or both.

Contrary to the study hypothesis, we observed similar disability durations among recent immigrant and Canadian-born women, not observed for other comparisons. This finding may be explained by labour market characteristics of more recent immigrant women. In a post-hoc investigation of our study cohort, recent immigrant women were more likely to arrive in Canada with a bachelor's degree or higher and as an economic immigrant (vs as a refugee or a family member), compared with recent immigrant men. Under the Canadian immigration system, economic immigrants arrive with the educational credentials, work experience and language skills needed to succeed in the labour market<sup>20 45</sup> suggesting that recent immigrant women have a competitive advantage compared with immigrant men in the Canadian context. More recent immigrant women may secure jobs commensurate with their education and skills that negates the immigration effects for longer work disability durations described above, including deskilling, economic vulnerabilities and exposures to work hazards that increase the incidence and severity of work injury.<sup>1</sup> Recent immigrant women with higher education levels may be better able to navigate compensation and healthcare systems for improved disability management and recovery from work-related injuries.

Conversely, immigrant women are known to be overrepresented in precarious and entry-level positions with little opportunity for career progression.<sup>19</sup> At the same time, women are shifting from secondary earners, individuals that work to supplement household income, to primary earners who contribute significantly to the economic well-being of their family.<sup>46</sup> It is possible that some recent immigrant women represent the most vulnerable segment of the workforce that are the least likely to report injuries to the compensation system or the most likely to return to work before fully recovered resulting in suppression of disability durations compared with Canadian-born women. The gender difference for recent immigrant women persisted across

models testing various methodological decisions except for the models limited to fractures only. As noted above, longer disability durations for acute fractures that are less prone to reporting or claim suppression, regardless of gender/sex for both recent and established immigrant workers, provide some indication of more severe injuries (even within the same type of injury) or more challenges navigating compensation and healthcare systems for disability management and recovery following an injury.

Both recent and established immigrant men had similar longer disability durations compared with Canadian-born men. Immigrant men may enter the labour market quickly taking work regardless of education and skill, and established immigrant men may continue in hazardous and vulnerable jobs, in order to sustain gendered economic roles for their immediate and extended families (eg, remittance of funds to family abroad and sponsoring family members).<sup>20</sup>

Although some justifications are provided, future research should consider inclusion of key return to work determinants that may help tease apart the relationship seen in recent immigrants across gender/sex.

### Strengths and limitations

The findings of this study should be considered in the context of strengths and limitations. A key strength of this study was the opportunity to combine administrative workers' compensation claim records with immigration data at the individual-level. This provided access to a novel database and large study cohort with the ability to create multiple stratification groups to investigate disability duration among subgroups of immigrants and by gender/sex.

Our study also had limitations. First, the reliance on retrospective claims records has the potential for residual confounding from unmeasured variables that could bias results for the relationship between immigration status and work disability duration in either direction. The models were adjusted for six known determinants of work-related disability<sup>31</sup> and characteristics associated with immigration status, including socioeconomic, work, injury and time characteristics. Comparison of the stepwise adjusted models showed that age and sex were the most important confounders of the relationship between immigration status and disability duration (10%+change in the effect estimate), with little change associated with the subsequent introduction of occupation, prior injury, injury type or year of injury to the models. Further, the study findings were robust to different study inclusion criteria as tested by models limited to first claim only, claims in the most recent years and claim for fractures only. The unmeasured potential confounder of concern is injury severity, but this is more likely on the causal pathway between immigration status, as a surrogate measure for occupational hazards and injury risk, and the outcome of work disability. Second, the study cohort was limited to short-term disability claims over a 17-year period (1995–2012) based on availability of claims data from WorkSafeBC at the time of study conception and implementation. While the inclusion of up-to-date data is

warranted in future research, findings from this study are valid given that the composition of the immigrant workforce in Canada has remained relatively stable in the last two decades.<sup>47</sup> Third, disability duration was measured as total number of paid disability days regardless of modified, accommodated or vocational rehabilitation days. Examining more detailed return to work pathways or trajectories is warranted for future research and could provide a more comprehensive understanding of immigration and gender differences in disability duration. Lastly, it is difficult to ascertain generalisability of the findings to jurisdictions outside of Canada that have different immigration systems and labour market structure. However, it is not unreasonable to generalise to other provinces in Canada and other countries that have a similar overall labour force, compensation and healthcare contexts for immigrant and native-born workers.

### Public health implications

Previous studies have found that the likelihood of returning to work decreases as length of time off work increases.<sup>31 48</sup> In light of longer disability durations for immigrant workers, workers' compensation systems could consider disability management that is sensitive to the needs of immigrant workers, such as translation services and resources, to help workers navigate rehabilitation and healthcare services for work-related injuries. Disability management could also consider gender-sensitive approaches that recognise employment and economic issues that may lead to longer disability durations including, for example, delays in seeking disability benefits earlier in the injury process or delays when faced with a return to unsafe work environment while still recovering.

Employers have a duty to accommodate injured workers as per workers' compensation reintegration policies and modified or gradual return-to-work practices are viewed as beneficial to recovery following injury. However, work accommodations are managed by employers and physicians in British Columbia, and are more challenging to navigate for vulnerable and precariously employed workers,<sup>49</sup> of which a significant portion are immigrants. Stronger advocacy and supports for work accommodation as part of the disability management process for immigrant workers are warranted. More broadly, stigma with regards to injured workers returning to work may be magnified by discrimination against immigrants. Ongoing research that highlights inequalities by immigration status is integral to awareness and discourse for reducing systemic bias and discrimination.

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