

# Labour Market OUTCOMES

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of Graduates of Alberta Post-Secondary Institutions

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ISBN 987-1-4601-3718-5

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Created by: Alberta Advanced Education  
Last updated: February 1, 2018

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# ACKNOWLEDGEMENTS

Alberta Advanced Education wishes to thank the Council of Ministers of Education Canada for their contributions to this project. We also wish to express our appreciation to Alberta post-secondary institutions and the Alberta Institutional Researchers who participated in the project and provided feedback throughout the duration of the project. We are especially thankful to Statistics Canada for their partnership and continued support in making this project possible.

# EXECUTIVE SUMMARY

This report provides valuable insight into the labour market outcomes of graduates of Alberta post-secondary institutions. Enrolment data was linked to tax records held at Statistics Canada to determine median incomes of graduates by credential and field of study.

## HIGHLIGHTS OF THE RESULTS:

- Most post-secondary graduates see significant increases in income in the years following graduation.
- Growth rates in income vary over time by credential and field of study; some graduates consistently see growth over time, while others see the largest increases shortly after graduation.
- Graduating in a recession year can result in lower earnings for some credential holders, initially and in the long run, compared to those graduating in non-recession years.
- Earning a higher credential in the same field of study usually results in a higher income.
- Field of study is just as significant in determining earning potential as credential type.
- Initial earnings are not always a good indicator of long-run earning potential.

# INTRODUCTION

The Benefits to Post-Secondary Education Project (BPSEP) is a new research project being led by Alberta Advanced Education in partnership with Statistics Canada, the Council of Ministers of Education Canada and Alberta Post-Secondary Institutions that intends to fill information gaps related to the labour market outcomes of Alberta post-secondary graduates. The report aims to provide contextual analysis on graduate earnings by credential and field of study based on the findings of BPSEP.

Before a prospective student chooses to invest their time and financial resources into a particular post-secondary program, it is important for them to understand the potential labour market outcomes associated with that program. This project provides insight on graduates' initial performance in the labour market and can also be used to understand the long term earning potential of graduates, which can serve as an additional tool that students can use when planning for post-secondary education. Information from the report will also be available on [Alberta Learning Information Service \(ALIS\)](#) for student use.

## OVERVIEW

Graduates from Alberta's publicly-funded post-secondary institutions from the academic years 2004-2005 to 2012-2013 were followed over time to study the dynamics of their income.<sup>1</sup> Income information was collected for graduates from the first tax year following the year of graduation, for those who do not meet any of the exclusion criteria (see Appendix A for details), and aggregated for each cohort. The analysis includes, where possible, breakdowns by credential and field of study. Tax records are available for the vast majority of graduates from each graduation year cohort.

The job market can vary substantially across regions and over time. Therefore, project findings should be interpreted with this in mind, if they are being used in post-secondary planning. This is a descriptive study and as such, causal claims should not be made. Further studies need to be conducted to understand the differences in earnings over time. Refer to Appendix A for further details.

## ANALYSIS

The analysis uses median income to represent graduate earnings for each cohort, as opposed to average income, as median is a better indicator of how a typical graduate is doing: half of the cohort is earning above the median income and half is earning below. This prevents outliers (the highest and lowest earners) from skewing the results. Earning figures are rounded to the nearest \$100 and expressed in real 2015 dollars using the Alberta Consumer Price Index All-Items (CPI). The number of graduates in each cohort is randomly rounded to a base of ten to protect privacy. Classification of Instructional Programs (CIP) Canada 2011 codes, as defined by Statistics Canada, are used to classify instructional programs according to field of study<sup>2</sup>.

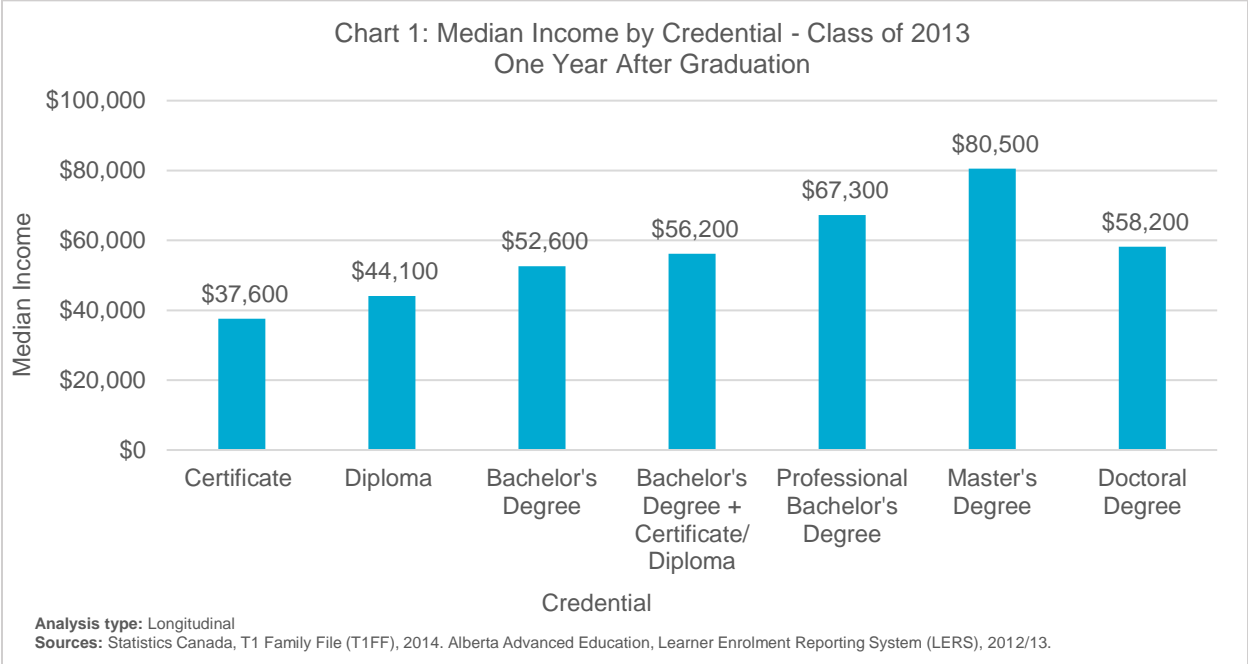
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<sup>1</sup> There are twenty-six publicly funded post-secondary institutions in Alberta. All except the Banff Centre, which does not offer credential programs, participated in the project. A full list of participating institutions can be found in Appendix C.

<sup>2</sup> The full list of codes can be found at: [www23.statcan.gc.ca/imdb/p3VD.pl?Function=getVD&TVD=127939](http://www23.statcan.gc.ca/imdb/p3VD.pl?Function=getVD&TVD=127939)

# MEDIAN INCOME ONE YEAR AFTER GRADUATION: ALL CREDENTIALS

For the Class of 2013, the most recent graduation year cohort, median incomes range from \$37,600 for certificate graduates to \$80,500 for master’s degree graduates one year after graduation. Tax records are available for 23,600 graduates from the Class of 2013. Details on the cohort can be found in Appendix B: Table 1.



# MEDIAN INCOME OVER TIME: BY CREDENTIAL

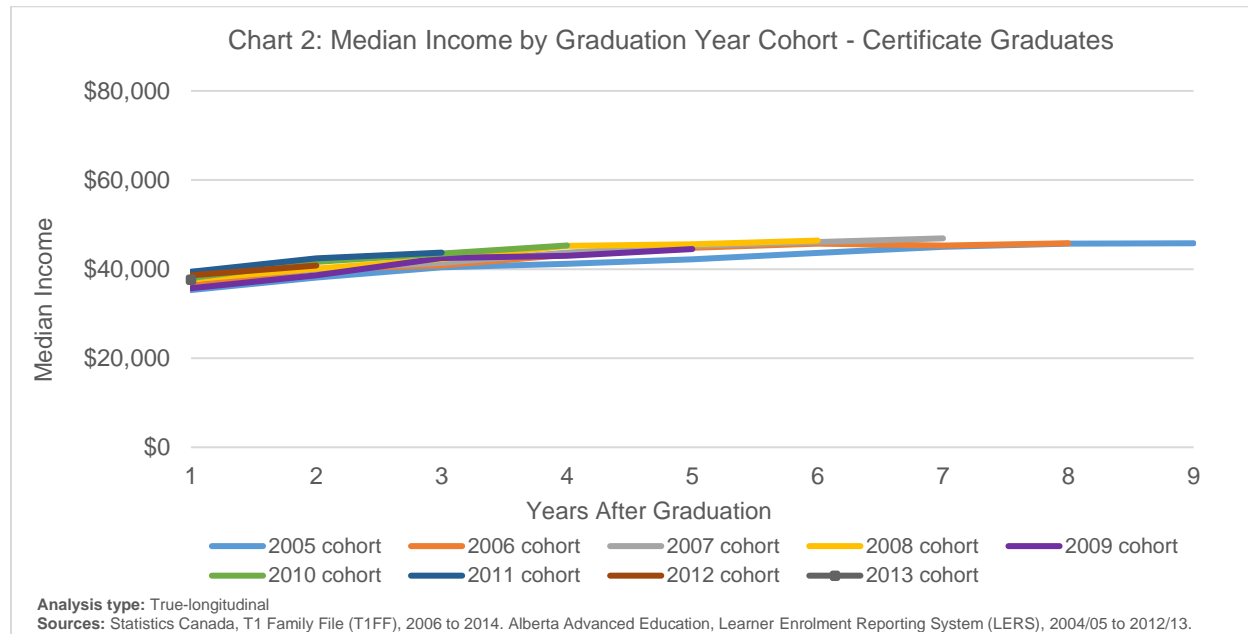
Income trajectory is an important factor to consider in post-secondary education planning, since initial earnings for graduates are not always a good indicator of long term earning potential. With income information available for nine graduating classes, a more robust analysis can be done that considers labour market outcomes of graduates over time. Using a true longitudinal approach, an identical set of graduates are followed throughout the entire analysis period to demonstrate income growth over time<sup>3</sup>. It is important to note that for some cohorts, income may fall over time. This could be attributed to factors such as graduates going back to school part time and reporting lower incomes on an annual basis, the number of graduates in the analysis, which tends to decline over time due to discontinuities in tax filing behaviour, or changes in business cycle. These factors may apply to graduates of any credential. Note, graduates who meet any of the exclusion criteria, in any year are not included in this analysis. Details on the cohorts can be found in Appendix B: Tables 2-5.

## Certificate Graduates

First year earnings of certificate graduates range from a median of \$36,700 for the 2005 cohort to \$40,300 for the 2011 cohort. Graduates from the 2009 cohort, who were entering the labour market during the

<sup>3</sup> Refer to Appendix A for methodology details.

recession<sup>4</sup> earned a median income of \$1,300-a-year less, in real terms, than their counterparts in the 2008 cohort. Growth in income is steady initially, and begins to flatten out over time. Graduates see the biggest increases in earnings in years shortly following graduation. Five years after graduation, graduate cohorts are earning a median income of \$44,300 to \$47,000; an increase of approximately \$7,000 since one year after graduation.

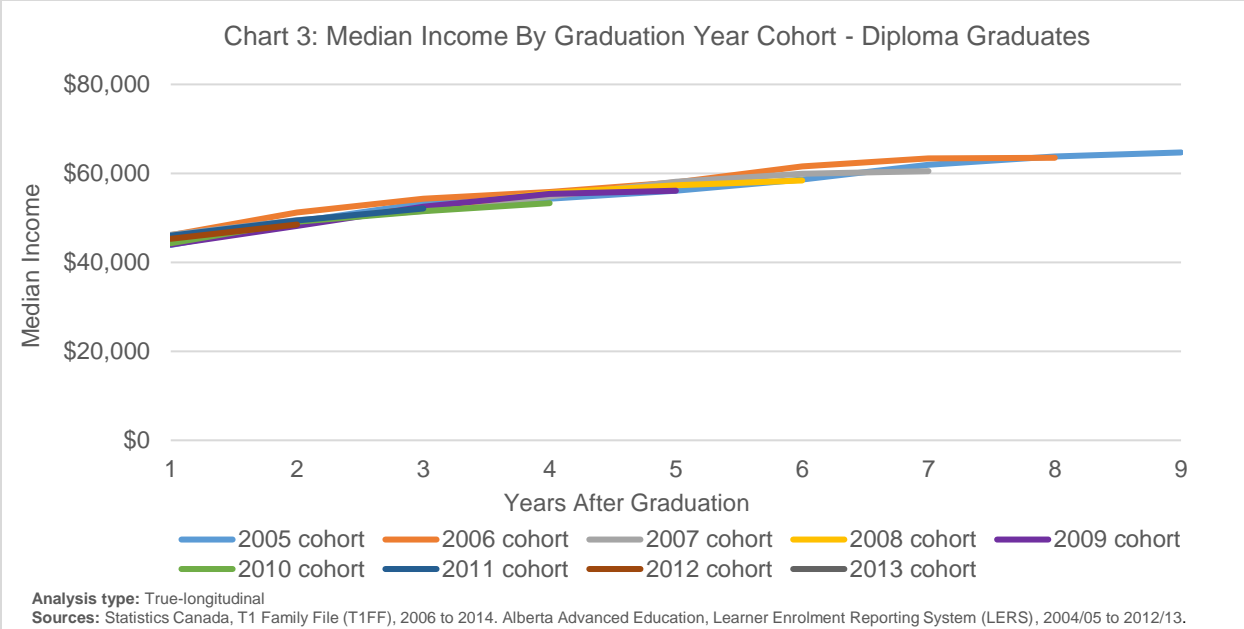


## Diploma Graduates

When comparing earnings for diploma graduates across different graduation year cohorts, there are very few differences; first year earnings range from a median of \$43,900 for the 2009 cohort to \$46,200 for the 2007 cohort. Over time, the variance in earnings between graduation year cohorts is very small. Growth in income is steady over time, with the largest increases in the first few years following graduation. Five years after graduation, graduate cohorts are earning a median income of \$56,100 to \$58,100; an increase of approximately \$12,000 since one year after graduation.

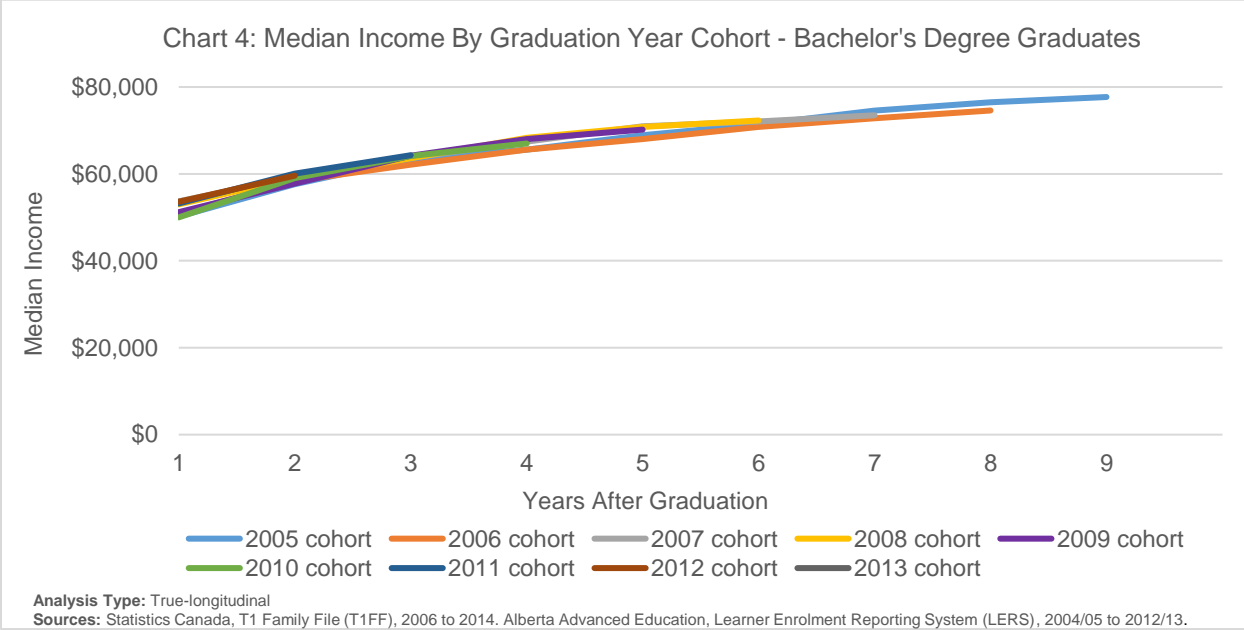
<sup>4</sup> Alberta's unemployment rate peaked at 7.3 per cent in August 2009 and again in November 2009; up from 3.6 per cent in 2008 (Statistics Canada, Labour Force Survey).





### Bachelor's Degree Graduates

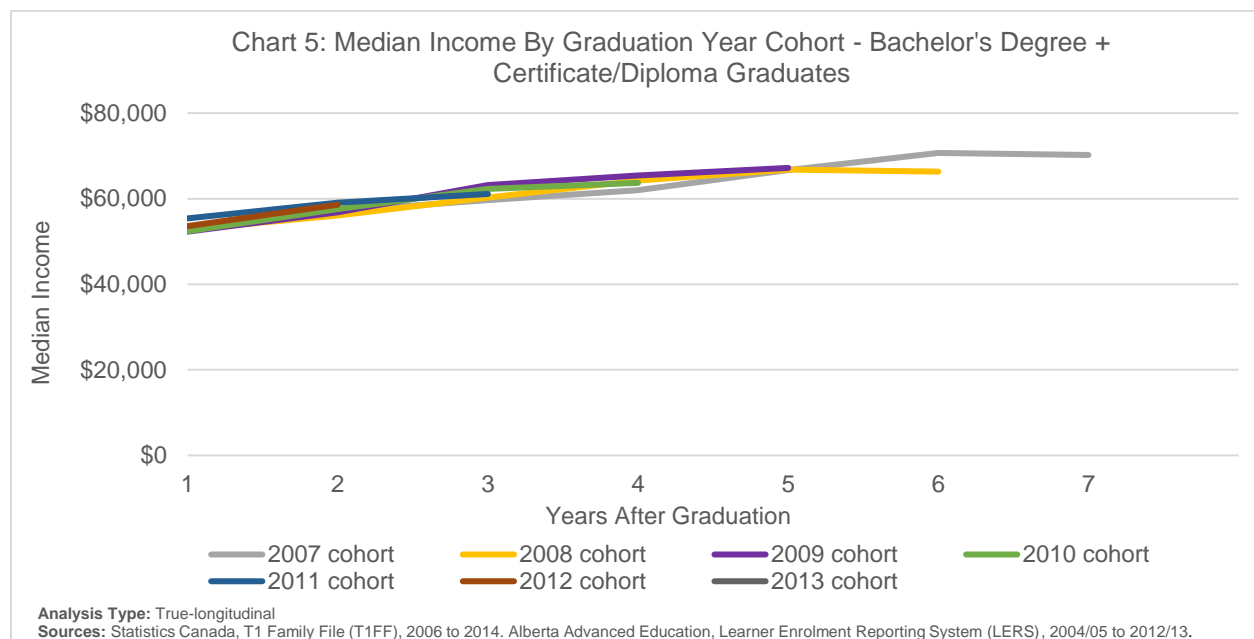
Bachelor's degree graduates represent the largest proportion of all post-secondary graduates. First year earnings of all bachelor's degree graduates are quite consistent across graduation year cohorts, ranging from \$52,600 for the 2013 cohort to \$58,900 for the 2007 cohort. There are no notable trends around recession years. Variance in median income between graduation year cohorts is small in the long run, which may indicate labour market stability for bachelor's degree graduates. Growth in income is steady and increases very quickly within a few years of graduation. Five years after graduation, graduate cohorts are earning a median income of \$71,400 to \$73,900.



## Bachelor's Degree + Certificate/Diploma Graduates

This category consists of graduates who have a bachelor's degree, as well as a certificate or diploma. For instance, a post-Baccalaureate certificate or a post-Baccalaureate diploma.

For this analysis, the 2005 and 2006 cohorts have been removed due to significantly smaller class sizes, as well as historical differences in the composition of the category. First year earnings of the remaining bachelor's degree plus certificate/diploma cohorts are fairly consistent, with median incomes ranging from \$53,300 for the 2010 cohort to \$56,300 for the 2007 cohort. There do not appear to be any differences for those who graduate during recession years. Earnings are slightly higher, on average, than graduates with only a bachelor's degree one year after graduation. Over time the differences are minimized and become comparable to, or even lower than, the cohorts with only a bachelor's degree. Five years after graduation, graduate cohorts are earning a median income of \$67,800 to \$69,500.

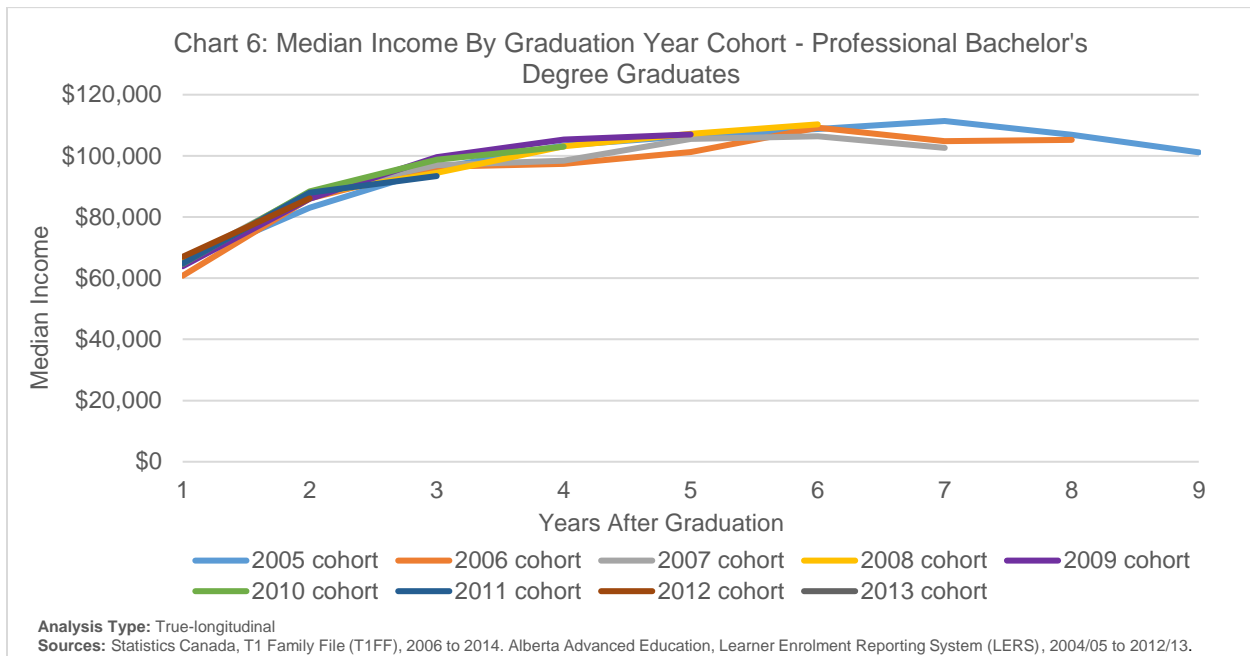


## Professional Bachelor's Degree Graduates

The professional bachelor's degree category includes graduates from dentistry, law, medicine, pharmacy and veterinary medicine programs. Since this report excludes graduates who earn self-employment income, many professional bachelor's degree graduates are excluded from the analysis, as these fields typically have a very high rate of self-employment. Additionally, for medicine graduates, a residency counts as full-time enrolment in post-secondary. Thus, all medicine graduates working in the field are excluded from the analysis in the first few years following graduation. Therefore, this category consists primarily of law and pharmacy graduates.

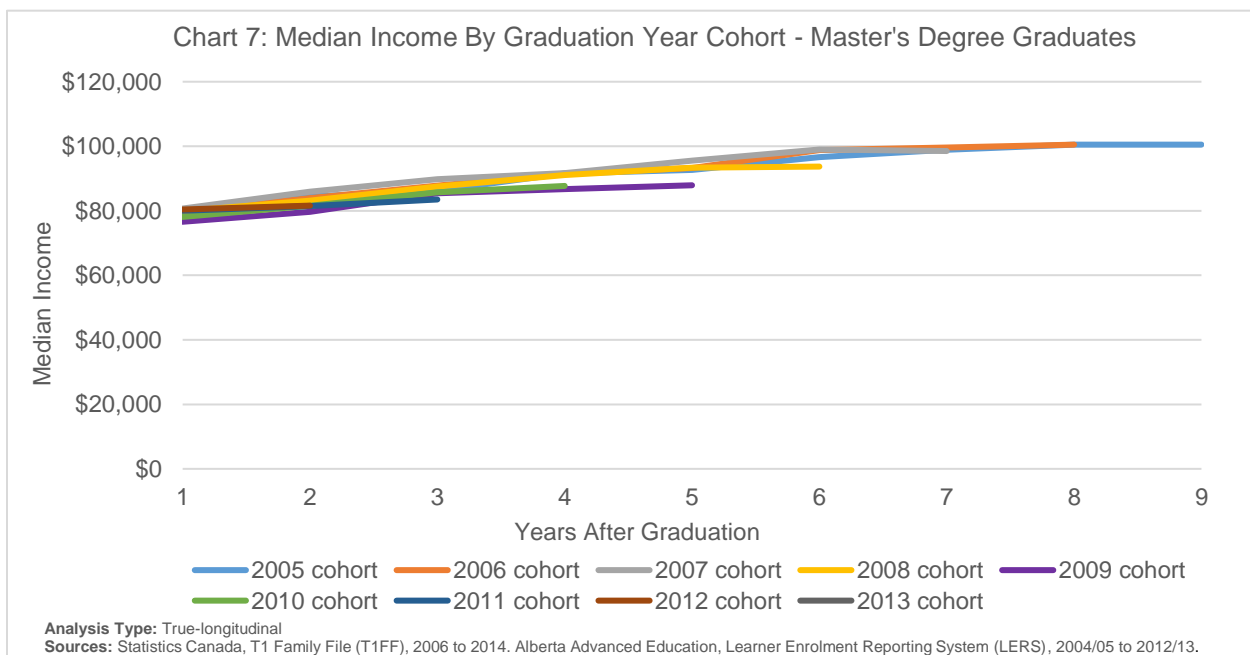
First year earnings of all professional bachelor's degree graduates are relatively consistent, in real terms, across graduation year cohorts, ranging from \$66,300 for the 2009 cohort to \$78,600 for the 2008 cohort. While those who graduated in a recession year saw lower earnings initially, the differences are minimized over time, which may indicate labour market stability for professional bachelor's graduates. Approximately five years after graduation, median incomes begin to level off, and even fall in some years further out. However, the decline in reported income may reflect a segment of graduates creating incorporated businesses and reporting earnings through other forms such as dividends, which are not captured in employment income. For professional bachelor's degree graduates, incorporation rates increase in each

year following graduation. Five years after graduation, graduate cohorts are earning a median income of \$106,000 to \$114,000; an increase of approximately \$40,000 since one year after graduation.



## Master's Degree Graduates

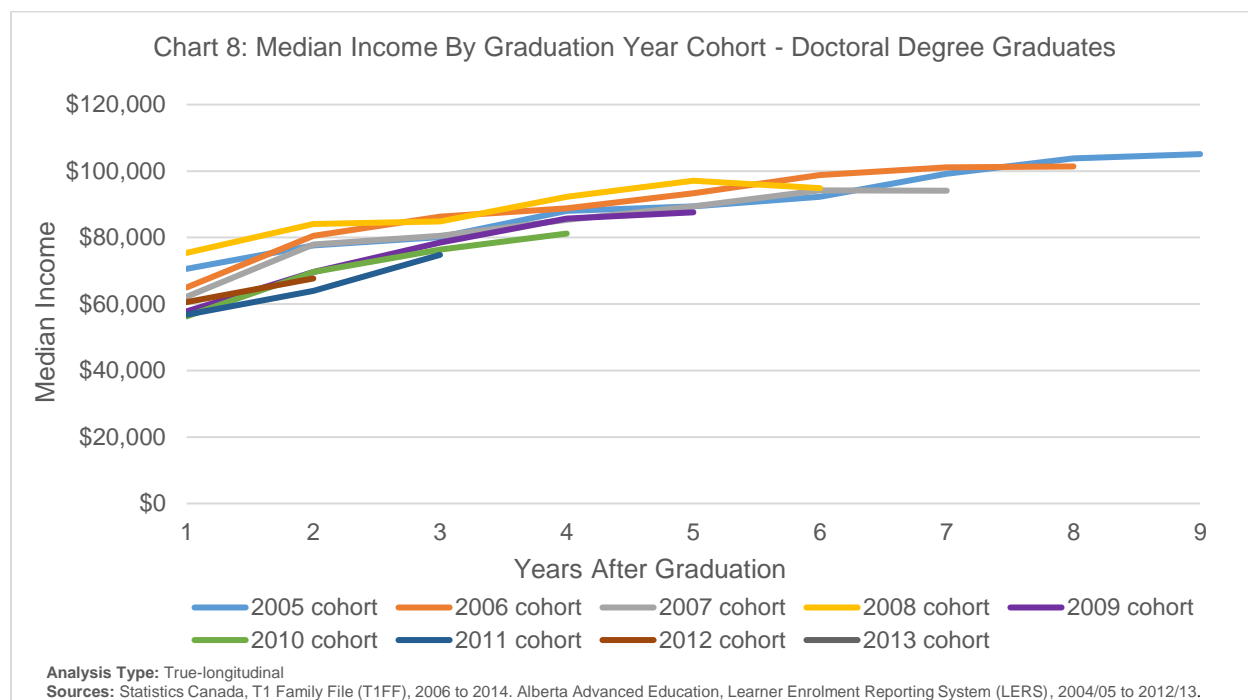
First year earnings of all master's degree graduates are quite consistent and range from \$78,700 for the 2010 cohort to \$86,100 for the 2006 cohort. Growth in income for these graduates is steady over time. However, five years after graduation, the 2009 cohort, that was entering the labour market during the recession, is earning a median income of approximately \$5,000 to \$10,000 less than other cohorts at the same point in their careers. For example, the 2009 cohort is earning a median of \$91,300, compared to all other cohorts who are earning a median income of \$96,400 to \$101,000. While there are differences by



field of study, those who graduate during a recession may have a harder time catching up to the income of their peers in the long run.

## Doctoral Degree Graduates

First year earnings of doctoral degree graduates show the most variability between graduation year cohorts. Median incomes range from \$58,200 for the 2013 cohort to \$79,000 for the 2008 cohort. However, these graduates see considerable increases in median income over time. Similar to master's degree graduates, those who graduated in the 2009 cohort earn below most other cohorts, and remained at the lower end of the income spectrum over time. Five years after graduation, graduate cohorts are earning a median income of \$88,400 to \$95,700. Nine years following graduation, median incomes of doctoral degree graduates exceed all other credential earners.



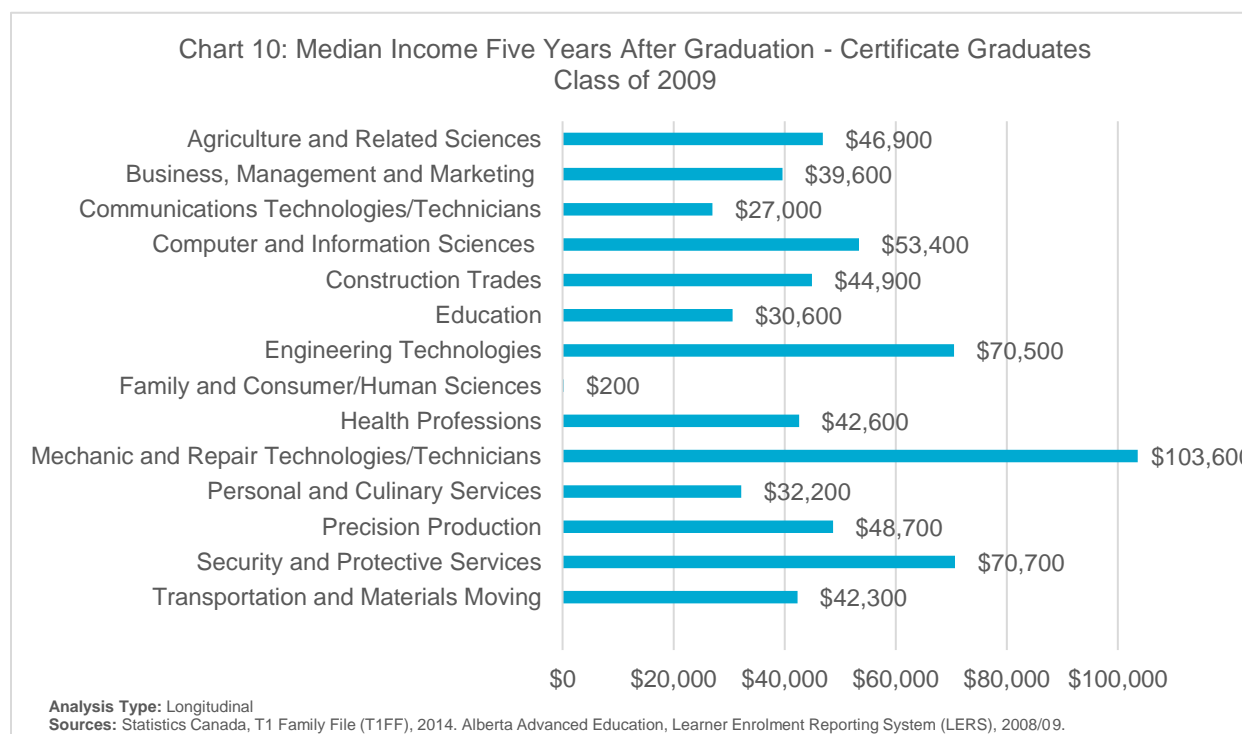
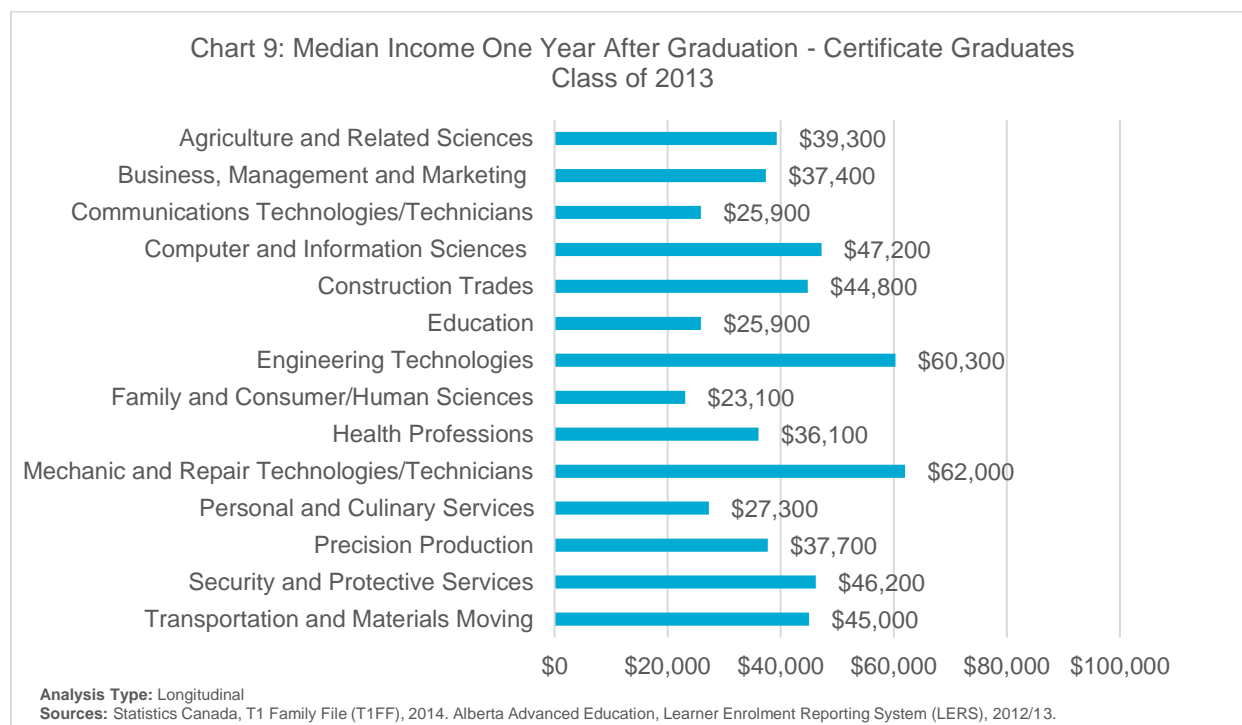
## MEDIAN INCOME OVER TIME: BY CREDENTIAL AND FIELD OF STUDY

In addition to analyzing graduate earnings at the credential level, it is important to note that there is considerable variation within each credential, depending on the field of study. To demonstrate these differences, a breakdown of median income by field of study is presented for the 2013 cohort one year after graduation. Next, the same analysis is done for graduates five years after graduation using a longitudinal approach. Since income information five years out is not yet available for the 2013 cohort, the 2009 cohort is used. Although not directly comparable, this is the most recent cohort with income information available five years out. Both analyses report on incomes from the 2014 tax year. Note, some years may not have graduates from a particular field of study and some results may be suppressed due to small class sizes.

## Certificate Graduates

For all 2013 certificate graduates, median incomes range from \$23,100 for family and consumer science graduates to \$62,000 for mechanic and repair technologies/technicians graduates one year after graduation. Ranges in median income are even wider for the 2009 cohort, five years after graduation, and

there are some fields of study in which median income is even lower than for the 2013 cohort one year after graduation. There are 4,390 certificate graduates from the Class of 2013 and 2,890 graduates from the Class of 2009 included in this analysis. Income counts by field of study, which represent class sizes, can be found in Appendix B: Table 6.



## Diploma Graduates

For all 2013 diploma graduates, median incomes range from \$28,000 for parks, recreation leisure and fitness studies graduates to \$135,200 for precision production graduates one year after graduation. Growth in income following graduation is relatively consistent: almost all fields of study see significant increases over time. Five years after graduation, median incomes of the Class of 2009 range from \$31,000 for family and consumer sciences graduates to \$141,000 for precision production graduates. In fact, this particular cohort of precision production graduates earns more than all other credential holders in any field of study, five years after graduation. There are 5,860 diploma graduates from the Class of 2013 and 4,140 graduates from the Class of 2009 included in this analysis. Valid income counts by field of study can be found in Appendix B: Table 7.

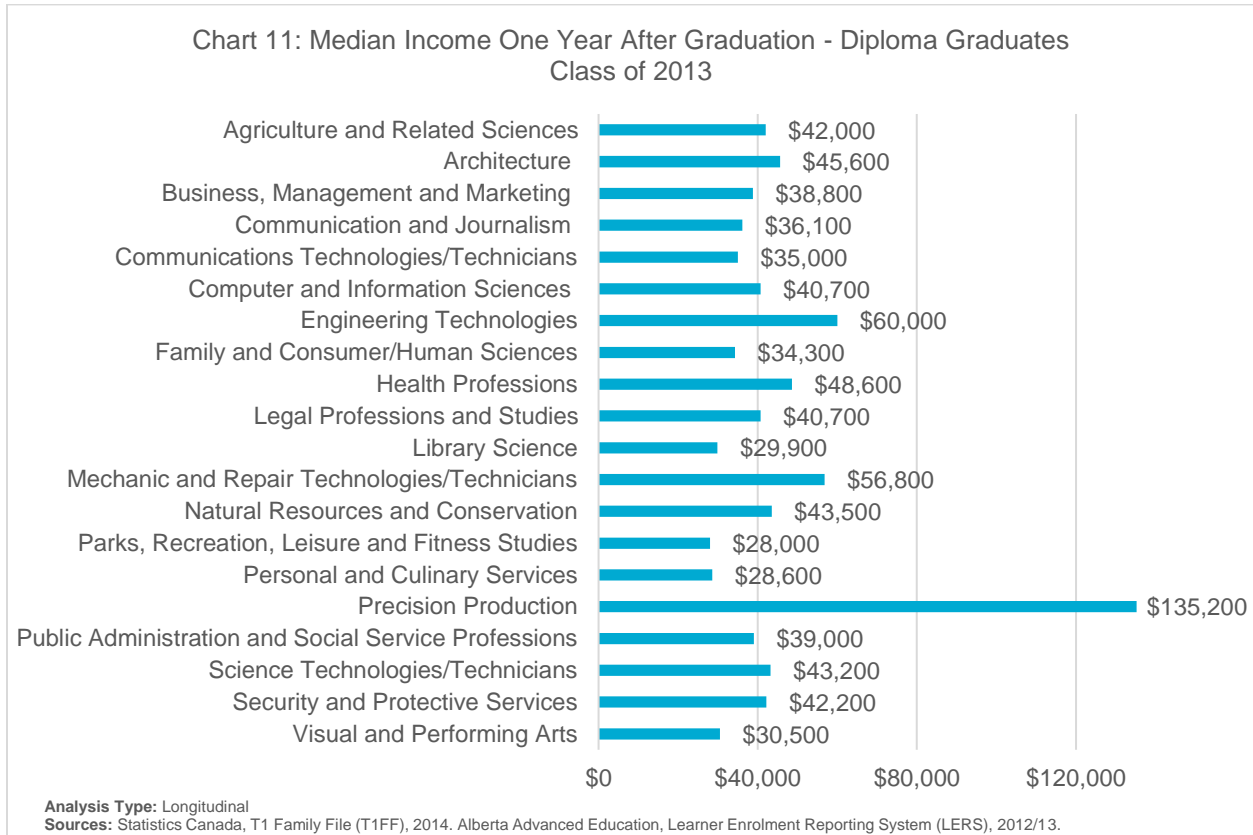
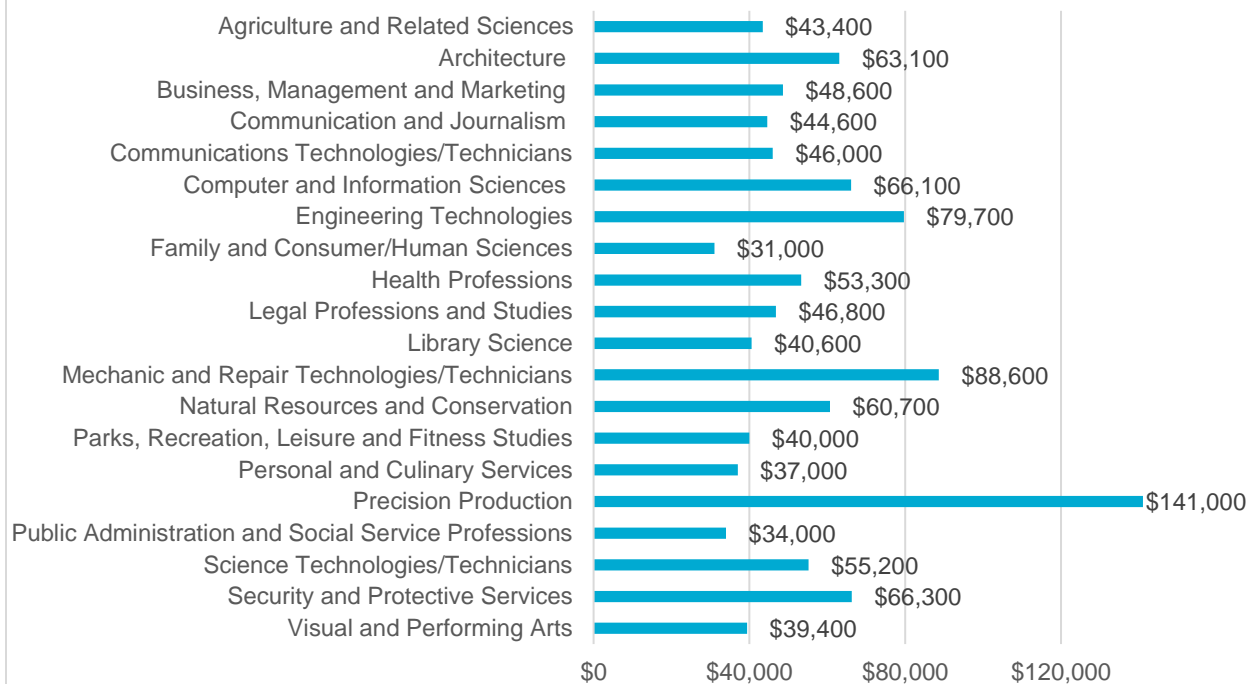


Chart 12: Median Income Five Years After Graduation - Diploma Graduates  
Class of 2009



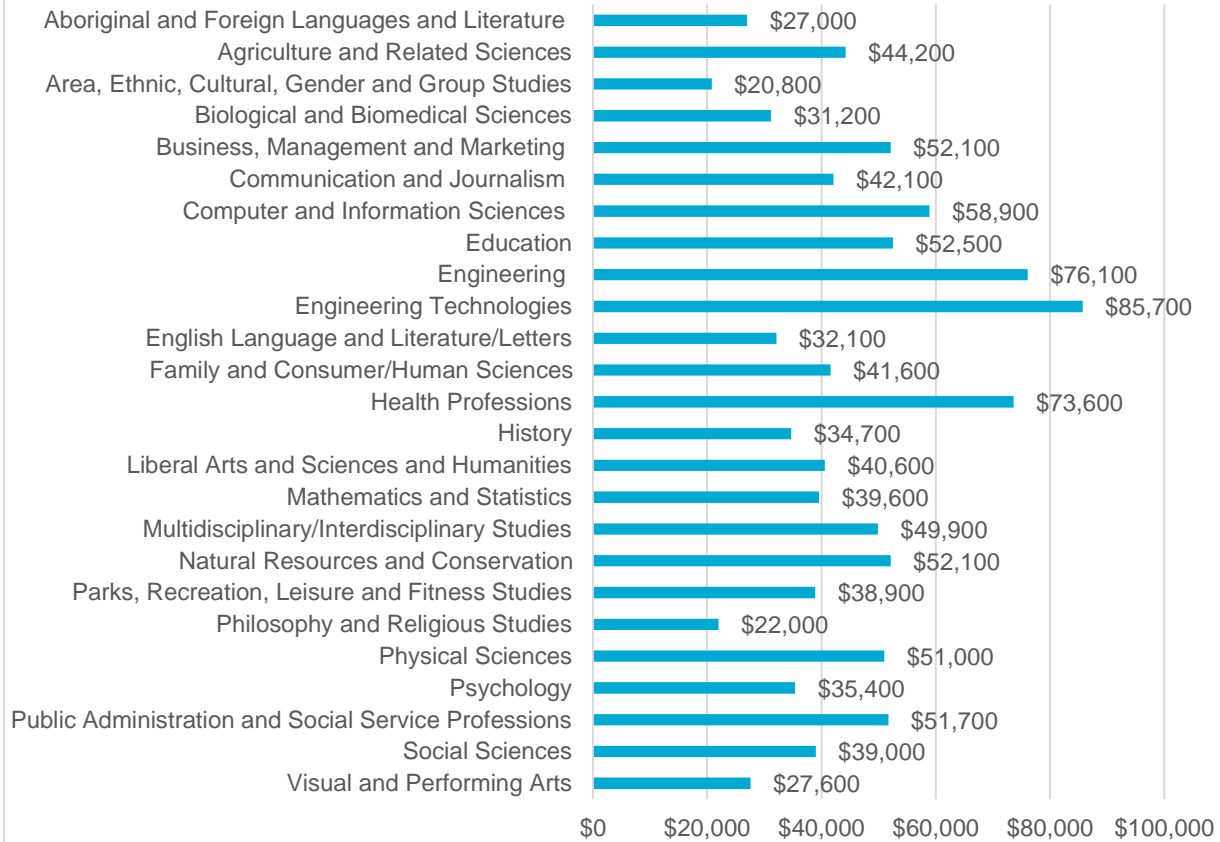
Analysis Type: Longitudinal  
Sources: Statistics Canada, T1 Family File (T1FF), 2014. Alberta Advanced Education, Learner Enrolment Reporting System (LERS), 2008/09.

## Bachelor's Degree Graduates

For all 2013 bachelor's degree graduates, median incomes range from \$20,800 for area, ethnic, cultural, gender and group studies graduates to \$85,700 for engineering technologies graduates one year after graduation. Five years after graduation, median incomes of the Class of 2009 range from \$29,200 for philosophy and religious studies graduates to \$99,600 for engineering graduates.

On average, graduates in each field of study see increases in their income over time. However, there are certain trends that are worth noting. For instance, health professions graduates, such as nurses, typically see high earnings one year after graduation, but do not experience as much growth in years following. On the other hand, graduates with a business or physical sciences degree typically start off with average earnings, but see much higher incomes throughout their careers. This demonstrates the importance of having data on graduates for many years following graduation. There are 8,980 bachelor's degree graduates from the Class of 2013 and 6,240 graduates from the Class of 2009 included in this analysis. Valid income counts by field of study can be found in Appendix B: Table 8.

Chart 13: Median Income One Year After Graduation - Bachelor's Degree Graduates  
Class of 2013

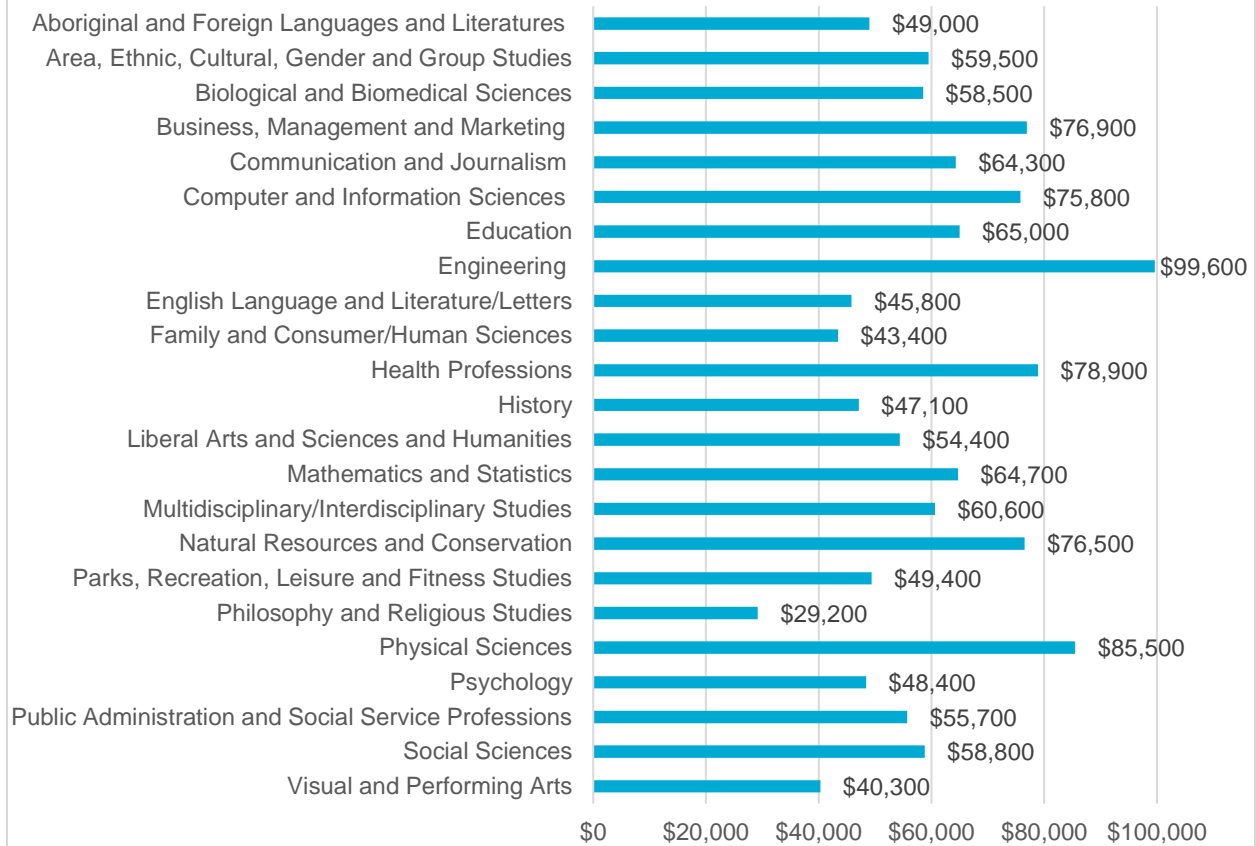


Analysis Type: Longitudinal

Sources: Statistics Canada, T1 Family File (T1FF), 2014. Alberta Advanced Education, Learner Enrolment Reporting System (LERS), 2012/13.



Chart 14: Median Income Five Years After Graduation - Bachelor's Degree Graduates  
Class of 2009



Analysis Type: Longitudinal

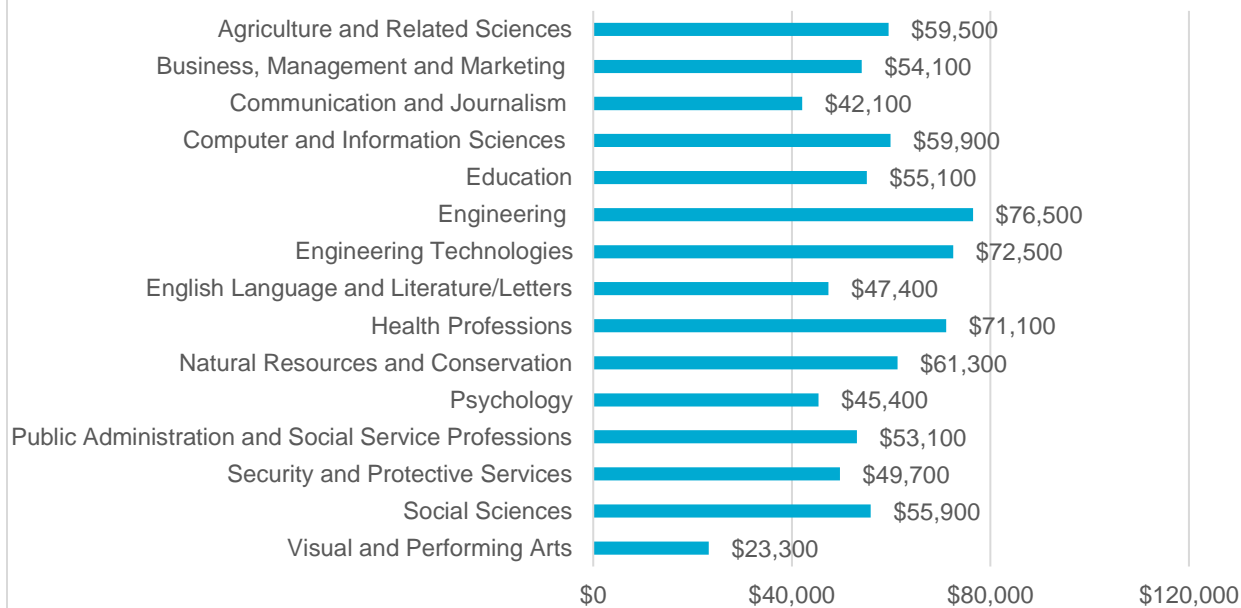
Sources: Statistics Canada, T1 Family File (T1FF), 2014. Alberta Advanced Education, Learner Enrolment Reporting System (LERS), 2012/13.

## Bachelor's Degree + Certificate/Diploma Graduates

For all 2013 bachelor's degree + certificate/diploma graduates, median incomes range from \$23,300 for visual and performing arts graduates to \$76,500 for engineering graduates one year after graduation. Five years after graduation, median incomes of the Class of 2009 range from \$47,600 for graduates of communication, journalism and related programs to \$113,400 for engineering graduates.

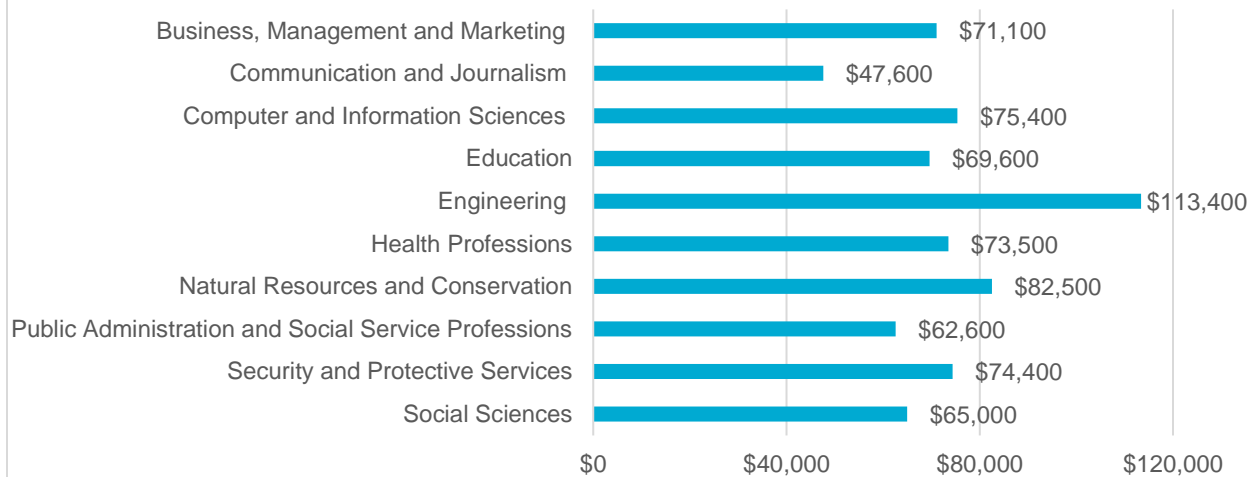
Earnings for bachelor's degree + certificate/diploma graduates follow similar trends to those with only a bachelor's degree with these graduates seeing higher incomes over time. Median incomes are higher than graduates with only a bachelor's degree for most fields of study. However, it is important to keep in mind that obtaining a higher or additional credential may not result in higher earnings. All graduates have unique characteristics or experience other factors that influence their earning potential, such as local labour markets or years of experience. There are 1,630 bachelor's degree + certificate/diploma graduates from the Class of 2013 and 820 graduates from the Class of 2009 included in this analysis. Valid income counts by field of study can be found in Appendix B: Table 9.

Chart 15: Median Income One Year After Graduation - Bachelor's Degree + Certificate/Diploma Graduates  
Class of 2013



Analysis Type: Longitudinal  
Sources: Statistics Canada, T1 Family File (T1FF), 2014. Alberta Advanced Education, Learner Enrolment Reporting System (LERS), 2012/13.

Chart 16: Median Income Five Years After Graduation - Bachelor's Degree + Certificate/Diploma Graduates  
Class of 2009

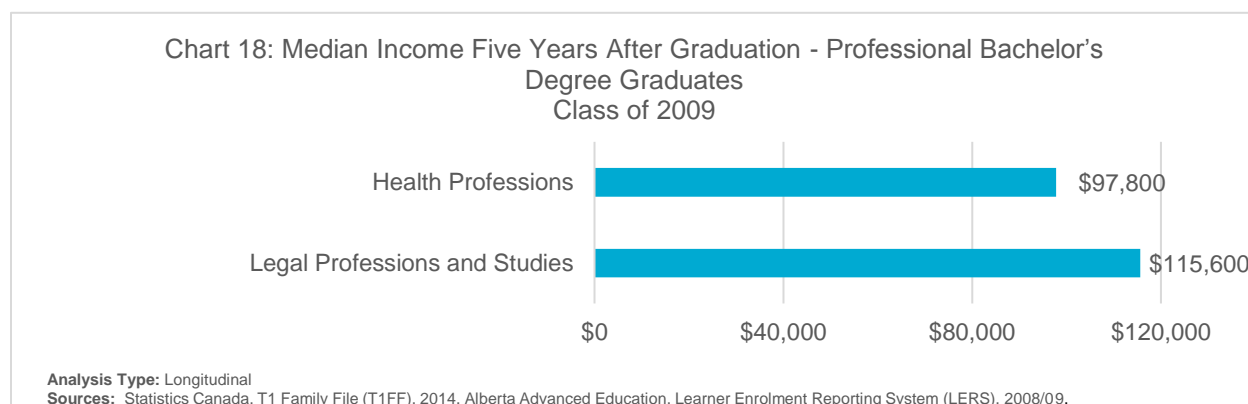
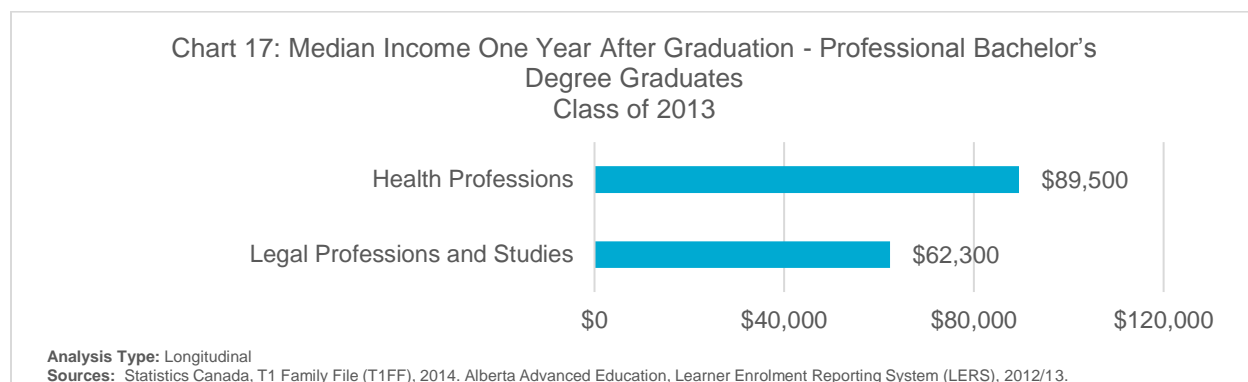


Analysis Type: Longitudinal  
Sources: Statistics Canada, T1 Family File (T1FF), 2014. Alberta Advanced Education, Learner Enrolment Reporting System (LERS), 2008/09.

## Professional Bachelor's Degree Graduates

Median income for legal professions graduates increases from \$62,300 for the Class of 2013 one year after graduation to \$115,600 for the Class of 2009 five years after graduation. This significant increase reflects graduates first completing an articling period before moving fully into the profession. Median income of health professions graduates increases from \$89,500 for the Class of 2013 one year after graduation to \$97,800 for the Class of 2009 five years after graduation. Note, this category predominately consists of

pharmacists, as the other fields of study, namely dentistry and medicine, have high rates of self-employment and incorporation. There are 360 professional bachelor's degree graduates from the Class of 2013 and 310 graduates from the Class of 2009 included in this analysis. Valid income counts by field of study can be found in Appendix B: Table 10.

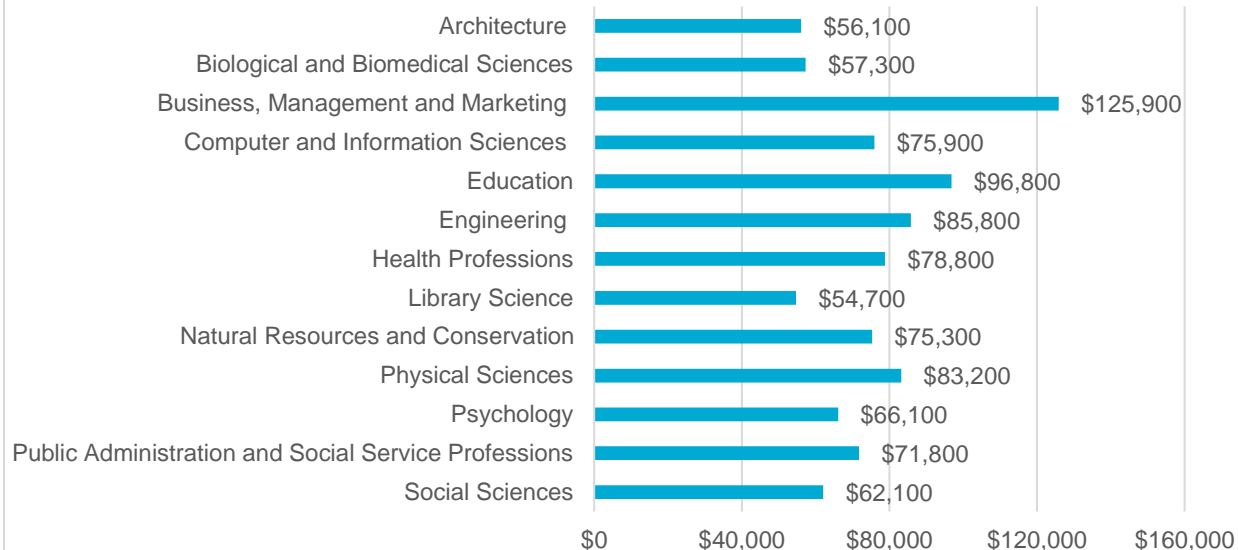


## Master's Degree Graduates

For all 2013 master's degree graduates, median incomes range from \$54,700 for library science graduates to \$125,900 for business, management and marketing graduates one year after graduation. Five years after graduation, median incomes of the Class of 2009 range from \$61,700 for biological and biomedical sciences graduates to \$116,200 for business, management and marketing graduates.

Growth in median incomes is relatively steady over time for all fields of study. In addition, graduates with a master's degree see much higher median incomes than those with only a bachelor's degree in the same fields of study. One of the most notable differences is in the field of education. One year after graduation, bachelor's degree graduates earn a median income of \$52,500, while master's degree graduates earn \$96,800. Even five years after graduation, those with only a bachelor's degree are not making nearly as much as those with a master's degree one year after graduation. While ability or years of experience cannot be accounted for, high-performing individuals may be more likely to obtain an additional credential. This demonstrates that earning a higher credential can often significantly increase a graduate's earning potential and may be worth the additional investment. There are 2,010 master's degree graduates from the Class of 2013 and 1,300 graduates from the Class of 2009 included in this analysis. Valid income counts by field of study can be found in Appendix B: Table 11.

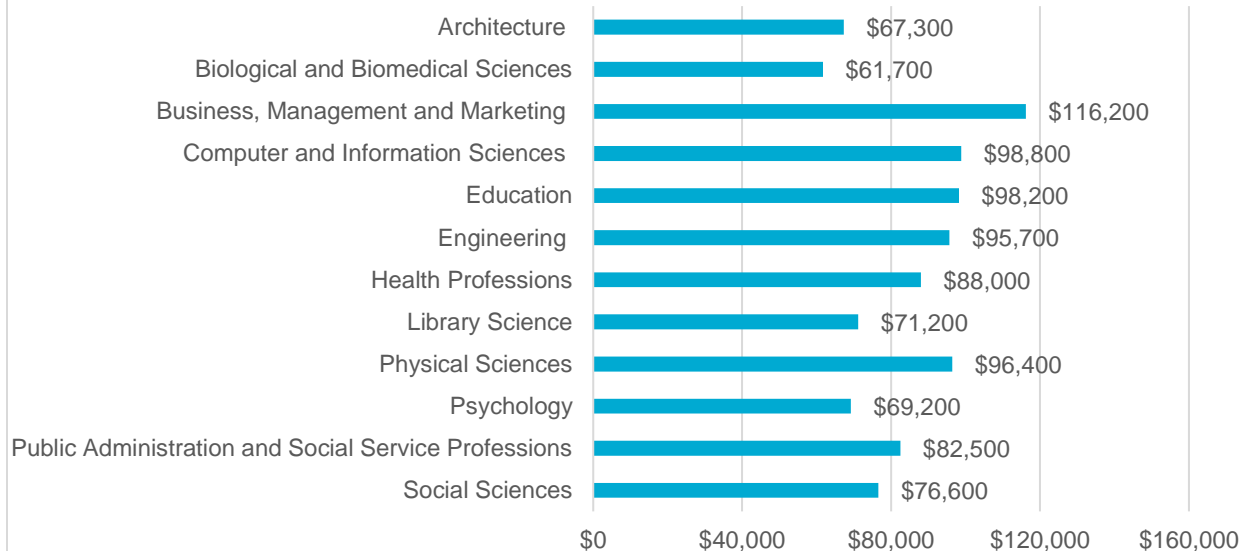
Chart 19: Median Income One Year After Graduation - Master's Degree Graduates  
Class of 2013



Analysis Type: Longitudinal

Sources: Statistics Canada, T1 Family File (T1FF), 2014. Alberta Advanced Education, Learner Enrolment Reporting System (LERS), 2012/13.

Chart 20: Median Income Five Years After Graduation - Master's Degree Graduates  
Class of 2009



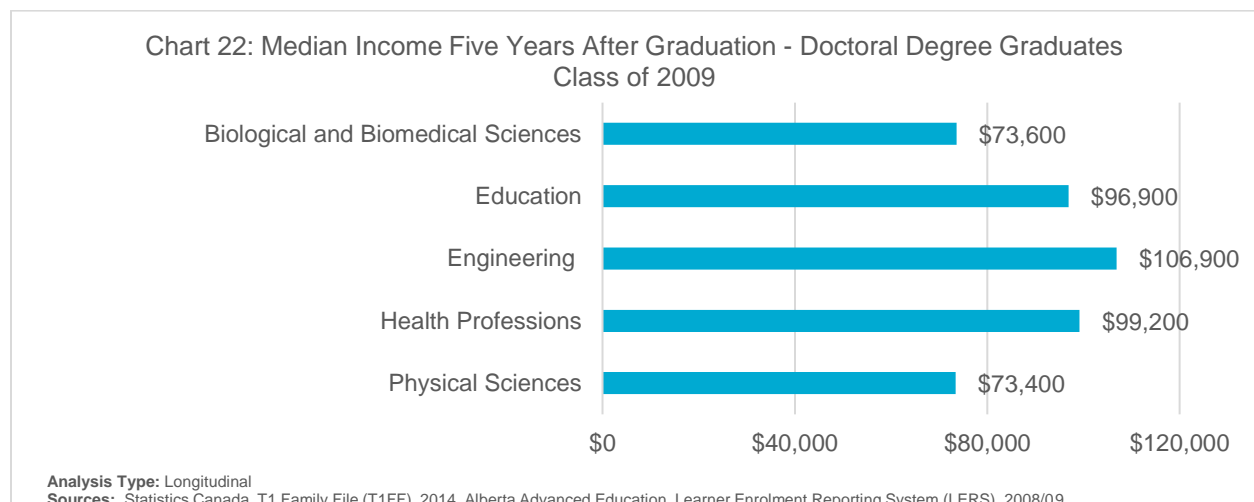
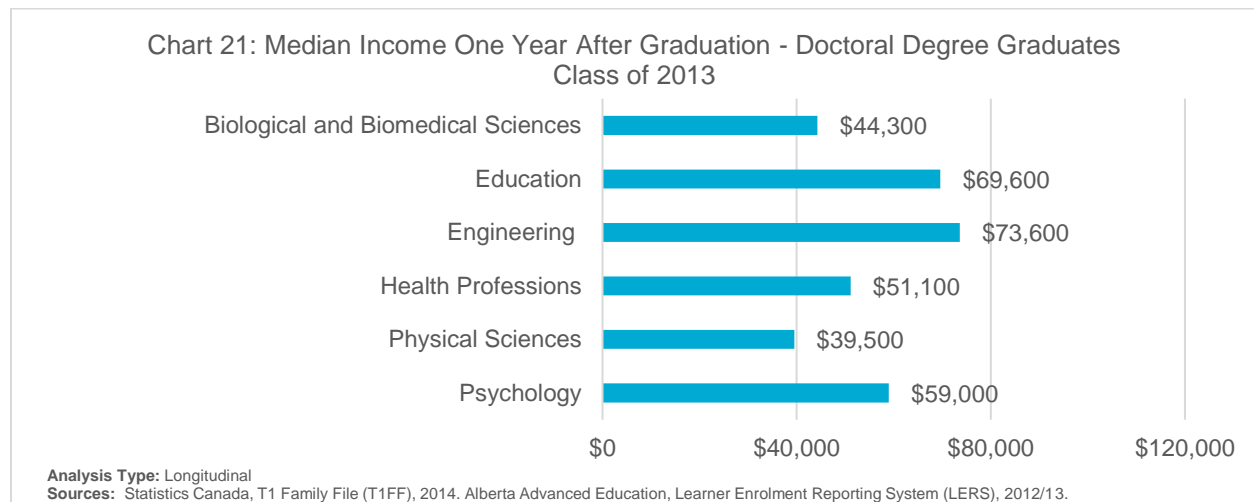
Analysis Type: Longitudinal

Sources: Statistics Canada, T1 Family File (T1FF), 2014. Alberta Advanced Education, Learner Enrolment Reporting System (LERS), 2008/09.

## Doctoral Degree Graduates

For all 2013 doctoral degree graduates, median incomes range from \$39,500 for physical sciences graduates to \$73,600 for engineering graduates one year after graduation. Five years after graduation, median incomes of the Class of 2009 range from \$73,400 for biological and biomedical sciences graduates to \$106,900 for engineering graduates.

In some cases, median income is lower for those with a doctoral degree, compared to those in the same field of study with only a master's degree, one year after graduation. For example, doctoral graduates in biological and biomedical sciences and physical sciences earn significantly less than those with a master's degree, and even some with only a bachelor's degree, one year after graduation. This is likely attributed to differences in the labour market. For instance, a position in academic research may pay quite differently than an applied occupation that requires a lesser credential. Graduates may also find it harder to transition into the labour market or find a job that suits their skillset. However, over time, those with a doctoral degree experience the highest growth in income. In addition, due to the smaller number of graduates with doctoral degrees, there can also be much more variability in median income. There are 370 doctoral degree graduates from the Class of 2013 and 250 graduates from the Class of 2009 included in this analysis. Valid income counts by field of study can be found in Appendix B: Table 12.



# CONCLUSION

The exploration of median income by credential and field of study leads to some interesting findings. Some of the results were expected, such that most graduates earn higher incomes over time, and that, aside from a few exceptions, earning a higher credential in the same field of study typically results in a higher income. However, field of study proves to be just as influential in determining one's earning potential, regardless of the credential. Additionally, it is important to look at the trajectory of graduate incomes over time, as short term data can be a poor indicator of long run earnings. Overall, this data provides substantive evidence that those with a post-secondary credential see significant increases in their earning potential in the long run.

# APPENDIX A: METHODOLOGY AND LIMITATIONS

## METHODOLOGY

Labour market outcomes are analyzed by linking Alberta Learner Enrolment Reporting System (LERS) data, which captures information about students and enrolment in all credit programs offered by public post-secondary institutions in Alberta, to Statistics Canada's T1 Family File (T1FF) tax information.

Income information is collected in the first tax year following the year of graduation to allow adequate time for graduates to find employment. It is important to note that there are sometimes difficulties linking graduates to tax records. However, we are able to link approximately 90 per cent of all graduates. Additionally, not all individuals file taxes every year.

The analysis focuses on graduates who:

- Completed a personal income tax return in Canada; and
- Were not enrolled in an additional post-secondary program full-time in the year of analysis.

The following graduates were excluded in the income calculation:

- Full-time students at the time of the analysis, as they would likely not have the same level of earnings as other graduates (part-time students remain included);
- Students pursuing post-secondary education outside of Alberta, who are identified when they claim education tax credits, but simultaneously lack records in LERS;
- Graduates with self-employment earnings, in the first year they reported self-employment income and any subsequent self-employed years. Employment earnings for self-employed individuals are not representative of actual earnings, which may be retained within a corporation, transmitted through dividends, or allocated to family members. Sometimes negative self-employment income is also reported. Note that some fields have a relatively larger proportion of self-employed individuals (such as dentistry and medicine); and
- International students, as many do not or have never filed taxes in Canada.

In the longitudinal analysis, graduates are dropped from the study if they did not file taxes for two or more years in the given timeframe. In the true longitudinal analysis, an identical population is followed over time, therefore graduates who meet any of the exclusion criteria or do not file taxes in any year are not included.

Linkages between LERS and tax data were conducted in secured facilities at Statistics Canada to safeguard the privacy of individuals. Results are published only at the aggregate level following Statistics Canada's disclosure rules to ensure that any individual's income cannot be directly or indirectly ascertained. Furthermore, the results of this project are highly policy relevant and of public interest, especially to current and future post-secondary students. The detailed level of outcomes findings at the field of study and credential level obtained from this project cannot be obtained from other sources such as surveys.

## LIMITATIONS

Since the report only contains income information for graduates who filed their taxes, there are some graduates who are not captured in the data. For instance, an individual with no or very low employment earnings may have little incentive to file taxes. These individuals would have an impact on the median income of their particular cohort, but instead are not captured in the data.

It is important to note that the report captures earnings from all sources of employment. It is possible that graduates may be earning income from a job outside of their field of study. While field of study cannot be validated using T1FF tax information, job relatedness is another important indicator of graduate outcomes.

Another caveat is that income is only reported as an annual figure. As a result, we are not able to tell how many hours an individual has worked, or for what duration of the year. For example, a new graduate may have a full-time and a part-time job and work a much higher number of hours a week than an individual with only one job, whereas another graduate may do seasonal work six months out of the year. A better understanding of hourly wage, or number of weeks worked per year could provide greater insight to the findings.

We are also unable to control for years of work experience. For instance, an individual may already have many years of employment experience before pursuing a new or additional credential. We would expect these individuals to have higher first year earnings upon graduation than someone with little or no work experience.

Lastly, there are many benefits of post-secondary education beyond employment earnings. While this is more of a quantifiable way of measuring graduate outcomes, personal interest and satisfaction cannot be measured through this approach. Other attributes of employment such as job security, health benefits, and employee pension plans are difficult to compare.



# APPENDIX B: RESPONSE RATE, EXCLUSION RATE, INCOME AND INCOME COUNTS

## CLASS OF 2013

Response rate defines the fraction of respondents whose tax records are available for a given year. Exclusion rate defines the fraction of respondents who are excluded from the study for a given year. Valid income counts represent the number of graduates that the median income calculation is based on. All income counts are randomly rounded to a base of ten for privacy reasons.

Credential	Response Rate	Exclusion Rate	Valid Income Counts
Certificate	84%	35%	4,390
Diploma	83%	41%	5,860
Bachelor's Degree	87%	40%	8,980
Bachelor's Degree + Certificate/Diploma	91%	34%	1,630
Professional Bachelor's Degree	92%	51%	360
Master's Degree	78%	46%	2,010
Doctoral Degree	68%	49%	370

Analysis Type: Longitudinal  
Sources: Statistics Canada, T1 Family File (T1FF), 2014. Alberta Advanced Education, Learner Enrolment Reporting System (LERS), 2012/13.

## ALL COHORTS

Response rates are lowest for doctoral degree graduates and highest for professional bachelor's degree graduates. There are no notable differences in response rates during recession years, despite higher levels of overall unemployment. Over time, response rates tend to fall due to discontinuities in tax filing behavior, but remain very high overall compared to survey response rates.

Credential	Number of Years After Graduation				
	1	3	5	7	9
Certificate	67% - 84%	67% - 80%	67% - 77%	67% - 75%	67%
Diploma	62% - 83%	62% - 80%	62% - 78%	62% - 74%	62%
Bachelor's Degree	67% - 87%	67% - 82%	67% - 78%	67% - 74%	67%
Bachelor's Degree + Certificate/Diploma	75% - 90%	77% - 88%	76% - 82%	76%	n/a
Professional Bachelor's Degree	76% - 92%	76% - 88%	76% - 86%	76% - 83%	76%
Master's Degree	64% - 78%	64% - 75%	64% - 70%	64% - 68%	64%
Doctoral Degree	55% - 68%	53% - 64%	53% - 59%	53% - 59%	53%

Analysis Type: True-longitudinal  
Sources: Statistics Canada, T1 Family File (T1FF), 2006 to 2014. Alberta Advanced Education, Learner Enrolment Reporting System (LERS), 2004/05 to 2012/13.

Exclusion rates increase over time as graduates decide to return to post-secondary, do not file taxes, or become self-employed.

<b>Table 3: Exclusion Rate by Credential – All Cohorts</b>					
<b>Credential</b>	<b>Number of Years After Graduation</b>				
	<b>1</b>	<b>3</b>	<b>5</b>	<b>7</b>	<b>9</b>
Certificate	34% - 65%	49% - 65%	54% - 65%	58% - 65%	65%
Diploma	41% - 69%	51% - 69%	58% - 69%	91% - 69%	69%
Bachelor's Degree	40% - 67%	50% - 67%	55% - 67%	60% - 67%	67%
Bachelor's Degree + Certificate/Diploma	34% - 62%	47% - 61%	54% - 61%	61%	n/a
Professional Bachelor's Degree	51% - 72%	57% - 72%	63% - 72%	66% - 72%	72%
Master's Degree	46% - 69%	55% - 69%	62% - 69%	63% - 69%	69%
Doctoral Degree	49% - 73%	59% - 73%	65% - 73%	70% - 73%	73%

**Analysis Type:** True-longitudinal  
**Sources:** Statistics Canada, T1 Family File (T1FF), 2006 to 2014. Alberta Advanced Education, Learner Enrolment Reporting System (LERS), 2004/05 to 2012/13.

<b>Table 4: True Longitudinal Income by Credential – All Cohorts</b>										
<b>Credential</b>	<b>Graduation Year</b>	<b>Number of Years After Graduation</b>								
		<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>
Certificate	2005	\$36,700	\$39,400	\$41,900	\$43,200	\$44,300	\$45,400	\$46,800	\$47,300	\$47,000
	2006	\$37,200	\$41,500	\$42,700	\$44,200	\$46,000	\$47,400	\$47,000	\$46,900	
	2007	\$39,500	\$41,800	\$43,600	\$45,200	\$46,800	\$48,100	\$48,600		
	2008	\$38,800	\$41,800	\$43,900	\$47,400	\$47,000	\$46,900			
	2009	\$37,500	\$40,700	\$44,100	\$44,800	\$44,900				
	2010	\$39,400	\$42,800	\$44,700	\$45,500					
	2011	\$40,300	\$43,600	\$43,700						
	2012	\$39,200	\$41,200							
Diploma	2005	\$43,900	\$49,100	\$53,300	\$54,300	\$56,100	\$58,600	\$61,900	\$63,800	\$64,700
	2006	\$46,100	\$51,200	\$54,300	\$55,800	\$58,000	\$61,600	\$63,400	\$63,500	
	2007	\$46,200	\$49,500	\$51,600	\$54,800	\$58,100	\$59,900	\$60,500		
	2008	\$45,900	\$48,800	\$52,300	\$55,600	\$57,300	\$58,400			
	2009	\$44,000	\$48,200	\$52,500	\$55,400	\$56,100				
	2010	\$44,300	\$49,100	\$51,500	\$53,300					
	2011	\$46,000	\$49,400	\$52,100						
	2012	\$45,300	\$48,500							
Bachelor's Degree	2005	\$54,700	\$60,700	\$66,200	\$68,700	\$72,200	\$75,200	\$78,000	\$80,500	\$81,300
	2006	\$55,500	\$62,300	\$65,500	\$69,100	\$71,400	\$74,600	\$77,100	\$78,400	
	2007	\$58,900	\$63,000	\$67,500	\$70,700	\$73,800	\$75,200	\$75,900		
	2008	\$58,400	\$63,700	\$67,700	\$71,900	\$73,900	\$74,100			
	2009	\$55,700	\$62,200	\$67,800	\$70,200	\$72,000				
	2010	\$54,600	\$62,400	\$67,100	\$68,900					
	2011	\$56,500	\$63,000	\$66,300						
	2012	\$55,500	\$60,700							
Bachelor's Degree + Certificate/Diploma	2007	\$56,300	\$60,600	\$60,800	\$64,200	\$67,800	\$72,100	\$71,900		
	2008	\$53,600	\$57,900	\$62,000	\$65,300	\$67,800	\$67,000			
	2009	\$53,800	\$59,200	\$64,900	\$67,200	\$69,500				
	2010	\$53,300	\$60,300	\$64,000	\$65,800					
	2011	\$55,400	\$60,300	\$62,500						
	2012	\$54,200	\$59,000							
	2013	\$56,200								
	2005	\$68,600	\$91,200	\$102,500	\$107,500	\$107,300	\$109,400	\$114,900	\$113,900	\$109,000

Professional Bachelor's Degree	2006	\$75,500	\$95,400	\$99,700	\$104,200	\$106,000	\$114,400	\$111,000	\$113,100	
	2007	\$78,100	\$94,300	\$98,100	\$100,000	\$108,200	\$108,400	\$107,900		
	2008	\$78,600	\$96,300	\$100,400	\$106,800	\$110,800	\$113,700			
	2009	\$66,300	\$88,700	\$100,200	\$108,100	\$114,000				
	2010	\$70,600	\$92,100	\$102,000	\$105,700					
	2011	\$66,500	\$90,800	\$95,400						
	2012	\$68,600	\$86,400							
2013	\$67,300									
Master's Degree	2005	\$84,900	\$89,000	\$92,700	\$97,000	\$97,700	\$102,300	\$104,500	\$107,000	\$105,500
	2006	\$86,100	\$90,600	\$94,800	\$97,900	\$99,100	\$103,200	\$103,300	\$103,600	
	2007	\$85,700	\$91,700	\$93,400	\$96,300	\$101,000	\$103,000	\$101,700		
	2008	\$84,200	\$87,800	\$90,900	\$94,300	\$96,400	\$94,900			
	2009	\$82,500	\$86,100	\$90,500	\$91,500	\$91,300				
	2010	\$78,700	\$85,200	\$87,600	\$89,700					
	2011	\$82,000	\$85,100	\$85,500						
2012	\$82,300	\$82,600								
2013	\$80,500									
Doctoral Degree	2005	\$78,400	\$82,000	\$82,700	\$90,300	\$92,900	\$99,800	\$103,500	\$109,500	\$110,900
	2006	\$75,200	\$84,300	\$91,800	\$92,100	\$95,700	\$100,500	\$104,000	\$105,900	
	2007	\$75,900	\$81,700	\$84,100	\$86,200	\$90,000	\$94,700	\$95,700		
	2008	\$79,000	\$85,600	\$87,600	\$90,500	\$92,200	\$92,100			
	2009	\$66,200	\$76,000	\$80,900	\$90,400	\$88,400				
	2010	\$60,700	\$71,500	\$79,100	\$82,000					
	2011	\$61,600	\$69,000	\$73,000						
	2012	\$62,000	\$70,000							
2013	\$58,200									

Analysis Type: True-longitudinal

Sources: Statistics Canada, T1 Family File (T1FF), 2006 to 2014. Alberta Advanced Education, Learner Enrolment Reporting System (LERS), 2004/05 to 2012/13.

**Table 5: True Longitudinal Valid Income Counts by Credential – All Cohorts**

Credential	Graduation Year	Number of Years After Graduation								
		1	2	3	4	5	6	7	8	9
Certificate	2005	1,910	1,910	1,910	1,910	1,910	1,910	1,910	1,920	1,910
	2006	2,200	2,200	2,200	2,200	2,200	2,200	2,200	2,190	
	2007	2,060	2,050	2,050	2,060	2,050	2,050	2,050		
	2008	1,910	1,920	1,910	1,920	1,920	1,910			
	2009	2,240	2,240	2,250	2,240	2,240				
	2010	2,340	2,340	2,330	2,330					
	2011	2,990	3,000	3,000						
	2012	3,880	3,880							
2013	4,380									
Diploma	2005	2,240	2,240	2,240	2,230	2,240	2,240	2,230	2,230	2,240
	2006	2,370	2,370	2,360	2,370	2,370	2,370	2,370	2,370	
	2007	2,650	2,660	2,660	2,660	2,650	2,660	2,660		
	2008	2,920	2,920	2,920	2,920	2,920	2,920			
	2009	3,100	3,100	3,100	3,100	3,100				
	2010	3,540	3,540	3,540	3,540					
	2011	4,140	4,130	4,130						
	2012	4,730	4,740							
2013	5,860									
Bachelor's Degree	2005	3,790	3,780	3,790	3,790	3,780	3,790	3,780	3,790	3,790
	2006	4,360	4,350	4,360	4,350	4,350	4,360	4,360	4,350	
	2007	4,710	4,710	4,710	4,710	4,710	4,710	4,710		
	2008	5,040	5,040	5,040	5,040	5,040	5,040			
	2009	5,160	5,160	5,160	5,160	5,170				

	2010	5,610	5,610	5,610	5,610					
	2011	6,590	6,600	6,590						
	2012	7,690	7,700							
	2013	8,980								
Bachelor's Degree + Certificate/ Diploma	2007	220	220	220	220	220	220	220		
	2008	440	430	430	440	430	430			
	2009	670	680	670	670	670				
	2010	810	810	820	820					
	2011	1,010	1,000	1,000						
	2012	1,270	1,270							
Professional Bachelor's Degree	2005	160	160	160	170	170	160	170	160	170
	2006	160	170	160	160	160	160	160	170	
	2007	190	200	190	190	200	200	190		
	2008	210	200	210	210	210	210			
	2009	240	240	240	240	230				
	2010	260	270	270	260					
	2011	290	280	290						
	2012	350	350							
Master's Degree	2005	750	750	750	750	750	750	750	750	750
	2006	910	910	910	910	910	910	910	910	
	2007	980	970	970	970	980	970	980		
	2008	1,070	1,070	1,080	1,070	1,070	1,080			
	2009	1,000	990	1,000	1,000	990				
	2010	1,230	1,230	1,230	1,230					
	2011	1,500	1,510	1,500						
	2012	1,790	1,780							
	2013	2,010								
Doctoral Degree	2005	120	130	120	120	120	120	130	120	120
	2006	150	140	150	150	150	150	140	140	
	2007	150	150	160	150	150	150	150		
	2008	200	200	190	190	190	190			
	2009	200	210	200	200	210				
	2010	270	260	260	270					
	2011	270	270	280						
	2012	300	300							
	2013	370								

Analysis Type: True-longitudinal

Sources: Statistics Canada, T1 Family File (T1FF), 2006 to 2014, Alberta Advanced Education, Learner Enrolment Reporting System (LERS), 2004/05 to 2012/13.

**Table 6: Valid Income Counts by Field of Study – Certificate Graduates**

	Class of 2013 One Year After Graduation Total = 4,390	Class of 2009 Five Years After Graduation Total = 2,890
Agriculture and Related Sciences	40	20
Business, Management and Marketing	650	340
Communications Technologies/Technicians	30	30
Computer and Information Sciences	70	50
Construction Trades	150	30
Education	150	110
Engineering Technologies	200	130
Family and Consumer/Human Sciences	110	90

Health Professions	2,160	1,440
Mechanic and Repair Technologies/ Technicians	460	270
Personal and Culinary Services	80	30
Precision Production	120	40
Security and Protective Services	50	170
Transportation and Materials Moving	40	50
<b>Analysis Type:</b> Longitudinal		
<b>Sources:</b> Statistics Canada, T1 Family File (T1FF), 2014. Alberta Advanced Education, Learner Enrolment Reporting System (LERS), 2008/09 and 2012/13.		

<b>Table 7: Valid Income Counts by Field of Study – Diploma Graduates</b>		
	<b>Class of 2013 One Year After Graduation Total = 5,860</b>	<b>Class of 2009 Five Years After Graduation Total = 4,140</b>
Agriculture and Related Sciences	110	60
Architecture	160	90
Business, Management and Marketing	1,100	890
Communication and Journalism	210	120
Communications Technologies/Technicians	100	70
Computer and Information Sciences	70	40
Engineering Technologies	950	740
Family and Consumer/Human Sciences	140	110
Health Professions	1,520	1,030
Legal Professions and Studies	150	90
Library Science	40	20
Mechanic and Repair Technologies/ Technicians	200	130
Natural Resources and Conservation	110	100
Parks, Recreation, Leisure and Fitness Studies	60	40
Personal and Culinary Services	130	60
Precision Production	60	40
Public Administration and Social Service Professions	210	110
Science Technologies/Technicians	60	50
Security and Protective Services	240	150
Visual and Performing Arts	200	120
<b>Analysis Type:</b> Longitudinal		
<b>Sources:</b> Statistics Canada, T1 Family File (T1FF), 2014. Alberta Advanced Education, Learner Enrolment Reporting System (LERS), 2008/09 and 2012/13.		

<b>Table 8: Valid Income Counts by Field of Study – Bachelor’s Degree Graduates</b>		
	<b>Class of 2013 One Year After Graduation Total = 8,980</b>	<b>Class of 2009 Five Years After Graduation Total = 6,240</b>
Aboriginal and Foreign Languages and Literature	50	30
Agriculture and Related Sciences	50	n/a
Area, Ethnic, Cultural, Gender and Group Studies	20	20
Biological and Biomedical Sciences	390	150
Business, Management and Marketing	1,530	960
Communication and Journalism	100	100
Computer and Information Sciences	150	140
Education	1,450	1,350
Engineering	940	710
Engineering Technologies	40	n/a
English Language and Literature/Letters	150	100
Family and Consumer/Human Sciences	70	50
Health Professions	1,540	980
History	110	40
Liberal Arts and Sciences and Humanities	120	140
Mathematics and Statistics	30	40
Multidisciplinary/Interdisciplinary Studies	90	40
Natural Resources and Conservation	70	90
Parks, Recreation, Leisure and Fitness Studies	250	120
Philosophy and Religious Studies	40	20
Physical Sciences	250	120
Psychology	430	210
Public Administration and Social Service Professions	130	80
Social Sciences	30	70
Visual and Performing Arts	640	430
<b>Analysis Type:</b> Longitudinal		
<b>Sources:</b> Statistics Canada, T1 Family File (T1FF), 2014. Alberta Advanced Education, Learner Enrolment Reporting System (LERS), 2008/09 and 2012/13.		

<b>Table 9: Valid Income Counts by Field of Study – Bachelor’s Degree + Certificate/Diploma Graduates</b>		
	<b>Class of 2013 One Year After Graduation Total = 1,630</b>	<b>Class of 2009 Five Years After Graduation Total = 820</b>
Agriculture and Related Sciences	20	n/a
Business, Management and Marketing	600	380
Communication and Journalism	70	50
Computer and Information Sciences	50	30
Education	120	70
Engineering	30	20
Engineering Technologies	60	20
English Language and Literature/Letters	20	n/a
Health Professions	280	140
Natural Resources and Conservation	60	40
Psychology	20	20
Public Administration and Social Service Professions	110	70
Security and Protective Services	40	40
Social Sciences	30	30
Visual and Performing Arts	30	20
<b>Analysis Type:</b> Longitudinal <b>Sources:</b> Statistics Canada, T1 Family File (T1FF), 2014. Alberta Advanced Education, Learner Enrolment Reporting System (LERS), 2008/09 and 2012/13.		

<b>Table 10: Valid Income Counts by Field of Study – Professional Bachelor’s Degree Graduates</b>		
	<b>Class of 2013 One Year After Graduation Total = 360</b>	<b>Class of 2009 Five Years After Graduation Total = 310</b>
Legal Professions and Studies	210	180
Health Professions	150	140
<b>Analysis Type:</b> Longitudinal <b>Sources:</b> Statistics Canada, T1 Family File (T1FF), 2014. Alberta Advanced Education, Learner Enrolment Reporting System (LERS), 2008/09 and 2012/13.		

<b>Table 11: Valid Income Counts by Field of Study – Master’s Degree Graduates</b>		
	<b>Class of 2013 One Year After Graduation Total = 2,010</b>	<b>Class of 2009 Five Years After Graduation Total = 1,300</b>
Architecture	60	30
Biological and Biomedical Sciences	50	30
Business, Management and Marketing	410	170
Computer and Information Sciences	50	60
Education	280	210
Engineering	180	210
Health Professions	480	270
Library Science	40	40
Natural Resources and Conservation	20	30
Physical Sciences	50	30
Psychology	100	60
Public Administration and Social Service Professions	140	40
Social Sciences	40	50
<b>Analysis Type:</b> Longitudinal <b>Sources:</b> Statistics Canada, T1 Family File (T1FF), 2014. Alberta Advanced Education, Learner Enrolment Reporting System (LERS), 2008/09 and 2012/13.		

<b>Table 12: Valid Income Counts by Field of Study – Doctoral Degree Graduates</b>		
	<b>Class of 2013 One Year After Graduation Total = 370</b>	<b>Class of 2009 Five Years After Graduation Total = 250</b>
Biological and Biomedical Sciences	40	30
Education	30	30
Engineering	100	60
Health Professions	40	30
Physical Sciences	50	30
Psychology	30	n/a
<b>Analysis Type:</b> Longitudinal <b>Sources:</b> Statistics Canada, T1 Family File (T1FF), 2014. Alberta Advanced Education, Learner Enrolment Reporting System (LERS), 2008/09 and 2012/13.		



# APPENDIX C: PARTICIPATING POST-SECONDARY INSTITUTIONS

Post-secondary institutions participating in the project are listed according to their current names, as some have changed over the analysis period:

- Alberta College of Art and Design
- Ambrose University
- Athabasca University
- Bow Valley College
- Burman University
- Concordia University of Edmonton
- Grande Prairie Regional College
- MacEwan University
- Keyano College
- Lakeland College
- Lethbridge College
- Medicine Hat College
- Mount Royal University
- NorQuest College
- Northern Alberta Institute of Technology
- Northern Lakes College
- Olds College
- Portage College
- Red Deer College
- Southern Alberta Institute of Technology
- St. Mary's University
- The King's University
- University of Alberta
- University of Calgary
- University of Lethbridge