

Study: Is field of study a factor in the payoff of a graduate degree?, 2016

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It is a choice faced by many university students in their last undergrad year: finish their degree and enter the job market, or enrol in graduate studies and hope that a graduate degree might mean higher earnings down the road.

But is there a payoff associated with a master's degree or a doctorate, relative to a bachelor's degree in the same field?

A new study, "[Results from the 2016 Census: Is field of study a factor in the payoff of a graduate degree?](#)" uses data from the most recent census to shed light on the question. The study is part of a series of articles that examine social and economic topics in Canada based on deeper analysis of the 2016 Census results.

The study examines the extent to which the earnings of workers with a bachelor's degree differ from those who have a master's degree or a doctorate in the same field. The target population includes paid employees aged 30 to 59 who worked full year and full time during the year preceding the census (in 2015), and whose highest educational qualification was obtained in Canada.

To more accurately make comparisons between fields of study and levels of education, the value of earnings used in this study controls for other factors that could influence earnings, such as age, immigrant status, and geography.

The study has two major findings. First, it finds that the earnings advantage associated with pursuing a master's degree or a doctorate varies by field of study.

Second, differences in the occupational profile of bachelor degree holders and graduate degree holders largely explain the disparities in earnings.

Earnings are higher for those with a graduate degree, but results vary across major fields of study

Taken together, women (+13%) and men (+11%) with a master's degree earned more than those who had a bachelor's degree.

A doctorate also contributed to increased earnings of both men and women. Among women, those with a doctorate earned 10% more than those with a master's degree. Among men, a doctorate was associated with a 5% increase in earnings.

These results, however, varied across field of study categories. The first category, STEM, includes science, technology, engineering and mathematics and computer science. The other, called BHASE (non-STEM), includes fields such as business, health, humanities, arts, social sciences and education.

In 2016, more than three-quarters of full-year full-time workers with a bachelor's degree or a master's degree were in BHASE fields. In contrast, more than one-half (58%) of earned doctorates were in STEM fields.

At the bachelor's level, those with a STEM degree typically earned more than those with a BHASE degree. At the master's level, however, there was little difference in earnings between the two groups.

This suggests that having a master's degree in BHASE has more of an impact on earnings than having a master's degree in STEM.

Specifically, men with a master's degree in a BHASE field earned 17% more than their counterparts who had a bachelor's degree in BHASE. For women in the same field, the difference was 14% compared with those with a bachelor's degree.



In contrast, those with a STEM master's degree earned slightly more than their counterparts with a bachelor's degree. For women, the difference was 6%; for men, it was 1%.

Women with a doctorate in BHASE earned 13% more than those with a master's degree, while those with a doctorate in STEM earned 4% more than those with a STEM master's degree. Among men, it was the opposite—the earnings advantage of having a doctorate over a master's degree was higher in STEM (7%) than in BHASE (1%) fields.

Within BHASE fields, the earnings advantage associated with a master's degree is largest in business and related studies

While the payoff associated with a master's degree was generally higher in BHASE fields than in STEM fields, there were variations within these two categories.

For example, in the BHASE field of business and related studies—the most common field of study among workers with a master's degree—both women and men with a master's degree earned over 25% more than those with a bachelor's degree in the same field.

Business and related studies, which includes programs such as masters of business administration (MBA), was also among the highest-paying fields for full-year, full-time workers with a graduate degree.

The results are related to changes in the occupational profile. Those with a master's degree in business and related studies were more likely to work as senior and specialized managers (38%) than those with a bachelor's degree (24%).

Similar results were found in social and behavioural sciences. In social and behavioural sciences, women with a master's degree earned 19% more than those with a bachelor's degree, and women with a doctorate earned 21% more than those with a master's degree. This is because those with graduate degrees in social and behavioural sciences are more likely to work in occupations related to their fields of study than those with bachelor's degrees in this field.

In the BHASE field of law, however, there was little difference in the earnings of bachelor's degree holders and master's degree holders, mainly because the occupational profile did not change significantly with the acquisition of a graduate degree. Both bachelor's and master's degree holders in law worked mainly as lawyers.

Little difference in earnings between bachelor's degree holders and master's degree holders in engineering and in computer science

In all STEM fields, the earnings difference between master's and bachelor's degree holders was less than 10%, for both women and men.

In engineering and in computer and information science, women and men with a master's degree earned about the same as those with a bachelor's degree. In both fields, there was little occupational difference between bachelor's degree holders and master's degree holders. In engineering, for example, 47% of those who had a bachelor's degree worked as engineers, as did 51% of those who had a master's degree.

However, in some STEM fields there were larger earnings differences between a doctorate and a master's degree. For example, doctorate holders in computer and information science earned a little over 13% more than master's degree holders.

Note to readers

This study uses data from the 2016 Census of Population. The target population is Canadians aged 30 to 59 who had a bachelor's degree, master's degree or earned doctorate as their highest level of education; obtained that degree in Canada; worked as full-year, full-time employees in 2015; and had positive wages. Degrees in medicine, dentistry, veterinary medicine and optometry are not included, as these degree types are distinct from bachelor's and master's degrees, and doctorates.

In this study, earnings are defined as wages, salaries and commissions. To more accurately make comparisons between fields of study and levels of education, earnings levels by field of study are obtained using a quantile regression to control for factors that could influence earnings.

It should be noted that comparisons with earlier census years are not possible due to definitional changes in the field of study categories.

Definitions, data sources and methods: survey number [3901](#).

The article "[Results from the 2016 Census: Is field of study a factor in the payoff of a graduate degree?](#)" is now available in *Insights on Canadian Society* ([75-006-X](#)).

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