

Foreign Education and The Earnings Gap Between Immigrants and Canadian-born Workers

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Introduction

- ▶ Some (relatively young) immigrants complete their education in their home country, while others do so in the host country
- ▶ This can have an important impact on earnings and other labor market outcomes if the quality of education, and its "portability" into the host country varies depending on the country of origin
- ▶ Canada has a large immigrant population (over 20% of the population) and, as in the U.S., the distribution of country of origin has changed a lot over time (from Europe to Asia)
- ▶ The effect of foreign education can be studied in the 2006 census that asked (for the first time) about location of study (highest degree).
- ▶ We can also look at how this varies depending on field of study (asked in the census since 1986)

Results in a nutshell

- ▶ A large fraction (30 to 80 percent) of the earnings gap between immigrants and natives can be accounted for by the location of study.
- ▶ Immigrants who studied in Canada or other "comparable" countries (UK, US, Western Europe) tend to do much better than those who did not.
- ▶ The role of foreign schooling in the earnings gap is particularly important for women and immigrants who came to Canada after age 25.
- ▶ Immigrants with foreign degrees in math/computer science do relatively better, those with degrees in education do worse.

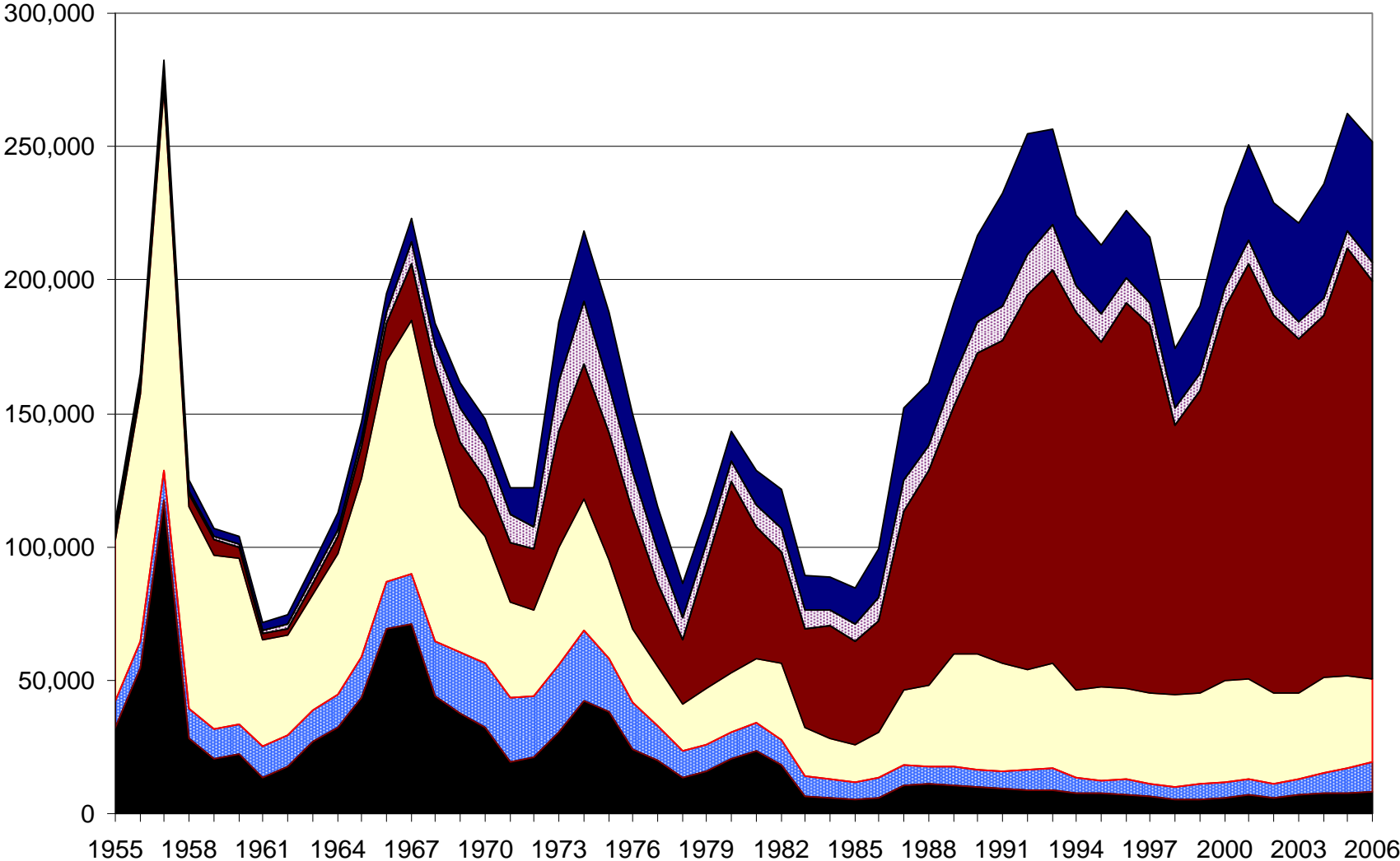
Why does it matter?

- ▶ Can help explain secular changes in the immigrants-native earnings gap
 - ▶ Immigrants arriving in 1990s earned around 30% less than Canadian-born workers.
 - ▶ Immigrants arriving in 1970s earned about the same as Canadian-born workers.
 - ▶ Country of origin is a major part of the explanation, but not clear what are the channels involved (language skills, quality of education, discrimination, etc.)
- ▶ Important dimension of school quality
- ▶ Under the assumption this is all about school quality, as opposed to portability, the results can be used to construct a market-based measure of school quality. Potentially important for understanding cross-country differences in productivity.

Backgrounder on immigration in Canada

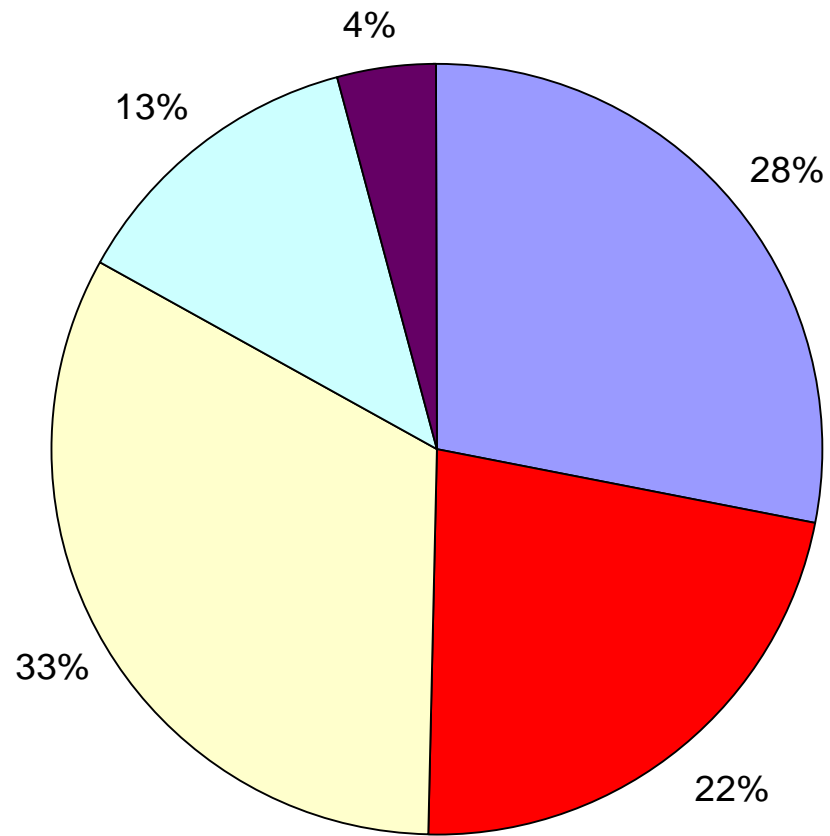
- ▶ Since the late 1960s immigration has been managed under a point system where you get points based on language skills, education, intended occupation, etc. No points for quality of schooling.
- ▶ But only a fraction of individuals really come under the point system, since there are other immigration categories (refugees, investors) and many family members also come in with them (at the time of immigration or later).
- ▶ System still “works” in the sense that immigrants are more educated than natives.
- ▶ An important group for the purpose of this paper is foreign students. First enter under a student visa but can later apply to be permanent resident (year of immigration in the census refers to the latter).

Immigration to Canada by Source Region: 1955-2006



■ Britain ■ USA ■ Other europe ■ Asia ■ West Indies ■ Other

Immigrants to Canada by Category: 2006



■ Family ■ Economic: own ■ Economic: spouse and dependents ■ Refugees ■ Other

Data: 2006 Canadian Census

- ▶ 2006 Long-form Canadian Census (20% census): Interviews residents of private dwellings as of May 16, 2006 (reference day)
- ▶ Sample : 20-64 years old, full time workers with positive earnings and education levels higher than high school.
 - ▶ Non-permanent residents are not considered.
 - ▶ Further restriction - Only consider immigrants arriving between the ages of 15 and 29 years old.
- ▶ Dependent variable: Logarithm of average weekly wages.
 - ▶ Minimum weekly wage: 15 times the hourly wage of the province.

Measurement of location of study

- ▶ We contrast our direct measure of location of study with an alternative imputation approach first pioneered by Friedberg (2000).
- ▶ The imputation is based on educational achievement and age at arrival. For example, a university graduate who immigrated at age 18 will be imputed a Canadian university degree.
- ▶ A university graduate who immigrated at age 25 will be imputed a foreign degree from his/her origin country.
- ▶ Not possible to identify whether individuals (Canadians or immigrants) received their degree in a “third” country (mostly US or UK).
- ▶ Immigrants who were older when they got their degree, or were students in Canada who immigrated (became permanent residents) later will be mis-classified as having a foreign degree

Data Description

- ▶ Source countries' importance shifted throughout the years (from UK and Europe to Asia).
- ▶ 56% of immigrants got their highest education in Canada.
- ▶ Immigrants cluster themselves in the top CMAs. Top five CMAs hold 75% of all foreign-born.
- ▶ Immigrants are relatively older and more educated than natives. Higher share above bachelor's degree (17% against 11%)
- ▶ Younger immigrants are more likely to continue their studies in Canada.
 - ▶ 92% of immigrants arriving at 19 years old got their highest education in Canada.
 - ▶ 29% for foreign-born arriving at 29.

Table 1: Immigrant's Top Countries of Origin and Location of Study

	Total	Study in home country	Study in Canada	Study abroad	Comparing with imputation procedure	
					Study in home country	Study in Canada
Top Ten countries						
India	9.3	59.0	34.9	6.1	84.4	15.6
UK	7.8	51.0	47.2	1.8	81.2	18.8
Philippines	7.6	65.0	33.9	1.1	84.7	15.3
China	5.9	40.3	51.7	8.0	83.1	16.9
US	3.9	38.3	60.5	1.2	73.1	26.9
Poland	3.2	49.6	47.8	2.6	82.1	17.9
France	2.3	55.5	41.5	3.0	86.4	13.6
Two other Countries						
Pakistan	1.8	48.9	40.2	10.9	80.4	19.6
Romania	1.7	62.2	33.7	4.1	87.9	12.1
Rest of the World						
Africa	7.8	27.7	61.1	11.3	78.7	21.3
Rest of America	7.3	21.2	74.9	4.0	74.9	25.1
Rest Europe	7.1	34.7	60.4	4.9	72.5	27.5
East Europe	5.9	50.6	43.8	5.6	80.4	19.6
W. and C. Asia	5.2	30.1	61.0	8.9	71.8	28.2
South America	5.0	28.6	67.9	3.6	75.3	24.7
Rest Asia	4.4	31.8	58.4	9.7	71.9	28.1
South-East Asia	1.8	15.9	70.8	13.3	72.1	27.9
Oceania	1.3	40.9	56.3	2.9	80.9	19.1

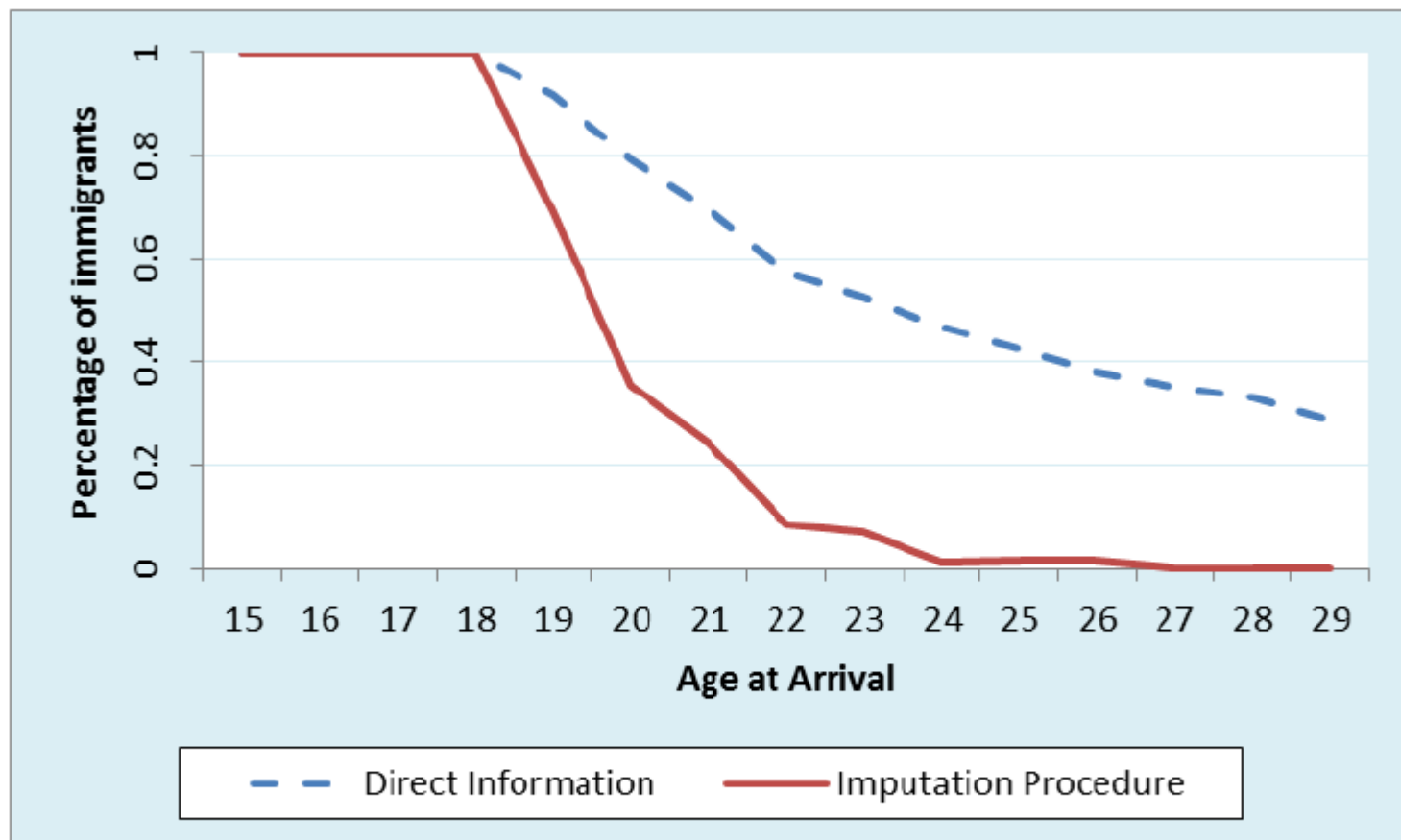


Figure 1: Share of Immigrants with a Canadian degree by age at immigration

Table 2: Distribution of Field of Study

Field of Study	Native	Immigrant	Share of immigrants educated in Canada
Education	7%	4%	52%
Humanities and Visual and Performing Arts	7%	7%	44%
Social and Behavioural Sciences and Law	10%	8%	56%
Business, Finance and Marketing	13%	13%	59%
Small Businesses, Accounting and Business Support	8%	9%	60%
Computer Sc., Math., Physical Sc. And Sc. Technologies	5%	11%	62%
Architecture and Engineering and Engineer Technicians	9%	17%	49%
Construction trade, Mechanics and Woodwork	15%	10%	57%
Health Practicioners and Life Science	4%	5%	54%
Health Assistance	9%	9%	62%
Others	13%	7%	58%

Estimation

$$w_{iol} = \alpha_C + \alpha_I I_i + X_i \beta + G_o \theta + F_f \eta + L_l \phi + \mu_{iol}$$

- ▶
- ▶ w_{iol} : Logarithm of weekly wages for individual i , from source country/area o , with a field of study f and who finished highest education in country/area l
- ▶ I_i : Dichotomous variable indicating whether person i is an immigrant.
- ▶ X_i : Education, work experience, gender, language skills.
- ▶ Importance of separating Canadian and foreign human capital for the immigrant-native wage gap
- ▶ Relevance of **location of study** for immigrant-native wage gap

Table 3: Base Specification

	(1)	(2)	(3)	(4)	(5)	(6)
Immigrant	-.1096 (0.002)***	-.0580 (0.0025)***	-.0787 (0.0023)***	-.0603 (0.0025)***	-.0359 (0.0038)***	-.0283 (0.0039)***
Below Bachelor	0.1652 (0.0014)***	0.1653 (0.0014)***	0.1663 (0.0014)***	0.1667 (0.0014)***	0.1654 (0.0014)***	0.1657 (0.0014)***
Bachelor	0.4456 (0.0017)***	0.4494 (0.0017)***	0.4558 (0.0017)***	0.4557 (0.0017)***	0.4544 (0.0017)***	0.4542 (0.0017)***
Above Bachelor	0.5906 (0.0022)***	0.5908 (0.0022)***	0.5997 (0.0023)***	0.5991 (0.0023)***	0.5993 (0.0023)***	0.5986 (0.0023)***
Below Bachelor - FOR			-.0390 (0.005)***	-.0667 (0.0082)***	-.0282 (0.005)***	-.0462 (0.0082)***
Bachelor - FOR			-.1530 (0.0054)***	-.1525 (0.0088)***	-.1155 (0.0054)***	-.1152 (0.0088)***
Above Bachelor - FOR			-.0801 (0.0057)***	-.1441 (0.009)***	-.0677 (0.0057)***	-.1165 (0.0091)***
Work Exp.	0.0518 (0.0002)***	0.052 (0.0002)***	0.0518 (0.0002)***	0.0521 (0.0002)***		
Work Exp. - CAN					0.0524 (0.0002)***	0.0522 (0.0002)***
Work Exp. - FOR					0.0015 (0.002)	0.0077 (0.002)***
Loc. of study F.E.	No	Yes	No	Yes	No	Yes

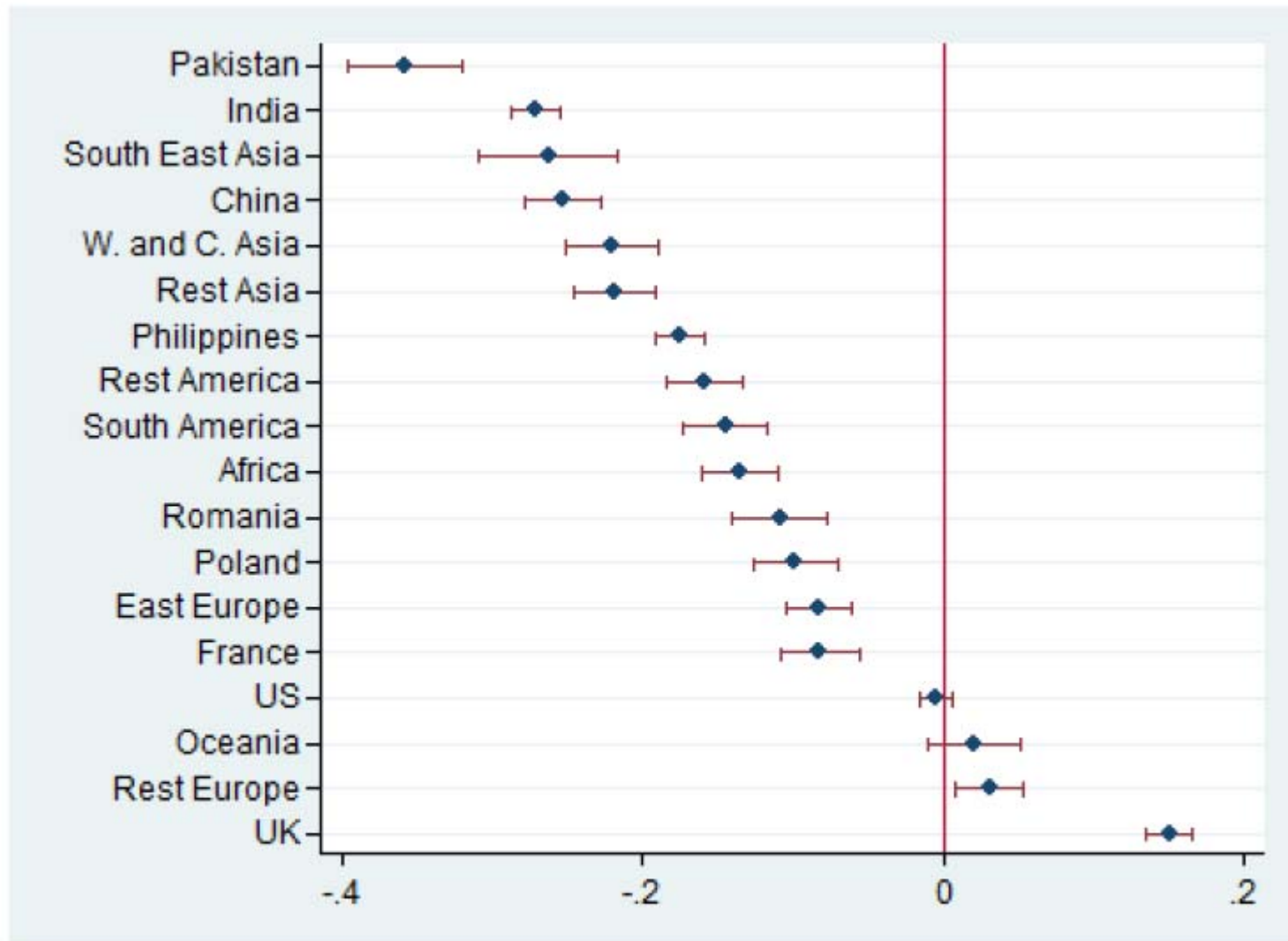


Figure 2: Location of Study Fixed Effects - Col 2 Table 3

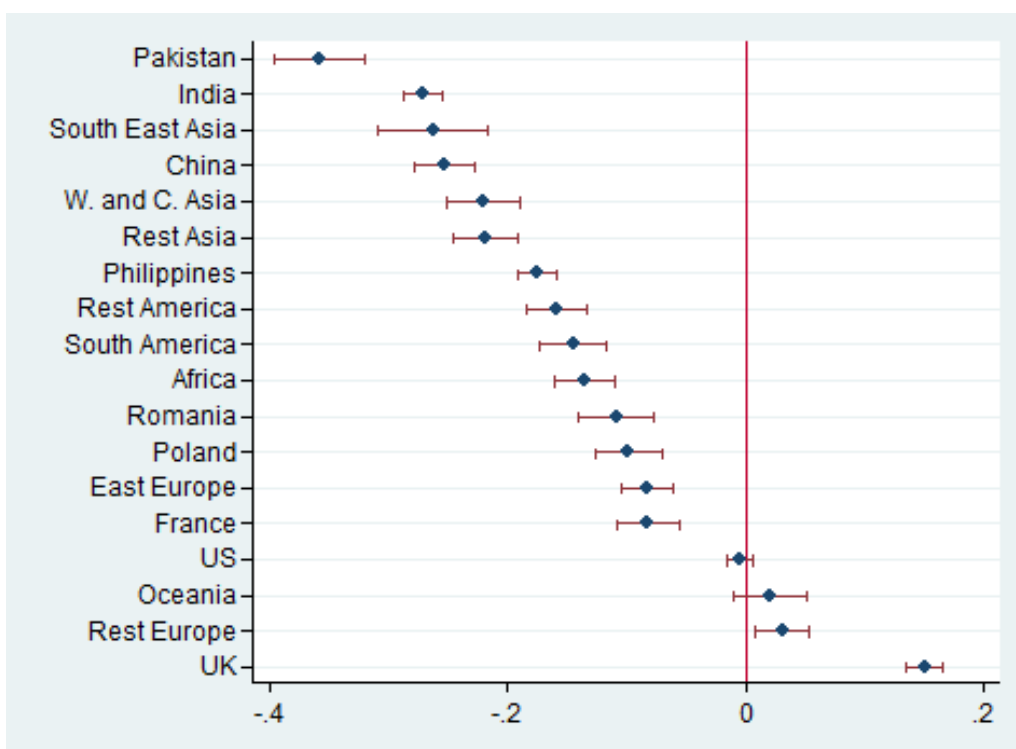


Figure 2: Location of Study Fixed Effects - Col 2 Table 3

Table 4: Including Older Arriving Immigrants

	(1)	(2)	(3)	(4)	(5)	(6)
Immigrant	-.2336 (0.0016)***	-.1006 (0.0022)***	-.0155 (0.0031)***			
Below Bachelor	0.1617 (0.0014)***	0.1655 (0.0014)***	0.1643 (0.0014)***	0.1648 (0.0014)***	0.1664 (0.0014)***	0.1645 (0.0014)***
Bachelor	0.4178 (0.0017)***	0.4529 (0.0017)***	0.4512 (0.0017)***	0.4299 (0.0017)***	0.4549 (0.0017)***	0.4515 (0.0017)***
Above Bachelor	0.5596 (0.0021)***	0.5951 (0.0023)***	0.5966 (0.0023)***	0.5829 (0.0021)***	0.5993 (0.0023)***	0.5954 (0.0023)***
Below Bachelor - FOR		-.0802 (0.0062)***	-.0508 (0.0062)***		-.0697 (0.0062)***	-.0537 (0.0063)***
Bachelor - FOR		-.2244 (0.0065)***	-.1628 (0.0065)***		-.2013 (0.0065)***	-.1679 (0.0068)***
Above Bachelor - FOR		-.2302 (0.0068)***	-.1692 (0.0068)***		-.1904 (0.0068)***	-.1746 (0.0074)***
Age of Imm. 15-19				-.0226 (0.0042)***	-.0242 (0.0042)***	-.0215 (0.0042)***
Age of Imm. 20-24				-.0770 (0.0035)***	-.0510 (0.0053)	0.0019
Age of Imm. 25-29				-.1720 (0.0029)***	-.0898 (0.0035)***	0.0422 (0.0086)***
Age of Imm. 30-34				-.2927 (0.0033)***	-.1768 (0.0039)***	0.065 (0.0122)***
Loc. of study F.E.	No	Yes	Yes	No	Yes	Yes
Separating work exp. by source	No	No	Yes	No	No	Yes

	Females			
	(1)	(2)	(3)	(4)
Immigrant	-0.0933 (0.0028)***	-0.0202 (0.0033)***	-0.0057 (0.0051)	0.0091 (0.0052)*
Below Bachelor	0.2508 (0.0021)***	0.2519 (0.0021)***	0.2526 (0.0021)***	0.2538 (0.0022)***
Bachelor	0.5589 (0.0024)***	0.5639 (0.0024)***	0.5713 (0.0024)***	0.5721 (0.0024)***
Above Bachelor	0.7167 (0.003)***	0.7209 (0.003)***	0.7293 (0.0031)***	0.7295 (0.0031)***
Below Bachelor - FOR			-0.0578 (0.0069)***	-0.1032 (0.0126)***
Bachelor - FOR			-0.181 (0.0073)***	-0.2175 (0.0132)***
Above Bachelor - FOR			-0.1083 (0.0077)***	-0.1914 (0.0137)***
Loc. of study F.E.	No	Yes	No	Yes

	Males			
	(5)	(6)	(7)	(8)
Immigrant	-0.1184 (0.0029)***	-0.0839 (0.0036)***	-0.0568 (0.0057)***	-0.0546 (0.0057)***
Below Bachelor	0.1212 (0.0019)***	0.121 (0.0019)***	0.1206 (0.0019)***	0.1206 (0.0019)***
Bachelor	0.3677 (0.0024)***	0.3711 (0.0024)***	0.3734 (0.0024)***	0.373 (0.0024)***
Above Bachelor	0.5041 (0.0032)***	0.5016 (0.0033)***	0.5093 (0.0034)***	0.5084 (0.0034)***
Below Bachelor - FOR			-0.0095 (0.0074)	-0.0131 (0.0109)
Bachelor - FOR			-0.0564 (0.008)***	-0.0329 (0.012)***
Above Bachelor - FOR			-0.0298 (0.0082)***	-0.058 (0.0122)***
Loc. of study F.E.	No	Yes	No	Yes

Table 6: Comparing Results With Imputation Methods

	Direct Measurement			Friedberg Method	
		Original base	Immigrants between 20 to 29 at arrival	Original base	Immigrants between 20 to 29 at arrival
	(1)	(2)	(3)	(4)	(5)
Below Bachelor	0.1452 (0.0014)***	0.1456 (0.0014)***	0.146 (0.0014)***	0.1453 (0.0015)***	0.1457 (0.0015)***
Bachelor	0.4108 (0.0017)***	0.417 (0.0017)***	0.4167 (0.0017)***	0.4153 (0.0017)***	0.415 (0.0017)***
Above Bachelor	0.5535 (0.0022)***	0.5602 (0.0023)***	0.5598 (0.0023)***	0.5576 (0.0023)***	0.5571 (0.0023)***
Below Bachelor - FOR		-0.0266 (0.008)***	-0.0258 (0.0082)***	-0.0187 (0.0059)***	-0.0189 (0.0061)***
Bachelor - FOR		-0.0834 (0.0085)***	-0.0824 (0.0087)***	-0.0706 (0.0069)***	-0.0708 (0.0071)***
Above Bachelor - FOR		-0.0863 (0.0088)***	-0.0843 (0.009)***	-0.0693 (0.0081)***	-0.0683 (0.0083)***
West		0.049 (0.0076)***	0.0477 (0.0078)***	0.0527 (0.0116)***	0.0349 (0.0208)*
East Europe		-0.0951 (0.0121)***	-0.1084 (0.0131)***	-0.022 (0.0158)	-0.0465 (0.0347)
China, W. and C. Asia		-0.0846 (0.0136)***	-0.0799 (0.0142)***	-0.0548 (0.016)***	-0.0611 (0.0274)**
Ind., Pak., Rest Asia		-0.1632 (0.0111)***	-0.1627 (0.0119)***	-0.0549 (0.012)***	-0.0499 (0.0214)**
Rest America		-0.0428 (0.0116)***	-0.0376 (0.0122)***	-0.0069 (0.0115)	-0.0131 (0.0242)
South East Asia		-0.1241 (0.0132)***	-0.1263 (0.015)***	-0.0575 (0.0137)***	-0.081 (0.0309)***

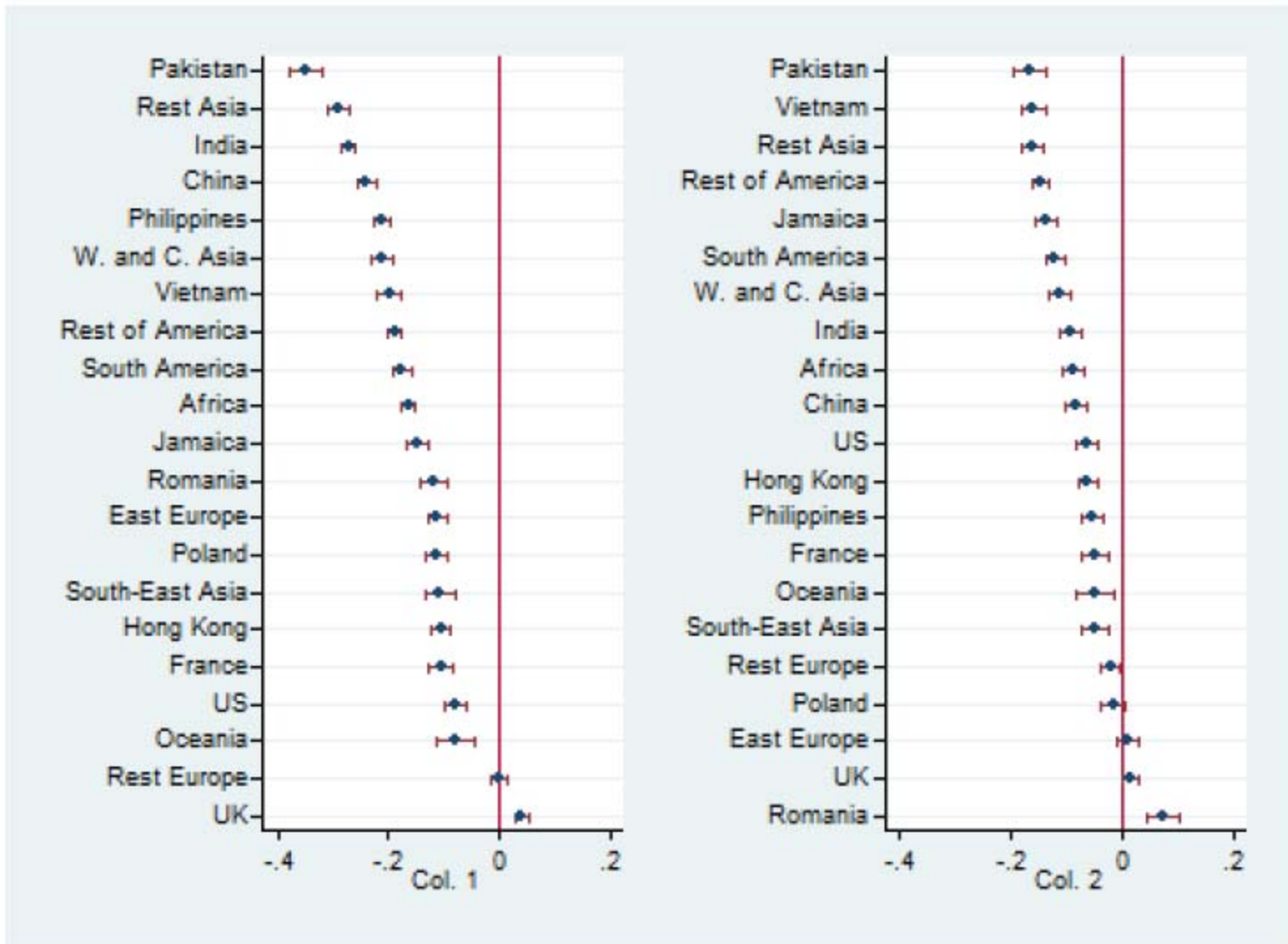


Figure 3: Country of Origin Fixed Effects - Col 1 and 2 Table 6

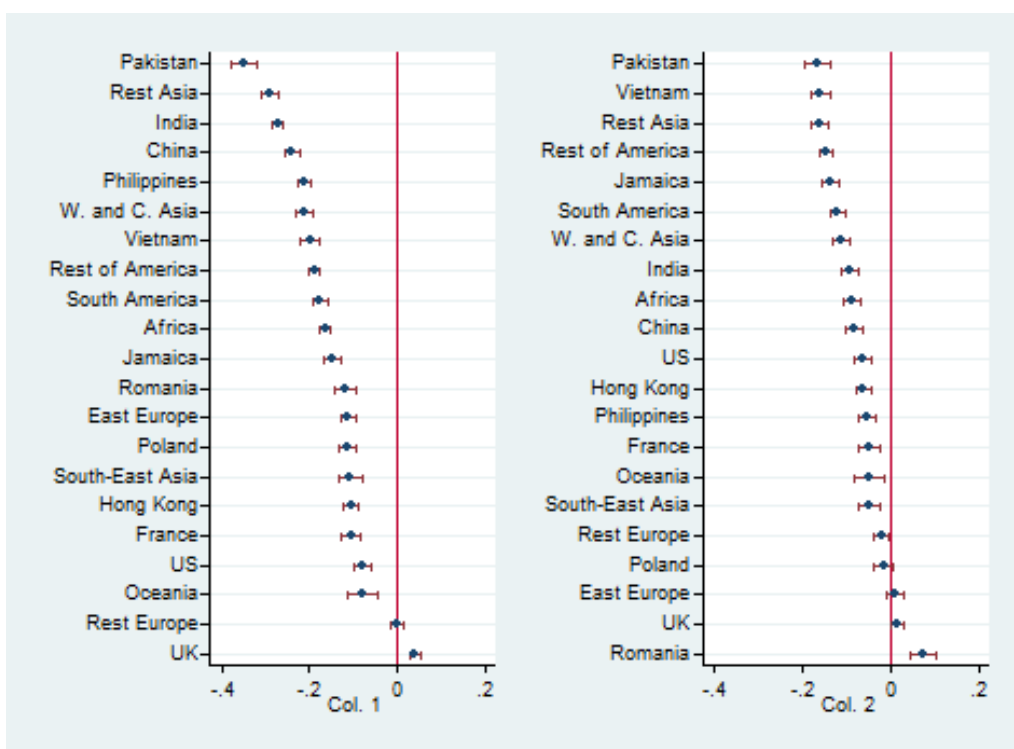


Figure 3: Country of Origin Fixed Effects - Col 1 and 2 Table 6

Table 7: Interactions: Location of Study and Field of Study

Field of Study	Location of Study							
	Canada (Base)	West	East Europe	China, W. and C. Asia	Ind., Pak. and Rest Asia	Rest America	South East Asia	Africa
Education	0.1445 (0.0030)***	-0.0622 (0.0085)***	-0.2152 (0.0332)***	-0.2005 (0.0506)***	-0.2289 (0.0317)***	-0.2008 (0.0349)***	-0.2919 (0.0271)***	-0.0865 (0.0497)*
Humanities and Arts		-0.0352 (0.0115)***	-0.0907 (0.0281)***	0.0013 (0.0309)	-0.1485 (0.0158)***	0.0723 (0.0414)*	-0.0168 (0.042)	-0.0037 (0.0403)
Soc. and Behav.Sc.and Law	0.1201 (0.0030)***	0.0522 (0.0125)***	-0.1983 (0.0243)***	-0.1415 (0.0389)***	-0.2277 (0.0219)***	-0.0825 (0.0273)***	-0.2089 (0.0294)***	-0.1064 (0.0369)***
Bus., Fin.and Mark.	0.2717 (0.0029)***	0.0316 (0.0119)***	-0.2733 (0.0294)***	-0.2269 (0.0333)***	-0.3124 (0.0182)***	-0.1586 (0.0227)***	-0.3124 (0.0233)***	-0.1452 (0.0388)***
Small Bus. and Acc.	0.1742 (0.0030)***	0.0257 (0.016)	-0.1791 (0.0386)***	-0.1355 (0.0316)***	-0.1465 (0.0225)***	-0.0274 (0.0273)	-0.1433 (0.0221)***	0.0095 (0.0292)
Comp. Sc., Math. and Phys.	0.2199 (0.0033)***	0.0376 (0.0144)***	-0.0433 (0.0241)*	-0.0617 (0.0254)**	-0.1487 (0.022)***	0.0081 (0.0347)	-0.1303 (0.0282)***	-0.0698 (0.0362)*
Arch.and Eng.and Eng. Tech.	0.3307 (0.0030)***	-0.0001 (0.0116)	-0.2004 (0.0166)***	-0.2271 (0.0195)***	-0.1657 (0.0179)***	-0.0961 (0.0271)***	-0.2513 (0.0201)***	-0.0673 (0.0344)*
Const. trade and Mech.	0.3160 (0.0030)***	0.0028 (0.0125)	-0.0604 (0.0198)***	-0.1519 (0.0511)***	-0.0665 (0.0278)**	-0.0823 (0.0217)***	-0.1623 (0.0323)***	-0.1576 (0.0522)***
Health Pract.and Life Sc.	0.1931 (0.0041)***	0.0484 (0.0167)***	-0.152 (0.0444)***	-0.1214 (0.0432)***	-0.2152 (0.0249)***	-0.0714 (0.0452)	-0.2966 (0.0384)***	0.1165 (0.0515)**
Health Assistance	0.2510 (0.0029)***	-0.0331 (0.0147)**	-0.0935 (0.0343)***	0.0381 (0.0445)	-0.0112 (0.0325)	-0.0667 (0.0413)	-0.0305 (0.0202)	0.0051 (0.073)

Field of Study	Location of Study				
	Canada (Base)	West	East Europe	China, W. and C. Asia	Ind., Pak. and Rest Asia
Education	0.1445 (0.0030)***	-0.0622 (0.0085)***	-0.2152 (0.0332)***	-0.2005 (0.0506)***	-0.2289 (0.0317)***
Humanities and Arts		-0.0352 (0.0115)***	-0.0907 (0.0281)***	0.0013 (0.0309)	-0.1485 (0.0158)***
Soc. and Behav.Sc.and Law	0.1201 (0.0030)***	0.0522 (0.0125)***	-0.1983 (0.0243)***	-0.1415 (0.0389)***	-0.2277 (0.0219)***
Bus., Fin.and Mark.	0.2717 (0.0029)***	0.0316 (0.0119)***	-0.2733 (0.0294)***	-0.2269 (0.0333)***	-0.3124 (0.0182)***
Small Bus. and Acc.	0.1742 (0.0030)***	0.0257 (0.016)	-0.1791 (0.0386)***	-0.1355 (0.0316)***	-0.1465 (0.0225)***
Comp. Sc., Math. and Phys.	0.2199 (0.0033)***	0.0376 (0.0144)***	-0.0433 (0.0241)*	-0.0617 (0.0254)**	-0.1487 (0.022)***
Health Assistance	0.2510 (0.0029)***	-0.0331 (0.0147)**	-0.0935 (0.0343)***	0.0381 (0.0445)	-0.0112 (0.0325)

Conclusions

- ▶ A large fraction (30 to 80 percent) of the earnings gap between immigrants and natives can be accounted for by the location of study.
- ▶ Immigrants who studied in Canada or other "comparable" countries (UK, US, Western Europe) tend to do much better than those who did not.
- ▶ The role of foreign schooling in the earnings gap is particularly important for women and immigrants who came to Canada after age 25.
- ▶ Consistent with other evidence suggesting that foreign schooling is not as valuable in the Canadian labour market as Canadian education (e.g. Ferrer, Green and Riddell)