OTTAWA SCIENCE POLICY NETWORK

2022

FINANCIAL CHALLENGES FACED BY GRADUATE STUDENTS IN CANADA:

RESULTS FROM THE NATIONAL GRADUATE STUDENT FINANCE SURVEY

Financial Challenges Faced by Graduate Students in Canada:
Results from the National Graduate Student Finance Survey

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THE OTTAWA SCIENCE POLICY NETWORK

The Ottawa Science Policy Network is a student-run club at the University of Ottawa. Our group was founded in the Spring of 2021 by a small group of graduate students interested in learning more about the science policy landscape in Ottawa and Canada. It became apparent to us early on that funding, stipends, and financial struggle were topics on many graduate students' minds. We decided to launch a National Graduate Student Finance Survey in December of 2021 after careful deliberation on how we could contribute to this important issue. Over the course of 3 months, we met and developed partnerships with over 40 graduate student associations across Canada. We listened to countless stories of struggles, inequalities, and crippling debt.

INTRODUCTION

Graduate students are students who have already completed a Bachelor's degree and are now enrolled in a Master's or Doctoral degree. Most graduate degrees include full-time, independent research in collaboration with a Principal Investigator (PI) or Supervisor who is a Faculty member at the university. This work is highly intensive and creates the foundation of research in Canada. Research has shown that ⅓ publications have PhD students as authors or co-authors, exemplifying the crucial role graduate students play in the creation of research and publications.

Since graduate students often complete their studies full-time, many receive a stipend meant to offset the cost of living so that students can focus on their studies. Funding for graduate students is complex, and often paid through a *stipend*. In general, this funding comes from two main sources: **(1)** directly through scholarships, such as those provided by one of the three federal granting agencies, known as the Tri-Councils (Natural Sciences and Engineering Research Council (NSERC), Social Science and Humanities Research Council (SSHRC) and the Canadian Institute for Health Research (CIHR)) or, **(2)** indirectly through their supervisor's research grants and/or departments. Graduate student funding is unique to each student and depends on many factors. Depending on the program and institution, some students may be required to complete Teaching Assistantships (TA) or Research Assistantships (RA) as part of their stipend.

The value of graduate student stipends are often set by universities, faculties and departments. Tri-Council scholarship values have set the precedent for what stipend values should be at the university level, by establishing a pay value for the highest performing students. The *value* of these Tri-Council scholarships have not changed since 2002. Additionally, there have been little increases in the *number* of scholarships available. A 2018 report from the Science & Policy Exchange (SPE) showed that 91% of graduate students were largely displeased with the number of Tri-Council scholarships available for graduate students. As well, 79% of graduate students would like to see an increase in the value of the awards. In its entirety, the aforementioned report eloquently displays the dissatisfaction amongst students in regard to these federal scholarships, as well as the perceived financial security that comes with obtaining one of these scholarships.

In recent years, Canadians have experienced increasing costs of living, which have also been magnified in light of the COVID-19 pandemic. This is largely caused by a 40-year high in inflation rates which has led to an increase in everyday expenses. While this affects all those in Canada right now, graduate students are a particularly vulnerable group who are left behind with stipends that do not reflect the costs of living. The Canadian housing market has also witnessed a significant increase in real estate prices during the COVID-19 pandemic. While the majority of graduate students are not in a position to purchase their own homes, many turn to rental properties, which, according to the 2022 *Zumper Canadian Rent Report*, are increasing at astronomical rates.

For the last few years, graduate students have been actively advocating for increases to graduate student scholarships and funding in Canada. Most notably, student-led science policy networks have advocated for increased financial support for graduate students for many years. In response to the release of the *Fundamental Science Review* (commonly known as the Naylor Report) in 2017, the Science & Policy Exchange (SPE) started a campaign called #Students4TheReport, urging the government to implement the 32 recommendations in the Naylor Report. This report became a key piece of evidence in forming the Canadian Council of Academies *Degrees of Success* Report which investigated the current barriers for PhD students when transferring into the labour market.

As previously described here and in the Toronto Science Policy Network's *COVID-19 Graduate Student Report*, the COVID-19 pandemic exacerbated the challenges for graduate students. In the last year, several groups, including OSPN, have come together to organise under the central cause of advocating for increased funding for graduate students and postdoctoral fellows. This grassroots movement, called Support Our Science, organised rallies on Parliament Hill in Ottawa and Montreal to deliver an open letter to Prime Minister Justin Trudeau and Minister François-Philippe Champagne. The success of these rallies has rippled through the country and has become a unified message to policymakers, the media, and the public. Additionally, our President, Sarah Laframboise, was invited to speak about our survey and the results with policymakers on numerous occasions, including as a witness to the House of Commons' Standing Committee on Science and Research, which resulted in specific recommendations to increase financial support for graduate students in Canada.

Despite this work, there is a lack of national data on graduate student finances, especially for the vast majority of graduate students who do not hold a federal scholarship. The goal of this survey was to investigate graduate student finances to create a comprehensive profile of graduate students in Canada. While this survey is limited to the perspectives of graduate students in Canada, it is important to note that the effects of financial struggle are also felt by graduates of PhD programs. Those students who go on to complete postdoctoral fellowships continue to be subject to limited funding, as well as increases in professional and personal pressures. A 2016 survey from the Canadian Association of Postdoctoral Scholars (CAPS) detailed financial struggles, a lack of access to health benefits and an increase in mental health issues amongst postdocs in Canada.

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NATIONAL GRADUATE STUDENT
FINANCE SURVEY

CHAPTER 1: DEMOGRAPHICS

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One aim of our survey was to assess the financial situation of graduate students across Canada, including students from various different programs, fields of study, and ages. We received a total of 1,305 responses, 1,030 of which were in English and 275 in French. Nearly all respondents were registered as full-time students (96.7%), with only a small percentage registered in part-time programs (2.3%). Students currently residing in Quebec and Ontario made up 78.6% of respondents, with 484 respondents from Ontario and 541 from Quebec (**Figure 1A**). This is consistent with StatsCanada data from the National Graduates Survey (2015), which showed that Quebec and Ontario made up 73.8% and 73.7% of Master's and PhD graduates, respectively. Additionally, over 70% of respondents are between the ages of 24-33 (**Figure 1B**). Again, this is consistent with the StatsCanada data, which showed an average graduate's age was 31 and 35 for Master's and PhD students upon graduation, respectively. In its entirety, this provides confidence that the conclusions made in this survey are valid as it is a representative comparison to the overall graduate student profile in Canada.

A majority of respondents (57.6%) are pursuing a doctoral degree, and nearly all are in a research-stream program (**Figure 2A**). Similarly, the majority (60.9%) of Master's student respondents were in the research stream, while the remaining were in course-based (19.8%) and professional masters programs (19.3%) (**Figure 2A**). A majority of responses were distributed evenly across years of study (**Figure 2B**). Survey respondents were primarily in science-based programs, such as physical science (26.3%), medical sciences (23.8%), life sciences (23.5%) and social sciences (16.4%) (**Figure 3**). Arts and Humanities students comprised 7.7% of respondents (**Figure 3**). A small percentage of business students (1.6%) and law students (0.5%) also responded to the survey (**Figure 3**). Additional demographic data can be found in **Supplemental Table 1.**

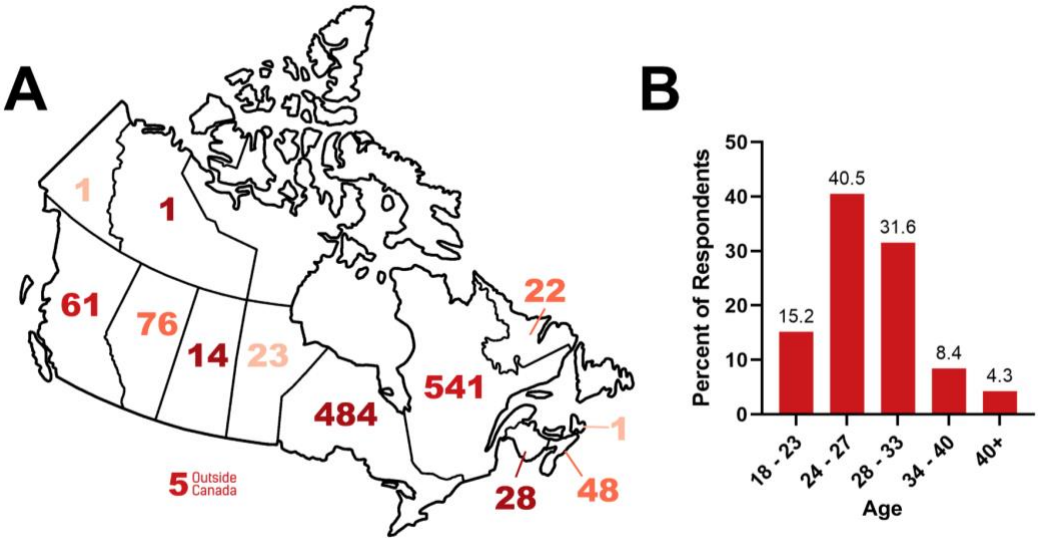

Figure 1. Geographic Location and Age. ***A*** *Number of respondents from each province and territory (n=1305).* ***B*** *Age category of respondents by percent (n=1305).*

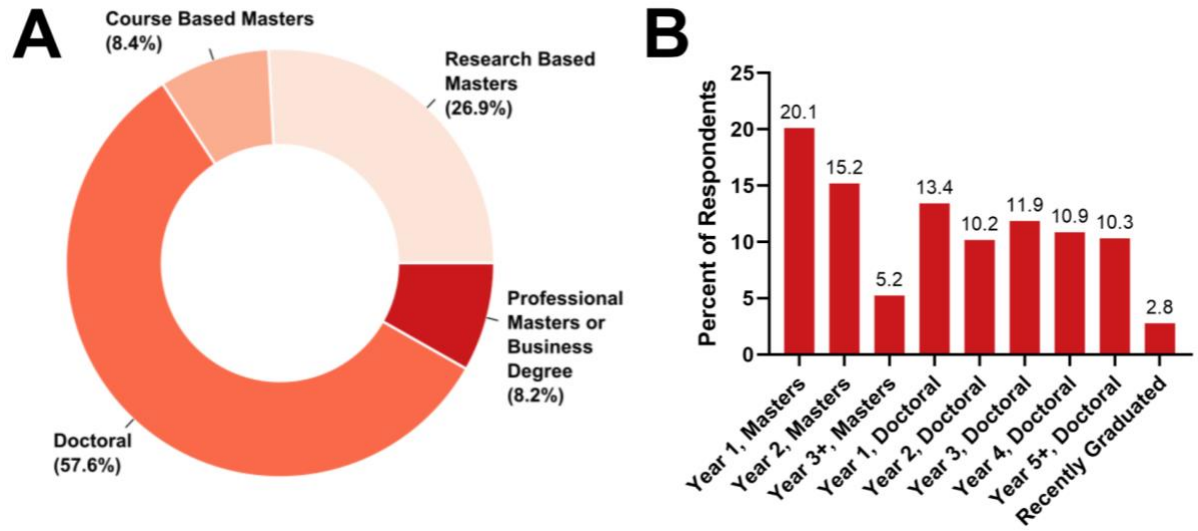

Figure 2. Level and Year of Study. ***A*** *Current type and level of study by percent (n=1303). The Doctoral category includes Professional Doctoral (ex. EdD, PharmD, DBA), Research Stream Doctoral (PhD), Course Based Doctoral and MD PhD* ***B*** *Current year of study by percent (n=1297).*

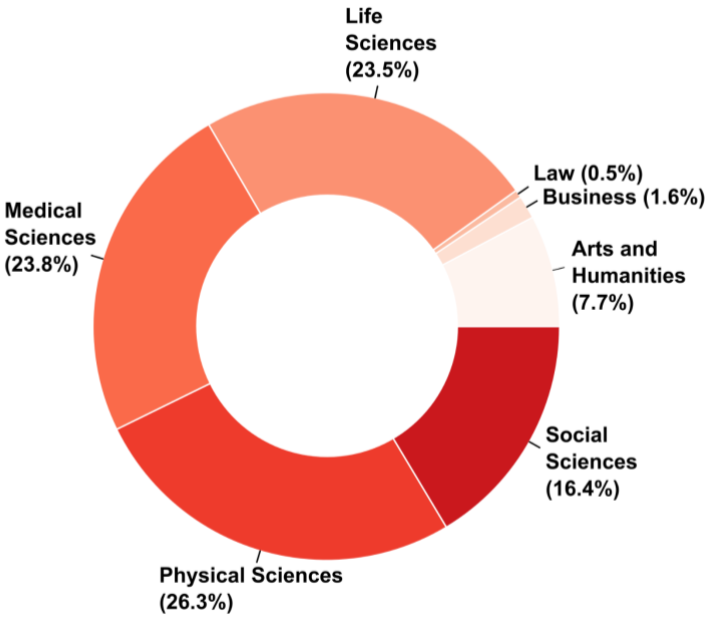

Figure 3. Field of Study. *Respondents self-reported their field of study from 7 categories: Arts and Humanities, Business, Law, Life Sciences, Medical Sciences, Physical Sciences (Engineering, Physics, Mathematics, etc.) and Social Sciences (n=1305). If respondents indicated multiple fields of study or an option not listed in the survey, they were categorised into one of the seven categories based on their answers for analysis purposes.*

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NATIONAL GRADUATE STUDENT
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CHAPTER 2: GENERAL ANALYSIS

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A. TUITION

Tuition remains one of the largest expenses among graduate students in Canada, and is primarily regulated by provincial governments. The average tuition for Canadian graduate students is about $7,437 per year (up 1.7% from last year) (Statistic Canada, 2022). Nova Scotia graduate students have the highest tuition, on average $10,591 per year, with Ontario ($9,385) and British Columbia ($9,994) close behind. Comparatively, Quebec has the lowest average tuition for graduate students, an average of $3,582 per year.

Every university uses a different tuition fee structure, with various opportunities for tuition rebates/waivers. Tuition freezes, which were implemented in Ontario during the COVID-19 pandemic, can also play a role in variation in the rising tuition costs across the country. In addition to tuition, students are required to pay ancillary fees throughout their education. These can include fees for fitness or athletic services, technology use, public transit, health and dental plans, etc.

"My stipend total this year (including additional TA work) was $29000. From that, ~$6000 was deducted for tuition. $23000/year is not enough to live on - that is below the low income threshold that qualifies you for assistance programs (ex: Leisure Access Pass) in Edmonton. Except as students we are exempt from these programs."

To assess the financial situation of graduate students, we investigated tuition variance among students. We found that the average annual tuition paid by respondents across Canada was $7,518 for domestic students (for international student costs, see *Chapter 7*). The lowest average cost of tuition was reported in Newfoundland and Labrador at $5,016.27 per year, while the highest average was reported in Ontario at $8,972.46 per year (**Figure 4**).

To further characterise tuition distribution among respondents, we asked graduate students to report their out-of-pocket payments. This accounts for students' tuition waivers, which are offered through universities to subsidise the cost of tuition. Across all domestic students, the average out-of-pocket tuition was $3,226. Our results reflect a bimodal distribution, with a significant proportion of respondents either paying 0-10% or 90-100% (**Figure 5**), where 82.6% of domestic graduate students either pay less than 10% or more than 90% of their tuition out of pocket, highlighting an all-or-none approach to tuition finances. This variation in out-of-pocket tuition payments could partly be attributed to the amount of money that some students receive through scholarships. When broken down by scholarship status, we found that domestic respondents who held a government award paid significantly less tuition out of pocket (KS test, $p<10^{-5}$) with 70% of award holders paying 10% or less of their tuition out of pocket compared with 37.3% for those who did not hold a government award (**Figure 6**). The bimodal distribution is still seen for students who do not hold a government award, implying that other factors also contribute.

We also hypothesised that this trend may impact the financial situation of graduate students paying either 0-10% or 90-100% of their tuition out-of-pocket. To test this, respondents in either group were cross-compared with how they ranked their financial situation (**Figure 7**). We found a significant difference (chi2 test, p=0.011) between these two groups, with those who paid over 90% of tuition out-of-pocket being more likely to be struggling financially.

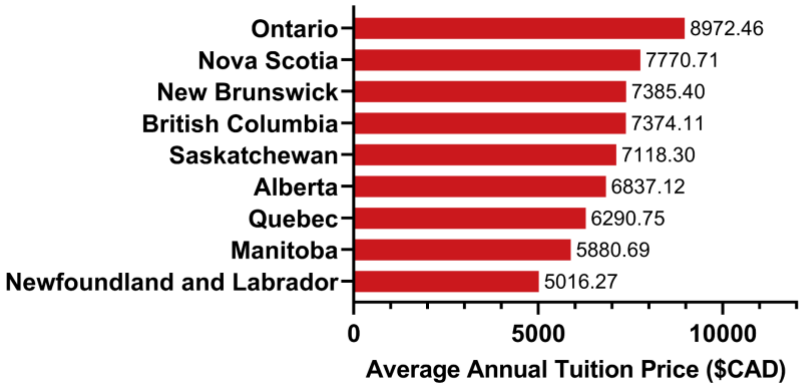

Figure 4. Annual Tuition Fees. *Average annual tuition in CAD dollars by province (n=886). Categories with less than 5 responses were excluded (Prince Edward Island, Northwest Territories, Yukon and Outside of Canada).*

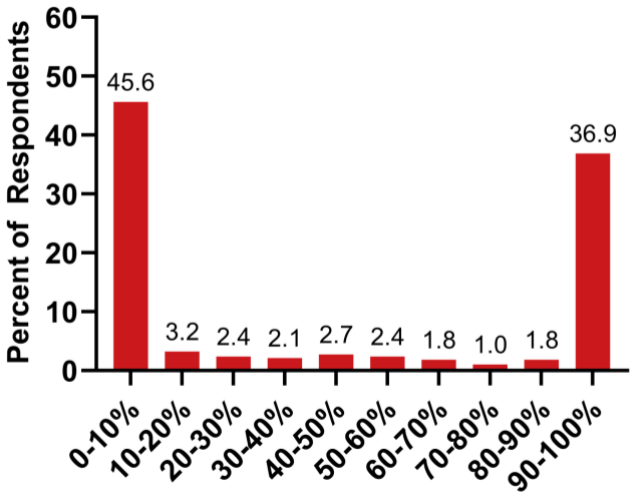

Figure 5. Percent Tuition Paid out of Pocket (Domestic Only). *Percent of tuition paid out of pocket after any applicable scholarships for domestic respondents (n=885). Tuition paid out of pocket was divided by total annual tuition fees to calculate the percentage.*

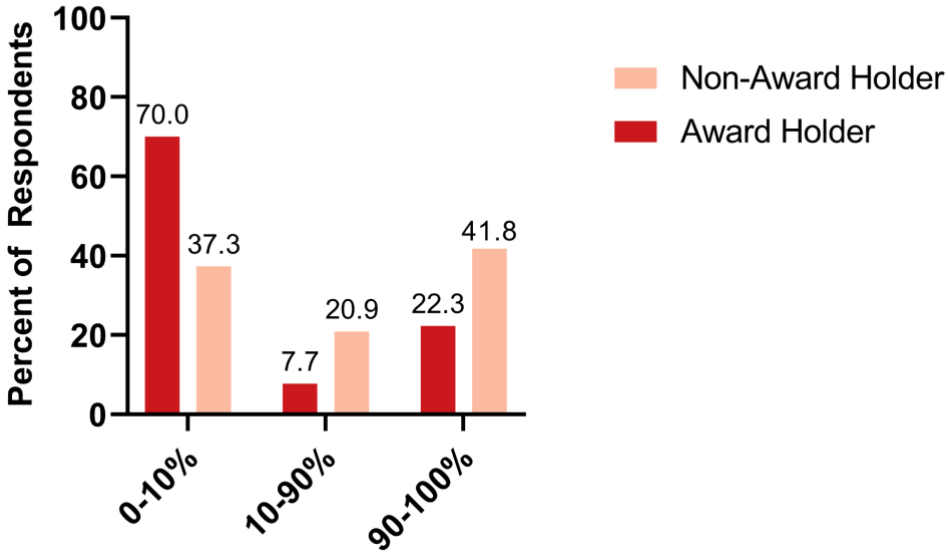

Figure 6. Percent Tuition Paid Out of Pocket by Award Holder Status (Domestic Only) *Percent of tuition paid out of pocket after any applicable scholarships for domestic students with a government*

award (n=220) and without a government award (n=665). Tuition paid out of pocket was divided by the total annual tuition fees for each respondent to calculate the percentage.

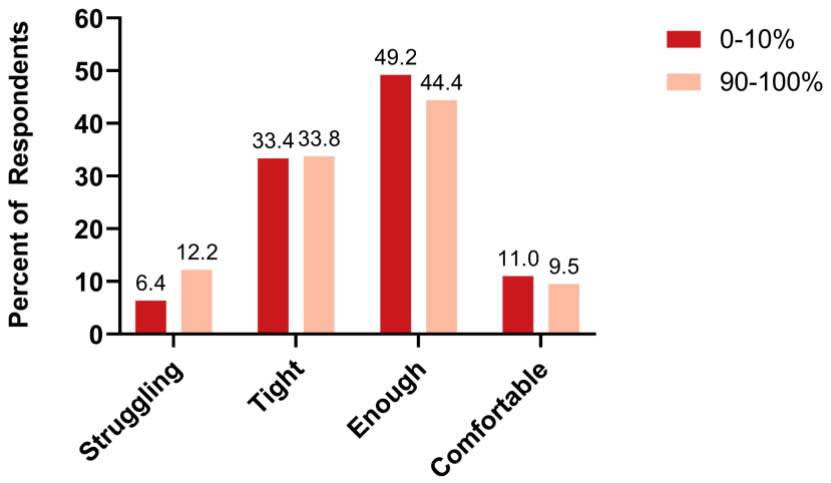

Figure 7. *Financial Situation of Low (0-10%) vs. High (90-100%) Percent Tuition Paid out of Pocket (n=1,004)*

B. COST OF LIVING

> **I had to take cash advances on my credit card and borrow money from family to get by... As such I am still paying off debts which has delayed accomplishing milestones (like buying a house and starting a family) that others my age are currently doing. Bottom line graduate students should be paid at least a minimum wage full-time salary as taking on secondary jobs to supplement income is just not possible if we want to graduate on time.**

As described in our introduction, Canada is currently experiencing record-high inflation, resulting in higher costs of living for all Canadians. In combination with the lingering effects of the COVID-19 pandemic, graduate students are particularly vulnerable considering slow and inflexible funding models. To better understand how graduate students are spending their finances, we investigated their housing costs, area of residence, living situation, and monthly expenses.

Our findings show that over 80% of respondents are currently renting, with less than 10% owning housing (**Figure 8A**). This is particularly concerning compared to recent (2022) Statistics Canada data profiling home ownership. For young adults aged 25 to 29 years, 36.5% owned their homes. For those aged 30 to 34 years, home-ownership rates are 52.3%. This is indicative of a significant financial burden experienced by graduate students compared to their peers. While others in their age range are building wealth and investing in their future, graduate students are subjected to the insecurity of the rental market.

Three-quarters of respondents live in an urban area (74.5%). The remainder lives in suburban areas (20.4%), and few live in rural areas (4.7%) (**Figure 8B**). The living situation showed that most respondents live with other people, such as a partner, roommate(s), or family (**Figure 8C**), while 25% live alone. A large majority of our respondents do not have any dependents

> **I have taken to my monthly budget with a fine tooth comb, ensuring to buy only the minimum required to remain alive (all no-name, store brand, and absolutely no extraneous costs). But even with a strict budget, those in charge of funding may fail to realize that the cost of housing and rentals is out of control [...] After groceries and rent, my funding leaves me with a negative cashflow position.**

(**Figure 8D**), while the remainder 13% have 1 or more dependents (further analysis of those with dependents can be found in *Chapter 6*).

Based on those who pay rent, a quarter of respondents (25.3%) pay $500-$750 monthly rent (**Figure 8E**). Most respondents pay between $500-$1500 in rent, a wide range that depends on location, roommate situation, etc. Sadly, 1% of respondents (14/1305) do not even have stable housing (**Figure 8A**), potentially interfering with their ability to focus on their research and graduate studies.

Monthly expenses for respondents were surveyed across different categories **(Figure 9)**. The highest expense, aside from rent (**Figure 8E**), was groceries, where over 70% of respondents spent $100-$400 monthly.

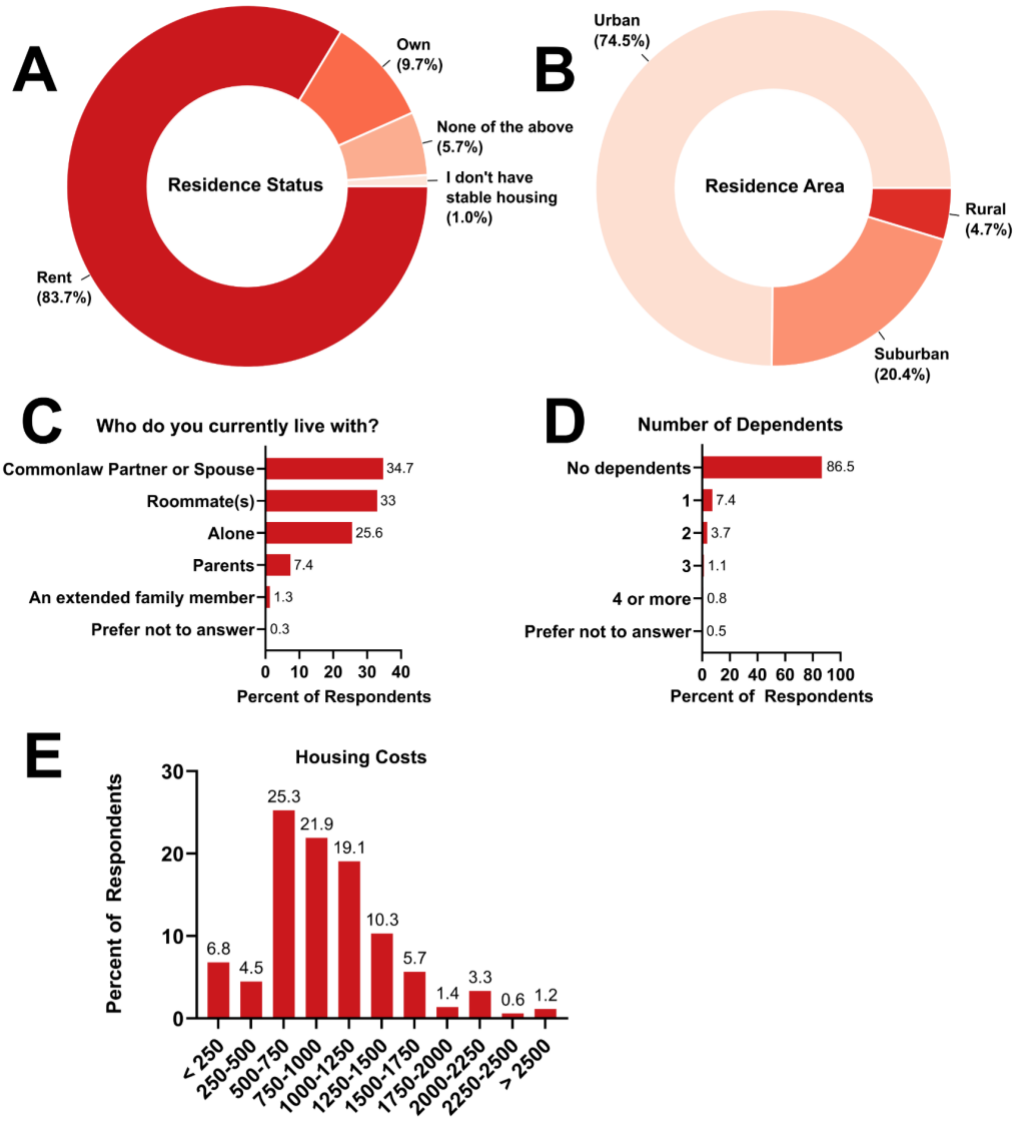

Figure 8. Residence Situation. ***A*** *Residence status of respondents by percent (n=1,305).* ***B*** *Area of residence by percent (n=1,305). Respondents who listed areas other than Urban, Rural or Suburban were re-categorized into one of the three.* ***C*** *Current living arrangements of respondents (multiple selections possible) by percent (n=1,305).* ***D*** *Number of dependents reported by respondents by percent (n=1,305).* ***E*** *Monthly Housing Costs ($CAD) by percent of respondents (n=1,291).*

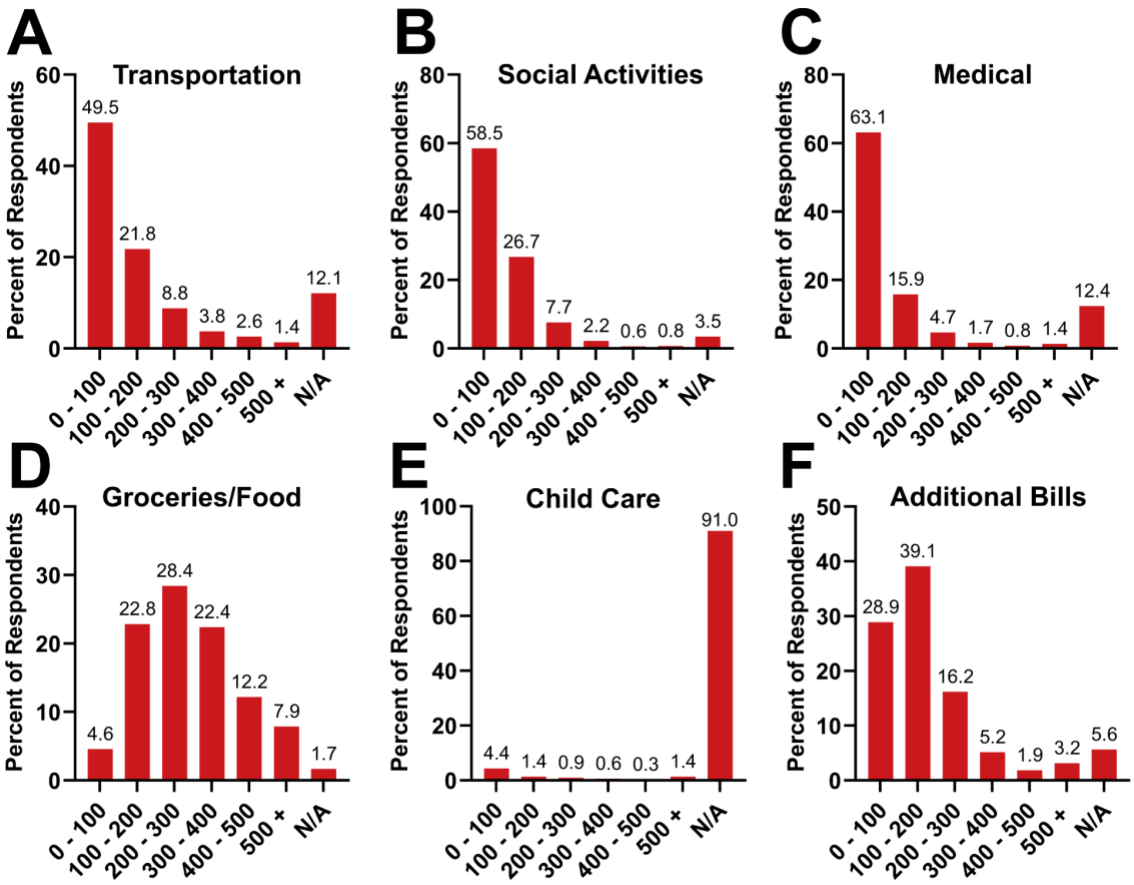

Figure 9. Monthly Expenses. Respondents were asked to share their average monthly expenses in each category within a range: **A** Transportation (n=1,305), **B** Social Activities (n=1,305), **C** Medical (n=1,305), **D** Groceries/Food (n=1,305), **E** Child Care (n=1,305), **F** Additional Bills (n=1,297). Data are shown by the percent of respondents for each category.

C. FINANCIAL STRUGGLE

Between low pay, increasing costs of living, and accumulating debt, financial stress is a major concern for many graduate students. Pursuing a graduate degree is significantly challenging, and funding their degree adds additional stress. Not only can this financial stress impact graduate students' well-being and ability to complete their studies, but insufficient savings and outstanding debt can impact their future financial security. This has become a dominant narrative across research ecosystems as many students are speaking out on these financial struggles in Canada and other countries.

To investigate the circumstances of graduate students across Canada, we asked survey respondents to identify their comfort levels with their current financial situation. Our team examined how concerned students were about various financial stresses, including living expenses, debt and emergency funds. To investigate students' financial status, we asked participants to choose which most appropriately defined their current financial situation:

Comfortable (I am very comfortable financially. I have enough money that I do not need to worry about monthly expenses and spend as I would like.), Enough (I have enough. My finances are a bit tight but I live within my means and can afford to provide for myself.), Tight (Every month is tight, but I am getting by. I am often making sacrifices to pay for necessities.) and Struggling (I am struggling financially. I often do not have enough to make ends meet.). Nearly half of all respondents (43.4%) identified that they were either frequently struggling to make ends meet or that their tight finances forced them to make sacrifices in order to afford necessities (**Figure 10A**). Less than 10% of students stated that they were very comfortable with their current financial situation (**Figure 10A**). Unsurprisingly, those who identified as struggling to make ends meet generally had the lowest stipend values, whereas those who identified as being very comfortable with their financial situation had the highest (**Figure 10B**).

"I recently had to drop out of my Masters program due to finances and having to work full time in order to afford the cost of living [...] The faculty I was in did not support students working externally yet offered very few alternatives to afford both tuition, living expenses, and debt payments."

The majority of respondents (85.7%) expressed experiencing stress/anxiety about finances at some point during their graduate studies. Meanwhile, 54.7% experienced difficulty budgeting, and 30.7% have considered leaving their studies due to financial struggles alone (**Figure 11A**). Concern over paying for living expenses was common among respondents, with over 30% having experienced concern about rent and food (**Figure 11A**), and 27.2% either "always" or "often" worrying about their ability to pay for bills (**Figure 11B**).

Standard advice from financial experts and the recommendation from the Financial and Consumer Agency of Canada is to ideally have at least 3-6 months of savings for living expenses. Only half of our survey respondents meet this recommendation, with 52.3% having only 0-3 months of living expenses saved (**Figure 11C**), and 53.7% of students either "always" or "often" worrying about their ability to pay for emergency expenses (**Figure 11B**). This leaves graduate students increasingly vulnerable to unexpected financial challenges.

As an expected consequence, graduate students worry about their future financial security. Nearly 60% of respondents indicated that they either "always" or "often" worry about future financial security, and a similar number (57%) indicated "always" or "often" worrying about their ability to obtain a job in the future (**Figure 11B**). A key contributor to this may be the accumulation of debt throughout one's university career, as over half of respondents (51.2%) have some outstanding debt, the majority of which have over $10,000 owed (**Figure 12A**). Indeed, respondents with outstanding debt reported worrying about future financial security more often than respondents with no outstanding debt (**Figure 12B**). A higher percentage of respondents with outstanding debt also reported struggling financially compared to those with no outstanding debt (**Figure 12C**). Reliance on debt seems to partly stem from a lack of parental support, as only 20% of students with debt receive financial support from parents,

"People in graduate studies and people who are successful in their academics should be FULLY funded. I have a 96% average and I am probably going to be homeless in a month. Tuition has gone up over $600 last term with no notice. I have cut out everything in my life to remain alive. I only buy no name or store brand products. Mostly canned food. I would never recommend master's at this point."

compared to 30% of students with no debt receiving parental support (**Figure 12D**). Additionally, doctoral students had a higher amount of debt on average compared to master's students ($34,370 vs. $26,755, respectively; **Figure 13A**). This is unsurprising given their increased length of study time, although master's students and doctoral students still reported similar responses regarding their financial situations (**Figure 13B**).

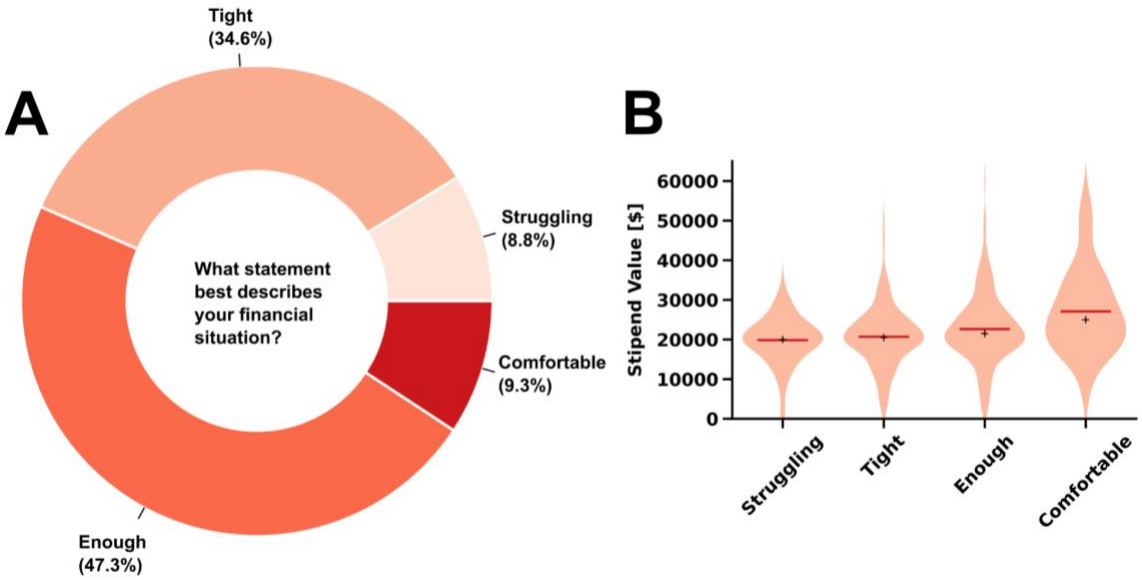

Figure 10. Financial Situation. **A** Respondents were asked what best describes their financial situation: Comfortable (I am very comfortable financially. I have enough money that I do not need to worry about monthly expenses and spend as I would like.), Enough (I have enough. My finances are a bit tight but I live within my means and can afford to provide for myself.), Tight (Every month is tight, but I am getting by. I am often making sacrifices to pay for necessities.) and Struggling (I am struggling financially. I often do not have enough to make ends meet.). Data are shown by percent (n=1,303). **B** Violin plot of respondents' financial situation and their stipend value (n=1,303).

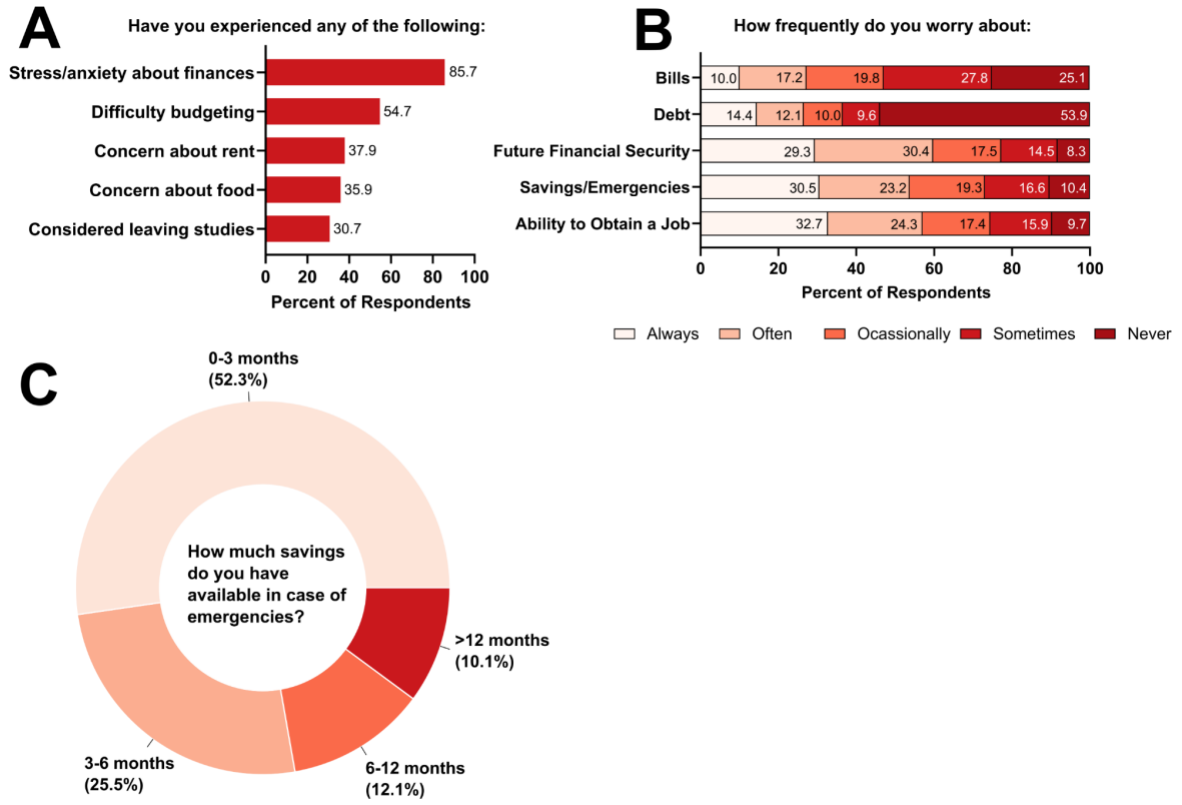

Figure 11. Financial Stressors. **A** Concerns and stress experienced by respondents (multiple selections possible) by percent (n=1,178). **B** Respondents were asked how frequently they worry about their ability to obtain a future job in their chosen field, savings/ability to pay for emergency expenses, future financial security, ability to pay back debt, and ability to pay bills. Data are shown by percent in each category (n=1,305). **C** Amount of savings, measured by months of living expenses, that respondents have available for emergencies, by percent (n=1,264).

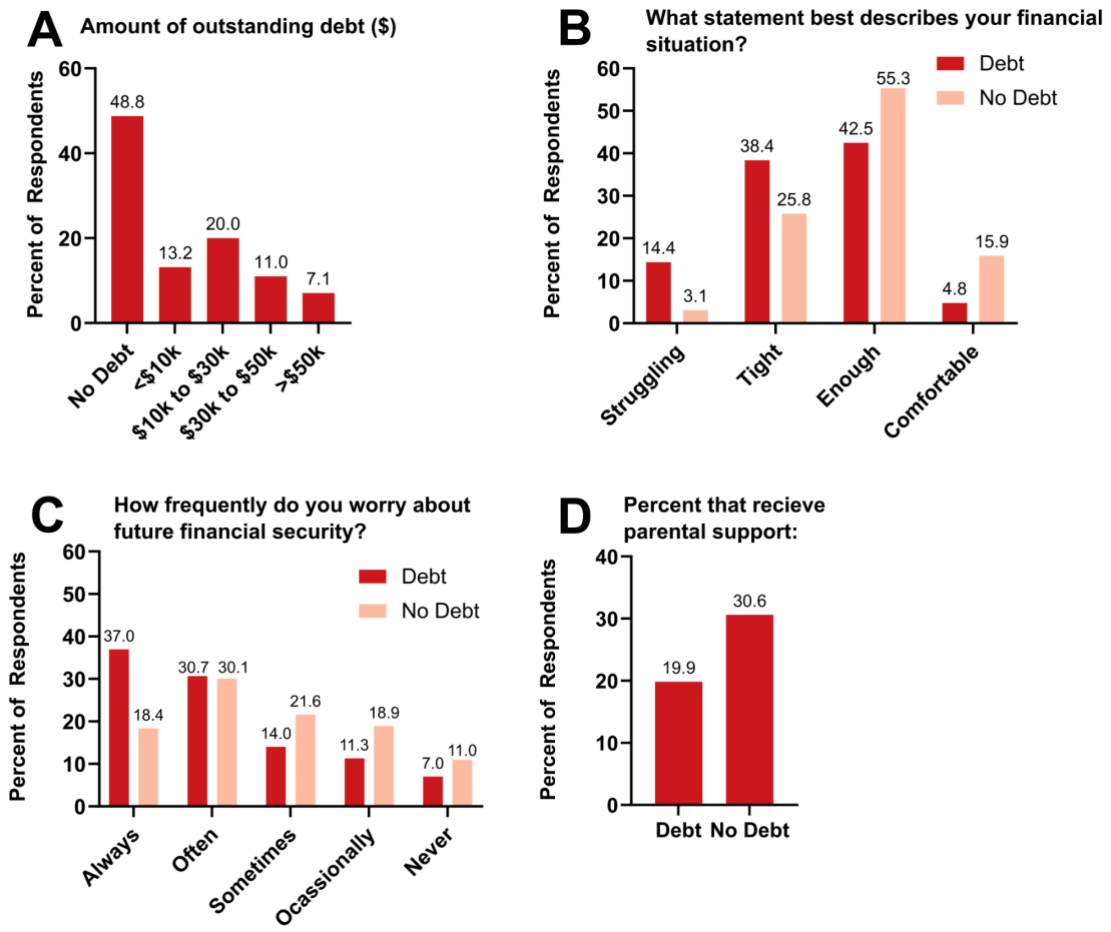

Figure 12. Financial Situation by Debt Status. **A** Amount of outstanding debt of respondents in ranges, by percent (n=1,130). **B** Financial situation of respondents with debt (n=584) or no debt (n=555) by percent. **C** Financial situation of respondents with debt (n=584) or no debt (n=555). Data are shown by the percent of respective debt status. **D** Parental support of respondents with debt (n=584) or no debt (n=555) by percent.

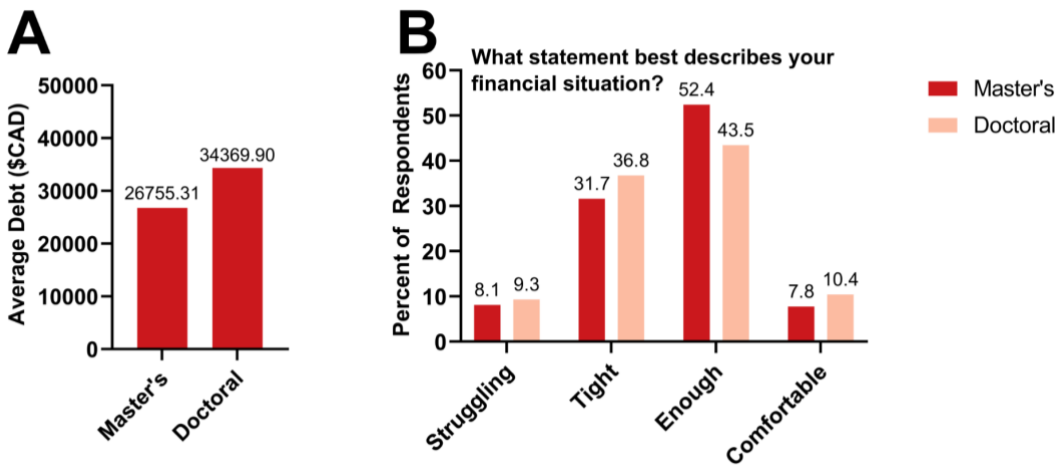

Figure 13. Financial Situation by Level of Study. **A** Average debt of Master's (n=553) and Doctoral respondents (n=750) in CAD dollars. **B** Financial situation of Master's (n=553) and Doctoral (n=750) respondents. Data are shown by the percent of the respective level of study.

D. WORK OUTSIDE OF STUDIES

Work done outside of a graduate student's studies is a taboo topic as it is often frowned upon or, in some cases, against the rules. Academic institutions can prevent graduate students from accessing alternative forms of income through the implementation of the **10-hour rule.** The 10-hour rule is a stipulation provided by most institutions across Canada in which graduate students are eligible to work a maximum of 10 hours per week to supplement their stipend. According to the Ontario Council on Graduate Studies (OCGS) "Principles for Graduate Study at Ontario's Universities", the 10-hour rule is recommended to allow for student success and the timely completion of their program. The 10-hour rule was first implemented by the Ontario Government and OCGS in 1994. Scholarships issued by the Ontario Government also adhere to this rule and regulate the amount of time another establishment can employ a student.

Graduate students have challenged the 10-hour rule, for example, the University of Waterloo cited that there was a "strong desire to provide greater flexibility in employment hours" and changed the requirements of the 10-hour rule to now allow for a student to work up to 20 hours per week. Abolishing the 10-hour rule has increasingly become a topic of conversation in relation to financial struggles amongst graduate students. In provinces outside of Ontario, this seems to be less of an issue as most universities/provinces have much higher limits on work outside of studies (for example, the University of Winnipeg has a limit of 35 hours a week).

"Most graduate students in our department work full time jobs on top of completing their studies AND TA or RA positions. The department complains about students not finishing their programs within a short amount of time, yet they won't pay us more and strongly advise against/look down on students who work over the 10 hour/week "limit".

To investigate graduate student work and gain insight into the work-study balance of graduate students, we began by asking respondents if they are externally employed (or get paid for a service) outside of their graduate studies. This includes any money that is made in addition to their stipend. Many graduate students work as Teaching Assistants and that was counted as additional work if the payment was not included or required as part of their stipend.

More than half of all respondents, 55.6%, work in addition to their studies (**Figure 14A, B**). Of this majority, nearly half work less than 10 hours per week, while the other half work over 10 hours per week. This includes 18.5% between 5-10 hours/week and 17.8% between 10-20 hours/week (**Figure 14C**). A small percentage of respondents (6.5%) actually work over 30 hours per week.

Additionally, when looking at financial struggles, respondents who worked are significantly more worried about their ability to pay back student debt compared to those who do not work (chi2 test, $p = 0.036$) (**Figure 15**). Other financial worries are similar between both the working and non-working groups.

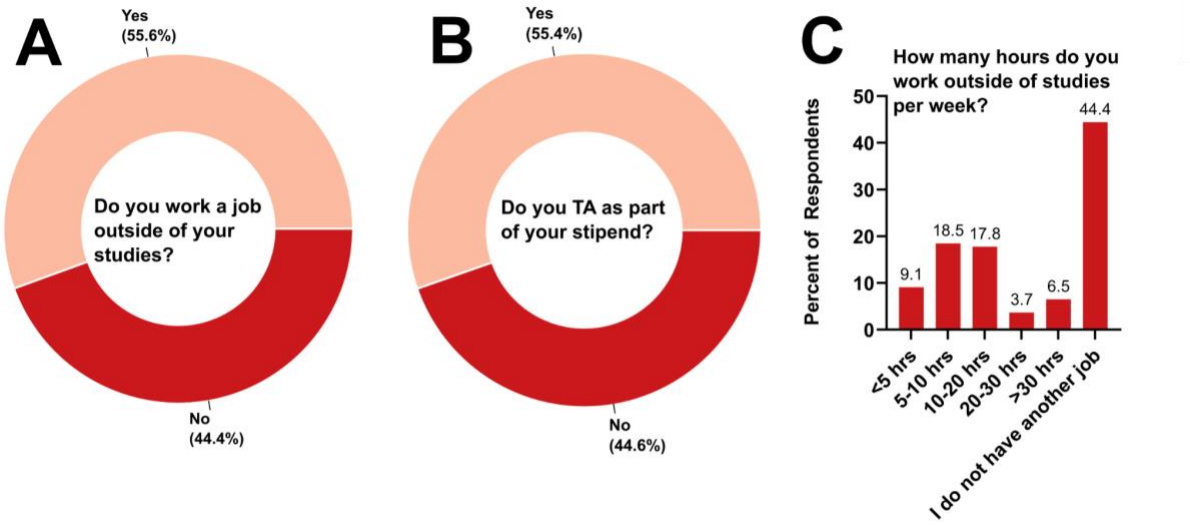

Figure 14. Work outside of studies. ***A*** *Respondents were asked if they work a job outside their studies, by percent (n=1305).* ***B*** *Respondents indicated if being a Teaching Assistant (TA) was a condition of their stipend (n=914).* ***C*** *Number of hours respondents worked outside of studies per week, by percent (n=1305).*

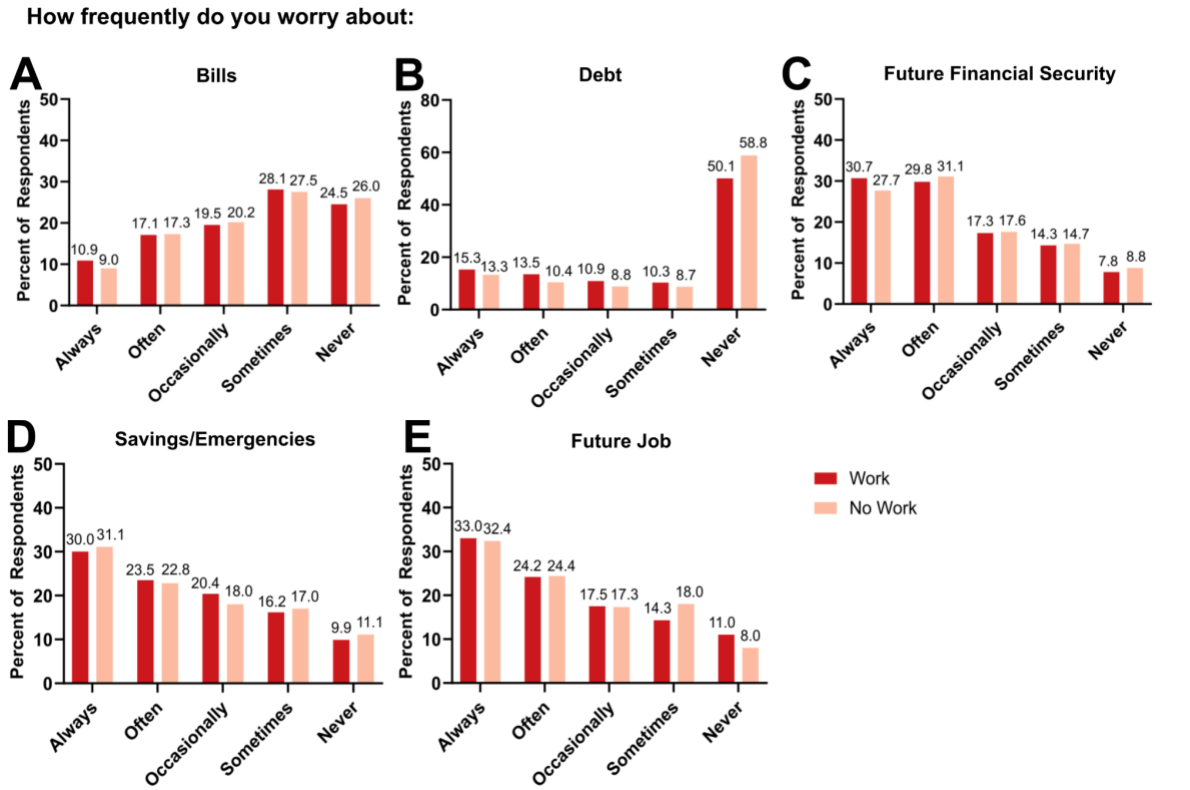

Figure 15. Work outside of studies - Financial Situation. How frequently respondents who work or don't work worry about their **A** ability to pay bills, **B** ability to pay back their student debt, **C** future financial security, **D** savings/ability to pay for emergency expenses and **E** ability to obtain a future job in their chosen field. Data are shown by percent in each category: Work (n=727) and No Work (n=578).

E. STIPEND ERRORS

Graduate students depend on their stipend for financial needs. However, some graduate students have experienced "stipend errors", which are defined as a disruption in the regularly

scheduled payment of your stipend. Our survey sought to understand what stipend errors graduate students may face using questions based on a study conducted by the Dalhousie Working for Inclusion in Chemical Sciences Group.

When asked if survey respondents experienced any errors regarding stipend payments, over 60% of respondents indicated they had not experienced any errors (**Figure 16A**). In contrast, 27% of respondents stated they received late stipend payments. Students have also had errors in getting paid too little, too much or had their stipend payments put towards a university expense/fee (**Figure 16A**). One in three respondents (36.4%) have experienced at least one error in stipend payments (**Figure 16B**).

Anecdotal reports have demonstrated that stipend errors have significantly affected graduate students' finances, time, and energy:

Since this process largely depends on the university administration that is responsible for stipend payments, this work will need to be assessed on a university and/or department level in order to properly view the impacts of stipend errors. While our results show that they are occurring, future work should identify why this is happening and how this can be improved to assist with student financial stress.

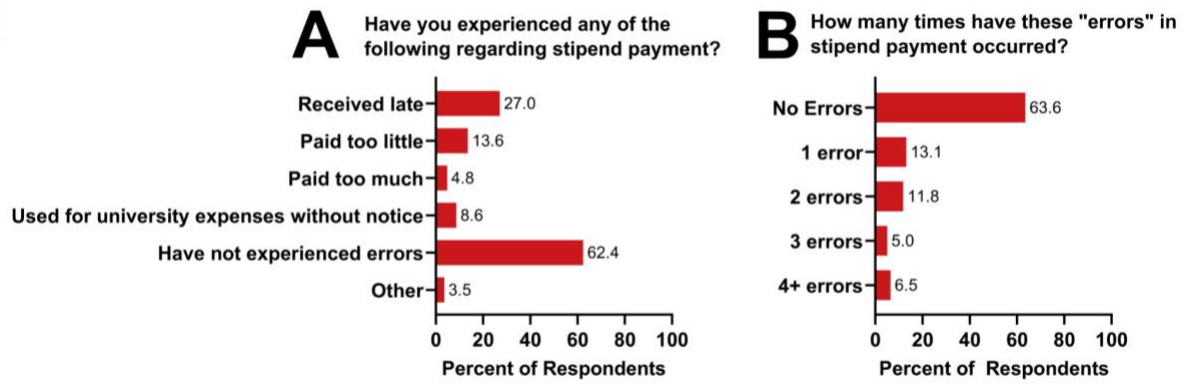

Figure 16. Stipend Errors. **A** Respondents were asked if they ever experienced any errors regarding stipend payments (multiple selections possible) by percent (n=914). An "error" was defined as a *disruption in the regular scheduled payment of your stipend.* **B** Number of times respondents experienced an "error" in stipend payments, by percent (n=914).

F. REIMBURSEMENTS

While the cost of living continues to increase at record rates and stipends remain stagnant, many graduate students are not equipped to deal with unexpected expenses. With only 9.3%

of respondents feeling comfortable financially (**Figure 10A**), we worried about the impact of upfront expenses on graduate students. One common example of academic expenses is conferences, which are frequently encouraged for professional development and can incur hundreds of dollars of expenses in registration and travel fees. In some cases, this could include other forms of travel fees (such as that seen for field work or expeditions), equipment or supplies and more. Additionally, these costs usually have to be paid months in advance, however, the student typically cannot receive the reimbursement until after the conference. A delay in reimbursement, or absence of one, could lead to increased interest on credit card charges and/or lack of money to pay for standard living expenses

Over 50% of respondents, with and without stipends, have previously paid for academic expenses upfront (**Figure 17A**). One of the more surprising findings was that more students without stipends (25.1%) than those with stipends (10.3%) have had to pay for an expense out of pocket. This indicates that not only are these students not receiving monetary compensation for their work but they are also more likely to be asked to spend their own money on academic expenses. In addition, 33.8% of students without stipends were never reimbursed for expenses they paid for compared to 6.3% of students with stipends (**Figure 17B**).

> **For conferences and plane tickets, I can only request a reimbursement after the conference has actually happened. This means that I pay the conference fee and 6 months later I can get it reimbursed. I'd like to note that I often don't request a reimbursement since it's a lot of work and sometimes it's not worth the time and effort to get $300 back.**

The vast majority of students had to wait longer than a week for reimbursements, meaning they had to take on the cost of the expense for extended periods of time (**Figure 17B**). Only 24% of students without stipends and 32.8% of students with stipends received reimbursement within 1-4 weeks. Otherwise, 19.9% of students without stipends and 24.1% of students with stipends had to wait over 2 months. Waiting periods of over a month have the ability to significantly impact student finances, especially as students living on limited stipends have regular monthly expenses such as rent, utilities, credit card bills, etc.

Thus, unsurprisingly, waiting for reimbursements has impacted the ability of the survey's respondents to pay for their other living expenses, with 19.7% of those with stipends and 14.8% of those without stipends indicating so (**Figure 17C**). Expenses related to academic progress should not impede the ability of students to live, and waiting for reimbursements is one way where the academic system puts an incredible burden on students.

This survey provided just a cursory overview of the effects of upfront academic expenses, and has highlighted it as a real issue. Future work should aim to provide a more detailed picture of this issue and how it impacts students. For example, while we did not ask about the nature of these expenses, it may be interesting to delve further into the type of expense's students were asked to pay for - for example was it considered mandatory or not? Did students feel like they had a choice in the decision? What is the total amount of expenses you have paid for? Additionally, one of the risks with waiting for expenses is if a student needs to pay for it through a credit card and doesn't receive their reimbursement on time then interest will begin to increase. This interest will not be covered by the eventual reimbursement.

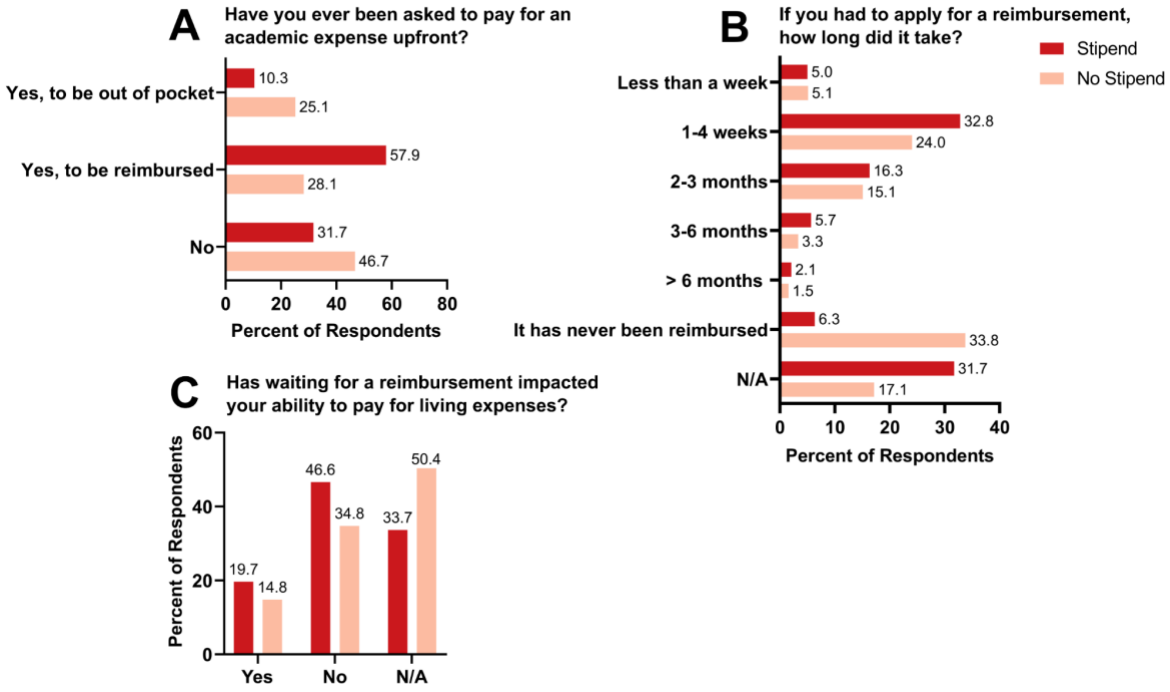

Figure 17. Reimbursements. **A** Respondents who receive a stipend (n=832) or do not (n=366) indicated if they have been asked to pay for an academic expense upfront. **B** Length of time to receive expense reimbursement. Data are shown by percent in each category: Stipend (n=914) and No Stipend (n=391). **C** Impact of reimbursement on living expenses.

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NATIONAL GRADUATE STUDENT
FINANCE SURVEY

CHAPTER 3: GRADUATE STUDENT FUNDING BREAKDOWN

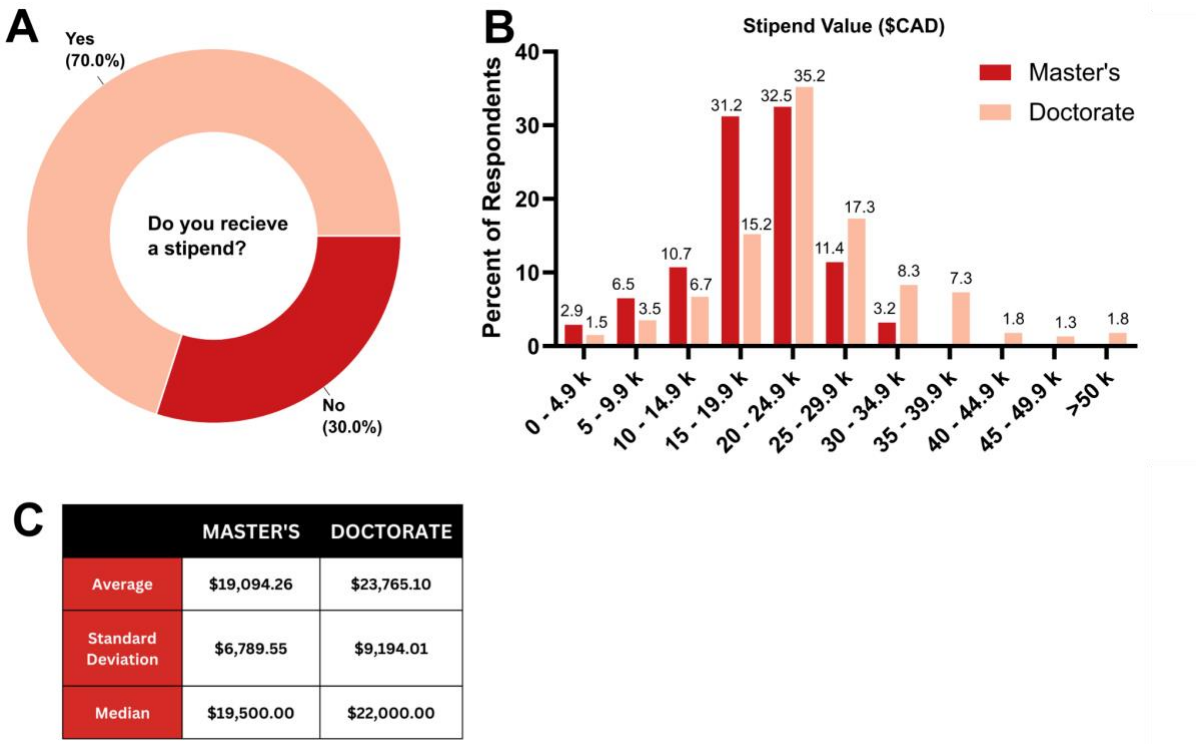
CHAPTER 3: GRADUATE STUDENT FUNDING BREAKDOWN

Funding for graduate students in Canada is complex as it comes from a variety of sources and is regulated on multiple levels. While some universities set minimum funding levels for student stipends, this can vary greatly between departments and faculty at the same university. Over 70% of respondents who answered the survey declared that they received a stipend (**Figure 18A**). The other 30% declared that they did not receive a stipend at all. Of these, 73% felt that they should have a stipend (**Figure S3**).

The average stipend reported is $19,094 for master's students (includes Professional Master's; Research Stream Master's; Course-Based Master's; Professional Business Degree) and $23,765 for doctorate students (Professional Doctoral; Research Stream Doctoral; Course Based Doctoral; MD PhD) (**Figure 18B**). If we consider an average 40-hour work week, this becomes an hourly average pay of $9.18/hour for a master's student and $11.43/hour for a doctoral student. This is well below the $15/hour minimum wage implemented by the federal government, and does not account for the fact that many graduate students work over the average 40-hour standard.

Based on the Likert Scale of Satisfaction (1 as Very Unhappy and 5 as Very Happy), almost half the respondents (46%) felt unhappy about their stipend value, which highlights an issue with the current stipend values (**Figure 19**). When asked about their ideal stipend values, respondents reported an average of $28,600 for master's students and $33,512 for doctorate students, significantly higher than current stipends (**Figure 20**). The SPE's *Rethinking Federal Research Funding Report*, found that respondents' ideal value of federal scholarships was $21,000 for a master's student and $35,000 for a PhD student. In our results, master's students reported a much higher ideal stipend value. This could be because current funding for master's students (averaging $19,094) puts them well below the poverty line. Further, the ideal value of $21,000 from the SPE survey would still be under the poverty line in the vast majority of the country.

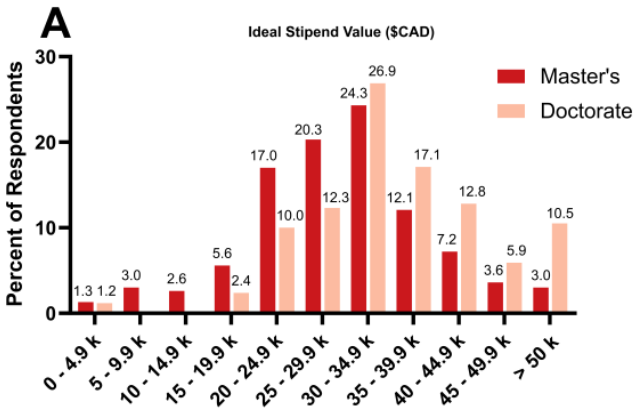
We asked respondents to share the source of their stipend, which could include multiple sources. A majority of respondents (67%) are funded through their supervisor (**Figure 21A**). Less than half (45.2%) are funded through their department/faculty. While there are national and provincial awards, only 20% are funded through federal awards and 11.5% of respondents are funded through provincial awards. Most respondents (77%) reported only having between 1-2 funding sources (**Figure 21D**). The length of funding also varies from less than 6 months to 4 years (**Figure 21C**). Additionally, 45.1% of students have experienced either an increase or decrease in their stipend value; 25.9% have received an increase, 6.5% have received a decrease, and 12.7% have received both an increase and a decrease at some point in their studies (**Figure 22A**). The top reported cause of an increase in stipend values was that the respondent received a scholarship (further information about scholarships can be found in *Chapter 5*). Otherwise, respondents reported that their supervisor gave a stipend raise or their student association fought through negotiations to increase student stipends (**Figure 22B**). Conversely, the top reasons for students' stipends decreasing were a change in TA hours, their scholarship ending, or their supervisors decreasing their funding due to tight finances (**Figure 22B**). In general, scholarships, TA hours and the supervisor's financial status play a large role in determining the student's stipend value.



C

	MASTER'S	DOCTORATE
Average	$19,094.26	$23,765.10
Standard Deviation	$6,789.55	$9,194.01
Median	$19,500.00	$22,000.00

Figure 18. Stipend Status. **A** Respondents were asked if they receive a stipend, by percent (n=1305). **B** Stipend value of respondents in their Master's (n=308) or Doctorate (n=600) studies. Data are shown by the percentage of students in the respective level of study. **C** Average and Median stipend value of respondents in their Master's (n=308) or Doctorate (n=600) studies.



B

	MASTER'S	DOCTORATE
Average	$28,636.56	$33,512.70
Standard Deviation	$ 12,198.09	$ 10,666.61
Median	$30,000.00	$ 32,000.00

Figure 19. Ideal Stipend. **A** The ideal stipend value shared by respondents in their Master's (n=305) or Doctorate (n=592) studies. Data are shown by the percentage of students in the respective level of study. **B** Average and Median of ideal stipend value of respondents in their Master's (n=308) or Doctorate (n=600) studies.

Figure 20. Stipend Satisfaction. Respondents were asked if they were happy with the value of their stipend based on the Likert scale of satisfaction (1 as Very Unhappy and 5 as Very Happy) by percent (n=914).

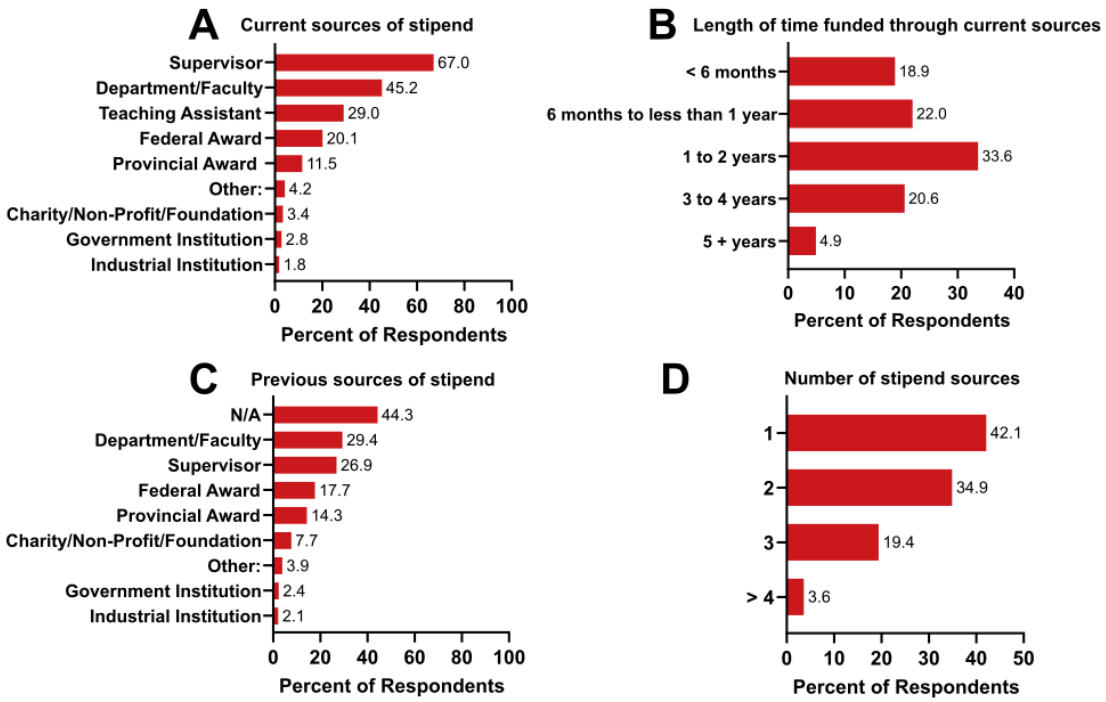


Figure 21. Stipend Sources. **A** Current sources of stipend of respondents (multiple selections possible) (n=914). "Other" includes institutional scholarships, research assistantships, and university scholarships. **B** Length of time funded through current sources of stipend (n=914). **C** Previous sources of stipend, not including current stipend sources (multiple selections possible) (n=914). "Other" includes Mitacs and institutional scholarships. **D** Number of current stipend sources (n=914). Data are shown by percentage.

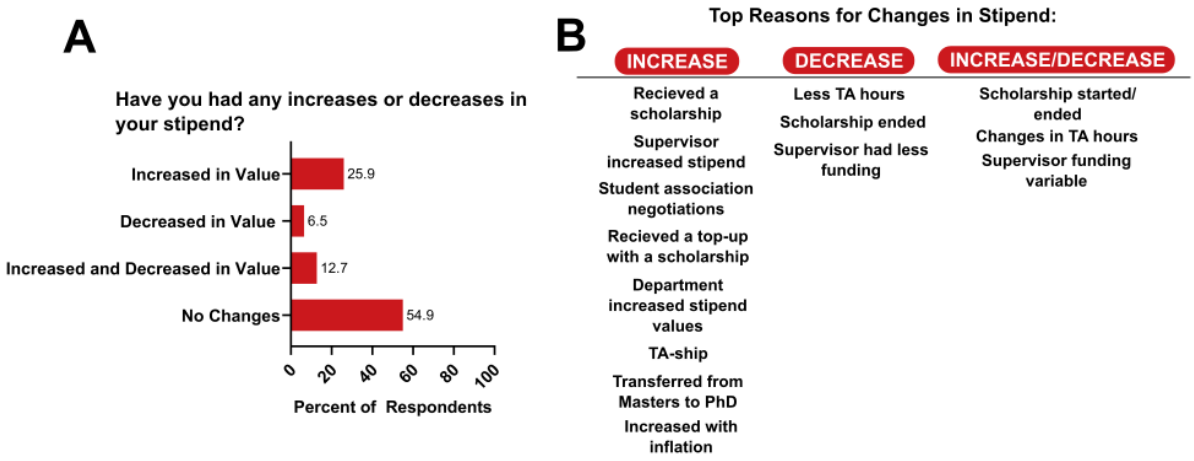


Figure 22. Stipend Changes **A** Reported increases and decreases in student stipend values (n=914). **B** Top reasons for the reported change in stipend values, broken down increase, decrease or both an increase and a decrease.

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CHAPTER 4: FIELD OF STUDY ANALYSIS

CHAPTER 4: FIELD OF STUDY ANALYSIS

Graduate student experiences, especially regarding financial situations, vary greatly depending on the field of study dictated by differences in tuition prices, stipend values, work expectations, and scholarship access.

Statistics Canada reported that in 2022/2023, students' tuition varied significantly based on their degrees. For example, those studying business, management and public administration paid the highest tuition, averaging $14,272 per year. Graduate students in STEM fields, such as computer and information sciences with an average tuition of $8,902 per year, and engineering with an average tuition of $7,454 per year, are on the higher end of tuition costs. Comparatively, humanities graduate students have lower tuition on average, at $4,753 per year.

We were interested in exploring how tuition, stipend payments, and work vary between graduate students in different fields of study and whether these contribute to differences in financial struggle. We asked students to report their annual tuition fees, including ancillary fees. Unsurprisingly, business students had the highest annual tuition (**Figure 23**), which was similar to what was reported by Statistics Canada. Physical sciences, medical sciences, and law students all reported annual tuition costs above $9,000, while those for social sciences, life sciences, and arts students were above $8,000 per year (**Figure 23**).

Whether students receive a stipend or not depends on the program and degree type. The majority of students in the life sciences, physical sciences, and medical sciences reported receiving a stipend (87.6%, 77.6% and 71.4%, respectively) (**Figure 24A**). In comparison, only 49.5% and 44.4% of students in the arts and humanities and social sciences, respectively, receive a stipend. Business students were least likely to receive a stipend, with only 33.3% of students reporting receiving one. This disparity between programs is likely due to stipends typically only being granted to students in research-based programs, which tends to be more common in the natural sciences. While the average stipend value was consistent across programs (**Figure 24B**), the most common sources for those stipends differed. Funding by the supervisor was the most common stipend source for life science, physical science and medical science students, followed by the department/faculty, and then teaching assistantships (life science and physical science) or federal awards (medical science) (**Table 1**). In contrast, for arts and humanities and social sciences students, the department/faculty was the most common stipend source, followed by teaching assistantship, and then either federal awards (arts and humanities) or supervisors (social sciences).

As expected, a larger percentage of students in programs that receive stipends less often, particularly arts and humanities and social sciences, reported working outside of their studies (71.3% and 77.1% respectively) (**Figure 25**). In comparison, students in programs that more often receive stipends (life sciences, medical sciences, and physical sciences) were less likely to report working outside of studies (44.6%, 54.3%, and 47.7% respectively).

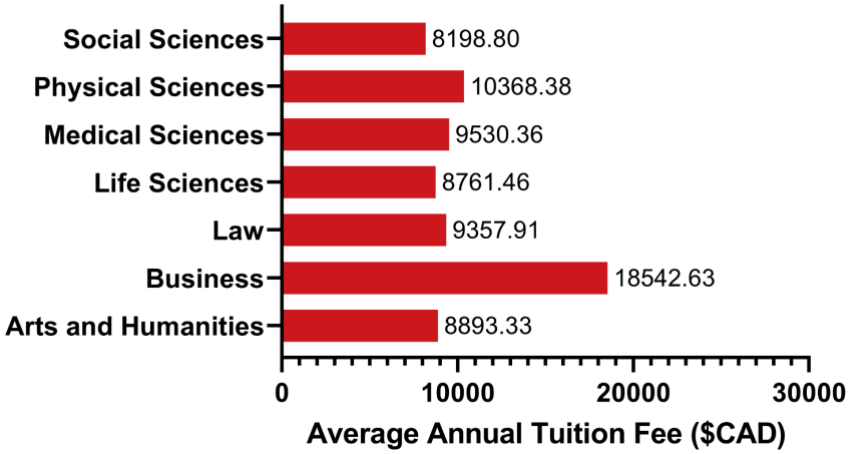

Figure 23. Tuition Fee by Field of Study. Average annual tuition in CAD dollars by field of study (n=1305). Respondents self-reported their field of study from 7 categories. If respondents indicated multiple fields of study or an option not listed in the survey, they were categorized into one of the six categories based on their answers for analysis purposes.

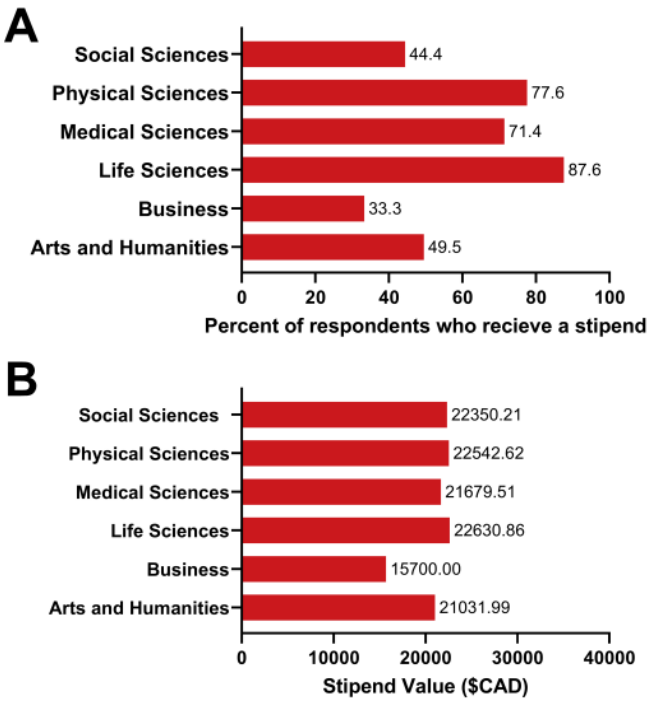

Figure 24. Field vs. Stipend. **A** Respondents were asked if they receive a stipend, categorized by field of study. Responses are shown as a percent of respondents who responded yes to receiving a stipend (n=914). **B** Average stipend value of respondents by their field of study. Arts and Humanities (n=101), Business (n=21), Life Sciences (n=307), Medical Sciences (n=311), Physical Sciences (Engineering, Physics, Mathematics, etc) (n=344) and Social Sciences (n=214). Law was excluded due to less than 5 responses.

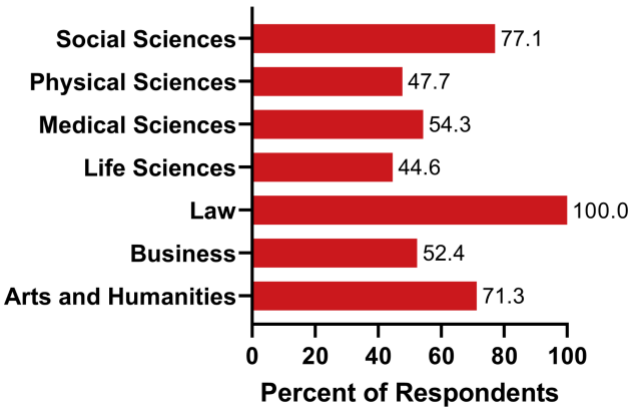

Figure 25. Work by Field of Study. Respondents were asked if they work a job outside of their studies, categorised by field of study: Arts and Humanities (n=101), Business (n=21), Law (n=7), Life Sciences (n=307), Medical Sciences (n=311), Physical Sciences (Engineering, Physics, Mathematics, etc) (n=344) and Social Sciences (n=214). Data are shown as a percent of respondents who responded yes to working outside of their studies.

FIELD OF STUDY	RANKING	FUNDING SOURCE	PERCENT OF RESPONDENTS
Arts and Humanities	1	Department/Faculty	64.00%
	2	Teaching Assistant	46.00%
	3	Federal Award (Tri-Councils - NSERC, CIHR, SSHRC, etc)	22.00%
Life Sciences	1	Supervisor	75.09%
	2	Department/Faculty	44.61%
	3	Teaching Assistant	31.60%
Medical Sciences	1	Supervisor	74.77%
	2	Department/Faculty	30.63%
	3	Federal Award (Tri-Councils - NSERC, CIHR, SSHRC, etc)	17.57%
Physical Sciences (Engineering, Physics, Mathematics, etc)	1	Supervisor	90.99%
	2	Department/Faculty	55.86%
	3	Teaching Assistant	34.68%
Social Sciences	1	Department/Faculty	67.37%
	2	Teaching Assistant	50.53%
	3	Supervisor	33.68%

Table 1. Top Funding Sources by Field of Study. Top three funding sources by field of study (multiple selections possible): Arts and Humanities (n=50), Business (n=21), Life Sciences (n=269), Medical Sciences (n=222), Physical Sciences (Engineering, Physics, Mathematics, etc) (n=267) and Social Sciences (n=95). Business and Law were excluded due to fewer than 5 responses. Data are shown as a percent of respondents by field of study.

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NATIONAL GRADUATE STUDENT
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CHAPTER 5: AWARD RECIPIENTS ANALYSIS

CHAPTER 5: AWARD RECIPIENTS ANALYSIS

As previously outlined, graduate students can fund their studies through a number of different sources, including federal/provincial/institutional scholarships, bursaries/grants, federal/provincial student loans, bank loan/line of credit, family/spousal/partner support, employment pay, employer support, institutional stipends, and personal savings. Though the list of potential monetary support for students may initially appear extensive, the amount of available funding for a given student depends on their living situation and varies greatly.

In Canada, awards are granted to students who display a high level of academic achievement and are intended to encourage graduate students to dedicate more time to their studies (**Table 2**). The awards are primarily distributed by three federal research funding groups: the Natural Sciences and Engineering Research Council of Canada (NSERC), the Social Sciences and Humanities Research Council of Canada (SSHRC), and the Canadian Institute of Health Research (CIHR), which together form the Tri-Agency.

AWARD TITLE	FEDERAL RESEARCH FUNDING AGENCY	VALUE ($CAD), MAXIMUM DURATION & TENURE	ELIGIBILITY*
Canadian Graduate Scholarships-Master's (CGS-M)	Tri-Agency	$17,500/yr. for 1 yr. Eligible Canadian institution	Canadian Citizen, Permanent Resident of Canada, or a Protected person under subsection 95(2) of the Immigration and Refugee Protection Act (Canada) Completed between 0-12 months in program
Vanier Canada Graduate Scholarships	Tri-Agency	$50,000/yr. for 3 yrs. Eligible Canadian institution	Canadian Citizen, Permanent Resident of Canada, Foreign Citizens Completed <20 months in program Completed <32 months in program****
Canadian Graduate Scholarships-Doctoral (CGS-D)	Tri-Agency	$35,000/yr. for 3 yrs. Eligible Canadian institution	Canadian Citizen, Permanent Resident of Canada, or a Protected person under subsection 95(2) of the Immigration and Refugee Protection Act (Canada) Completed <24 months in program** Completed <36 months in program***
NSERC Postgraduate Scholarships-Doctoral (PGS-D)	NSERC	$21,000/yr. for 3 yrs. Eligible Canadian institution or eligible foreign institution	Canadian Citizen, Permanent Resident of Canada, or a Protected person under subsection 95(2) of the Immigration and Refugee Protection Act (Canada) Completed <24 months in program** Completed <36 months in program***
SSHRC Doctoral Fellowships	SSHRC	$20,000/yr. for 1-4 yrs. Eligible Canadian institution or eligible foreign institution	
Doctoral Foreign Study Award (DFSA)	CIHR	$30,000/yr. for 3 yrs. Eligible foreign institution	Canadian Citizen, Permanent Resident of Canada, or a Protected person under subsection 95(2) of the Immigration and Refugee Protection Act (Canada) Completed <24 months in program** Completed <36 months in program***

Table 2. Summary of Federal Tri-Council Awards. A summary of NSERC, SSHRC and CIHR awards for master and PhD students, including the funding agency, value and eligibility requirements.

In addition to federal research awards, there are also provincial awards for graduate students. For example, the Ontario Graduate Scholarship (OGS) is allocated through a merit-based program and available for application by students of varying academic disciplines across the province. Each award is jointly funded by the Province of Ontario (two-thirds) and the university offering the award (one-third). Fonds de recherche du Québec (FRQ) is another provincial organisation known to recognize excellence in the work of researchers. Every year, FRQ provides financial support to many students by offering awards, from Master's training scholarships to Doctoral scholarships.

Of 1,305 survey respondents, 221 doctoral and 131 master's students reported receiving a federal award, whilst 144 doctoral and 52 master's students reported receiving a provincial award (**Figure 26**). These award recipients represent high-calibre students that have not only achieved acceptance into competitive graduate research programs, but that have also been identified as the top scholars within this strong research categorisation. In surveying Canadian graduate students, we wanted to identify whether the intended goals of federal and provincial awards were being achieved by the current 2021 award values, and how the financial well-being of award and non-award holders varied.

In comparing responses pertaining to the financial concerns of award and non-award holders, awardees reported having less financial concern for bills (significant difference at $p<10^{-5}$ level using a chi2 test), debt, future financial security, and savings/emergencies (significant difference at p=0.032 level using a chi2 test) than non-award holders (**Figure 27**). When asked how much savings students have available in case of emergencies, award holders were significantly more likely than non-award holders to have 6+ months of living expenses saved (chi2 test, p=0.00011), though we note that less than 30% of respondents in both categories claimed to have these funds available (**Figure 28**). The survey revealed that award holders have less outstanding student debt compared to non-award holders, at $26,124.85 and $32,123.30, respectively (**Figure 29**). Furthermore, when asked to describe their current financial situation, award holders were less than half as likely to respond as "struggling" and more than twice as likely to respond as "comfortable" compared to non-award holders, a difference significant at the $p<10^{-5}$ level (chi2 test) (**Figure 30**). Overall, 48.4% of non-award holders and 38% of award holders responded as either "struggling" or "tight" to describe their current financial situation. These survey findings are not surprising considering that awards can help guarantee an income for graduate students that may or may not be provided to non-awardees.

Surprisingly, however, the survey responses demonstrate that awardees are nonetheless preoccupied with financial concerns during their graduate program. For example, when asked how frequently they worry about financial concerns including bills, savings/emergencies, and future financial security, over 66% of award holders responded having financial concerns through responses of "always," "often," or "sometimes". Over 44% of award holders responded having concerns about financial debt (**Figure 27**). These findings highlight the inability of current federal and provincial award values to effectively enable graduate award holders to concentrate fully on their studies. When graduate students were asked what their ideal stipend value would be, 26% of respondents stated $30,000-$34,999 (**Figure 19**). This value range falls closely to the value of the current Canadian Graduate Scholarships-Doctoral (CGS-D) award.

Additionally, we examined financial incentives received by graduate students after getting an award. The most popular incentive was an additional “top-up” of their stipend (27% of respondents), typically from their supervisor. This is typically granted to the student in cases where the scholarship replaces a stipend previously paid by their supervisor. Since the supervisor no longer needs to pay the student's stipend, some will choose to pay the student a smaller additional amount on top of their award. Additionally, 17% of respondents reported receiving a scholarship meant to cover their tuition fully and 14% received a scholarship meant to cover their tuition partially. This is often granted by the student’s department/university in the form of an “Excellence Scholarship " or “Tuition Waiver”.

Interestingly, 5.5% of award holders reported a decrease in their total amount of take-home money. This could be due to specific situations where the value of awards is less than the stipend value they were receiving. It should be noted that receiving Tri-Council awards can add additional financial burdens on the student as it can interfere with the students’ ability to qualify for loans. Additionally, these awards are defined for a period of time that is often unrealistic for students and does not cover them for the entirety of their studies. Although not fully captured in this study, future efforts should identify what happens to students following the end of their award. It was noted various times in the written comments, that students often did not have guaranteed funding after this funding expired. For example:

“For those funded through scholarships/awards, what happens when their awards ends. For example, mine will end in August 2022, and my stipend for my research assitantship will not be adjusted to compensate for the $13000 net loss in my annual compensation. For myself and others in my position, this will be an extremely large financial burden as we attempt to complete the final years of our graduate studies.”

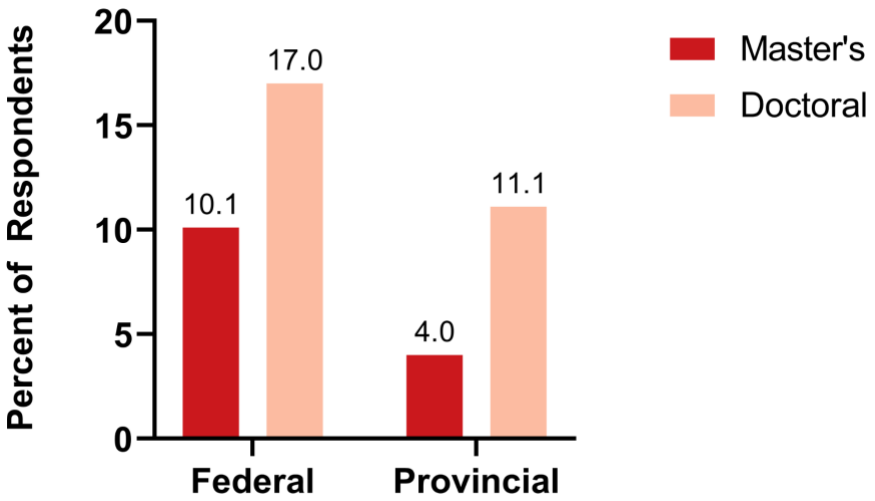

Figure 26. Federal and Provincial Award Holders. Percent of respondents who have received an award based on level of study: Master’s (n=547) and Doctoral (n=758). Award holder status is defined as being selected to receive a federal or provincial award. This does not include any other awards that were indicated (admission scholarships, institutional scholarships, etc.).

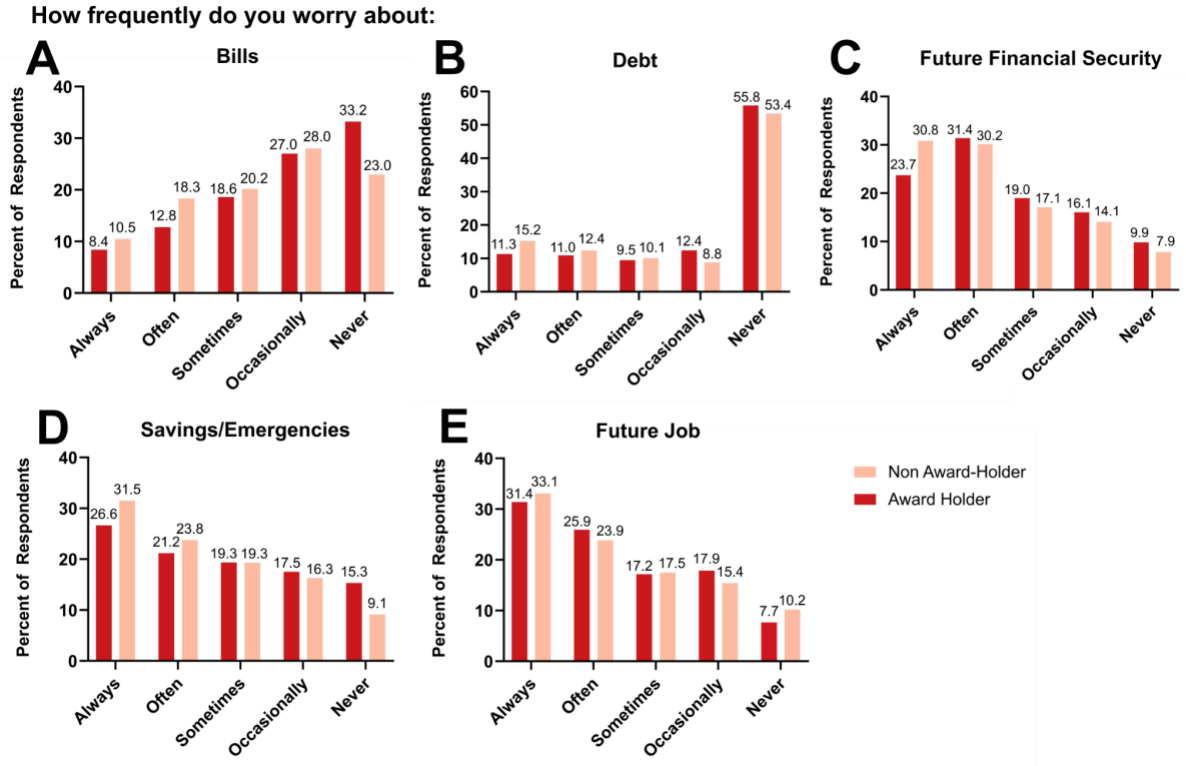

Figure 27. Financial Situation by Award Holder Status. How frequently respondents, based on award holder status, worry about their **A** ability to pay bills, **B** ability to pay back their student debt, **C** future financial security, **D** savings/ability to pay for emergency expenses and **E** ability to obtain a future job in their chosen field. Data are shown by percent in each category: Non Award-Holder (n=1031) and Award-Holder (n=274). Award holder status is defined as being selected to receive a federal or provincial award. This does not include any other awards that were indicated (admission scholarships, institutional scholarships, etc.).

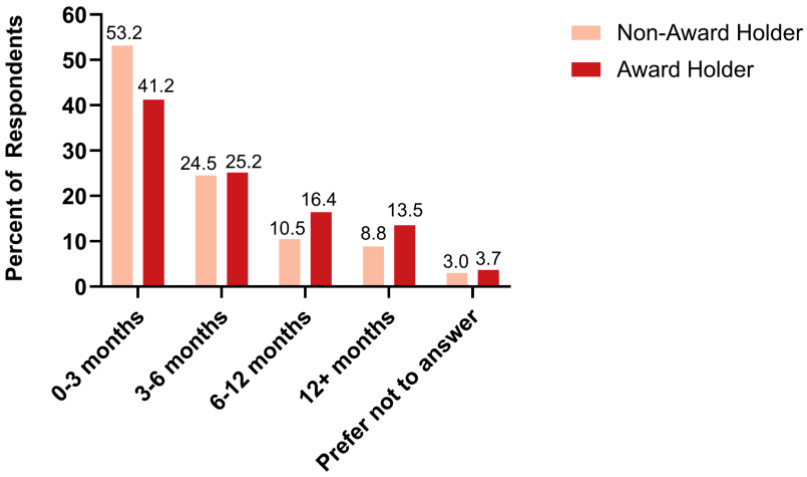

Figure 28. Amount of Savings by Award Holder Status. Amount of savings, measured by months of living expenses, that respondents have available for emergencies, by award holder status. Data are shown by percent in each category: Non Award-Holder (n=1031) and Award-Holder (n=274). Award holder status is defined as being selected to receive a federal or provincial award. This does not include any other awards that were indicated (admission scholarships, institutional scholarships, etc.).

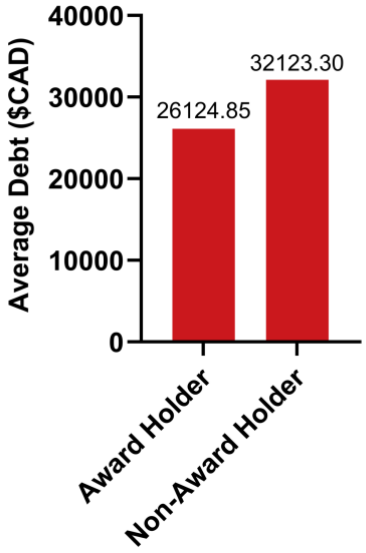

Figure 29. Average Debt by Award Holder Status. Average debt of respondents by award holder status. Data are shown by percent in each category: Non Award-Holder (n=1031) and Award-Holder (n=274). Award holder status is defined as being selected to receive a federal or provincial award. This does not include any other awards that were indicated (admission scholarships, institutional scholarships, etc.).

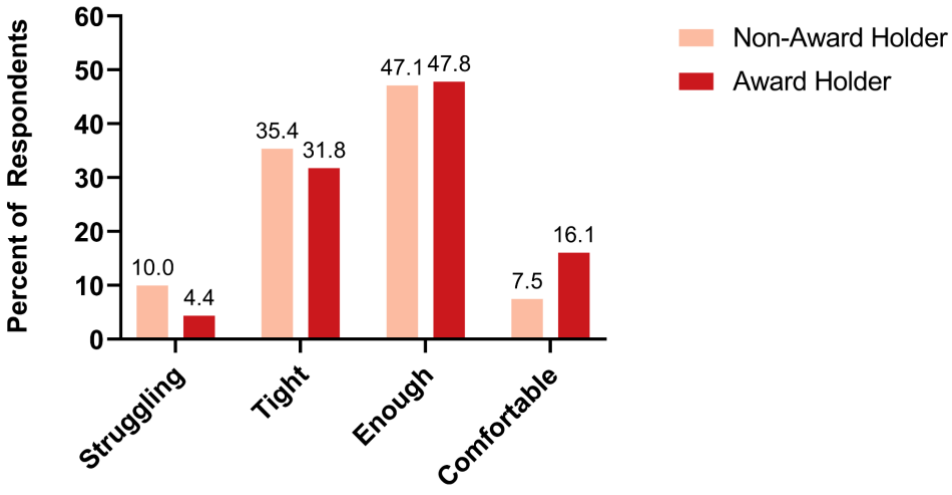

Figure 30. Financial Situation by Award Holder Status. Financial situation of non award-holding (n=1031) and award-holding (n=274) respondents. Data are shown by the percent of respective award statuses. Award holder status is defined as being selected to receive a federal or provincial award. This does not include any other awards that were indicated (admission scholarships, institutional scholarships, etc.).

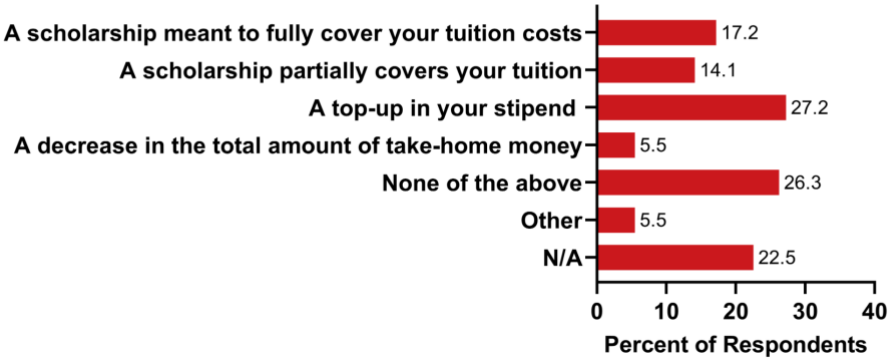

Figure 31. Scholarship Incentives. Respondents were asked if they received additional incentives or changes after receiving their scholarships (n=941). Other includes: scholarship is subtracted from stipend (no top-up) and funding caps.

OSPN
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NATIONAL GRADUATE STUDENT
FINANCE SURVEY

CHAPTER 6: DEMOGRAPHIC CROSS-SECTION ANALYSIS

CHAPTER 6: DEMOGRAPHIC CROSS-SECTION ANALYSIS

Diversity is essential amongst graduate students to foster a generation of scientists who carry diverse perspectives and ideas. This will be vital to innovation as we tackle the grand challenges of today and tomorrow. A 2019 *Survey of Postsecondary Faculty and Researchers* from Statistics Canada showed that Postdoctoral fellows and PhD students are increasingly more diverse than the previous generation of researchers. In fact, 50% of Postdoctoral fellows and 39% of PhDs reported belonging to a visible minority group. Importantly, this study also revealed that women, visible minorities and those who self-reported with a disability or as Indigenous, were all less likely to receive research funding. Per the Dimensions charter: "equity, diversity and inclusion strengthen the research community, the quality, relevance and impact of research, and the opportunities for the full pool of potential participants."

Further, as described in Baskaran, et. al. (2021), women, Indigenous peoples, and visible minorities remain underrepresented in graduate programs. This translates to a lack of representation amongst federal doctoral and master's level scholarships. Factors such as eligibility, duration of awards, and evaluation criteria are significant barriers to the promotion of equity, diversity, and inclusion (EDI) in graduate programs. While targeted investments, such as new funding in Budget 2022 for Black Scholars, and recent changes to evaluation criteria, such as NSERC's new Guidelines on Contributions to Research, Training and Mentoring which expands the definition of "excellence", are steps in the right direction, there is still work to be done to ensure accessibility of graduate degrees.

Herein, we aim to understand the financial struggles of underrepresented groups of graduate students in order to further understand barriers of entry into graduate degrees in Canada.

A. GENDER-BASED ANALYSIS

Women composed the majority of the survey sample (63.2%), followed by men (32.8%), and respondents who identified as non-binary, gender-fluid, agender, genderqueer, trans, two-spirit, or gender non-conforming (4.0%; definitions in Appendix F). There were no significant differences in average stipend between gender groups (KW test, p = 0.078) (**Figure 33)**. Across all gender groups, about half viewed their financial situations as "Struggling" or "Tight", with men slightly more likely to do so, however, the differences between groups were not significant (chi2 test, p=0.053) (**Figure 35**). It appears that respondents who did not identify solely as men or women were less likely to have received a government award compared to those who did, however, this difference was not significant (chi2 test, p=0.058) (**Figure 34)**.

With the low sample size of gender diverse individuals in this study, cross analysis for these metrics were not conclusive. Future efforts should be targeted to better understand the specific financial struggles of these graduate students.

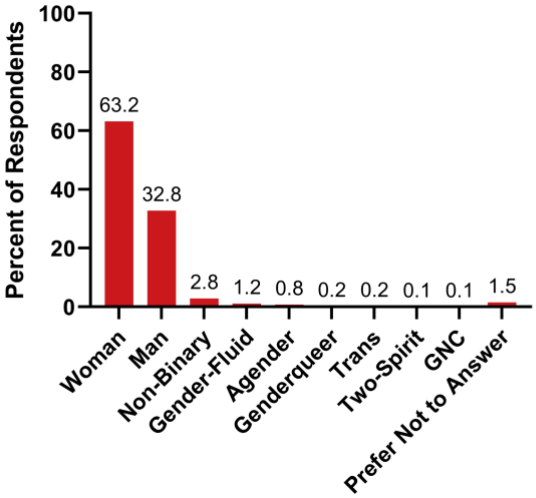


Figure 32. Gender Identity. Gender identity of all respondents by percent (n=1305) (multiple selections possible). Definitions are located in Appendix C. GNC = gender non-conforming.

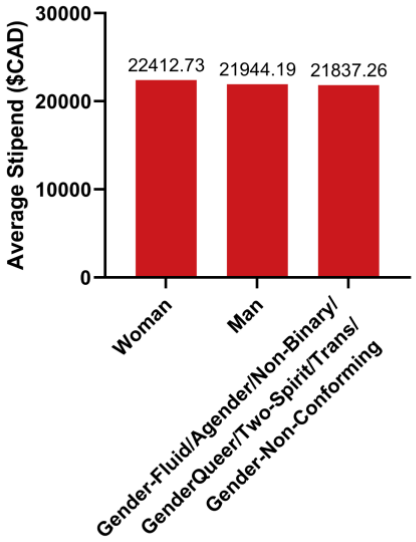


Figure 33. Average Stipend by Gender Identity. Average stipend value of respondents by their gender identity: Woman (n=547), Men (n=328) and Gender-Fluid/Agender/ Non-binary/ GenderQueer/ Two-Spirit/ Trans/ Gender-Non-Conforming (n=37).

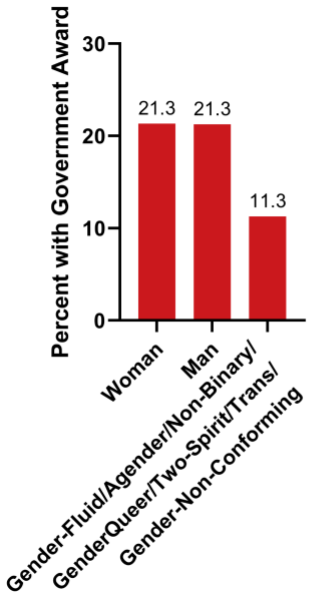


Figure 34. Award Holder Status by Gender Identity. Percent of respondents who have received an award by their gender identity: Woman (n=825), Men (n=428) and Gender-Fluid/ Agender/ Non-binary/ GenderQueer/ Two-Spirit/ Trans/ Gender-Non-Conforming (n=62). Award holder status is defined as being selected to receive a federal or provincial award. This does not include any other awards that were indicated (admission scholarships, institutional scholarships, etc.).

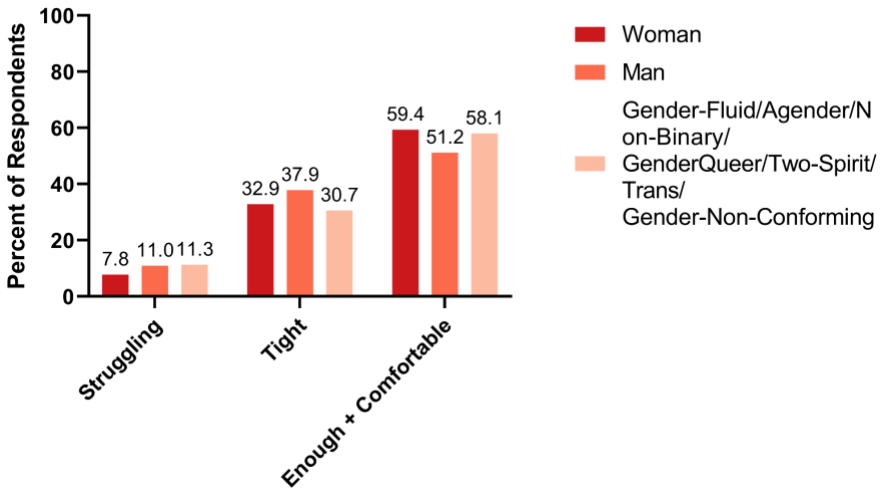
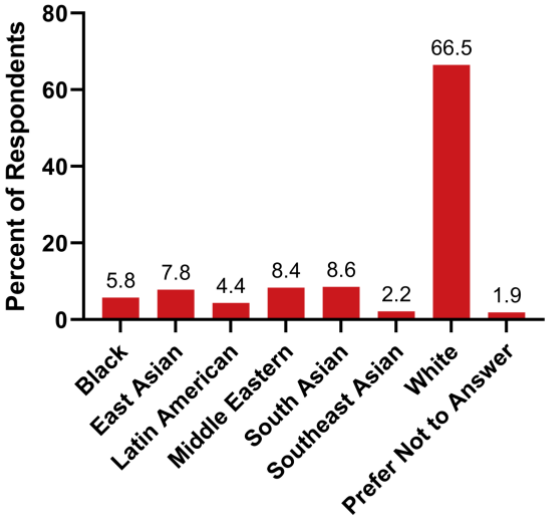


Figure 35. Financial Situation by Gender Identity. Financial situation of respondents by their gender identity: Woman (n=825), Men (n=428) and Gender-Fluid/Agender/Non-binary/GenderQueer/Two-Spirit/Trans/Gender-Non-Conforming (n=62). Enough and Comfortable responses were grouped to ensure more than 5 responses in this category.

B. ETHNICITY-BASED ANALYSIS

Respondents largely identified as White (66.5%) (**Figure 36**). Significant differences (Chi2 test, p=0.0087) were seen in the proportion of students receiving a government award with 32% of Southeast Asian students and 24% of White students reported receiving a government award, which was higher than Black (9%), East Asian (18%), Latin American (16%), Middle Eastern (15%), and South Asian students (19%) (**Figure 38**). Significant differences in average stipends were found (KW test p=0.006) with Black, Middle Eastern and South Asian students having noticeably lower average stipends **(Figure 37).** Black, Latin American, Middle Eastern, South Asian, and Southeast Asian students were also more likely to report struggling

or feeling tight financially than East Asian or White students (**Figure 39**). Overall, those who identified as Middle Eastern were much more likely to struggle financially, while those identifying as White were much less likely to struggle financially compared to racialized groups (**Figure 39**).



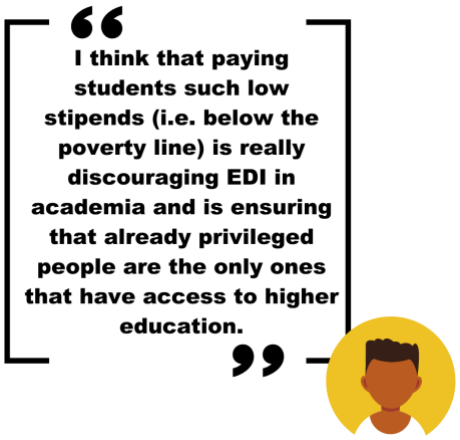


Figure 36. Ethnic Identity. Percent of respondents reporting selected ethnic identity (multiple selections possible) (n=1300).

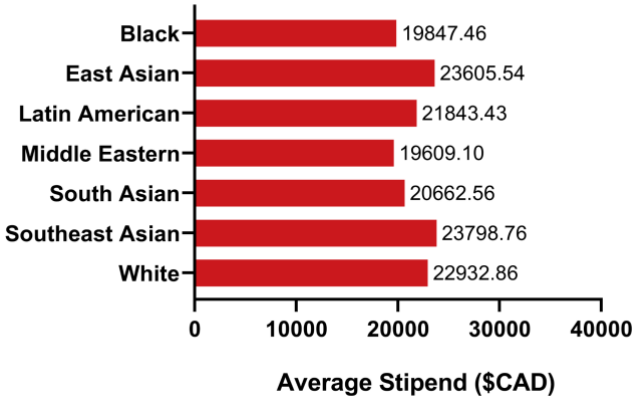


Figure 37. Average Stipend by Ethnic Identity. Average stipend value of respondents by their ethnic identity: Black (n=48), East Asian (n=78), Latin American (n=46), Middle Eastern (n=77), South Asian (n=91), Southeast Asian (n=21), White (n=588).

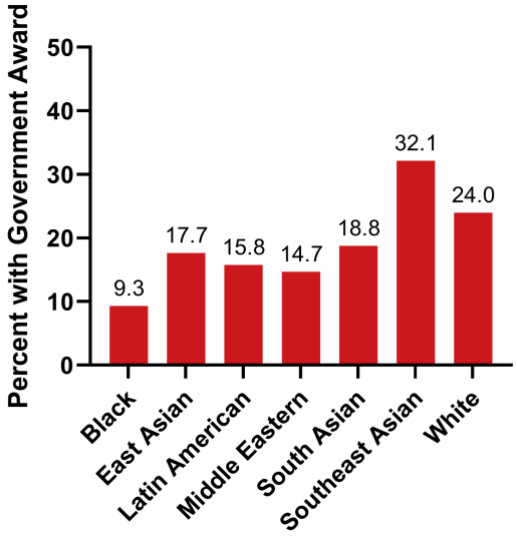


Figure 38. Award Holder Status by Ethnic Identity. Percent of respondents who have received an award by their ethnic identity: Black (n=75), East Asian (n=102), Latin American (n=57), Middle Eastern (n=109), South Asian (n=112), Southeast Asian (n=28), White (n=868). Award holder status is defined as being selected to receive a federal or provincial award. This does not include any other awards that were indicated (admission scholarships, institutional scholarships, etc.).

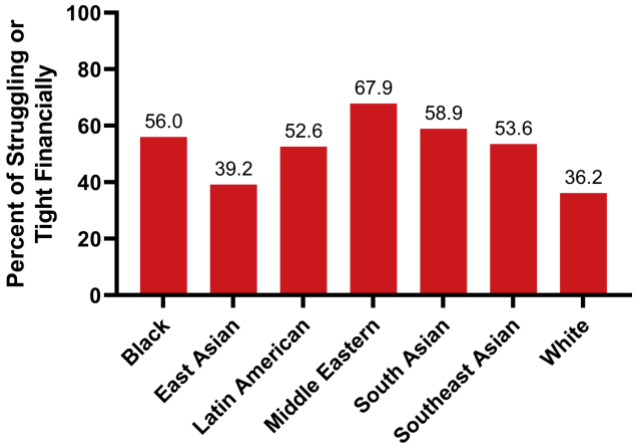


Figure 39. Financial Situation by Ethnic Identity. Financial situation of respondents by their ethnic identity: Black (n=75), East Asian (n=102), Latin American (n=57), Middle Eastern (n=109), South Asian (n=112), Southeast Asian (n=28), White (n=868). Enough/Comfortable and Tight/Struggling responses were combined to ensure more than 5 responses in the grouped categories.

C. INDIGENOUS

The 2021 Census found that 1.8 million Indigenous peoples reside in Canada. Of these, 1.8 million Indigenous individuals, approximately 1.048 million people identify as First Nation, 625 thousand identify as Metis, and 70 thousand identify as Inuit, representing the three main categories of Indigenous peoples in Canada. Indigenous participation in graduate programs surveyed remains low. Indigenous respondents consisted of only 1.2% of the survey population, while 0.8% of individuals preferred not to answer this question (**Figure 40**). Proportionally, this is consistent with the Statistics Canada report showing that 1.7% of PhD students identify as indigenous. Additionally, while indigenous peoples in Canada belong to three broad groups: Inuit, Metis, and First Nations, our survey did not collect any further information examining which groups the Indigenous respondents identify as.

However, some alarming trends could be seen between Indigenous and non-Indigenous graduate students within these results. There is a significant (KS test, p=0.0012) reduction in the average stipend for the Indigenous population ($13,682) to non-Indigenous populations ($22,286) (**Figure 41).** There was no significant difference (Chi2 test, p=0.42) in the responses of Indigenous (33.3%) and non-Indigenous (43.7%) individuals responding that their financial situation is struggling or tight (**Figure 42**). The small sample in our data suggests that it could be important for a more detailed investigation into these discrepancies.

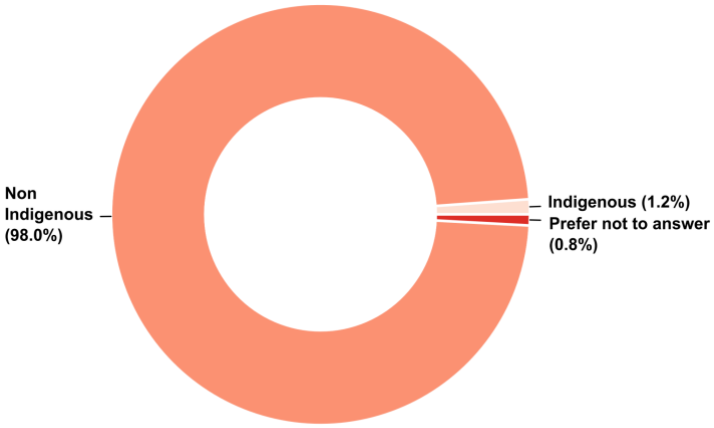


Figure 40. Indigenous Identity. Percent of respondents who identified as Indigenous (First Nations, Métis or Inuit) (n=1305).

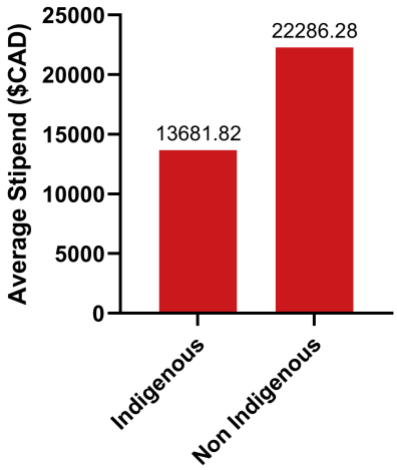


Figure 41. Average Stipend by Indigenous Identity. Average stipend value of respondents who identify as Indigenous: Indigenous (n=11) and Non Indigenous (n=890).

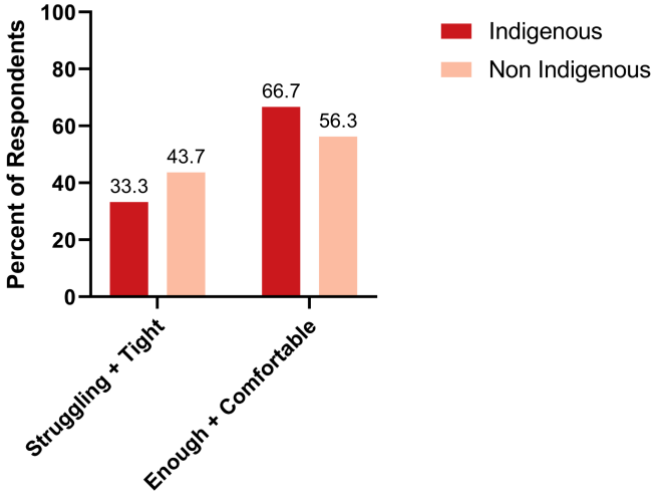


Figure 42. Financial Situation by Indigenous Identity. Financial situation of respondents who identify as Indigenous: Indigenous (n=15) and Non Indigenous (n=1279). Enough/Comfortable and Tight/Struggling responses were combined to ensure more than 5 responses in the grouped categories.

D. DEPENDENTS

A dependent is an individual who relies upon others, such as family members, for financial support. We assessed the relevance of dependency on financial struggle. Survey data reveals that the majority of Canadian graduate students have no dependents (86.5%), while having one dependent (7.4%) or more than one dependent was less common (5.7%) (**Figure 43)**. In general, having dependants corresponds with increased financial struggle, as more respondents with dependants classified their financial situation as struggling (15%) or tight (42.4%), in comparison to those without dependents (7.8% and 33.6% respectively) (**Figure 44**). This could potentially stem from the struggle of older graduate students with dependents to access need-based funding.

Whether a graduate student has dependents or not, the average debt accumulated in graduate studies remains roughly the same. Respondents without dependents have accumulated an average debt of $30,889, while those with one dependent averaged $34,933 in debt (**Figure 45**). As the number of dependents increases, the amount of average debt accumulated decreases to below $26,000 (**Figure 45**). The majority of graduate students, whether they have dependents or not, rent property for housing needs. As the number of dependents increases, there is a slight decrease in the average number of respondents living in rental properties and an increase in respondents who own property (**Figure 46A**).

“Awards and bursary applications are geared to young students and not at all applicable to adult homeowners or students with families/children. Adult learners are effectively excluded from needs based support.”

Above we have highlighted the lack of financial funding and security for Canadian graduate students; our data surveyed respondents on their average monthly housing costs (mortgage or rent). On average, the monthly housing costs tend to be higher for graduates with more dependents, which is likely attributed to the requirement for a larger living space. While graduate students with no dependents have an average monthly housing cost of $898, the average monthly housing costs also increase as the number of dependents increase (one

dependent - $1204 two dependents - $1439, three dependents - $1034, and four or more dependents $1541) (**Figure 46B)**.

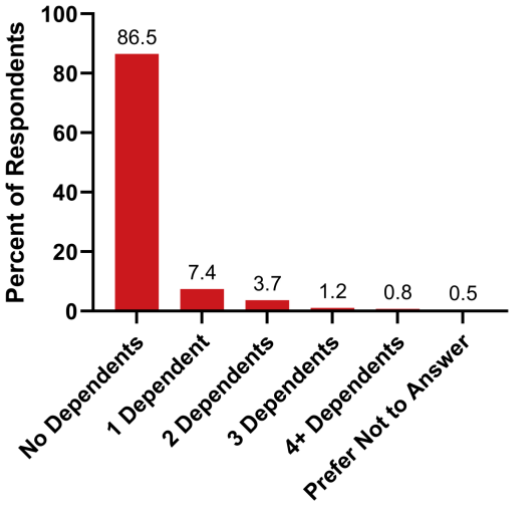


Figure 43. Dependents The percentage of respondents with each number of dependents.

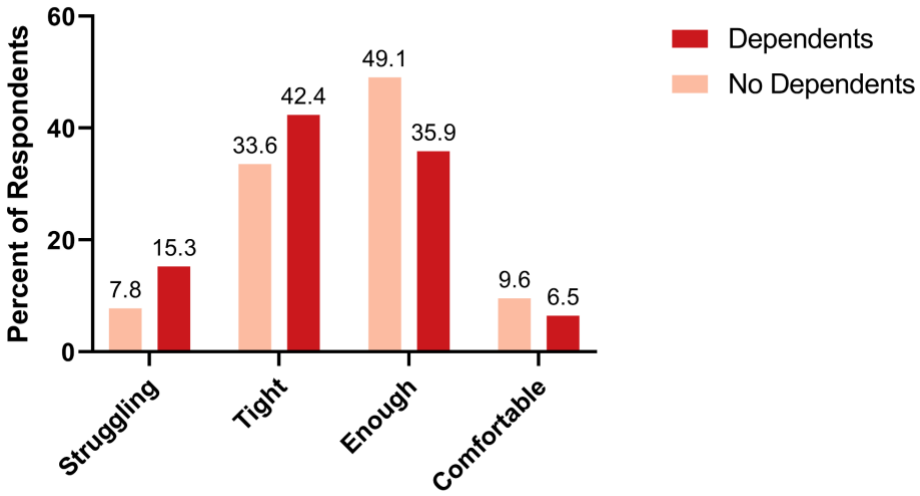


Figure 44. Dependents and Financial Situation. Financial situation of respondents with or without dependents: Dependents (n=170) and No Dependents (n=1129). Dependents include 1 or more dependents, and were combined to ensure more than 5 responses in the grouped categories.

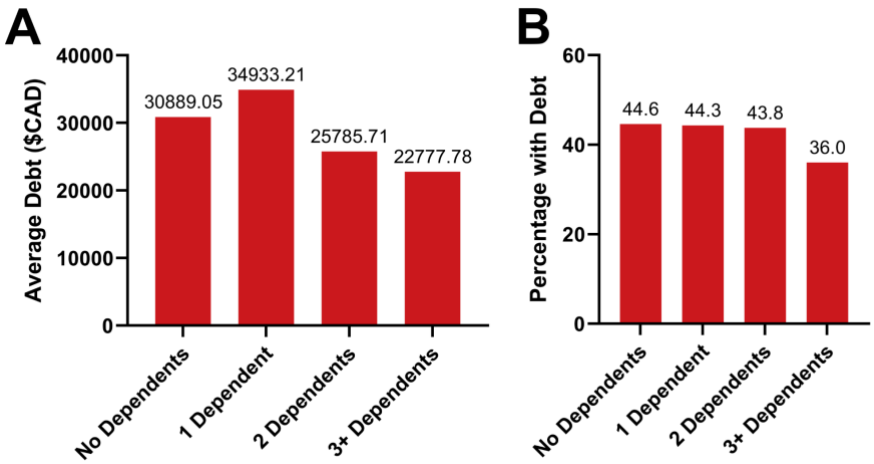


Figure 45. Dependents and Debt **A** The average student debt for those respondents who have student debt conditional on the number of dependents. **B** The proportion of respondents who have student debt conditional on the number of dependents.

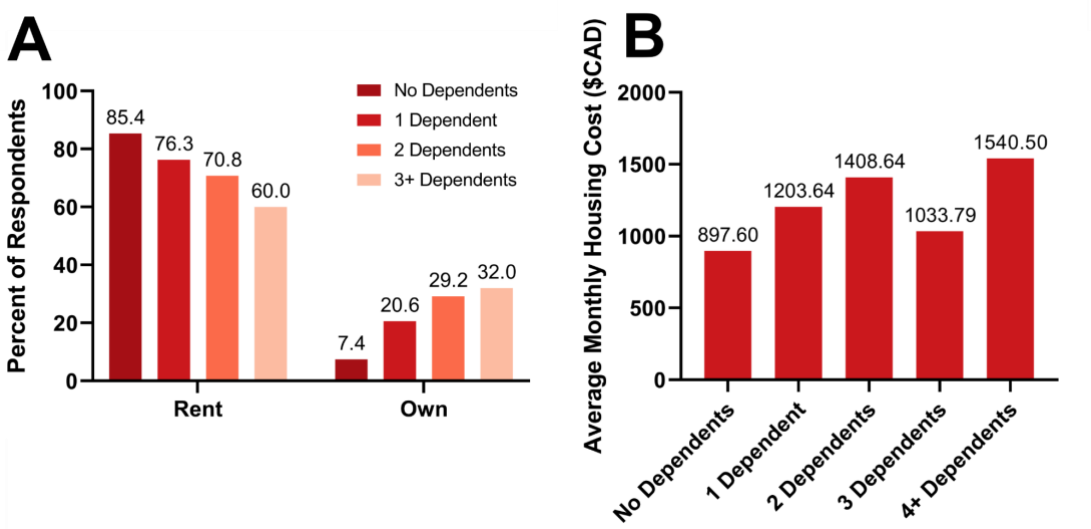


Figure 46. Dependents and Housing **A** The percentage of respondents who rent or own (does not add up to 100% due to other living statuses) conditional on the number of dependents they have. **B** The average monthly cost of housing for respondents conditional on the number of dependents.

E. DISABILITY

A disability is defined by the Canadian Government as a physical, mental, intellectual, cognitive, sensory, learning, communication impairment, or a functional limitation, whether apparent or not, and permanent, temporary, or episodic in nature, that hinders a person's full and equal participation in society when they face a barrier. According to the 2017 Canadian Survey on Disability, 22% of the Canadian population aged 15 years or older (approximately 6.2 million individuals) had one or more disabilities (Time use among persons with disabilities in Canada). It has been well documented that individuals with a disability face numerous obstacles and challenges in society. There are substantial government aid programs for students with a disability. For example, the Canada Student Grant for Students with Disabilities exists where students can apply for up to $4,000 grant per academic year, through provincial granting agencies (Canada Student Grant for Students with Permanent Disabilities). In addition, local funding opportunities exist with grants and bursaries directed to individuals with disabilities at each academic institution. In addition to government funding, the National Education Association of Disabled Students (NEADS) is an organisation founded in 1986 designed to support full access to education, as well as employment for post-secondary students and graduates across Canada. NEADS offers disabled students services such as student debt reduction, increased campus involvement and experience and help with post-graduate employment. Academic institutions do provide and accommodate services for individuals with disabilities such as note-taking, visual language interpretation, captioning for virtual learning, accessibility in campus/classroom, testing/exam accommodation and tutoring services designed for each disability and learning requirement. As such, there are services available for graduate students with a disability across Canadian academic institutions.

"Grad school is disabling, and things like counselling, physical therapy, and prescription medications are both not accounted for in stipend values and not covered by public insurance here in Canada."

We collected data on whether respondents identified as having a disability and if it impacted their graduate school success and financial status. Overall, the majority of respondents (87.4%) revealed that they did not identify with a disability, 10.3% identified as someone being affected by a disability, and 2.3% of respondents preferred not to answer this question (**Figure 47**). Respondents with a disability identified that the average stipend was similar to that of individuals without a disability ($23,134.83 vs. $22,120.41, respectively) (**Figure 48)**. In addition to a similar stipend amount, graduate students with a disability had a similar proportion of receiving an award/scholarship at 21.5%, while 20.9% of individuals without a disability had an award/scholarship (**Figure 49**). While not significant, a larger percentage of students with a disability indicated that they are financially "struggling" or "tight", compared to those without a disability. Our survey reported that 10.4% of graduate students with a disability were "struggling", while only 8.4% of graduate students without a disability were struggling (**Figure 50**). In addition, 38.5% of graduate students with a disability were feeling "tight" on their finances while only 34.0% of graduate students without a disability responded similarly (**Figure 50**). Results showed that 51.1% of respondents with a disability were comfortable with their financial status, while 57.4% of respondents without a disability were comfortable with their finances. Whilst these differences did not exceed our significance threshold of 5%, they may still be indicative of underlying differences. Certainly, academic institutions have made significant progress with maintaining accessibility and offering support/services but our survey still represents that more individuals with disabilities are struggling or tight with their finances thus identifying a need for more governmental support.

"Disability also increases costs by extending the length of people's programs, costing them many thousands of dollars in tuition and fees they would not otherwise be paying.) Disability and inability to pay for it is by far the biggest reason I've seen people drop out of grad programs during my MA and PhD here at UBC."

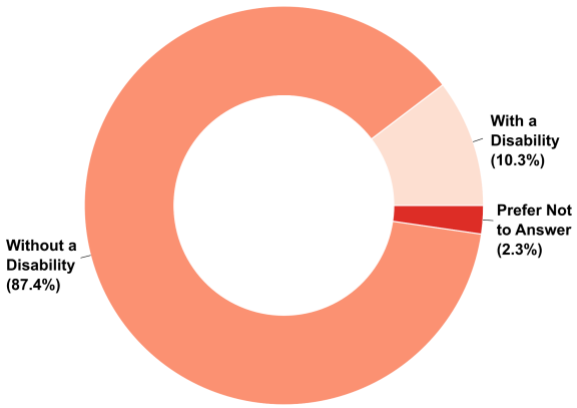


Figure 47. Disability Status The percentage (%) of respondents (n = 1305) who identify with a disability.

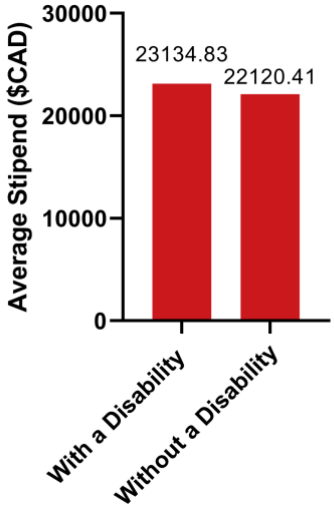


Figure 48. Average Stipend by Disability Status The average stipend ($) of respondents with (n = 93) or without (n = 794) a disability.

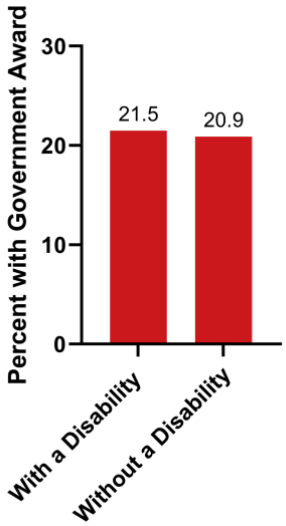


Figure 49. Award Holder Status by Disability Status The percentage (%) of respondents with (n = 135) or without (n = 1140) a disability who indicated receiving a Government award.

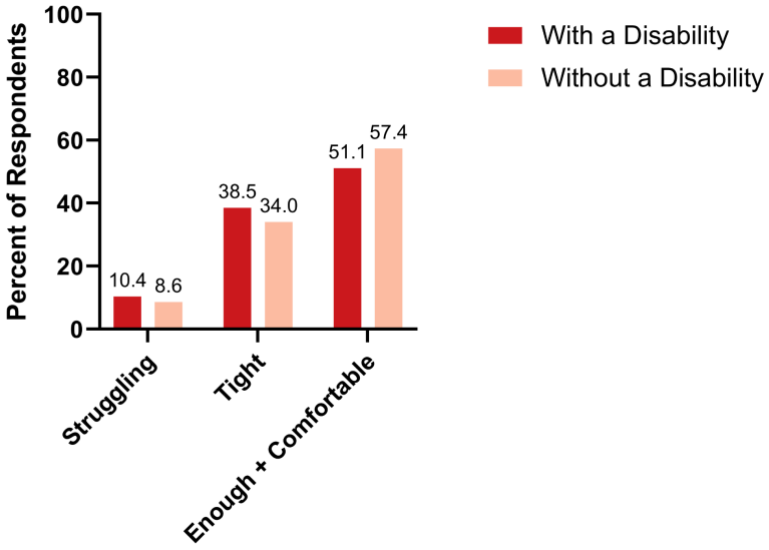


Figure 50. Financial Struggle by Disability Status The percentage (%) of respondents with (n = 135) or without (n = 1140) a disability who identified their financial status as being either “struggling”, “tight” or “enough + comfortable”.

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NATIONAL GRADUATE STUDENT
FINANCE SURVEY

CHAPTER 7: INTERNATIONAL STUDENTS ANALYSIS

CHAPTER 7: INTERNATIONAL STUDENTS ANALYSIS

International students compose 21% of master's and 37% of doctoral students in Canada, with this proportion rising to nearly 50% for those studying in STEM. This is comparable to the 31.6% of respondents to our survey who were international students (**Supplemental Table 1)**.

International students can face additional challenges compared to domestic students, such as: legal limits on the number of hours they can work off-campus (which has recently been suspended until the end of 2023), ineligibility for most government scholarships, as well as other struggles. For example, adapting to a new country and different cultures can add stress to their mental and social well-being. One notable difference between international and domestic graduate students is the amount that they must pay in tuition, with 39% of international students having annual fees over $15,000 compared to only 3% of domestic students (**Figure 51**). Whilst 28% of international students have their tuition entirely covered by additional scholarships or higher stipends, over two-thirds must pay for at least part of their tuition out of pocket (**Figure 52**).

International students were found to be significantly (chi2 test, $p<10^{-5}$) more likely to report that they are "struggling" to make ends meet or that their finances are "tight", with over 50% falling into these categories (**Figure 53**). Concerns over one's ability to pay for bills, financial security, and emergency expenses were also significantly higher (chi2 test, p values of $<10^{-5}$, 0.002 and $<10^{-5}$ respectively). The survey reported 44% of international students were "always worried" about their ability to pay for emergency expenses compared with 24% of domestic students (**Figure 54**). The amount of emergency savings held by international students was also significantly different (chi2 test, $p<10^{-5}$), with 70% of international students having less than 3 months of expenses saved compared to 44% of domestic students (**Figure 55**). This is despite international students generally paying less in rent (although far fewer have no rent to pay, probably due to their inability to live rent-free with parents or other relatives) (**Figure 56**).

Additionally, there were large differences in how graduate students received funding. Only 13% of international students receive government scholarships compared to 26% of domestic students (**Figure 57**). This is most likely due to the lack of eligibility of international students for federal and provincial scholarships. In fact, the only federal scholarship that international students can apply for is the prestigious Vanier Scholarship. An evaluation report of the Vanier Scholarship shows that only 13% of Vanier awardees are international scholars. Since these awards, valued at $50,000, are much higher than other federal awards they are highly competitive and have since failed at their original objective of attracting and recruiting talent from outside of Canada.

Further, at the time this survey was conducted, there were limitations on the number of hours international students were allowed to work outside of their studies. This hinders the ability of students to supplement their income and puts them at increasing risk of financial insecurity. International students work less outside of their studies compared to domestic students (**Figure 58)**. Recently these limits have been suspended. The restriction for international students to work less than 20 hours per week during school semesters has been removed to allow for more flexibility. However, this was implemented as a temporary solution to address Canada's labour shortage and not primarily to promote the interests of international students.

Not all international students, particularly graduate students, have the time to work outside of their studies. Similarly, far fewer international student respondents indicated receiving stipends larger than $27,000 in comparison to domestic students, most likely due to the lack of access to federal scholarships (**Figure 59A**).

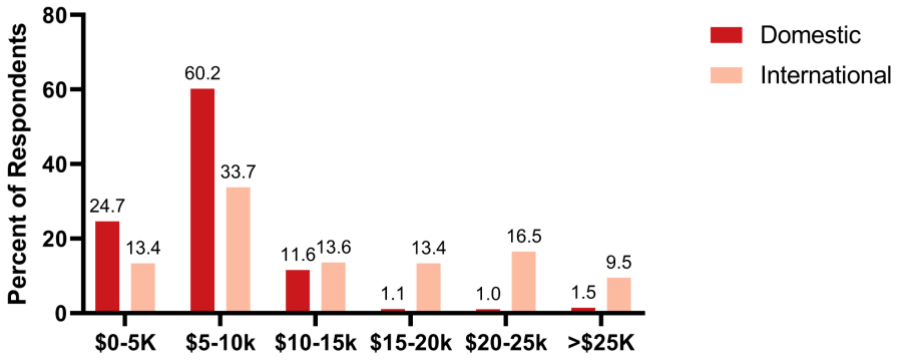

Figure 51. Tuition Fees The annual tuition and other mandatory fees for domestic (n=892) vs. international (n=412) students.

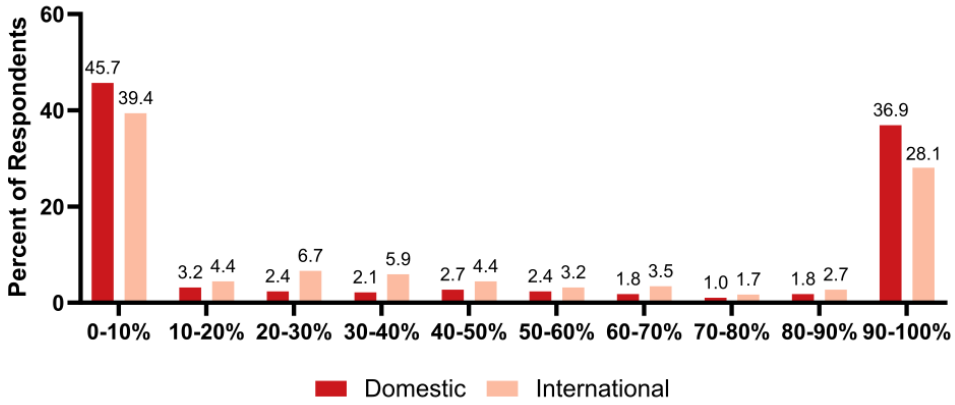

Figure 52. Tuition paid out of pocket The percentage of tuition paid out of pocket for domestic (n=886) vs. international (n=406) students.

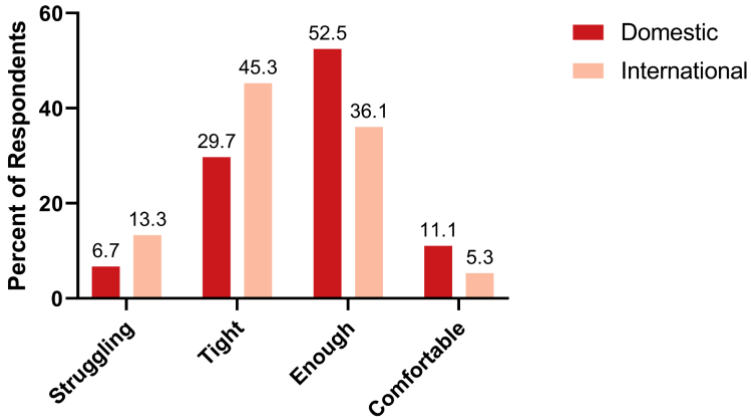

Figure 53. Financial Situation - Domestic vs. International The percent of respondents who are struggling financially and often do not have enough to make ends meet; every month is tight and often making sacrifices to pay for necessities; have enough and able to afford to provide for themselves or very comfortable and can spend as they like for domestic (n=892) vs. international (n=413) students.

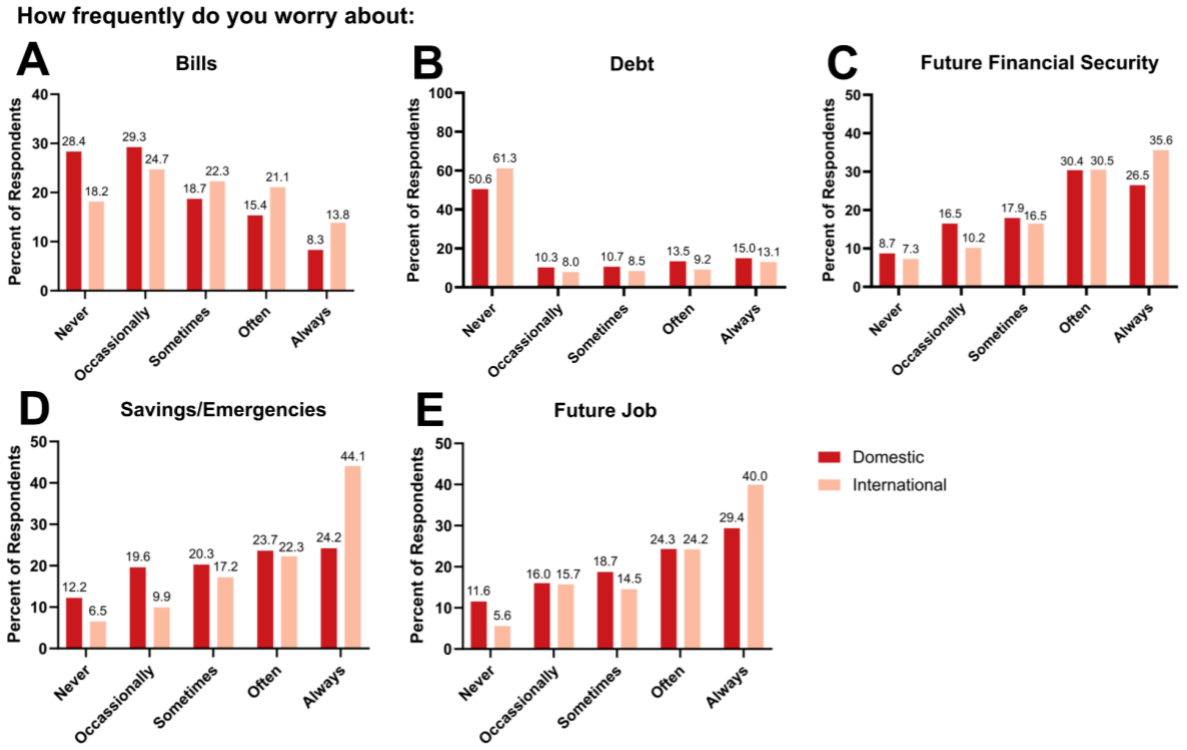

Figure 54. Financial Stresses - Domestic vs. International The responses for domestic (n=892) vs. international (n=413) students on how frequently they worry about their **A** ability to pay bills **B** ability to pay back their student debt **C** future financial security **D** savings/ability to pay for emergency expenses **E** ability to obtain a future job in their chosen field. Data are shown by percent in each category.

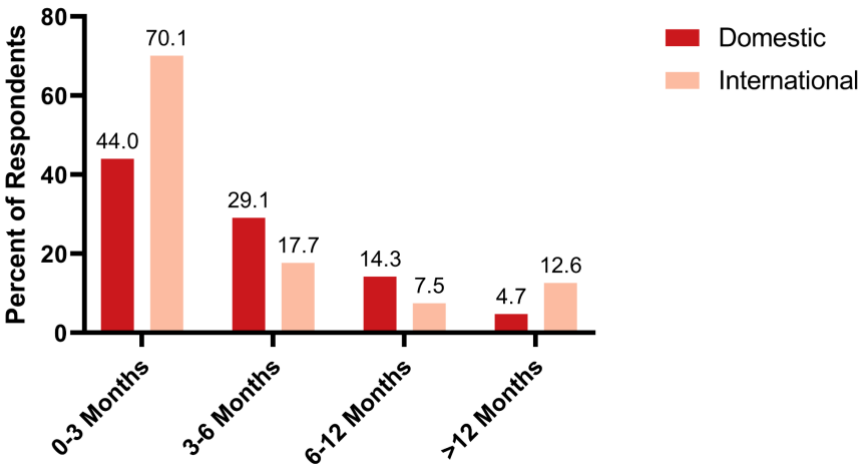

Figure 55. Savings - Domestic vs. International The number of months of living expenses respondents have as savings for domestic (n=863) vs. international (n=401) students.

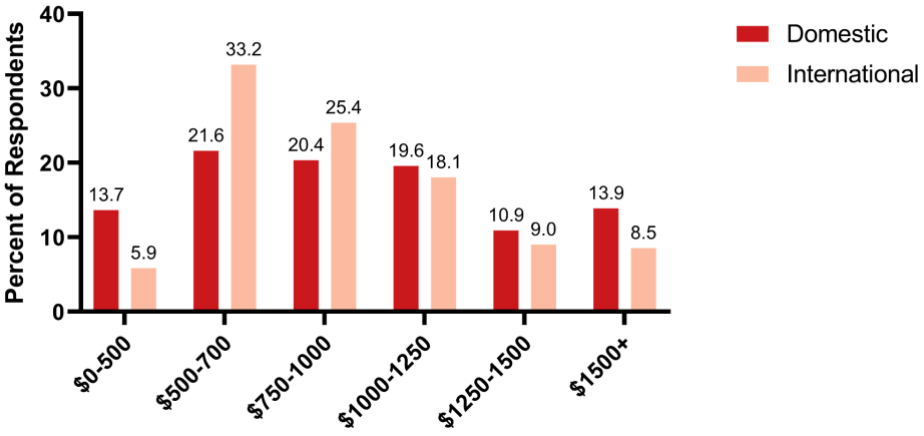

Figure 56. Housing costs - Domestic vs. International The monthly cost of housing of respondents for domestic (n=879) vs. international (n=410) students.

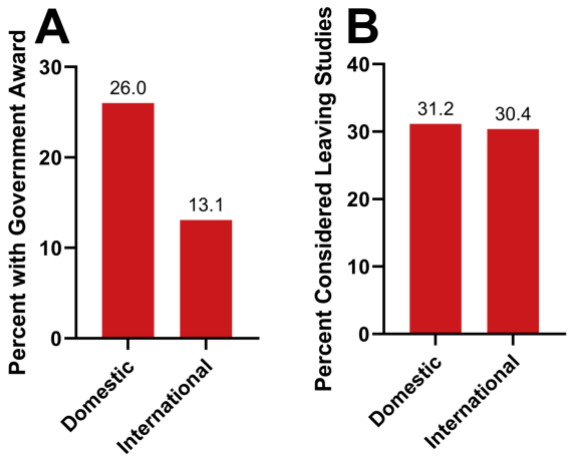

Figure 57. Government Awards and Leaving Studies **A** The percentage of respondents who receive a federal or provincial award for domestic (n=982) vs. international (n=413) students. **B** The percentage of respondents who have considered leaving studies due to concern over finances for domestic (n=889) vs. international (n=408) students.

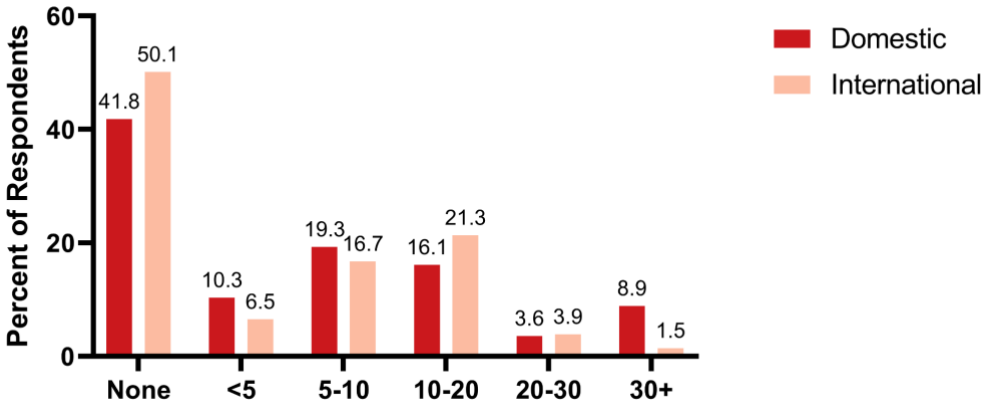

Figure 58. Hours outside work - Domestic vs. International The number of hours worked per week outside of graduate studies for domestic (n=892) vs. international (n=413) students.

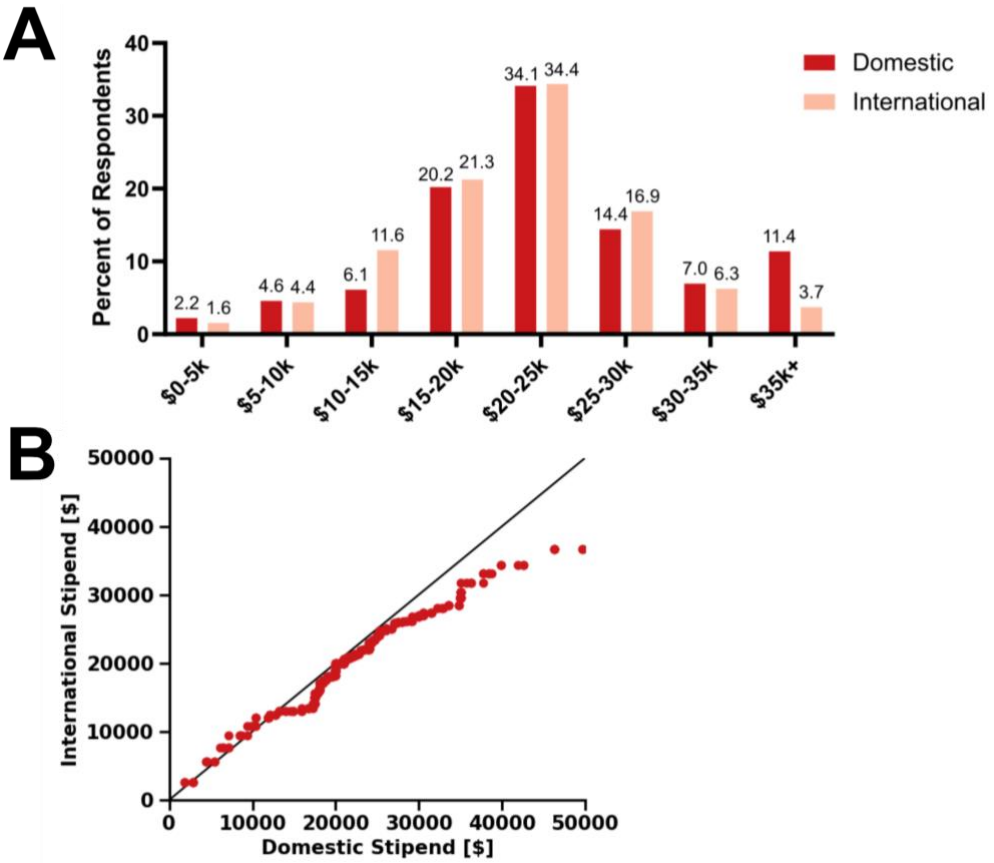

Figure 59. Stipend levels - Domestic vs. International The annual stipend received by respondents who were domestic (n=589) vs. international (n=320) students. **a** The percentage of respondents in each category who receive a stipend of this amount. **b** A Q-Q plot (binned into groups of 5 to maintain de-identification) showing how the distribution of stipends for domestic and international students differ. A Q-Q plot is such that the same quantile for each data set is plotted against each other (eg. the 5th percentile of both distributions is one point). If the two distributions were the same they would follow the line indicated.

OSPN
OTTAWA SCIENCE POLICY NETWORK

NATIONAL GRADUATE STUDENT
FINANCE SURVEY

CHAPTER 8: NEXT STEPS AND RECOMMENDATIONS

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1. **Increase federal funding (through the Tri-Councils) for graduate students in the form of research grants and scholarships.**

The conclusions of this survey support the current recommendation of the Support Our Science campaign. Put simply, we ask for an increase in the *value* and *number* of graduate student scholarships at academic institutions across Canada to account for increased inflation and enrollment into graduate programs since 2003 (i.e. the last time these awards were increased):

a) **Increase in the *value* of Tri-Council scholarships -** We recommend harmonising all federal Tri-Council scholarships to a *minimum* of $25,000 for master's students and $35,000 for PhD students. This aligns with the ideal stipend values declared by our survey respondents (**Figure 19**). Careful consideration should go into this decision as it sets the standard for stipends at the university level.
b) **Increase in the *number* of Tri-Council scholarships -** Our survey has found that about 20% of students are funded through federal scholarships, while 12% are funded through provincial-level scholarships (**Figure 21**). We recommend increasing the number of students who are funded through these scholarships by 50% annually to account for increased enrollment into graduate programs.
c) **Increase the value of Tri-Council *research grants* -** We recommend a specific increase in research grants (i.e. Discovery grants, etc.) that will allow for supervisors to increase the stipends of their graduate students. Our survey shows that the majority of students (67%) are funded through their supervisors (**Figure 21**). Future work should investigate structural and policy changes to ensure that these increases in research grants are directly funding and supporting graduate students. Careful consideration should be taken to ensure support for students is increased without simply being put towards funding additional students at lower pay, but rather increasing the pay for students.

2. **Implement a standard for stipends in Canada and establish transparency practices for university departments.**

Many survey respondents cited confusion, variation, and inconsistencies in all aspects of stipends. In many ways, this confusion has contributed to the challenges faced by groups advocating for stipend increases. From university and department websites, it is often unclear what funding packages are available for graduate students, and this information is often buried under policy jargon in academic regulations. Transparency of this information is vital to allow students to make an informed decision about their graduate school pursuits. Additionally, we recommend developing a standardised approach to defining a stipend for graduate students. This includes shifting terminology to specifically consider the "take-home" value of stipends to ensure that the students live above the poverty line. Specifically, this means the amount of a student's stipend *after* paying tuition and mandatory expenses. This distinction is important as tuition remains one of the largest costs for students, and students who pay tuition out-of-pocket have increased financial struggles (**Figure 7**). This goes in hand with increasing transparency

of stipends, including stipulations, requirements, timelines, and limitations for graduate students.

3. **Expand the eligibility of Tri-Council graduate student scholarships to help provide funding for international students and underrepresented groups.**

Current eligibility for Tri-Council graduate student scholarships, namely the Canada Graduate Scholarships (CGS) and Postgraduate Scholarships (PGS) awards (**Table 2**), excludes international students. While the Vanier scholarship aims to attract and retain international scholars, this award fails to live up to these goals. We recommend that the Tri-Council re-evaluate the key priorities of the Vanier scholarship and consider creating specific scholarship allocations for international students. Further, we have found data suggesting that underrepresented groups are less likely to receive Tri-Council scholarships (**Figures 34 and 38)**. We further amplify the recommendations of Baskaran et al., which suggest harmonising the duration eligibility for Tri-Council CGS and PGS awards to increase the time in which a student is eligible to apply for the awards. We also recommend continuing efforts to expand the definition of "excellence" to include diverse forms of work, volunteering, and mentoring. All of these recommendations will assist with removing barriers of entry for foreign scholars and underrepresented groups.

4. **Index and evaluate graduate student funding on a regular basis to ensure the sustainability of research infrastructure in Canada.**

To ensure the long-term sustainability of research in Canada and appropriately retain and attract top students, we recommend indexing the value of stipends and Tri-Council scholarships to the consumer price index. This is already done in countries like Australia, which index all graduate student scholarships annually to adjust for inflation. This will ensure that we do not reach a financial struggle crisis, such as that we are experiencing now. The costs of living have continued to increase over time, including the cost of tuition for graduate students, which has increased 38% since 2006. However, federal awards have not changed in value since 2003 and financial support for graduate students has remained stagnant over these past 20 years.

5. **Remove limits on work outside of studies for graduate students.**

We have highlighted the limitations of working outside of graduate student studies. We recommend the removal of certain work limitations, in particular the 10-hour rule, which severely impedes graduate students from obtaining supplemental income. To be clear, we *do not* suggest removing these limitations as a way of resolving graduate student financial struggles, as this would merely provide a band-aid solution to a much larger problem that is outlined in this report. Instead, this recommendation should be interpreted as a chance for students with increased financial needs to have the option to seek work outside of their studies if necessary.

6. **Further investigate the role of EDI factors in financial struggle.**

One limitation of our study is that we did not have sufficient demographic data to provide tangible and targeted EDI-centred recommendations. Future work could specifically

investigate the financial status of graduate students who identify as members of historically underrepresented groups, including women, Indigenous Peoples (First Nations, Inuit, and Métis), persons with disabilities, members of visible minority/racialized groups, and members of LGBTQ2+ communities This will enable a more diverse understanding of students' needs depending on their demographic background and the subsequent development of effective, equitable, and evidence-based programs and/or policies to support students from historically underrepresented groups.

APPENDIX

A. DATA POLICY

Responses to the survey are held in confidence by the Ottawa Science Policy Network (OSPN), a student organisation at the University of Ottawa. Aggregated, anonymous or de-identified data may be shared with representatives of student associations, university administrations, advocacy groups, legislatures and governments across Canada, including data subsets where appropriate.

Although we did not collect obviously identifying information (such as names) we understand that individuals may still be possible to identify by combining responses. To protect anonymity we will only publish or share subsets of data generated by combining responses 2 or more questions when there are at least 5 responses in all categories. Any numerical data will only be published or shared as summary statistics (for instance mean and standard deviation) or as binned data (for instance a histogram). Responses will never be shared or published in such a way that links together all an individual's responses.

Raw data collected in the survey will be retained for a period of 7 years after which it will be deleted. Any data published or shared with other organisations will be retained indefinitely. Once the analysis of the data has concluded access will only be granted to the OSPN president (or other OSPN members that the OSPN executive determine are responsible for the custody of the data).

B. STATISTICAL TESTS AND DATA VISUALIZATION

Throughout this report, we used a significance threshold of 5%. For comparing categorical data the chi-squared test was used (using the categories presented in the plot or other summary data) and for numerical data using a two-sample KS test. These statistical tests do not provide information about how two distributions or samples differ - only whether or not any differences they have are to be less than 5% probability of occurring due to random chance.

For data visualisation bar graphs were created by using GraphPad Prism, donut charts using R and lessR package; and violin and Q–Q plots created using Python with the statsmodels package.

C. DEFINITIONS

10-hour rule: a stipulation provided by most institutions across Canada in which graduate students are eligible to work at maximum of 10 hours per week to supplement their stipend.

Agender: a person who identifies as not having a gender identity.

Dependent: an individual who relies on another person (i.e. family member) as a primary source of income or financial support.

Disability: Under the Accessible Canada Act, disability means an impairment or functional limitation that reduces someone's full involvement in society because of the barriers they face. They can include physical, mental, intellectual, cognitive, learning, communication and/or sensory barriers.

Diversity: differences in the lived experiences and perspectives of people that may include race, ethnicity, religion, ability, sex, gender identity, sexual orientation, age, class, and/or socio-economic status.

Equity: involves creating policies and opportunities that allow students, especially those from marginalised groups, to have equal access to education, research, and other programs.

Gender-fluid: a person whose gender identity is not fixed.

Gender non-conforming: people who do not behave in a way that conforms to the traditional expectations of their gender, or whose gender expression does not fit neatly into a category. While many also identify as transgender, not all gender non-conforming people do.

Genderqueer: people who typically reject notions of static categories of gender and embrace a fluidity of gender identity and often, though not always, sexual orientation. People who identify as "genderqueer" may see themselves as being both male and female, neither male nor female or as falling completely outside these categories.

Graduate student: someone who has earned a bachelor's degree and is pursuing additional education and/or research (i.e. master's or doctoral studies) in a specific field of study.

Inclusion: an active and ongoing process to address inequities in power and privilege. This builds a respectful and diverse community where people are welcomed and their contributions are valued.

Indigenous: encompasses First Nations, Métis and Inuit peoples in Canada.

Non-binary: an adjective describing a person who does not identify exclusively as a man or a woman. Non-binary people may identify as being both a man and a woman, somewhere in between, or as falling completely outside these categories. While many also identify as transgender, not all non-binary people do. Non-binary can also encompass identities such as agender, bigender, genderqueer or gender-fluid.

Principal Investigator: a researcher, usually a doctor or other medical professional, who leads the clinical or basic research team and regularly monitors study progress. The principal investigator is responsible for the preparation, conduct, and administration of the research grant.

Research Assistantships: A student hired to provide services in the context of carrying out research activities. Duties and tasks may include but are not limited to the performance of clerical, laboratory or any technical tasks, or the organisation of research-related activities.

Scholarship: a form of financial aid awarded to students pursuing further education. Generally, awardees are selected based on certain criteria, such as academic merit, leadership experience, community involvement, and/or financial need.

Science policy: an area of policy concerning the effective allocation of funding and resources for conducting science and research to reach goals (e.g. technological innovation, advances in healthcare, environmental protection) that ultimately serve the public interest.

Stipend: a fixed amount of money provided to people pursuing unpaid work to help offset various living expenses. Unlike a salary, a stipend is not a payment for hours worked.

Student loan: a sum of money borrowed to finance post-secondary education or related expenses. This is designed to help students afford tuition, books, supplies, and living expenses. The interest rate may be lower than regular loan types and the repayment schedule may be deferred while the student is still in school.

Teaching assistant (TA): a graduate student who assists a professor with instructional responsibilities. This is typically a part-time paid position that one applies for.

Trans: people whose gender identity and/or expression is different from cultural expectations based on the sex they were assigned at birth. Being transgender does not imply any specific sexual orientation. Therefore, transgender people may identify as straight, gay, lesbian, bisexual, etc.

Tri-Council Scholarships: scholarships issued by one of Canada's three major research grant agencies: the Natural Sciences & Engineering Research Council (NSERC); the Social Sciences & Humanities Research Council (SSHRC); and the Canadian Institute of Health Research (CIHR).

Tuition fees (including mandatory fees): semester charges imposed on students to attend an institution of higher education, which are required as a condition of enrollment.

Two-spirit: a modern, pan-Indian, umbrella term used by some Indigenous North Americans to describe people in their communities who fulfill a traditional third-gender (or other gender-variant) ceremonial and social role in their cultures

D. SUPPLEMENTARY DATA

	Number of Respondents
Total Respondents:	**1305**
Language of Response: English French	 1030 275
Level of Studies: Course Based Master's Research Stream Master's Professional Master's Research Stream Doctoral (PhD)	 109 337 107 750

Year of Study:	
First Year - Master's	261
Second Year - Master's	197
Third Year or more - Master's	68
First Year - Doctoral	174
Second Year - Doctoral	132
Third Year - Doctoral	154
Fourth Year - Doctoral	141
Fifth Year or More - Doctoral	134
Recently Graduated	36
Age of Respondents:	
18-23	198
24-27	529
28-33	412
34-40	110
40+	56
Full-time Status:	
Full-time	997
Part-time	24
No Response	10
Identify with a Disability:	
Yes	135
No	1140
Prefer not to answer	30
Identify as Indigenous:	
Yes	15
No	1279
Prefer not to answer	11
Identify as:	
White	868
Chinese	84
South Asian/East Indian	110
Black	75
Filipino	5
Non-White Latin American	57
Southeast Asian	22
Non-White West Asian	112
Japanese	9
Korean	8
Prefer not to answer	25
Other	14
Identify as:	
Agender	10
Woman	825
Gender-fluid	15
Man	428
Non-binary	37
Genderqueer	3
Trans	3
Two-spirit	1
Gender non-conforming	1
Prefer not to answer	20

Identify as an International Student:	
Yes	413
No	892

Table S1. Demographic Information.

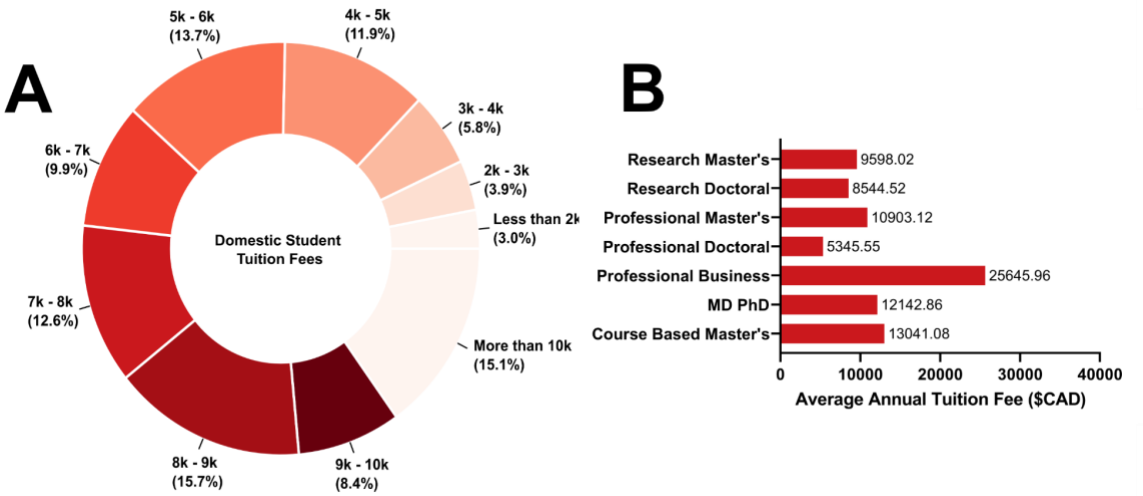

Figure S1. Tuition Fees **A** The total tuition (and other mandatory fees) paid by domestic students. Given as a percentage of students paying each amount (n=892). **B** The average tuition paid by respondents (both domestic and international) by type of degree.

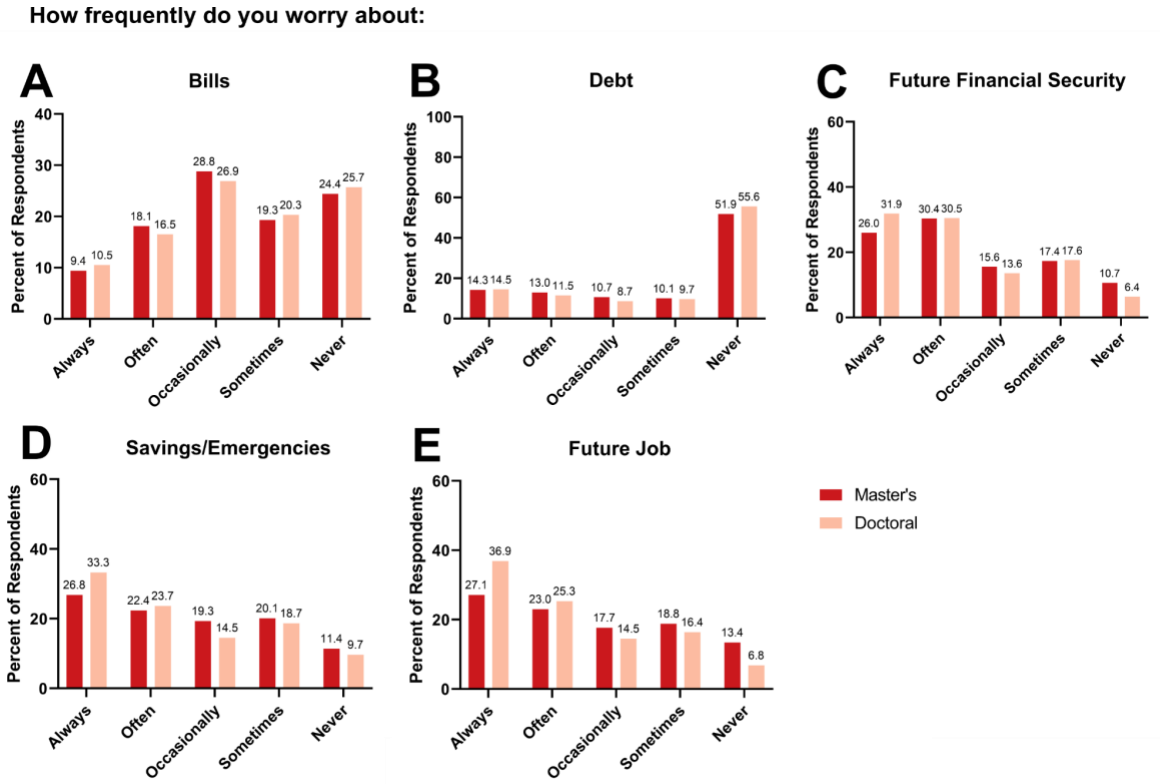

Figure S2. Financial Stresses - Master's vs. Doctoral The response for those in their Master's (n=553) vs. Doctoral (n=750) studies on how frequently they worry about their **A** ability to pay bills **B** ability to pay back their student debt **C** future financial security **D** savings/ability to pay for emergency expenses **E** ability to obtain a future job in their chosen field. Data are shown by percent in each category.

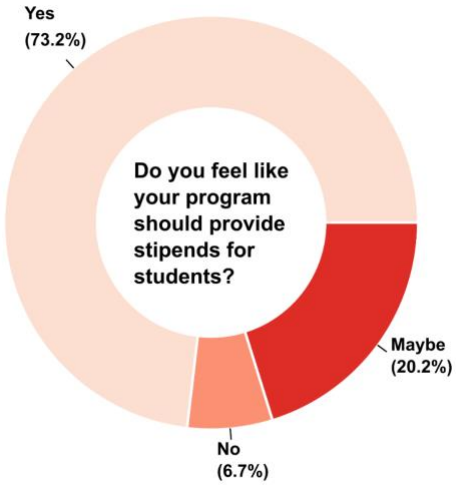

Figure S3. No Stipend The proportion of respondents who do not receive a stipend but felt that their program should (n=391).

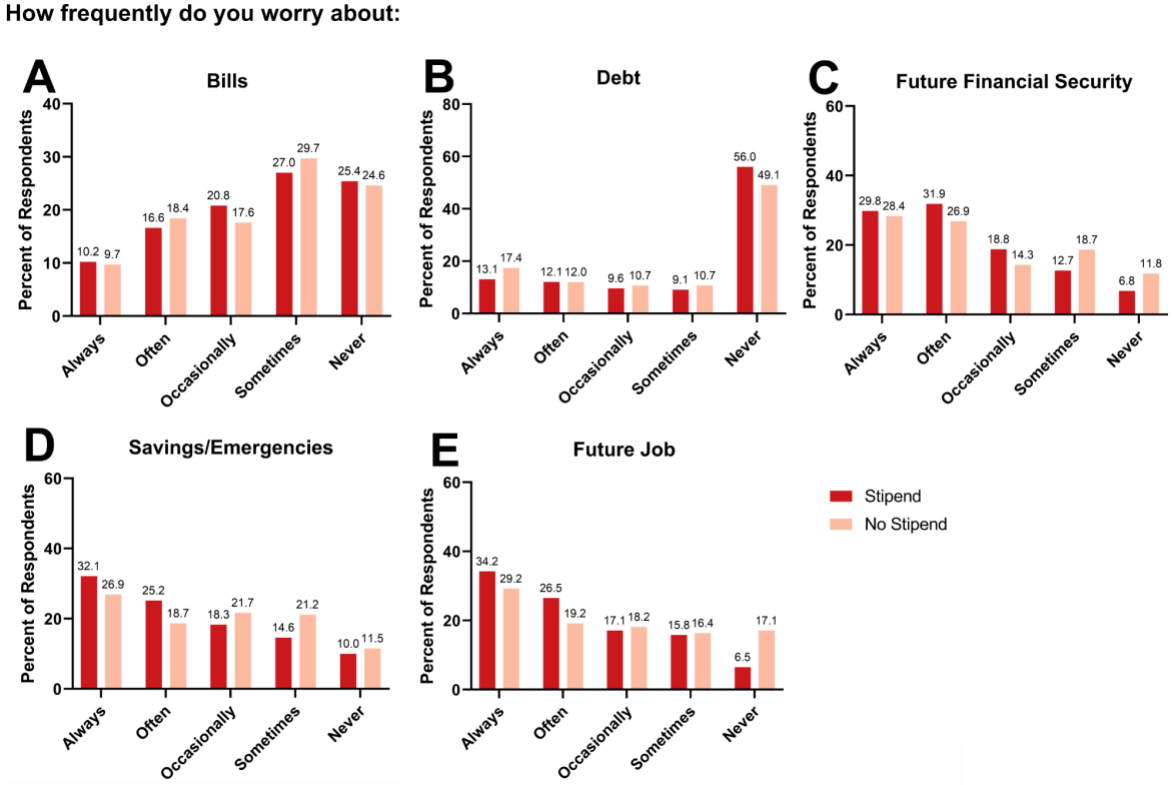

Figure S4. Stipend - Financial Stresses The response for students who received a stipend (n=914) vs. did not receive a stipend (n=391) on how frequently they worry about their **A** ability to pay bills **B** ability to pay back their student debt **C** future financial security **D** savings/ability to pay for emergency expenses **E** ability to obtain a future job in their chosen field. Data are shown by percent in each category.