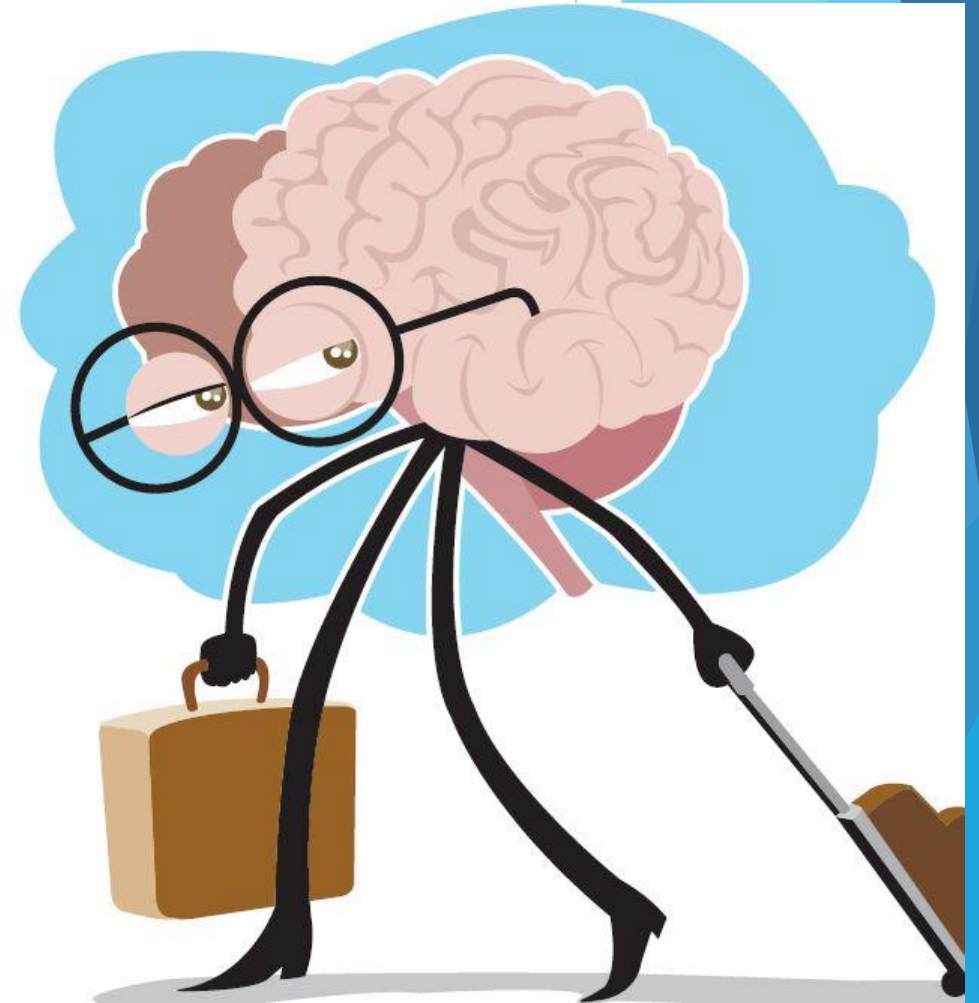# Brain waste?
National and regional analysis of educated immigrants in Canada

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Motivation

▶ Brain gain: reception of human capital from other countries

▶ Canada's immigration policy aims to maintain high levels of immigrant inflows to face short- and long-term labour shortages across the country and boost economic development (Ferrer et al., 2014).

▶ Between 2011 and 2016, 60% of immigrants were admitted under the economic class category.

▶ To what extent are they utilizing the human capital in their subsequent employment.

Job-education mismatch

Research questions

▶ Does a job-education mismatch exist between immigrants from different countries/regions? Are immigrants from certain countries/regions faring better than the others? If so, why?

▶ Are immigrants in certain Canadian regions faring better in terms of job-education match than in other regions? If so, why?

▶ What other factors significantly affect the job-education (mis)match of immigrants in Canada?
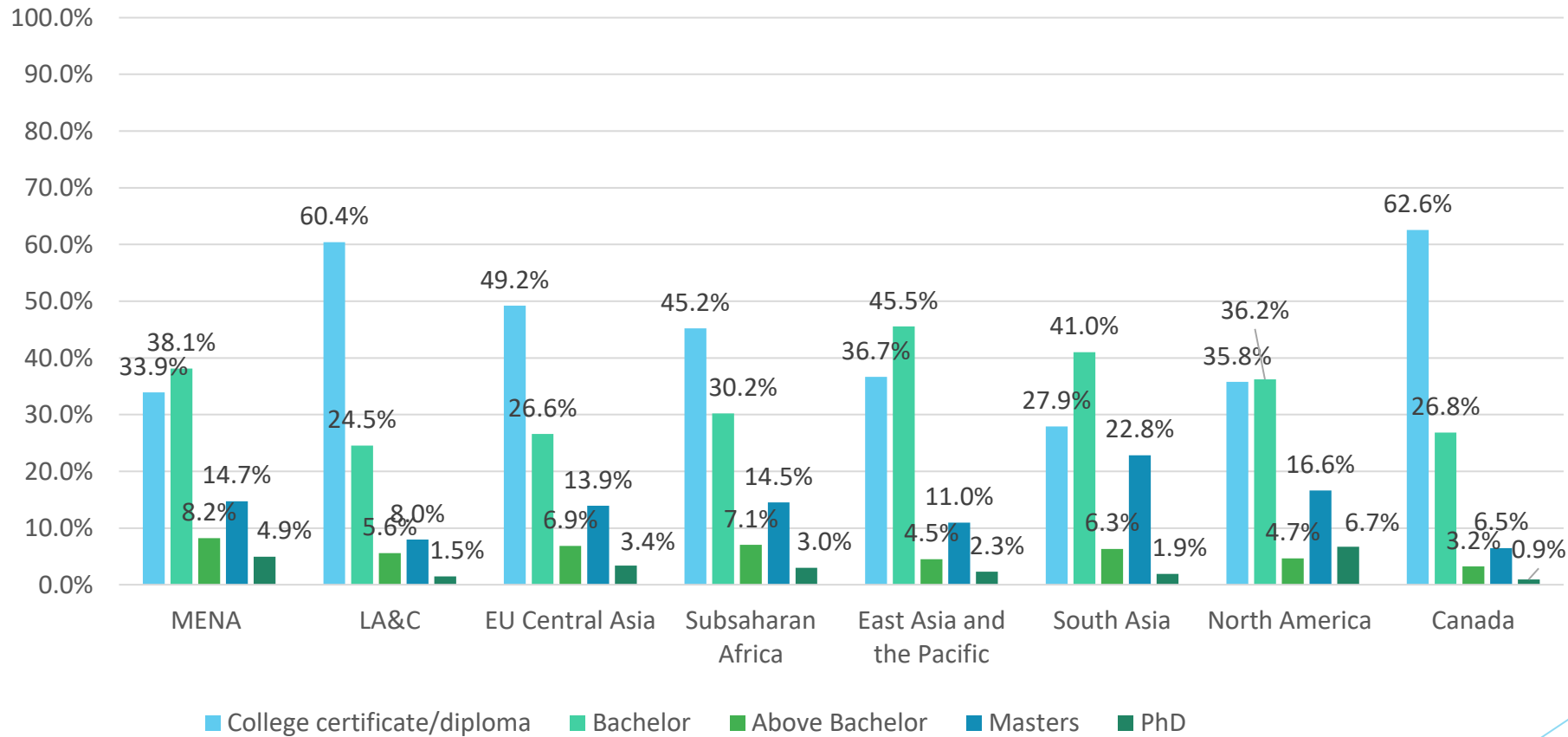
Methodology

▶ Dataset: Canadian Census of Population 2016

▶ Sample: immigrants and the native-born aged 19-65 who are employed, not currently attending school, and have completed a post-secondary degree or diploma. We exclude individuals who had only completed a high school diploma and were unemployed in the reference year 2015.

▶ Method used: Realized matches. We used the mode level of education for each occupation compared it to the individual's actual level of education

▶ Outcome variable: Job-education mismatch

   ▶ Overeducation

   ▶ Adequate match

   ▶ Undereducation

▶ Descriptive statistics and multinomial logistic analysis – Marginal effects at the means

$$Pr_{ij} = pr(y_i = j) = \frac{\exp(\boldsymbol{x'_i}\beta_j)}{\sum_{j=1}^{3} \exp(\boldsymbol{x'_i}\beta_j)}$$

$$\frac{\partial pr_{ij}}{\partial \boldsymbol{x_i}} = pr_{ij}\left(\beta_j - \bar{\beta}_i\right)$$
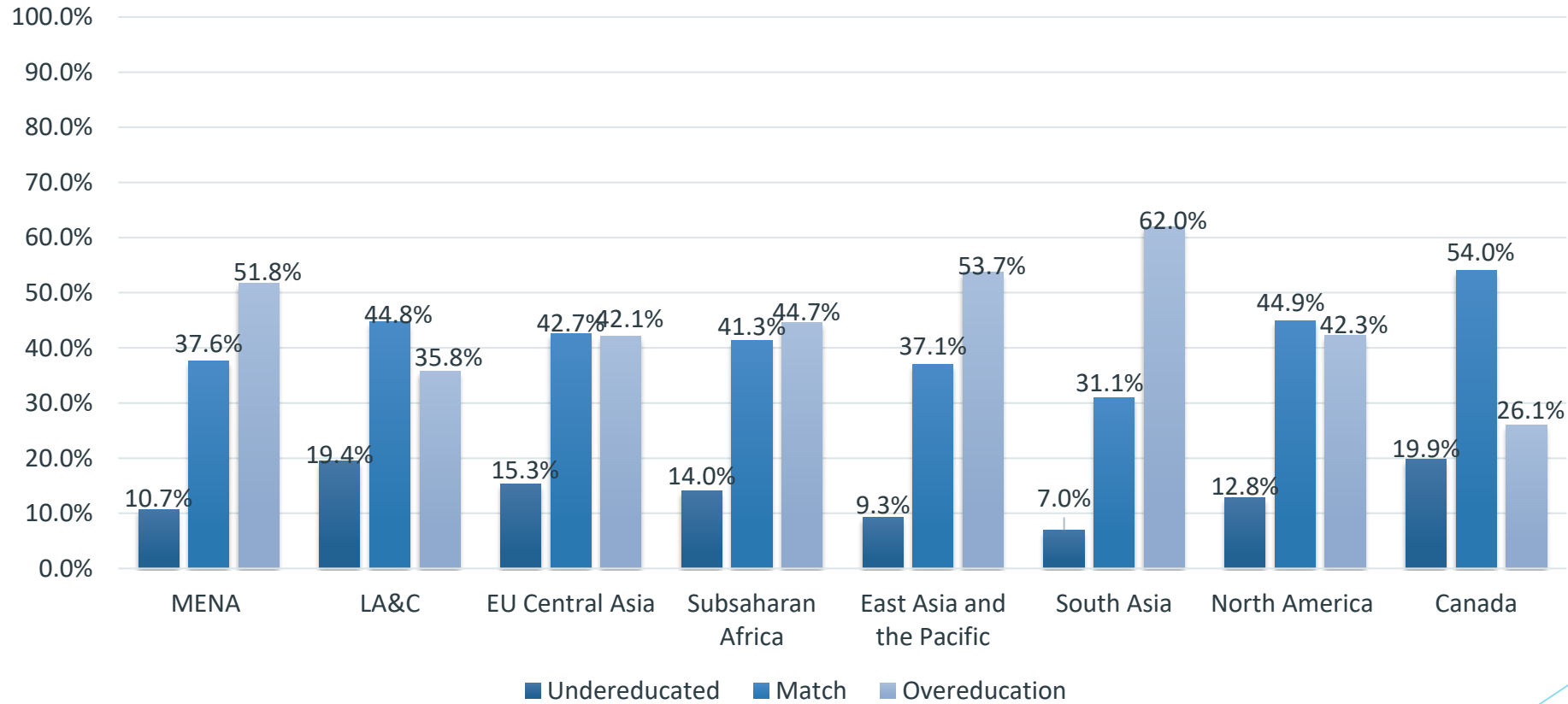
Results: Descriptive statistics

Figure 1. Brain gain: Human capital of immigrants in Canada by source region
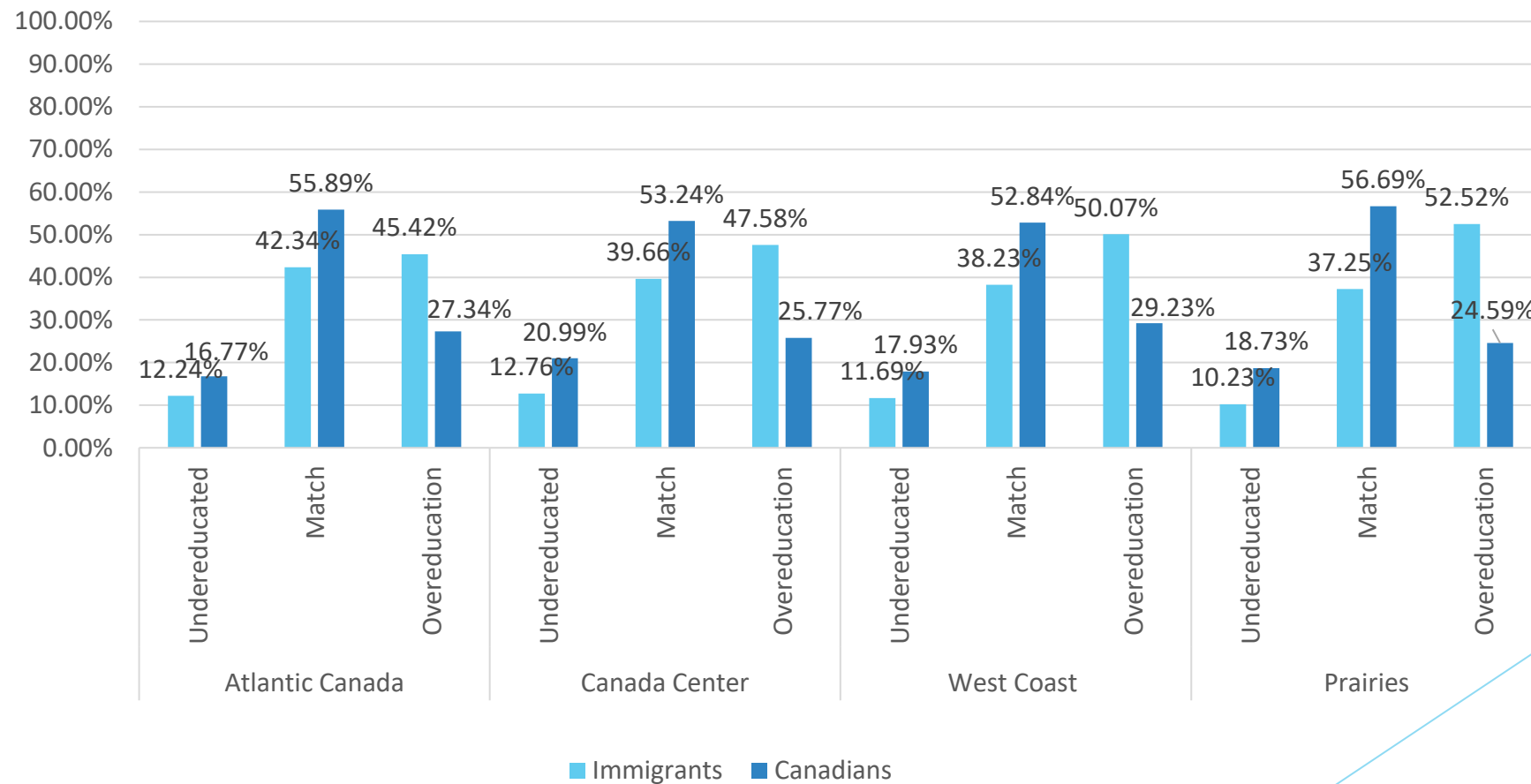
Results: Descriptive statistics

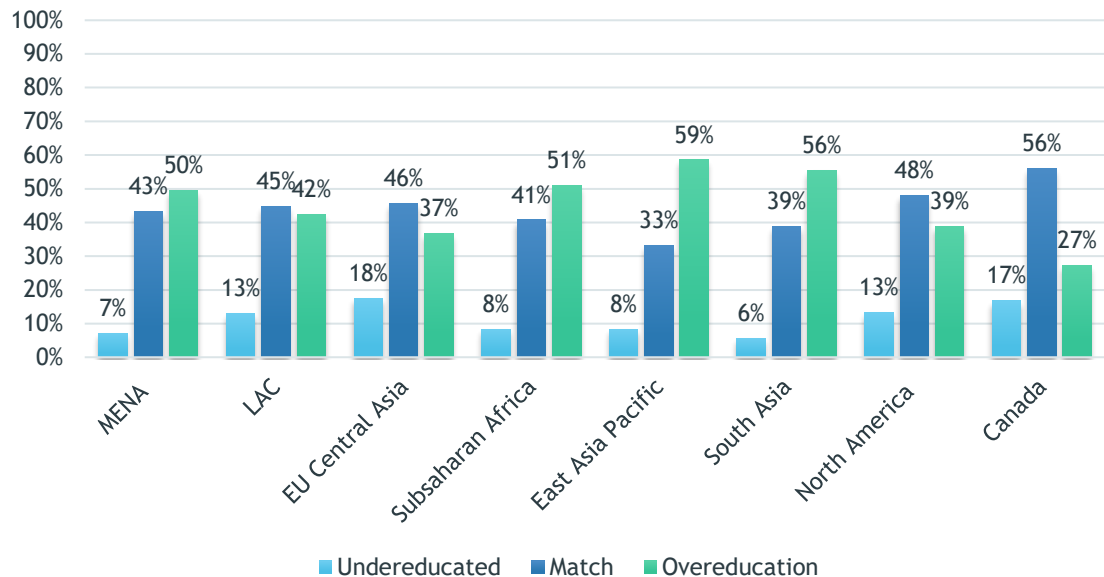## Figure 2. Incidence of job-education (mis)match per immigrant source region

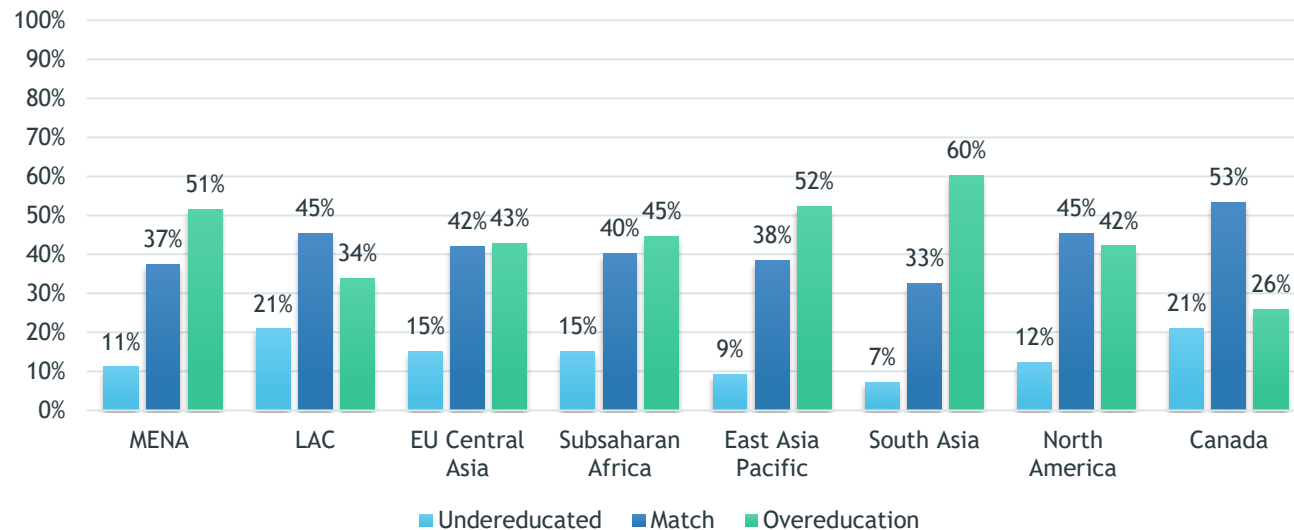# Results: Descriptive statistics

Figure 3. Regional overview of immigrants' job-education (mis)match compared to the native-born
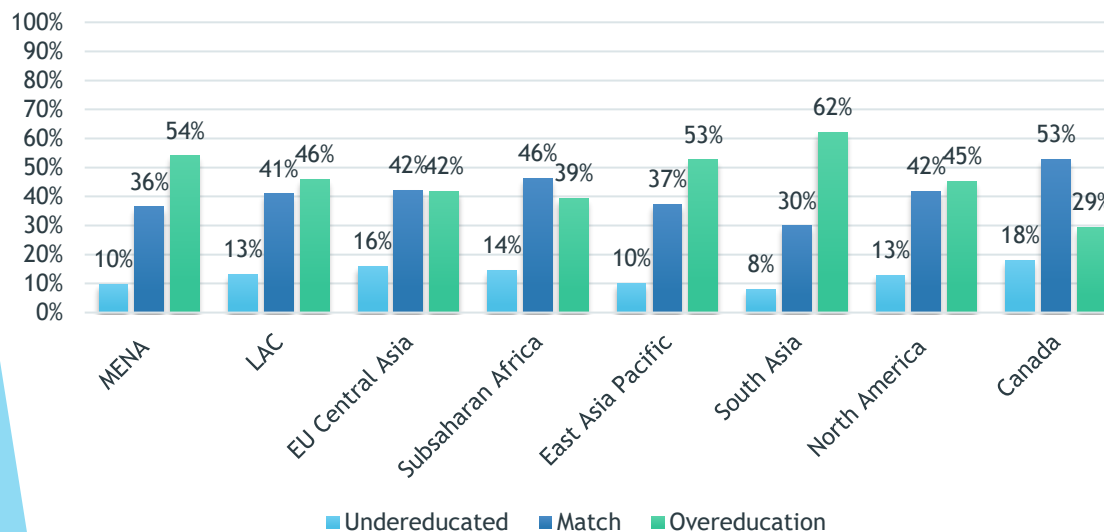
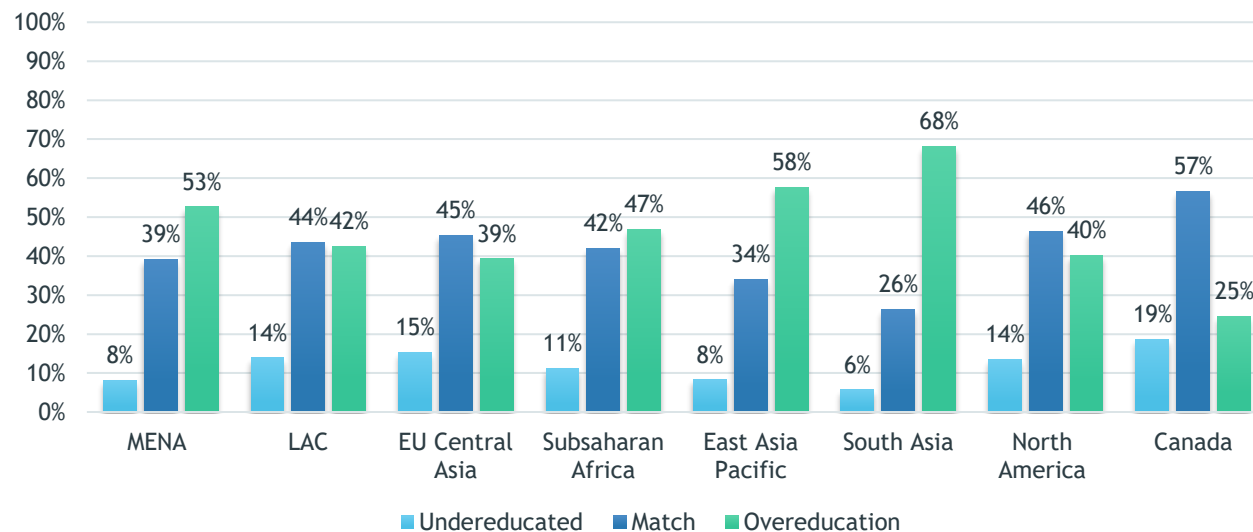**Atlantic Canada: Job-education mismatch per source region**

Source region	Undereducated	Match	Overeducation
MENA	7%	43%	50%
LAC	13%	45%	42%
EU Central Asia	18%	46%	37%
Subsaharan Africa	8%	41%	51%
East Asia Pacific	8%	33%	59%
South Asia	6%	39%	56%
North America	13%	48%	39%
Canada	17%	56%	27%

Canada Centre: Job-education (mis)match per source region

Source region	Undereducated	Match	Overeducation
MENA	11%	37%	51%
LAC	21%	45%	34%
EU Central Asia	15%	42%	43%
Subsaharan Africa	15%	40%	45%
East Asia Pacific	9%	38%	52%
South Asia	7%	33%	60%
North America	12%	45%	42%
Canada	21%	53%	26%

West Coast: Job-education mismatch per source region

Source region	Undereducated	Match	Overeducation
MENA	10%	36%	54%
LAC	13%	41%	46%
EU Central Asia	16%	42%	42%
Subsaharan Africa	14%	46%	39%
East Asia Pacific	10%	37%	53%
South Asia	8%	30%	62%
North America	13%	42%	45%
Canada	18%	53%	29%

Prairies: Job-education mismatch per source region

Source region	Undereducated	Match	Overeducation
MENA	8%	39%	53%
LAC	14%	44%	42%
EU Central Asia	15%	45%	39%
Subsaharan Africa	11%	42%	47%
East Asia Pacific	8%	34%	58%
South Asia	6%	26%	68%
North America	14%	46%	40%
Canada	19%	57%	25%

Findings at the national level

- **Source Country**

  - South Asia, MENA and East Asia and the Pacific immigrants are more likely to be overeducated than matched.

  - LA&C, Sub-Sahara Africa and Europe and Central Asia immigrants are more likely to be undereducated than matched.

  - All groups are less likely to have an adequate match compared to North America.

- **Schooling outside of Canada**

  - Immigrants are 15.8 percentage points more likely to be overeducated for their occupation if their credentials are from outside of Canada than if their credentials are obtained in the province they reside.

- **Census Metropolitan Area**

  - Immigrants living in Toronto, Montreal, Vancouver, and Halifax are positively associated with being overeducated

  - Immigrants living in Fredericton, Charlottetown, St. John, Calgary and Winnipeg are negatively associated with being overeducated.

- **Field of study**

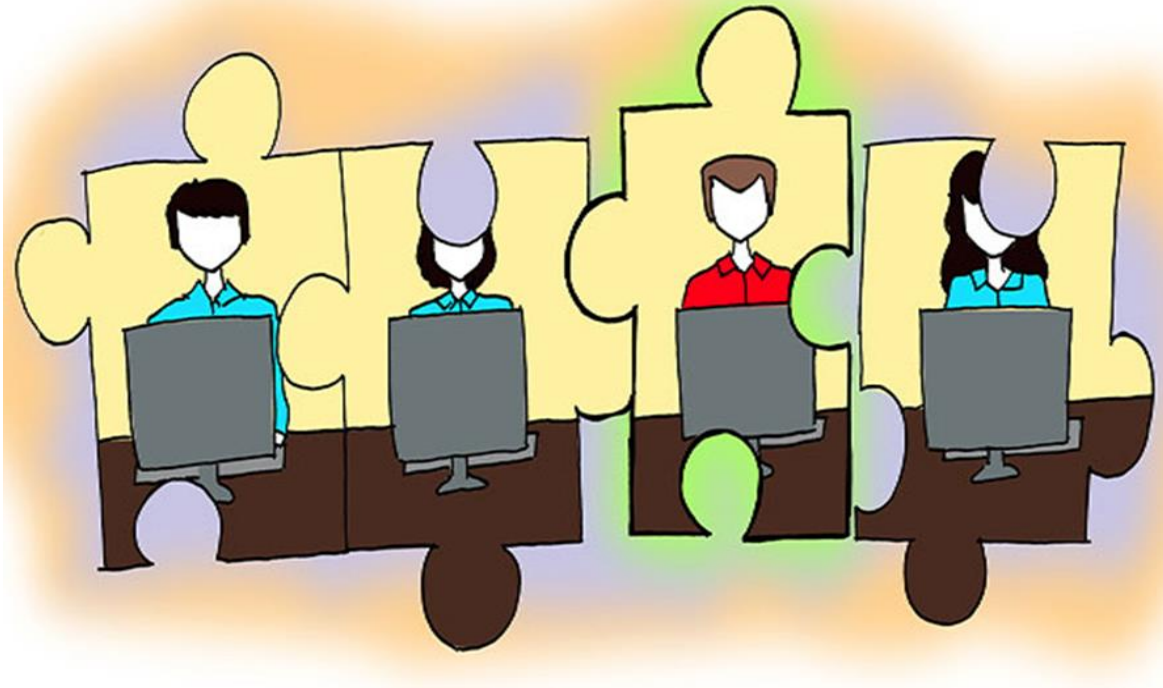 - Immigrants in STEM are more likely to find an adequate job-education match.

Regional Findings

LA&C immigrants residing in the Center and the Prairies highest likelihood of undereducation.

MENA immigrants residing in Atlantic Canada are the most likely to have a job-education match

East Asia immigrants are more likely to have an adequate match in the Prairies than in any other region.

Sub-Saharan Africa immigrants are less likely to have a match across regions.

Regional Findings

Years since immigration

- New arrivals have the highest likelihood of a job-education match in Atlantic Canada than in the other regions
- New arrivals have the highest likelihood of overeducation in the Centre and West Coast
- New arrivals are more likely to be undereducated in the Center than in the other regions.

Location of schooling

- Atlantic Canada is associated with the lowest likelihood and Canada Center is associated with the highest likelihood of overeducation associated with foreign schooling.
- Immigrants with foreign schooling residing in the Prairies are associated with the highest likelihood of a match across regions.
- Immigrants with foreign schooling residing in Atlantic Canada and the Prairies are the most likely to be undereducated

Contribution

The source region from which skilled immigrants come to Canada has significant impact on the likelihood of job-education mismatch due to overeducation and undereducation.

The high incidence of overeducation implies "brain waste" of high-skilled immigrants due to underutilization of formal education. The incidence of undereducation among immigrants is low compared to the native-born which implies that these immigrants are overachieving in their occupations.

Increasing high-skilled labour supply across regions in Canada and away from traditional destinations such as Toronto, Montreal and Vancouver increase immigrants' job-education match.

Policy Recommendation

(1) Conduct further analysis on the levels of labour demand and supply to ensure that immigrants arriving in Canada have secured employment that match their qualification before their arrival in the country in order to reduce the incidence of overeducation and potential brain waste.

(2) Continue policy efforts to ensure foreign credential recognition and equivalency in the labour market.

(3) Introduce programs that help immigrants from source regions that present higher incidence of overeducation find adequate employment that match their qualifications.

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