

## BC STUDENT OUTCOMES



# Focus on STEM: Outcomes of Former Post-Secondary Students Who Participated in Science, Technology, Engineering, or Mathematics and Computer Programs

*A significant percentage of the former students who are surveyed by BC Student Outcomes every year have participated in STEM programs; that is, science, technology, engineering, or mathematics and computer programs, which include computer science and information technology-related programs. A full list of the STEM programs taken by post-secondary students who were eligible for the survey is appended to this fact sheet.<sup>1</sup>*

## PROGRAM PARTICIPATION

### *STEM PROGRAMS OVER TIME*

Over the past five years, there has been an increase in the overall numbers of graduates and near-completers from STEM programs. The most noticeable growth has been in STEM diploma programs.

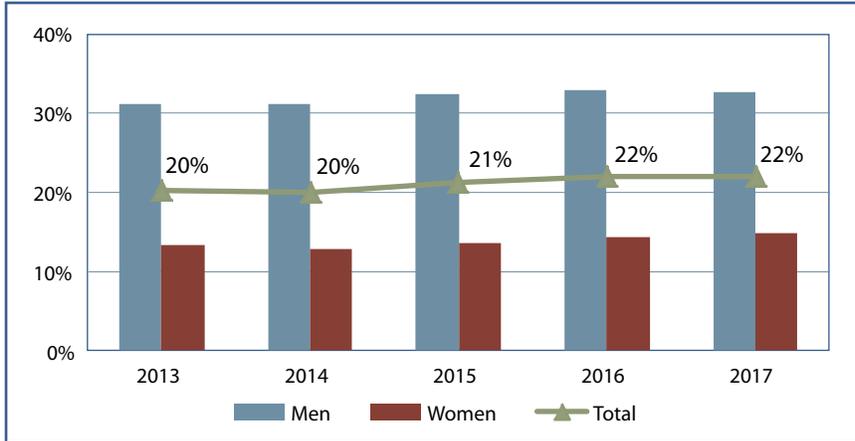
Men participated in these programs at significantly higher rates than women.

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1. The STEM designation is based on the Classification of Instructional Programs (CIP) 2011 STEM groupings from [Statistics Canada](#).

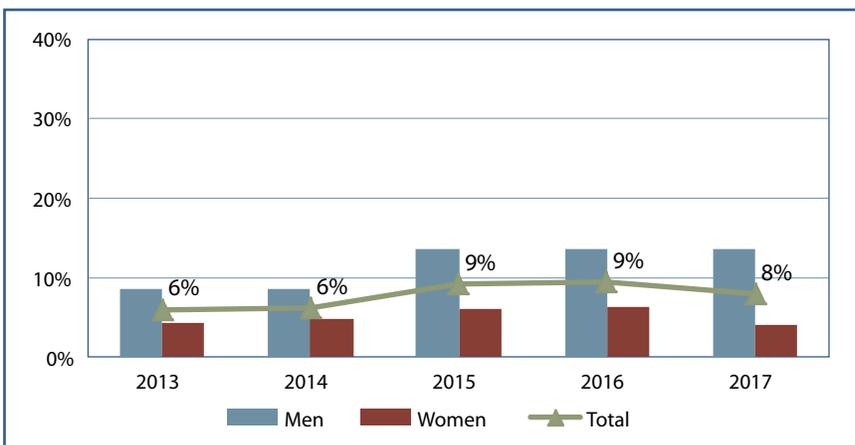
Notes: The following figures use data from each whole cohort submitted for surveying, not just respondents. The years shown are survey years—the years the data were collected. Trades foundation programs are not included.

### BACCALAUREATE



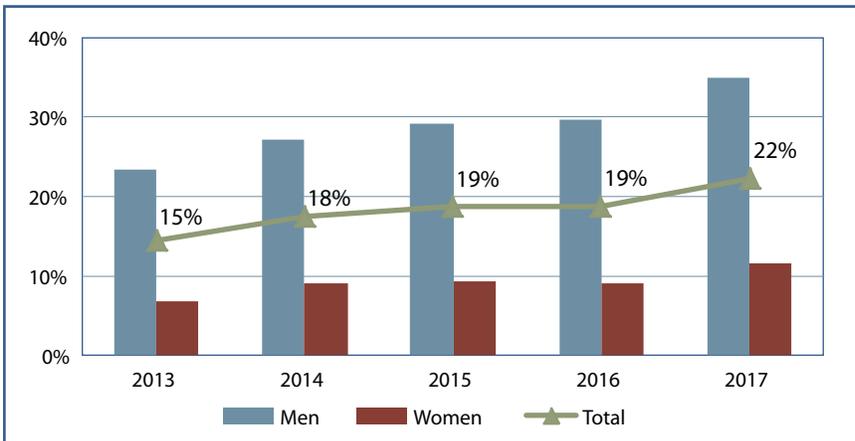
Percentages of baccalaureate graduates from STEM programs have been consistent over the past five years.

### ASSOCIATE DEGREE



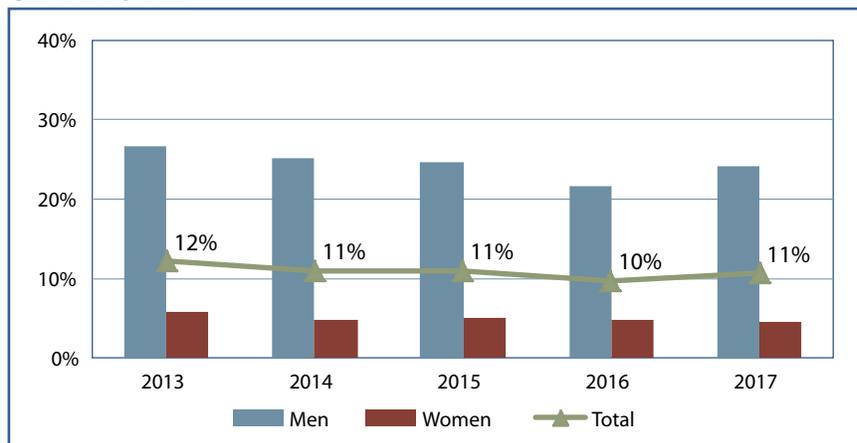
The percentage of male former associate degree STEM students has increased since 2013.

### DIPLOMA



The percentage of former diploma students who took a STEM program has increased steadily between 2013 and 2017.

## CERTIFICATE



*There has been some fluctuation in the percentages of male former certificate students who took STEM programs.*

## STEM PROGRAM GROUPS

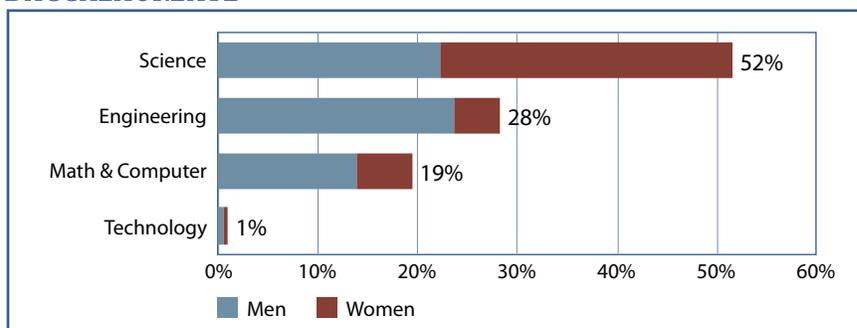
In 2017, participation in STEM programs varied significantly by the type of program and by credential.

Technology programs were associated with diploma and certificate credentials rather than baccalaureate or associate degree; the number of students participating in these programs was very low, however.<sup>2</sup>

Overall, women participated in science programs at a higher rate than men. In other areas, especially engineering, women were greatly outnumbered.

*Notes: The following figures use data from each whole cohort eligible for surveying in 2017, not just respondents. The percentages shown are of those in the named STEM group, based on those who took STEM programs. Trades foundation programs are not included.*

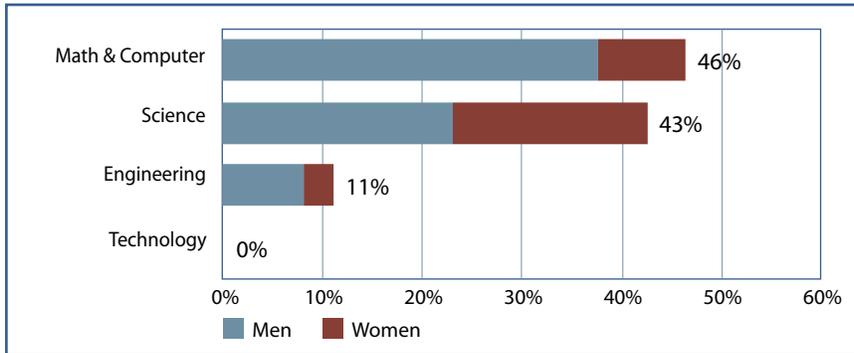
## BACCALAUREATE



*Over half of the baccalaureate STEM graduates took a science program.*

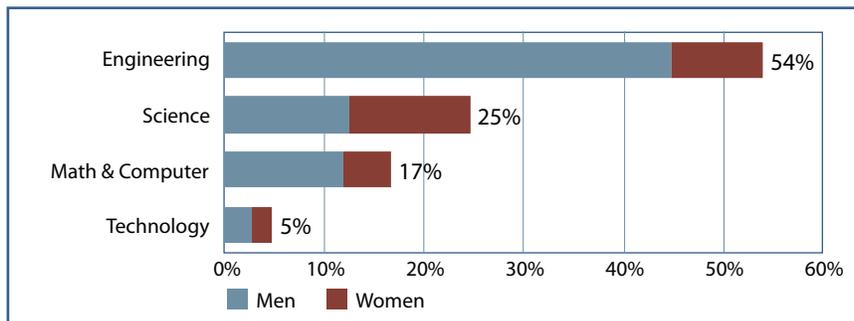
2. The list of programs defined as “technology” by the Statistics Canada 2011 groupings was limited and there were only five technology programs taken by former students eligible for the Student Outcomes surveys. See the appended *List of STEM Programs*.

## ASSOCIATE DEGREE



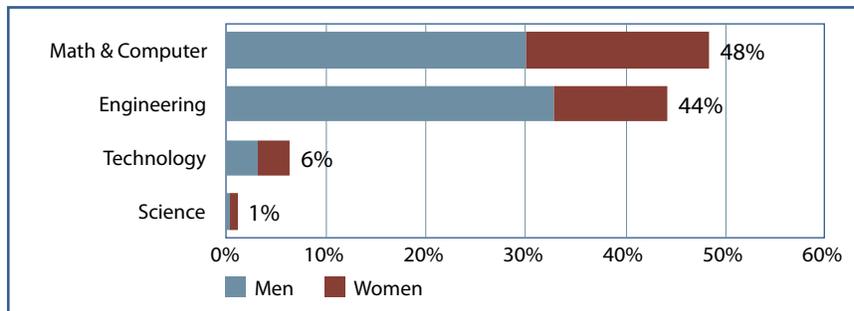
*Almost half of the former associate degree STEM students took math and computer programs.*

## DIPLOMA



*Engineering programs were taken by over half of the former diploma STEM students.*

## CERTIFICATE



*Almost half of the former certificate STEM students were from math and computer programs.*

# FURTHER EDUCATION AND EMPLOYMENT

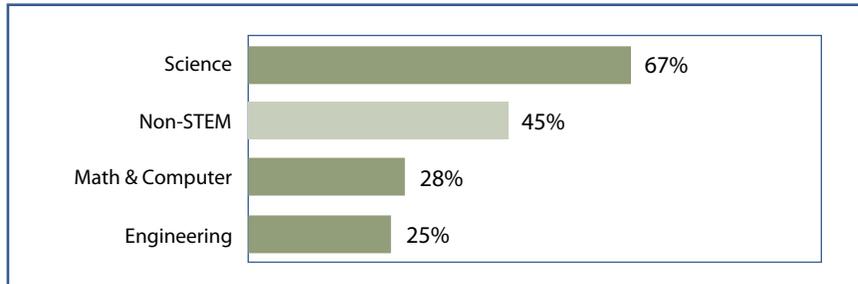
## FURTHER EDUCATION

The overall rate of further education for STEM graduates and near-completers was not too different than that of those from other programs. However, there were significant differences in further study rates by credential and between the different STEM groups.

In general, former students who completed science programs were more likely than others to take further education.

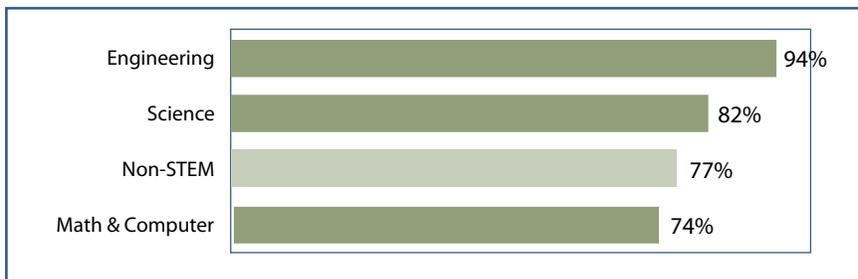
Notes: The following percentages are of respondents who participated in formal post-secondary education or training after graduating or nearly completing their programs, based on all 2017 respondents (excluding those from foundation trades programs). The numbers of respondents from baccalaureate and associate degree technology programs and from certificate science programs are too low to permit further analysis.

### BACCALAUREATE



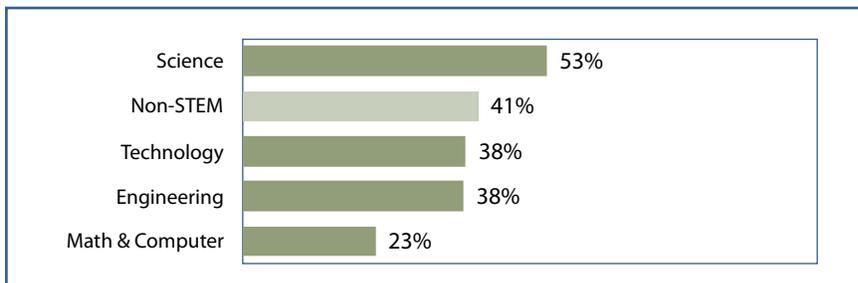
Two-thirds of baccalaureate science graduates took further education.

### ASSOCIATE DEGREE



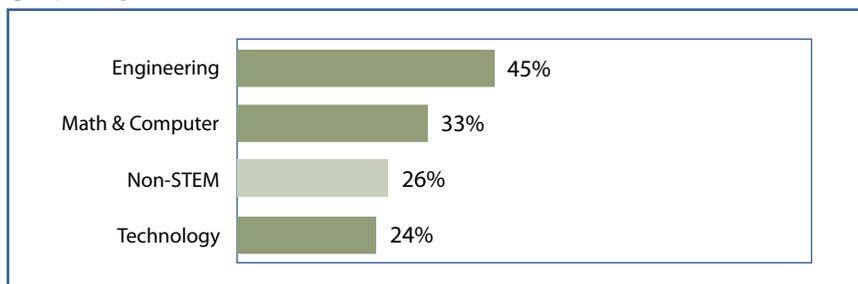
Former associate degree students were very likely to take further education, especially those from engineering programs.

### DIPLOMA



Over half of the former diploma science students went on to further studies.

### CERTIFICATE



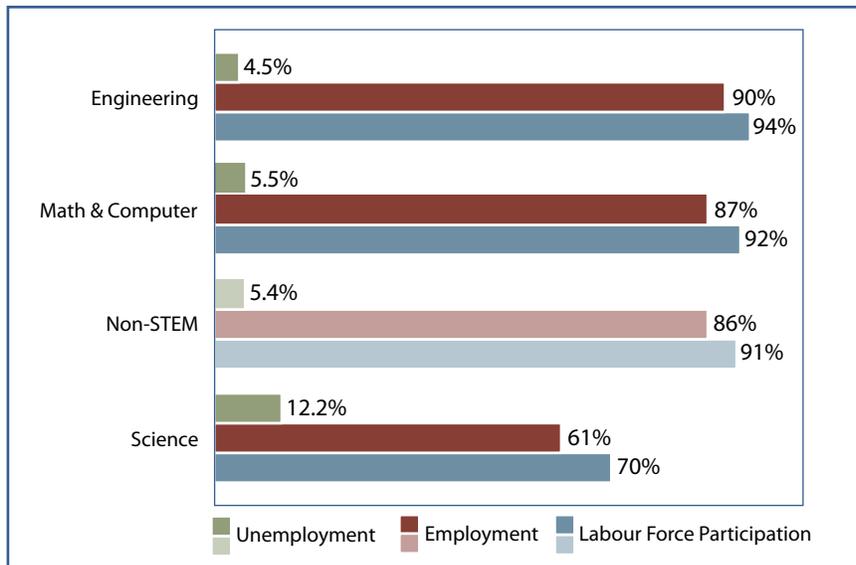
Close to half of the former students from certificate engineering programs took further education.

## LABOUR FORCE PARTICIPATION

Overall, the labour force participation and employment rates for former STEM students were less favourable than the rates of non-STEM respondents. However, the rates varied considerably by STEM group and by credential. Baccalaureate graduates had high labour force participation and employment rates; the low rates for associate degree students reflected their high level of participation in further education.

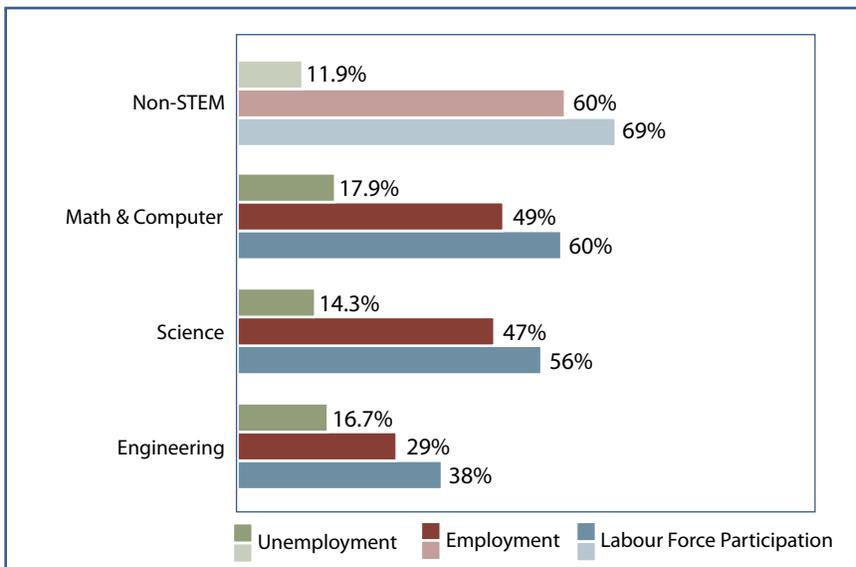
*Notes: In the following charts, the Labour Force Participation rate is the number of respondents employed or looking for work as a percentage of all 2017 respondents. The Employment rate is the number employed as a percentage of all respondents. The Unemployment rate is the number of unemployed as a percentage of respondents in the labour force. Respondents from trades foundation programs are not included.*

### BACCALAUREATE



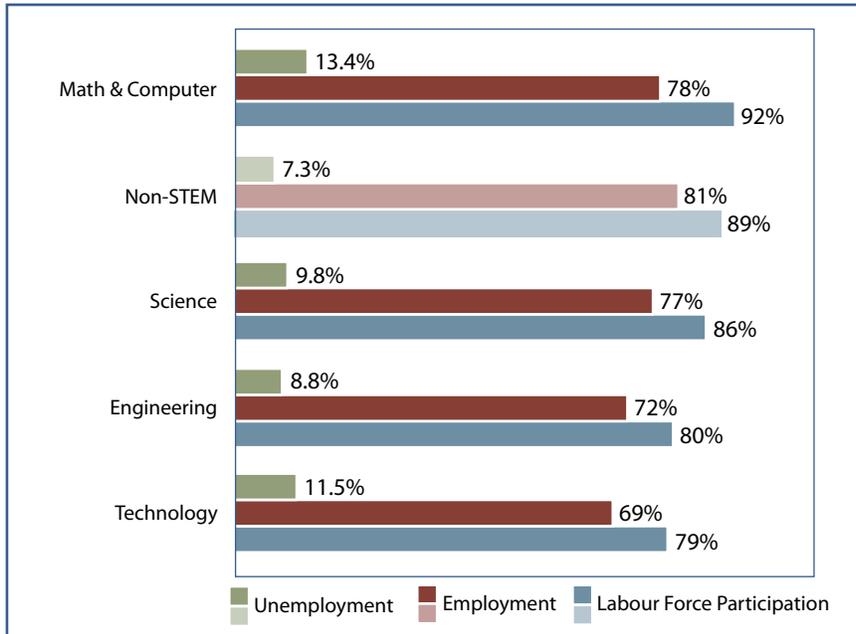
*Baccalaureate engineering graduates had high labour force participation and employment rates.*

### ASSOCIATE DEGREE



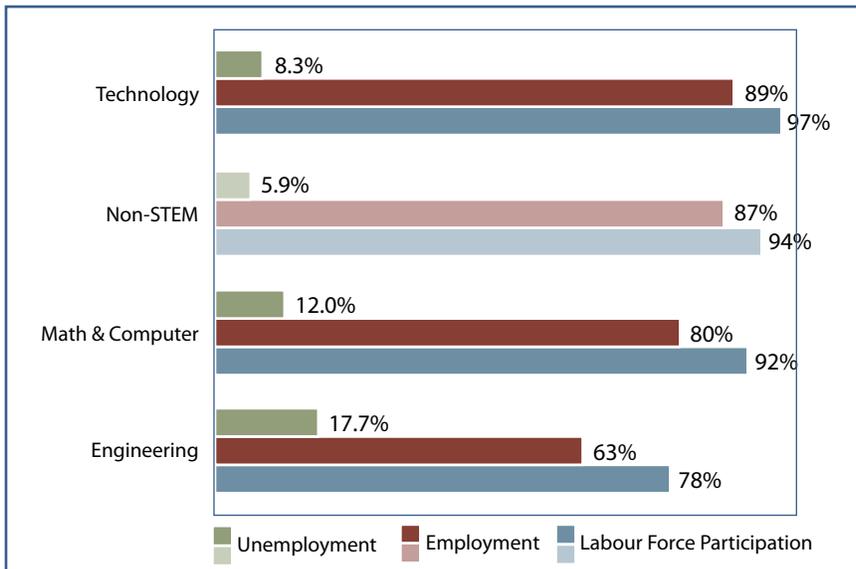
*The employment outcomes of respondents from associate degree programs reflected their high rates of further education.*

## DIPLOMA



*Respondents from diploma programs had good rates of labour force participation and employment.*

## CERTIFICATE



*The labour force participation and employment rates of former certificate students, especially those from technology programs, were very good.*

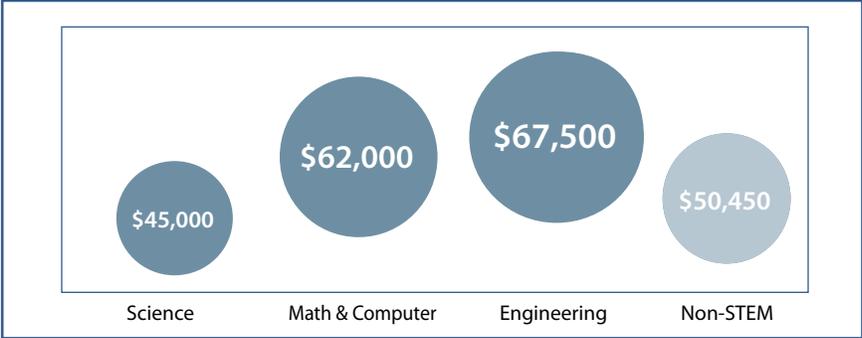
## EARNINGS

Overall, employed former STEM students tended to earn higher incomes than those from non-STEM programs. There were substantial differences by credential and between STEM groups.

Former engineering students, with the exception of those from diploma programs, reported the highest full-time annual salaries or highest hourly wages.

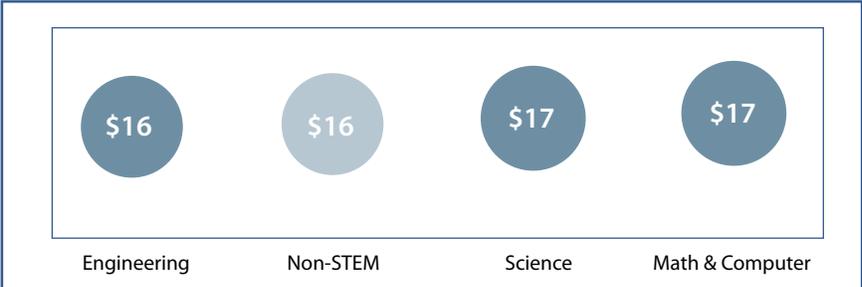
Note: Amounts shown in the following charts are medians, based on respondents who were employed full-time and reported salary or wage amounts. Baccalaureate respondents reported annual salary; others reported hourly wage. Respondents from trades foundation programs are not included.

**BACCALAUREATE**



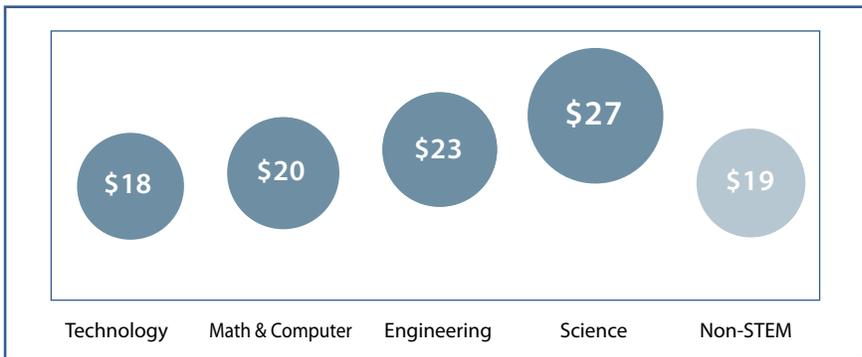
On average, baccalaureate engineering graduates reported the highest annual salaries.

**ASSOCIATE DEGREE**



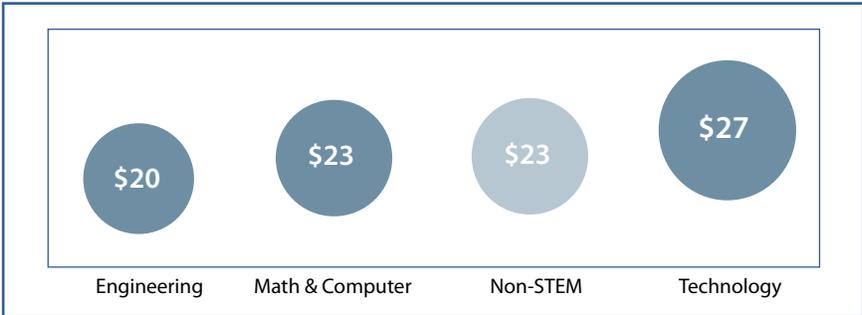
Respondents from associate degree STEM programs didn't show a lot of variation in earnings.

**DIPLOMA**



On average, diploma science respondents earned the highest hourly wage.

**CERTIFICATE**



Respondents from certificate programs, especially those from technology, had good hourly wages.

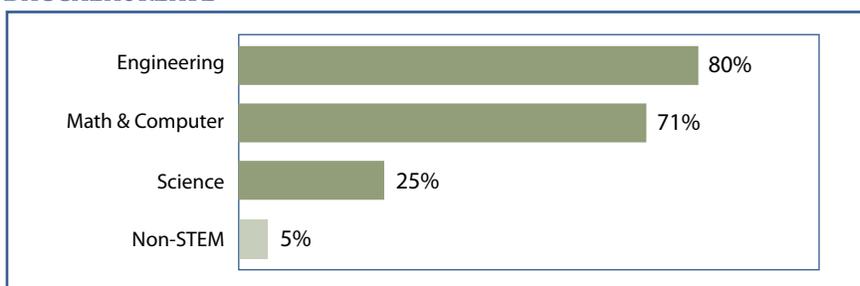
## OCCUPATIONS

With the exception of former associate degree students, substantial percentages of employed STEM respondents were working in STEM occupations. There were significant differences by credential and STEM group.

STEM occupations include natural and applied sciences occupations such as engineers, computer scientists, and biologists, technical occupations in motion pictures and broadcasting, telecommunications workers, and related management occupations.<sup>3</sup>

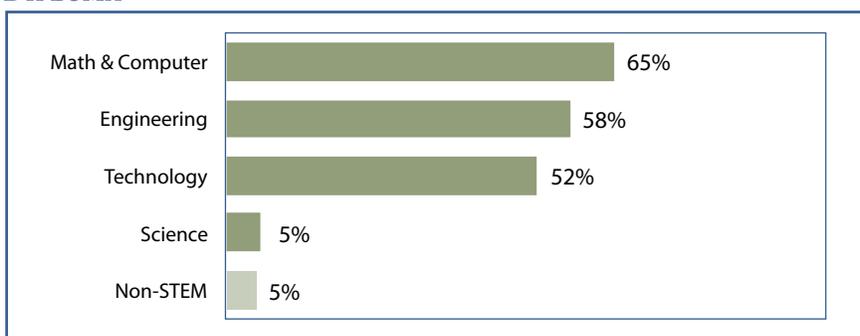
*Notes: Percentages shown in the following charts are of those who have STEM occupations, based on employed respondents in each group. The numbers of associate degree completers employed in STEM occupations are too low to report. Respondents from trades foundation programs are not included.*

### BACCALAUREATE



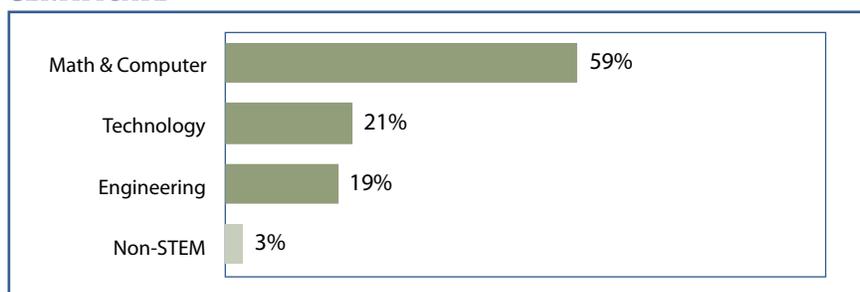
*A large majority of baccalaureate engineering graduates were employed in STEM occupations.*

### DIPLOMA



*Almost two-thirds of diploma students who took math and computer programs were employed in STEM occupations.*

### CERTIFICATE



*Over half of the certificate students who took math and computer science programs were employed in STEM occupations.*

3. From the "WorkBC Labour Market Outlook Profile: Science, Technology, Engineering, and Mathematics (STEM) Occupations," B.C. 2017 Labour Market Outlook.

## ABOUT BC STUDENT OUTCOMES

The annual BC Student Outcomes surveys collect information from former post-secondary students, who have completed a program of study at a B.C. post-secondary institution. Survey respondents are asked to evaluate their educational experiences and to talk about their current employment and further education. For more information, see the [BC Student Outcomes](#) website.

The BC Student Outcomes surveys are conducted with funding from the Ministry of Advanced Education, Skills and Training, the participating British Columbia post-secondary institutions, and the Industry Training Authority.

# APPENDIX

## DATA NOTES

The years shown for survey results are survey years; that is, the years the data were collected. On average, the respondents left their post-secondary programs one to two years before they were surveyed.

The coding for STEM programs was based on the Classification of Instructional Programs (CIP) 2011 STEM groupings from [Statistics Canada](#).

There are no apprenticeship STEM programs; therefore no data from the apprenticeship or trades foundation surveying are included. The numbers for certificate and diploma programs below do not include trades foundation programs.

## 2017 DATA COLLECTION NUMBERS

Credential	Baccalaureate	Associate Degree	Diploma	Certificate
Cohort	23,715	3,240	10,501	8,819
Respondents	10,642	1,446	5,554	4,803
Response Rate	45%	45%	53%	54%
STEM Cohort	5,224	261	2,342	927
STEM Respondents	2,490	116	1,448	561
STEM Response Rate	48%	44%	62%	61%

## STEM COHORTS 2013 TO 2017

Baccalaureate	2013	2014	2015	2016	2017
Cohort	18,823	21,468	22,495	23,642	23,715
STEM Cohort	3,838	4,309	4,782	5,212	5,224
STEM % of Cohort	20%	20%	21%	22%	22%
Associate Degree	2013	2014	2015	2016	2017
Cohort	3,546	4,381	4,433	3,874	3,240
STEM Cohort	216	277	409	367	261
STEM % of Cohort	6%	6%	9%	10%	8%
Diploma	2013	2014	2015	2016	2017
Cohort	11,462	10,288	10,266	10,217	10,870
STEM Cohort	1,656	1,789	1,894	1,885	2,342
STEM % of Cohort	14%	17%	18%	18%	22%
Certificate	2013	2014	2015	2016	2017
Cohort	13,382	13,110	12,666	13,607	14,332
STEM Cohort	1,215	1,067	1,010	879	927
STEM % of Cohort	9%	8%	8%	6%	6%

## LIST OF STEM PROGRAMS (ATTACHED) BC STUDENT OUTCOMES 2013 TO 2017