Exploring the Utility of the 2007 Canadian Graduate and Professional Student Survey: Student Satisfaction at the University of Western Ontario

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for the Higher Education Quality Council of Ontario

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Table of Contents

List of Tables

List of Figures

Executive Summary

In 2007, the Canadian Graduate and Professional Student Survey (CGPSS) was conducted to gain insights into the experience of students at various universities across the country. This survey collected information on a variety of issues as well as demographic information. There is, understandably, considerable interest in understanding the ability of this survey to provide insights into the quality of, and processes related to, graduate education in Ontario. The University of Western Ontario (UWO) is one institution that administered the survey, and the results for UWO are used in this in-depth case study to investigate the surveys. At UWO, there has been a strong interest in identifying the satisfaction levels of graduate students with varied needs. This information is important for a variety of reasons, including increasing retention and graduation rates as well as improving the overall experience of students. The specific analysis of the data for UWO is an attempt to capture current trends, identify relationships of interest, and articulate a framework that would reveal strategic areas of focus, to enhance graduate student satisfaction.

This analysis contains two parts: a descriptive analysis and an explanatory analysis.

Descriptive findings of interest include the following:

- 70.0% of students reported that if they were to start their graduate/professional career again, they would select the same university.
- 82.0% of students reported that if they were to start their graduate/professional career again, they would select the same field of study.
- 76.6% of students reported they would recommend the university to someone considering their program.
- 89.5% of students reported the quality of their academic experience at the university as high.
- 84.1% of students reported the quality of their student life experience at the university as high.
- 85.7% of students reported the quality of their graduate/professional program at the university as high.
- 87.9% of students reported the quality of their overall experience at the university as high.
- 81.4% of students reported that overall, their advisor performed the role well.
- 77.1% of students reported that the availability of area courses they needed to complete their program was high.
- 87.3% of students reported the quality of instruction in their courses was high.
- 68.3% of students reported a high degree of opportunities to take coursework outside their own department.
- 69.8% of students reported a high degree of opportunities to engage in interdisciplinary work.

An analysis of the processes and mechanisms governing graduate student satisfaction revealed several patterns:

- The role of the advisor was paramount. The advisor is the mentor and person from the university that a graduate student will typically interact with most; therefore, this role must continue to be a point of focus in increasing satisfaction among students.
- The relationship between faculty and students figures prominently across the results. A positive and open culture where students feel comfortable interacting with faculty appears to be very important. A positive atmosphere is one where students appear to thrive most.
- Coursework issues are important to students (amount of coursework, overall quality of graduate level teaching, and availability of courses). Coursework is an opportunity to gain much knowledge in the

area of study, and students look to faculty to provide this experience. Ensuring that the amount of coursework is appropriate as well as aiming to maximize course availability would pay large dividends.

- Advice/workshops on career opportunities within academia are indispensable to students. Education is a stepping stone to a career; in particular, information pertaining to academia is appealing for those students pursuing a graduate degree (a prerequisite to such employment).
- University services and resources do not appear to be important; however, library facilities, in some cases, are one service that students value.
- Degree type was seen to play a role in some instances. The distinction was between Master's Professional students and their fellow students in Master's Research and PhD programs, with the former exhibiting a much more positive perception of the institution than their research counterparts.
- Debt load, work and financial commitments, graduate division, year of study, sex, publication record, funding to attend conferences, advice/career options outside of academia, and university resources, including health services and registrarial services, did not appear to play any role in explaining the outcomes of interest.
- Models ranged considerably in terms of how much they explained the various outcomes related to satisfaction. There is a solid understanding of what makes a good advisor. On the other hand, the models were much weaker in explaining whether a respondent would select the same university again or whether they would recommend the university to someone considering their program. Quality of the graduate and professional program, quality of the academic experience, and quality of the overall experience were in between the two poles of the continuum in terms of our understanding of these various outcomes.

Surveys of this nature must continue to be implemented on a regular basis to gauge changes over time and assess the university's progress in addressing the needs of its students.

Surveys that are flexible, spanning the needs of the institution in its entirety, coupled with faculty/department specific questions, particularly for professional programs, would be a logical way to proceed.

Survey questions pertaining to obstacles to academic progress, such as graduating teaching assistantships, the advisor, health status, funding and tuition must be addressed in future surveys.

A comparative analysis with institutions of similar size and stature to the University of Western Ontario would provide some perspective on the findings.

There are general lessons that this case study has revealed for graduate education in Ontario and across the country:

- The Canadian Graduate and Professional Student Survey can be used for understanding graduate level education processes.
- Extending the study to a larger data set with other universities would be useful because this would offset many of the limitations encountered with smaller data sets and allow comparative analyses.
- This survey tool has the potential to provide a provincial or nation-wide portrait of the state of graduate level education, which is useful to government and other stakeholders, shedding insights on policy issues, such as graduate funding, impediments to completion, institutional infrastructure, and other areas for improvement.
- To maintain a competitive edge internationally with respect to our graduate level institutions, analyses at the provincial and national levels using detailed data such as the Canadian Graduate and

Professional Student Survey are necessary to promote relevant changes and adapt in an appropriate manner.

Overall, individual academic institutions, governments, and other stakeholders armed with the tools to make informed decisions related to graduate level education will maximize the chances of success. The generation of this type of data is a necessary step to ensuring such success at all levels.

Introduction

In 2007, the Canadian Graduate and Professional Student Survey (CGPSS) was conducted to gain insights into the experience of students at universities across the country to provide improved educational opportunities to students of today and tomorrow. This survey collected information on a variety of issues ranging from general satisfaction with the university, advisors, and field of study to satisfaction with the program, quality of interactions and coursework, to professional skills development and research experience, to university resources and student life. Some demographic information on respondents such as age, marital status, financial support and student debt levels was also collected in the survey.

The Higher Education Quality Council of Ontario has voiced a strong interest in examining how the Canadian Graduate Student Survey may be used in the future to provide insights into the quality of, and the processes related to, graduate education in Ontario. The University of Western Ontario as one of the institutions that administered the survey is used as an in-depth case study to illustrate its utility.

At the University of Western Ontario, there has been a strong interest in identifying the satisfaction level of graduate students with varying needs. This information is important for a variety of reasons, including increasing retention and graduation rates and improving the overall experience of students. The specific analysis of the data from the University of Western Ontario is an attempt to capture current trends, identify relationships of interest, and articulate a framework that will identify key strategic areas for enhancing graduate student satisfaction. The insights generated from this analysis are an important first step in demonstrating the potential uses of the 2007 administration of the Canadian Graduate Student Survey and highlighting some of its shortcomings.

The analysis was composed of four main components:

a) A pre-analysis, in-depth examination of the questions in consultation with stakeholders to provide a comprehensive context for areas of research analysis;

b) An examination of the data set with a focus on methodological issues, such as missing data, and the development of appropriate techniques to handle these problems;

c) Descriptive statistics to provide a basic overview of trends;

d) An in-depth analysis given initial findings, using appropriate statistical techniques.

This document will begin with a description of the data and key indicators of interest, followed by a thorough overview of the data set. Next, selected descriptive statistics will be shown and a series of statistical models presented and discussed. Finally, conclusions will be provided, articulating areas for future research.

It should be noted that methodological issues related to missing data and validity are found in the Appendix. As well, the full version of descriptive statistics, broken down at the institutional and faculty levels by degree type, (PhD, Master's Research, and Master's Professional) is provided in the Appendix. Finally, a technical presentation of the full statistical model is given strict attention in the Appendix.

Data

During the winter session 2007, the University of Western Ontario, along with 27 other Canadian universities, administered a comprehensive survey of the graduate student experience. This was a population survey of all graduate students in all years of study, with the single exception of students registered in the MBA program. This research utilizes the *2007 Canadian Graduate and Professional Student Survey for the University of Western Ontario*.

Responses from Law and Dentistry were dropped as their negligible number of cases, made any sort of analysis of these groups irrelevant and misleading. Degrees from Huron College were also dropped from the analysis as the students are not considered part of the University of Western Ontario, the population of interest. These cases reduced the total sample size from 1365 to 1354.

The data set contained values that were missing. The range of missing values for a question ranged from 3.7% to 78.3%, with a large percentage of variables missing 10% to 20% of their values. There are various ways of handling missing data as discussed in the statistical literature, with ignoring the problem probably the worst way to handle this methodological issue (Allison 2002; Little and Rubin 1987; Maxim 1999). This research project deals with missing data through the multiple imputation method, which is considered the method of choice by most statisticians in principle (King et al. 2001). Multiple imputation is simply the process whereby missing values for a variable are predicted using other variables in the data set. Given that the generated values are predicted, several plausible values are produced, usually five to ten. These values are then imputed into the same number of data sets as there are estimates for each missing value (five in this case). Each data set contains the same values for the observed items and different estimated values for the imputations. The analyst then analyzes each of the full data sets, performing the statistical operations of interest, and proceeds to combine the results across the data sets (see Appendix for further information).

Outcomes of Interest

As indicated earlier, the objectives behind the analysis of the satisfaction survey at the University of Western Ontario centre on obtaining feedback on pivotal dimensions of the institution to enable administrators, faculty and staff to identify strengths and weaknesses and improve the experience of students. This analysis has wider application, however, in that it demonstrates how the Canadian Graduate and Professional Student Survey can be used to understand graduate education in other Ontario and Canadian universities.

This survey provides information on several areas of the institution. Given the vast number of indicators, it was determined that this research project would focus on specific areas of central importance to the University of Western Ontario. A consensus on the main indicators of interest was arrived at through in-depth consultations and meetings with several main stakeholders at the institution. *Please select your response to the following statements:*

- If you were to start your graduate/professional career again, would you select this same university?

- Would you recommend this university to someone considering your program?

  Answers:
  a. No
  b. Maybe
  c. Yes

Overall, how would you rate the quality of

- Your academic experience at this university?

- Your graduate/professional program at this university?

- Your overall experience at this university?

Answers:
a. Low
b. High

Thesis/Dissertation advisors engage in a variety of mentoring activities. For the following statement, indicate the extent that it DESCRIBES THE BEHAVIOR of your advisor.

- Overall, performed the role well

Answers:
a. Disagree
b. Agree
c. NA/No Opinion

Descriptive Analysis of Statistics

The administration of the Canadian Graduate and Professional Student Survey at the University of Western Ontario provides useful information at the institutional and faculty level. Given the low number of respondents at the departmental level, no frequencies are reported because the data are unreliable. Throughout the analysis, a distinction is drawn between three analytically important groups: Doctoral students (PhD), Master's Research students (MA Research), and Master's Professional students (MA Professional). The experiences of these students are expected to differ given the varying requirements, length, costs, and foci of the programs.[1] A number of selected frequencies are highlighted at the institutional level below (see Appendix for a complete listing of frequencies at the institutional and faculty levels).

Demographic Profile

Approximately two thirds of students were between 21 and 30 years of age while 16.0% were 31 to 35 years of age; and 16.5% were over 36 years of age; and1.9% of students were 21 years of age or younger. Figure 1 shows the distribution of responses for the university (Total) and degree types, that is, PhD, Master's Research, and Master's Professional.

[1] All questions related to advisors are irrelevant to MA Professional students; therefore, they are not reported in the results.

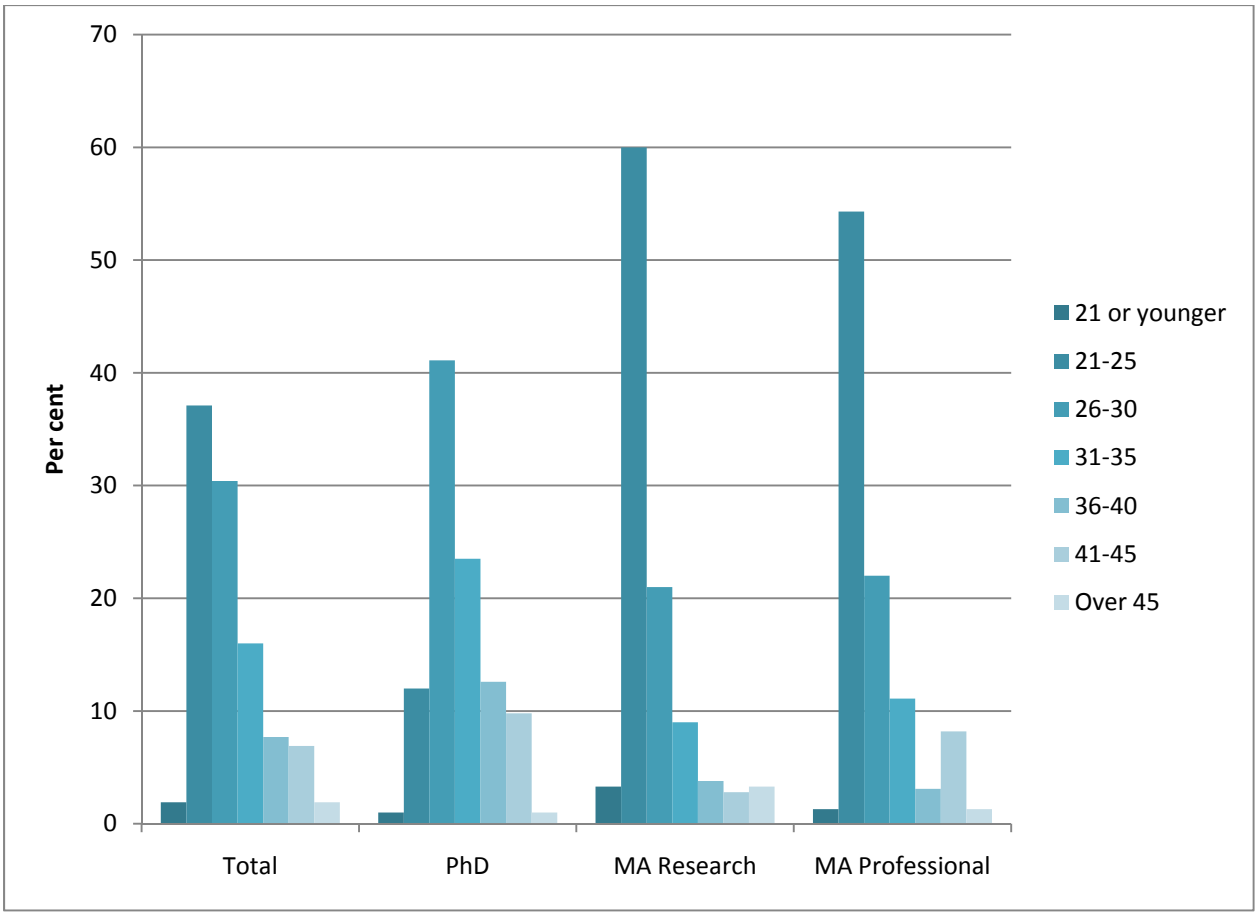

Figure 1 Distribution of age across the populations of all graduate students (Total), PhD, MA Research and MA Professional students at the University of Western Ontario.

- As regards the marital status of students, most reported being not married (59.7%), followed by married (29.3%), with domestic partner (8.3%), divorced (1.7%), and separated (1.0%).
- About 82% of students reported having no children; one child (10.3%), two children (5.5%), three children (1.4%), and four or more children (0.5%).
- The vast majority of students lived in off-campus housing not owned by the university, that is, 82.4%. About 8.2% of students lived in off-campus housing owned by the university, and 9.5% of students lived in on-campus student housing.
- The citizenship status of students was primarily “Canadian citizen” at 63.1%, 23.2% of students reported being a “Citizen of another country with a student visa or other non-immigrant visa,” 13.7% of students reported being a “Permanent Residents of Canada.”
- There were 2.7% of students who self-identified with or had ancestry as an Aboriginal person.

Education

- The distribution of students across the faculties of the university included Arts (8.5%), Business (2.1%), Engineering (19.4%), Education (2.9%), Health Sciences (13.6%), Information and Media Studies (10.2%), Music (2.1%), Medicine (12.3%), Science (16.8%), and Social Sciences (12.3%). Figure 2 below shows the distribution of students by faculty for the university (Total) and for the degree types, that is, PhD, Master's Research, and Master's Professional.
- Almost half of students were in first year, 26.7% in second year, 11.2% in third year, 8.3% in fourth year, and 5.8% in fifth year or above.
- One third of students expected to graduate by the end of the academic year.

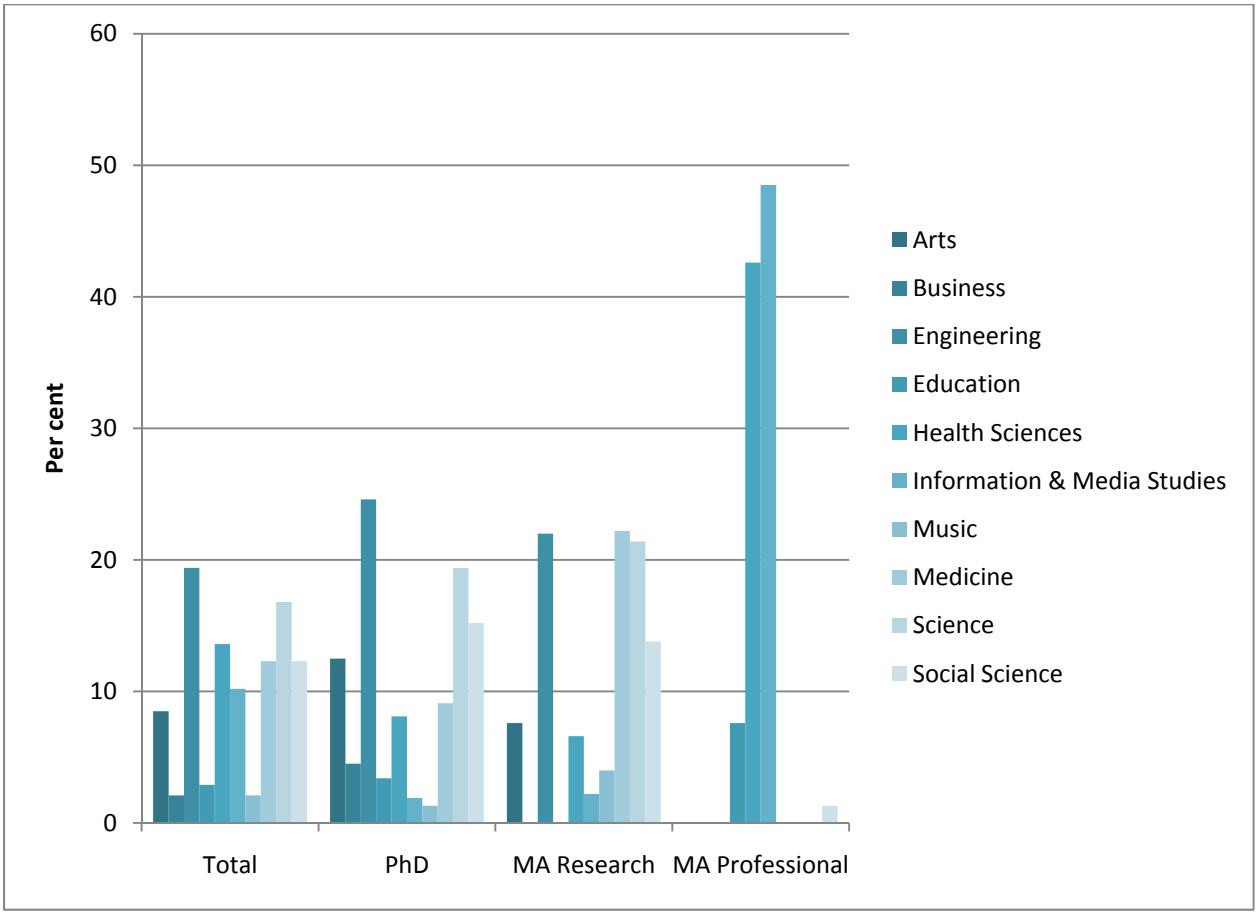

Figure 2 Distribution of all graduate (Total), PhD, MA Research and MA Professional students across the faculties of the University of Western Ontario.

Sources of Financial Support

The most frequently cited sources of financing for graduate school at this institution were graduate teaching assistantships (63.3%) and graduate research assistantships (48.1%), loans, savings, or family assistance (44.3%), and university funded fellowships (30.1%). Full and partial tuition scholarships or waivers, provincial government scholarships/fellowships, and federal granting council scholarships/fellowships were all cited moderately as sources of support - approximately one fifth of respondents reported they received this support while enrolled in their program. The data illustrate that PhD and Master's Research students followed this pattern of financing for graduate school, although a higher percentage of PhD students reported receiving scholarships/fellowships, tuition waivers, teaching assistantships, and research assistantships. Master's Professional students reported different sources of financing for graduate school: loans, savings, or family assistance (69.1%) were cited most, while offcampus employment (13.2%), other campus employment (12.3%), graduate research assistantship (11.6%), provincial government scholarships/fellowships (9.8%), partial tuition scholarships or waivers (9.5%), and graduate teaching assistantship (9.0%) were all relatively similar in rank in terms of their contribution.

Debt Loads

Upon graduation, about 35% of graduate students estimated that they would have no educational debts to repay. Nearly 60% of all students reported no debt load accumulation at the undergraduate level although this figure dropped to 46.1% at the graduate level. A minority of students reported debt levels at the extreme end of the spectrum, that is, $40,000 or more, with about 17% of graduate student estimating that they would owe this amount upon graduation.

There are, however, key differences within the graduate student population with respect to estimated debt load upon graduation. In fact, student debt levels varied by the type of degree program in which they were enrolled. A significant proportion of PhD and Master's Research students estimated graduating with no educational debt, that is, about 38%. On the other hand, Master's Professional students reported the highest levels of debt, with approximately 19% of students estimating no debt accumulation upon graduation. At the other end of the spectrum, about 28% of Master's Professional students estimated having to repay $40,000 or more upon graduation while 14.8% of PhD students and 13.7% of Master's Research students estimated graduating with this debt load.

Overall, Master's Professional students would shoulder a higher educational debt burden upon graduation than PhD and Master's Research students, with a large amount of this debt accumulated in graduate school. PhD and Master's Research students reported somewhat similar levels of educational debt accumulation at both the undergraduate and graduate levels.
Figure 3 below shows the distribution of estimated debt load for all students at the university (Total) as well as by degree type.

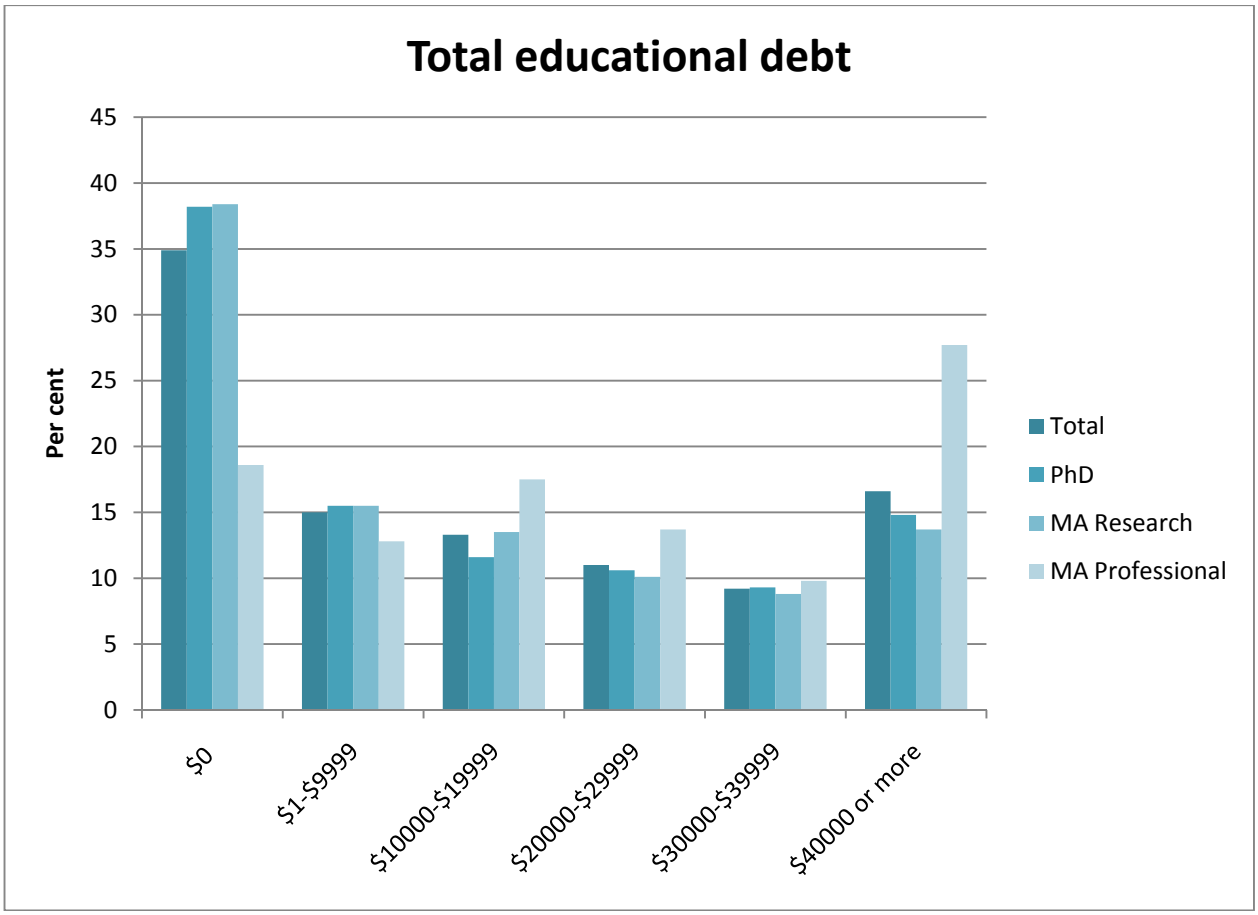

Figure 3 Distribution of University of Western Ontario graduate students across levels of educational debt.

Obstacles to Academic Progress

Work and financial commitments were the greatest single obstacle to academic progress among graduate students. About 66% of all students classified it as an obstacle to progress. Family obligations (44.9%) and program structure or requirements (43.9%) were other notable obstacles to academic progress.

Figure 4,
Figure 5, and
Figure 6 below show the distribution of responses for the aforementioned obstacles for the university (Total) and the types of degree. PhD and Master's Research students were relatively similar in their reports of obstacles to academic progress while Master's Professional students differed on certain indicators. For example, Master's Professional students were less likely to report availability of faculty and immigration laws or regulations, and more likely to report program structure or requirements and course scheduling, as obstacles to academic progress. Although overall, Master's Professional students reported work and financial

commitments as an obstacle to academic progress at a rate similar to PhD and Master's Research students, they were more likely to report it as a major obstacle than their fellow graduate students.

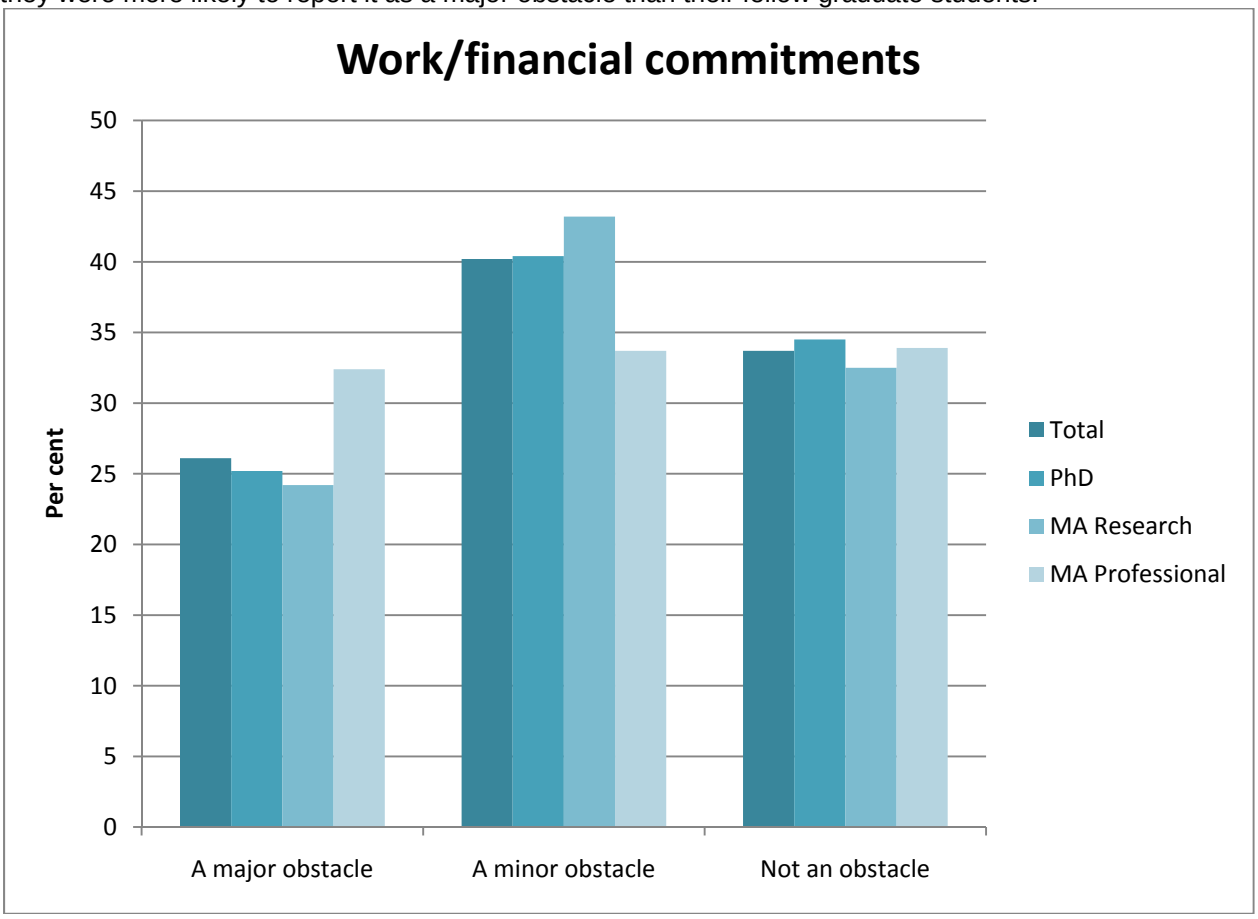

Figure 4 University of Western Ontario graduate students were asked to rate how much of an obstacle work/financial commitments are to their academic progress. The figure shows the distribution of students across each rating.

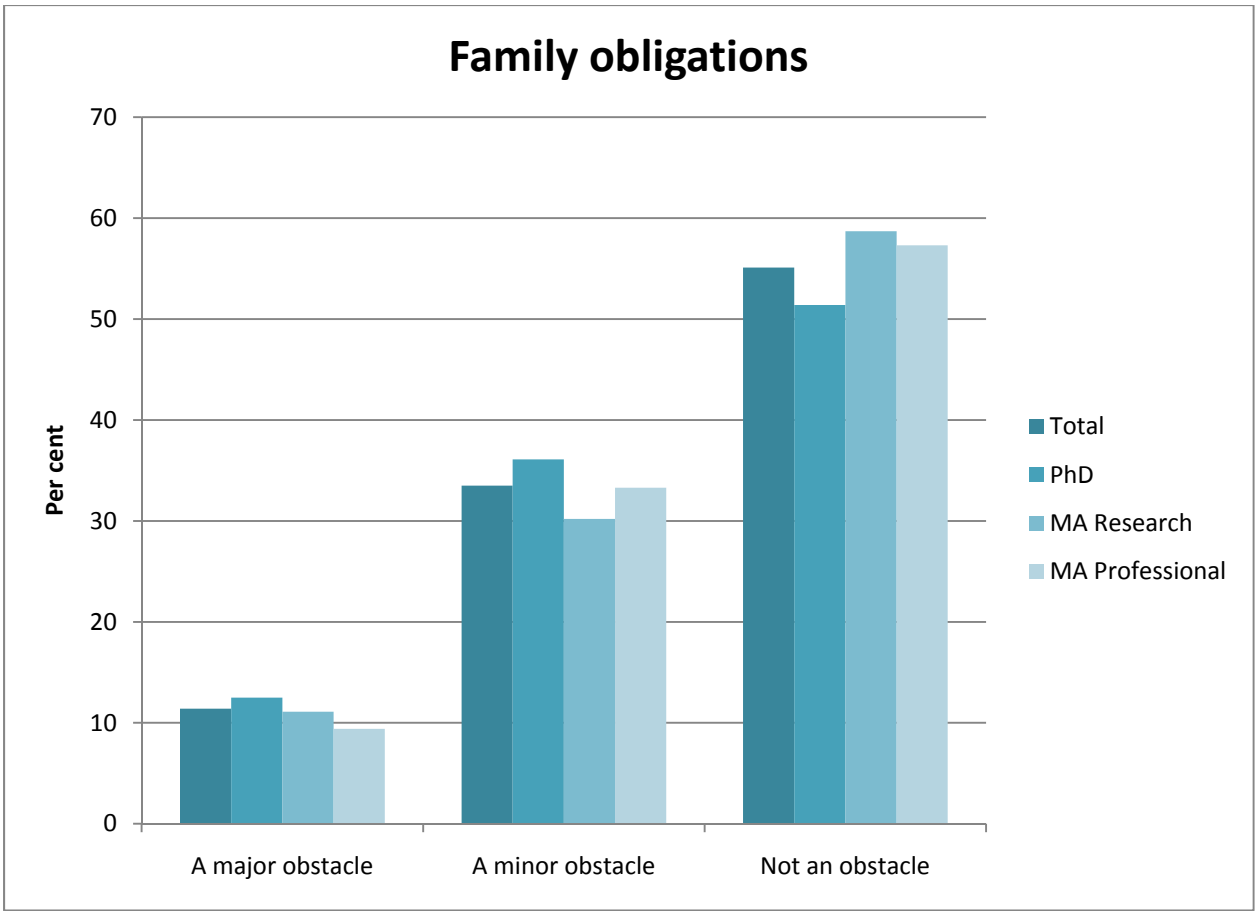

Figure 5 University of Western Ontario graduate students were asked to rate how much of an obstacle family obligations are to their academic progress. The figure shows the distribution of students across each rating.

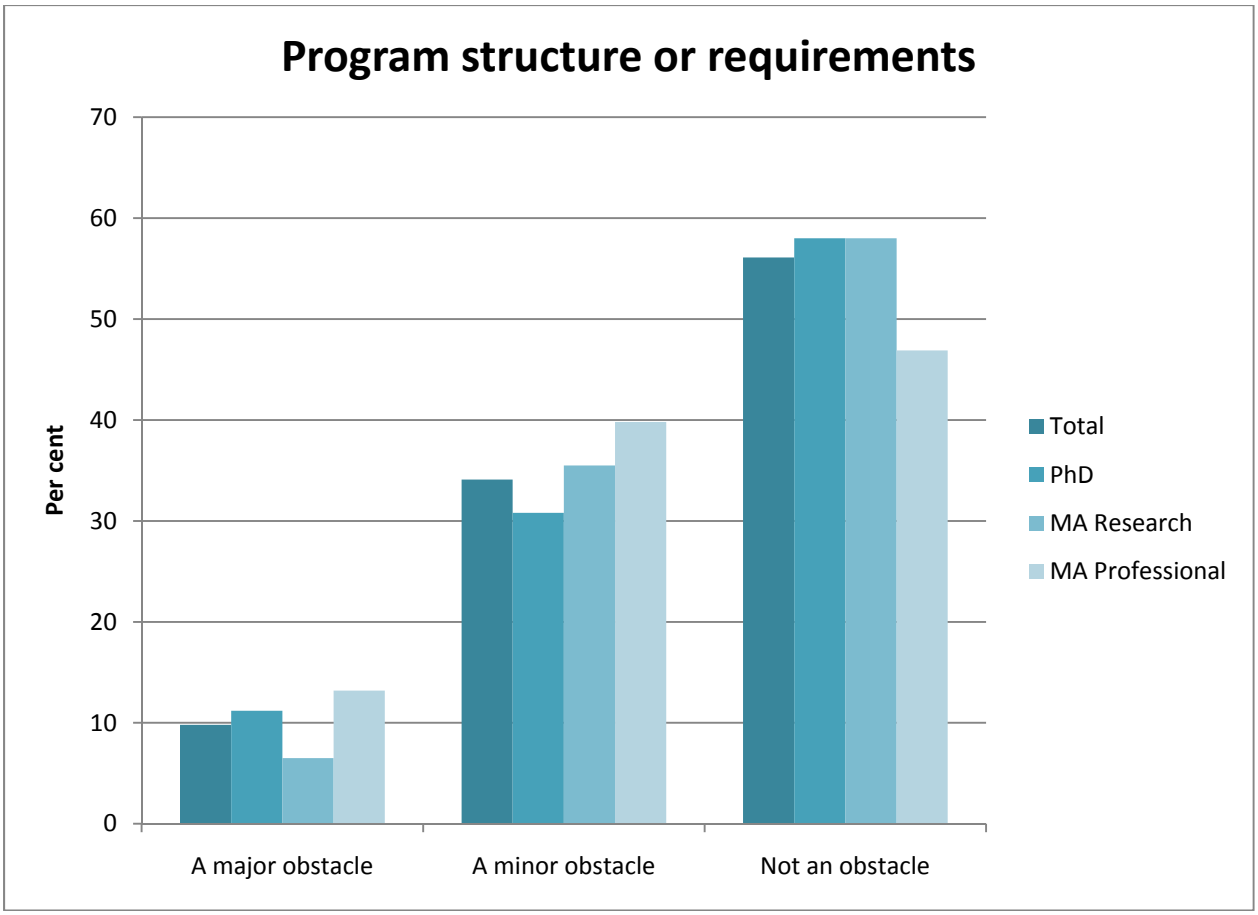

Figure 6 University of Western Ontario graduate students were asked to rate how much of an obstacle the structure or requirements of their academic programs are to their academic progress. The figure shows the distribution of students across each rating.

The values in the category "other" should not be taken too literally (See Appendix for a listing of all obstacles to academic progress included in the survey). Respondents were asked to identify any other obstacles to academic progress that were not indicated in the survey and rate the degree to which that obstacle affected academic progress. Most of the obstacles identified by respondents were considered major in degree; however, it should be noted that there was a wide range in the obstacles that respondents raised in the survey. A careful analysis of this reported data indicates that the survey questions pertaining to obstacles to academic progress may not have been exhaustive judging from some of the other obstacles reported by many respondents. Issues pertaining to graduate teaching assistantships, such as being expected to work more than the number of hours indicated in the contract, were mentioned several times. Further, there are virtually no questions associated with the advisor despite the fundamental role he/she plays in the progress of the student. The question related to the availability of faculty is the only item that is somewhat associated with the issue of the advisor. Health is another important obstacle to academic progress which the survey did not capture. Finally, although there was a question related to work and financial commitments, a number of students raised the issue of funding and tuition as important obstacles to their academic progress. A question directly addressing these issues would be of value given that they influence the student's standard of living. Future

administrations of the survey should include these issues in the questionnaire if we are to understand the obstacles facing students in their academic endeavours and develop initiatives to offset them.

University Resources

Several of the survey questions related to university resources. The focus here is on those resources that were heavily used by students, that is, those questions with a low proportion of respondents who answered "did not participate/not applicable." Figure 7, Figure 8, and Figure 9 below show the distribution of responses for the university (Total) and degree types, that is, PhD, Master's Research, and Master's Professional for library facilities, health care services, and registrarial services. For the university, about 95% of respondents rated library facilities as high, with relatively similar levels of satisfaction across the different degree types.

Approximately 70% of respondents reported health care services as high, but there was a wide range with Master's Professional students reporting rates of satisfaction about 15% lower than PhD students. Two thirds of respondents reported a high degree of satisfaction with registrarial processes, with PhD students having the highest level of satisfaction and Master's Professional students the lowest.

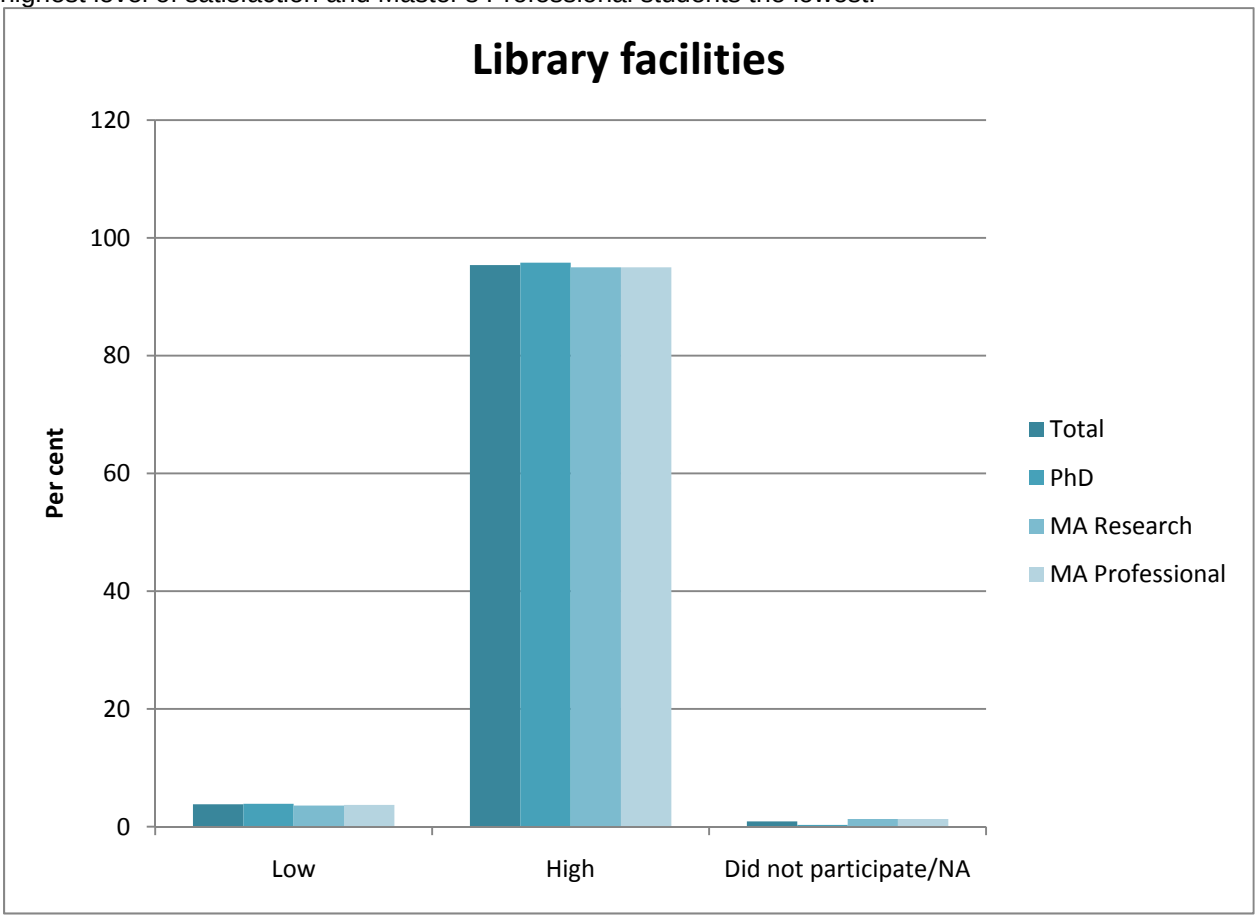

Figure 7 University of Western Ontario graduate students were asked to rate their school's library facilities based on the quality experienced while using them. The figure shows the distribution of students across each rating.

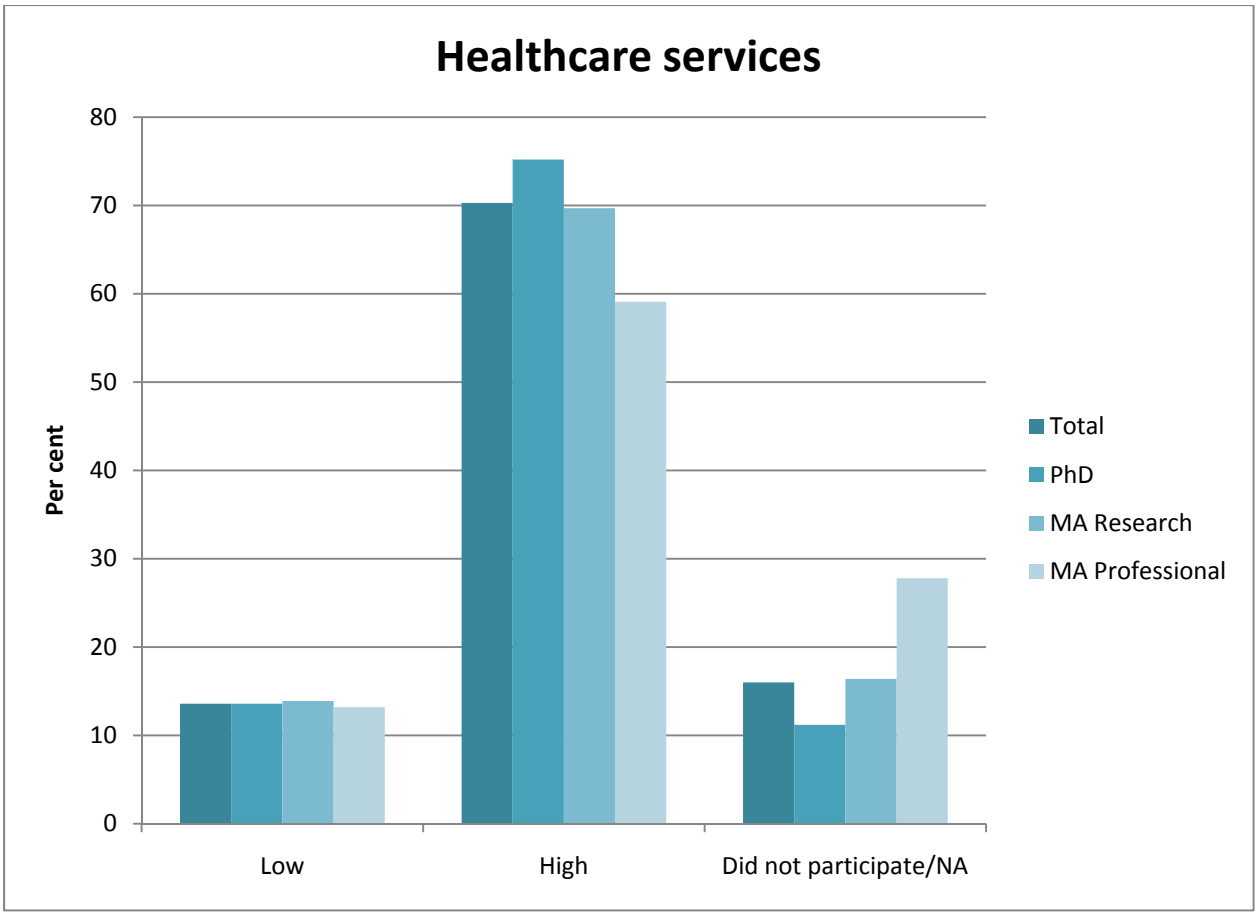

Figure 8 University of Western Ontario graduate students were asked to rate their school's health care services based on the quality experienced while using them. The figure shows the distribution of students across each rating.

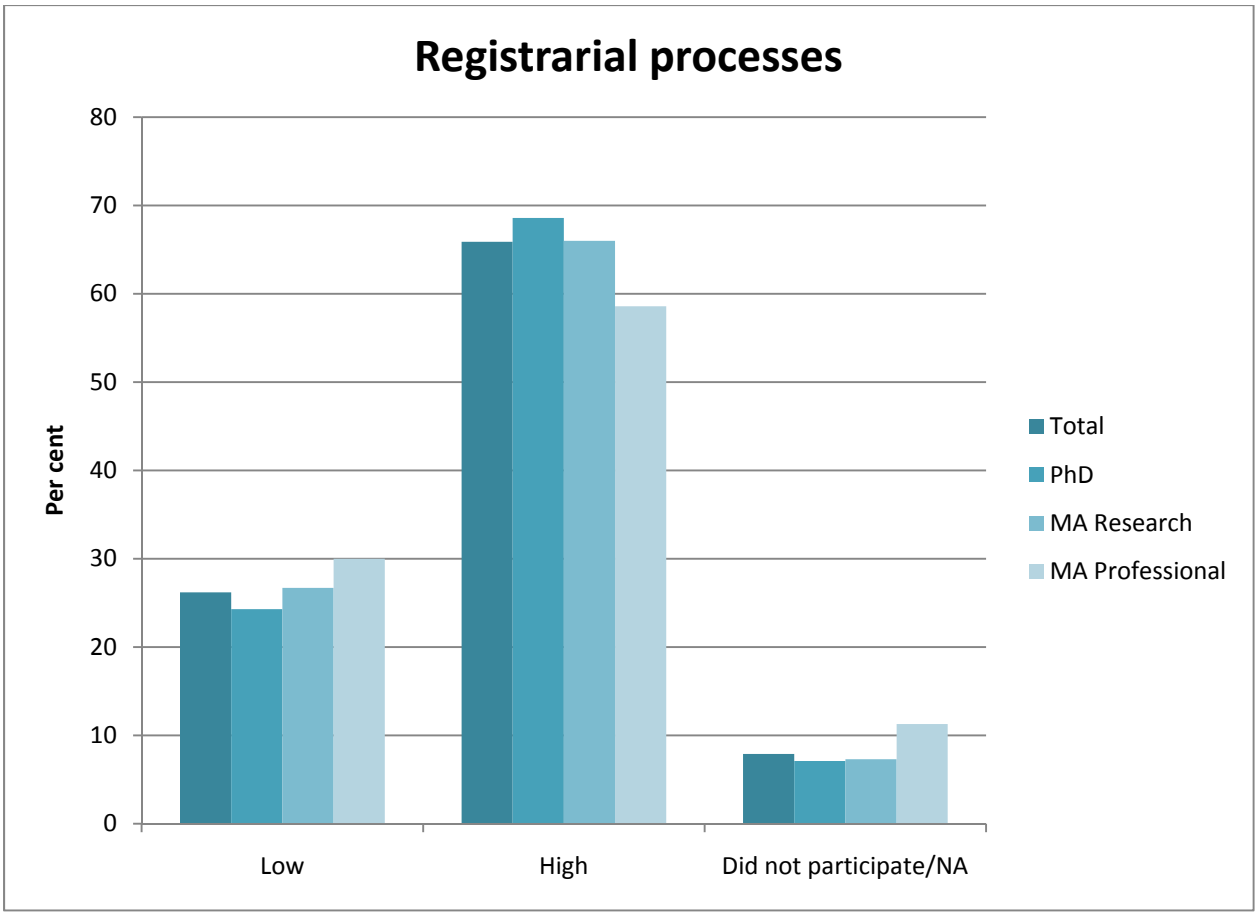

Figure 9 University of Western Ontario graduate students were asked to rate their school's registrarial processes based on the quality experienced while using them. The figure shows the distribution of students across each rating.

Professional Skills/Development

In terms of professional skills/development, one of the most crucial areas relates to career counseling given the primary goal of graduate school is to ease the transition into the workforce. Two questions pertaining to this issue are reported; that is, how do you rate the advice/workshops on career options within and outside of academia. Figure 10 and Figure 11 below show the distribution of responses for the university (Total) and the degree types. Overall, the percentage of respondents who rated the advice/workshops on career options within academia as high was about 5% higher than for respondents who rated the advice/workshops on career options outside as high academia. There were no major differences by degree type except for advice/workshops on career options outside academia where Master's Professional students reported a much higher level of support in this area than PhD and Master's Research students.

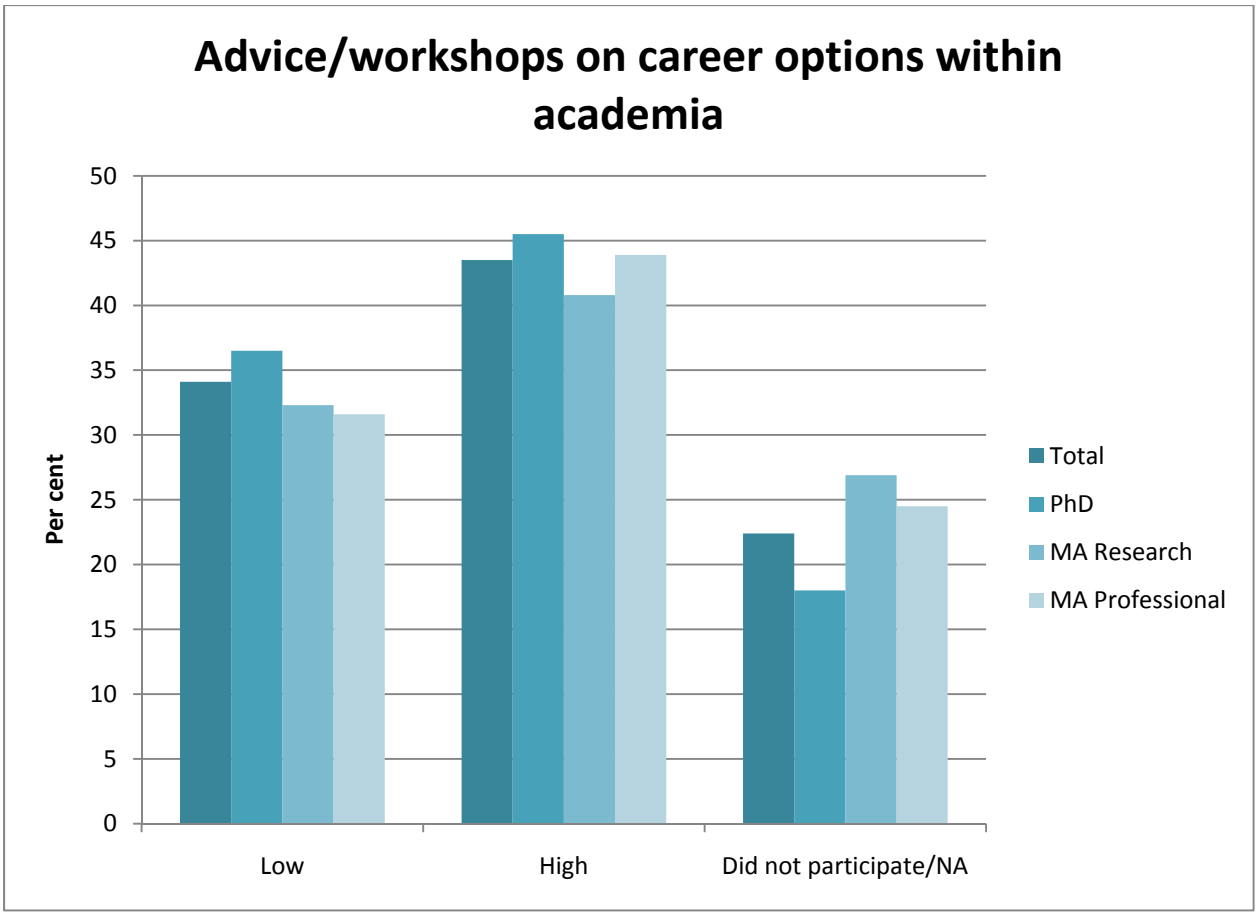

Figure 10 University of Western Ontario graduate students were asked to rate the quality of the support and training they received in advice/workshops on career options within academia. The figure shows the distribution of students across each rating.

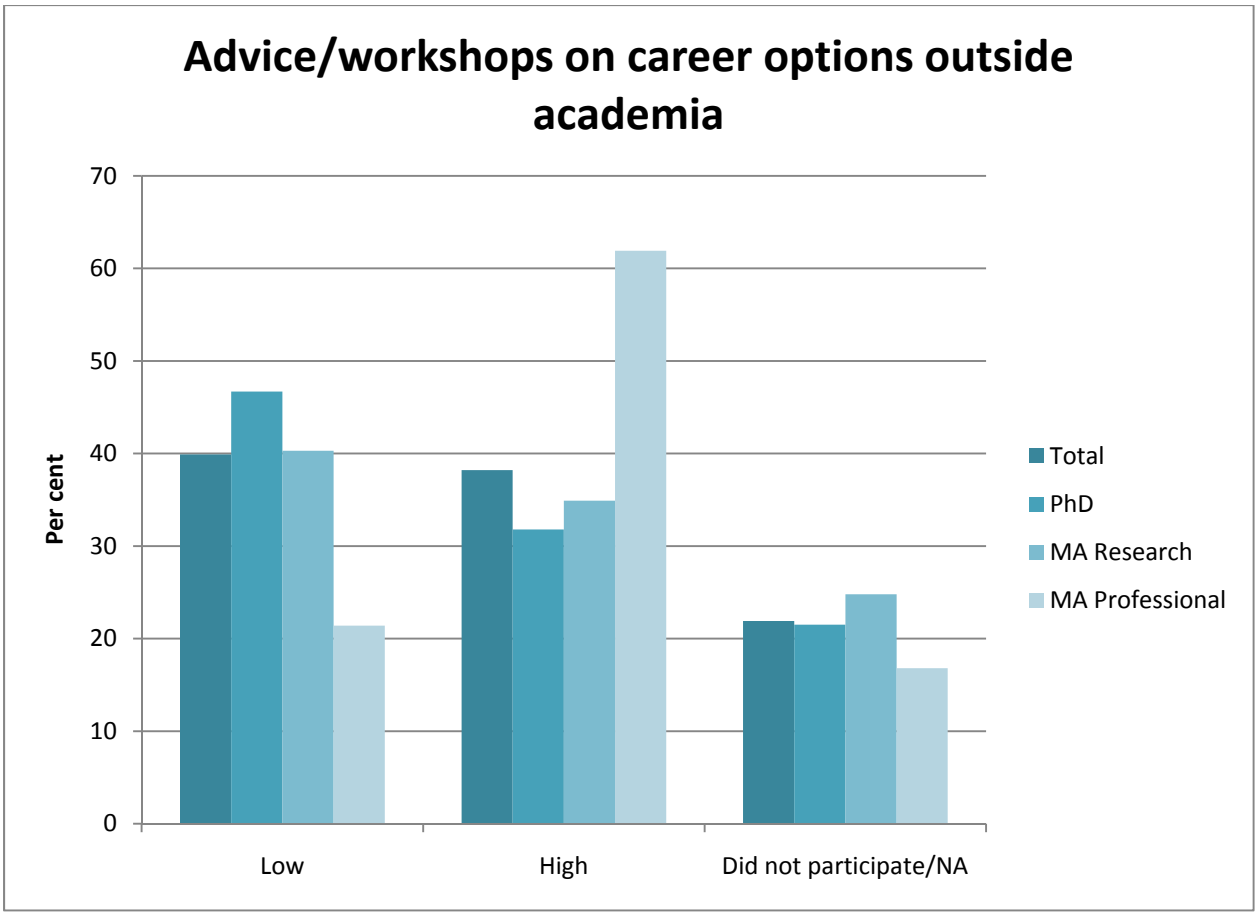

Figure 11 University of Western Ontario graduate students were asked to rate the quality of the support and training they received in advice/workshops on career options outside academia. The figure shows the distribution of students across each rating.

Overall Indicators of Satisfaction

- Asked if they were to start their graduate/professional career again, 70% of students reported that they would select the same university. This value was highest for Master's Professional students at 76.6% and lowest for PhD students at 67.9%. Figure 12 shows the distribution of responses for the university (Total) and degree types.

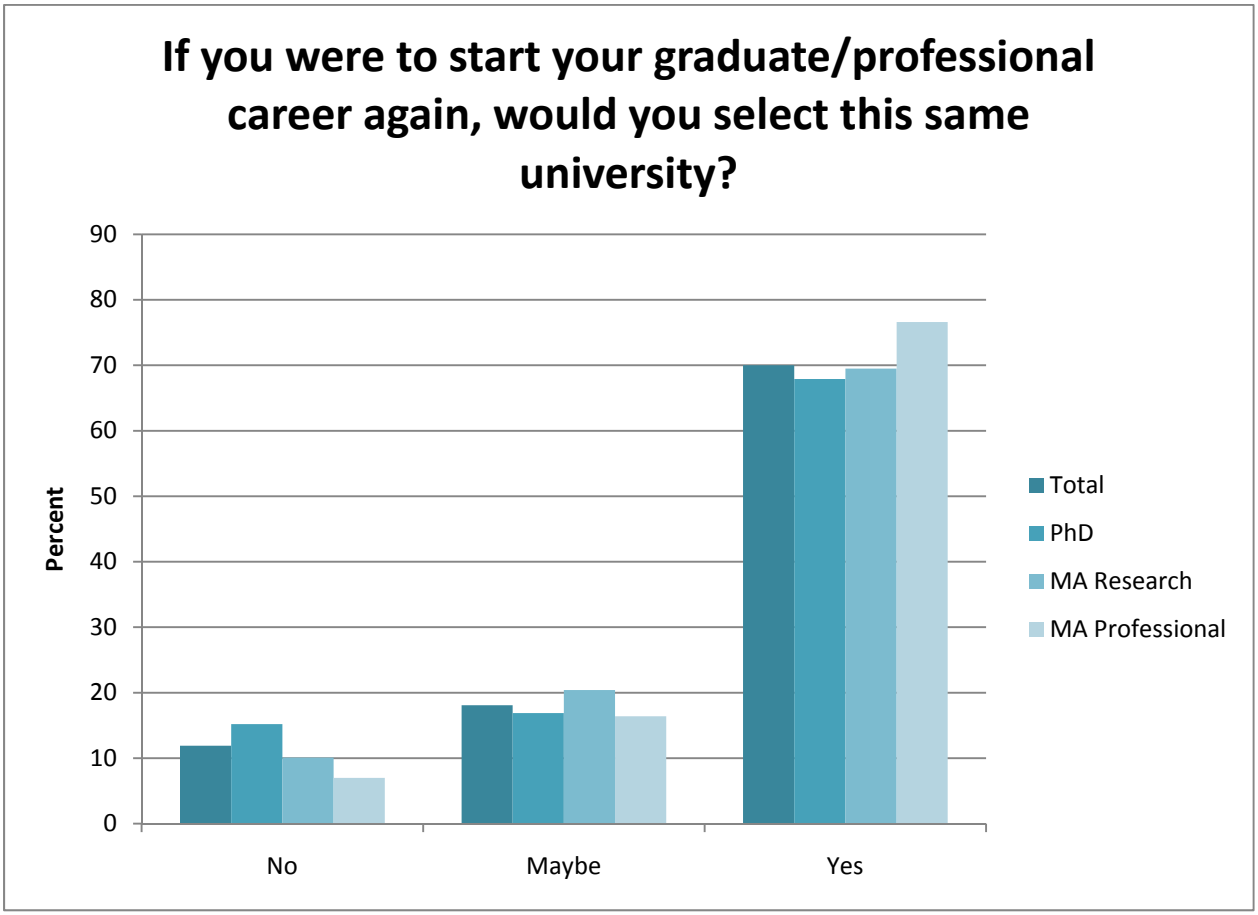

Figure 12 Distribution of responses by University of Western Ontario graduate students to the question, "If you were to start your graduate/professional career again, would you select this same university?"

- Asked if they were to start their graduate/professional career again, 82.0% of students reported that they would select the same field of study. Master's Professional and PhD students were similar in answering yes to this question at 84.4% and 84.2% respectively compared to 78.2% of Master's Research students. Figure 13 shows the distribution of responses for the university (Total) and degree types.

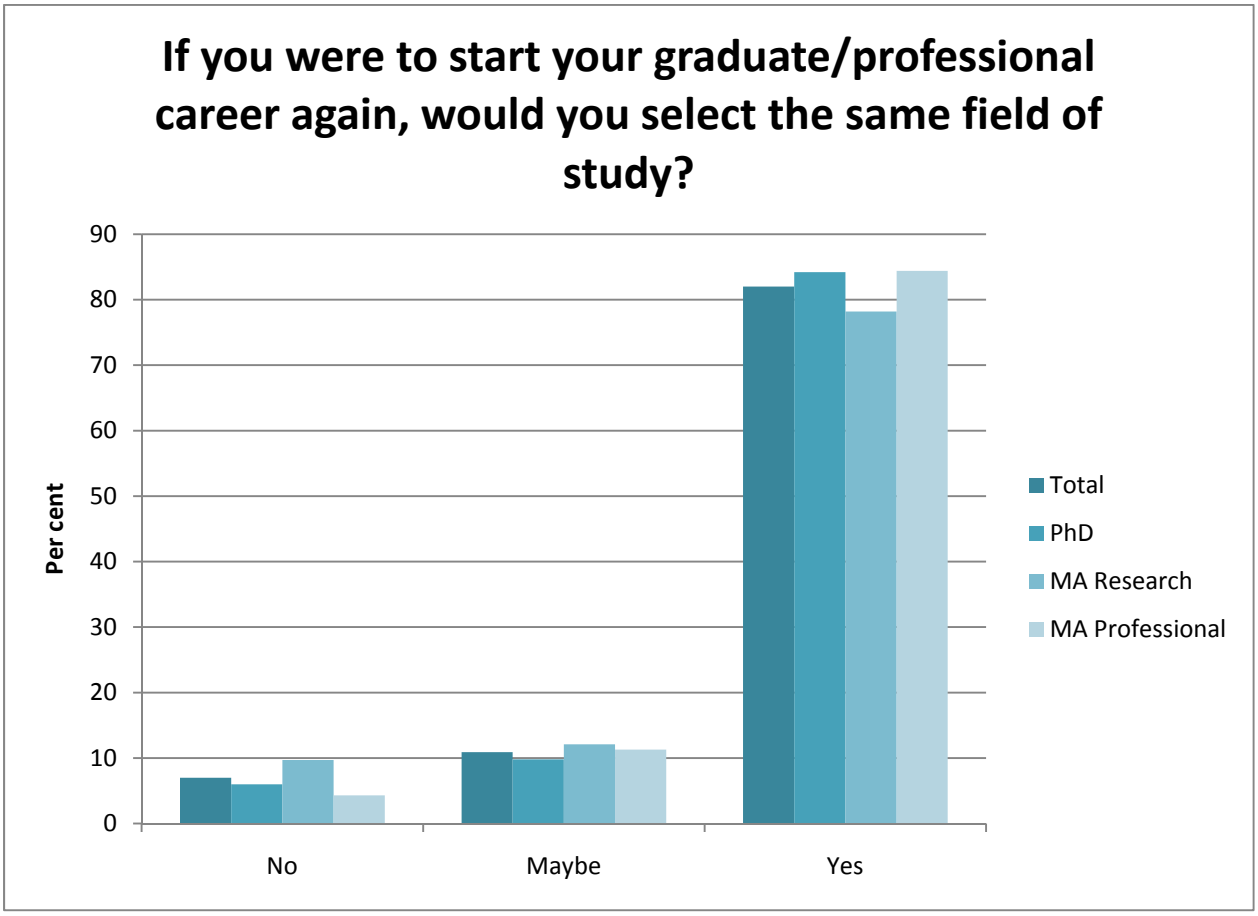

Figure 13 Distribution of responses by University of Western Ontario graduate students to the question. "If you were to start your graduate/professional career again, would you select the same field of study?"

- Asked if they would recommend the university to someone considering their program, 76.6% of students reported that they would. Master's Research students were most likely to answer yes at 79.8%, followed by Master's Professional students (77.9%), and PhD students (73.4%). Figure 14 shows the distribution of responses.

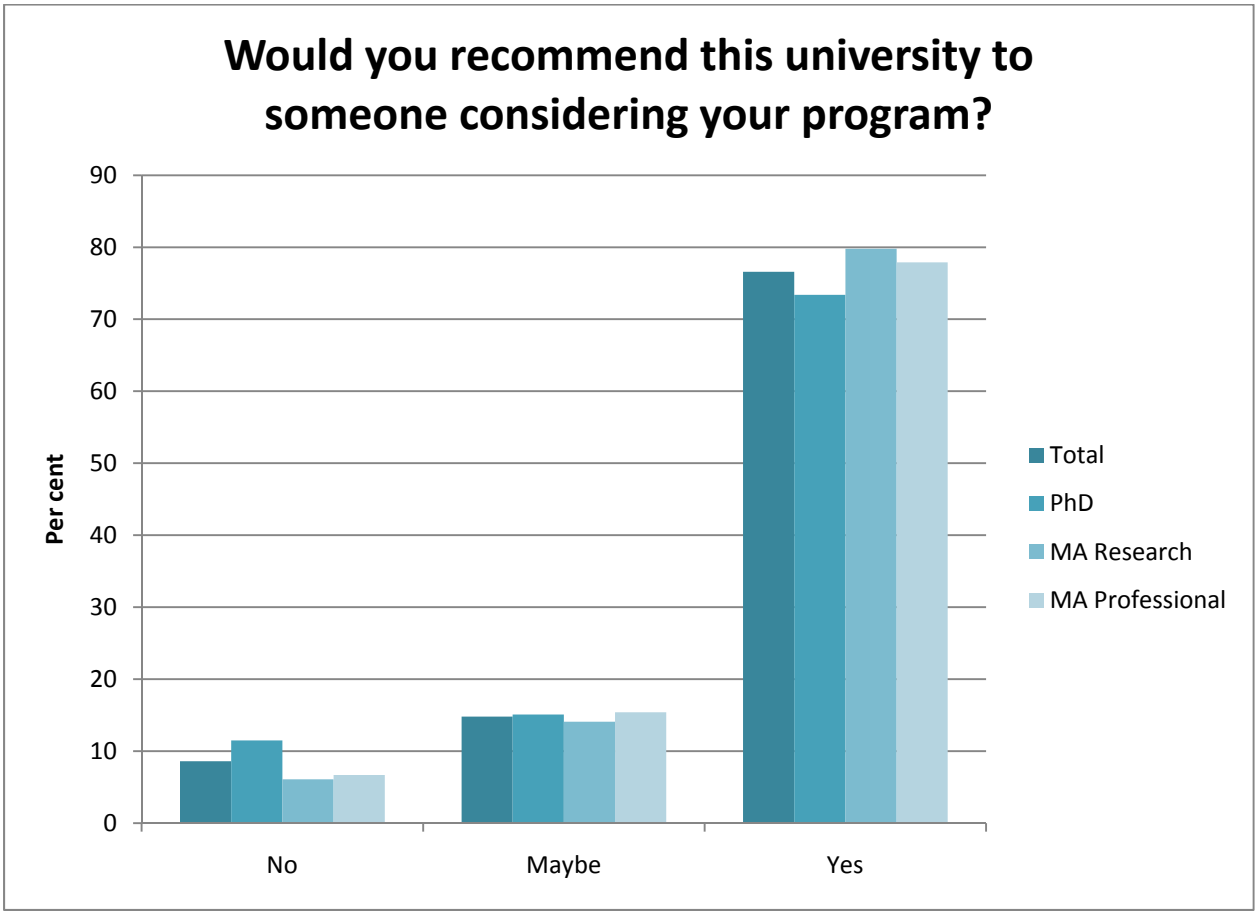

Figure 14 Distribution of responses by University of Western Ontario graduate students to the question. "Would you recommend this university to someone considering your program?"

- 66.8% of students reported they would recommend the university to someone in another field. Master's Research students were most likely to answer yes at 69.0%, followed by PhD students (66.9%), and Master's Professional students (61.9%). Figure 15 shows the distribution of responses.

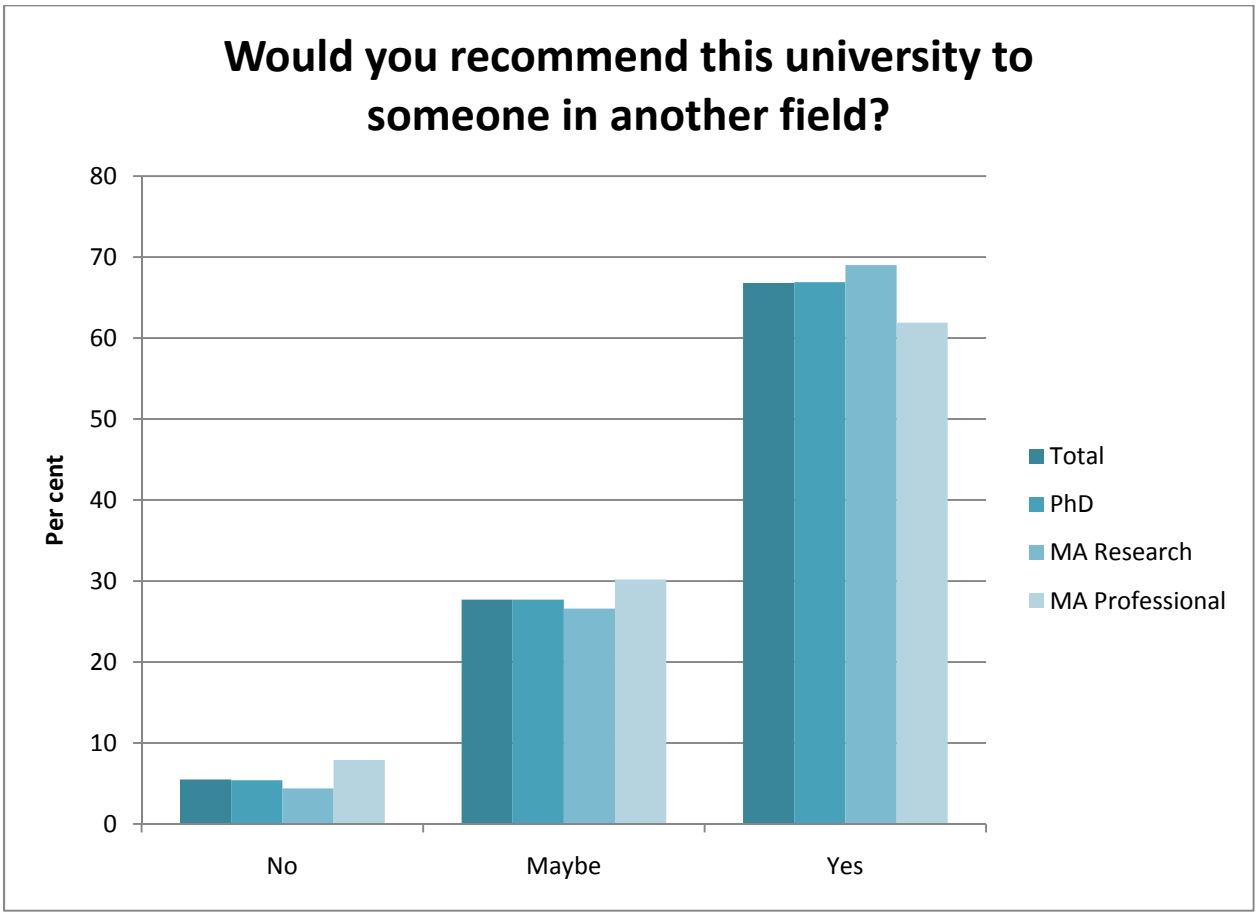

Figure 15 Distribution of responses by University of Western Ontario graduate students to the question. "Would you recommend this university to someone in another field?"

- Asked if they were to start their graduate career again,71.5% of students reported that they would select the same faculty supervisor. PhD students were most likely to answer yes at 75.0%, followed by Master's Research students at 71.1%. Figure 16 shows the distribution of responses for the university (Total) and degree types, that is, PhD and Master's Research.

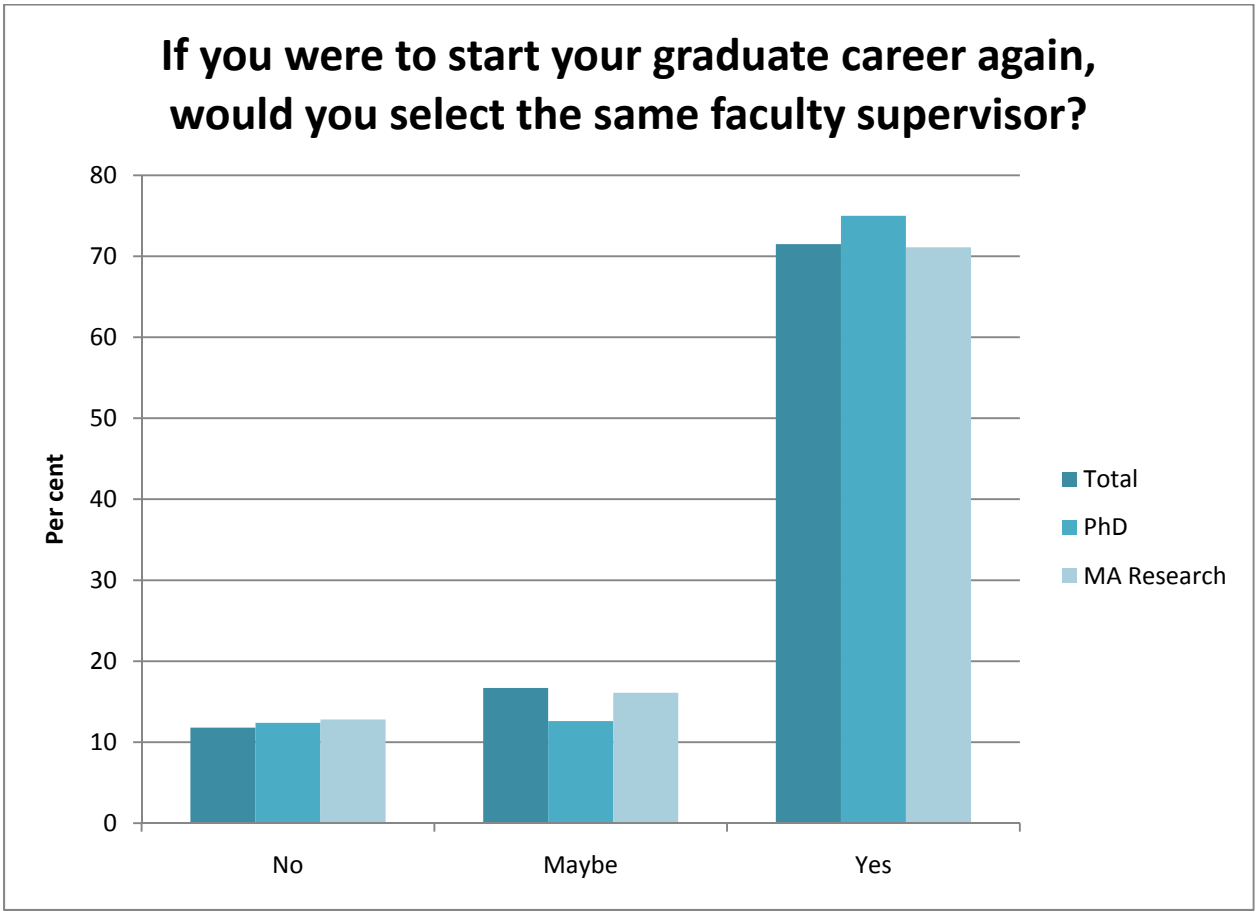

Figure 16 Distribution of responses by University of Western Ontario graduate students to the question, "If you were to start your graduate career again would you select the same faculty supervisor?"

- Asked to rate the quality of their academic experience at the university 89.5% of students as high. Master's Research students were most likely to rate the quality of their academic experiences at the university as high at 90.7%, followed by PhD students (89.2%) and Master's Professional students (87.8%). Figure 17 shows the distribution of responses, for the university (Total) and degree types, that is, PhD, Master's Research, and Master's Professional.

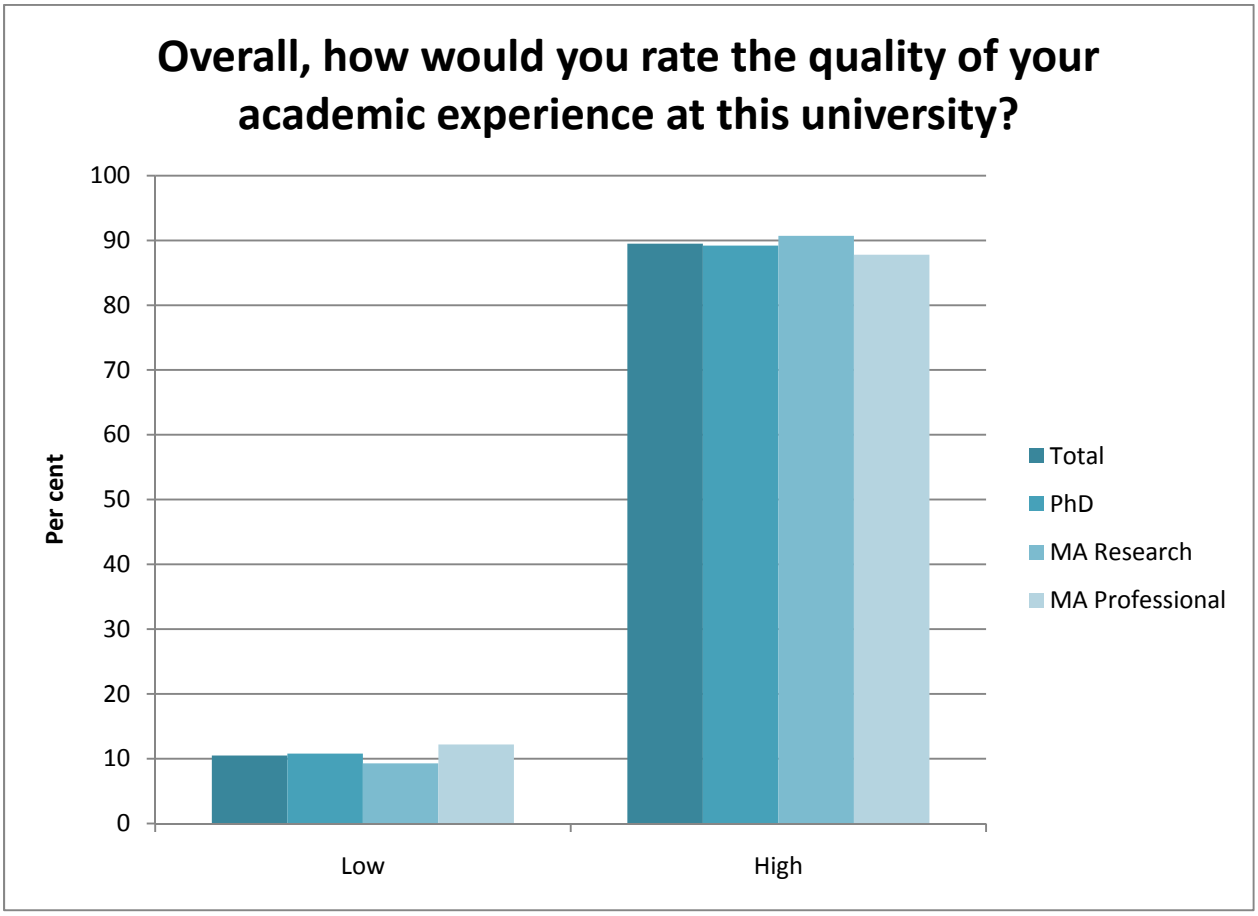

Figure 17 Distribution of responses by University of Western Ontario graduate students to the question, "Overall, how would you rate the quality of your academic experience at this university?"

- Asked to rate the quality of their student life experience at the university, 84.1% of students reported it as high. Master's Professional students were most likely to rate quality of their student life experience at the university as "high" at 86.8%, followed by Master's Research students (85.6%) and PhD students (81.9%). Figure 18 shows the distribution of responses.

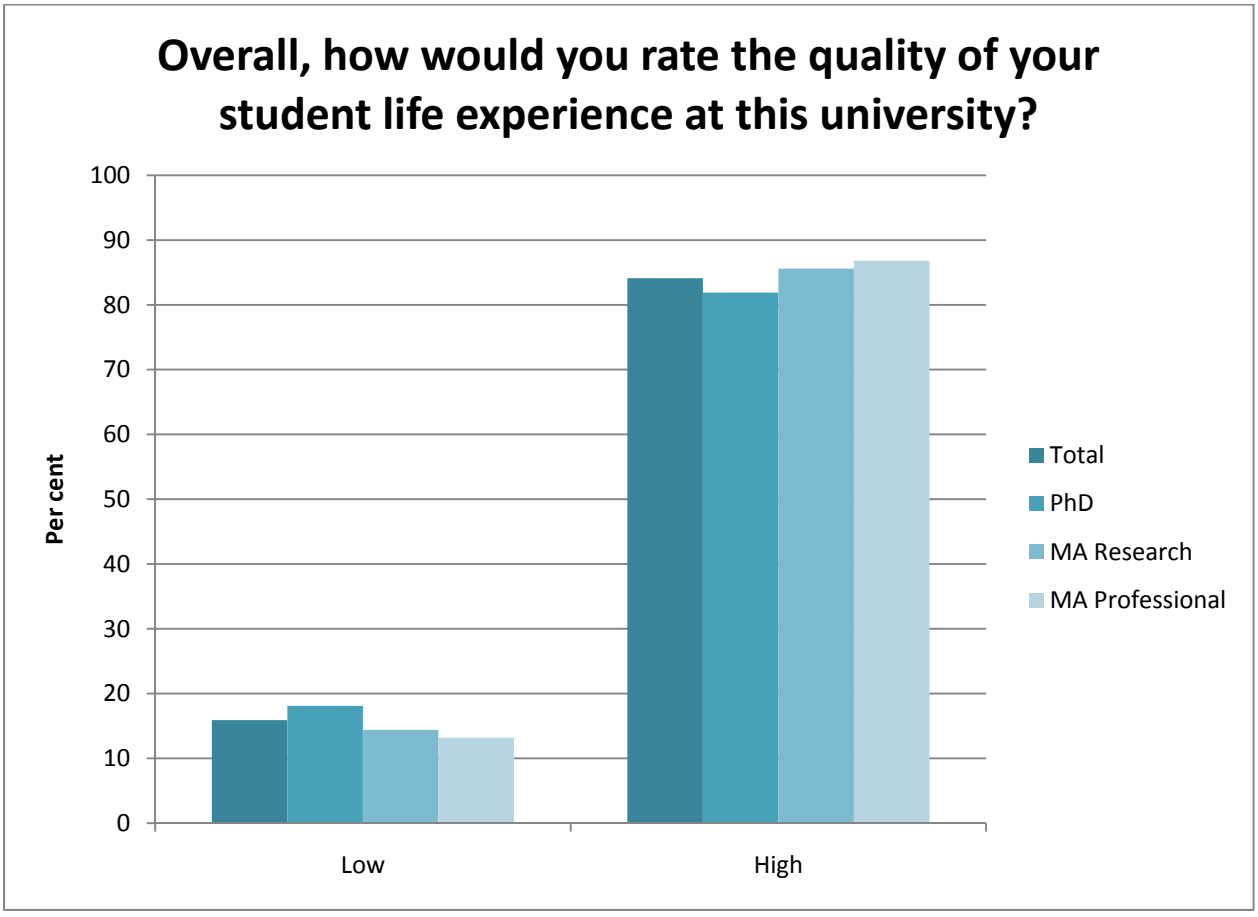

Figure 18 Distribution of responses by University of Western Ontario graduate students to the question. "Overall, how would you rate the quality of your student life experience at this university?"

- Asked to rate the quality of their graduate/professional program at the university, 85.7% of students reported it as high. Master's Research students were most likely to rate the quality of their graduate/professional program as high at 86.2%, followed by PhD students (85.7%) and Master's Professional students (85.0%). Figure 19 shows the distribution of responses for the university (Total) and degree types, that is, PhD, Master's Research, and Master's Professional.

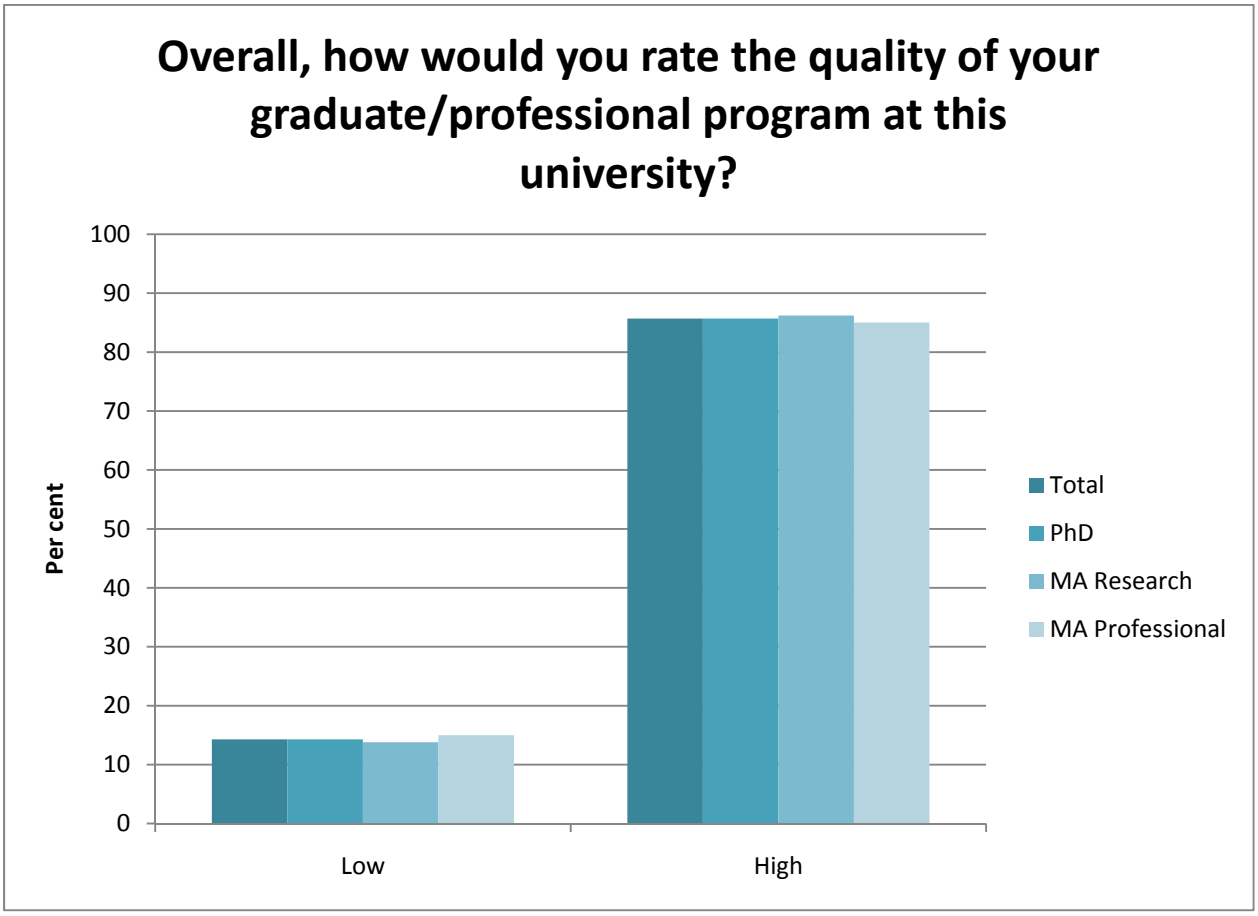

Figure 19 Distribution of responses by University of Western Ontario graduate students to the question "Overall, how would you rate the quality of your graduate/professional program at this university?"

- Asked to rate the quality of their overall experience at the university, 87.9% of students reported it as high. Master's Research students were most likely to rate the quality of their overall experience at the university as high at 88.2%, followed by PhD students (87.8%) and Master's Professional students (87.3%). Figure 20 shows the distribution of responses for the university (Total) and degree types, that is, PhD, Master's Research, and Master's Professional.

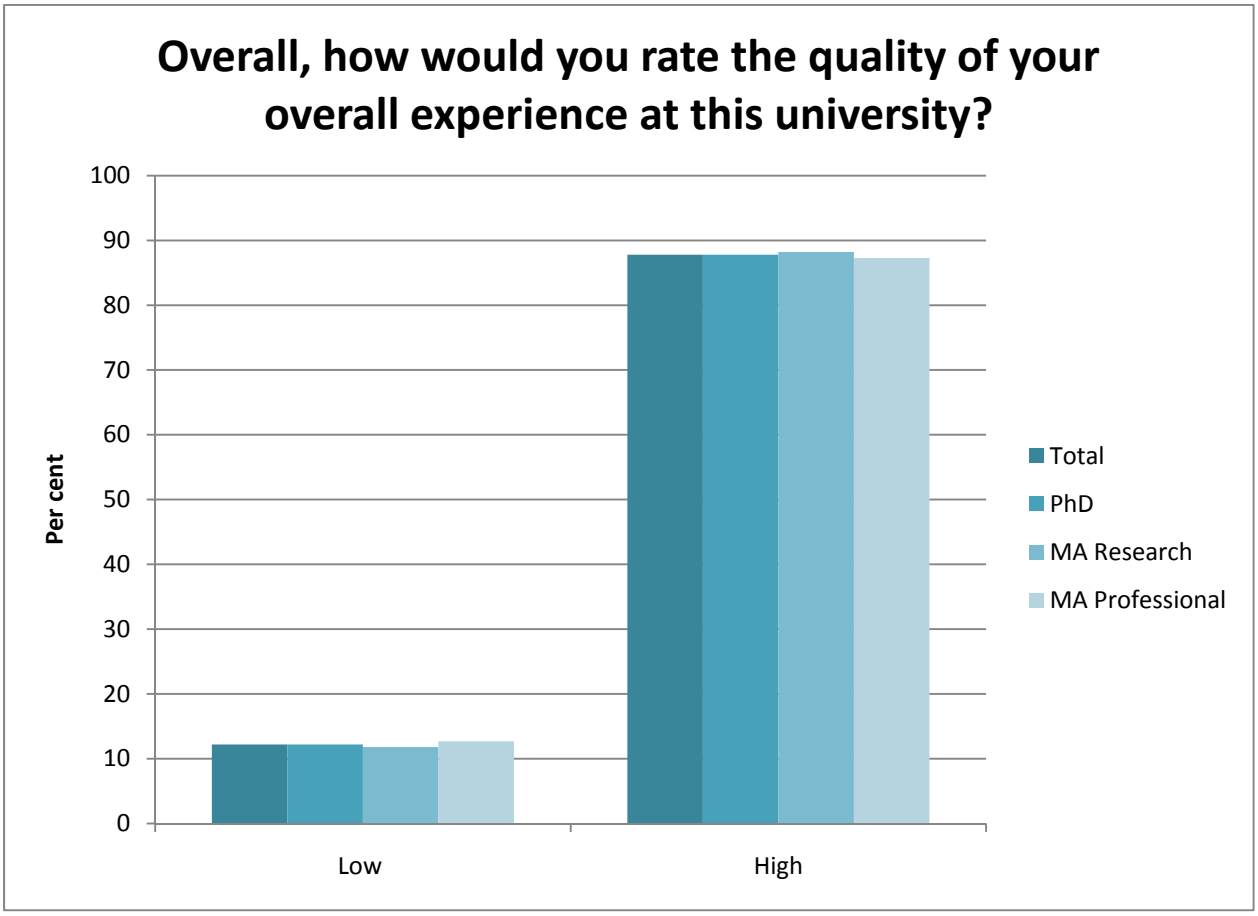

Figure 20 Distribution of responses by University of Western Ontario graduate students to the question "Overall, how would you rate the quality of your overall experience at this university?"

- 81.4% of students reported that overall, their advisor performed the role well. Master's Research students were most likely to agree their advisor performed the role well at 82.2%, followed by PhD students at 80.8%.
- Figure 21 shows the distribution of responses for the university (Total) and degree types, that is, PhD, and Master's Research.

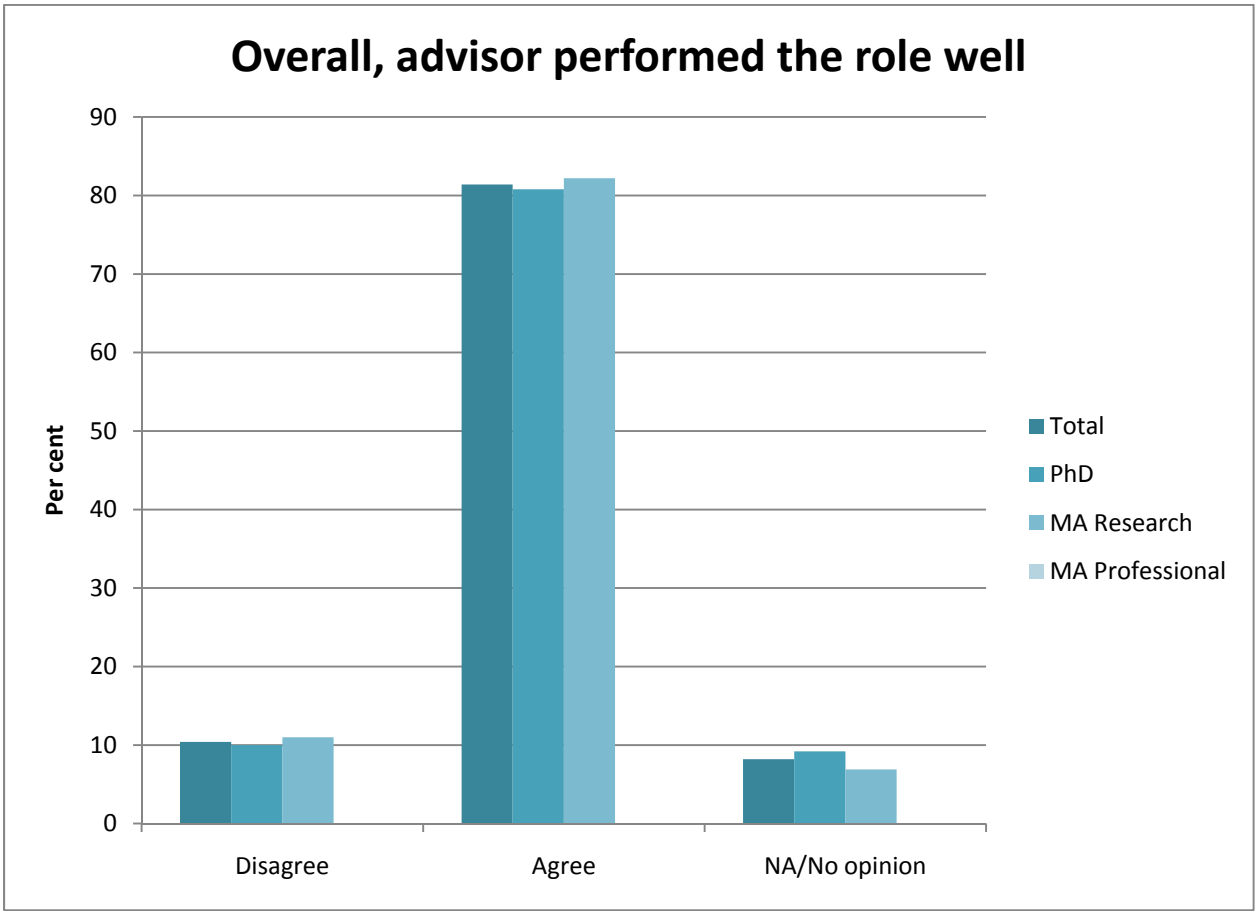

Figure 21 University of Western Ontario graduate students were asked to indicate whether or not they agree that their advisor has performed his/her role well. The figure shows the distribution of students across each rating.

Satisfaction with Coursework

- 77.1% of students reported the availability of courses they needed to complete their program was high. Master's Professional students were most likely to state the availability of the courses they need to complete their program was high at 87.0%, followed by Master's Research students (77.7%) and PhD students (72.8%). Figure 22 shows the distribution of responses for the university (Total) and degree types, that is, PhD, Master's Research, and Master's Professional.

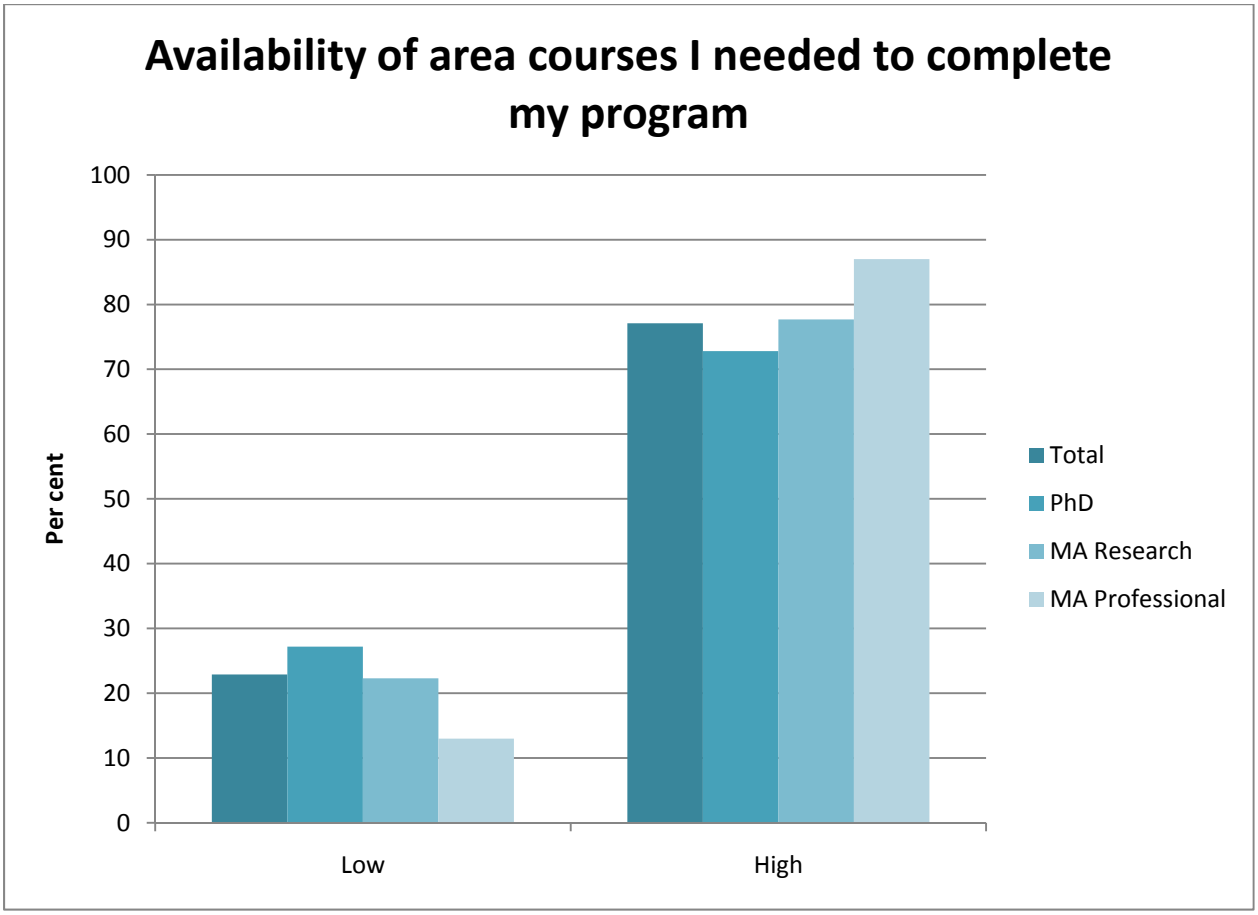

Figure 22 University of Western Ontario graduate students were asked to rate the availability of courses needed to complete their programs. The figure shows the distribution of students across each rating.

- 87.3% of students reported Asked to assess the quality of instruction in their courses, 87.3% of students reported it was high. Master's Research students were most likely to state the quality of instruction in their courses was high at 89.4%, followed by PhD students (87.0%) and Master's Professional students (83.5%).
- Figure 23 shows the distribution of responses for the university (Total) and degree types, that is, PhD, Master's Research, and Master's Professional.

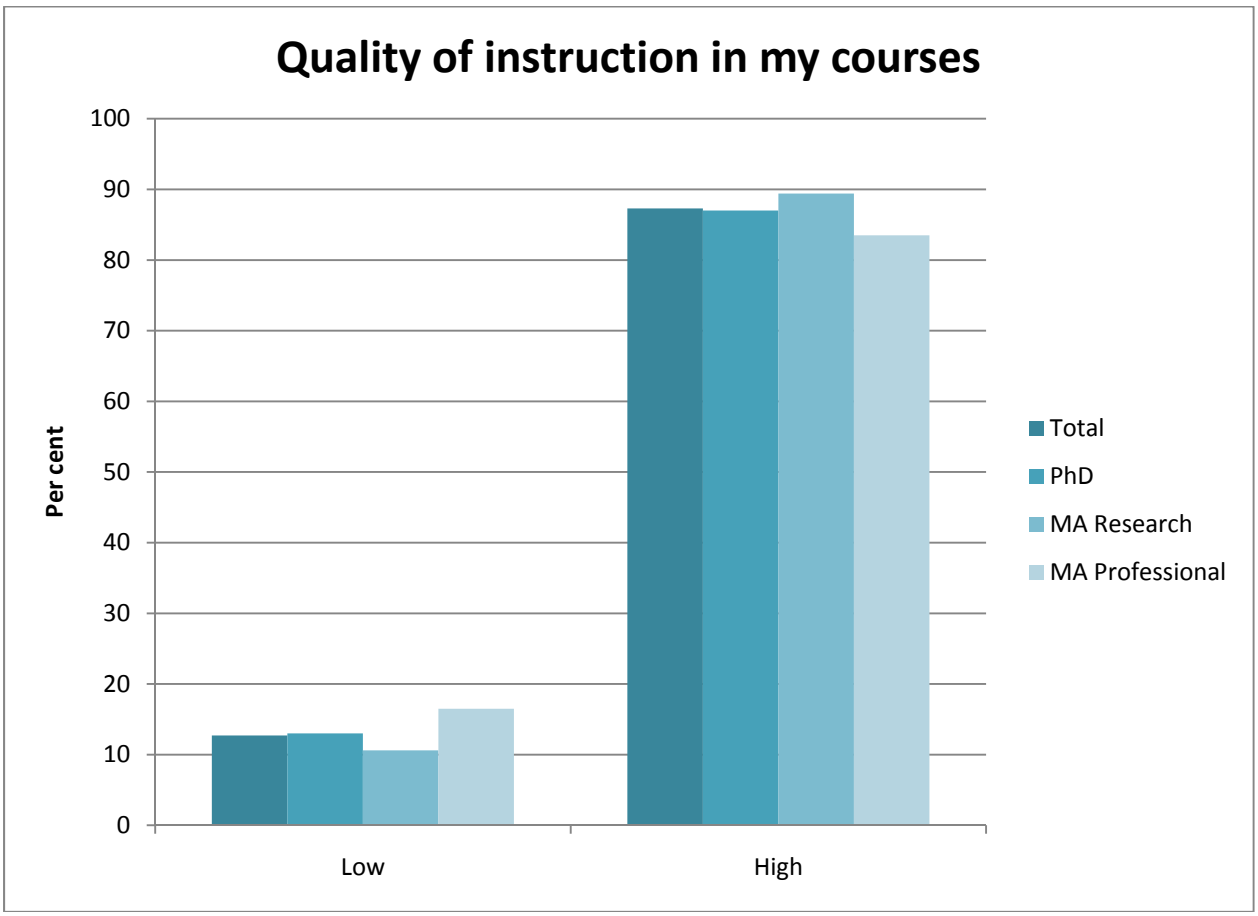

Figure 23 University of Western Ontario graduate students were asked to rate the quality of instruction received in their courses. The figure shows the distribution of students across each rating.

- Asked to rate the degree of opportunities to take coursework outside their own department, 68.3% of students reported it as high. PhD students were most likely to report a high degree of opportunities to take outside their own department at 76.3%, followed by Master's Research students (68.1%) and Master's Professional students (47.5%). Figure 24 shows the distribution of responses for the university (Total) and degree types, that is, PhD, Master's Research, and Master's Professional.

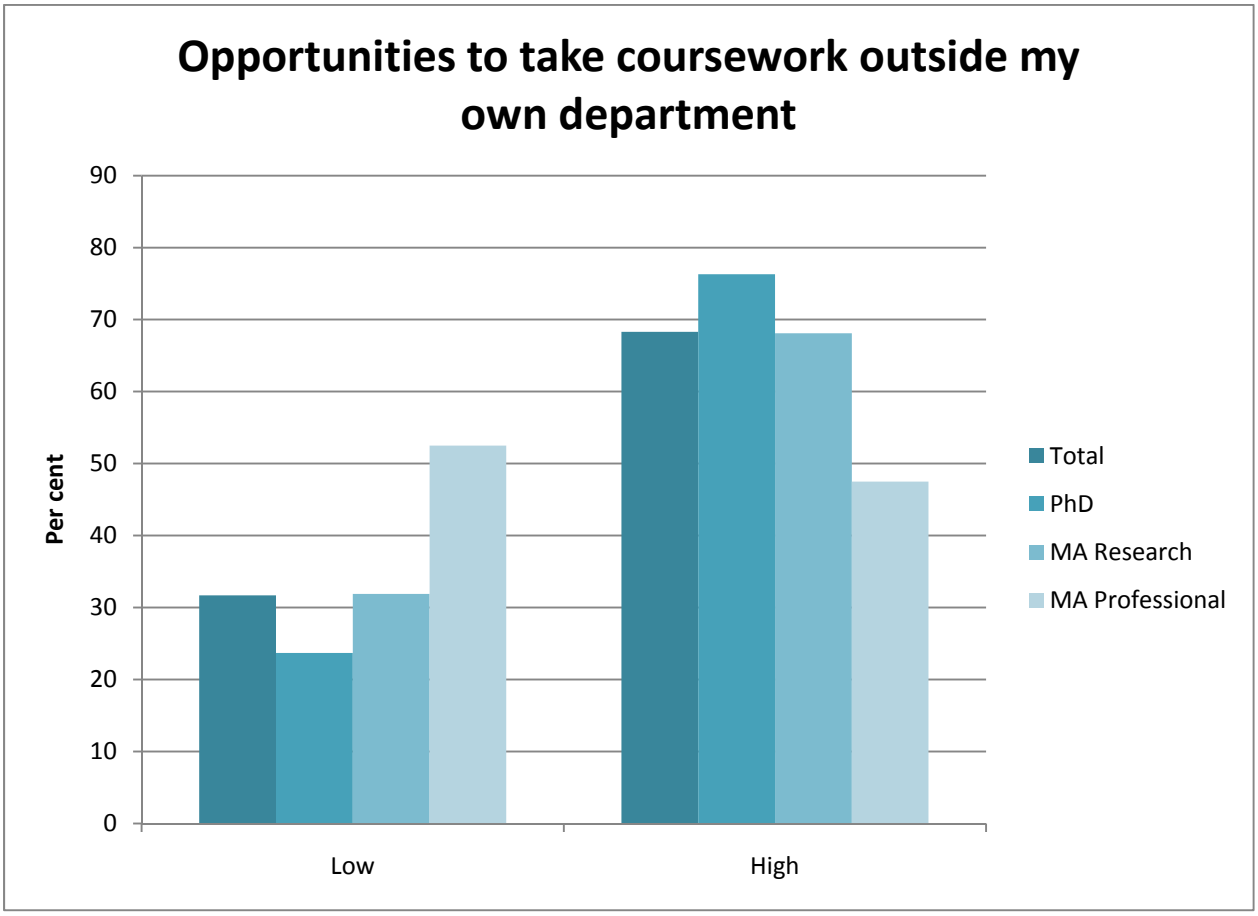

Figure 24 University of Western Ontario graduate students were asked to rate the number of opportunities they have to take coursework outside their own departments. The figure shows the distribution of students across each rating.

- 69.8% of students reported a high degree of opportunities to engage in interdisciplinary work. PhD students were most likely to report a high degree of opportunities to engage in interdisciplinary work at 73.0%, followed by Master's Research students (71.7%) and Master's Professional students (57.5%). Figure 25 shows the distribution of responses for the university (Total) and degree types, that is, PhD, Master's Research, and Master's Professional.

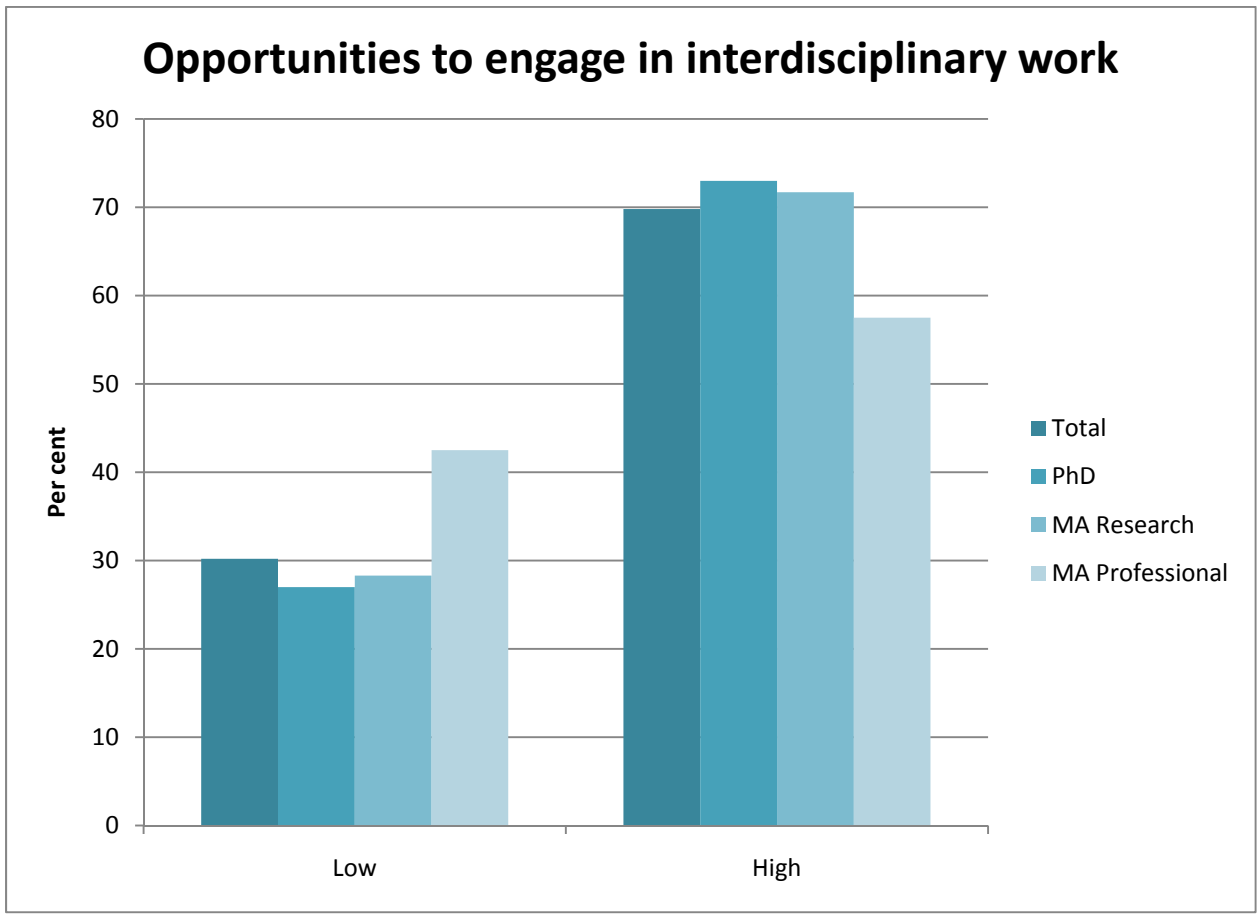

Figure 25 University of Western Ontario graduate students were asked to rate the number of opportunities they have to engage in interdisciplinary work. The figure shows the distribution of students across each rating.

Explanatory Analysis

Having provided a descriptive snapshot of some key issues and themes at the institutional level, we proceed with our attempt to understand the mechanisms that generate some of the outcomes of interest for strategizing.

General linear model statistical analyses were conducted to "explain" several outcomes deemed to be of principal importance.[2] This type of analysis allows one to explain outcomes using a combination of explanatory variables simultaneously. The results measure the direction and size of the effect of each explanatory variable on the outcome of interest, taking into account or "controlling" for the effects of other explanatory variables in the model. The explanatory variables used in the analyses were chosen based on their logical and theoretical importance, after several in-depth consultations with some of the stakeholders of this research. The main findings from the analyses are presented below, but the full documentation and results are presented in the Appendix, beginning on page 79.

The tables present an intuitive way to understand the results. The variables that were significant in explaining the outcome of interest are presented in a table (non significant variables are presented after each table), along with a pseudo R^2 (McFadden R^2) value which tells us how much of the outcome of interest is explained by the explanatory variables.[3,4] The effect of each variable is presented in a table as an odds ratio (please refer to the Appendix for further technical details). Values greater than one indicate that the outcome of interest is more likely to occur for one group of individuals (e.g. males) relative to another group (e.g., females) which we can refer to as the reference group (denoted by the odds ratio 1.00), while values less than one indicate the outcome of interest is less likely to occur for one group of individuals (e.g., males) relative to another group of individuals (e.g., females). In the case of an explanatory variable with more than two categories, one group is chosen as the reference group (denoted by the odds ratio 1.00) that we compare against the other categories. Unless noted otherwise, all categories are significantly different than the reference group.

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[2] Several variables were collapsed for theoretical reasons or out of statistical necessity to avoid violating the assumptions of the statistical models.
A) Faculty was grouped into the following four major graduate studies divisions: Arts, Social Sciences, Biosciences, and Physical Sciences.
B) For questions pertaining to the advisor (e.g.., For each of the following statements, indicate the extent that it describes the behaviour of your advisor), it was determined that a large percentage of responses in the Not Applicable/No opinion category were from those individuals who were at an early stage in their program. Therefore, in most cases, they simply did not have an advisor and any related questions were likely not relevant to the respondent. This category was dropped in the analyses.
C) For questions pertaining to general satisfaction (e.g.., If you were to start your graduate/professional career again, would you select this same university? Would you recommend this university to someone considering your program?), it was decided that the distinction of importance was between those who definitively answered "yes" versus others (i.e., no + maybe). Again this was done out of both theoretical and statistical necessity.

[3] In terms of model fit, several R^2 analogues have been proposed in the literature for logistic regression models (Hosmer and Lemeshow 2000; Menard 2002). Tabachnick and Fiddell (2001) explain that these analogues are not identical to the R^2 linear regression interpretation of variance. Menard (2000; 2002) argues convincingly that the most appropriate R^2 analogue is McFadden's R^2 as it is the closest measure to ordinary least squares linear regression R^2. When researchers do use these R^2 analogue measures, their magnitudes tend to be particularly low.

[4] In general, there are no set criteria for what is considered a satisfactory R^2 value, as this can be influenced by a number of factors, such as the topic being examined or the design (cross sectional versus longitudinal) of the data (Studenmund 2000). Given that this is the first known explanatory analysis of the questions of interest set out in the graduate student survey data, the R^2 values would be used most effectively for two purposes: a) comparing the relative explanatory power of the different models given the outcomes of interest; b) providing baseline or reference values for related analyses in the future at the University of Western Ontario and other academic institutions.

Logistic Regression Model: Quality of Academic Experiences

A logistic regression model was run given the outcome variable of interest: "Overall, how would you rate the quality of your academic experience at this university?'

Answers: Low, High

The model was run with a series of explanatory variables to estimate the odds that one would rate the quality of their academic experience at this university as high (see Table 1). McFadden R^2=0.333, which means that this model accounted for 33.3% of the variance in the quality of academic experiences at the university.

The following variables had a significant effect on the outcome variable of interest:

- **Availability of courses.** Those who reported the availability of courses as high were more likely to report a high quality academic experience than those who rated the availability of courses as low, with the odds of the former 1.802 times the odds of the latter.
- **Opportunities to take coursework outside my own department.** Those who reported a high level of opportunities to take coursework outside one's own department were more likely to report a high quality academic experience than those who reported a low level of opportunities to take coursework outside one's own department, with the odds of the former 2.005 times the odds of the latter.
- **Overall quality of graduate level teaching**. Those who believed that the overall quality of graduate level teaching was high were more likely to report a high quality academic experience than those who believed that the overall quality of graduate level teaching was low, with the odds of the former 4.153 times the odds of the latter.
- **Relationship between faculty and students.** Those who reported the relationship between faculty and students as high were more likely to report a high quality academic experience than those who reported the relationship between faculty and students as low, with the odds of the former 2.751 times the odds of the latter.
- **Overall advisor performed the role well.** Those who agreed that overall, their advisor performed the role well were more likely to report a high quality academic experience than those who disagreed, with the odds of the former 3.833 times the odds of the latter.
- **Advice/Workshops on career options within academia.** Those who reported a high level of advice/workshops on career options within academia were more likely to report a high quality academic experience than those who reported low levels of advice/workshops on career options within academia, with the odds of the former 4.654 times the odds of the latter.

The following variables were not statistically significant in explaining the outcome variable of interest:

- Age
- Sex
- Degree Type
- Year of Study
- Total Debt Load
- Work and Financial Commitments
- Amount of Coursework
- Departmental Funding for Students to Attend National or Regional Meetings
- Published

- Advice/Workshops on Career Options Outside Academia
- Graduate Division

Overall, it appears that course related issues as well as cohesion, as indicated by faculty student relations, including perceptions of the advisor, figure prominently in explaining whether one would rate the quality of their academic experience as high. Finally, a high level of advice/workshops on career opportunities within academia greatly increases one's likelihood of rating the quality of their academic experience as high.

Table 1 Overall, how would you rate the quality of your academic experience at this university? (Modelling the odds of the response High)

Variable	Value	Odds Ratio
Availability of Courses	Low	1.00
	High	1.802
Opportunities to Take Coursework Outside My Own Department	Low	1.000
	High	2.005
Overall Quality of Graduate Level Teaching	Low	1.000
	High	4.153
Relationship Between Faculty and Students	Low	1.000
	High	2.751
Overall Advisor Performed Role Well	Disagree	1.000
	Agree	3.833
Advice/Workshops on Career Opportunities Within Academia	Low	1.000
	High	4.654
	Did Not Participate/NA	1.302^{ns}
McFadden R^2 = 0.333		

ns = category was not significantly different than the reference group: low

Logistic Regression Model: Quality of Graduate/Professional Program

A logistic regression model was run given the outcome variable of interest: "Overall, how would you rate the quality of your graduate/professional program at this university?'

Answers: Low, High

The model was run with a series of explanatory variables to estimate the odds that one would rate the quality of their graduate/professional program at this university as high (see Table 2). McFadden R^2=0.362, which means that this model accounted for 36.2% of the variance in quality of graduate/professional programs at the university.

The following variables had a statistically significant effect in explaining the outcome variable of interest:

- **Sex.** Males were less likely to report the quality of their graduate/professional program as high compared to females, with the odds of the former 0.589 times the odds of the latter.
- **Degree type.** Those who reported their degree type as Master's Research or PhD were less likely to report the quality of their graduate/professional program as high compared to those in the Master's Professional category, with the odds of the former 0.164 times the odds of the latter.
- **Availability of courses.** Those who agreed that the availability of courses was high were more likely to report the quality of their graduate/professional program as high than those who believed that the availability of courses was low, with the odds of the former 3.077 times the odds of the latter.
- **Opportunities to take coursework outside my own department.** Those who reported a high level of opportunities to take coursework outside one's own department were more likely to report the quality of their graduate/professional program as high than those who reported a low level of opportunities to take coursework outside one's own department, with the odds of the former 1.645 times the odds of the latter.
- **Amount of coursework.** Those who reported that the amount of coursework was appropriate (high) were more likely to report the quality of their graduate/professional program as high than those who reported that the amount of coursework was inappropriate (low), with the odds of the former 1.710 times the odds of the latter.
- **Overall quality of graduate level teaching.** Those who reported that the overall quality of graduate level teaching was high were more likely to report the quality of their graduate/professional program as high than those who reported that the overall quality of graduate level teaching was low, with the odds of the former 3.890 times the odds of the latter.
- **Relationship between faculty and students.** Those who reported the relationship between faculty and students as high were more likely to report the quality of their graduate/professional program as high than those who reported the relationship between faculty and students as low, with the odds of the former 2.851 times the odds of the latter.
- **Overall advisor performed the role well**. Those who agreed that overall, their advisor performed the role well were more likely to report the quality of their graduate/professional program as high than those who disagreed, with the odds of the former 5.294 times the odds of the latter.
- **Advice/workshops on career options within academia.** Those who reported a high level of advice/workshops on career options within academia were more likely to report the quality of their

graduate/professional program as high than those who reported low levels of advice/workshops on career options within academia, with the odds of the former 3.503 times the odds of the latter.

The following variables were not statistically significant in explaining the outcome variable of interest:

- Age
- Year of Study
- Total Debt Load
- Work & Financial Commitments
- Departmental Funding for Students to Attend National or Regional Meetings
- Published
- Advice/Workshops on Career Options Outside Academia
- Graduate Division

Overall, it appears that course-related issues as well as cohesion, as indicated by faculty student relations, including perceptions of the advisor, figure prominently in explaining whether one would rate the quality of their program at the university as high. Males were less likely to rate the quality of their program at this university as high. Master's Professional students were much more likely to rate the quality of their program at this university as high. Finally, receiving a high level of advice/workshops on career opportunities within academia had a considerable effect, increasing one's likelihood of rating the quality of their program at this university as high.

Table 2: Overall, how would you rate the quality of your graduate/professional program at this university? (Modelling the odds of the response High)

Variable	Value	Odds Ratio
Sex	Females	1.000
	Males	0.589
Degree Type	MA Professional	1.000
	MA Research/PhD	0.164
Availability of Courses	Low	1.000
	High	3.077
Opportunities to Take Coursework Outside My Own Department	Low	1.000
	High	1.645
Amount of Coursework	Low	1.000
	High	1.710
Overall Quality of Graduate Level Teaching	Low	1.000
	High	3.890
Relationship Between Faculty and Students	Low	1.000
	High	2.851
Overall Advisor Performed Role Well	Disagree	1.000
	Agree	5.294
Advice/Workshops on Career Opportunities Within Academia	Low	1.000
	High	3.503
	Did Not Participate/NA	2.213^{ns}
McFadden R^2 = 0.362		

ns = category was not significantly different than the reference group: low

Logistic Regression Model: Quality of Overall Experience

A logistic regression model was run given the outcome variable of interest: “Overall, how would you rate the quality of your experience at this university?’

Answers: Low, High

The model was run with a series of explanatory variables to estimate the odds that one would rate the quality of their overall experience at this university as high (see Table 3). McFadden R^2=0.363, which means that this model accounted for 36.3% of the variance in the quality of overall experience at the university.

The following variables had a statistically significant effect on the outcome variable of interest:

- **Library facilities**. Those who rated the library facilities as high were more likely to report a high overall experience at the university than those who reported the library facilities low, with the odds of the former 3.426 times the odds of the latter.
- **Amount of coursework**. Those who reported the amount of coursework as appropriate or high were more likely to report a high overall experience at the university than those who reported the amount of coursework as inappropriate or low, with the odds of the former 2.215 times the odds of the latter.
- **Overall quality of graduate level teaching**. Those who rated the quality of graduate level teaching as high were more likely to report a high overall experience at the university than those who rated the amount of coursework as low, with the odds of the former 3.978 times the odds of the latter.
- **Departmental funding for students to attend national or regional meetings.** Those who did not report access to departmental funding for students to attend national or regional meetings were less likely to report a high overall experience at the university than those who did report access to such funding, with the odds of the former 0.571 times the odds of the latter.
- **Published.** Those who did not report publishing were less likely to report a high overall experience at the university than those who did report publishing, with the odds of the former 0.437 times the odds of the latter.
- **Relationship between faculty and students**. Those who rated the relations between faculty and students as high or positive were more likely to report a high overall experience at the university than those who rated the relations as low or negative, with the odds of the former 3.910 times the odds of the latter.
- **Overall, advisor performed the role well.** Those who agreed the advisor did perform the role well were more likely to report a high overall experience at the university than those who disagreed, with the odds of the former 3.251 times the odds of the latter.

The following variables were not statistically significant in explaining the outcome variable of interest:

- Age
- Sex
- Degree Type
- Year of Study
- Total Debt Load
- Health Care Services
- Registrarial Processes

- Work & Financial Commitments
- Availability of Courses
- Opportunities to Take Coursework Outside My Own Department
- Advice/Workshops on Career Options Within Academia
- Advice/Workshops on Career Options Outside Academia
- Graduate Division

Overall, it appears that course-related issues as well as cohesion, as indicated by faculty student relations including perceptions of the advisor, figure prominently in explaining whether one reports their overall experience as high. Also, a positive view of library facilities, access to funding for conferences, and having published all increase a respondent's likelihood of reporting their overall experience as high.

Table 3: Overall, how would you rate the quality of your overall experience at this university? (Modelling the odds of the response High)

Variable	Value	Odds Ratio
Library Facilities	Low	1.000
	High	3.426
	Did not participate/NA	0.993[ns]
Amount of Coursework	Low	1.000
	High	2.215
Overall Quality of Graduate Level Teaching	Low	1.000
	High	3.978
Departmental Funding for Students to Attend National or Regional Meetings	Yes	1.000
	No	0.571
Published	Yes	1.000
	No	0.437
Relationship Between Faculty and Students	Low	1.000
	High	3.910
Overall Advisor Performed Role Well	Disagree	1.000
	Agree	3.251
McFadden R^2= 0.363		

ns = category was not significantly different than the reference group: low

Logistic Regression Model: Selecting the Same University

A logistic regression model was run given the outcome variable of interest: "If you were to start your graduate/professional career again, would you select this same university?"

Answers: No, Yes

The model was run with a series of explanatory variables to estimate the odds that one would respond "Yes, if I were to start my graduate/professional career again, I would select this same university." McFadden R^2=0.187, which means that this model accounted for 18.7% of the variance in whether students would select the same university.

The following variables had a statistically significant effect on the outcome variable of interest:

- **Degree type.** Those who were in the MA Research or PhD stream were less likely to respond that they would return to the institution if they were to start their graduate/professional career again than those students in the MA Professional stream, with the odds of the former 0.440 times the odds of the latter.
- **Library facilities.** Although the variable was significant, the contrasts chosen were not significantly different from one another; in other words, the differences between those who reported the facilities high, or who did not participate/not applicable. were not more or less likely to return to the same university as those who reported the facilities low.
- **Availability of courses.** Those who agreed that the availability of courses was high were more likely to report that they would return to the institution if they were to start their graduate/professional career again than those who believed that the availability of courses was low, with the odds of the former 1.880 times the odds of the latter.
- **Amount of coursework.** Those who agreed that the amount of coursework was appropriate (high) were more likely to report that they would return to the institution, if they were to start their graduate/professional career again, than those who believed that the amount of coursework was inappropriate (low), with the odds of the former 2.027 times the odds of the latter.
- **Overall quality of graduate level teaching.** Those who reported that the overall quality of graduate level teaching was high were more likely to report that they would return to the institution if they were to start their graduate/professional career again than those who reported that the overall quality of graduate level teaching was low, with the odds of the former 2.501 times the odds of the latter.
- **Relationship between faculty and students.** Those who rated the relationship between faculty and students as high were more likely to report that they would return to the institution if they were to start their graduate/professional career again than those who rated the relationship between faculty and students as low, with the odds of the former 2.806 times the odds of the latter.
- **Overall, advisor performed role well.** Those who agreed that overall, their advisor performed the role well were more likely to report that they would return to the institution if they were to start their graduate/professional career again than those who disagreed, with the odds of the former 1.915 times the odds of the latter.

The following variables were not statistically significant in explaining the outcome variable of interest:

- Age
- Sex

- Year of Study
- Total Debt Load
- Health Care Services
- Registrarial Processes
- Work/Financial Commitments
- Opportunities to Take Coursework Outside My Own Department
- Departmental Funding for Students to Attend National or Regional Meetings
- Published
- Advice/Workshops on Career Options Within Academia
- Advice/Workshops on Career Options Outside Academia
- Graduate Division

Overall, it appears that course related issues as well as cohesion, as indicated by faculty/student relations including perceptions of the advisor, figure prominently in explaining whether one would select the same university again. Finally, Master's Professional students are more likely to state they would select the same university again than their research counterparts at the Master's Research and PhD levels.

Table 4: If you were to start your graduate/professional career again, would you select this same university? (Modelling the odds of the response Yes)

Variable	Value	Odds Ratio
Degree Type	MA Professional	1.000
	MA Research/PhD	0.440
Library Facilities	Low	1.000
	High	1.577[ns]
	Did not participate/NA	0.295[ns]
Availability of Courses	Low	1.000
	High	1.880
Amount of Coursework	Low	1.000
	High	2.027
Overall Quality of Graduate Level Teaching	Low	1.000
	High	2.501
Relationship Between Faculty and Students	Low	1.000
	High	2.806
Overall Advisor Performed Role Well	Disagree	1.000
	Agree	1.915
McFadden R^2 = 0.187		

ns = category was not significantly different than the reference group: low

Logistic Regression Model: Recommending the University to Someone Considering the Same Program

A logistic regression model was run given the outcome variable of interest: "Would you recommend the university to someone considering your program?"

Answers: No, Yes

The model was run with a series of explanatory variables to estimate the odds that one would respond "Yes, I would recommend the university to someone considering my program." McFadden R^2=0.233, which means that this model accounted for 23.3% of the variance in recommending the university to someone considering the same program.

The following variables had a statistically significant effect on the outcome variable of interest:

- **Availability of courses.** Those who agreed that the availability of courses was high were more likely to report that they would recommend the university to someone considering their program than those who believed that the availability of courses was low, with the odds of the former 2.054 times the odds of the latter.
- **Amount of coursework.** Those who agreed that the amount of coursework was appropriate (high) were more likely to report that they would recommend the university to someone considering their program than those who believed that the amount of coursework was inappropriate (low), with the odds of the former 2.777 times the odds of the latter.
- **Overall quality of graduate level teaching.** Those who believed that the overall quality of graduate level teaching was high were more likely to report that they would recommend the university to someone considering their program than those who believed that the overall quality of graduate level teaching was low, with the odds of the former 2.800 times the odds of the latter.
- **Relationship between faculty and students.** Those who rated the relationship between faculty and students as high were more likely to report that they would recommend the university to someone considering their program than those who rated the relationship between faculty and students as low, with the odds of the former 2.482 times the odds of the latter.
- **Overall, advisor performed role well.** Those who agreed that overall their advisor performed the role well were more likely to report that they would recommend the university to someone considering their program than those who disagreed, with the odds of the former 1.909 times the odds of the latter.
- **Advice/workshops on career options within academia.** Those who reported a high degree of advice/workshops on career options within academia were more likely to report that they would recommend the university to someone considering their program than those who reported a low degree of such activities, with the odds of the former 1.837 times the odds of the latter.
- **Graduate division.** Those who reported being in bioscience were more likely to report that they would recommend the university to someone considering their program than those who reported being in arts, with the odds of the former 2.097 times the odds of the latter.

The following variables were not statistically significant in predicting whether the outcome variable of interest:

- Age
- Sex
- Degree Type

- Year of Study
- Total Debt Load
- Library Facilities
- Health Care Services
- Registrarial Processes
- Work/Financial Commitments
- Opportunities to Take Coursework Outside My Own Department
- Departmental Funding for Students to Attend National or Regional Meetings
- Published
- Advice/Workshops on Career Options Outside Academia

Overall, it appears that course related issues as well as cohesion, as indicated by faculty student relations, including perceptions of the advisor, figure prominently in explaining whether one would recommend the university to someone considering their program. Also, advice/workshops on career options within academia and being in bioscience resulted in a greater likelihood of a student recommending the university to someone considering their program.

Table 5: Would you recommend this university to someone considering your program? (Modelling the odds of the response Yes)

Variable	Value	Odds Ratio
Availability of Courses	Low	1.000
	High	2.054
Amount of Coursework	Low	1.000
	High	2.777
Overall Quality of Graduate Level Teaching	Low	1.000
	High	2.800
Relationship Between Faculty and Students	Low	1.000
	High	2.482
Overall Advisor Performed Role Well	Disagree	1.000
	Agree	1.909
Advice/Workshops on Career Options Within Academia	Low	1.000
	High	1.837
	Did Not Participate/NA	1.725[ns]
Graduate Division	Arts	1.000[ns]
	Social Science	1.234[ns]
	Bioscience	2.097
	Physical Science	0.915[ns]

McFadden R^2= 0.233

ns = category was not significantly different than the reference groups: low, arts

Logistic Regression Model: Satisfaction with Advisor

A logistic regression model was run given the outcome variable of interest: Thesis/Dissertation advisors engage in a variety of mentoring activities. For the following statement, indicate the extent that it DESCRIBES THE BEHAVIOUR of your advisor.

- Overall, advisor performed the role well

  Answers: Disagree, Agree

The model was run with a series of explanatory variables to estimate the odds that one would agree, overall, their advisor performed the role well. McFadden R^2=0.590, which means that this model accounted for 59.0% of the variance in satisfaction with advisors.

- **Quality of academic advising and guidance.** Those who rated the quality of academic advising and guidance as high were more likely to agree their advisor, overall, performed the role well than those who rated it low, with the odds of the former 2.822 times the odds of the latter.
- **Advisor knowledgeable about formal degree requirements.** Those who agreed with the statement that their advisor was knowledgeable about formal degree requirements were more likely to agree their advisor, overall, performed the role well than those who disagreed, with the odds of the former 5.730 times the odds of the latter.
- **Advisor served as my advocate when necessary.** Those who agreed with the statement that their advisor served as their advocate when necessary were more likely to agree their advisor, overall, performed the role well than those who disagreed, with the odds of the former 2.644 times the odds of the latter.
- **Advisor gave me constructive feedback on my work.** Those who agreed with the statement that their advisor gave them constructive feedback on their work were more likely to agree their advisor, overall, performed the role well than those who disagreed, with the odds of the former 4.544 times the odds of the latter.
- **Advisor was very helpful to me in writing the dissertation.** Those who agreed with the statement that their advisor was very helpful to them in writing the dissertation were more likely to agree their advisor, overall, performed the role well than those who disagreed, with the odds of the former 2.938 times the odds of the latter.
- **Advisor promoted my professional development.** Those who agreed with the statement that their advisor promoted their professional development were more likely to agree their advisor, overall, performed the role well than those who disagreed, with the odds of the former 12.605 times the odds of the latter.
- **Advice/workshops on writing grant proposals.** Those who reported that they did not participate or that the issue of advice/workshops on writing grant proposals was not applicable were more likely to agree their advisor, overall, performed the role well than those who reported a low degree of such activities with the odds of the former 6.322 times the odds of the latter.
- **Degree.** Those who reported being in a PhD program were more likely to agree their advisor, overall, performed the role well than those who reported being in a Master's Research program, with the odds of the former 2.716 times the odds of the latter. This variable was on the border of statistical significance, but it was still interpreted given the strength of the effect.

The following variables were not statistically significant in explaining the outcome variable:

- Sex
- Year of study
- Advisor returned my work promptly
- Advisor was available for regular meetings
- Departmental Funding for Students to Attend National or Regional Meetings
- Published
- Advice/Workshops on Career Options Within Academia
- Advice/Workshops on Career Options Outside Academia
- Graduate Division

This model explained the perceptions of one's advisor quite well. In particular, promoting the professional development of students appears to be extremely important. As well, being knowledgeable about formal degree requirements and providing constructive feedback both had relatively strong effects. Also of note, acting on behalf of students, and assisting with the dissertation in a very helpful manner were cited by students as meaningful. Finally, PhD students were more likely to have a favourable perception of their advisor than Master's Research students.

Table 6: Thesis/Dissertation advisors engage in a variety of mentoring activities. Overall, my advisor performed the role well (Modelling the odds of the response Agree)

Variable	Value	Odds Ratio
Quality of Academic Advising and Guidelines	Low	1.000
	High	2.822
Advisor Knowledgeable About Formal Degree Requirements	Disagree	1.000
	Agree	5.730
Advisor Served As My Advocate When Necessary	Disagree	1.000
	Agree	2.644
Advisor Gave Me Constructive Feedback On My Work	Disagree	1.000
	Agree	4.544
Advisor Was Very Helpful to Me in Writing the Dissertation	Disagree	1.000
	Agree	2.938
Advisor Promoted My Professional Development	Disagree	1.000
	Agree	12.605
Advice/Workshops on Writing Grant Proposals	Low	1.000
	High	2.674[ns]
	Did Not Participate/NA	6.322
Degree	Master's Research	1.000
	PhD	2.716
McFadden R^2= 0.590		

ns = category was not significantly different than the reference group: low

Overview of Regression Analyses

Across the six regression analyses conducted, there are some patterns that emerge (see Table 7 below).

First, the role of the advisor appears to be a key variable across many of the models. Those individuals who believed their advisor performed the role well were much more likely to report a positive outcome than those who disagreed. The advisor is the mentor and person from the university that a graduate student will typically interact with most; therefore, it is quite clear that this role must continue to be a point of focus in increasing satisfaction among students. Promoting the professional development of students, being knowledgeable about formal degree requirements, and providing constructive feedback are strong determinants of a good advisor. As well, advisors who act on behalf of their students and assist with the dissertation in a very helpful manner are valued highly by students. The university, individual faculties, and departments can work to develop best practices for advising students, given some of the results mentioned above. Distinguished advisors can play a mentoring role to other faculty members to hone advisory skills. Increasing resources for seminars and workshops on this issue should be a priority. Besides education, a change in the reward system (annual review of faculty) may also promote a culture in which advising is given a much greater emphasis. To ensure a successful advisor-student relationship, students should also be educated on the roles, expectations, and responsibilities that they themselves should assume as well as those of their advisors at their institution. Constant review and promotion of the existing standard documentation related to supervising students across campus would be useful. As well, chairs, and particularly graduate chairs, have a fundamental role to play in ensuring that advisor-student relations are strong and that issues are dealt with appropriately.

Second, the relationship between faculty and students figures prominently across the results. A positive and open culture where students feel comfortable interacting with faculty appears to be very important. Note: students appear to distinguish between advisor relations and overall faculty-student relations. Both of these indicators of cohesion/mentorship have separate but relatively strong effects. A positive atmosphere is, no doubt, the atmosphere in which students appear to thrive most. Subsidized departmental functions, informal gatherings, and classroom interactions are all opportunities to foster relations. As well, the design and location of social spaces, including offices, lounge areas, and lunch rooms, can affect the degree of interaction between faculty and students, influencing opportunities for social exchanges. Educating faculty on the magnitude of the role of positive relations between faculty and graduate students with respect to student satisfaction would be and inexpensive and useful first step.

Third, issues related to coursework are important to students. In particular, the amount of coursework, the overall quality of graduate level teaching, and the availability of courses were given strict attention by students. Given that coursework is the first phase of a student's program, their initial experience and impression of the program and institution may be at stake. Students obviously view coursework as the opportunity to gain much knowledge in the area of study, and they look to faculty to provide this experience. Ensuring that the amount of coursework is appropriate as well as aiming to make courses available, given the student's needs, should be areas to examine.

Fourth, advice/workshops on career opportunities within academia play a conspicuous role in a few outcomes of interest. The effect is intuitive because education is the stepping stone to a career; in particular, information pertaining to academia is appealing for those pursuing a graduate level degree, which is a prerequisite to employment in academia.

Fifth, university services and resources do not appear to explain much if any of the outcomes of interest; however, library facilities, in some cases, are one service that students value. Understandably, graduate

students turn to these facilities as a resource to carry out their work. Thus, investments in such resources do not go unnoticed. Ongoing feedback from students would be an efficient way to ensure that the facilities continue to meet the needs of students. Simple emails or random visits to departments may yield the information desired. An expansion of the questions related to library facilities may be useful in future administrations of the Canadian Graduate and Professional Student Survey, given its important role in satisfaction indicators.

Sixth, degree type plays a part in a few outcomes. The main distinction was between Master's Professional students and their fellow students in Master's Research and PhD programs. Of particular note was the large difference between these two groups with respect to rating the quality of one's graduate/professional program at the university. The Master's Professional students exhibited a much more positive perception than their research counterparts.

Seventh, while theoretically important, debt load, work and financial commitments, graduate division, year of study, sex, publication record, funding to attend conferences, advice/career options outside of academia, and university resources including health services and registrarial services, do not appear to play any role in explaining these outcomes of interest. Let us briefly discuss some of these findings. Student debt load is a very popular issue among graduate students, given the increases in the costs of obtaining a university education over the years. The non significant effect observed could likely be explained by a selection effect. In other words, students who pursue a graduate education are likely quite enthusiastic about obtaining a graduate degree in their area. The debt accrued may, therefore, be viewed as a somewhat irrelevant point relative to the payoff expected from the investment, effort, and sacrifices of these students. Theoretically, however, there is a threshold with the evidence from this survey showing that current costs do not adversely affect satisfaction.[5]

Nevertheless, we must remember that this survey does not capture students who may not have attended the institution for this very reason! Perhaps the next administration of the Canadian Graduate and Professional Student Survey should tap into the issue of the perceived economic worth of the degree (e.g., Are you satisfied with the cost of your degree?). Future research on this crucial issue is warranted because the results would be useful in the design of funding packages for students.
In terms of graduate division, it is possible that the grouping scheme used for this analysis mitigated the variation between many departments and faculties, yielding non significant results, although the scheme used was far from atheoretical.

Sex differences do not appear to exist in the models with all explanatory variables included. Any sex related differences are captured by other processes which are statistically controlled or taken into account by this analysis.

Unlike advice/career options inside of academia, advice/career options outside of academia appear to be a moot issue in determining satisfaction. It seems reasonable that those graduate students most likely seeking employment outside of academia, such as in professional programs, probably already have a clear career path, given the specificity of their studies; hence, receiving advice/career options is less important to them in terms of their satisfaction with the institution.

Health care services and registrarial services are probably not of much importance in terms of satisfaction given the limited use of these services by students in their day-to-day lives.

[5] Note, however, that work and financial commitments were the greatest single obstacle to academic progress among graduate students!

In sum, these non significant findings are worth consideration in guiding future research down more fruitful paths, given their limited value in this analysis. It must be emphasized, however, that this is a sample, which means that non-significant results do not mean that these variables have no effects whatsoever in the population because they do have some theoretical and logical importance. Research findings from future administrations of the survey will be the true test of the definitiveness of these results.

Finally, these models range considerably in terms of how much they explain about the various outcomes of interest. It appears that we have a solid understanding of what makes a good advisor. On the other hand, our models were much weaker in explaining whether a respondent would select the same university again if they were to start their graduate/professional career again or whether they would recommend the university to someone considering their program. The quality of the graduate and professional program, the quality of the academic experience, and the quality of the overall experience were in between the two poles of the continuum in terms of our understanding of these outcomes.

Table 7: Summary of the statistical models: All outcomes of interest

Variable	Value	Odds Ratio[1]	Odds Ratio[2]	Odds Ratio[3]	Odds Ratio[4]	Odds Ratio[5]	Odds Ratio[6]
Age		NS	NS	NS	NS	NS	---
	25 and Under						
	26-30						
	31-35						
	36 and Over						
Sex		NS		NS	NS	NS	NS
	Females		1.000				
	Males		0.589				
Degree Type		NS		NS		NS	---
	MA Professional		1.000		1.000		
	MA Research/PhD		0.164		0.440		
Degree		---	---	---	---	---	
	Master's Research						1.000
	PhD						2.716
Year of Study		NS	NS	NS	NS	NS	NS
	Junior						
	Senior						
	Over normal time						
Total Debt Load		NS	NS	NS	NS	NS	---
	$0						
	$1-$9,999						
	$10,000-$19,999						
	$20,000-$29,999						
	$30,000-$39,999						
	$40,000+						
Quality of Academic Advising and Guidance		---	---	---	---	---	
	Low						1.000
	High						2.822

Variable	Value	Odds Ratio[1]	Odds Ratio[2]	Odds Ratio[3]	Odds Ratio[4]	Odds Ratio[5]	Odds Ratio[6]
Advisor Knowledgeable About Formal Degree Requirements		---	---	---	---	---	
	Disagree						1.000
	Agree						5.730
Advisor Served As My Advocate When Necessary		---	---	---	---	---	
	Disagree						1.000
	Agree						2.644
Advisor Gave Me Constructive Feedback On My Work		---	---	---	---	---	
	Disagree						1.000
	Agree						4.544
Advisor Returned My Work Promptly		---	---	---	---	---	
	Disagree						NS
	Agree						
Advisor Promoted My Professional Development		---	---	---	---	---	
	Disagree						1.000
	Agree						12.605
Advisor Was Available for Regular Meetings		---	---	---	---	---	NS
	Disagree						
	Agree						
Advisor Was Very Helpful to me in writing the dissertation		---	---	---	---	---	
	Disagree						1.000
	Agree						2.938
Advice/Workshops on Writing Grant Proposals		---	---	---	---	---	
	Low						1.000
	High						2.674[ns]
	Did not participate/NA						6.322
Overall Advisor Performed Role Well							

Variable	Value	Odds Ratio[1]	Odds Ratio[2]	Odds Ratio[3]	Odds Ratio[4]	Odds Ratio[5]	Odds Ratio[6]
	Disagree	1.000	1.000	1.000	1.000	1.000	---
	Agree	3.833	5.294	3.251	1.915	1.909	
Library Facilities		---	---			NS	---
	Low			1.000	1.000		
	High			3.426	1.577[ns]		
	Did not participate/NA			0.993[ns]	0.295[ns]		
Health Care Services		---	---	NS	NS	NS	---
	Low						
	High						
	Did not participate/NA						
Registrarial Processes		---	---	NS	NS	NS	---
	Low						
	High						
	Did not participate/NA						
Work & Financial Commitments		NS	NS	NS	NS	NS	---
	Major obstacle						
	Minor obstacle						
	Not an obstacle						
Availability of Courses				NS			---
	Low	1.000	1.000		1.000	1.000	
	High	1.802	3.077		1.880	2.054	
Opportunities to Take Coursework Outside My Own Department				NS	NS	NS	---
	Low	1.000	1.000				
	High	2.005	1.645				

Variable	Value	Odds Ratio[1]	Odds Ratio[2]	Odds Ratio[3]	Odds Ratio[4]	Odds Ratio[5]	Odds Ratio[6]
Amount of Coursework		NS					---
	Low		1.000	1.000	1.000	1.000	
	High		1.710	2.215	2.027	2.777	
Overall Quality of Graduate Level Teaching							---
	Low	1.000	1.000	1.000	1.000	1.000	
	High	4.153	3.890	3.978	2.501	2.800	
Departmental Funding for Students to Attend National or Regional Meetings		NS	NS		NS	NS	NS
	Yes			1.000			
	No			0.571			
Published		NS	NS		NS	NS	NS
	Yes			1.000			
	No			0.437			
Relationship Between Faculty and Students							---
	Low	1.000	1.000	1.000	1.000	1.000	
	High	2.751	2.851	3.910	2.806	2.482	
Advice/Workshops on Career Options Within Academia				NS	NS		NS
	Low	1.000	1.000			1.000	
	High	4.654	3.503			1.837	
	Did not participate/NA	1.302[ns]	2.213[ns]			1.725[ns]	
Advice/Workshops on Career Options Outside Academia		NS	NS	NS	NS	NS	NS
	Low						
	High						
	Did not participate/NA						
Graduate Division		NS	NS	NS	NS		NS
	Arts					1.000	

Variable	Value	Odds Ratio[1]	Odds Ratio[2]	Odds Ratio[3]	Odds Ratio[4]	Odds Ratio[5]	Odds Ratio[6]
	Social Science Bioscience Physical Science					1.234[ns] 2.097 0.915[ns]	
McFadden R^2		0.333	0.362	0.363	0.187	0.233	0.590

1 = Overall how would you rate the quality of your academic experience at this university? (Modelling the odds of the response "High")
2 = Overall, how would you rate the quality of your graduate/professional program at this university? (Modelling the odds of the response "High")
3 = Overall, how would you rate the quality of your overall experience at this university? (Modeling the odds of the response "High")
4 = If you were to start your graduate/professional career again, would you select this same university? (Modelling the odds of the response "Yes")
5 = Would you recommend this university to someone considering your program? (Modelling the odds of the response "Yes")
6 = Thesis advisors engage in a variety of mentoring Activities. Overall, my advisor performed the role well (Modelling the odds of the response "Agree")
NS = Variable was not significant in explaining the outcome of interest; therefore, odds ratios are not provided
ns = Value or attribute of the variable was not significantly different than the reference group (i.e., the group with odds equal to 1.00)
--- = Variable was not used in the model to explain the outcome of interest

Conclusion

This analysis sought to shed light on the utility of the Canadian Graduate and Professional Student Survey using the case of the University of Western Ontario. This specific research project attempted to gauge the degree and determinants of satisfaction of graduate students at this institution across a wide range of indicators.

It was determined that the data were best examined at the institutional and faculty level. These levels are naturally relevant, given the administrative structure of the university. Statistical considerations prevented any reliable data from being generated at a more detailed level of analysis, such as at the departmental level. Nevertheless, senior administrators and staff, deans, associate deans, and chairs will find this information useful.

This research is a first step toward increasing our understanding of the basic trends and areas of strength/weakness. Further research may be useful in pursuing other relevant research questions. Particularly at the faculty level, associations between variables of specific interest may be a research path worth investigating. Of course, the number of respondents may be a limiting factor in some cases depending on the level of statistical sophistication desired.

What can we conclude from these results? Frankly, it depends on the question being asked. Nevertheless, overall, the majority of respondents have a very positive outlook on the institution. Perhaps, the real question to ask is how Western fares in comparison other universities of similar size and stature. A comparative analysis would be a useful way to provide some perspective on these findings.

We strongly recommend that a graduate satisfaction survey be administered on a regular basis to capture long term trends. Such information would allow the university:

a) to develop interventions and strategies for improvement in key areas of interest;
b) to gauge improvement over time in key areas of interest;
c) to compare its policies and practices , where appropriate, with other similar institutions; and
d) to maximize its effectiveness and attract and retain its graduate student base.

Survey questions in the future would have to adapt to the growing concerns and needs of departments, faculties and students. Brief consultations with these groups would allow the survey to capture the interests of these groups. It might be possible to develop and administer a tool that contains a core set of questions that are relevant across the university, but also a subset of questions that focus on the unique needs and goals of particular faculties and departments. For example, a separate instrument for Master's Professional students would be useful given the important differences in program structure, fees, demands, and focus from their peers in graduate research programs. Homogenizing graduate students, given the range of their programs provides a simplistic and erroneous picture of the processes within the university.

Another component of the survey that requires some revision pertains to obstacles to academic progress. Issues pertaining to graduate teaching assistantships were not addressed in the survey. Most importantly, there were too few questions associated with the advisor despite the fundamental role he/she plays in the progress of the student. Health impediments and issues related to funding and tuition are other items that in future administrations of the Canadian Graduate and Professional Student Survey must be included. Indeed, increasing the appropriateness of the survey instrument tool would significantly enhance its utility.

Let us now take a step back from the results at the University of Western Ontario and speak of the more general lessons that this rigorous case study has revealed for graduate education in Ontario and across the country. There are several main points worth noting.

1) Clearly, this survey has shed some light on the processes related to graduate level education that can be garnered from an administration of the Canadian Graduate and Professional Student Survey.
2) To reach more general conclusions at the provincial or national level, extending the study to a larger data set with other universities would be useful. This data set would offset many of the limitations encountered with the University of Western Ontario data set, such as small N sizes for subgroup analyses.
3) This survey tool has the potential to provide a province or nation-wide portrait of the state of graduate level education. How are Ontario institutions faring? Are they doing better or worse than the national average? Where are the weaknesses? These issues are of primary importance if we wish to boost graduate level education on a large scale and increase graduation rates.
4) There is no question that individual institutional data are useful for their respective senior administrators, deans, and chairs; however, governments would benefit most from a comprehensive data set, spanning multiple universities across various regions as suggested in (2). Indeed, more detailed insights, such as the ones brought to the forefront by the analysis at the University of Western Ontario, can be used for provincial and federal policy making on graduate funding, addressing impediments to completion, prioritizing resources for institutional infrastructure (e.g., libraries), and areas for improvement.
5) To maintain a competitive edge internationally with respect to our graduate level institutions, data and analysis at the provincial and national levels using this type of data are necessary to promote relevant changes and adapt in an appropriate manner.

Overall, individual academic institutions, governments, and other stakeholders armed with the tools to make informed decisions related to graduate level education will maximize the chances of success. The generation of this type of survey data is a necessary step to ensuring such success at all levels.

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