TRACE

TRACE 2.0—QUANTITATIVE REPORT
SHANMUGAVALLI NARAYANAN
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INTRODUCTION

TRaCE 2.0 expanded on the TRaCE pilot project by tracking 1,818 PhD graduates in the humanities, social sciences, and fine arts (also MFA graduates) from eight Canadian universities. The overarching objective of the project was to develop quantitative and qualitative/narrative evidence about the career paths of PhD graduates: where they have gone, what they are doing, and how they feel about their experiences. This report summarizes the project's quantitative findings. We begin with a brief description of TRaCE 2.0 methodology. We then report our analytical findings with respect to employment, gender, geography, and time from completion. We conclude with a discussion of key limitations and potential next steps.

DATA COLLECTION AND ANALYSIS

TRaCE 2.0 was a joint effort between collaborating Canadian universities and the central TRaCE office, located at Graduate and Postdoctoral studies, McGill University.

The participating universities were:

Carleton University	University of Guelph
Concordia University	University of Toronto
McGill University	University of Waterloo
Queen's University	York University

NUMBER OF GRADUATES ACROSS PARTICIPATING UNIVERSITIES
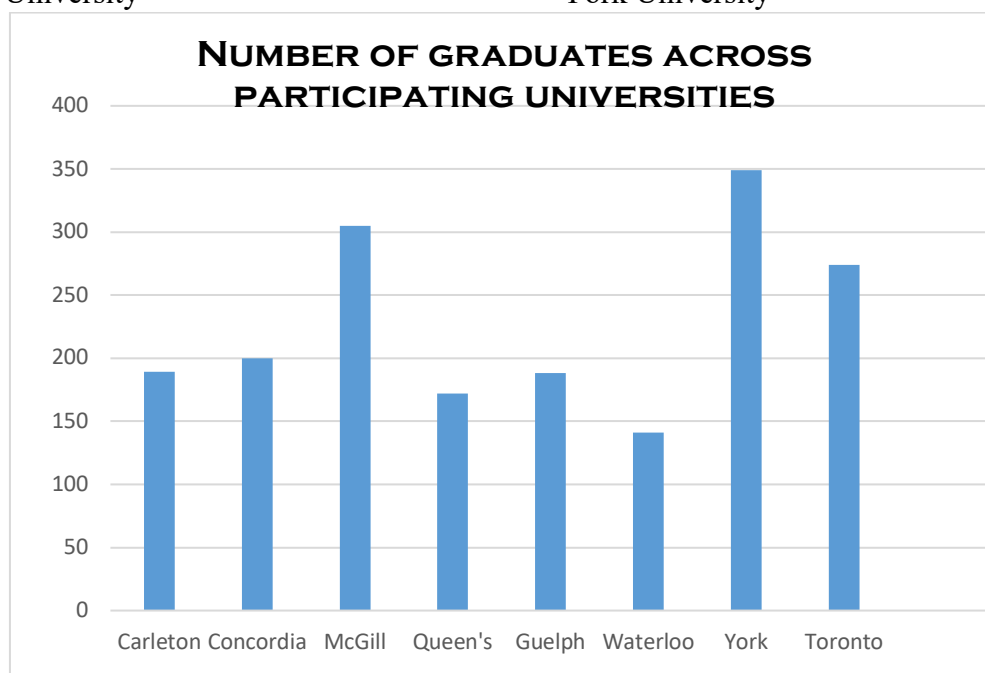
Each participating university determined that a certain number of departments would take part in the study. The total graduates tracked by discipline from across the participating universities are as follows: Political Science with 305 graduates; Sociology—283; History—233; Art Education—23; Business Administration—87; Economics—91; Anthropology—167; Philosophy—66, EDUC—81; English & Theatre—18; MFA-Studio Arts—149; Family Relations and Applied Nutrition—19; Psychology—92; Global Governance—15; Medieval Studies—94; Linguistics—49; SIP (Special Individualized Program)—34; INDI (Individualized Program)—19; Music—51; and German Studies—14.
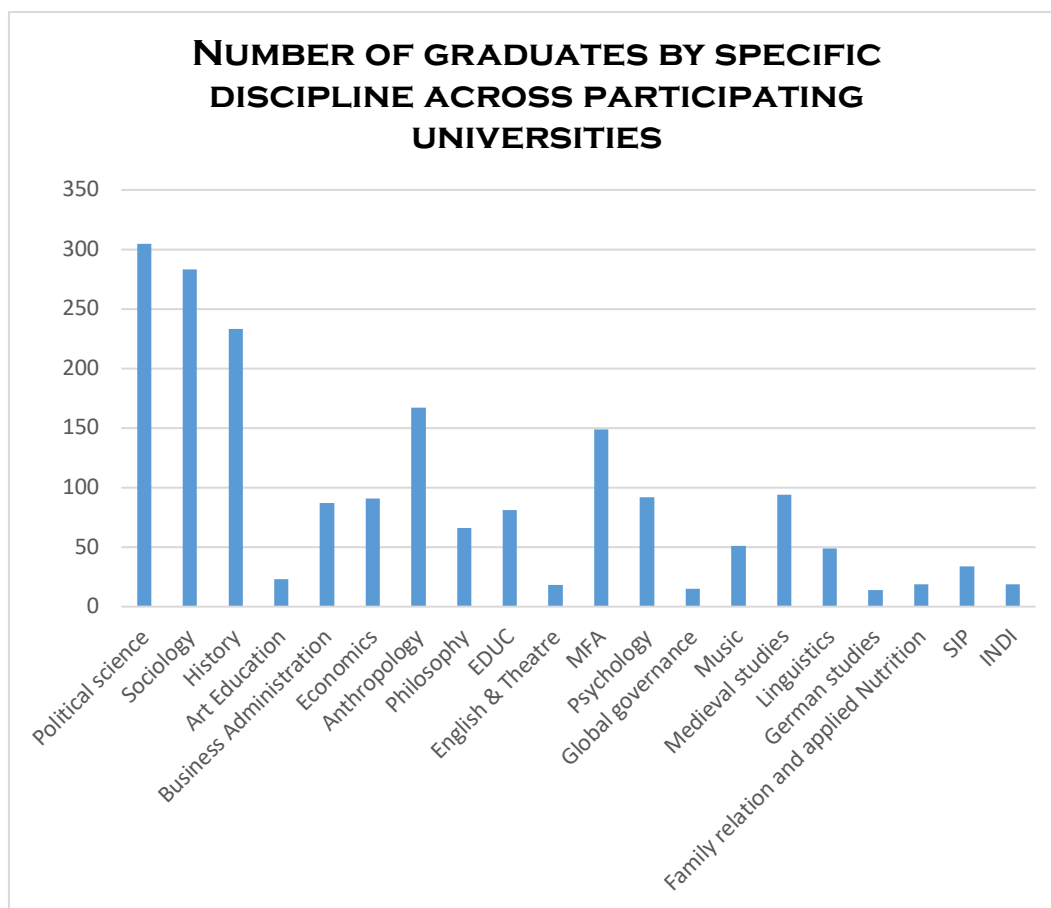

Participating universities provided the TRaCE office with lists of PhD graduates—graduating cohorts from 2007 to 2017. These lists included graduates' names, year of graduation, and dissertation titles. Supplementary data was added to this list by the project's graduate student researchers, who used the basic lists supplied by the respective departments to search the Web and public electronic employment/professional sites (e.g., LinkedIn, academia.edu) and gather data on graduates' current occupation and geographic location. Links to the relevant source(s) of retrieved data were also captured in the dataset for verification purposes. Student researchers were provided with a data collection template to facilitate and streamline data retrieval. All student researchers, who all came from the participating universities and who were paid by their respective universities, received training and support from the central office.

Data analysis was undertaken at the TRaCE office. We assessed demographic characteristics of the dataset and conducted a series of basic descriptive analyses to explore associations between discipline/department, graduation year, gender, occupation, and location of employment. The TRaCE office was responsible for merging the institutional datasets, conducting the analyses, and presenting the findings. Beyond basic cleaning and streamlining, the central office was only minimally involved in ensuring the accuracy of the collected data; this responsibility remained primarily with the student researchers, who all received the same training/guidance prior to data collection. This was intentional and an important part of assessing the feasibility of this project's methodology; we discuss the possibilities of misclassification and bias later in this report. Results are summarized below. Given the cross-sectional nature of the dataset and the focus on very few disciplines in this exercise, all findings should be viewed as exploratory.

RESULTS

SAMPLE CHARACTERISTICS

Our master dataset contained 1,818 PhD graduates from eight Canadian universities. Information about gender and year of graduation was provided by the participating universities. Province or country of present residence, current employment, employer, and employment category were collected by the student researchers. We were able to collect good data for 80% of the total number of grads—a total of approximately 1,450 grads. The data collected by student researchers reflects two different levels of occupational information: one variable represents general occupational categories (e.g., higher education, non-profit, for-profit), and a second variable represents specific occupational type (e.g., tenure-track professor, lawyer, writer/artist). Data on broad employment-related variables were 80% complete, but there was a substantial amount of missing data for the more granular categories, and a potentially large amount of misclassification as reflected in the pie chart below. As such, we rely primarily on the general occupational data for the purposes of this summary. We offer a more detailed discussion of this issue in the Limitations section.

CAREER PATHWAYS-MOST GENERAL CATEGORIES

- Higher educaton
- Other
- Unknown

58% — 22% — 20%
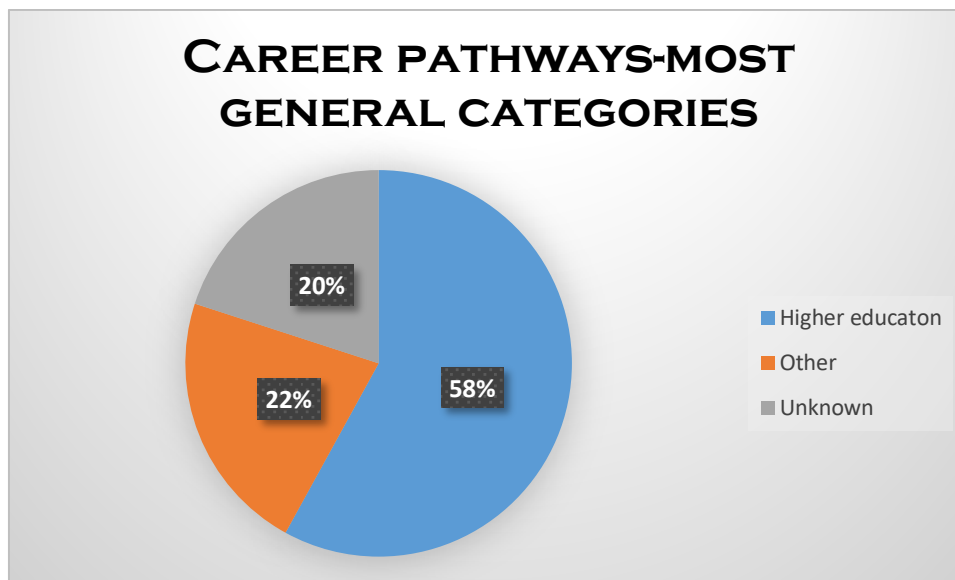
EMPLOYMENT

The most common types of employment among humanities and social sciences PhD grads were distributed across the categories of higher education, self-employment, non-profit, and for-profit.

EMPLOYMENT CATEGORIES

- Higher Education
- Self Employed
- Profit/Business
- Non-Profit
- Other
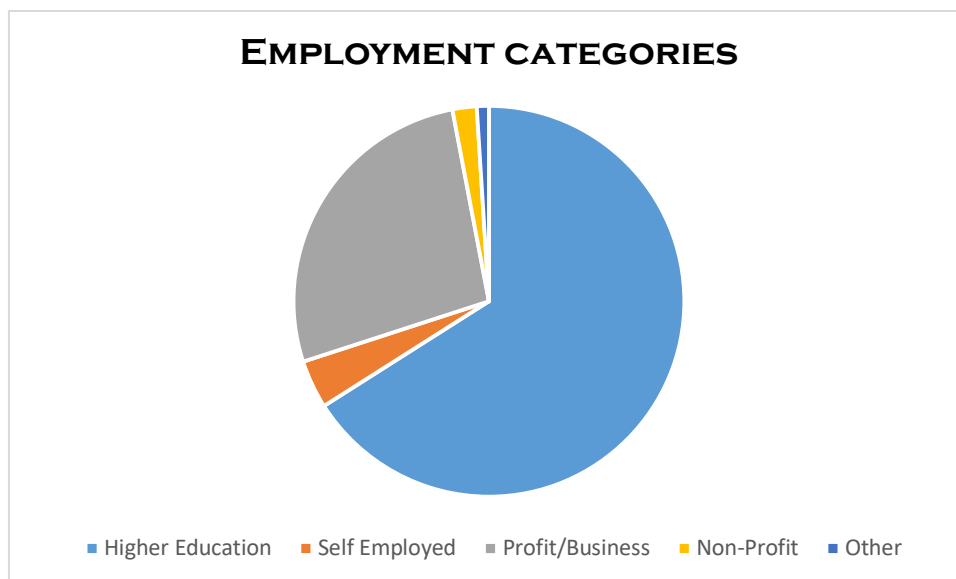
It is clear that many PhD graduates hope to secure jobs in higher education. One of our primary objectives was to determine trends in higher education employment. A total of 66% of the graduates for which we were able to collect data were working somewhere in higher education at the time of data collection. Our "higher education" category includes tenure track (TT) and non-tenure track (NTT) sessional/adjunct/course instructor, postdoctoral research fellow, research

analyst, research administrator, research co-ordinator, project manager, director of fellowship information, and administrator.

Graduate student researchers were also asked to collect more granular information on employment (for example, tenure-track (TT) vs. non-tenure track (NTT)). These data were more difficult to reliably retrieve than the broader occupational information. An estimated 45% of the grads for which we have data are working as professors, of which the majority (approximately 82% of those classified as professors or 32% of 1,450 grads (i.e., 464 grads) are employed as TT faculty. However, the amount of missing data limits any conclusive analysis of these trends.

There was considerable employment variability among the 22% of graduates working outside higher education. We determined that 68% of those outside higher education were currently working in the for-profit sector; 23% were self-employed; and 9% were working in the non-profit sector. It is also important to note that many graduates (particularly those working outside higher education) held multiple jobs at the time of data collection, which is likely reflective of the evolving nature of the labour force in which people hold multiple (sometimes precarious) positions simultaneously. We attempted to identify graduates' principal/primary occupation for the purposes of this study.

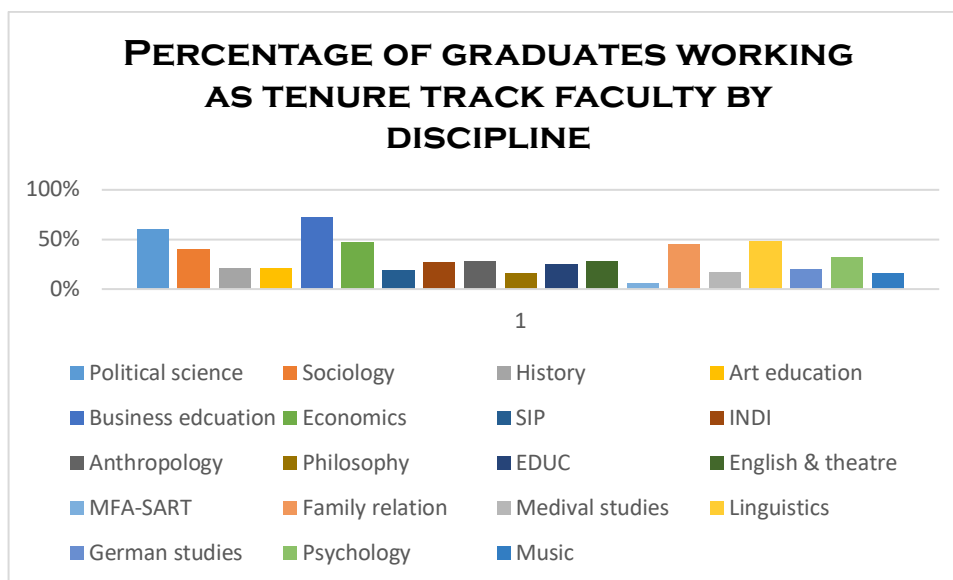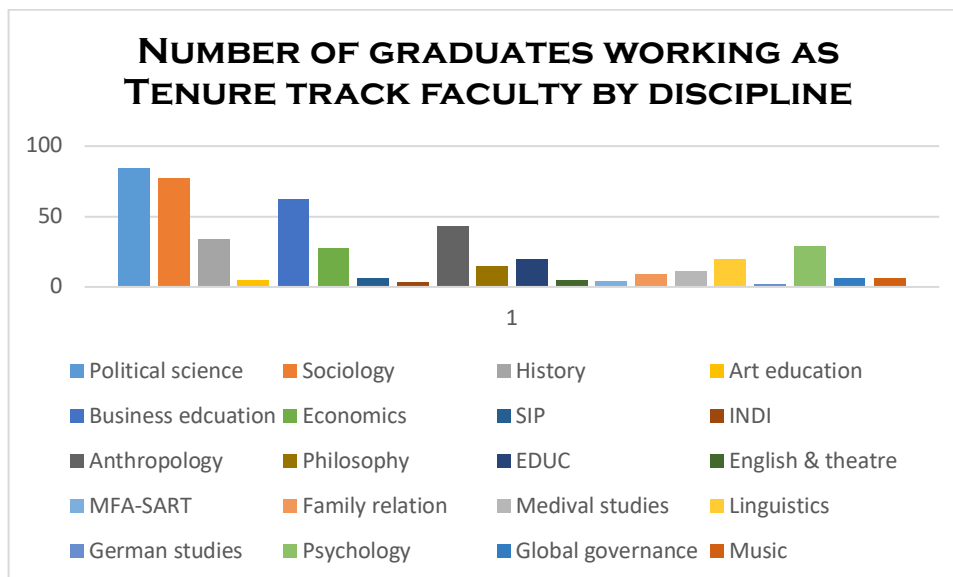**EMPLOYMENT TRENDS FOR GRADUATES WORKING OUTSIDE HIGHER EDUCATION**
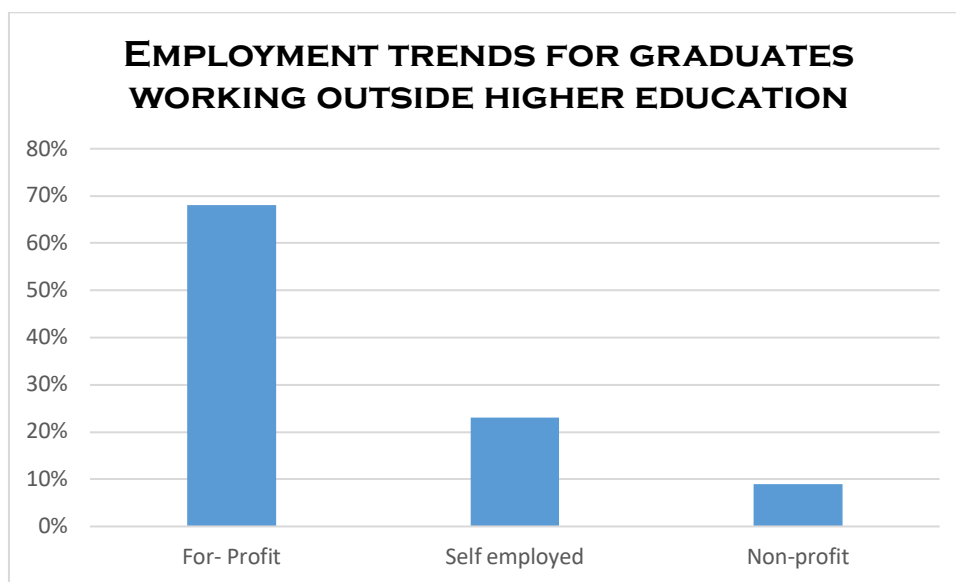
Higher education employment appeared to vary by discipline. While the majority of graduates from most departments was employed in higher education, which aligns with our analysis of the overall sample, our analysis revealed a few interesting outliers. It is crucial to note that we had very few graduates from German Studies, Global Governance, and the Individualized Program, so although these percentages seem striking, they are actually statistically non-informative. Our analysis by discipline revealed that Psychology and Fine Arts graduates had a comparatively unique trajectory: approximately 30% were employed outside of the higher education sector as therapists or counselors and 70% as artists at the time of data collection. This may, of course, be related to the smaller sample size in this study.

NUMBER OF GRADUATES WORKING IN HIGHER EDUCATION BY DISCIPLINE

PERCENTAGE OF GRADUATES WORKING IN HIGHER EDUCATION BY DISCIPLINE
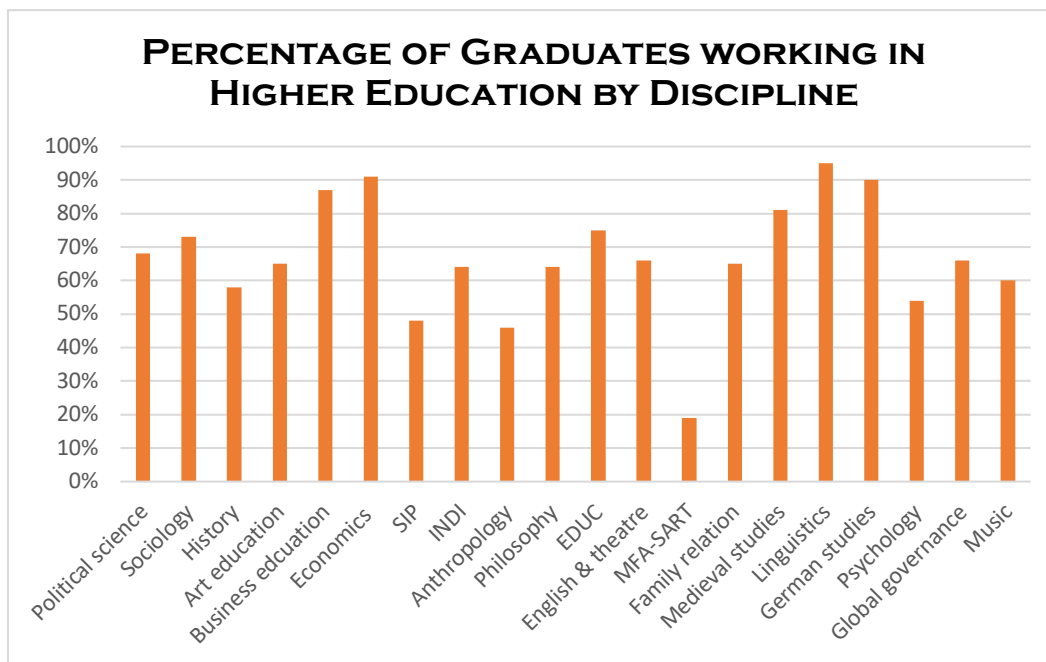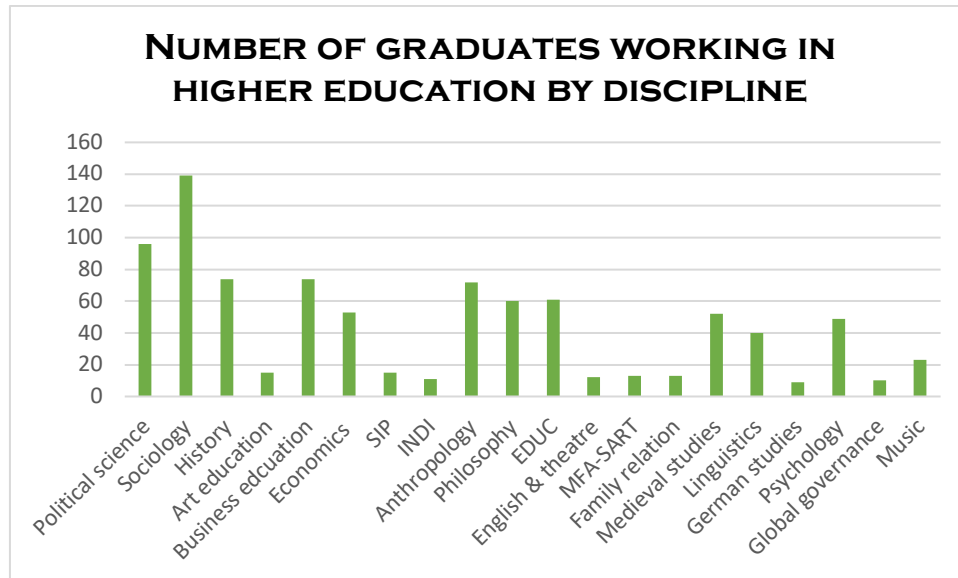

Since our higher education category included multiple occupations, we took a more targeted look at disciplinary trends in faculty/professor employment specifically. It is to be noted that, of the 66% of graduates working in higher education, 45% were working as professors, mostly employed as TT faculty. Approximately 82% of those classified as professors were TT. Again, we note that these data were more difficult to reliably retrieve than the broader occupational information, especially since any amount of missing data limits any conclusive analysis of these trends. This proportion varies considerably among disciplines in our sample. Again, readers are reminded that we have limited data on certain fields (Global Governance, German Studies, and the Individualized Program), so the proportions corresponding to these disciplines are likely not significant. Accordingly, we do not discuss them here. The proportion of graduates working as professors was lower than average among Fine Arts and Psychology graduates, and higher than

average among Sociology, Political Science, Business Administration, Anthropology, and History.

NUMBER OF GRADUATES WORKING AS TENURE TRACK FACULTY BY DISCIPLINE

Legend: Political science, Sociology, History, Art education, Business edcuation, Economics, SIP, INDI, Anthropology, Philosophy, EDUC, English & theatre, MFA-SART, Family relation, Medival studies, Linguistics, German studies, Psychology, Global governance, Music

PERCENTAGE OF GRADUATES WORKING AS TENURE TRACK FACULTY BY DISCIPLINE

Legend: Political science, Sociology, History, Art education, Business edcuation, Economics, SIP, INDI, Anthropology, Philosophy, EDUC, English & theatre, MFA-SART, Family relation, Medival studies, Linguistics, German studies, Psychology, Music

Not surprisingly, employment patterns outside higher education also vary by discipline. However, restricting our sample to graduates outside higher education and stratifying by employment sector resulted in insufficiently small cell sizes (which can easily lead to misleading results), so we focused mainly on our most densely populated disciplines for the purposes of this analysis: Political Science, Sociology, History, MFA, and Psychology. Our findings suggested that government employment, journalism, and museum work were particularly prevalent among History graduates; many Political Science grads find work in fields in public policy; and employment in the for-profit sector was comparatively high among Fine Arts and Psychology graduates, with many graduates working as consultants, artist, and writers/editors.

DISTRIBUTION BY NUMBER OF GRADUATES OUTSIDE HIGHER EDUCATION
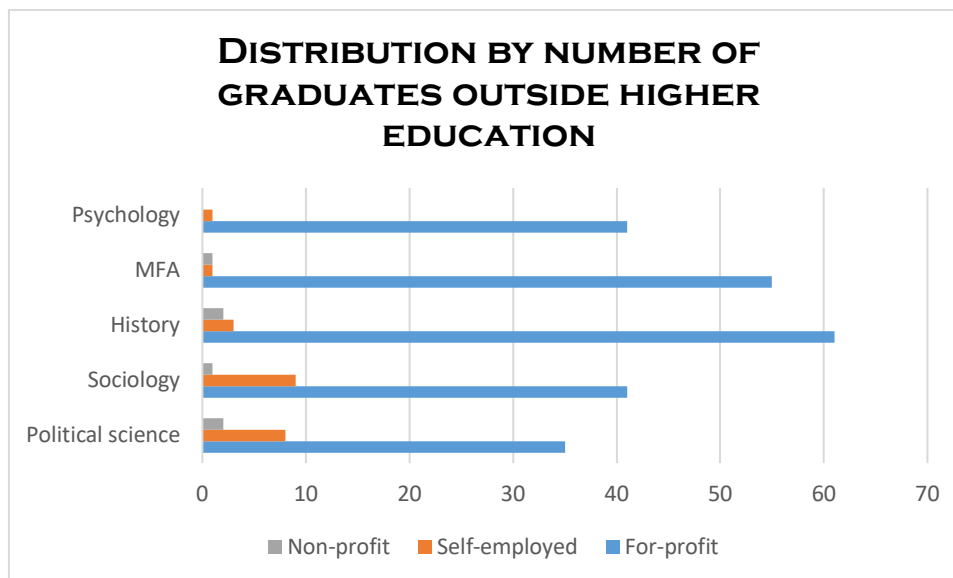
Our cross-sectional dataset does not allow us to conclude that certain disciplines prepare graduates more effectively for careers in specific sectors, but these possible lines of connection may merit further investigation.

DISTRIBUTION BY PERCENTAGE OUTSIDE HIGHER EDUCATION
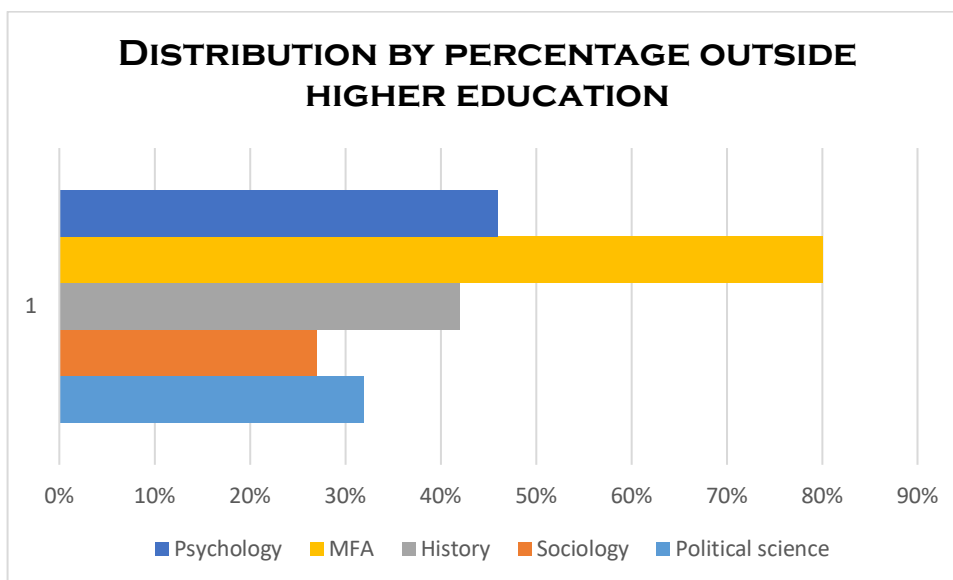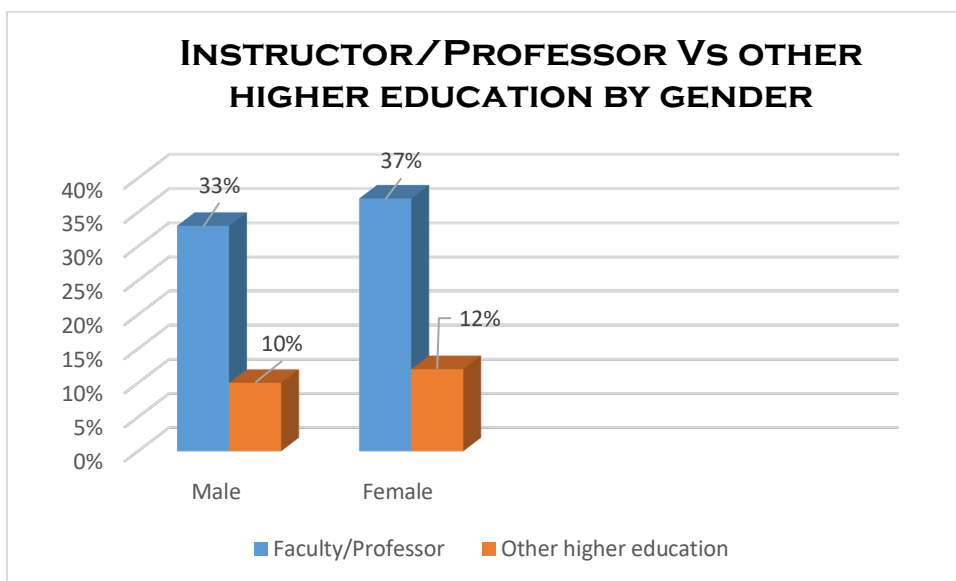
GENDER

Gender-related differences in employment were a key area of interest in this study. Given the imbalance of men and women (46% vs. 57% respectively) in our employed category sample, the following analyses were stratified by gender from 7 of 8 our participating universities (we did not have data on gender from one university). In other words, we looked within gender categories to compare occupational distributions. In our gender-stratified analysis of higher education employment versus employment in all other sectors, we found fairly similar trends

between men and women: 50% of sampled women were employed in higher education (vs. all other fields) at the time of data collection, compared to 43% of male graduates.

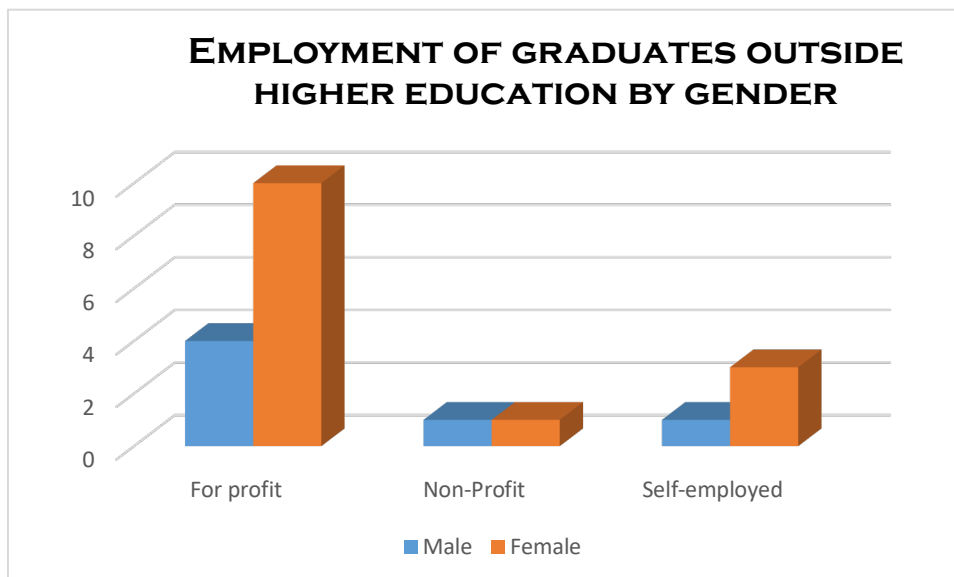**GRADS WORKING IN HIGHER EDUCATION VS OTHER SECTORS BY GENDER**
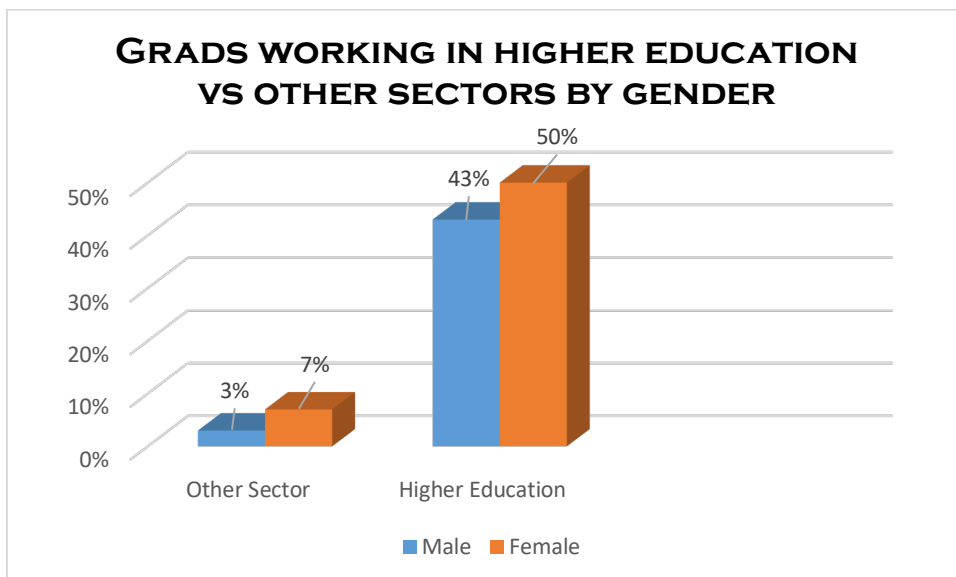
Because our higher education category was a composite variable consisting of various types of positions, we again opted to look specifically at instructor/professor employment versus other higher education occupations. We found a slightly higher percentage of women compared to men working in instructor/professor positions at the time of data collection (37% vs. 33%, respectively).

INSTRUCTOR/PROFESSOR VS OTHER HIGHER EDUCATION BY GENDER


Our data analysis suggests that other employment trends also differed significantly by gender. For example, women in our sample were more engaged than were men in self-employment and for-profit sectors. Interestingly, few women or men were following career paths in the non-profit sector. Our data are not sufficient to conclude that employment patterns are truly different

between men and women, but the TRaCE narratives already posted on the website do suggest some significant differences.

EMPLOYMENT OF GRADUATES OUTSIDE HIGHER EDUCATION BY GENDER

[Bar chart showing employment of graduates outside higher education by gender. Categories on x-axis: For profit, Non-Profit, Self-employed. Legend: Male (blue), Female (orange). For profit: Male approximately 4-5, Female approximately 10-11. Non-Profit: Male approximately 1, Female approximately 1. Self-employed: Male approximately 1-2, Female approximately 3.]

GEOGRAPHY/LOCATION:
We have geographic data for roughly 90% of the grads for which we have data. The graduates are dispersed across the world. It's important to note that we don't know where our graduates are from originally or where they hoped to end up post-completion. These facts are clearly very important in any geographical analysis. However, the TRaCE narratives may begin to shed some light on where humanities, social sciences, and fine arts grads who come to do their programs from outside Canada go after they finish their degrees. The majority (62%) of our sample graduates were residing somewhere in Canada at the time of data collection, 21% in the USA, and 17% in other countries. Our other country list includes graduates now resident in Israel, Morocco, Germany, Austria, South Africa, Japan, North Korea, South Korea, and Australia.

WHERE GRADUATES ARE BY COUNTRY


- Canada
- USA
- Other country
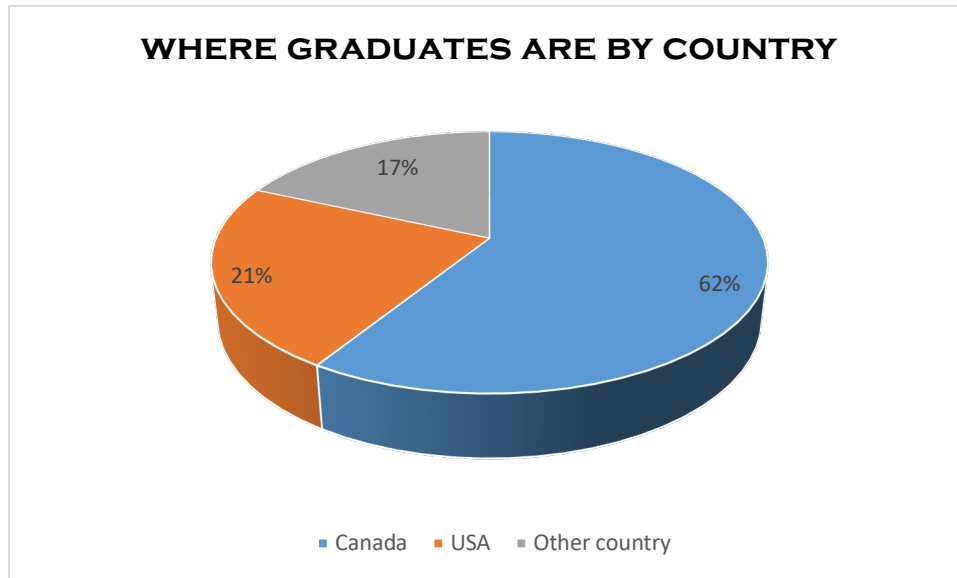
Among the graduates residing in Canada, we assessed whether the proportion of the graduates' employment varied by discipline across the provinces. We found that the proportion of graduates residing in Canada was relatively constant across most disciplines with exceptions and with a higher proportion employed in Ontario. Note that 6 of our 8 participating universities are in Ontario. There were notable exceptions in Sociology, History, and Political Science: the number of graduates from these disciplines employed in Canada was relatively high vs employment in the United States. Interestingly, the number of graduates from Political Science residing in Canada was marginally larger relative to graduates employed in USA. We are uncertain about the roots of this difference, but it might be indicative of a shortage of jobs in Political Science in the US.

TIME FROM COMPLETION

We examined the relationship between year of graduation and kind of employment. We observed a relationship between year of graduation and higher education employment patterns. We found, somewhat predictably, that the odds of instructor/professor employment (versus all other jobs) were lower among more recent cohorts than among older cohorts. Similarly, the odds of other types of higher education employment (postdoctoral fellowships, research fellowships, etc.) were higher among more recent graduates.

Percentage of Instructors/Professors Vs Other higher education employment by graduation Year
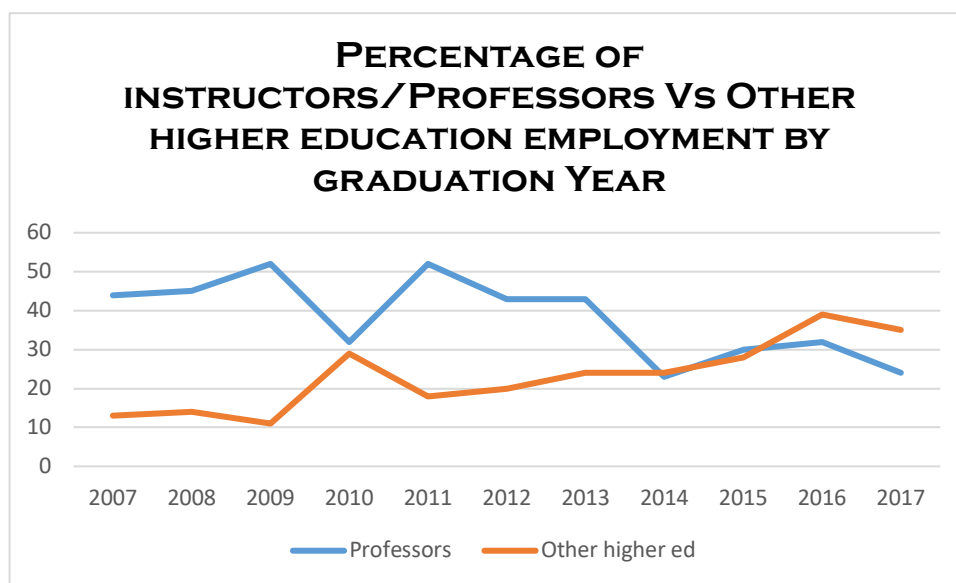
The graph above, which is restricted to graduates employed in higher education, illustrates the proportion of graduates employed as instructors/ professors (versus elsewhere in higher education) by graduation year. These trends were consistent for both men and women. We also observed that the proportion in either employment category was essentially equivalent from 2014 to 2015; this suggests that, while there was a fairly clear association between both categories and time from completion, the association is more pronounced at the upper and lower ends of the graduation year distribution. These estimates may be exaggerated/non-generalizable, however, due to the relatively small numbers of graduates at the extremes. Furthermore, and perhaps most importantly, these data do not tell us when graduates obtained their positions. While there is clearly a higher proportion of graduates in instructor/professor roles among earlier/older cohorts, our data do not indicate when in the post-graduate trajectory (for example, immediately upon completion versus 3 years post-grad) these jobs were secured.

Percentage of instructors/Professors Vs other jobs by graduation year
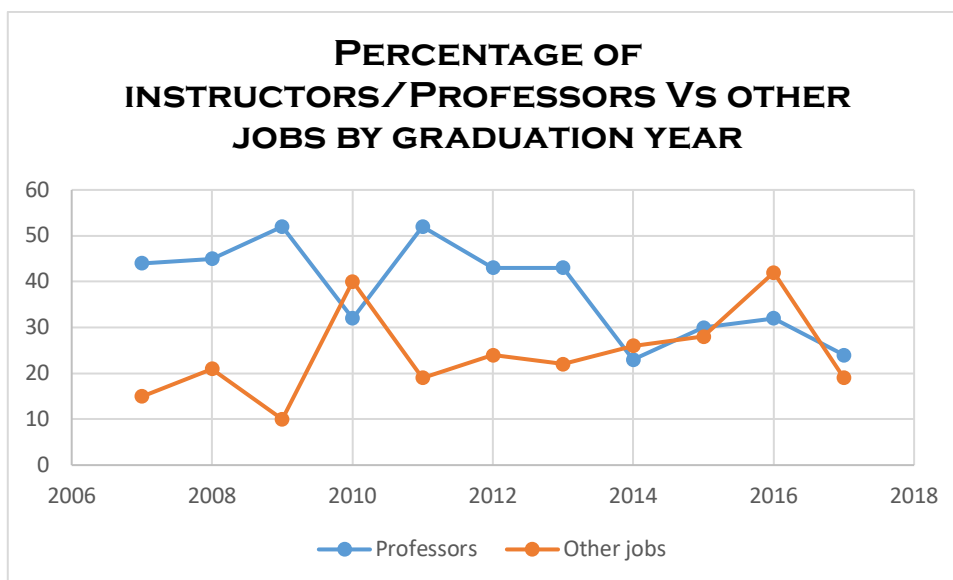
We also assessed the proportion working as instructors/professors versus all other jobs by graduation year. Again, we found generally higher proportions of graduates working as faculty members in earlier graduation years, and this proportion decreased among more recent graduates. Among 2005 graduates, for example, nearly half were employed as instructors/professors at the time of data collection; this figure dropped to 32% for 2010 graduates and 23% for 2014 graduates (the last year with sufficient data). Finally, we looked at the relationship between graduation year and other types of employment, specifically self-employment, for-profit, and non-profit employment (our most common occupational categories outside of higher education). We found a weak association between for-profit employment and graduation year, with recent graduates more likely to work in this sector, but this was due in large part to a jump in for-profit employment among our 2015 and 2016 graduates. We did not identify a relationship between graduation year and any other employment category.

LIMITATIONS

TRaCE 2.0 was successful in obtaining a range of information on a fairly large sample of PhD graduates, but it is important to acknowledge the limitations of this study in order to interpret its findings appropriately and to determine future directions most effectively. Here we offer a discussion of a number of issues relating to the project's methodology. Our data/results may have been impacted by two key factors: 1) selective self-reporting (of graduates) in the social media channels such as LinkedIn, Facebook, and 2) misclassification error (by student researchers/coders). The data mining approach (obtaining information via publicly available channels) allowed us to gather data on many graduates at minimal cost, but the quality/consistency of the resultant data is unclear. For example, graduates who are "successful" may have a stronger online presence, and may consequently be overrepresented in our dataset. Similarly, graduates who are currently looking for employment may have much more detailed information in their public profiles, and some graduates may have abandoned certain platforms in favour of others (i.e., LinkedIn vs. ResearchGate), resulting in out-of-date or inconsistent data across platforms. Furthermore, given the amount of missing data in our dataset, our cohort may not be reflective of the general population of Canadian PhD graduates in humanities, social sciences, and fine arts.

There was ample opportunity for misclassification at multiple stages of this study, and data quality varied between student researchers and institutions. This was somewhat unavoidable given the number of graduate researchers involved, but the issue can likely be ameliorated with improved design. Misclassification was a particularly serious problem in the more granular occupational categories, which is why we did not feature this variable prominently in our analyses. However, even in the broad occupational categories, different graduate researchers sometimes coded the same occupation in different ways. We plan to address this issue in our future research by improving our training procedures and refining the data collection template to capture data elements that can be reliably and easily retrieved.

Furthermore, there is room to expand the type of data retrieved by graduate researchers: future iterations of this project would ideally collect more detailed information on ethnicity, ability, self-reported gender, and international status in order to better assess potential equity issues. This was beyond the scope of this project, but it is undoubtedly important given the findings of our ongoing qualitative analyses. Finally, the issue of longitudinal data collection is of special importance here. Collecting information over time would be exceptionally useful, and would likely tell a different story than our current cross-sectional data. Although we were able to offer a few basic time-related analyses based on graduation year, it would be far more interesting/relevant to track the trajectory of individual graduates over the course of their post-grad years to better understand real trends in employment and geography/migration.

CONCLUSION
What happens to humanities, social sciences, and fine arts PhD (and MFA) graduates post-completion? Our quantitative findings suggest that most go on to work in higher education while a minority find work in other, non-academic sectors. The preliminary evidence in this report also suggests that employment patterns may differ by discipline, year of graduation, and gender, but further research is required in order to ensure that these observed associations are not simply artifacts of the data. It is important to remember that TRaCE 2.0 was a project with a very tight disciplinary and institutional focus; as such, various aspects of the methodology and analysis could (and should) be refined in future iterations of the project. Nonetheless, this project represents an important step in understanding what really happens to Canada-based PhD graduates in the humanities, social sciences, and fine arts. However, the numbers only tell us part of the story. The qualitative, narrative-gathering side of our project offers an in-depth look at the lives and trajectories of graduates working both inside and outside of the academy.