

Catalogue no. 11F0019M — No. 393
ISSN 1205-9153
ISBN 978-0-660-08255-4

Analytical Studies Branch Research Paper Series

Over-education and Life Satisfaction among Immigrant and Non-immigrant Workers in Canada

by Kristyn Frank and Feng Hou

Release date: May 5, 2017



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- .. not available for a specific reference period
- ... not applicable
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- 0^s value rounded to 0 (zero) where there is a meaningful distinction between true zero and the value that was rounded
- ^P preliminary
- ^r revised
- X suppressed to meet the confidentiality requirements of the *Statistics Act*
- ^E use with caution
- F too unreliable to be published
- * significantly different from reference category ($p < 0.05$)

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Statistics Canada

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Analytical Studies Branch Research Paper Series

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Abstract

The increased migration of skilled workers globally has led to a focus in the immigration literature on the economic costs of unsuccessful labour market integration. Less attention has been given to the consequences of employment difficulties, such as those related to over-education, on aspects of immigrants' subjective well-being. Although a large proportion of immigrants experience over-education, studies examining the relationship between over-education and life satisfaction tend to concentrate on the general population. These studies find a negative relationship between over-education and life satisfaction. Since immigrant and Canadian-born (non-immigrant) workers may experience over-education differently, it is important to examine this relationship in both groups. This study examines how over-education is associated with life satisfaction among university-educated immigrant and non-immigrant workers in Canada, and accounts for differences in the degree of over-education in each group. Results indicate that over-education was negatively associated with life satisfaction among immigrants and non-immigrants, although the effect was weaker in the immigrant population. Income was the main factor mediating the negative relationship between over-education and life satisfaction among immigrants. Furthermore, this relationship weakened with immigrants' increased residence in Canada. This may suggest that over-education is less influential in immigrants' assessment of life satisfaction over time, or the effect of over-education is weaker among earlier arrival cohorts. Results also indicated that the negative relationship between over-education and life satisfaction was weaker for immigrants from developing countries compared with those from developed countries.

Keywords: education; immigrants; life satisfaction; over-education; subjective well-being

Executive summary

The increased migration of skilled workers globally has led to a focus in the immigration literature on the economic costs of unsuccessful labour market integration. Less attention has been given to the consequences of employment difficulties, such as those related to over-education, on aspects of immigrants' subjective well-being. Although many immigrants experience over-education, studies examining the relationship between over-education and life satisfaction tend to concentrate on the general population. These studies find a negative relationship between over-education and life satisfaction. However, since immigrant and non-immigrant workers encounter different challenges in labour market integration, they may experience over-education differently as well.

This study addresses these issues by examining the relationship between over-education and life satisfaction among university-educated immigrant and Canadian-born (non-immigrant) workers in Canada, accounting for differences in the degree of over-education in each group. Four research questions are examined:

1. Is the negative relationship between over-education and life satisfaction weaker among immigrant workers than among non-immigrant workers?
2. Are the mechanisms through which over-education affects the life satisfaction of immigrants and non-immigrants different, and, if so, what are they?
3. Does the relationship between over-education and life satisfaction change with the length of time immigrants have resided in Canada?
4. Does the relationship between over-education and life satisfaction among immigrants from developed countries differ from that among immigrants from developing countries?

The empirical analysis for this study is based on pooled data from the 2009 to 2014 Canadian Community Health Survey, which collects a standard set of demographic and socioeconomic characteristics, as well as a broad range of information on health status, determinants of health and health system utilization. The study sample includes adults of prime working age (from 25 to 64 years) who hold a university degree and are currently working as paid employees. There are 24,985 non-immigrant respondents and 5,826 immigrant respondents.

Results indicated a negative relationship between over-education and life satisfaction in both the immigrant and non-immigrant populations in Canada. However, despite a greater prevalence of over-education among immigrants, the negative relationship between over-education and life satisfaction was stronger in the non-immigrant population. Income was found to be the main factor mediating the negative relationship between over-education and life satisfaction for immigrants, while it was only one of several factors for the non-immigrant group. Furthermore, the negative influence of over-education on life satisfaction of immigrants diminished with the number of years of residence in Canada. This may suggest that over-education is less influential in immigrants' assessment of life satisfaction over time, or that the effect of over-education is weaker among earlier arrival cohorts. Lastly, the negative relationship between over-education and life satisfaction was found to be weaker for immigrants from developing countries compared with those from developed countries.

The experience of over-education is often associated with financial insecurity, a loss of social status, and precarious employment, which can affect both immigrants' and non-immigrants' overall satisfaction with life. However, the experience of over-education appears to be associated less with immigrants' life satisfaction in Canada compared with non-immigrants.

1 Introduction

Much of the literature examining over-education concentrates on its economic consequences, such as lower productivity and unused human capital. However, the human cost of over-education is also important, as this phenomenon can negatively affect individuals' health, particularly their psychological well-being (e.g., Bracke, Pattyn and von dem Knesebeck 2013; Chen, Smith and Mustard 2010). A misalignment between workers' educational and occupational attainment can affect many spheres of their lives, potentially compromising overall life satisfaction.

A key factor in understanding the psychological effects of over-education is the loss of social status. This is particularly true among more highly educated workers who find themselves unable to obtain higher-status occupations, which, typically, are deemed attainable for individuals with their levels of education (Smith and Frank 2005). When educational attainment does not match other aspects of socioeconomic status, such as occupation or income, individuals experience status inconsistency, which can adversely affect their well-being (Peter, Gässler and Geyer 2007).

Studies that examine the relationship between employment circumstances and psychological well-being have mostly focused on the general population. Despite increases in the migration of skilled workers globally, little research examines this relationship among immigrants specifically. It is important to examine immigrant and non-immigrant populations separately, as each group generally has different experiences integrating into the labour market and may experience over-education differently. Immigrants tend to have greater difficulty obtaining employment that matches their level of education than non-immigrants, and they have the additional challenge of adapting to the cultural and labour market differences in the host country (Aycan and Berry 1996). Consequently, immigrants who are over-educated in their jobs may be more susceptible to feelings of alienation and social isolation, thereby leading to high levels of dissatisfaction. Conversely, its prevalence among immigrants may make over-education more socially acceptable within this population, resulting in lower levels of dissatisfaction than among the non-immigrant population. Since over-education is less prominent among the Canadian-born (Chiswick and Miller 2009; Galarneau and Morissette 2008), it might have a larger negative effect on non-immigrants, who primarily compare themselves with other Canadian-born workers.

This study asks four questions about the relationship between over-education and life satisfaction among immigrant and non-immigrant workers in Canada.

1. Is the negative relationship between over-education and life satisfaction weaker among immigrant workers than among non-immigrant workers?

The negative relationship between over-education and life satisfaction is expected to be weaker among immigrant workers. There are several reasons for this hypothesis. First, because over-education is more common among immigrant than non-immigrant workers (Chiswick and Miller 2009; Galarneau and Morissette 2008), it is more of a social norm among immigrants. That is, its higher prevalence among immigrants may make over-education more socially acceptable for this group, and subsequently less psychologically stressful. However, non-immigrants typically compare themselves with other non-immigrants, who largely do not experience over-education. Additionally, recent immigrants often use individuals from their source country as a reference group (Schündeln and Fuchs-Schündeln 2009). Since many immigrants migrate because of unfavourable conditions in their source country, comparison with a reference group in the source country may result in an overall improvement in life satisfaction in the host country, which could mitigate the negative effects of over-education. Lastly, over-education among immigrants often originates from factors that are not directly associated with individual characteristics, such as differences in the level of economic development and the quality of education in the source and host countries. Over-education may then have a weaker effect on immigrants than on non-immigrants, as immigrants may be more likely to regard over-education as an unavoidable consequence of immigration rather than as a personal failure.

2. Are the mechanisms through which over-education affects the life satisfaction of immigrants and non-immigrants different, and if so, what are they?

Certain factors are expected to be more relevant to immigrant populations than to non-immigrant populations. Financial hardship might affect immigrants more than non-immigrants because it permeates multiple areas of their lives. For example, some immigrants arrive in the host country alone, with the objective of obtaining employment that will facilitate the migration of the rest of the family. Immigrants who are over-educated typically hold low-wage jobs that prevent them from both moving their family to the host country and providing them with adequate financial support, resulting in decreased life satisfaction (Asanin Dean and Wilson 2009).

3. Does the relationship between over-education and life satisfaction change with the length of time immigrants have resided in Canada?

In this case, there are two competing hypotheses. First, the negative effect could become stronger when over-education is no longer just a transient difficulty of initial adjustment to the host country. That is, the continued experience of being over-educated and the lack of upward mobility may compound feelings of dissatisfaction over time. Conversely, the effect could become weaker if immigrants become accustomed to the situation or reassess their goals. The negative effect of over-education could weaken with length of residence in Canada if immigrants assign greater importance to other domains of their lives and focus less on goals that they perceive to be unattainable.

4. Does the relationship between over-education and life satisfaction among immigrants from developed countries differ from that among immigrants from developing countries?

The negative relationship between over-education and life satisfaction is expected to be weaker among immigrants from developing countries. This is because immigrants from developing countries may be more likely than those from developed countries to anticipate over-education in the host country because of greater differences between the economic and educational systems of the source and host countries. Moreover, immigrants from developing countries are more likely to experience improvements in their living conditions and other aspects of life as a result of migration, which thereby enhances their overall life satisfaction (Frank, Hou and Schellenberg 2016). This experience may lessen the negative effect of over-education.

This study adds to the current literature by providing evidence based on a large nationally representative sample with immigrants from over 160 countries. Moreover, different degrees of over-education are considered among the university-educated population: individuals who work in occupations that require only high school or less education (over-educated) and those working in occupations for which some postsecondary education is generally sufficient (marginally over-educated). The analysis also includes immigrant and non-immigrant groups who are employed in occupations that match their level of education (education–occupation matched). This approach provides more detailed information on differences between the immigrant and non-immigrant populations, as well as within-group differences.

2 Over-education and its consequences

Over-education is typically defined as employment in an occupation that is below an individual's skills or work experience (Chen, Smith and Mustard 2010). Subjective measures based on respondents' self-perceived over-education are also used in the literature (Feldman and Turnley 1995). Although there are multiple operational definitions (Friedland and Price 2003), the most commonly used measure identifies the occurrence of over-education as when an individual's educational attainment is higher than the level of education "required to adequately perform" his or her job (Rubb 2003; Wolbers 2003, p. 250). This study also employs this definition of over-education, focusing specifically on the match between an individual's educational attainment and the educational requirements of the occupation.

Generally, individuals who are over-educated are not able to obtain employment that fully capitalizes on their level of education, in terms of either financial rewards or skill utilization (Bracke, van de Straat and Missinne 2014; Feldman 1996). The consequences of over-education have been examined extensively. Much of the literature focuses on either the economic costs of over-education or how over-education affects job quality. These studies indicate that over-education results in lower earnings, lower productivity, more precarious working conditions, less autonomy on the job, and unused human capital (e.g., Chiswick and Miller 2009; Fleming and Kler 2008; Hartog 2000; Nordin, Persson and Rooth 2010; Peter, Gässler and Geyer 2007; Piper 2015; Smith and Frank 2005; Wu, Luksyte and Parker 2015). However, there are also psychological costs that may be linked, at least in part, to these consequences of over-education.

While decreases in financial security and skill use are important factors in explaining how over-education affects individuals' psychological well-being, the loss of social status also plays a role. Occupational aspirations are often based on "the opportunity to claim certain statuses in society" (Friedland and Price 2003, p. 34). Educational attainment serves as a general indicator of the types of occupations that are "available" to individuals (Smith and Frank 2005, p. 828). When there is a mismatch between the "traditional indicators" of an individual's socioeconomic status (i.e., education, occupation, income), status inconsistency is the result (Lenski 1954; Peter, Gässler and Geyer 2007, p. 605).

The consequences of status inconsistency often include downward social mobility, which can result in marginalization (Lenski 1954) and decreased health status. For example, Peter, Gässler and Geyer (2007) conclude that status inconsistency is associated with increased risk of heart disease. This relationship was attributed to the higher levels of stress associated with less stable employment and the challenging working conditions often found in jobs with lower educational requirements. Additionally, Dressler (1988, p. 81) notes that individuals experience "goal striving stress" when their aspirations are not met. This type of stress is typically experienced by individuals who are unable to improve their employment status, and it is particularly prevalent among those with high levels of education (Chen, Smith and Mustard 2010; Smith and Frank 2005).

Researchers who have studied over-education find that a mismatch between an individual's level of education and occupational attainment is associated with higher levels of depression (e.g., Bracke, Pattyn and von dem Knesebeck 2013) and mental disorders (Gal et al. 2008), lower job satisfaction (e.g., Burris 1983; Erdogan and Bauer 2009; Fleming and Kler 2008; Johnson and Johnson 2000; Maynard, Joseph and Maynard 2006), and increased feelings of alienation and hopelessness (Burris 1983). Studies also show that over-education is negatively associated with the life satisfaction of university graduates in the United States and the United Kingdom (Feldman and Turnley 1995; Piper 2015). There are several explanations for this relationship. Piper (2015) notes that lower levels of life satisfaction could result from unmet expectations, comparisons with the individual's past (e.g., questioning whether additional investment in education was

worthwhile), or comparisons with a reference group (e.g., peers with the same education level who are not over-educated, individuals with the same job who invested less in their education).

The literature on unemployment and happiness provides further insight into the dynamics of how workers' life satisfaction might be affected by the group or groups with which they compare themselves. The extent to which unemployed individuals' life satisfaction may be affected by their employment circumstances depends in part on the experience of other individuals in their reference group. For example, unemployment has a smaller negative effect on life satisfaction when there is a high level of unemployment in the region (Clark 2003). Therefore, a high level of local unemployment has a normalizing effect that mitigates the degree to which a negative employment situation affects an individual's overall life satisfaction.

The reference groups that immigrants and non-immigrants use when assessing their life satisfaction could also help to explain how over-education might affect the life satisfaction of these two groups differently. First, because immigrants are more likely to compare themselves with other immigrant groups in the host country than with the Canadian-born (Bartram 2010, 2011), the high incidence of over-education among immigrants (Chiswick and Miller 2009; Galarneau and Morissette 2008) could lessen the negative effect of over-education by creating a social norm. That is, a large number of over-educated immigrants in the host country might make over-education more socially acceptable because of its prevalence among this group. Consequently, over-education may have a stronger negative influence on the life satisfaction of the non-immigrant population, who tend to compare themselves with other Canadian-born workers, the majority of whom have education–occupation matches.

The extent to which immigrants experience over-education has been a focus of many researchers examining immigrant integration in Canada. Studies have largely focused on the barriers that skilled immigrants encounter when trying to obtain employment aligned with their education, including recognition of credentials obtained in their country of origin, occupation-specific testing requirements, language barriers, and employers' preference for Canadian work experience (e.g., Aydemir and Skuterud 2005; Basran and Zong 1998; McDade 1988). Although some attribute the dissatisfaction experienced by over-educated immigrants to unrealistic expectations when they enter the Canadian labour force, Chen, Smith and Mustard (2010) find that immigrants are generally realistic and expect to have some difficulties transitioning into the labour market. Nevertheless, a large proportion of immigrants to Canada are skilled workers who migrate to improve their economic opportunities. In addition to the general challenges that immigrants experience after arriving in a new country, such as language difficulties and a loss of social networks, over-education can also result in a loss of social status, stressful working conditions and low income, which add to immigrants' stress level, adversely affecting their health and well-being (Dunn and Dyck 2000).

This issue is of particular interest to countries that receive large numbers of highly skilled immigrants. A study of recent immigrants to Canada (i.e., resided in Canada for three years or less) found that skilled immigrants most often attributed feelings of stress, anxiety, depression and unhappiness to being over-educated for their jobs and working outside their fields of expertise (Asanin Dean and Wilson 2009). The resulting financial insecurity can also prevent immigrants from reuniting with their family or participating in other activities in the host country (Asanin Dean and Wilson 2009), thereby affecting their psychological well-being. Moreover, Chen, Smith and Mustard (2010) found that, while declines in mental health (over a four-year period) were more likely to be reported by immigrants experiencing over-education, the relationship was largely mediated by their level of job satisfaction, indicating the important role that immigrants' employment situation plays in their overall well-being. Results also showed that while there was some variation between different immigrant groups in the incidence of over-education, the degree to which over-education affected immigrants' mental health was not significantly different between these groups.

One limitation of these studies is that they are concentrated on recent immigrants, who tend to experience a range of challenges when transitioning into a new culture and labour market. While some hypothesize that a continued mismatch between immigrants' education and employment likely increases their feelings of dissatisfaction (Chen, Smith and Mustard 2010), there is no evidence that this is the case. In fact, George et al. (2012) found that immigrant engineers who were not employed in their field and had been living in Canada for six or more years had higher life satisfaction than their more recently arrived counterparts.

This difference may be explained by quality of life studies showing that individuals often reorder the importance they assign to different "life domains" over time and under varying circumstances (e.g., Rapkin and Schwartz 2004; Wu 2009, p. 37). This research builds on Locke's (1976) "range of affect" hypothesis, which proposed that individuals' assessment of satisfaction is based on the discrepancy between their wants and what they perceive that they can obtain, as well as the degree of importance that an individual assigns to wants (Wu 2009, p. 38). Generally, studies have found that the larger the difference between an individual's current and desired life status, the lower the life satisfaction (Campbell, Converse and Rogers 1976; Wu 2009). However, studies of "response shift" find that when individuals change the importance of their previous wants and re-conceptualize what is most important to their lives, measures of their quality of life improved (Wu 2009, p. 38). For example, Wrosch et al. (2003) found that individuals' quality of life could be improved by placing less importance on unattainable goals. Accordingly, individuals may increase their life satisfaction by shifting their focus to life domains with better circumstances and discounting areas in which outcomes are poorer than expected (Sprangers and Schwartz 1999).

Therefore, in the case of immigrant populations, there are two possible outcomes to increased length of residence in the host country. On one hand, the longer the amount of time during which an immigrant experiences over-education in the host country, the lower his or her life satisfaction may be, because of prolonged stress. However, the response shift literature indicates that the reverse might occur. That is, if over-educated immigrants progressively discount the importance placed on the employment domain of their lives because of continued frustrations in meeting their goals, and if they increase the importance placed on other domains, such as friends and family, then it is possible that their levels of life satisfaction may increase over time. Moreover, low levels of life satisfaction may be more pronounced among recent immigrants, as they often experience dissatisfaction across a range of areas during the transition process (Ayman and Berry 1996).

3 Data, measures and methods

3.1 Data

This study uses pooled data from the 2009 to 2014 Canadian Community Health Survey (CCHS) (Statistics Canada, n.d.). The CCHS is a cross-sectional, nationally representative survey with a sample size of about 60,000 annually. It collects a standard set of demographic and socioeconomic characteristics, as well as a broad range of information on health status, determinants of health and health system utilization. The response rate ranges from 73% in 2009 to 66% for 2014.

Six years of CCHS data are pooled together for three reasons. First, these surveys contain comparable national samples. They have the same sample design and are collected within a relatively short period of six years. Second, these surveys use the same instruments (questions) for life satisfaction, education, occupation and other predictors of life satisfaction. More importantly, a previous study shows that the associations between life satisfaction and a common set of determinants are consistent across various cycles of the CCHS (Bonikowska et al. 2014). Finally, pooling similar surveys has the advantage of reducing errors in sampling, coverage and measurement (Hou 2014a; Schenker and Raghunathan 2007). The combined datasets increase the sample size and improve the reliability of regression estimates.

The study sample includes adults of prime working age (from 25 to 64 years) who hold a university degree and are currently working as paid employees. There are 24,985 non-immigrant respondents and 5,826 immigrant respondents. These immigrants come from over 160 source countries. The top 10 source countries or areas, in descending order of sample size, include India, China, the Philippines, the United States, the United Kingdom, France, Pakistan, Hong Kong, Iran and Romania. Each of these top source countries provides at least 150 immigrant respondents.

3.2 Measures

The outcome variable of this study is life satisfaction. It is based on a single question: “Using a scale of 0 to 10, where 0 means ‘Very dissatisfied’ and 10 means ‘Very satisfied,’ how do you feel about your life as a whole right now?” (Statistics Canada n.d., p. 20, question GEN_Q02B) This single-term scale has been used widely by researchers for decades and has been established as a reliable and valid indicator of individuals’ subjective well-being (Blanchflower 2009; Diener, Inglehart and Tay 2013).

The focal independent variable captures the extent to which individuals’ educational attainment matches the educational requirement of a specific occupation. The educational requirement for a specific occupation is established in Canada’s 2006 National Occupational Classification for Statistics (NOC-S) (Statistics Canada 2006). Based on extensive occupational research, the NOC organizes over 30,000 job titles into about 500 occupational group descriptions. The NOC classifies occupations on one of four broad skill levels, A through D. These levels correspond to the kind and/or amount of training or education required for entering an occupation. Occupations in skill level A usually require a university education. Occupations in skill level B usually require some postsecondary education or apprenticeship training. Occupations in skill level C generally require completion of secondary school and some job-specific training. Occupations in skill level D usually require some secondary school, or on-the-job training. The NOC does not assign specific educational levels to management occupations. In this study, senior management occupations and specialized middle management occupations are treated as skill level A, while middle management occupations in retail and wholesale trade and customer services, trades,

transportation, production and utilities are treated as skill level B.¹ This study focuses on university graduates, and classifies three categories for the education–occupation match variable: over-educated, which is when university graduates work in occupations that require only high school or less education (levels C and D); marginally over-educated, which is when university graduates work in occupations that require some postsecondary education but not a university degree (level B); and education–occupation matched, which is when university graduates work in occupations that require a university degree (level A).

In multivariate models, this study also includes five domains of covariates that are available in the CCHS and are likely related to both education–occupation match and life satisfaction. These covariates could potentially account for the effect of education–occupation match on life satisfaction. The first domain has basic demographic characteristics, including visible minority status, sex, marital status, age and graduate degrees. Visible minority status is coded as 1 if the respondents reported themselves as Black, Chinese, South Asian, Filipino, Southeast Asian, West Asians/Arab, Latin American, Japanese, Korean or multiple visible minority origins; and 0 otherwise. Sex is coded as 1 for women and 0 for men. Marital status has four categories: married (reference group); common-law; divorced, separated, or widowed; never married. Age is coded into four 10-year groups: 25 to 34, 35 to 44, 45 to 54, and 55 to 64, with the last group as the common reference. The dummy variable for graduate degrees is coded as 1 for graduate degrees and 0 for bachelor's degrees.

The second domain of covariates has work characteristics, including self-perceived work stress and working hours. Self-perceived work stress is based on the survey question: “Would you say that most days at work were...? 1 – Not at all stressful, 2 – Not very stressful, 3 – A bit stressful, 4 – Quite a bit stressful, 5 – Extremely stressful.” (Statistics Canada n.d., p. 21, question GEN_Q09). Working hours is a three-category variable: working long hours (over 56 hours a week), regular hours (37 to 56 hours a week) and short hours (under 37 hours a week), with regular hours as the common reference group.

The third domain reflects individuals' economic status. It is represented by personal income. This variable is grouped into six categories: lowest income (annual income \$29,999 or less), lower-middle income (\$30,000 to \$49,999), middle income (\$50,000 to \$69,999), upper-middle income (\$70,000 to \$99,999), highest income (\$100,000 or more) and income not reported, with the upper-middle income category as the common reference.

The fourth domain reflects individuals' social capital and connectedness. It is measured by a single-item question on sense of belonging to local community. Previous studies have shown that local community belonging is strongly correlated with individuals' local social networks and positively associated with general well-being and mental health (Carpiano and Hystad 2011). It is measured in the CCHS from the survey question: “How would you describe your sense of belonging to your local community? Would you say it is...? 1 – Very strong, 2 – Somewhat strong, 3 – Somewhat weak, 4 – Very weak, 5 – Don't know.” (Statistics Canada n.d., p. 21, question GEN_Q10). The question is coded as a dummy variable in the analysis, with 1 indicating strong belonging, and 0 otherwise.

The fifth domain reflects an individual's health status. It is measured by the number of chronic physical illnesses reported by individuals, including asthma, arthritis, back problems, high blood pressure, migraine, chronic bronchitis, diabetes, heart disease, cancer, stomach or intestinal

1. In the 2011 version of the NOC, all management occupations are identified as belonging to skill level A. In the study sample, no more than 30% of non-immigrant individuals in middle management occupations in retail and wholesale trade and customer services, trades, transportation, production and utilities had university degrees, while generally more than 50% of non-immigrant individuals in senior management occupations and specialized middle management occupations had university degrees.

ulcers, effects of a stroke, urinary incontinence, bowel disorder, and Alzheimer's disease or other dementia. The value of this variable ranges from 0 to 8.

Two additional variables for the models are specific to immigrants. One is years since immigration, with values ranging from 0 (arrived in the year of the survey) to 34. The other is a dummy variable indicating whether the immigrant is from a developing country. Developing countries are broadly defined as those other than Canada, the United States, Japan, Australia, New Zealand and European countries.²

3.3 Methods

The analysis first produces descriptive statistics showing the percentage distribution of over-educated, marginally over-educated and education–occupation matched workers among immigrants and non-immigrants, as well as the differences in covariates between the three types of workers by immigration status.

In the multivariate analysis, two sequential ordinary-least-squares regression models are estimated, with life satisfaction as the outcome. The models are run separately for immigrant and non-immigrant workers.

$$Y = \beta_0 + \beta_1 * OE + \beta_2 * MOE + e \quad (1)$$

$$Y = \beta_0' + \beta_1' * OE + \beta_2' * MOE + \beta_{xj} * X_j + e \quad (2)$$

Model 1 includes two dummy variables only: over-educated (OE) and marginally over-educated (MOE), with education–occupation matched (EOM) as the reference group. The coefficient β_1 represents the difference in life satisfaction between over-educated and education–occupation matched workers. Similarly, β_2 represents the difference in life satisfaction between marginally over-educated workers and education–occupation matched workers. Model 2 adds the five domains of covariates (X_j) discussed above. The change in the coefficient associated with OE from Model 1 to Model 2 ($\beta_1 - \beta_1'$) is the portion of the observed difference in life satisfaction between over-educated and education–occupation matched workers that is accounted for by the covariates included. Likewise, the change in the coefficient associated with MOE from Model 1 to Model 2 ($\beta_2 - \beta_2'$) is the portion of the observed difference in life satisfaction between marginally over-educated and education–occupation matched workers that is accounted for by the covariates included. Using an alternative form of the Oaxaca decomposition (Hou 2014b), the difference ($\beta_1 - \beta_1'$) can be further decomposed into the contribution of each covariate:

$$\frac{\beta_{xj} (\bar{X}_{oe.j} - \bar{X}_{eom.j})}{\sum \beta_{xj} (\bar{X}_{oe.j} - \bar{X}_{eom.j})}$$

where $\bar{X}_{oe.j}$ is the mean of covariate X_j for over-educated workers, and $\bar{X}_{eom.j}$ is the mean of the same covariate for education–occupation matched workers. The same approach applies to the decomposition ($\beta_2 - \beta_2'$) when $\bar{X}_{oe.j}$ is replaced with $\bar{X}_{moe.j}$, which is the mean of covariate X_j for marginally over-educated workers.

2. This is a common definition of developed and developing countries, although there is no well-established classification. See the United Nations Statistics Division (2007) note on developed and developing countries).

A third model is run specifically for immigrants, which adds years since immigration and the dummy variable for developing countries, as well as their interaction with *OE* and *MOE*.

4 Results

Table 1 shows that among university-educated workers, immigrants (29.6%) were more than twice as likely to be over-educated for their jobs as non-immigrants (12.0%). While only 45.5% of university-educated immigrant workers worked in occupations that require university education, the corresponding rate for non-immigrants was 64.2%.

Table 1
Percentage distribution of occupations by immigration status among university-educated workers aged 25 to 64

	Non-immigrants	Immigrants
	percent	
Over-educated: occupations requiring high school education or less	12.0	29.6
Marginally over-educated: occupations requiring some postsecondary education	23.9	24.9
Matched: occupations requiring a university degree	64.2	45.5

Note: Percentages may not add up to 100.0% because of rounding.

Sources: Statistics Canada, Canadian Community Health Survey, 2009 to 2014, and 2006 National Occupational Classification.

For both non-immigrant and immigrant workers, the extent of education–occupation match was significantly associated with life satisfaction and a variety of covariates (Table 2). Among non-immigrants, relative to education–occupation matched workers, over-educated workers had a lower level of life satisfaction, and visible minorities were over-represented. They were also less likely to be in a common-law relationship, but more likely to be in a dissolved relationship or never married, and they were younger and less likely to have a graduate degree. Compared with education–occupation matched workers, over-educated non-immigrant workers experienced less work stress. Additionally, they were less likely to work long hours (over 56 hours a week), but more likely to work short hours (under 37 hours a week), which might be an indication of more precarious jobs. They tended to have much lower income than education–occupation matched workers and had a lower sense of community belonging. The characteristics of marginally over-educated non-immigrant workers were generally similar to those of the over-educated, except in some work characteristics and gender composition. Marginally over-educated workers had a higher share of working long hours but a lower share of working short hours; the proportion of women was also lower than among the other two types of workers.

Table 2
Variable means by immigration status and occupational skill level among university-educated workers aged 25 to 64

	Non-immigrants			Immigrants		
	Over-educated	Marginally over-educated	Education–occupation matched	Over-educated	Marginally over-educated	Education–occupation matched
	mean					
Life satisfaction	7.929 ***	8.163 ***	8.331	7.730 ***	7.869 **	7.981
Demographic characteristics						
Visible minority	0.099 ***	0.076 ***	0.059	0.826 ***	0.748 ***	0.662
Woman	0.582	0.467 ***	0.585	0.541 ***	0.442	0.431
Common law	0.145 **	0.156 *	0.169	0.038 ***	0.053	0.064
Divorced, separated or widowed	0.086 *	0.072	0.074	0.078 **	0.055	0.053
Never married	0.303 ***	0.207 **	0.190	0.165	0.158	0.171
Age	39.906 ***	40.844	41.005	40.905 ***	39.892	39.616
With a graduate degree	0.132 ***	0.188 ***	0.368	0.229 ***	0.283 ***	0.499
Work characteristics						
Work stress	2.963 ***	3.222 ***	3.294	2.825 ***	2.948 ***	3.151
Working long hours	0.054 ***	0.089 *	0.098	0.038 ***	0.063	0.067
Working short hours	0.366 ***	0.221 **	0.242	0.324 ***	0.174	0.183
Income						
Lowest income	0.241 ***	0.093 ***	0.053	0.434 ***	0.179 ***	0.104
Lower-middle income	0.299 ***	0.203 ***	0.131	0.289 ***	0.324 ***	0.187
Middle income	0.190 ***	0.222	0.229	0.122 ***	0.221	0.205
Highest income	0.066 ***	0.206	0.217	0.016 ***	0.082 ***	0.162
Income not reported	0.091 ***	0.055 *	0.047	0.112 ***	0.077	0.079
Local community belonging	0.632 *	0.637 *	0.656	0.645 ***	0.640 ***	0.580
Number of chronic physical illnesses	0.643	0.603	0.613	0.529	0.455	0.478
Immigrant-specific characteristics						
Year since immigration	...	...	...	10.480 ***	11.259 ***	12.708
From developing countries	...	...	...	0.841 ***	0.766 ***	0.680
	number					
Sample size	3,072	5,522	16,391	1,583	1,412	2,831

... not applicable

* significantly different from reference category ($p < 0.05$)

** significantly different from reference category ($p < 0.01$)

*** significantly different from reference category ($p < 0.001$)

Sources: Statistics Canada, Canadian Community Health Survey, 2009 to 2014, and 2006 National Occupational Classification.

The pattern of differences by the extent of education–occupation match in life satisfaction, work characteristics and income among immigrants was broadly similar to that of non-immigrants (Table 2). However, unlike non-immigrant workers, over-educated immigrant workers were older than education–occupation matched workers, and single individuals were not over-represented. Over-educated immigrants had stayed in Canada about two fewer years than education–occupation matched immigrants on average. About 84% of over-educated immigrants came from developing countries, compared with 68% among education–occupation matched immigrants.

On average, the negative effect of over-education on life satisfaction was weaker among immigrant than among non-immigrant workers, as shown in Model 1 (Table 3). Model 1 simply replicates the observed differences in life satisfaction between over-educated, marginally over-educated and education–occupation-matched workers, without accounting for differences in covariates among the three groups of workers. Among non-immigrants, over-educated workers had an average gap in life satisfaction of 0.402 relative to education–occupation matched workers. The corresponding gap was 0.251 among immigrant workers. The difference between the two gaps (i.e., 0.402 minus 0.251 equals 0.151) is statistically significant at $p < 0.001$. The gap in life satisfaction between marginally over-educated workers and education–occupation matched workers was much smaller than the gap among over-educated workers for both non-immigrants and immigrants.

Table 3

Results from regression models predicting the negative effect of over-education on life satisfaction, by immigration status

	Non-immigrants		Immigrants		
	Model 1	Model 2	Model 1	Model 2	Model 3
	coefficient				
Intercept	8.331 ***	8.945 ***	7.981 ***	8.330 ***	8.296 ***
Over-educated	-0.402 ***	-0.280 ***	-0.251 ***	-0.055	-0.569 ***
Marginally over-educated	-0.169 ***	-0.108 ***	-0.112 *	-0.074	-0.229 *
Visible minority	...	-0.246 ***	...	-0.095 *	-0.233 **
Woman	...	0.212 ***	...	0.205 ***	0.180 ***
Common law	...	-0.095 ***	...	0.092	0.085
Divorced, separated or widowed	...	-0.435 ***	...	-0.526 ***	-0.526 ***
Never married	...	-0.469 ***	...	-0.112 *	-0.130 *
Age 25 to 34	...	0.158 ***	...	0.196 *	0.301 **
Age 35 to 44	...	-0.116 ***	...	0.070	0.159 *
Age 45 to 54	...	-0.084 ***	...	-0.029	0.003
With a graduate degree	...	0.021	...	0.038	0.050
Work stress	...	-0.208 ***	...	-0.148 ***	-0.154 ***
Working long hours	...	-0.002	...	0.291 ***	0.299 ***
Working short hours	...	-0.012	...	-0.008	-0.008
Lowest income	...	-0.403 ***	...	-0.588 ***	-0.549 ***
Lower-middle income	...	-0.186 ***	...	-0.270 ***	-0.259 ***
Middle income	...	-0.101 ***	...	-0.129 *	-0.127 *
Highest income	...	0.119 ***	...	0.035	0.035
Income not reported	...	-0.176 ***	...	-0.257 ***	-0.234 **
Local community belonging	...	0.362 ***	...	0.509 ***	0.506 ***
Number of chronic physical illnesses	...	-0.146 ***	...	-0.275 ***	-0.276 ***
Years since immigration	...	...	...	...	0.002
From developing countries	...	...	...	...	0.064
Years since immigration					
Over-educated	...	...	...	...	0.022 ***
Marginally over-educated	...	...	...	...	0.006
From developing countries					
Over-educated	...	...	...	...	0.351 **
Marginally over-educated	...	...	...	...	0.129
			value		
R squared	0.012	0.112	0.006	0.110	0.117

... not applicable

* significantly different from reference category (p < 0.05)

** significantly different from reference category (p < 0.01)

*** significantly different from reference category (p < 0.001)

Note: Over-education relative to education–occupation matched workers.

Sources: Statistics Canada, Canadian Community Health Survey, 2009 to 2014, and 2006 National Occupational Classification.

Model 2 adds in the selected covariates (Table 3). From Model 1 to Model 2, the coefficient for over-educated decreased from -0.402 to -0.280 for non-immigrant workers, suggesting that 30% of the observed difference in life satisfaction between over-educated and education–occupation matched workers was accounted for by their differences in the covariates. In comparison, the corresponding coefficient for over-educated immigrants decreased from -0.251 in Model 1 to -0.055 in Model 2, suggesting that 78% of the observed difference in life satisfaction between over-educated and education–occupation matched workers was accounted for by their differences in the covariates. Indeed, the negative coefficient for over-educated workers in Model 2 became statistically non-significant for immigrants but remained statistically significant for non-immigrants.

In Table 4, the accounted portion of the negative effect of over-education was further decomposed into the contribution of each covariate, using the regression decomposition technique discussed in Subsection 3.3 (Methods). The first row in Table 4 shows the observed difference in life satisfaction between over-educated and education–occupation matched workers, as presented in Model 1 of Table 3. The second row is the adjusted difference in life satisfaction between over-educated and education–occupation matched workers, as presented in Model 2 of Table 3. The third row is the difference between the observed effect and the adjusted effect. This difference represents the portion of the negative effect of over-education accounted for by the covariates. This accounted portion was further decomposed into the contribution of each covariate, and then calculated as the sum of five dimensions: demographics, work characteristics, income, community belonging and chronic illnesses. The decomposition results show that income was the predominant contributor to the accounted effect of over-education for both non-immigrant and immigrant workers. However, since the selected covariates accounted for only 30% of the observed negative effect of over-education for non-immigrants but 78% for immigrants, it is clear that lower income was the main intermediate factor linking over-education to life satisfaction for immigrants, but it was just one of the important factors for non-immigrants.

Table 4
Decomposition of the effect of over-education on life satisfaction, by
immigrant status

	Non-immigrants	Immigrants
	score	
Observed effects	-0.402	-0.251
Adjusted effects	-0.280	-0.055
Effects accounted for	-0.122	-0.196
	percent	
Contributing components¹		
Demographic characteristics	39	15
Work characteristics	-55	-20
Income	105	115
Local community belonging	7	-17
Chronic physical illnesses	4	7

1. The selected covariates account for 30% of the over-education effect for non-immigrants and for 78% of the over-education effect for immigrants.

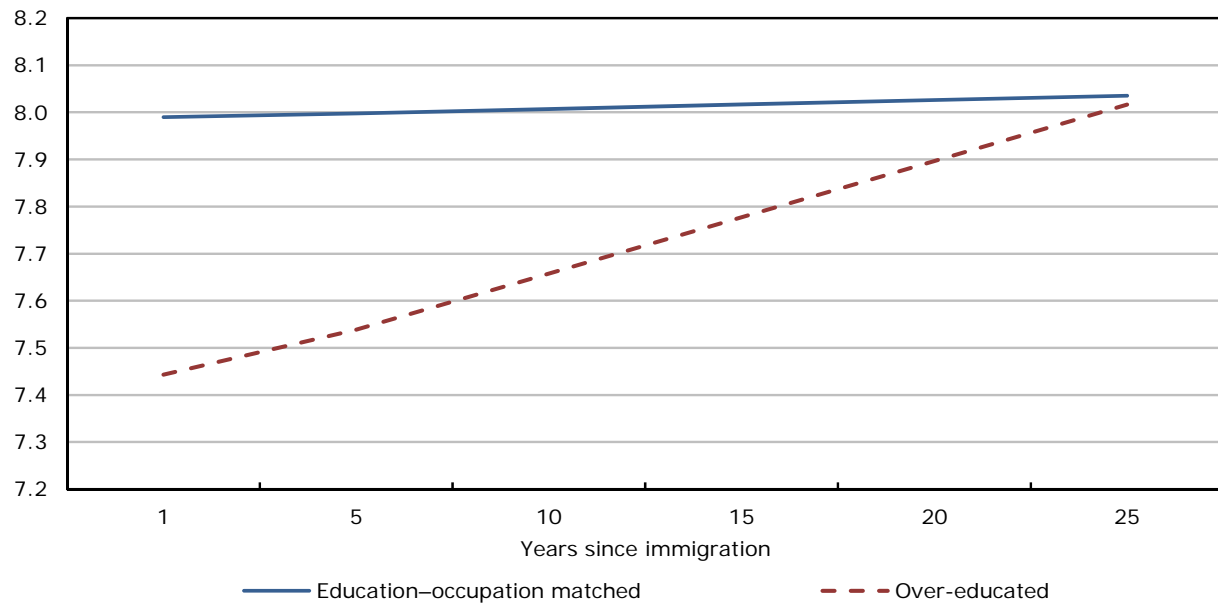
Sources: Statistics Canada, Canadian Community Health Survey, 2009 to 2014, and 2006 National Occupational Classification.

The variables included in Model 3 applied to the immigrant group only (Table 3). The significant and positive interaction term between years since immigration and over-education suggests that the negative effect of over-education tended to diminish with increased length of stay in Canada. Chart 1, based on the estimates in Model 3, illustrates the interaction effect. The gap in life satisfaction between over-educated and education–occupation matched workers was 0.55 in the first year after immigration, but this decreased to 0.13 in the 20th year. Put differently, life satisfaction increased only slightly over time among education–occupation matched immigrants, but it improved much more among over-educated immigrants. It is also possible that the negative effect of over-education on life satisfaction is weaker among earlier cohorts.

Lastly, the significant and positive interaction between developing countries and over-education suggests that the negative effect of over-education on life satisfaction was weaker among immigrants from developing countries than among those from developed countries. Chart 2, based on the estimates in Model 3 (Table 3), shows that the gap in life satisfaction between over-educated and education–occupation matched workers was 0.22 among immigrants from developing countries, but 0.57 among immigrants from developed countries.

Chart 1
The interaction effect of immigrant over-education and years since immigration

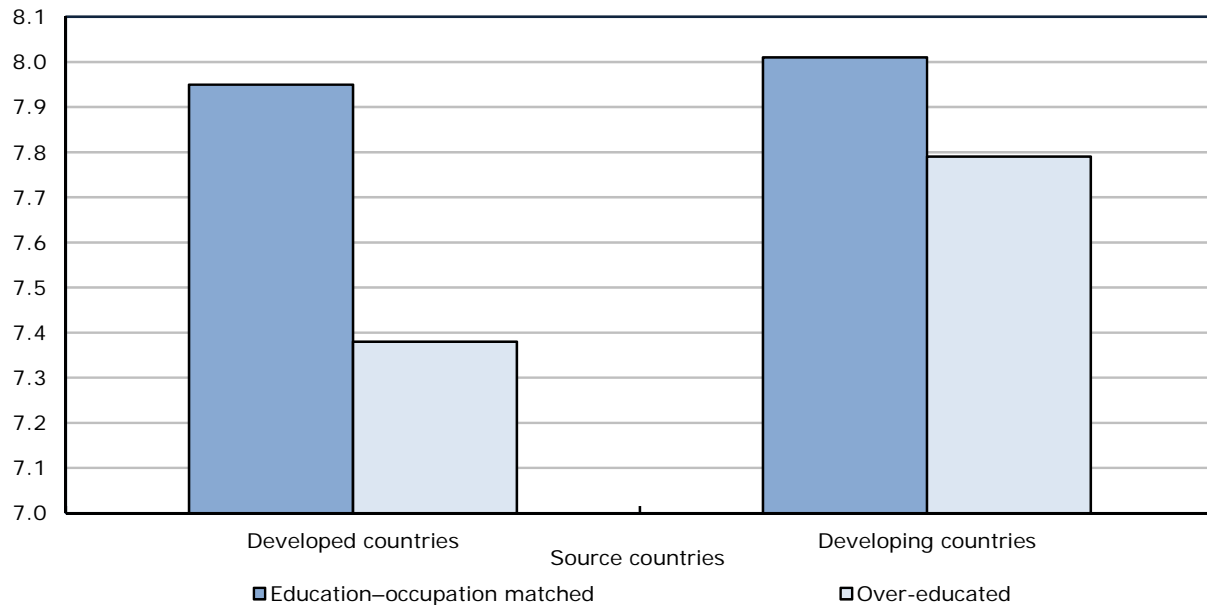
life satisfaction score



Sources: Statistics Canada, Canadian Community Health Survey, 2009 to 2014, and 2006 National Occupational Classification.

Chart 2
The interaction effect of immigrant over-education and source countries

life satisfaction score



Sources: Statistics Canada, Canadian Community Health Survey, 2009 to 2014, and 2006 National Occupational Classification.

5 Discussion and conclusion

This study examines the relationship between over-education and life satisfaction by comparing university-educated immigrant and non-immigrant workers in Canada. Differences between over-educated, marginally over-educated and education–occupation matched workers were studied, allowing for a more nuanced understanding of how different degrees of over-education may result in differences in life satisfaction. Issues pertaining to the immigrant population only were also addressed, such as how the relationship between over-education and life satisfaction might differ by length of residence in Canada or level of economic development in an immigrant's source country.

Similar to previous studies (e.g., Chiswick and Miller 2009; Galarneau and Morissette 2008), over-education was found to be more prevalent among the immigrant population than among the non-immigrant population. The initial set of results from the regression models, prior to the inclusion of the covariates, indicated a negative relationship between over-education and life satisfaction for both immigrants and non-immigrants. This is in line with previous research that finds a negative association between over-education and life satisfaction (Feldman and Turnley 1995; Piper 2015). Moreover, among both immigrants and non-immigrants, the gap between the life satisfaction of over-educated and education–occupation matched workers was more pronounced than the life satisfaction gap between workers who were over-educated and those who were only marginally over-educated. This suggests that the degree to which university-educated workers are over-educated plays a role in their level of life satisfaction.

Although there is a greater incidence of over-education among immigrants, the negative effect of over-education on life satisfaction was weaker for the immigrant population than for the non-immigrant population. When demographic, work and income characteristics were included in the model, the negative coefficient for over-education lost statistical significance among the immigrant population, yet it remained statistically significant for the non-immigrant group. These characteristics accounted for the majority of the negative effect that over-education had on immigrants' life satisfaction and explained a notable, but much smaller, percentage of the effect among non-immigrants. These results support the first hypothesis, which expected over-education to have a weaker negative association with immigrants' life satisfaction, possibly because over-education is a common experience among immigrants in the host country. Since non-immigrant workers generally compare themselves with their Canadian-born peers, the majority of whom are not over-educated, being over-educated may have a larger negative influence on overall life satisfaction for this group.

The decomposition analysis indicated that low income was an important mediating factor in the negative relationship between over-education and life satisfaction for both immigrant and non-immigrant groups. However, income was the dominating factor through which over-education affected the life satisfaction of immigrants, while it was only one of several factors for the non-immigrant group. This supports the second hypothesis, which expected that the lower earnings typically associated with over-education would be particularly influential in immigrants' life satisfaction, possibly because of its effect on multiple aspects of their lives (Asanin Dean and Wilson 2009).

Findings from this study also provide information about how the relationship between over-education and life satisfaction varies by characteristics specific to the immigrant population. The negative effect of over-education weakened with increased time in Canada. This finding supports previous Canadian research that found lower life satisfaction among recent immigrant engineers who were not employed in their field than for their peers who had resided in Canada for a longer period of time (George et al. 2012).

The decreased negative effect of over-education over time in the host country was not largely attributable to a general increase in life satisfaction over time among all immigrants; the life

satisfaction of immigrants with education-matched occupations increased only slightly with more years in Canada. This increase in life satisfaction among over-educated immigrants may be indicative of a reassessment of goals, as discussed in the response shift literature. That is, individuals who are unable to attain their goals may shift the importance that they assign from that goal to other attainable goals or more satisfactory life domains (Sprangers and Schwartz 1999; Wrosch et al. 2003; Wu 2009). Therefore, with increased time in the host country, over-educated immigrants may place more importance on non-work-related aspects of their lives, such as familial or social domains. This finding challenges the assumption that over-education has a cumulative and negative bearing on immigrants' well-being over time. However, these results are based on cross-sectional data and may capture differential effects of over-education on different arrival cohorts.

The negative relationship between over-education and life satisfaction was also weaker for immigrants from developing countries compared with those from developed countries. This finding supports the fourth hypothesis and suggests that immigrants from developing countries may be more likely to anticipate over-education in the host country because of greater differences in the level of economic development and educational and labour market systems in their source and host countries. Additionally, since immigrants from developing countries are more likely to experience improved living conditions after migration than those from developed nations, this general improvement in quality of life might mitigate the negative effects of over-education.

Despite the increasing migration of skilled workers globally, there is limited research examining the consequences of over-education on the life satisfaction of immigrant workers specifically. As the results from this study have shown, it is important to examine how over-education affects both the immigrant and Canadian-born populations, as they have distinct experiences and may be affected by over-education differently. Although the successful integration of individuals in the labour market is often measured in economic terms, the difficulties that they encounter also have consequences that affect their well-being. The experience of over-education typically results in a loss of social status, financial insecurity and precarious employment, which can affect both immigrants' and non-immigrants' overall satisfaction with life. However, the experience of over-education appears to be associated less with immigrants' overall life satisfaction compared with non-immigrants. This result may be attributable to the common experience of over-education among immigrant workers, making over-education more socially acceptable among this group than among the non-immigrant population.

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