The Mobility of Construction Workers in Canada: Insights from Administrative Data

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Abstract
There is limited research that examines the employment-related geographical mobility (E-RGM) of journeypersons in the construction industry. Such an investigation is important because migration can help reduce labour shortages and surpluses and allow journeypersons to obtain gainful employment. In this paper we investigate the E-RGM of construction industry journeypersons. Drawing on data from the Education and Labour Market Longitudinal Platform (ELMLP) from 2008 to 2016, we find that while Ontario and Alberta gain the most migrants, the Atlantic region has more than 30% of its workforce that engages in E-RGM. Of the most mobile trades are steamfitters and pipefitters, ironworkers, and construction trade helpers and labourers. Moreover, those who are married, immigrants, and women are less likely to engage in E-RGM than are single journeypersons, non-immigrants, and men. Red Seal trades or endorsements were associated with greater mobility; however, whether journeypersons were registered in their province of residence was the greatest predictor of mobility. This finding suggests that while Red Seal programs have succeeded in creating standardised expectations across provinces and territories, place of residence has important implications for E-RGM of construction industry journeypersons. These findings point to the need for more research that examines the root causes of migration.

Keywords Construction · Internal mobility · Education · Administrative data

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Introduction

Training and maintaining a skilled workforce in Canada, particularly in the construction industry, is necessary to sustain a robust economy (Paquin, 2009). Consequently, journeypersons are an indispensable segment of the workforce (Statistics Canada, 2020b). Labour shortages are one of the challenges facing the Canadian economy; however, these shortages do not affect all economic sectors or provinces equally (Paquin, 2009). The COVID-19 pandemic has also exacerbated these concerns. Statistics Canada (2021a) states that, while labour shortages were, on average, higher during the second quarter in 2021 in all provinces, labour shortages were particularly pronounced in the construction industry. Specifically, job vacancies increased by nearly 47% in this sector and were most pronounced among construction trade helpers and labourers at approximately 75% and electricians at 109% (Statistics Canada, 2021a).

Likewise, a recent report prepared for the Canadian House of Commons identifies that there are significant labour shortages in the construction industry in the Greater Toronto and Hamilton Area (May, 2019). As such, the report calls for an enhancement in the mobility of skilled workers, from parts of Canada that do not have labour shortages, to boost the supply (May, 2019). Additionally, a recent survey shows that employers in Atlantic Canada, British Columbia, and Ontario reported hiring difficulties, in which the construction sector was listed as one of the most affected industries (Cocolakis-Wormstall, 2018). Nevertheless, between 2008 and 2016, employment in the construction industry increased dramatically (Statistics Canada, 2021b) and employed nearly 1.6 million people in 2021 (BuildForce Canada, 2021). Since the construction industry spans many diverse occupational groups and is a key sector of the economy (Haan et al., 2020), the mobility patterns of journeypersons in the construction industry has far-reaching implications. Moreover, there is a gap in the literature, particularly in the social sciences, on the employment-related mobility of journeypersons in the construction industry (Haan et al., 2020). As such, in this article, we study the employment-related geographical mobilities (E-RGM) of recently certified journeypersons of trades in the construction sector and ask the following research questions:

1. Do migration rates and interprovincial employment rates among journeypersons differ between provinces and territories and by major trade group?
2. Are certifications and endorsements, particularly those that allow workers trained in one jurisdiction in Canada to work in another, associated with migration and interprovincial work?
3. What demographic characteristics are associated with employment-related geographical mobility?

We use the recently released administrative data sets in the Education and Labour Market Longitudinal Platform (ELMLP) to answer our research questions. We document the mobility outcomes of journeypersons a year after their certification and examine the factors associated with mobility using a 3-state Multinomial Logistic
Regression model. Mobility and E-RGM encompasses journeypersons who do not move (stayers), those who work outside of the province in which they live (interprovincial workers), and those who migrate permanently for work (migrants). Thus, E-RGM refers to any movement or non-movement (whether permanent or temporary) across provincial borders (Haan et al., 2020).

In many developed countries, including Canada, migration propensities generally peak after people finish their education and steadily decrease after the education-to-work transition (Greenwood, 1997; Saunders, 2018). Research shows that 13% to 15% of all postsecondary school graduates reside in a different province than the one in which they were born (Burbidge & Finnie, 2000), while other research demonstrates that migration rates rise as education levels rise (Finnie, 2000). However, little is known about the post-completion geographical mobility of individuals who finished their apprenticeship training, especially for those in the construction industry, which is another major pillar of postsecondary education in Canada. This study is important because it has been estimated that one in five individuals in Canada reside in a different province than the one they were born in (Haan et al., 2018). As well, the construction industry contributes to provincial and national economies, especially because of its association with public funding and infrastructure needs, which makes this investigation pertinent in terms of policy implications (Haan et al., 2020). Especially concerning is that the Canadian Construction Association estimates that by 2029 there will be a shortage of approximately 300,000 workers across Canada (BuildForce Canada, 2020). This study focuses on the location choices of journeypersons in an important sector that is prone to significant labour supply issues.

Literature Review

The internal mobility patterns of construction journeypersons in Canada can have deleterious effects on local labour markets and economies. For example, Manitoba and Saskatchewan lost the most workers due to interprovincial migration in 2018 and 2019 of all provinces (Chastko, 2021). These less densely populated areas that already suffer from declining populations and demographic issues lose young workers due to migration and, therefore, migratory patterns could actually perpetuate the inequality between provinces and territories (Bernard et al., 2008). While some researchers find that journeypersons in infrastructure trades are no more likely to migrate interprovincially than journeypersons in other trade groups, approximately half of those who did migrate moved to Alberta (Turcotte & Weeks, 2014). In addition, infrastructure journeypersons in Atlantic Canada have very high rates of interprovincial migration (Turcotte & Weeks, 2014). This is a region that already suffers from demographic stagnation (APEC, 2020). In fact, demographic growth is uneven across Canada and reflects the patterns of in and out-migration (Bernard et al., 2008). One of the biggest push factors for young workers in Atlantic Canada is the perception of a lack of employment opportunities (Barber & Breslin, 2020; Power, 2017), despite the fact that skilled trades training is booming, particularly in Newfoundland and Labrador (Walsh et al., 2015). Indeed, there exists an expanded
need for employees in various sectors in this region including oil, gas, construction, and mining (Power, 2017). Yet, out-migration continues to be a significant concern of the provincial government (Power, 2017), despite the region’s population growth in more recent years (Shaker, 2014). Therefore, we hypothesise that construction industry journeypersons from the Atlantic provinces will be the most mobile.

The construction industry in Canada is one of the largest and most diverse industrial sectors (Haan et al., 2020). It includes commercial and residential building, dams and mines, civil infrastructure, and transportation (Buckley et al., 2016; Mills, 2017). In addition to the economic implications of labour shortages and demands that span many sub-sectors and occupations, others point to how working in the construction industry is transient in nature because of the employment-related geographical mobilities (E-RGM) commonly found among construction workers (Haan et al., 2014, 2020). In fact, U.S. research shows that the construction industry attracts migrants in counties with robust construction industrial sectors such that these counties gained in terms of population, while counties reliant on primary industries, such as forestry or fishing, lost population (Ambinakudige & Parisi, 2017). Because of the sectoral and occupational diversity in the construction industry some trades groups, such as those tied to natural resource extraction (Haan et al., 2020), are more mobile than other trades. Among the trades common in this industry in 2016, steamfitters and pipefitters had the highest rates of interprovincial migration (12.8%), followed by welders at 8.4%, and then heavy duty equipment operators at 7% (Statistics Canada, 2020a). Consistent with previous literature, we expect that among major trade groups, steamfitters and pipefitters and ironworkers will be the most mobile.

Migration rates may also vary depending on the phase of the construction project (Haan et al., 2020). For example, research shows that in the construction phase, employers need the skills of a diverse workforce, in which these needs shift frequently, whereas during the operations phase labour demand tends to shrink and become more stable (Haan et al., 2020). Therefore, whether mobility is temporary or permanent may depend on whether journeypersons are able to commute, or are employed on a contractual, seasonal, or permanent basis (Haslam McKenzie, 2010; Storey, 2010), which could fluctuate depending on the phases of construction projects. Thus, there are important differences in both the industrial structure and the economic contributions of the construction industry across different regions in Canada (Chen & Fougère, 2010). Such differences require that there be a steady flow of labour market adjustments, which enables the mobilisation of workers out of areas with low demand, into areas with high demand (Mills, 2017).

The Predictors of Migration among Construction Journeypersons

E-RGM among journeypersons in the construction industry does not exist in isolation from other important social markers, such as age, gender, race, and immigrant status. Previous research examines the possible reasons that individuals participate in E-RGM throughout Canada, including earnings incentives. Specifically, those who are mobile generally earn more than stayers (Bernard et al., 2008; Paquin, 2009), while those who are displaced or move involuntarily may accept lower wages.
Factors such as age (Paquin, 2009; Saunders, 2018) and skill set are also associated with mobility and migration. For example, like the general population (Saunders, 2018) younger cohorts of journeypersons are more mobile than older cohorts (Paquin, 2009). Indeed, literature from Australia confirms that migration peaks at age 19 among those in university (Wilson, 2015), but less is known about construction related trades specifically. We examine how age, gender, Indigenous identity, immigrant status, and marital status are associated with employment-related geographical mobility (E-RGM) among construction industry journeypersons.

Extant research shows that different patterns emerge for migrants and stayers, especially with regard to these demographic characteristics. For example, among the immigrant population in Canada, studies demonstrate that women are less likely to migrate interprovincially (van Huystee & St Jean, 2014). Scholars also show that single parents are less likely to move than are single and childless individuals (Finnie, 2000; Paquin, 2009) and those who are married with children are even less likely to move, regardless of gender (Finnie, 2000). Since the literature indicates that migration is more common among certain major trades group (Statistics Canada, 2020a), the fact that trades are highly gender segregated (Paquin, 2009) has important implications. Trades that are typically male-dominated, such as steamfitter and pipefitters, have the highest rates of migration and are also associated with higher pay, while trades that are typically female-dominated, such as hairstylists, have the lowest migration rates and offer lower pay (Statistics Canada, 2020a). Important differences also emerge for Red Seal trades. For example, while approximately 80% of men in the skilled trades were registered in a Red Seal trade in 2014, only 59% of women were (Frank & Jovic, 2017). Of women who were registered in a Red Seal trade, the most common groups were hairstylists and cooks (Frank & Jovic, 2017). Additionally, researchers show that among all unemployed adults ages 15 to 64 in Canada in 2016, more women than men stated that they were not able or unwilling to move to a different province for work (Morissette, 2017). As such, we hypothesise that women will be less mobile than men, including both permanent migration and temporary interprovincial work.

Of all immigrants that arrived in Canada between 2006 and 2011, in their destination province, slightly less than 10% moved to another province (van Huystee & St Jean, 2014). Interestingly, immigrants who are secondary movers, or who move multiple times, typically migrate to Ontario, Alberta, or British Columbia. Thus, retention rates tend to be highest in Ontario, Alberta, British Columbia, and Quebec (van Huystee & St Jean, 2014); however, retention and mobility rates among immigrants may differ markedly for those in the construction industry because much of the labour that is performed is temporary and transient in nature (Haan et al., 2020). For example, while literature shows that among immigrants who come to Canada as skilled workers, 80% to 85% choose to stay within their destination province (van Huystee & St Jean, 2014), less is known about the extent to which immigrant journeypersons engage in interprovincial work. Yet, studies reveal some important differences between non-immigrant and immigrant journeypersons.

Using the 2015 National Apprenticeship Survey Frank and Jovic (2017) show that an estimated 9% of all apprentices are immigrants. However, immigrants tend to
be older when they register for apprenticeship training and are less likely to be registered in a Red Seal program when compared with non-immigrants (approximately 68% versus 79% respectively) (Frank & Jovic, 2017). Like the general population in Canada, immigrants who are older and women tend to migrate less than do men and younger cohorts (van Huystee & St Jean, 2014). Prior work shows that immigrant women are less likely to enter a male-dominated trade compared with non-immigrant women, while immigrant men are more likely to enter a female-dominated trade when compared with non-immigrant men (Frank & Frenette, 2019).

In addition, other factors that influence mobility among immigrants include credential recognition as well as perceptions about the labour market. Typically, individuals with higher education and credentials will earn more, yet this does not always ring true for the immigrant populations who frequently face issues of credential recognition. With credential recognition issues comes a discontent among skilled workers (Kaushik & Drolet, 2018). Because they feel that their skills are mismatched, they are likely to seek employment elsewhere and will continue to do this until they feel that their skills have been matched appropriately (Kaushik & Drolet, 2018). Since male-dominated trades have higher rates of mobility, and given that previous literature indicates lower migration rates among immigrant populations in Canada (van Huystee & St Jean, 2014), we hypothesise that immigrants who are journeypersons employed in the construction industry will have a lower propensity for migration and interprovincial work.

Unlike women and immigrant journeypersons, Indigenous journeypersons are not underrepresented in the skilled trades (Frank & Jovic, 2017; Laryea & Medu, 2010). For instance, in 2015, approximately 6% of all apprentices were Indigenous which is slightly higher than their share of the total Canadian population (Frank & Jovic, 2017). In 2015, most Indigenous journeypersons were First Nations (3.2%) or Métis (2.9%), but very few were Inuit (0.1%); however, Indigenous and non-Indigenous apprentices were equally likely to study a Red Seal trade (Frank & Jovic, 2017). Among the most common trade groups for Indigenous journeypersons are metal workers, carpenters and cabinet makers, and welders (Laryea & Medu, 2010). Thus, the construction industry is one in which Indigenous journeypersons often work; however, because of preferences among employers for White men, some scholars argue that Indigenous journeypersons are often employed in the secondary labour market (Mills, 2017).

While Indigenous people may not be underrepresented in construction related trades, they may find themselves employed precariously more often than their non-Indigenous counterparts. Yet, little is known about the mobility patterns of Indigenous journeypersons. This could be because there is a non-trivial amount of response mobility that occurs in Canadian surveys that ask about respondents’ ethnic or Indigenous identity (O’Donnell & Lapointe, 2019). For instance, approximately 25% of Indigenous respondents in 2016 identified as non-Indigenous in 2011 (O’Donnell & Lapointe, 2019). Although Indigenous people are dispersed more evenly across cities in Canada than in the past, this finding could result from ‘response mobility’, or more individuals identifying as Indigenous (Anderson, 2019). Nevertheless, the mobility of journeypersons can have important implications for Indigenous people and their communities and, in fact, literature demonstrates that First Nations peoples
who migrate are more educated and have higher incomes than do non-migrant First Nations peoples (Cooke & O’Sullivan, 2015). Since response mobility could be a mechanism through which geographic mobility manifests, we tentatively hypothesize that Indigenous journeypersons will be more likely to be interprovincial workers and migrants; however, the findings will be interpreted with caution.

Among the general English speaking population in Canada migration rates have been declining since the 1970s (Haan & Cardoso, 2020; Rheault, 2019). In fact, studies confirm that construction industry journeypersons are no more likely to migrate than those with other types of postsecondary credentials (Statistics Canada, 2014). For instance, only 4% of construction industry journeypersons migrated to another province in 2011 compared to 7% of university graduates (Statistics Canada, 2014). This rate has remained fairly steady, with 3.7% of all journeypersons migrating to a different province in 2017 (Statistics Canada, 2020a). Some researchers argue that these lower rates of migration stem from a move by provinces to equalize their services and the quality of those services across the country, thereby limiting the influence of the perception of better opportunities afforded elsewhere (Rheault, 2019). By encouraging individuals to remain within their province, the government is working against the necessity of skilled workers to move into areas that are in need, creating a dramatic decline in labour migration and inequalities in regional employment (Rheault, 2019). However, most studies in Canada have focused on permanent relocation with the exception of those who study temporary foreign workers (Prokopenko & Hou, 2018), those who work on offshore oil rigs and temporary worksites (Storey, 2010), and temporary and seasonal workers in the construction industry who migrate interprovincially (Barber & Breslin, 2020). What is less known is whether social factors restrict opportunities for mobility among some journeypersons and if Red Seal trades and journeypersons who are Red Seal endorsed are more or less likely to migrate permanently or work interprovincially than those without this designation.

Scholars confirm that mobility is restricted among some Canadian workers. For instance, Morissette (2017) shows that among the unemployed, almost two-thirds stated that they would not relocate to a different province to gain employment. Most stated that they want to live close to their relatives (30%), while 13% reported that their partners and children would not want to relocate. Finally, 7% stated that they could not relocate because they were caretakers for family members (Morissette, 2017). Alternatively, mobility could be restricted because of credential recognition issues for certain types of trade certifications. Established in the 1950s, Red Seal programs sought to facilitate greater ease of mobility among certified journeypersons in Canada as well as integrate regional and provincial and territorial labour markets (Frank & Jovic, 2017). Journeypersons can study a Red Seal designated trade without obtaining the endorsement that allows them to work anywhere in Canada; however, the endorsement ensures that journeypersons can migrate or work interprovincially without having to complete extra certifications. The limited research that does exist suggests that apprentices in Red Seal designated trades are more likely to work in a different province or territory (approximately 7%) than the one in which they registered, compared to 5% who work in the same province in which they registered for their training. Among the most mobile Red Seal trade
groups are steamfitter and pipefitters at approximately 9%, welders at approximately 6%, industrial mechanics at 5%, and plumbers at 5% (Frank & Jovic, 2017).

Consequently, one of the big issues is that of provincial recognition for some apprentice workers (Chen & Fougère, 2010). That is, different provinces may have different licensing requirements when it comes to regulated professions. Researchers argue that regulations reduce the probability of interprovincial migration for workers in apprentice trades (Chen & Fougère, 2010). This may be due to the type of apprenticeship or regional differences in employment opportunities, as oil-rich Alberta attracts migrants, while places with less lucrative industries consistently lose workers due to this interprovincial movement (Statistics Canada, 2020a). Moreover, Red Seal certifications and endorsements are also important as non-Red Seal journeypersons may face limited opportunities for mobility. As such, we expect that those who studied a Red Seal trade will be more likely to migrate and work interprovincially than journeypersons who did not. We also hypothesise that journeypersons who are Red Seal endorsed will have a higher propensity for migration and interprovincial work. Since migrants are generally younger (Saunders, 2018), and since mobility patterns among Canada’s skilled workers has such sweeping implications for provinces in terms of economic and demographic vitality and labour supply and demand, we investigate the association between age at certification and journeypersons’ mobility outcomes. We hypothesise that both interprovincial workers and migrants will be younger, on average, than stayers.

Overall, this literature review situates interprovincial mobility factors for those in the skilled trades within the patterns found among the general population. Additionally, we have detailed prior work that examines the mobility patterns by province as E-RGM can have important consequences (both positive and negative) on local labour markets. Our study contributes to the growing body of literature on the mobility of construction industry journeypersons by examining the most common trade groups within the sector and the mobility patterns that emerge by major trade group, both in terms of permanent migrants and more temporary interprovincial workers. Descriptively, we analyse the provincial destinations of migrants and interprovincial workers and test the association between various characteristics and E-RGM. There are many possible explanations for what leads some journeypersons in the construction industry to be more mobile than others. Oftentimes, mobility is associated with better economic and employment opportunities elsewhere. Yet, there are instances where individuals may be restricted in their ability to engage in E-RGM. These decisions may also impact broader economic and demographic concerns, which makes this particular investigation pertinent.

Data

This study uses datasets in the Education and Labour Market Longitudinal Platform (ELMLP). Statistics Canada developed the ELMLP to allow for the combination of information from the Registered Apprenticeship Information System (RAIS), as well as the Postsecondary Student Information System (PSIS), with other administrative datasets. The RAIS provides information on individuals who receive training and
those who obtain certification in a trade where apprenticeship training is offered. For this study, we use tax data from the T1 Family File (T1FF) and compiled T4 files, immigration information from the Longitudinal Immigration Database (IMDB) and selected demographic characteristics from the long-form 2016 Census linked against the RAIS.

The analytical sample contains journeypersons who received their certificates from 2008 to 2015 in construction trades. Trades qualifiers, or those who receive their certificates by challenging the exam without completing required apprenticeship training, are also included in the sample. Because apprentices are trained for specific occupations, such as electricians or carpenters, the RAIS classifies trade programs based on the National Occupation Classification (NOC). The classification of ‘construction trades,’ which is based on industry, is not readily available in the RAIS. Therefore, we define ‘construction trades’ in this study using the North American Industrial Classification System (NAICS) codes included in the T1FF, which contains up to two employers’ NAICS codes of a tax filer. Using this information, we compute the fraction of journeypersons working in the construction sector (NAICS code 21) within a year after certification by each 4-digit level NOC trade program. If the fraction exceeds 50%, we classify the trade as a construction trade. Through this, we identified 26 construction trades in the 4-digit NOC level. Table 1 summarises the list of construction trades.

By comparing the province of certification in the RAIS, and the province of residence and employment the year after certification in the tax data, we group journeypersons into three mobility groups. First, we define ‘migrants’ as those who left the province of certification. These are journeypersons who filed their taxes in a province other than that of certification. Second, of those who are not migrants, we define ‘interprovincial workers’ as those who lived in their province of certification but were employed in another province. These are journeypersons who filed taxes in the province of certification but received one or more T4 slips from an employee in another province. Lastly, we define the remaining journeypersons as ‘stayers’, or those who lived in their province of certification and had no employment income from another jurisdiction.

As we define the mobility outcomes using tax data, the availability of this information imposes additional restrictions on the analytical sample. We exclude journeypersons who did not have a tax record in the year after certification, as we cannot define their mobility outcomes. As well, we use the province of residence a year before registration (or certification for trade qualifiers) from the T1FF as one of the independent variables in the model analysis. Therefore, we also exclude those who did not file taxes a year before registration.

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1 We will use the term ‘province’ to imply province or territory in the exposition for simplicity.
2 Note that the journeyperson must be living in the province of certification to be classified as an interprovincial worker in this study. Conceptually, migrants, journeypersons who left the province of certification, can also be working outside of their province of residence. However, they are not included in the interprovincial workers.
3 A small number of (less than 1% of the RAIS) registered apprentices who took 15 years or more to receive their certificates are also excluded from the sample.
We use selected demographic characteristics from the long-form 2016 Census as independent variables in the model analysis, which approximately 23% of journey-persons in the analytical sample have responded to. The analytical sample contains 167,300 individuals, weighted using the personal weights included in the Census.

**Results**

**Summary Statistics**

Table 2 summarises the individual characteristics of our analytical sample. Regarding mobility status in the year after certification, on average, 89.7% of journey-persons in the sample are stayers, 5.6% are interprovincial workers, and
4.8% are migrants.\(^4\) By comparison, in the entire labour force in 2009, about 2.5% of employees engaged in interprovincial work (Laporte & Lu, 2013). This finding is consistent with the notion that construction workers engage in interprovincial work more than other workers.

As expected, most construction trades are male dominated, since only 1.6% of our sample are women. There are even fewer women (1.1%) working interprovincially, suggesting that on average less women than men work in a region outside their province of residence, while an average of 1.5% of female journeypersons in our sample migrate permanently for employment. In our sample, an average of 5.5% of journeypersons identify as Indigenous in the Census. This fraction is slightly higher than that of the total Canadian population. For instance, in 2015, 4.9% of the population in Canada identified as Indigenous (Statistics Canada, 2017a) suggesting that Indigenous people are not underrepresented in construction trades. This is particularly striking when compared to the differences in employment rates of

\(^4\) The unit of observation in the RAIS is a registration or a certification record, not an individual. However, we will refer to each observation as an individual in the exposition as most (more than 95%) people in the sample have only one certification.
Indigenous (64.8%) and non-Indigenous (80.4%) populations age 25–54 (Statistics Canada, 2017b).

Indigenous people are also, on average, more mobile than the rest of the sample, as 8.7% are interprovincial workers and 7.8% are migrants. Conversely, and consistent with previous literature (see Frank & Jovic, 2017), immigrants and visible minorities are underrepresented in the analytical sample when compared to the employment rate of working-aged immigrants. Specifically, approximately 8% of the sample are immigrants, while 6% of the sample are visible minorities, whereas about 24% of Canada’s labour force are immigrants (OECD, 2019).

Importantly, apprenticeship programs are administered by provinces and territories. To set common standards and facilitate the mobility of skilled workers, the Canadian Council of Directors of Apprenticeship (CCDA) runs the Red Seal Program, which is sponsored by Employment and Social Development Canada (ESDA) (Canadian Council of Directors of Apprenticeship, 2018). What is more, the Red Seal program designates specific trades, of which 84.5% of the journeypersons in the sample studied (Table 2); however, Table 2 also shows that only 55.2% of journeypersons in our sample are Red Seal endorsed. Depending on the provinces’ administrative practices, journeypersons can be certified in Red Seal trades without the Red Seal endorsement5; however, journeypersons with the Red Seal endorsement are able to be more mobile than those without the endorsement because it allows journeypersons to practice their trade in any province or territory due to the interprovincial standards of such an endorsement (Frank & Jovic, 2017).

Furthermore, approximately 95% of the journeypersons in our sample registered in their province of residence. Since trade qualifiers never registered, their residence a year before certification was compared against the province of certification. Of those that were stayers nearly 98% were registered in their province of residence. For interprovincial workers it was 94.3% and for migrants it was 42.8%. These results imply that those who were certified outside of their region of residence are less likely to stay in the province of certification. Similar findings are revealed when comparing the province of certification to the province of birth. Another important aspect to look at is the income of journeypersons in the construction trades. The average and median employment incomes are $66,850 and $65,370, respectively, for all journeypersons in the construction industry in our sample, demonstrating that the skilled trades are a lucrative career option for many in Canada. As expected, and consistent with previous research (see Bernard et al., 2008; Paquin, 2009), migrant and interprovincially mobile journeypersons have higher average and median incomes than stayers. These findings suggest that journeypersons migrate and work interprovincially for expected gains in income.

**Descriptive Results**

Figure 1 plots the distribution of the province of certification in the sample.

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5 Less than 1% of journeypersons in Quebec who studied a Red Seal trade received the Red Seal endorsement.
Most journeypersons in our sample were certified in Quebec, followed by Ontario, Alberta, and then British Columbia. This distribution is different from the distribution of the general population in the 2016 Census (Statistics Canada, 2018), implying that the diverse industrial composition across provinces affects the educational and occupational choices people make. The distribution of trades is summarised in Fig. 2.

Electrician (with the exception of those in industrial and power systems who are categorized separately under the NOC classification) is the most common trade for journeypersons in the construction industry, on average (25.3%), followed by carpenters (17.9%) and then plumbers (9.4%). The least common trades among journeypersons in the construction industry are construction trades helpers (.9%), painters and decorators (1.5%), and bricklayers at 1.6%.

Significantly, the mobility outcomes vary substantially across the provinces of certification. As hypothesised, and similar to the general population (Laporte et al., 2013; Morissette & Qiu, 2015),

Figure 3 shows that journeypersons from Atlantic Canada are on average more mobile than those from other provinces, with more than 30% either working outside of their province of residence (working interprovincially) or migrating to a province different from that of certification a year later. While Newfoundland and Labrador on average have the most interprovincial workers of all Atlantic provinces, surprisingly, they have the fewest migrants. Specifically, in other Atlantic provinces, more than 10% of journeypersons are migrants, whereas only 3.4% of those from Newfoundland and Labrador are migrants. Comparatively, journeypersons from Quebec are the least mobile, with approximately 95% of those who received their certificate in Quebec living and working in Quebec a year after certification. This finding, however, is not surprising because less than 1% of journeypersons in Quebec received a
Fig. 2 Distribution of trades in the sample. Source: The education and labour market longitudinal platform

Fig. 3 Mobility outcomes by province of certification. Source: The education and labour market longitudinal platform
Red Seal endorsement, which suggests that those without such an endorsement are less mobile. Other provinces with lower rates of migration and interprovincial work are Ontario, Saskatchewan, and Manitoba, as also shown in Fig. 3.

Mobility outcomes also differ across trades, as shown in Fig. 4.

Among the 15 largest trades in the sample, Fig. 4 shows that steamfitters, pipefitters and sprinkler system installers (NOC 7252), ironworkers (NOC 7236), and construction trades helpers and labourers (NOC 7611) are, on average, the most mobile with approximately 18% to 20% of these journeypersons either working interprovincially or migrating. These findings are interesting and suggest that there could be different motivations for interprovincial work and migration for these different trade groups. For instance, one could assume that steamfitters and pipefitters as well as ironworkers earn substantially more than construction trade helpers and labourers, which suggests that while all three trade groups may migrate for upward mobility, the latter group may be more mobile out of necessity since pay is lower. However, construction trade helpers and labourers have a larger proportion of permanent migrants than the other two trade groups. Migrant construction labourers could be working on work sites that house labourers. While ironworkers and steamfitters and pipefitters

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6 The 15 largest trades account for 94% of the sample.
on average have similar mobility rates overall, steamfitters and pipefitters have nearly double to rate of permanent migration. This finding is interesting and could stem from the nature of the work associated with each trade group. For example, ironworkers’ contracts may be shorter term than those or other trades. In contrast, approximately 3% of journeypersons who are heavy equipment operators (except crane; NOC 7521) and approximately 5% of painters and decorators (except interior decorators; NOC 7294) are interprovincial workers or migrants, making them the least mobile trade groups in our sample. It could be that these journeypersons obtain their qualifications in a trade that is in demand in their local labour markets, or that there is a steady demand for such workers across labour markets.

As previously noted, Alberta attracts many journeypersons from the rest of Canada (Paquin, 2009; Statistics Canada, 2020a; Turcotte & Weeks, 2014). Of those who migrated out of their province of certification, Fig. 5 shows that Alberta is the second most common province of residence a year after certification, while Ontario attracts the most. Additionally, consistent with previous literature, Fig. 5 shows that most interprovincial workers in our sample end up working in Alberta a year after certification. Among the provinces that receive the fewest incoming journeypersons are Manitoba, Quebec, and the territories. These results are not surprising as prior studies shows that Quebec and Manitoba lose workers due to interprovincial mobility (Chastko, 2021), while Alberta experiences gains in the number of journeypersons (Paquin, 2009; Statistics Canada, 2020a; Turcotte & Weeks, 2014).
The descriptive analysis in the previous section reveals the differences in mobility for interprovincial workers and migrants in different provinces, as well as differences by major trade group. In this section, we study the associations between various characteristics and mobility using a 3-state Multinomial Logistic Regression (Table 3), which allows us to control for all characteristics simultaneously.7

We include the individual characteristics of journeypersons reported in Table 2 (age at certification, age squared and cubed terms are included to capture non-linear

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**Table 3** Individual characteristics and predicted mobility

|                          | Stayers | Interprovincial workers | Migrants |
|--------------------------|---------|-------------------------|----------|
|                          | Changes in predicted probability (AME) |          |          |
| Women                    | 0.025 * (0.010) | −0.021 ** (0.007) | −0.004 (0.007) |
| Aboriginal ancestry      | −0.025 ** (0.006) | 0.017 ** (0.005) | 0.009 * (0.004) |
| Immigrant                | 0.042 ** (0.005) | −0.021 ** (0.005) | −0.021 ** (0.003) |
| Visible minority         | −0.004 (0.007) | −0.002 (0.006) | 0.006 (0.004) |
| Activity limitations     | −0.007 * (0.003) | 0.002 (0.003) | 0.005 * (0.002) |
| Married                  | 0.025 ** (0.003) | −0.021 ** (0.003) | −0.004 + (0.002) |
| Registered in the province of residence | 0.298 ** (0.012) | −0.012 + (0.006) | −0.287 ** (0.012) |
| Registered in the province of birth | 0.057 ** (0.005) | −0.010 ** (0.004) | −0.048 ** (0.003) |
| Trade qualifiers         | −0.043 ** (0.004) | 0.015 ** (0.003) | 0.027 ** (0.003) |
| Studied a Red Seal trade | 0.002 (0.006) | 0.012 ** (0.005) | −0.014 ** (0.005) |
| Red Seal Endorsed        | −0.030 ** (0.006) | 0.013 * (0.005) | 0.017 ** (0.004) |
| Observations             | 167,300 |                         |          |

Standard errors in parentheses; + p < 0.1 * p < 0.05 ** p < 0.01
In addition to the variables in the table, trade, jurisdiction, and certification year are controlled
Source: The Education and Labour Market Longitudinal Platform

**Multinomial Logistic Regression Results**

The descriptive analysis in the previous section reveals the differences in mobility for interprovincial workers and migrants in different provinces, as well as differences by major trade group. In this section, we study the associations between various characteristics and mobility using a 3-state Multinomial Logistic Regression (Table 3), which allows us to control for all characteristics simultaneously.7

Due to space constraints, we do not present the full results for jurisdiction and trade. These can be found in Appendix Table 4.
associations), the trade (by 4-digit NOC codes), the province of certification, and the year of certification, as predictors of mobility. Table 3 reports the average marginal effects of individual characteristics on mobility outcomes. As hypothesised, female journeypersons are significantly more likely (2.5%) to stay in their province of certification and 2.1% less likely to be employed interprovincially than their male counterparts. However, surprisingly, we find no significant difference in the predicted probability of migration between men and women, but this may be due to the small number of females in our sample and the resulting low level of statistical power. As expected, on average, Indigenous people are more mobile than non-Indigenous people, as they are 2.5% less likely to stay and 1.7% more likely to work interprovincially (significant at \( p < .01 \)). Indigenous journeypersons are also approximately 1% more likely to migrate than non-Indigenous journeypersons. Conversely, as expected, immigrants on average are less mobile than non-immigrants, as they are approximately 4.3% more likely to stay, and 2.1% less likely to be migrants or work interprovincially (significant at \( p < .01 \)). Consistent with previous literature (see Finnie, 2000; Paquin, 2009), marriage appears to be negatively associated with mobility because married journeypersons in our sample are, on average, 2.5% more likely to stay and 2.1% less likely to work interprovincially compared to single journeypersons (significant at \( p < .01 \)). While we find a significant difference between married and single journeypersons who migrate, the association was marginal (married journeypersons are on average 0.4% less likely to migrate).

Whether a journeyperson registered in their province of residence (or challenged the exam, for trade qualifiers) is the strongest predictor of mobility among the individual characteristics considered in the model. On average journeypersons who registered in the province where they live are on average 34.7% more likely to stay in the province of certification and 24.9% less likely to migrate than those who registered outside of their residential area (significant at \( p < .01 \)). They are also significantly less likely to be employed interprovincially, although the size and strength of the association is much smaller (−1.2%). As expected, on average, journeypersons who studied a Red Seal program are significantly more mobile, as those who studied a Red Seal trade are 1.2% more likely to work interprovincially. Unexpectedly, however, they are significantly less likely to be migrants (1.4%). While journeypersons who are Red Seal endorsed are 3% less likely to stay, surprisingly, they are only 1.3% more likely to work interprovincially and 1.7% more likely to be migrants when compared with those who do not have the endorsement (significant at \( p < .05; p < .01 \)). Thus, as expected journeypersons who are Red Seal endorsed are, on average, more mobile than those who are not, which suggests that the Red Seal program does help to streamline qualifications and standards between provinces and territories.

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8 Parameter estimates are available upon request.

9 Percentage calculated by: \( \exp(0.025) - 1 \times 100 = 2.53 \). All percentages have been rounded to the nearest tenth for ease of interpretation.
The predicted probabilities of the mobility outcomes, with respect to the age at certification, are in Fig. 6.10

Interestingly, although the model predicts that older journeypersons are less likely to leave the province of certification, the predicted probabilities do not show large variations in mobility regarding age. In the general population, it is known that young people are more mobile than their older counterparts, which is related to the transition from education to the labour market (Saunders, 2018). However, journeypersons in our analytical sample are skilled workers in their trades who finished their apprenticeship training or successfully challenged the exam. As a result, younger journeypersons in the sample already have on-the-job experience in their trade and are not necessarily more mobile than the older segment.

Discussion and Conclusion

The interprovincial mobility of the Canadian population plays an important role in the redistribution of a skilled workforce. Unfortunately, there is a gap in the literature in terms of establishing the extent to which journeypersons in the construction industry engage in migration and interprovincial work (Haan et al.,

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10 By construction, the probability of staying in the province of certification, not reported in the figure, is complementary to the reported two probabilities: \( Pr(\text{Stay}) = 1 - Pr(\text{Interprov. Employed}) - Pr(\text{Left}) \). The probability of staying is not included in the figure as it dwarfs the other two probabilities due to the large differences in their sizes.
Our study fills this gap by examining the interprovincial mobility and migration of journeypersons in construction trades, one year after their certification, using recently released administrative data sets in the ELMLP. We found that approximately 4.8% of journeypersons left the province from which they received their certification, while another 5.6% were employed interprovincially. Descriptively, our results showed that construction industry journeypersons in the Atlantic region are the most mobile; however, Newfoundland and Labrador have higher rates of interprovincial mobility and relatively low rates of journeypersons who permanently migrate. Because our findings are descriptive, we are unsure as to why it is that journeypersons in the construction industry in this region have different mobility patterns than other Atlantic provinces. Nevertheless, these findings are important contributions to the literature on labour mobility generally as they suggest future directions for research. We also found that interprovincial workers have higher median and average incomes than do migrants and stayers, which speaks to the potential of the construction industry to help generate economic growth in regions that suffer from demographic stagnation.

We also showed that steamfitter and pipefitters, ironworkers, and construction trade helpers and labourers are the most mobile but, again, important differences emerge. For example, our findings demonstrated that steamfitters and pipefitters permanently migrate more than ironworkers, which could also stem from the nature of the jobs available in the construction sector that are associated with each trade. Pipefitters may have more opportunity to relocate permanently, especially considering that this trade group excludes supervisors and those who work on commercial or residential projects, while ironworkers may work on infrastructure and development projects in which the work is contractual in nature. Since the results are descriptive, these interpretations should be taken with some caution. Nevertheless, they demonstrate that researchers must examine differences among major trade group rather than simply establishing aggregate patterns.

Using a Multinomial Logistic Regression model, we studied the associations between various characteristics of journeypersons and mobility outcomes, to establish who migrates and works interprovincially. The results demonstrated that, as hypothesised, women, those who are married, and immigrants are less mobile than men, single journeypersons, and non-immigrants respectively; however, Indigenous journeypersons were found to be more mobile. These findings indicate that women and immigrants may be less able to capitalise on the upward mobility afforded to journeypersons who can engage in geographic mobility, while those who are married may also be less able or willing to engage in mobility because of family responsibilities. While we confirmed our hypothesis that those who studied Red Seal trades and those who were endorsed are more mobile than those who did not study Red Seal trades and those who were not endorsed, interestingly, being registered in the province in which a journeyperson resided was the strongest predictor of mobility. Indeed, being registered in the province of residence greatly reduced the likelihood of migration which suggests that, while Red Seal trades and endorsements have successfully standardised the qualification and credentials required across provinces and territories, being certified where one resides is a major determinant of mobility.
Together, these findings have important policy implications. Some scholars argue that E-RGM is beneficial, as it can be a mechanism for labour market adjustment (Bernard et al., 2008), result in a decline in the national unemployment rate, higher wages for workers, and reduce the rate of reliance of social provisions such as Unemployment Insurance (Sharpe et al., 2007). Although E-RGM does serve a redistributive function (Coulombe & Trembley, 2006), we show that mobility also appears to be an option that is stratified based on race, gender, family formations, and immigrant status. As such, only some journeypersons seem to be able to take advantage of the gains afforded to those who can engage in mobility. Moreover, since important regional differences and differences by major trade group emerged in our study, particularly for permanent migrants, generally speaking, areas that already suffer from demographic and labour shortages seem to be on the losing end of migration. Interprovincial workers likely repatriate a portion of their earnings in their province of residence and, therefore, may help to equalize the inequality generated from permanent migration; however, we argue that since it is the same provinces that lack incoming migrants, overall, these provinces experience a drain of skilled labour. Additionally, major trades groups seem to be stratified in terms of the types of mobility opportunities – whether temporary or permanent. As such, E-RGM may further exacerbate inequality between provinces and territories, (Bernard et al., 2008), as well as contribute to greater inequality between journeypersons in different trades.

While the federal and provincial governments have instituted many programs aimed at growing a skilled workforce by encouraging underrepresented demographic groups to enter apprenticeship programs, such as the Apprenticeship Incentive Grant (AIG) (Government of Canada, 2021), the issues faced by these demographic groups appears to be multiple and contested especially in terms of mobility. Even a program like the Red Seal certification program, which was designed to remove barriers to mobility, may differentially affect some group members. Similarly, interprovincial mobility programs will only increase mobility for disadvantaged groups when those groups have the means to benefit from them. In the event that a move, or even the obstacle of paying tuition to enter into an apprenticeship is prohibitive, it is unlikely that these programs will have the intended impact on all groups. Future research could examine the associated gains in income for migration as well as demographic characteristics to see if, indeed, migration and mobility among construction trade journeypersons is stratified.

Our paper has several limitations. To start, our study is largely descriptive as we examine difference in migration and interprovincial work by province and major trade group. Future research could examine the causes of mobility and whether it is associated with expected earnings gains. Qualitatively, researchers could investigate how journeypersons perceive migration and interprovincial work. Are journeypersons pursuing opportunities for upward mobility and adventure, or are they engaging in mobility out of necessity? Finally, are some workers unable to take advantage of the earnings gains associated with interprovincial work and migration due to personal and familial circumstances? Such investigations will reveal what is driving mobility and how journeypersons experience migration and interprovincial work. Secondly, an assessment of labour demands and shortages in provinces at the time of
migration and interprovincial work were not examined in this study. Future research could look at these macro economic forces to better situate the decisions journeypersons make by contextualising mobility decisions within economic fluctuations. Such an investigation could reveal the reasons for why Newfoundland and Labrador have different mobility patterns than other provinces in the region. Moreover, we did not examine gender or racial stratification within each trade group and income. This type of investigation would be pertinent within the context of construction industry journeypersons since research shows that trades are gender segregated and that male-dominated trades are associated with higher rates of mobility and income (see Frank & Frenette, 2019; Paquin, 2009). This research contributes to the body of literature on the E-RGM of journeypersons in the construction industry by using newly developed administrative data sets and by investigating regional differences and differences by major trade group. Our study has demonstrated that migration and interprovincial work is common enough among construction industry journeypersons. Consequently, more research is needed that investigates the relationship between mobility, economic changes, income, and demographic characteristics.

Appendix A

Table 4  Additional controls not reported in Table 3

| Trade: reference group - Electrician (except industrial and power system) | Stayers | Interprovincial workers | Migrants |
|---------------------------|---------|-------------------------|----------|
|                           | Changes in predicted probability (AME) |           |          |
| Construction Managers     | −0.080 * | 0.061                   | 0.019 +  |
|                           | (0.037)  | (0.038)                 | (0.011)  |
| Chemical technologists and technicians | 0.000    | 0.000                   | 0.001    |
|                           | (0.026)  | (0.025)                 | (0.008)  |
| Sheet metal workers       | 0.038 ** | −0.037 **               | −0.002   |
|                           | (0.007)  | (0.004)                 | (0.005)  |
| Boilermakers              | −0.144 **| 0.130 **                | 0.014    |
|                           | (0.020)  | (0.018)                 | (0.010)  |
| Ironworkers               | −0.101 **| 0.102 **                | 0.000    |
|                           | (0.011)  | (0.010)                 | (0.005)  |
| Plumbers                  | 0.030 ** | −0.028 **               | −0.001   |
|                           | (0.005)  | (0.003)                 | (0.003)  |
| Steamfitters, pipefitters and sprinkler system installers | −0.060 ** | 0.054 **               | 0.006    |
|                           | (0.007)  | (0.006)                 | (0.004)  |
| Gas fitters               | −0.017 + | −0.026 **               | 0.043 ** |
|                           | (0.010)  | (0.007)                 | (0.007)  |
| occupational group                                      | stayers changes | interprovincial workers changes | migrants changes |
|--------------------------------------------------------|-----------------|---------------------------------|------------------|
| carpenters                                             | 0.028 **        | -0.027 **                       | -0.001           |
|                                                        | (0.004)         | (0.003)                         | (0.003)          |
| bricklayers                                            | -0.002          | -0.006                          | 0.008            |
|                                                        | (0.014)         | (0.010)                         | (0.010)          |
| concrete finishers                                     | 0.004           | -0.007                          | 0.003            |
|                                                        | (0.018)         | (0.013)                         | (0.013)          |
| tilesetters                                            | 0.071 **        | -0.050 **                       | -0.021 **        |
|                                                        | (0.009)         | (0.007)                         | (0.006)          |
| plasterers, drywall installers and finishers and lathers | 0.037 **        | -0.038 **                       | 0.001            |
|                                                        | (0.010)         | (0.007)                         | (0.008)          |
| roofers and shinglers                                  | 0.038 **        | -0.022 *                        | -0.016 +         |
|                                                        | (0.012)         | (0.009)                         | (0.009)          |
| glaziers                                               | 0.001           | -0.017                          | 0.016            |
|                                                        | (0.016)         | (0.013)                         | (0.011)          |
| insulators                                             | -0.107 **       | 0.080 **                        | 0.027 *          |
|                                                        | (0.024)         | (0.020)                         | (0.014)          |
| painters and decorators (except interior decorators)   | 0.058 **        | -0.042 **                       | -0.017 +         |
|                                                        | (0.011)         | (0.007)                         | (0.009)          |
| floor covering installers                              | 0.012           | -0.046 **                       | 0.035            |
|                                                        | (0.029)         | (0.013)                         | (0.027)          |
| heating, refrigeration and air conditioning mechanics   | 0.045 **        | -0.038 **                       | -0.007 +         |
|                                                        | (0.006)         | (0.004)                         | (0.005)          |
| elevator constructors and mechanics                    | 0.038 *         | -0.027 +                        | -0.011           |
|                                                        | (0.017)         | (0.016)                         | (0.010)          |
| oil and solid fuel heating mechanics                   | -0.054 *        | 0.017                           | 0.037 **         |
|                                                        | (0.025)         | (0.022)                         | (0.011)          |
| crane operators                                        | -0.049 **       | 0.040 **                        | 0.009 +          |
|                                                        | (0.010)         | (0.009)                         | (0.005)          |
| drillers and blasters - surface mining, quarrying and construction | -0.075 +       | 0.061                           | 0.015            |
|                                                        | (0.042)         | (0.038)                         | (0.013)          |
| water well drillers                                    | 0.071 **        | -0.059 **                       | -0.012           |
|                                                        | (0.015)         | (0.002)                         | (0.015)          |
| heavy equipment operators (except crane)               | 0.046 **        | -0.021 **                       | -0.024 **        |
|                                                        | (0.007)         | (0.006)                         | (0.004)          |
| construction trades helpers and labourers               | -0.047 **       | 0.023                           | 0.024 **         |
|                                                        | (0.016)         | (0.015)                         | (0.008)          |
| province: reference group - ontario                    | -0.184 **       | 0.189 **                        | -0.005           |
|                                                        | (0.017)         | (0.016)                         | (0.008)          |
Table 4 (continued)

|                  | Stayers | Interprovincial workers | Migrants | Changes in predicted probability (AME) |
|------------------|---------|-------------------------|----------|---------------------------------------|
|                  |         |                         |          | PE  | 0.238 ** 0.199 ** 0.039 + |
|                  |         |                         |          |     | (0.039) (0.038) (0.023) |
|                  |         |                         |          | NS  | −0.132 ** 0.117 ** 0.015 + |
|                  |         |                         |          |     | (0.014) (0.013) (0.008) |
|                  |         |                         |          | NB  | −0.122 ** 0.105 ** 0.017 ** |
|                  |         |                         |          |     | (0.012) (0.011) (0.006) |
|                  |         |                         |          | QC  | 0.016 ** −0.004 −0.011 ** |
|                  |         |                         |          |     | (0.006) (0.005) (0.004) |
|                  |         |                         |          | MB  | −0.011 0.029 ** −0.018 ** |
|                  |         |                         |          |     | (0.010) (0.008) (0.006) |
|                  |         |                         |          | SK  | 0.006 0.006 −0.013 * |
|                  |         |                         |          |     | (0.008) (0.006) (0.005) |
|                  |         |                         |          | AB  | 0.026 ** −0.016 ** −0.011 ** |
|                  |         |                         |          |     | (0.004) (0.003) (0.003) |
|                  |         |                         |          | BC  | −0.071 ** 0.078 ** −0.007 * |
|                  |         |                         |          |     | (0.006) (0.006) (0.004) |
| Territories      |         |                         |          | −0.026 0.036 −0.009 |
|                  |         |                         |          |     | (0.032) (0.029) (0.013) |
| Year of certification: reference group - 2008 |         |                         |          | 2009 | 0.001 0.006 −0.007 * |
|                  |         |                         |          |     | (0.005) (0.004) (0.004) |
|                  |         |                         |          | 2010 | −0.003 0.011 * −0.008 * |
|                  |         |                         |          |     | (0.006) (0.004) (0.004) |
|                  |         |                         |          | 2011 | −0.008 0.009 * −0.001 |
|                  |         |                         |          |     | (0.005) (0.004) (0.004) |
|                  |         |                         |          | 2012 | −0.027 ** 0.025 ** 0.002 |
|                  |         |                         |          |     | (0.006) (0.004) (0.004) |
|                  |         |                         |          | 2013 | −0.033 ** 0.026 ** 0.007 + |
|                  |         |                         |          |     | (0.005) (0.004) (0.004) |
|                  |         |                         |          | 2014 | −0.014 ** 0.015 ** −0.001 |
|                  |         |                         |          |     | (0.005) (0.004) (0.004) |
|                  |         |                         |          | 2015 | −0.001 0.000 0.000 |
|                  |         |                         |          |     | (0.005) (0.004) (0.004) |
| Observations     | 167,300 |                         |          |      |

Standard errors in parentheses; + p < 0.1 * p < 0.05 ** p < 0.01
Source: The Education and Labour Market Longitudinal Platform
Authors' Contributions  All authors contributed equally to this manuscript.

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Code Availability  Not applicable.

Declarations

Ethics Approval  Not applicable.

Consent to Participate  Not applicable.

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