

# SYSTEMS DESIGN ENGINEERING 2017 CLASS PROFILE HIGHLIGHTS

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This document is an abridged version. The full report can be found [here](#).

# INTRODUCTION

In the final months of school, the class of 2017 conducted a massive survey on themselves covering everything from courses, co-op, social life, family background and plans for the future. 77 of 82 students (94%) are represented in this survey, making it a complete capture of the graduating student body.

This document contains a few highlights from the full class profile. For the entire story, see the [full article](#), which features a write-up along with an in-depth report.

The class profile was conducted by SYDE students independent of the department, faculty, and university. It must be stressed that the results of this profile do not extend beyond the experiences of the SYDE 2017 class. The data do not necessarily generalize to other university students, nor even other SYDE cohorts. These results do not aim to make any inferences about a larger population, but only seek to represent the class as it was.



Photo by Jonathan Deiven

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## CO-OP

Job roles, salary

## ACADEMICS

Courses, grades

## SOCIAL & RECREATION

Extracurriculars, relationships, mental health

## BACKGROUND

Demographics, family

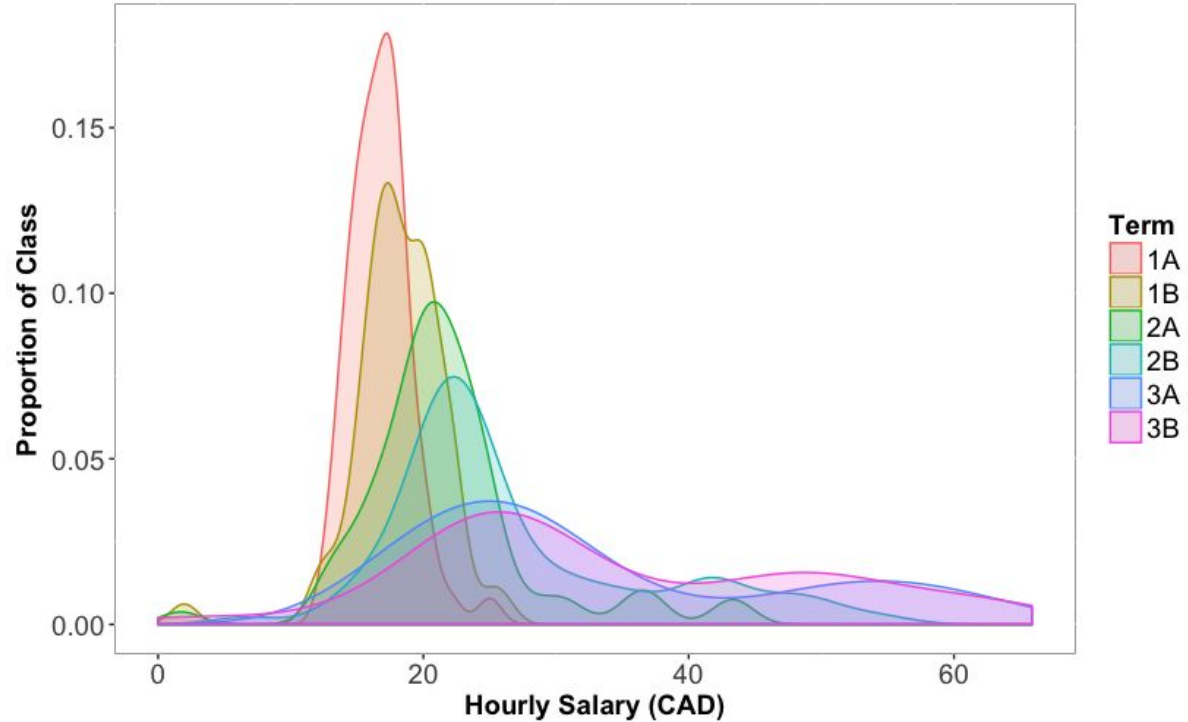
## THE FUTURE

Debt, work

# Salary went up for all, but not equally

Salary distribution became bimodal in later terms, mostly due to US jobs. Average salary in 1A was \$16.8/hr CAD. By 3B, average salary grew to \$25.4/hr CAD for Canadian jobs and \$49.4/hr CAD for US jobs (exchange rates differ by term, as shown).

This difference is in part due to the exchange rate and high demand for software engineers in the US. The salary gap is actually understated here, as housing stipends is excluded (which is more common for US jobs). This would add ~\$10/hr CAD to the average salary for US jobs.



Currency exchange was based on the rate at the end of each co-op term:

2A: 1 USD = 1.09 CAD, 2B: 1 USD = 1.22 CAD,

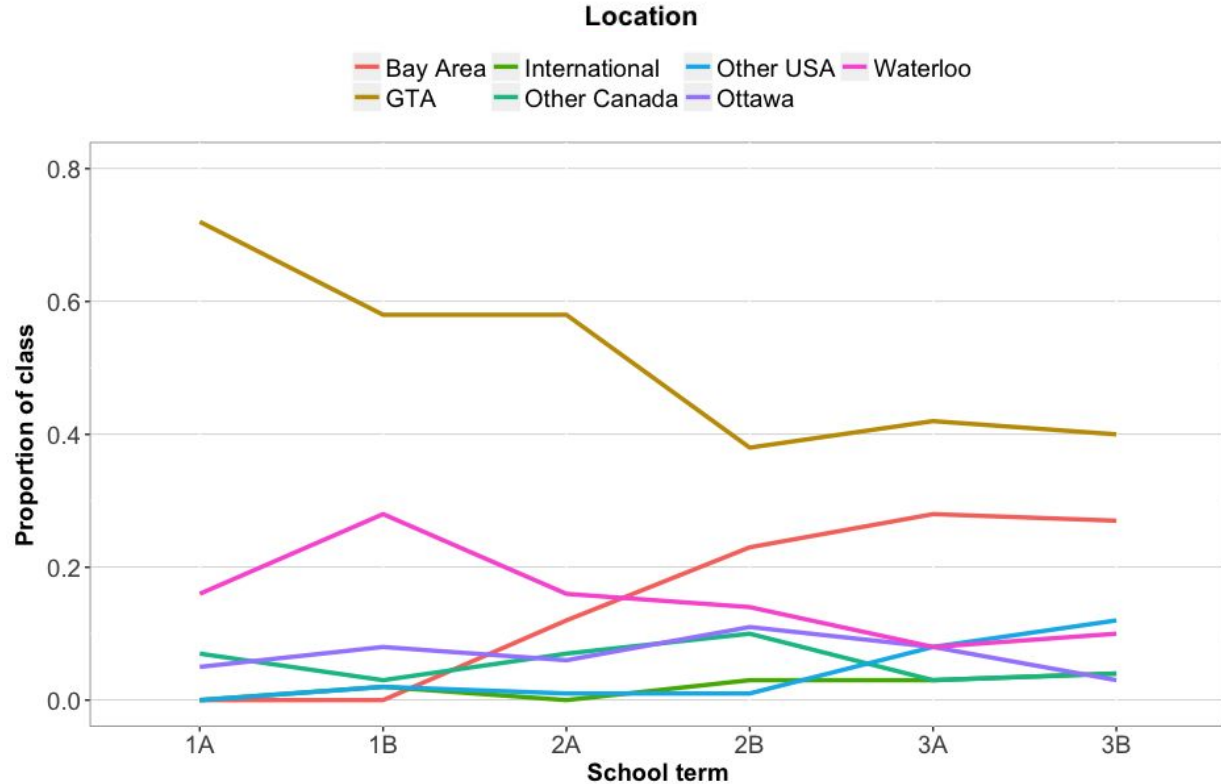
3A: 1 USD = 1.40 CAD, 3B: 1 USD = 1.31 CAD

# This may explain why students were attracted to the US

40% of the class took a job in the US in 3B, mostly in the Bay Area.

Waterloo jobs peaked at 30% in 1B, and declined from there. Greater Toronto Area jobs (GTA) declined from 70% to 40%.

Fun-fact: if all the money that students made over six terms is summed up, the class “GDP” is \$6,732,147 CAD (assuming 40-hour weeks, 16-week terms).

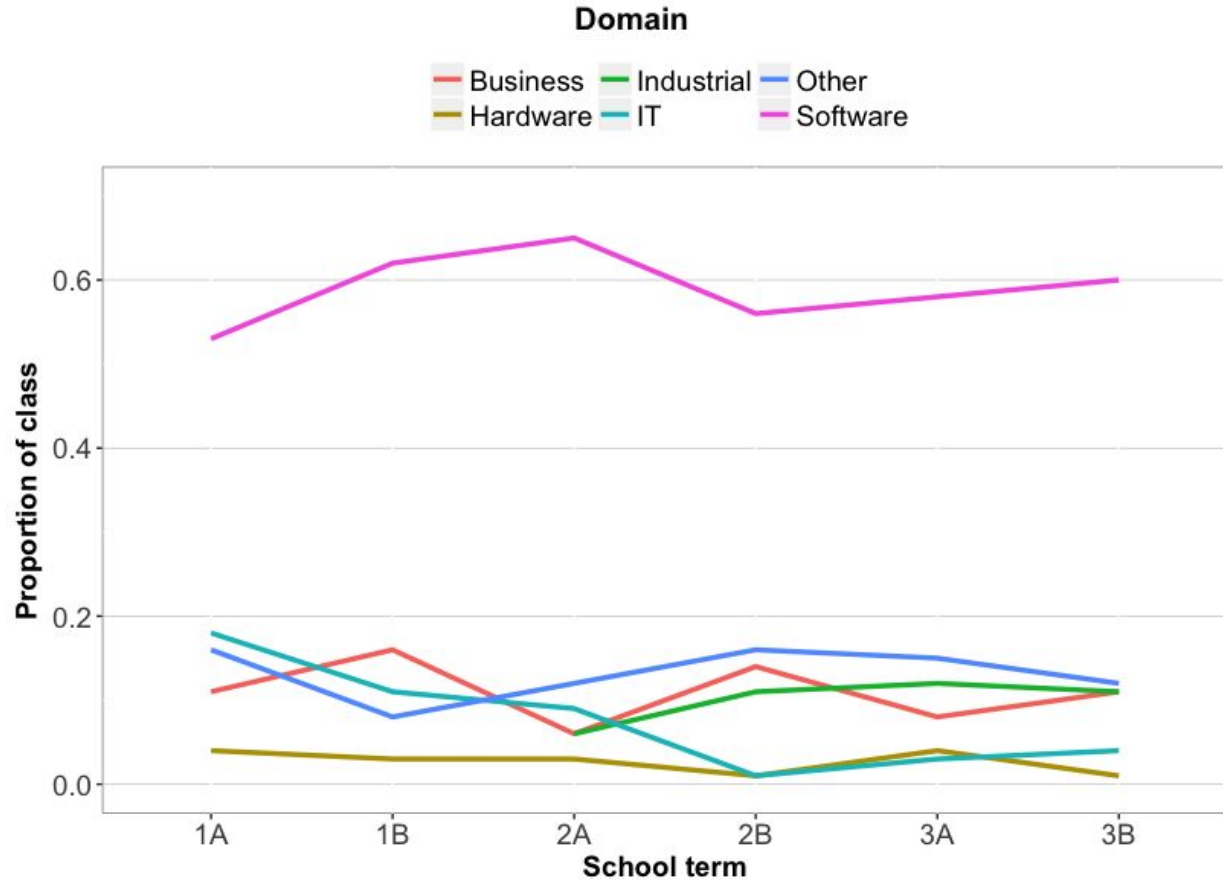


# Most of the class, about 60%, worked in software

This considers the area of the student's work, not the company's industry (ex. IT at a bank is classified as IT, not finance). IT is work that involves software but not software development, such as a systems technician.

The overall proportions were consistent over six terms, only that IT dipped over time and Industrial became more common.

The "Other" domain includes finance, civil, biomedical, mechanical, and research.



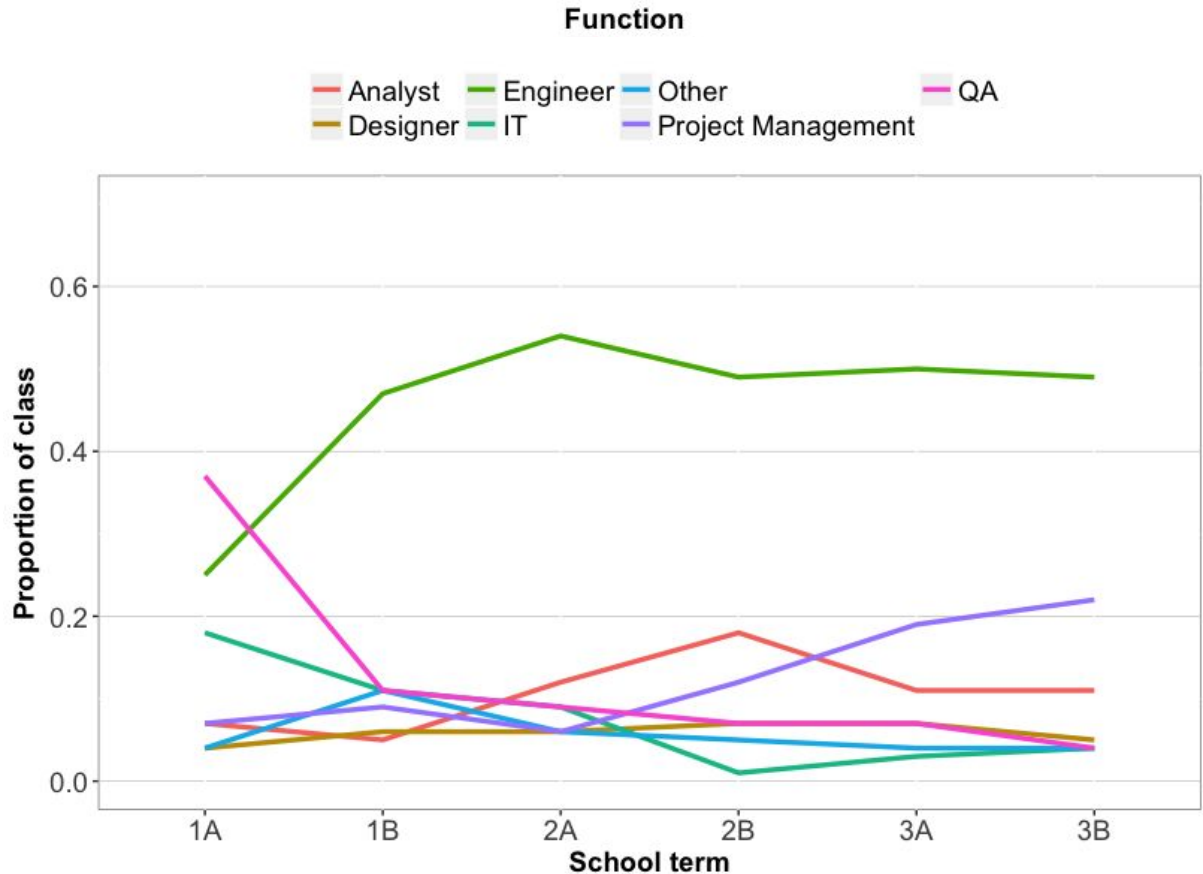


# 50% worked in an engineering role

This considers the type of work the student did, not the domain (ex. both software and mechanical engineers are in the “Engineer” category).

Quality Assurance (QA) began as the most popular function, but Engineering overcame it as students gained experience. Project Management steadily grew from 2A and by 3B about 20% of class was in this function.

The “Other” function includes sales, entrepreneurship, and marketing.





# Students from the poorest families earned higher salaries than those from the richest

Students from family income \$0-50k CAD had 40% higher salaries than those from \$300k+ CAD. This is partly due to outliers, but also suggests that those from poorer families placed stronger emphasis on co-op as a means of income.

Men of the class had a 20% higher mean salary than women.

East Asians had a moderately higher average salary than others.

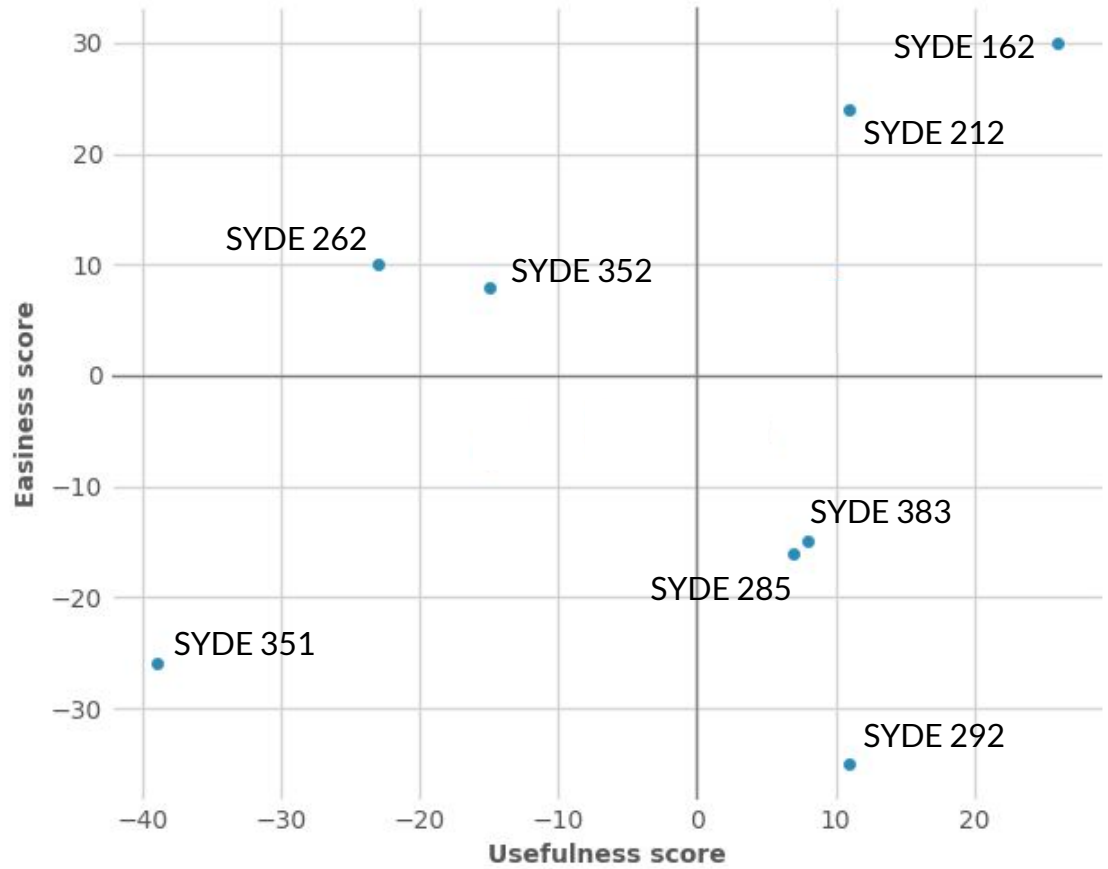
Group	Segments	Mean salary (final 3 co-ops)
Family Income	Poorest 10% (<\$50k)	\$36.3/hr CAD
	Richest 10% (\$300k+)	\$26.1/hr CAD
Sex	Female	\$27.0/hr CAD
	Male	\$32.5/hr CAD
Ethnicity	Caucasian	\$29.3/hr CAD
	East Asian	\$34.7/hr CAD
	Middle Eastern	\$32.2/hr CAD
	South Asian	\$29.3/hr CAD

# SYDE 162 (Human Factors) was the best course: easiest and most useful

SYDE 351 (Models), by the same logic, was the worst: hardest and least useful

SYDE 262 (Economics) was easy but not useful, and inversely, SYDE 292 (Circuits) was hard but useful.

Scores were calculated by subtracting number of people that considered a course as hard/useless from number that considered it easy/useful.



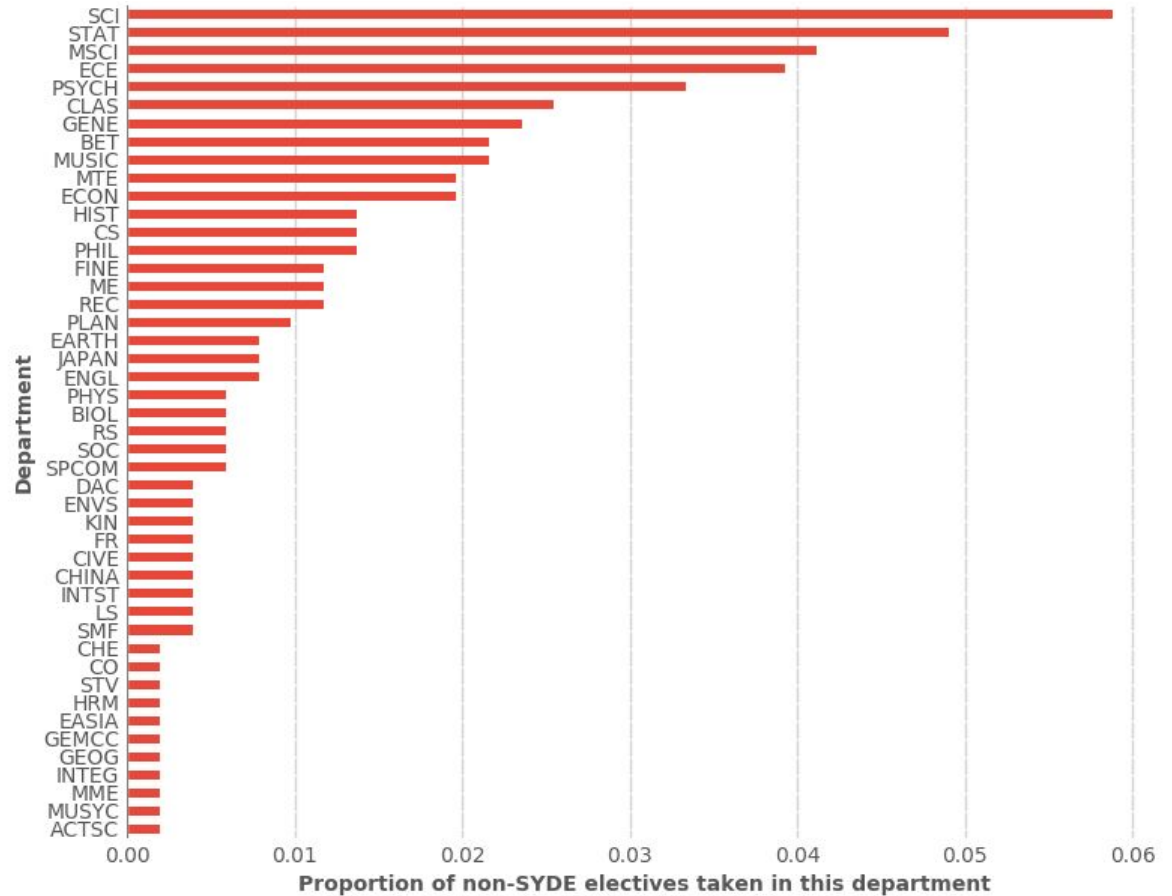
Course code mapping available at the [SYDE website](#).

# The class has a wide range of academic interests outside of engineering

The class took 160 different elective courses across 47 departments.

Most popular non-SYDE elective classes were SCI 238 (Astronomy), ECON 102 (Macroeconomics), and STAT 331 (Regression).

Most popular SYDE electives were SYDE 543 (Cognitive Ergonomics; 50% of the class!), SYDE 533 (Conflict Resolution), and SYDE 542 (Interface Design).

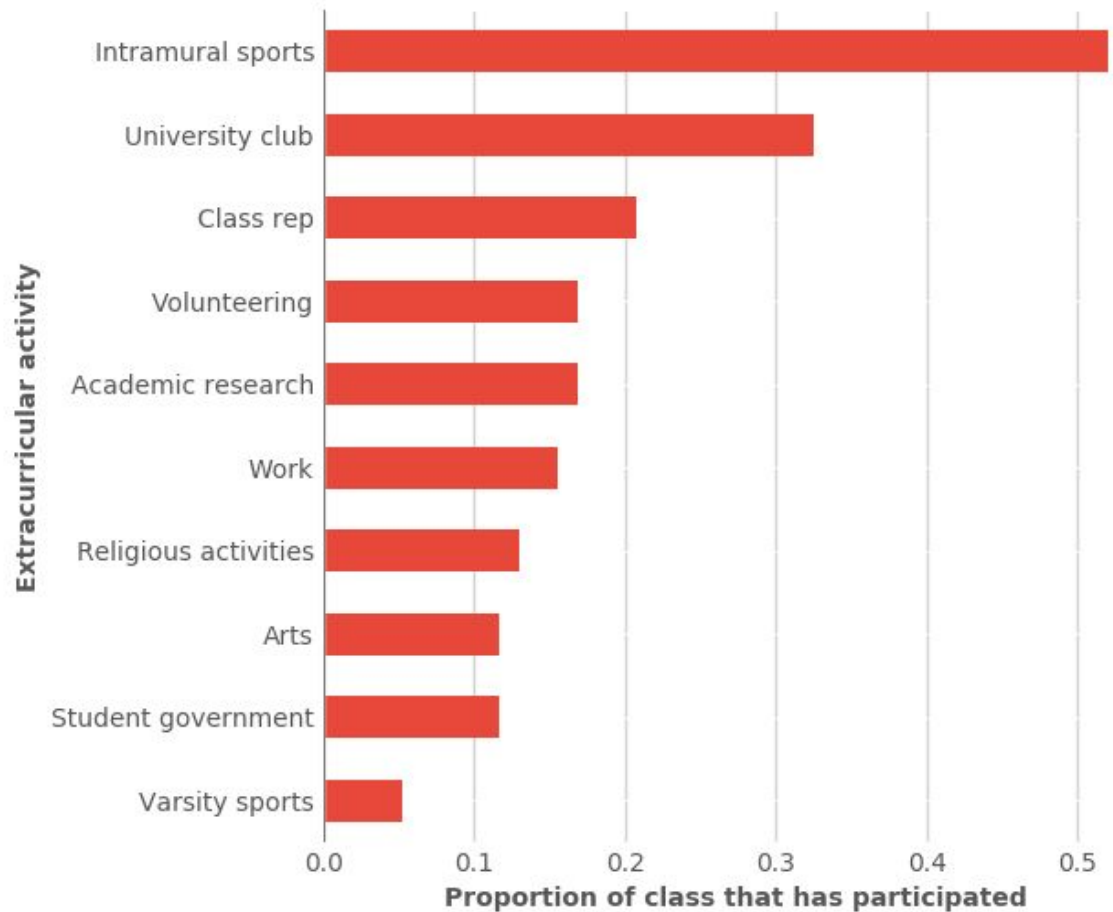


## 1 in 5 students has been a class rep

More than half the class has participated in intramural sports, and almost a third in university clubs.

45% of the class participated in a hackathon or engineering competition. Beyond participation, 1 in 3 was involved with *planning* events too.

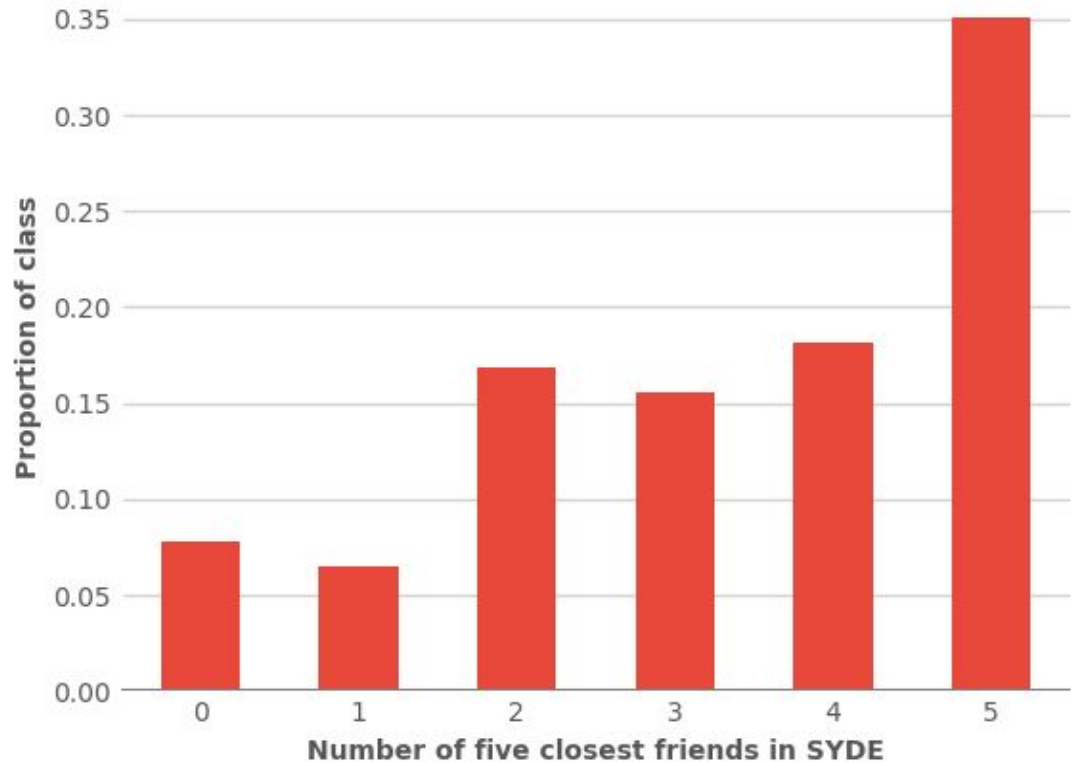
16% of the class was involved in an entrepreneurial venture, and 10% started a club.



## The closest friends students made during university were each other

More than half the class said that at least 4 of their 5 closest friends made during university were SYDE classmates.

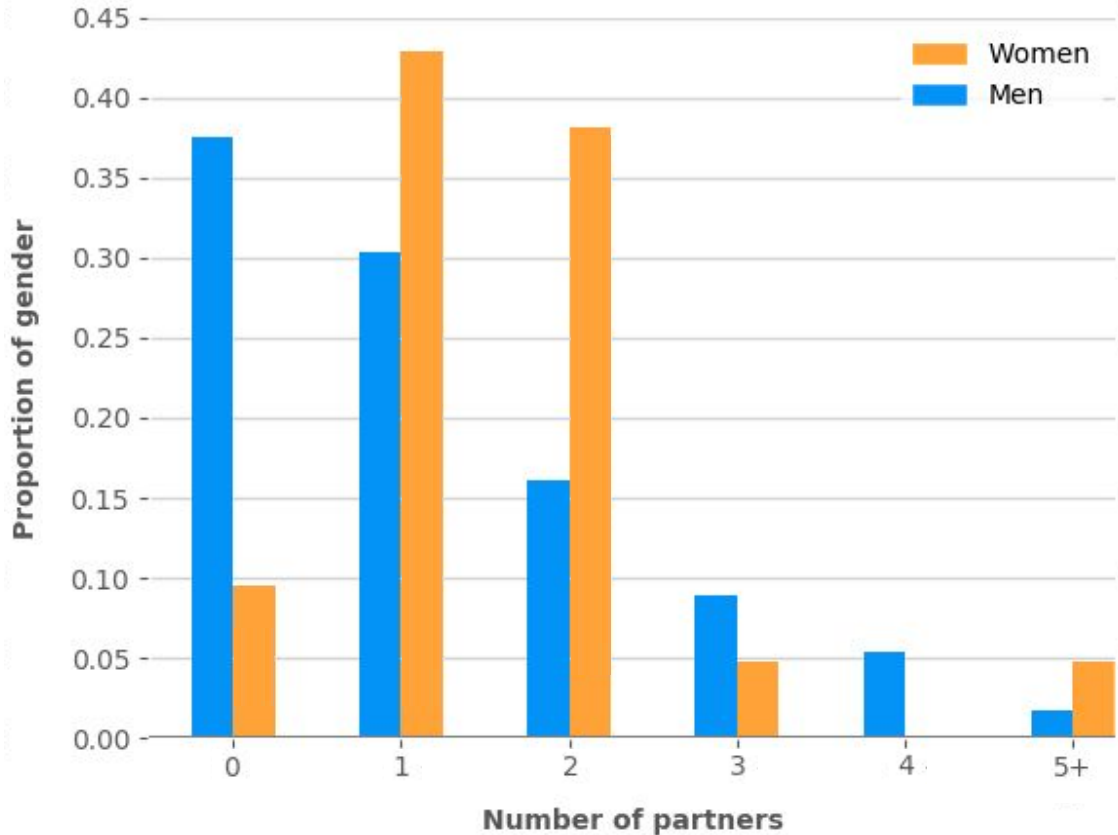
Students who have all 5 closest friends in SYDE have a mean grade 6.15 points higher than those who have 2 or fewer of their closest friends in SYDE (79.95 vs. 73.80). This suggests that social capital plays an important role in academic success in this program.



## Most students were in at least one relationship

70% of the class was in at least one relationship during university, but only 14% of the class were in 3 or more. This suggests that students commit to few relationships but for long term. Or, it could mean that students are reluctant to consider their relationships as “serious”.

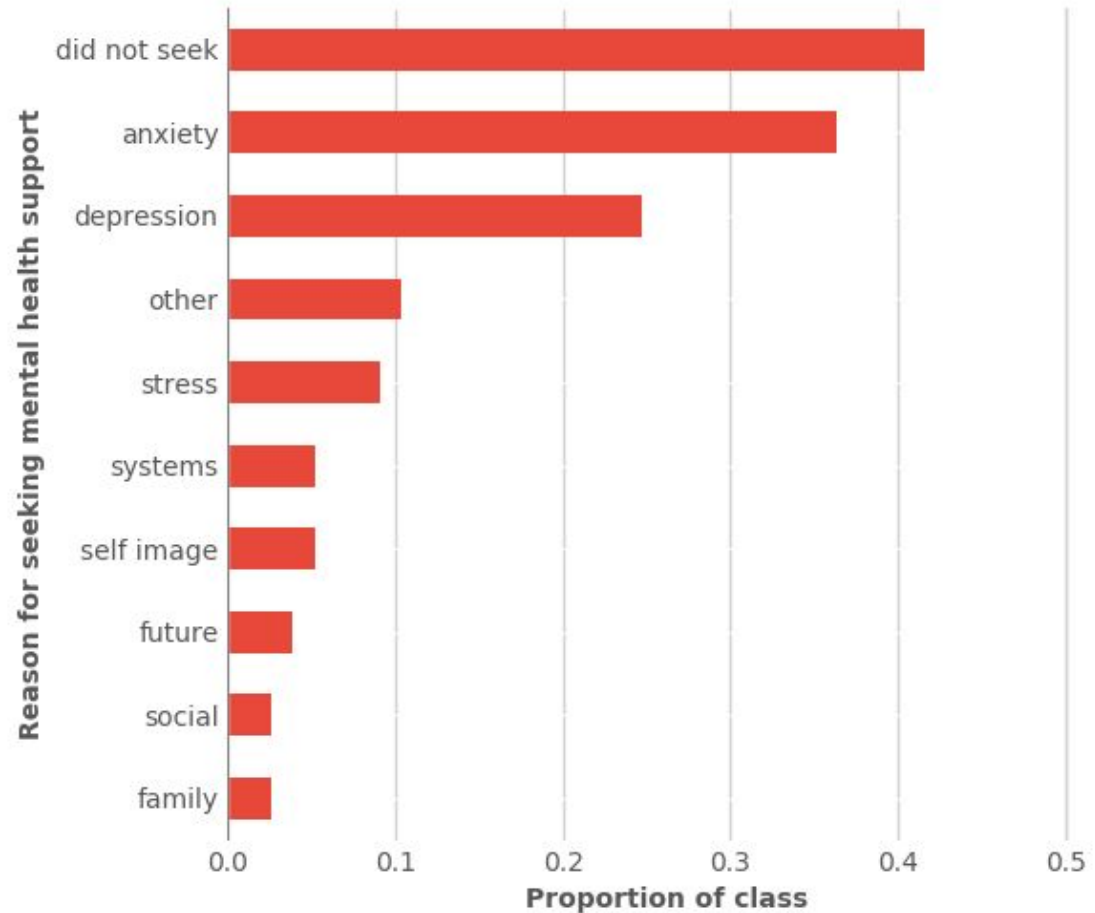
90% of women were in at least one relationship, compared to 65% of men. 80% of women have had 1 or 2 partners, compared to only 45% of men.



# More than half the class sought some form of help for a mental health issue

58%, to be precise. 1 in 3 students sought help for anxiety, and 1 in 4 for depression.

Getting help from family and friends was by far the most common form of mental health support: it was used by 60% of people who sought help. A quarter used either an engineering or university counselling service.



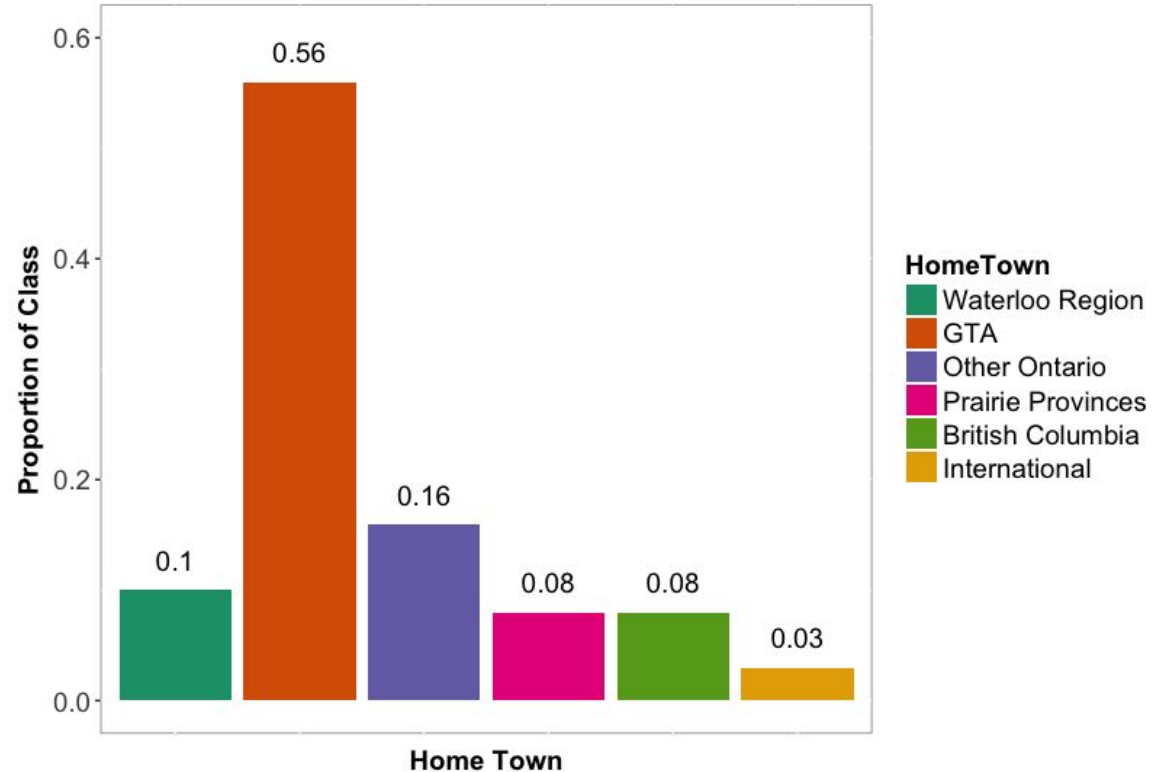


## Waterloo was not far from home for two thirds of the class

82% of the class completed high school in Ontario, 97% in Canada.

Caucasians made up only 37% of the class, with the other major ethnic group being East Asians, at 33%. Note that there were no Hispanics or African-Canadians.

The class was 73% men and 27% women: not a good ratio but more even than most engineering programs at Waterloo.

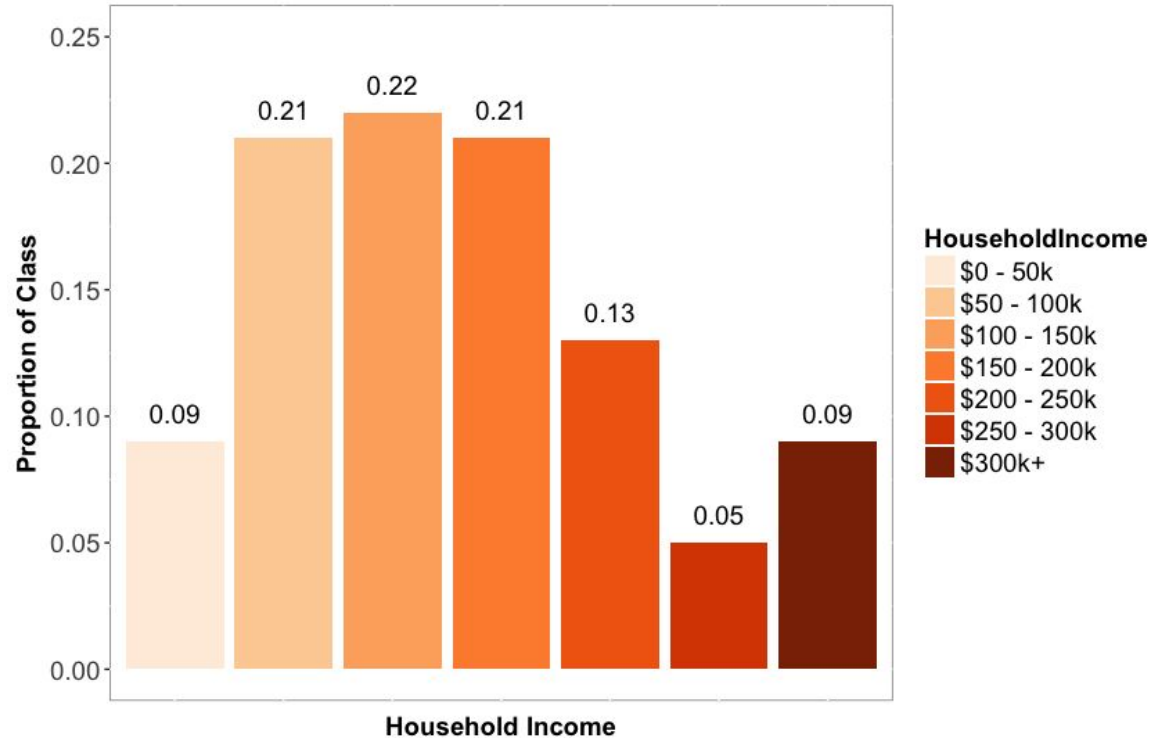


# Bourgeoi\$ babie\$

At least 70% of class was from a family which earned above the Canadian median annual household income of \$78,000 (2014). Yet, there is a notable gap between the richest and poorest: the richest 10% earn more than 6 times more than the poorest 10%.

75% of the class had at least one university-educated parent and 44% had a parent with some post-graduate degree.

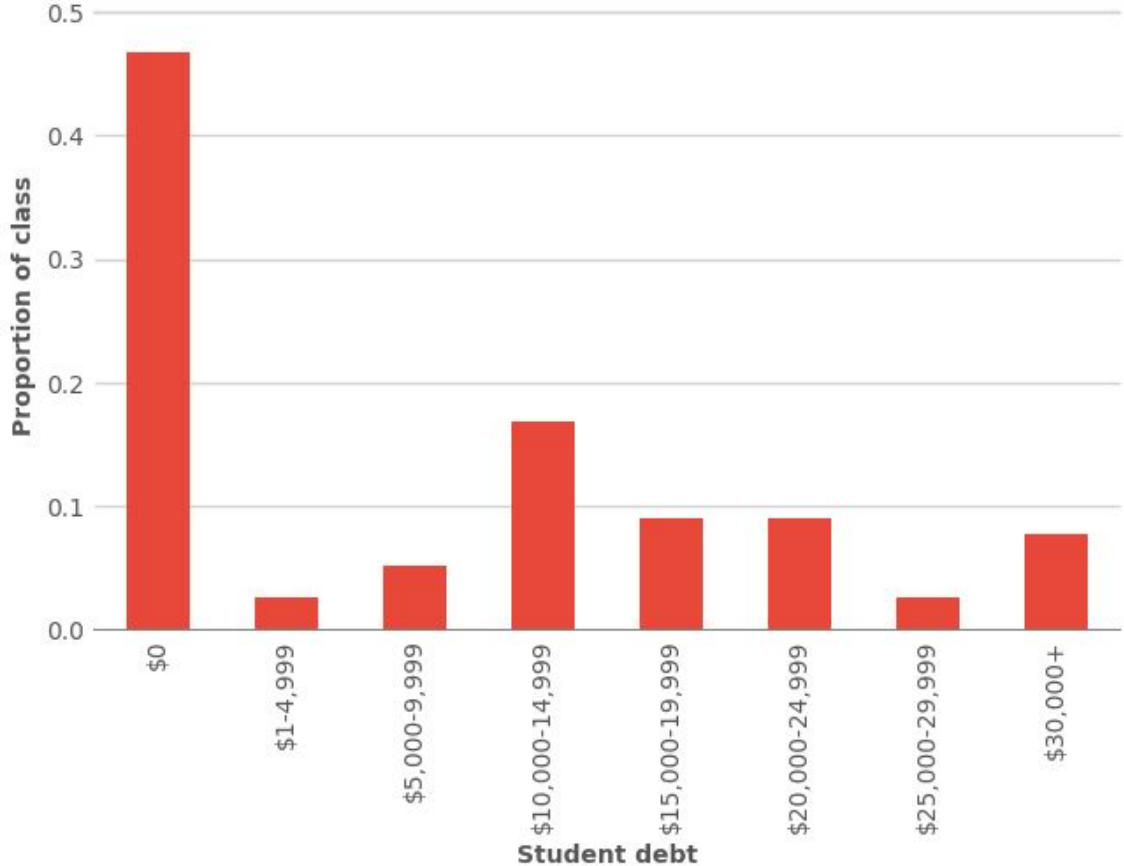
38% had at least one parent study engineering; 68% if broadened to STEM as a whole.



## Almost half the class graduated debt-free

47% of students graduated with no student debt.

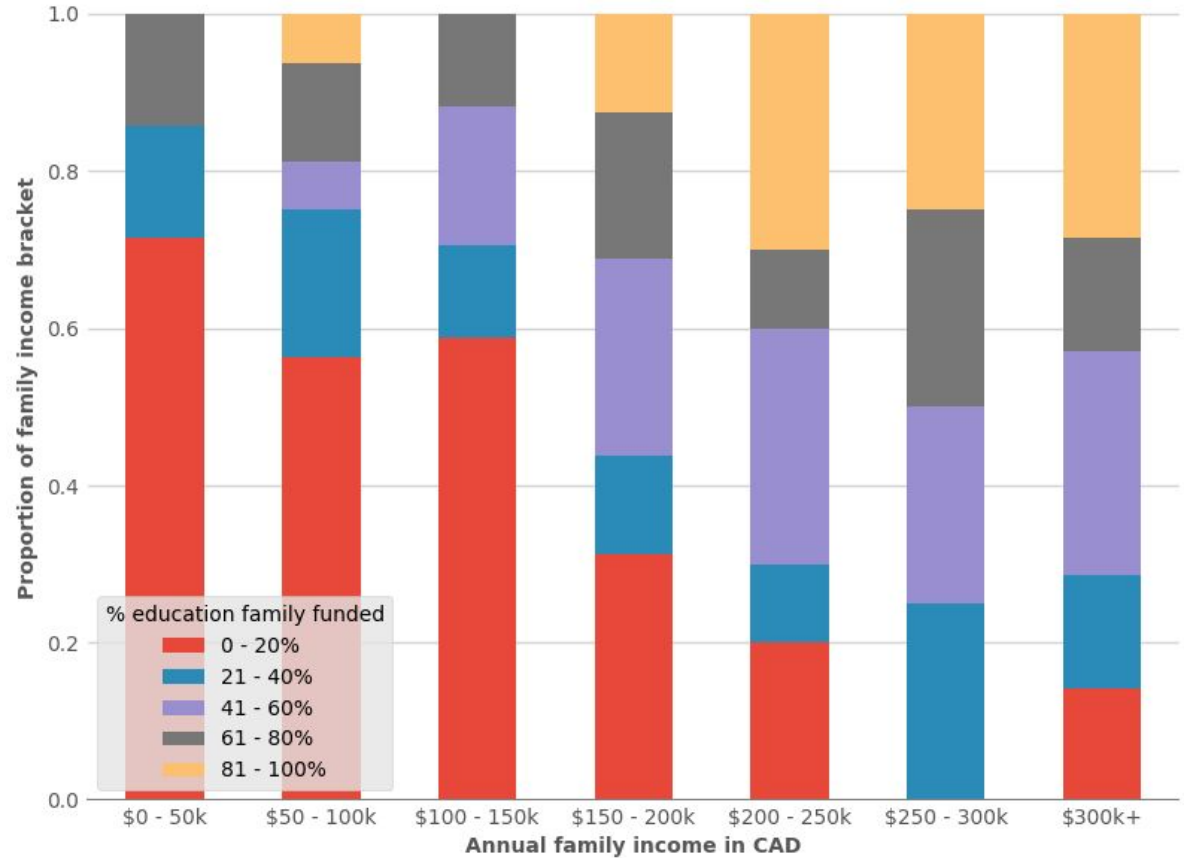
The mean amount of debt was \$9,454.



42% of students largely self-funded their education (family contributed <20%)

The lower the family income bracket, the greater proportion of students who largely self-fund their education.

This corroborates with the previous slide's conclusion that those in low family income brackets had higher debt: these students were relying less on their families to fund their education. As family income increased, families funded a larger portion of the student's education.

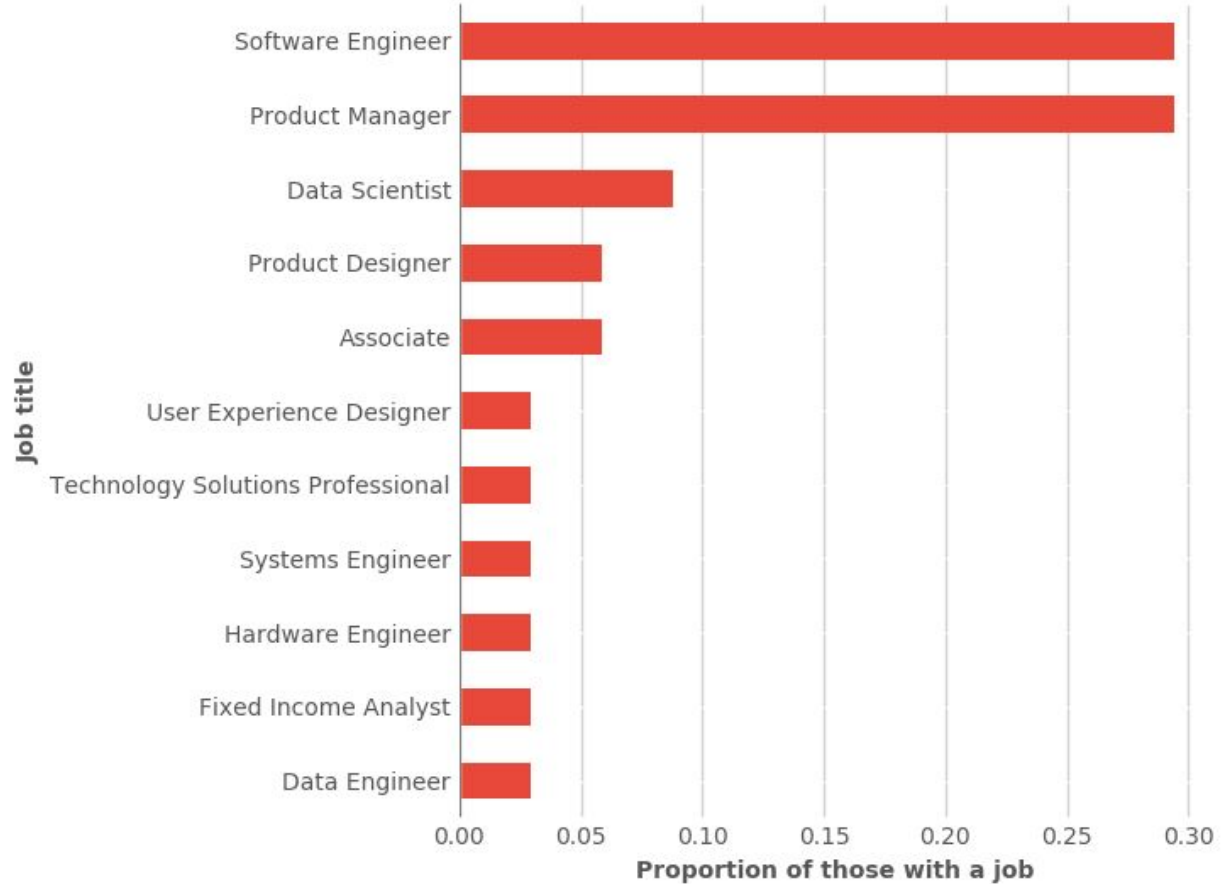


# The most recent trends for co-op roles carried out to full time jobs

Two months before graduation, 44% of the class had a job, 45% were looking, and 3 people were pursuing an advanced degree.

Of those with jobs, there were an equal number of product managers and software engineers: 30% each. There were also data scientists, designers, and associates: about 10% each.

65% of those with a job will be working for a company they've done co-op with.

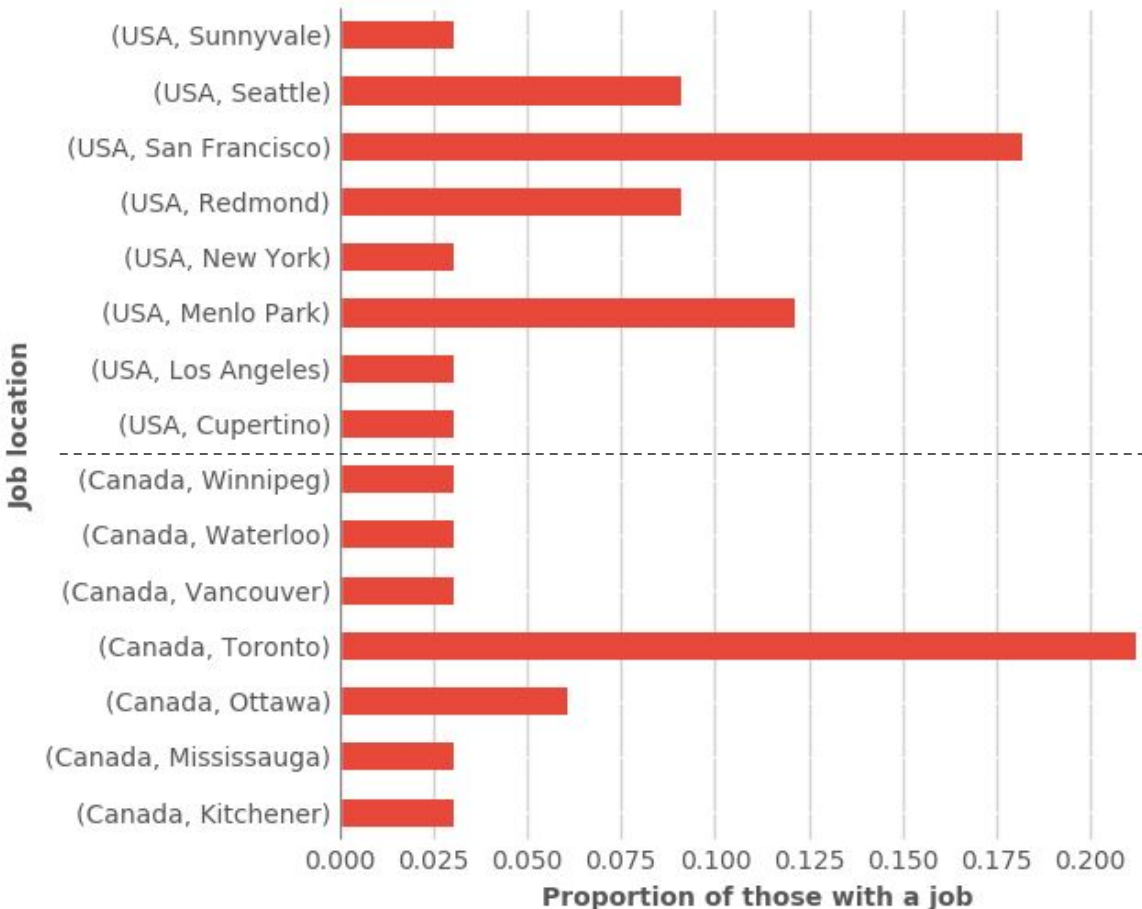


# More than half of those with a job will be working in the US

60% will be relocating to the US: all in California except for 2. This is 1.5x more people working in the US compared to the number of people who have worked in the US for co-op.

The 40% working in Canada will almost all be in Ontario.

The large proportion of students working in the US is, again, likely due to US companies beginning their recruiting earlier than Canadian companies.



# GET IN TOUCH

Thanks for your interest in learning about the Systems Design Engineering class of 2017! We hope you had as much fun reading it as we had making it. To get the entire story, see the [full article](#), which features a write-up along with an in-depth report.

Here are some links that may provide some more details about some of the things discussed in the profile:

Systems Design Engineering

<https://uwaterloo.ca/systems-design-engineering/>

Co-op at the University of Waterloo

<https://uwaterloo.ca/co-operative-education/>

Let us know what you think- reach out to us (Atef and Joey) at [chaudhury.atef@gmail.com](mailto:chaudhury.atef@gmail.com) and [hello@joeyloi.com](mailto:hello@joeyloi.com). We'd love to chat!