

Accessibility Study

UW Federation of Students

Background

In recent years, the price of a university education has increased substantially in the province of Ontario. While some provinces have maintained tuition freezes (Quebec, British Columbia), other provinces have allowed the cost of education to increase substantially. As concerned students, we want to ensure that tuition fee hikes have not affected the accessibility of post-secondary education.

Our idea was to correlate postal code information from incoming students with StatsCan income information. This way, we have been able to develop a yearly snapshot of the socio-economic background for the incoming class. By tracking each incoming class in a similar fashion, it was then possible to determine how the socio-economic composition of the class changed.

Initially, we started with UW data from the Institutional Planning and Analysis Department, but the study has now expanded its scope to include the examination of data from all of the universities across Ontario. We are looking for historical trends indicating changes in university student populations that might otherwise be missed in the year-to-year analysis.

Objectives

- To examine the socio-economic composition of incoming UW classes, and to track changes in the composition over the years 1991-92 to 1998-99.
- To perform a similar examination for all Ontario universities.
- To discover if there is any correlation between changes in tuition levels and changes in the socio-economic make-up of the student body.

Who is involved?

- Federation of Students, through the President's office, as project sponsors
- Accessibility Study Team: Dean Campbell, Elise Hug, Yaacov Iland
- Office of Institutional Planning and Analysis
- Statistics Consulting Director
- Dr. John Goyder, Sociology

Methodology

The research has been broken up into 4 stages. The first stage consisted of gathering student data from the Institutional Planning and the Ontario Universities Application Centre, tuition data from the Registrar's Office and income data from Statistics Canada. With the raw data collected, the next stage was to sort and group the information so that it could be analyzed. The third stage was a statistical examination of the data to determine if there is a correlation between tuition levels and changes in the socio-economic composition of the first year class. The final stage was to eliminate as many confounds as we could.

Data sources

Ontario Universities Application Centre (OUAC) data gives the first three digits of the postal code area (called Forward Sorting Area, or FSA) for every student accepting an offer of admission to an Ontario university.

StatsCan census data tells us the median income for all private households (with a 20% sample) for each FSA.

Data sorting

The study examines students who accepted offers of admission to university and classifies them according to the median household income of the FSA listed on their applications. From this information, we tabulated how many students in each year came from FSAs in income brackets based on increments of \$5000, according to the 1996 household income data. We have removed any students who are from areas for which we do not have income information. This is a very small number of students, less than half of a percent of students admitted to the University of Waterloo.

Data Analysis

Two analyses were done. The first was a collection and calculation of summary statistics. The second was a comparison of how the median income of Waterloo's entering class has changed in comparison with the median incomes of entering classes in all other Ontario universities.

There are significant fluctuations in the total size of the incoming class. In order to deal with changes in incoming class size, we are comparing the percentages rather than numbers of students in each income category.

Verification

To ensure that our results are accurate and that our methodology follows standard research practices, we have been working with Statistics Consulting to monitor our research.

Similar studies have been carried out that have correlated income levels from postal codes to the likelihood of fatal heart attacks. Some of the justification for our methodology has been based on studies like this one that rely on a similar premise and also use similar data sets from Statistics Canada.

Possible Confounds

- Labour market and income fluctuations
- Socio-cultural impacts of the recession and continuing economic insecurity.
- Continued de-industrialization and the rise of the knowledge economy
- Higher enrollment in higher education in general and higher enrollment in skill-specific and college programs in general
- Localized demographic and economic changes
- Urban and rural affordability issues, tied in to regional differences in cost of living expenses and incomes.
- Changes in any causal relationship that may exist between household income and a student's academic achievement (and university acceptance based on that achievement)

Figure 1: The mean income of the entering class of Waterloo is charted against the mean income of the entering class of all Ontario universities.

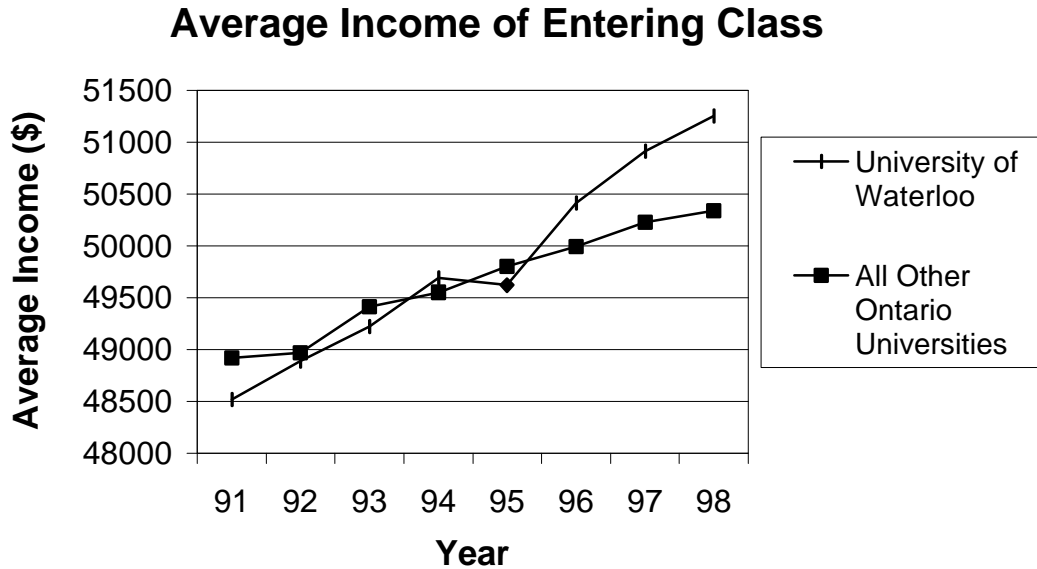
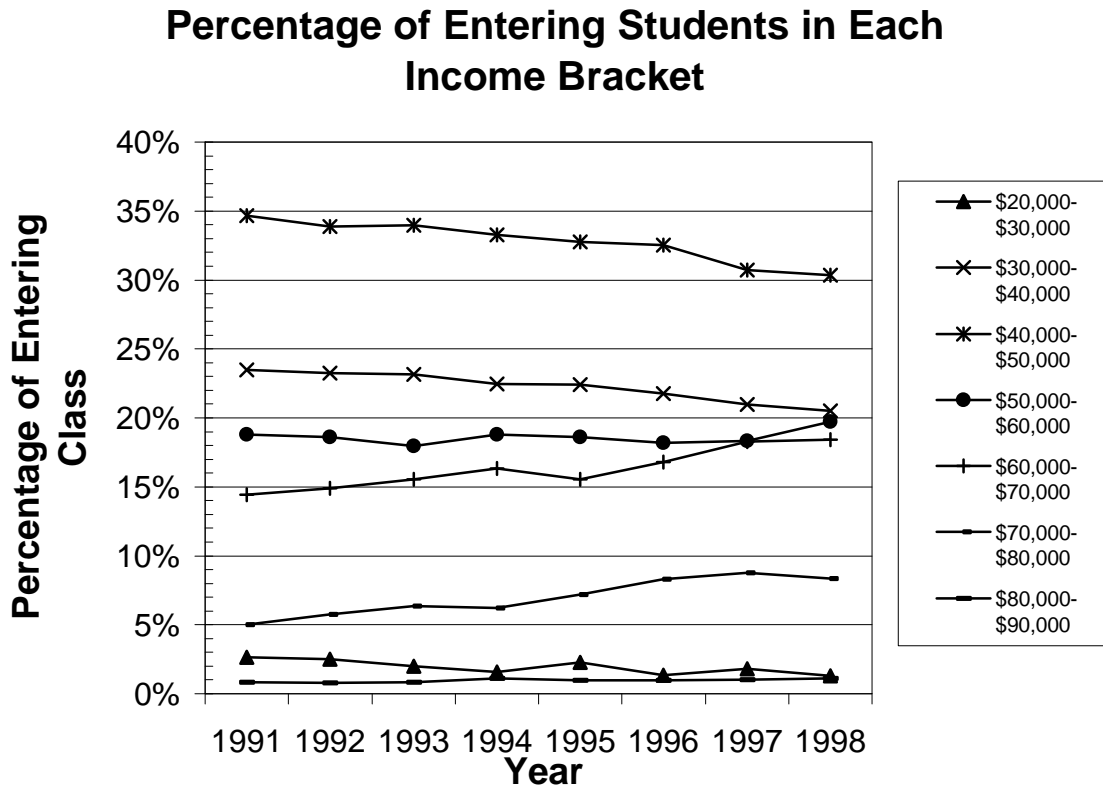
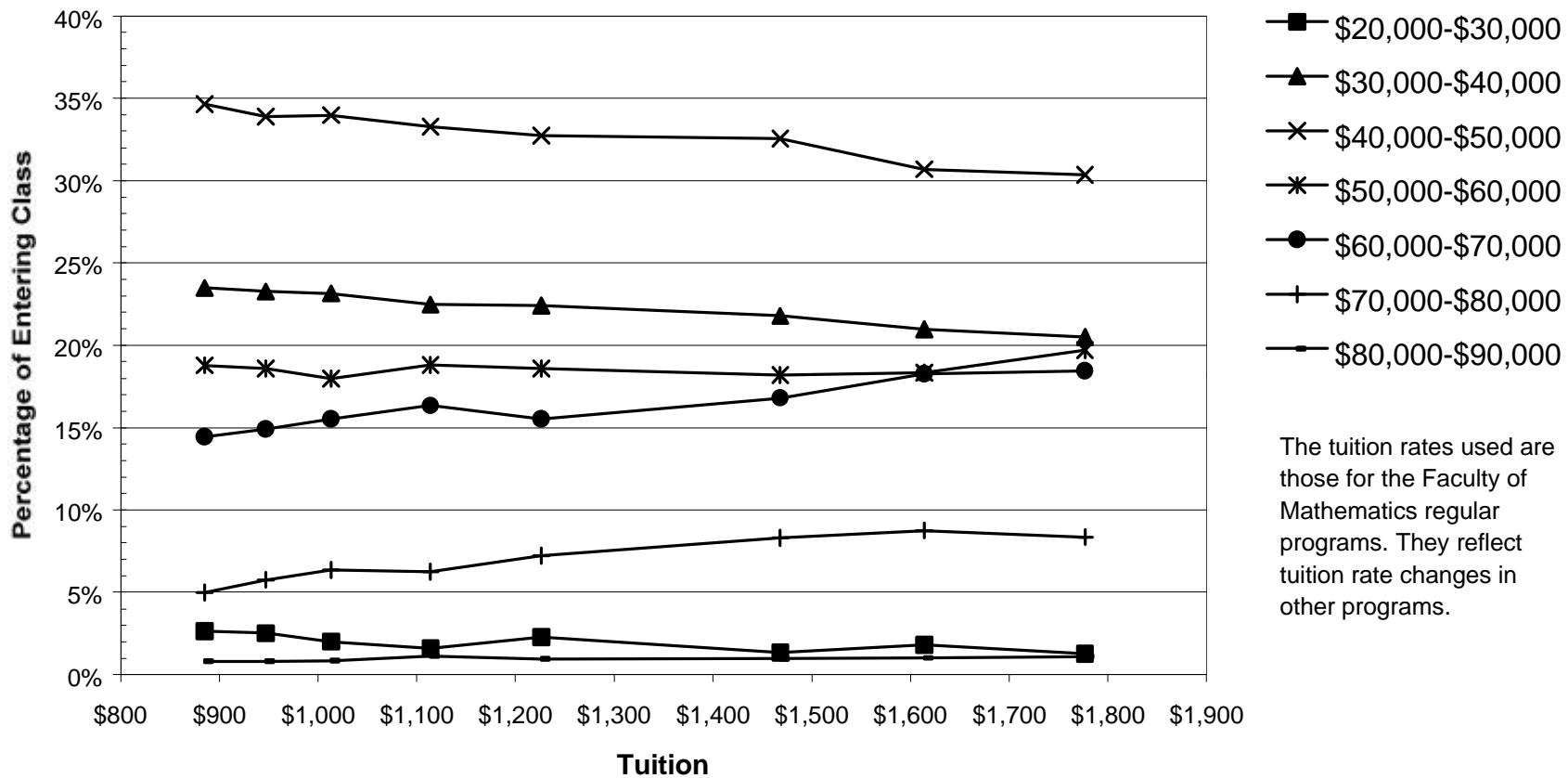


Figure 2: The percentage of entering class from FSAs with median incomes in each income range is charted over the years 1991 to 1997.



Percentage of incoming class in each range for given tuition



Percentage of Entering Class by Median Income of the FSA of Origin

Median Income of FSA of Origin

Year	Median Income of FSA of Origin											
	All Universities	\$0-\$10,000	\$10,000-\$20,000	\$20,000-\$30,000	\$30,000-\$40,000	\$40,000-\$50,000	\$50,000-\$60,000	\$60,000-\$70,000	\$70,000-\$80,000	\$80,000-\$90,000	\$90,000-\$100,000	>\$100,000
1991	0.00%	0.08%	3.17%	24.33%	31.66%	18.05%	14.92%	6.73%	0.95%	0.03%	0.00%	
1992	0.00%	0.09%	3.56%	23.73%	31.85%	17.47%	15.32%	6.89%	0.99%	0.04%	0.00%	
1993	0.00%	0.06%	3.04%	23.37%	30.98%	18.48%	15.64%	7.24%	1.09%	0.03%	0.00%	
1994	0.00%	0.08%	2.94%	23.27%	30.98%	18.28%	15.91%	7.34%	1.09%	0.04%	0.00%	
1995	0.00%	0.08%	3.01%	22.73%	30.81%	18.21%	16.27%	7.73%	1.06%	0.02%	0.00%	
1996	0.00%	0.08%	2.84%	22.26%	30.75%	18.44%	16.28%	8.02%	1.22%	0.03%	0.00%	
1997	0.00%	0.08%	2.56%	22.39%	29.81%	18.87%	16.83%	8.21%	1.16%	0.03%	0.00%	
1998	0.00%	0.09%	2.70%	22.11%	29.48%	18.85%	16.95%	8.47%	1.24%	0.06%	0.00%	
Total Change:	0.00%	0.01%	-0.47%	-2.22%	-2.18%	0.79%	2.02%	1.74%	0.30%	0.03%	0.00%	

Median Income of FSA of Origin

Year	Median Income of FSA of Origin											
	Waterloo	\$0-\$10,000	\$10,000-\$20,000	\$20,000-\$30,000	\$30,000-\$40,000	\$40,000-\$50,000	\$50,000-\$60,000	\$60,000-\$70,000	\$70,000-\$80,000	\$80,000-\$90,000	\$90,000-\$100,000	>\$100,000
1991	0.00%	0.07%	2.66%	23.49%	34.64%	18.80%	14.45%	4.99%	0.82%	0.02%	0.00%	
1992	0.00%	0.14%	2.52%	23.26%	33.88%	18.59%	14.91%	5.76%	0.81%	0.03%	0.00%	
1993	0.00%	0.06%	2.00%	23.16%	33.98%	17.96%	15.53%	6.36%	0.84%	0.00%	0.00%	
1994	0.00%	0.06%	1.60%	22.47%	33.27%	18.81%	16.34%	6.24%	1.13%	0.00%	0.00%	
1995	0.00%	0.16%	2.27%	22.43%	32.75%	18.59%	15.53%	7.21%	0.96%	0.08%	0.00%	
1996	0.00%	0.03%	1.34%	21.78%	32.55%	18.19%	16.80%	8.32%	0.97%	0.00%	0.00%	
1997	0.00%	0.05%	1.81%	20.97%	30.70%	18.34%	18.26%	8.76%	1.02%	0.03%	0.00%	
1998	0.00%	0.03%	1.28%	20.51%	30.36%	19.72%	18.44%	8.36%	1.10%	0.13%	0.00%	
Total Change:	0.00%	-0.05%	-1.37%	-2.98%	-4.28%	0.92%	3.99%	3.36%	0.28%	0.11%	0.00%	

Conclusion

As tuition has increased, the percentage of the entering class of the University of Waterloo from areas with median household incomes below \$50,000 has decreased. In 1991 60.86% of the students in the Waterloo entering class were from lower income areas. By 1998, only 52.17% of the students in the Waterloo entering class were from lower income areas. During this time, tuition rates steadily increased. Tuition in the faculty of Mathematics is representative of tuition in regulated programs at the University of Waterloo. In 1991, students in the regular mathematics program paid \$885 for tuition before incidental fees. This had more than doubled by 1998, to \$1,777. This suggests that there is a reason that students from lower income areas are choosing not to attend the University of Waterloo and that this reason is correlated with tuition rates.

Across Ontario, the percentage of students from lower income areas in the entering class of universities was 59.24% in 1991, and fell to 54.38% by 1998. In 1991, Waterloo had more students in from lower income areas in its entering class than the average for Ontario universities. The provincial average dropped 4.86% between 1991 and 1998, but Waterloo experienced a drop almost twice as large, 8.69%, and now has fewer students from lower income areas in its entering class than the provincial average. This indicates that students from lower income areas are finding greater deterrents to attending the University of Waterloo than other universities in Ontario.

The average income of students at the University of Waterloo and at Ontario universities in general is rising. Income data is from the 1996 Canadian census, so the increase reported here is independent of inflation. The average income at the University of Waterloo is rising faster than the provincial average. The provincial average rose \$1418.26 from 1991 to 1998. The Waterloo average rose almost twice as much, \$2729.27, during the same period. As a result Waterloo has gone from an average income of \$397.12 less than other Ontario universities, to an average income \$913.89 more. Waterloo students are coming from richer areas, and this trend is stronger at Waterloo than the average for Ontario universities.

These three trends demonstrate that students from lower income areas are no longer attending the University of Waterloo as frequently as they were in the past. They confirm that universities across Ontario are experiencing a similar trend. The trends also show that the loss of students from lower income areas is stronger at the University of Waterloo than at Ontario universities in general.

Overall, the information in this report suggests that rising tuition is negatively affecting accessibility to university education in Ontario.