

Education (Still) Pays, but by How Much?

As discussed in (<http://martinprosperity.org/insights/insight/changing-returns-to-education>) by the Martin Prosperity Institute, average income differs with various levels of educational attainment. The insight displayed the differences in average incomes associated with higher educational qualifications over the period of 1971-2006. As part of the Martin Prosperity Institute's on-going research on the connection between educational attainment and wage returns, we have taken a closer look at wage increases at different educational attainment levels.

When to leave school and start working can be a tough choice for students, as the investment in further education and the possible economic gains are considerable. Whether that decision is to start working after high school, or to gain a Master's degree after graduation from a Bachelor's program, financial returns should be considered. Field of study is also an important and difficult decision as there are varying economic returns associated with different programs studied and in some cases work experience is more valuable than further education and vice versa. The question for many students is: Will the money spent on further education be worth it? We aim to provide insight into the different educational options for students. As many students are currently working on College, Undergraduate, Masters and PhD applications, this insight serves as observation into educational attainment.

Exhibit 1 below displays the mean annual income (In 2010 dollars) of each educational attainment level and the difference between that level and all higher levels. To read the chart, select an attainment level on each axis and compare the income gap by finding their intersection. For example, the difference in annual income between a BA and DEG is \$10,613.

Average wage returns for additional educational attainment

Exhibit 1

Educational Attainment	Mean	HS	SC	DEG	BA	MAST	PhD
Less than High School (LTHS)	\$22,698	\$6,058	\$4,043	\$12,482	\$23,095	\$33,889	\$46,569
High School (HS)	\$28,756		-\$2,015	\$6,423	\$17,037	\$27,831	\$40,510
Some college (SC)	\$26,741			\$8,439	\$19,052	\$29,846	\$42,526
College degree (DEG)	\$35,180				\$10,613	\$21,407	\$34,087
Bachelor's degree (BA)	\$45,793					\$10,794	\$23,474
Master's degree (MAST)	\$56,587						\$12,680
Doctorate degree (PhD)	\$69,267						

The first thing that stands out from the table is the large difference between the average annual income of someone with less than a high school diploma and a person with a PhD. Those with Doctorate degrees earn an average of \$46,569 more per year. The table also displays that as a person attains a higher level of education, their average annual income increases. For most

additional increments of education the benefit in income averages around \$10,000 per year. The largest gap between incomes is found between someone with a high school diploma and someone who received a Bachelor's degree (\$17,037). The second largest jump in income is the \$12,680 resulting from the attainment of a Doctorate degree compared to a Master's. One interesting figure was the average decline in annual earning for someone who obtained some College training compared to none at all. Generally speaking the average income of someone who received some college training but no diploma, earned \$2,015 less than someone with just a high school diploma and \$8,439 less than someone who received a College degree. This could possibly be attributed to individuals whom are still enrolled, but are working part time, while trying to complete their degree. It is important to understand that while helpful, these numbers are averages and field of study is an important factor as it can make a great impact on an individual's wage. For example, receiving a BA or Masters degree in health care, engineering, business or law could lead to jobs with higher wages than the same level of degree in general arts or history. Field of study can also influence employability as some fields of study lead directly to certain careers (dentistry and veterinarian degrees), whereas other degrees do not result in a specific career path.

In Canada, where the cost of education for Canadians is lower than the USA or UK, the returns on education are more attractive. Therefore, the money spent on further educational attainment in Canada has a better chance of paying dividends as the tuition in most cases could be repaid in increased earnings after a year or two depending on the program. Since the average cost of undergrad programs are around \$5,000 a year and Masters programs costing anywhere from \$5,000 and above, the increase in average earning of around \$10,000 a year for the higher education level makes the decision more profitable. This can be seen as a reason for the increasing number of Canadians with BAs and beyond. (Canadian average undergrad tuition cost: \$5,366, Ontario is most expensive: \$6,640. Average Graduate tuition: \$5,599 (Ontario: \$7,578), executive MBA is most expensive program: \$37,501).

The returns of education also depend on the students choice of location and living arrangements while studying. Tuition is one thing, but if a student chooses to study away from home then the debt one faces will be much greater. There are also many Canadians for whom, staying at home while studying is not an option. When choosing to upgrade from a Bachelor's degree to a Master's degree away from home, the inevitable student debt due to living costs makes the average increase of \$10,000 a year less attractive as it will take longer to pay off.

Another interesting conclusion from the table is opportunity cost. Many individuals trying to determine whether or not to attain further education consider that during the extra years spent in school, the person would have been able to make money. A student that just graduated high school and immediately began working would make an average \$28,756 per year, which in four years attributes to a head start of around \$122,021 (using a current time-value of money rate of 2%). On the other hand, if a similar person decided to enroll in a 4 year BA program, they would be making an average \$45,793 a year after graduating. Using both of the averages and beginning after high school, the BA would take at least 6 years to make up for the \$122,021 that the high school diploma earned in 4. Furthermore, the BA would henceforth be earning an average \$17,037 a year more than the high school diploma (not including costs of education). When costs of education are great, then the catch up time for a student is noticeably longer. As educational attainment increases the catch-up time to make up for "lost earnings while studying" is slightly longer, as differences in earnings are not as stark as that between a high school diploma and a BA. Overall the time spent studying pays off in less than a decade and clearly generates higher future annual earnings.

Once again this depends on where the student chooses to study and what field they chose to study. If the student chooses or has to study away from home, the money spent during studies will increase. With the greater amount of money spent, it will take the individual even longer to make back what they possibly could have earned while studying. This must be an informed decision as the living costs associated with further studies can vary greatly. The greater the costs while studying, the longer it will take on average for the further education to reap financial benefits. This is one reason why according to Marc Frenette in two Statistics Canada studies, that the further a student lives from a University, the less likely that they will attend one. It was also found that Canadian students belonging to low income families that live far from Universities, were the individuals least likely to attend a University. Students must also factor in field of study as different programs lead to different careers with different incomes. When trying to determine the time that further education will take to reap financial gains, students should also factor in average incomes for careers associated with their program of study as there are variations. For example, someone who wanted to work in the trades would find that work experience gained would be more valuable than obtaining a University degree. An individual aspiring to work in health care on the other hand would benefit from receiving further education than just receiving a College degree and work experience in health care. As discussed earlier, the numbers provided in this insight are averages and there are variations in wages between different fields of study, which must be considered. With increases in both the costs and benefits associated with educational attainment, the decision for students is becoming more difficult.

This insight by the Martin Prosperity Institute provides information into the benefits of increased educational attainment. As the insight and the table display, average annual income rises with higher levels of education. In the second part of this series, the Martin Prosperity Institute examines the same variables, but categorized by gender to show income disparities between men and women.

To read more about the information provided in this insight, please take a look at Dr. Kevin Stolarick's working paper: [The Changing Returns to Education in Canada and Its Provinces: 1971–2006](#). Along with Marc Frenette's study: [Access to College and University](#).

The Martin Prosperity Institute at the University of Toronto's Rotman School of Management is the world's leading think-tank on the role of sub-national factors—location, place and city-regions—in global economic prosperity. We take an integrated view of prosperity, looking beyond economic measures to include the importance of quality of place and the development of people's creative potential.