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Earnings of Postsecondary Graduates by Detailed Field of Study

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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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Earnings of Postsecondary Graduates by Detailed Field of Study

by Marc Frenette and Kristyn Frank, Social Analysis and Modelling Division

This *Economic Insights* article documents age-adjusted mean earnings by detailed field of study among 25- to 54-year-old university and college graduates who worked full year, full time in 2010. The data are drawn from the 2011 National Household Survey. The results suggest that management sciences and quantitative methods graduates were the top earners among male and female bachelor's degree holders in 2010. The study also finds that earnings vary considerably among graduates from specific fields of study that are typically grouped together (e.g. economics graduates earn more than graduates from other social science programs, such as sociology and psychology).

Introduction

Perhaps the most important decision that postsecondary students make is what to study since the choice is closely linked to future job satisfaction and earnings. Evidence suggests that students take both factors into consideration. Indeed, while field of study choice is largely determined by students' individual preferences (Arcidiacono 2004), the expected earnings associated with a field is also an important consideration for most students (Gunderson and Krashinsky 2009). For this reason, producing quality evidence on the association between field of study and earnings has the potential to provide students with data that enable them to become better informed in their decision making.

Much of the existing literature provides earnings information for Canadian graduates by broad field of study, generally concluding that graduates of more applied fields, such as engineering, receive higher earnings than graduates of liberal arts fields (e.g., Finnie 2001; Finnie and Frenette 2003; Frank, Frenette and Morissette 2015; Frank and Walters 2012; Ostrovsky and Frenette 2014; Walters 2004).

While results by broad field of study may be highly useful to policymakers and education planners, students are typically required to decide among very specific programs. Earnings by detailed fields can provide students with information that may facilitate these decisions. Results can also provide insight into the potential earnings advantages of additional education within specific fields. Findings from the 1996 Census indicate notable earnings differentials within specific fields by different levels of education (Stark 2007); however, more recent data are needed.

This study uses the 2011 National Household Survey to compare mean (or average) annual earnings by detailed field of study

for bachelor's and master's degree graduates, as well as college graduates (see *Data sources, methodology and definitions*). Earnings across fields are presented separately for 25- to 54-year-old men and women who worked full year (49 to 52 weeks), full time (at least 30 hours per week) in 2010. Given the wide age range (necessary to produce adequate sample sizes), the results are age-adjusted. The fields of study are reported at the four-digit level of the 2011 Classification of Instructional Programs (CIP). This level of detail allows for useful comparisons within broad fields of study. For example, students interested in postsecondary programs in architecture and engineering may not only examine whether earnings differences exist between architecture and engineering graduates, but also between graduates of different types of engineering programs (e.g., civil, electrical and electronics, and mechanical). Note that results are only reported for fields with a sample size of 200 or more.¹

Note that results are only age-adjusted within sex and education level groupings. For this reason, the analysis in this study focuses exclusively on comparisons across field of study for individuals of the same sex and with the same highest level of completed education. Comparisons between men and women would be particularly challenging since the data do not contain many of the key factors that have been associated with analyzing the gender wage gap, such as accumulated work experience, job tenure, unionization, working in a self-directed work group, work schedules and flexible work hours, overtime pay, firm size, working for a non-profit organization, foreign ownership, performance-based pay, and receipt of workplace training (see Drolet, 2002).

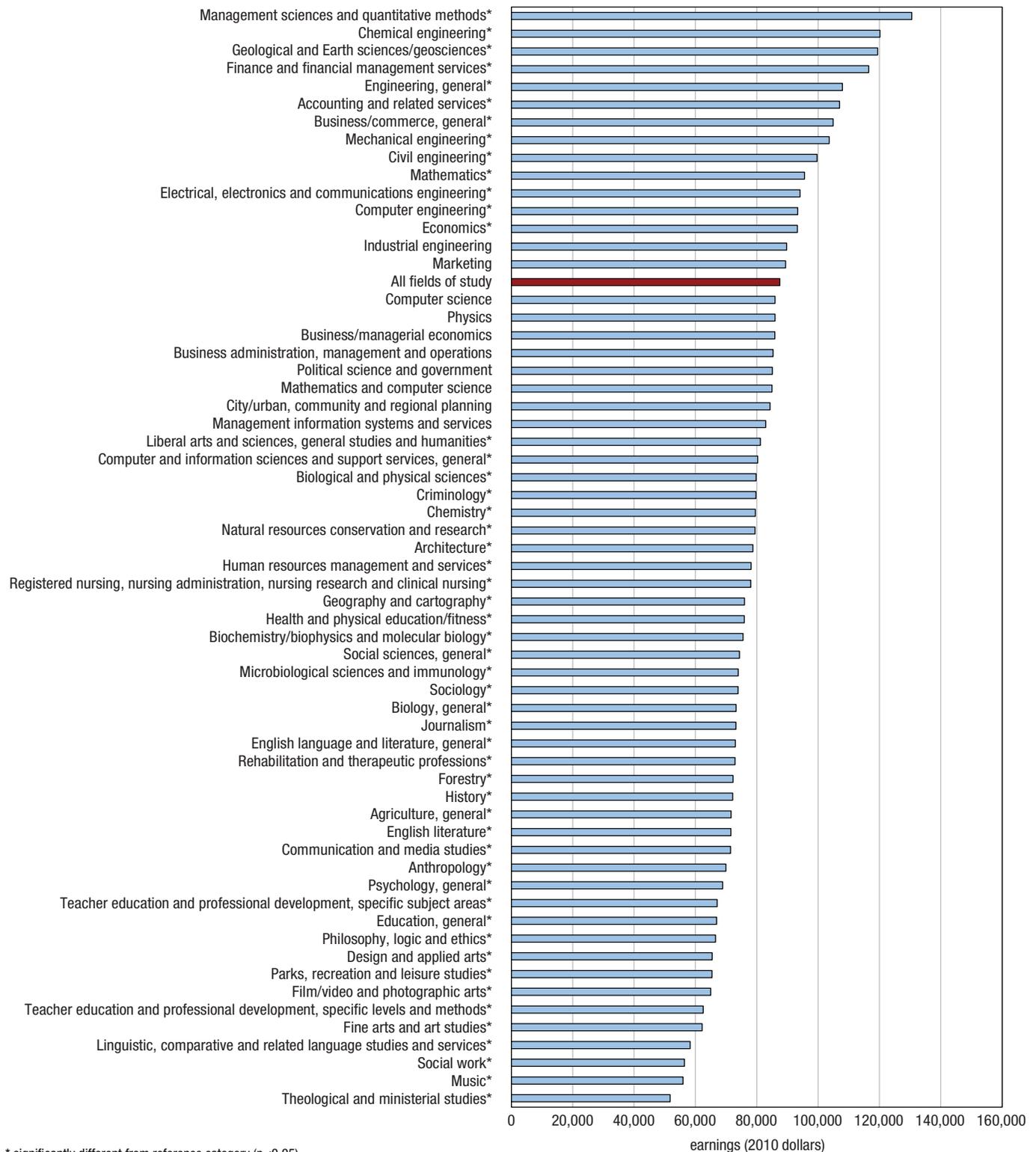
1. Results are not shown for doctoral and professional degree graduates since very few fields were retained with the sample criteria.



Chart 1

Mean age-adjusted earnings of male bachelor's degree graduates by field of study, 2010

Field of study (2011 CIP)

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

Notes: The 5% significance level indicates that the field of study is different than the average across all fields. The sample includes 25- to 54-year-olds who completed their highest level of education in Canada, who worked full year, full time (i.e., 49 to 52 weeks, mainly full time) as a paid employee, with positive wages and zero self-employment income. CIP: Classification of Instructional Programs.

Source: Statistics Canada, 2011 National Household Survey.



Management sciences and quantitative methods graduates highest earners among bachelor's degree holders

On average, 25- to 54-year-old male bachelor's degree graduates who worked full year, full time, in 2010, earned \$87,543 in 2010 dollars (Chart 1).² Among them, management sciences and quantitative methods graduates earned the most—\$130,547, or \$43,004 more than the average male bachelor's degree graduate (after adjusting for age).³ These graduates were followed closely by graduates of chemical engineering (\$120,148), geological and earth sciences/geosciences (\$119,397), and finance and financial management services (\$116,473).⁴ Of the 13 programs with above-average earnings,⁵ 6 were in engineering and 4 were in business. Note that 2010 was in the midst of a recovery in natural resources prices, which may have benefited graduates from certain disciplines such as engineering and geology. More recently, world oil prices have declined (Gellatly 2015), and it remains to be seen how graduates in related fields have fared in the labour market.

At the other end of the spectrum, male bachelor's degree graduates from theological and ministerial studies earned the least (\$51,791) after adjusting for age.⁶ These graduates were followed closely by graduates from music (\$55,942); social work (\$56,407); and linguistics, comparative and related language studies and services (\$58,301).

A key finding that emerges is that earnings varied considerably by specific fields, even within broad field groupings. For example, the primary 2011 CIP groupings combine architecture and engineering programs. However, while male graduates from all engineering programs but one earned more than the average male bachelor's degree graduate,⁷ the average earnings of male architecture graduates was almost \$9,000 below the overall average (after adjusting for age). Similarly, within the category of social and behavioural science and law,⁸ economics was the only field in which men had above-average earnings (\$93,256)—although male political science and government graduates were close to the average (\$85,069). In contrast, male general psychology graduates earned \$68,905 on average (\$24,352 less than their counterparts in economics), and male sociology graduates earned \$73,934 on average (\$19,322 less than their economics counterparts). Similar findings hold for other broad field of study groupings—that is,

the average earnings of graduates varied considerably across specific disciplines within the broader classification. This finding holds more generally by sex and education level.

The relative results for women with a bachelor's degree bear striking similarities to the results for men. In Chart 2, the field associated with the highest age-adjusted earnings was management sciences and quantitative methods graduates (\$94,525, which was about \$30,000 above the average across all disciplines—\$64,420).⁹ This was followed closely by chemical engineering (\$94,385), mechanical engineering (\$86,549) and general engineering (\$85,603). More generally, the fields associated with above-average pay for female bachelor's degree holders overlapped substantially with those for their male counterparts. This included many fields that women are typically less likely to choose than men, including several types of engineering programs, mathematics, and even geological and earth sciences/geosciences (a field that men are much more likely to select than women). Economics was also associated with the highest pay among social and behavioural science and law graduates for women (as was the case for men). Of the 18 disciplines associated with above-average earnings, 6 were in business and 6 were in engineering.

The fields associated with the lowest average earnings for female bachelor's degree graduates included French literature (\$50,328), followed very closely by human development, family studies and related services (\$50,607), general human services (\$50,624), and special education and teaching (\$50,927)¹⁰. Although the specific fields appearing at the very bottom were not the same for men and women, there was considerable overlap in the fields associated with below-average pay for both sexes.

Indeed, there were some notable differences in the fields of study associated with above- or below-average pay for male and female bachelor's degree holders. For example, male graduates of registered nursing, nursing administration, nursing research and clinical nursing programs earned \$9,491 below the average for all male bachelor's degree graduates. In contrast, their female counterparts earned \$7,026 above the average for all female bachelor's degree graduates. Similarly, male journalism graduates earned \$14,326 below the average earnings of all male bachelor's degree graduates, while their female counterparts registered earnings that were close to the average.

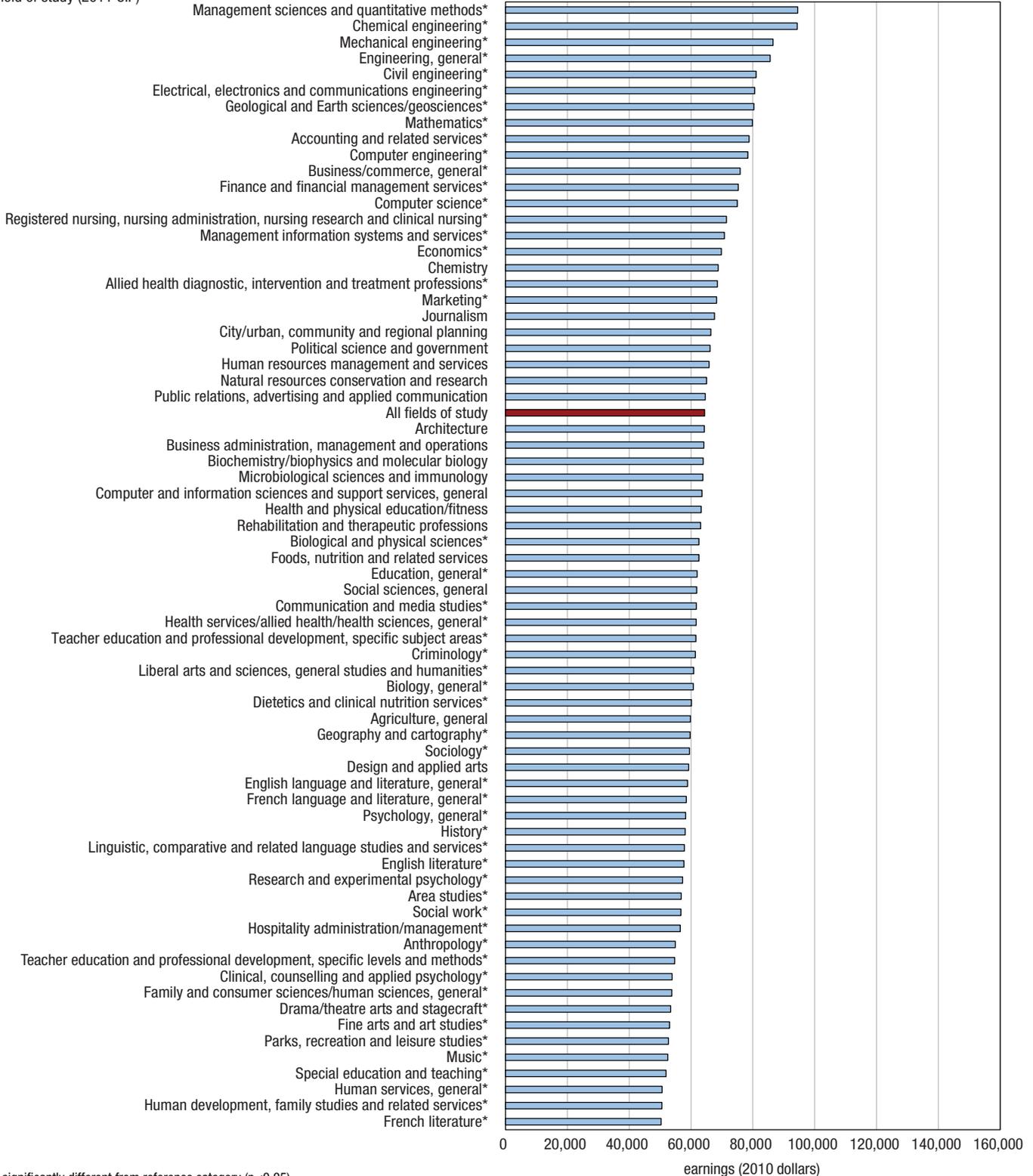
2. Among disciplines with at least 200 observations. Note also that the overall average reflects the fact that most graduates take disciplines that are associated with higher pay.
3. Slightly more than one-half of these graduates (male and female) worked as mathematicians, statisticians and actuaries (according to the 2011 National Occupational Classification). No other occupation accounted for more than 7% of all graduates from this field.
4. Most of the focus in this study is on the fields associated with the highest and lowest earnings. Far more can be written about the many fields in between; however, to be concise, these fields are only mentioned to make very specific points (e.g., to demonstrate the difference in earnings across fields that have been grouped together in previous studies).
5. Fields of study with earnings that are statistically significant.
6. Students may choose a program based on many factors, including earnings potential, but overall job satisfaction (e.g., helping others) is also an important factor. In addition, many programs may have public benefits that cannot be fully captured by earnings.
7. Industrial engineering graduates was the exception, having earned about the same as the average graduate.
8. Note that graduates of LLB, JD and BCL programs were excluded from this analysis since they are professional programs. Legal studies programs (which are non-professional) were not excluded, but the sample sizes were too small for reporting purposes. See *Data sources, methodology and definitions* for additional details.
9. See the Introduction for the many reasons why comparisons should not be made between men and women with these data.
10. Note that average earnings in general education were higher, at \$61,985.



Chart 2

Mean age-adjusted earnings of female bachelor's degree graduates by field of study, 2010

Field of study (2011 CIP)

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

Notes: The 5% significance level indicates that the field of study is different than the average across all fields. The sample includes 25- to 54-year-olds who completed their highest level of education in Canada, who worked full year, full time (i.e., 49 to 52 weeks, mainly full time) as a paid employee, with positive wages and zero self-employment income. CIP: Classification of Instructional Programs.

Source: Statistics Canada, 2011 National Household Survey.

Earnings highest among finance and financial management services graduates at the master's degree level

Turning to men with a master's degree, finance and financial management services graduates earned the most on average (after adjusting for age). Male graduates from this discipline earned \$160,100 on average (in 2010 dollars), which was almost \$50,000 more than the average across all fields of study (Chart 3). Of the five disciplines associated with above-average earnings, four were business-related, and the fifth was in engineering.¹¹

The field associated with the lowest pay for male master's degree holders included theological and ministerial studies (\$50,184), and is followed by social work (\$62,958), library science and administration (\$66,456), and general psychology (\$74,091).

One notable difference between the results for male bachelor's and master's degree holders relates to engineering graduates. At the bachelor's degree level, graduates from six out of seven of the different types of engineering programs registered above-average earnings in 2010 (the seventh registered average earnings). Among male master's degree holders, graduates from only one out of the six engineering programs with sufficient samples registered above-average earnings (general engineering).

Women who graduated with a master's degree in finance and financial management services also earned the most at their level—\$111,714 (Chart 4). They were followed closely by three other business-related disciplines: general business/commerce (\$111,327), business administration, management and operations (\$99,367), and accounting and related services (\$99,060).

The fields associated with the lowest pay for women with a master's degree included theological and ministerial studies (\$49,415), followed by student counselling and personnel services (\$59,944); linguistic, comparative and related language studies and services (\$62,614); and teacher education and professional development, specific levels and methods (\$65,342).

One interesting difference between men and women with a master's degree relates to the public administration results. Male graduates from that discipline earned almost \$17,000 less than the average male master's degree graduate. In contrast, female public administration graduates earned more than \$4,000 above the average female master's degree graduate.

Less earnings variation across fields among college graduates

In general, there was far less earnings variation across specific fields of study among college graduates than among bachelor's and master's degree graduates.

More specifically, male college graduates from 61 of the 93 fields (66%) earned within \$10,000 (in 2010 dollars) of the overall average after adjusting for age (Chart 5), compared with 23 of the 61 programs (38%) among male bachelor's degree graduates

(Chart 1) and 6 of the 30 programs (20%) among male master's degree graduates (Chart 3). Similarly, female college graduates from 61 of the 75 fields (81%) earned within \$10,000 of the overall average (Chart 6), compared with 46 of the 69 disciplines (67%) among female bachelor's degree graduates (Chart 2) and 17 of the 34 programs (50%) among female master's degree graduates (Chart 4).

That being said, the field associated with the highest average earnings among male college graduates was mining and petroleum technologies/technicians (\$102,986), while the lowest was health aides/attendants/orderlies (\$45,193).

Among female college graduates, average earnings ranged from \$63,721 for criminology graduates to \$36,158 for cosmetology and related personal grooming services.

Another notable difference between the college and university results is the fact that business graduates fared much better at the university level than at the college level. Indeed, university business graduates registered average earnings that were often near the top among all disciplines. In contrast, the average earnings of college business graduates were much closer to the overall college average.

Conclusion

The objective of this study has been to compare the age-adjusted earnings observed among full-time, full-year employees disaggregated by detailed fields of study. More specifically, specific fields of study were ranked according to age-adjusted earnings by sex and education level. Such information provides more useful information to students faced with making program choices than earnings data classified by broader categories.

One of the key findings that emerges from the study is the high degree of variability in earnings by specific field of study. For example, although engineering graduates are often grouped with architecture graduates, engineering graduates generally earn considerably more. Similarly, economics graduates typically earn far more than psychology graduates, yet both are often grouped together under social sciences.

The relative ranking for certain disciplines depended on the level of study. For example, engineering graduates were typically ranked above average at the bachelor's degree level. However, at the master's degree level, male engineering graduates generally registered below-average earnings. Similarly, university business graduates often ranked near the top of the earnings ladder, but at the college level, they were generally closer to the average.

The range of earnings associated with the fields was much smaller among college graduates than among their university counterparts. Male and female college graduates in most disciplines earned, on average, within \$10,000 of the overall average.

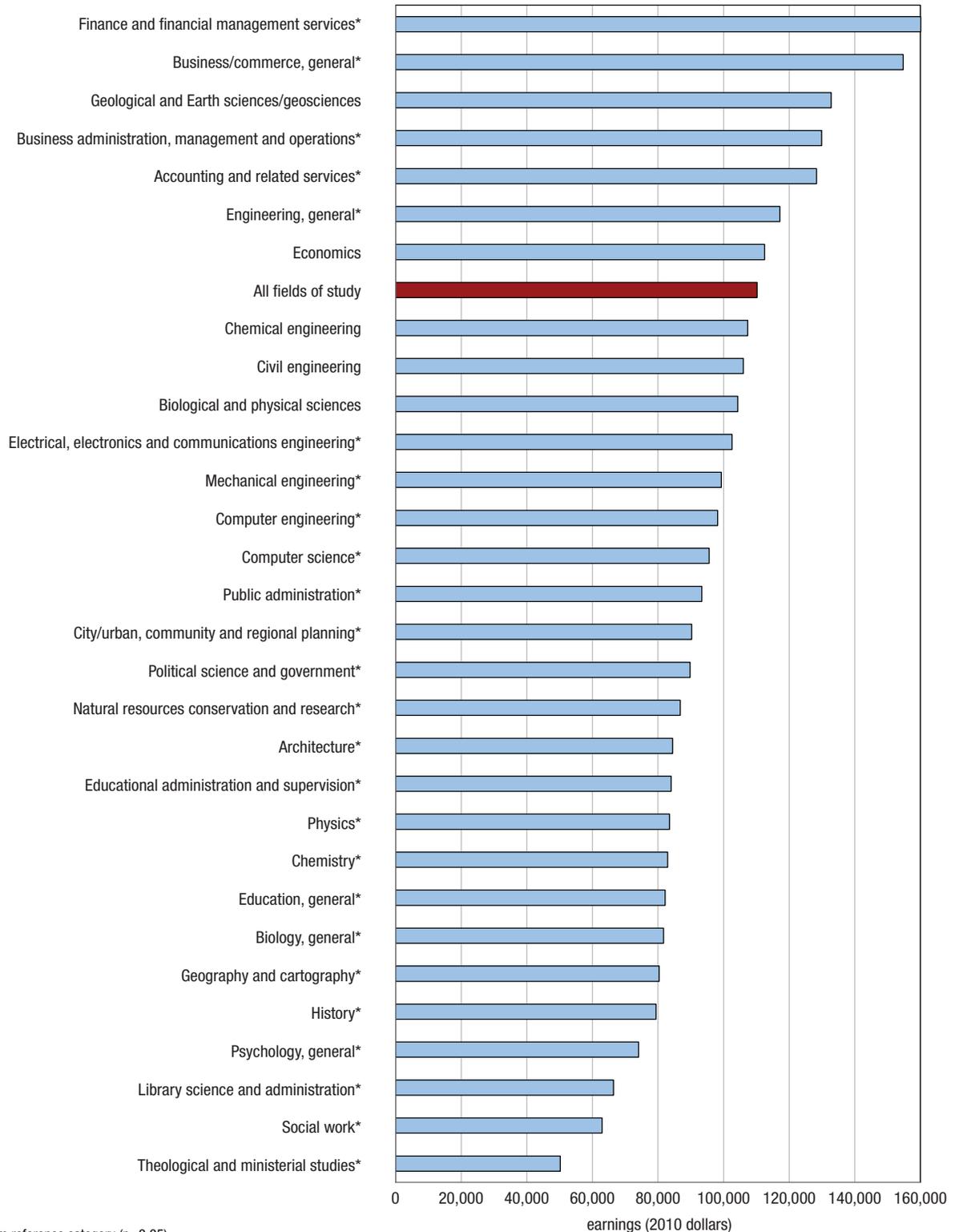
Given the insights provided in this study, future analysis carried out by field of study may benefit from a similar level of detail whenever possible. ■

11. Note that graduates of geological and Earth sciences/geosciences earned \$132,787 on average, which was more than \$30,000 above the average earnings among male master's degree graduates. However, this difference was not statistically significant.



Chart 3
age-adjusted earnings of male master's degree graduates by field of study, 2010

Field of study (2011 CIP)



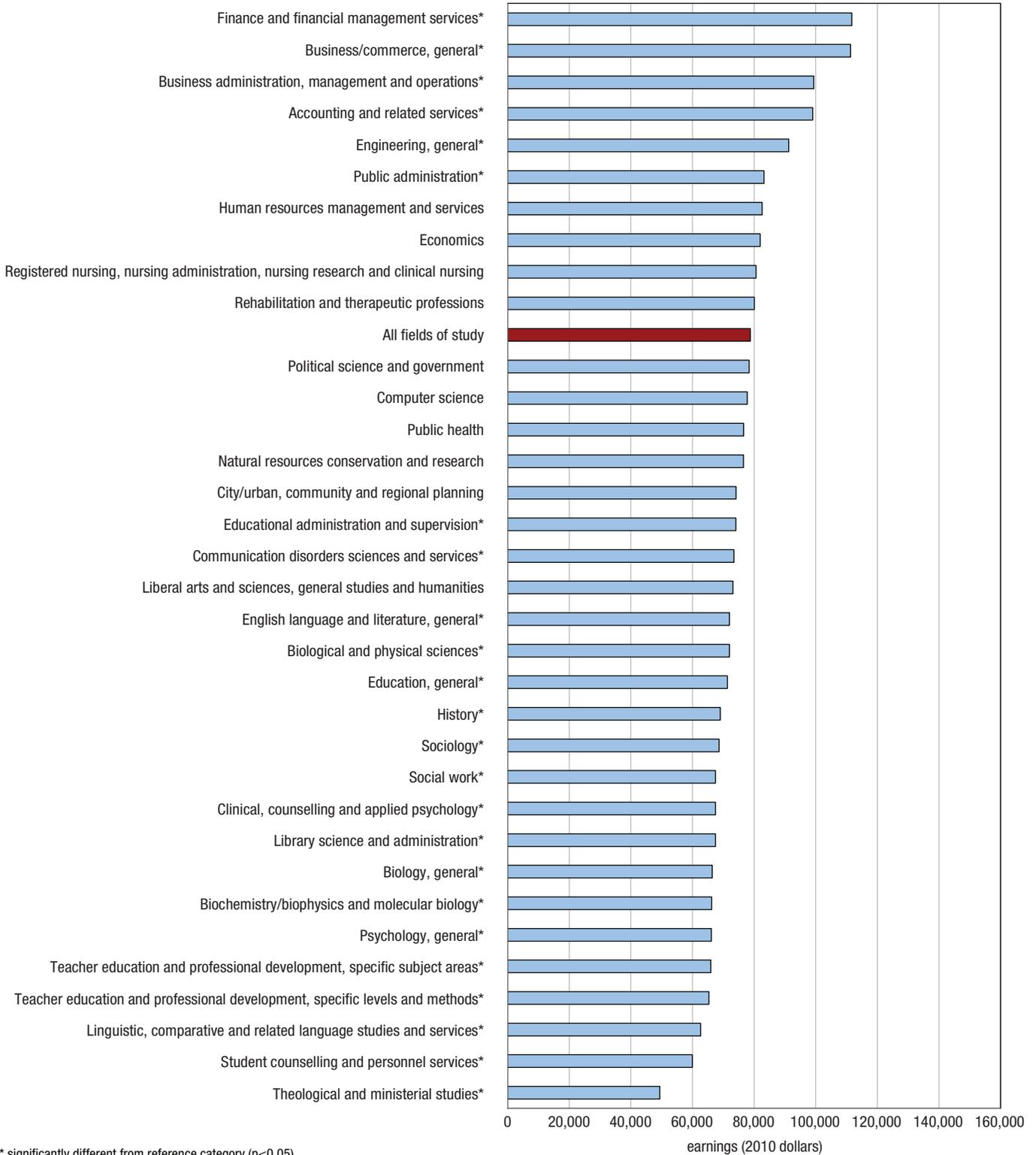
* significantly different from reference category ($p < 0.05$)

Notes: The 5% significance level indicates that the field of study is different than the average across all fields. The sample includes 25- to 54-year-olds who completed their highest level of education in Canada, who worked full year, full time (i.e., 49 to 52 weeks, mainly full time) as a paid employee, with positive wages and zero self-employment income. CIP: Classification of Instructional Programs.

Source: Statistics Canada, 2011 National Household Survey.

Chart 4
Mean age-adjusted earnings of female master's degree graduates by field of study, 2010

Field of study (2011 CIP)



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

Notes: The 5% significance level indicates that the field of study is different than the average across all fields. The sample includes 25- to 54-year-olds who completed their highest level of education in Canada, who worked full year, full time (i.e., 49 to 52 weeks, mainly full time) as a paid employee, with positive wages and zero self-employment income. CIP: Classification of Instructional Programs.

Source: Statistics Canada, 2011 National Household Survey.



Chart 5
Mean age-adjusted earnings of male college graduates by field of study, 2010

Field of study (2011 CIP)



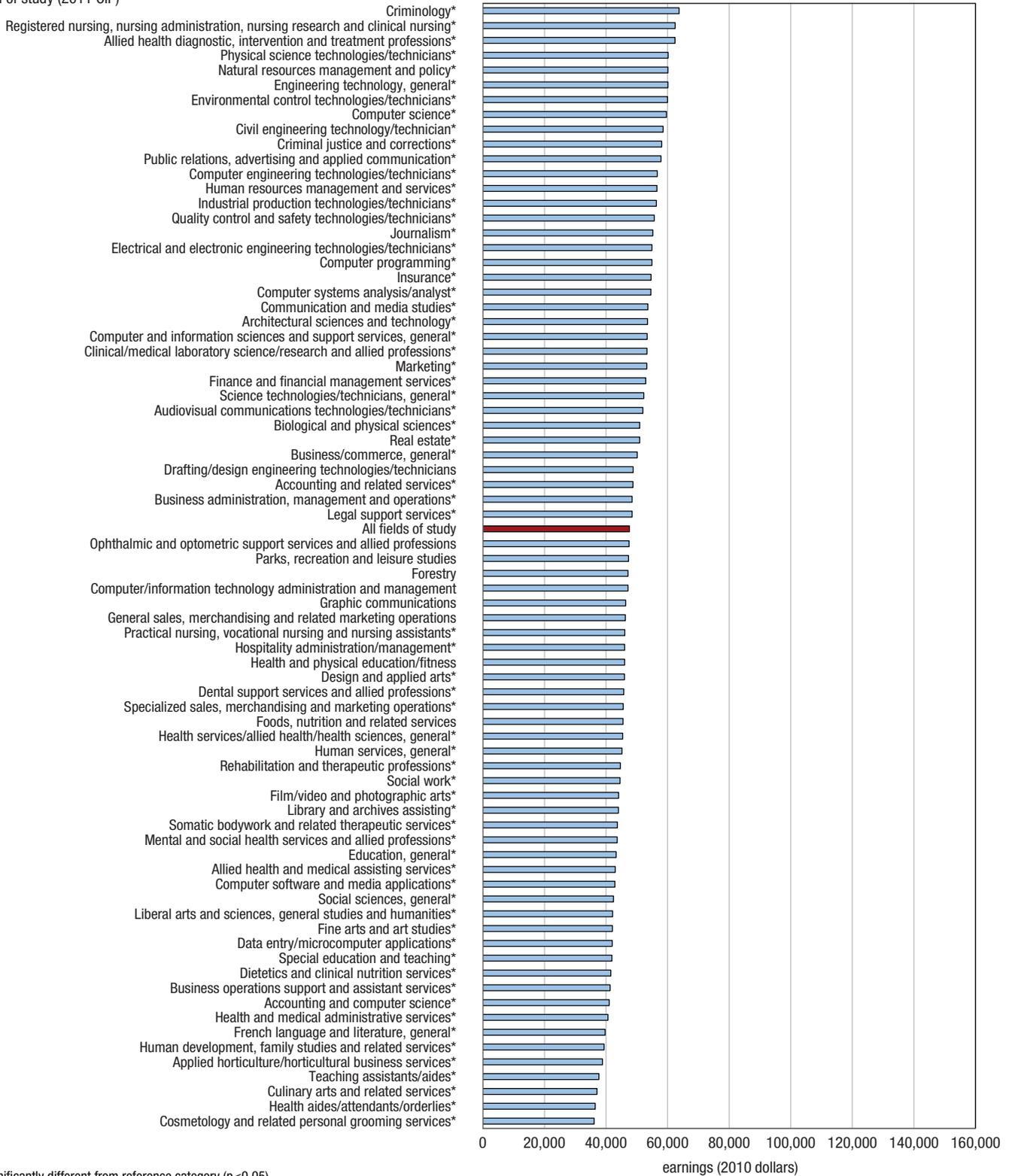
* significantly different from reference category ($p < 0.05$)

Notes: The 5% significance level indicates that the field of study is different than the average across all fields. The sample includes 25- to 54-year-olds who completed their highest level of education in Canada, who worked full year, full time (i.e., 49 to 52 weeks, mainly full time) as a paid employee, with positive wages and zero self-employment income. CIP: Classification of Instructional Programs.

Source: Statistics Canada. 2011 National Household Survey.

Chart 6
Mean age-adjusted earnings of female college graduates by field of study, 2010

Field of study (2011 CIP)



* significantly different from reference category (p<0.05)

Notes: The 5% significance level indicates that the field of study is different than the average across all fields. The sample includes 25- to 54-year-olds who completed their highest level of education in Canada, who worked full year, full time (i.e., 49 to 52 weeks, mainly full time) as a paid employee, with positive wages and zero self-employment income. CIP: Classification of Instructional Programs.

Source: Statistics Canada, 2011 National Household Survey.



Table 1
Mean age-adjusted earnings of men and women, by field of study, 2010

CIP Code	Field of Study	College		Bachelors		Masters	
		Men	Women	Men	Women	Men	Women
		earnings (2010 dollars)					
1.00	Agriculture, general	54,095*		71,610*	59,829		
1.03	Agricultural production operations	48,329*					
1.06	Applied horticulture/horticultural business services	58,948*	38,855*				
3.01	Natural resources conservation and research	73,514*		79,448*	65,014	86,788*	76,566
3.02	Natural resources management and policy	67,374	60,126*				
3.05	Forestry	63,693*	47,135	72,277*			
3.06	Wildlife and wildlands science and management	61,992*					
4.02	Architecture			78,738*	64,290	84,446*	
4.03	City/urban, community and regional planning			84,319	66,414	90,274*	74,163
4.09	Architectural sciences and technology	69,677*	53,502*				
5.01	Area studies				56,851*		
9.01	Communication and media studies	67,594	53,607*	71,466*	61,712*		
9.04	Journalism	59,027*	55,221*	73,217*	67,580		
9.09	Public relations, advertising and applied communication	64,652	57,860*		64,610		
10.02	Audiovisual communications technologies/technicians	58,561*	51,968*				
10.03	Graphic communications	53,390*	46,424				
11.01	Computer and information sciences and support services, general	65,011*	53,390*	80,290*	63,534		
11.02	Computer programming	67,801	54,900*				
11.05	Computer systems analysis/analyst	65,480	54,578*				
11.06	Data entry/microcomputer applications		42,046*				
11.07	Computer science	66,965	59,657*	85,992	74,972*	95,606*	77,776
11.08	Computer software and media applications	56,356*	42,860*				
11.10	Computer/information technology administration and management	60,765*	47,120				
12.03	Funeral service and mortuary science	60,860					
12.04	Cosmetology and related personal grooming services		36,158*				
12.05	Culinary arts and related services	47,212*	37,066*				
13.01	Education, general		43,272*	66,900*	61,985*	82,166*	71,313*
13.04	Educational administration and supervision					84,008*	74,090*
13.10	Special education and teaching	50,280*	41,908*		51,927*		
13.11	Student counselling and personnel services						59,944*
13.12	Teacher education and professional development, specific levels and methods			62,567*	54,703*		65,342*
13.13	Teacher education and professional development, specific subject areas			67,080*	61,563*		65,941*
13.15	Teaching assistants/aides		37,684*				
14.01	Engineering, general			107,941*	85,603*	117,160*	91,249*
14.07	Chemical engineering			120,148*	94,385*	107,371	
14.08	Civil engineering			99,644*	81,075*	106,007	
14.09	Computer engineering			93,373*	78,363*	98,201*	
14.10	Electrical, electronics and communications engineering			94,132*	80,576*	102,559*	
14.19	Mechanical engineering			103,600*	86,549*	99,288*	
14.35	Industrial engineering			89,770			
15.00	Engineering technology, general	77,765*	60,104*				
15.02	Civil engineering technology/technician	75,478*	58,544*				
15.03	Electrical and electronic engineering technologies/technicians	70,475*	54,911*				



Table 1
Mean age-adjusted earnings of men and women, by field of study, 2010 (continued)

CIP Code	Field of Study	College		Bachelors		Masters	
		Men	Women	Men	Women	Men	Women
earnings (2010 dollars)							
15.04	Electromechanical and instrumentation and maintenance technologies/technicians	76,179*					
15.05	Environmental control technologies/technicians	66,791	59,966*				
15.06	Industrial production technologies/technicians	74,418*	56,349*				
15.07	Quality control and safety technologies/technicians	70,898	55,664*				
15.08	Mechanical engineering related technologies/technicians	73,283*					
15.09	Mining and petroleum technologies/technicians	102,986*					
15.10	Construction engineering technology/technician	76,831*					
15.11	Engineering-related technologies	69,549					
15.12	Computer engineering technologies/technicians	65,959	56,645*				
15.13	Drafting/design engineering technologies/technicians	66,684	48,830				
15.99	Engineering technologies and engineering-related fields, other	79,098*					
16.01	Linguistic, comparative and related language studies and services			58,301*	57,849*		62,614*
19.01	Family and consumer sciences/human sciences, general				53,761*		
19.05	Foods, nutrition and related services		45,521		62,526		
19.07	Human development, family studies and related services	45,618*	39,371*		50,607*		
22.03	Legal support services	63,618*	48,448*				
23.01	English language and literature, general			73,027*	58,891*		72,012*
23.14	English literature			71,598*	57,717*		
24.01	Liberal arts and sciences, general studies and humanities	53,937*	42,120*	81,204*	60,836*		73,144
25.01	Library science and administration					66,456*	67,439*
25.03	Library and archives assisting		44,065*				
26.01	Biology, general			73,251*	60,761*	81,665*	66,407*
26.02	Biochemistry/biophysics and molecular biology			75,542*	63,951		66,245*
26.05	Microbiological sciences and immunology			73,944*	63,847		
27.01	Mathematics			95,587*	79,852*		
30.01	Biological and physical sciences	66,558	50,952*	79,812*	62,570*	104,330	71,979*
30.08	Mathematics and computer science			85,003			
30.16	Accounting and computer science		41,064*				
31.01	Parks, recreation and leisure studies	57,131*	47,328	65,423*	52,714*		
31.05	Health and physical education/fitness	59,323*	46,062	75,937*	63,259		
38.01	Philosophy, logic and ethics			66,592*			
39.06	Theological and ministerial studies	49,336*		51,791*		50,184*	49,415*
40.05	Chemistry	68,684		79,534*	68,805	82,945*	
40.06	Geological and Earth sciences/geosciences			119,397*	80,314*	132,787	
40.08	Physics	73,366*		85,983		83,526*	
41.00	Science technologies/technicians, general		52,251*				
41.03	Physical science technologies/technicians	74,872*	60,167*				
42.01	Psychology, general			68,905*	58,282*	74,091*	66,128*
42.27	Research and experimental psychology				57,278*		
42.28	Clinical, counselling and applied psychology				53,877*		67,450*
43.01	Criminal justice and corrections	73,719*	58,085*				
43.02	Fire protection	75,600*					
44.00	Human services, general	50,105*	45,191*		50,624*		



Table 1
Mean age-adjusted earnings of men and women, by field of study, 2010 (continued)

CIP Code	Field of Study	College		Bachelors		Masters	
		Men	Women	Men	Women	Men	Women
		earnings (2010 dollars)					
44.04	Public administration					93,377*	83,196*
44.07	Social work	53,919*	44,548*	56,407*	56,717*	62,958*	67,453*
45.01	Social sciences, general	57,877*	42,449*	74,354*	61,836		
45.02	Anthropology			69,949*	54,901*		
45.04	Criminology	76,813*	63,721*	79,744*	61,410*		
45.06	Economics			93,256*	69,814*	112,519	81,987
45.07	Geography and cartography	61,151*		76,031*	59,713*	80,344*	
45.10	Political science and government			85,069	66,182	89,773*	78,393
45.11	Sociology			73,934*	59,502*		68,619*
46.00	Construction trades, general	59,776					
46.02	Carpentry/carpenter	55,822*					
46.03	Electrical and power transmission installers	70,034*					
46.04	Building/construction finishing, management and inspection	59,263*					
46.05	Plumbing and related water supply services	67,399					
47.00	Mechanics and repairers, general	58,229*					
47.01	Electrical/electronics maintenance and repair technology	60,968*					
47.02	Heating, air conditioning, ventilation and refrigeration maintenance technology/technician	64,987					
47.03	Heavy/industrial equipment maintenance technologies	72,339*					
47.05	Stationary energy sources installer and operator	95,567*					
47.06	Vehicle maintenance and repair technologies	61,136*					
48.05	Precision metal working	61,442*					
48.07	Woodworking	49,989*					
49.01	Air transportation	85,556*					
49.02	Ground transportation	59,320*					
49.03	Marine transportation	79,132*					
50.04	Design and applied arts	54,600*	45,980*	65,476*	59,240		
50.05	Drama/theatre arts and stagecraft	54,825*			53,412*		
50.06	Film/video and photographic arts	54,651*	44,102*	64,988*			
50.07	Fine arts and art studies	54,032*	42,052*	62,189*	53,040*		
50.09	Music	52,817*		55,942*	52,516*		
51.00	Health services/allied health/health sciences, general		45,423*		61,677*		
51.02	Communication disorders sciences and services						73,463*
51.06	Dental support services and allied professions		45,753*				
51.07	Health and medical administrative services		40,636*				
51.08	Allied health and medical assisting services	60,631*	42,976*				
51.09	Allied health diagnostic, intervention and treatment professions	77,286*	62,415*		68,532*		
51.10	Clinical/medical laboratory science/research and allied professions	61,537*	53,321*				
51.15	Mental and social health services and allied professions		43,645*				
51.18	Ophthalmic and optometric support services and allied professions		47,481				
51.22	Public health						76,621
51.23	Rehabilitation and therapeutic professions		44,656*	72,888*	63,113		80,090
51.26	Health aides/attendants/orderlies	45,193*	36,485*				
51.31	Dietetics and clinical nutrition services		41,547*		60,141*		

Table 1
Mean age-adjusted earnings of men and women, by field of study, 2010 (concluded)

CIP Code	Field of Study	College		Bachelors		Masters	
		Men	Women	Men	Women	Men	Women
earnings (2010 dollars)							
51.35	Somatic bodywork and related therapeutic services		43,670*				
51.38	Registered nursing, nursing administration, nursing research and clinical nursing	67,023	62,441*	78,052*	71,446*		80,615
51.39	Practical nursing, vocational nursing and nursing assistants	47,186*	46,093*				
52.01	Business/commerce, general	72,607*	50,119*	104,880*	75,905*	154,758*	111,327*
52.02	Business administration, management and operations	66,646	48,487*	85,318	64,126	129,882*	99,367*
52.03	Accounting and related services	64,401*	48,767*	107,020*	78,802*	128,310*	99,060*
52.04	Business operations support and assistant services	52,141*	41,357*				
52.06	Business/managerial economics			85,888			
52.08	Finance and financial management services	73,266*	52,879*	116,473*	75,266*	160,100*	111,714*
52.09	Hospitality administration/management	55,439*	46,080*		56,537*		
52.10	Human resources management and services	62,025*	56,541*	78,152*	65,867		82,610
52.12	Management information systems and services	63,412		82,950*	70,790*		
52.13	Management sciences and quantitative methods			130,547*	94,525*		
52.14	Marketing	72,064*	53,225*	89,383	68,266*		
52.15	Real estate	66,037	50,931*				
52.17	Insurance	74,334	54,611*				
52.18	General sales, merchandising and related marketing operations	62,943	46,297				
52.19	Specialized sales, merchandising and marketing operations	53,149*	45,620*				
54.01	History			72,167*	58,131*	79,406*	69,039*
55.01	French language and literature, general		39,698*		58,490*		
55.14	French literature				50,328*		
	All fields of study	66,611	47,582	87,543	64,420	110,199	78,788

* significantly different from average earnings across all fields of study ($p < 0.05$)

Notes: Blank cells indicate insufficient sample size. CIP: Classification of Instructional Programs.

Source: Statistics Canada, 2011 National Household Survey.



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Data sources, methodology and definitions

Data sources

This study uses data from Statistics Canada's 2011 National Household Survey (NHS). The sample includes men and women aged 25 to 54 whose highest level of postsecondary studies were completed in Canada. In addition, only those who had positive wages, no self-employment income, worked as paid employees, and had full-year, full-time employment (i.e., they worked 49 to 52 weeks, mainly 30 hours or more per week) are included.

Only graduates from fields with 200 or more observations in the sample are retained for analysis. The resulting sample sizes were largest for college graduates, with 138,102 women and 129,843 men; among bachelor's degree holders, there were 105,129 women and 92,489 men. Sample sizes for master's degree holders are similar for women (19,226) and men (19,996). Based on the sample criteria, very few fields would have been retained for doctoral and professional degree holders, therefore they are not included in this study.

Methodology

The results presented in this study are based on age-adjusted regression coefficients estimated by multiple classification analysis (MCA)—a technique that removes the arbitrariness associated with selecting a reference category for the fields of study (Andrews et al. 1967). The approach begins by running an ordinary least squares regression with one omitted category (as per usual). Each coefficient is then adjusted (including the one associated with the omitted category, which is set to zero) by subtracting from each of them the value of the linear combination of all of the coefficients associated with each category and their relative population share. The standard errors can then be estimated with a non-parametric bootstrapping approach. Although it is not strictly necessary, bootstrapping the standard errors

accounts for the stratification inherent in the NHS. A total of 30 bootstrap iterations were applied in the study.

The resulting coefficients obtained from the MCA models are interpreted as a difference from the average earnings of individuals within a given group based on sex and education level. These coefficients were then used to calculate the average predicted earnings (in 2010 dollars) of graduates from each field of study, assuming they were all the same age (which was the average age for their sex and level).

Definitions

Bachelor's degree: A university degree at the undergraduate level, based on the highest certificate or degree. It excludes university certificates above or below a bachelor's degree, and first professional degrees in medicine, dentistry, veterinary medicine or optometry. Graduates of LLB, JD and BCL programs, and legal research and advanced professional studies (post-LLB/JD) programs, as well as pharmacy, pharmaceutical sciences and administration programs were also excluded from the analysis as these are typically associated with professional degrees.

College certificate: A certificate awarded by a college, CEGEP or other non-university institution (excluding registered apprenticeships or trades certificates), based on the highest certificate or degree.

Field of study: The field of study is based on the 2011 Classification of Instructional Programs (CIP) Canada codes, available for the highest certificate or degree in the 2011 National Household Survey. Fields are reported at the detailed subseries (four-digit) level (Statistics Canada 2011).

Master's degree: A university degree at the graduate level, based on the highest certificate or degree.