

Evaluation of Ryerson Graduate Student Mental Health during the COVID-19 Pandemic

Prepared for the Yeates School of
Graduate Studies (YSGS)



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Executive Summary

Previous research has found that graduate student populations are at heightened risk for mental health disorders compared to undergraduate populations and similarly educated working professionals.

The commitment that YSGS has to graduate student mental health was the impetus for undertaking this study. The study aimed to assess factors that may have an impact upon graduate student wellness (e.g., student-supervisor relationships, financial challenges), to help identify rates of psychological distress, and ultimately to provide recommendations for supporting the mental health and wellness of graduate students.

Data on graduate student mental health and wellness was collected via a secure online survey, administered to Ryerson graduate students in November and December 2020. A total of 515 participants participated in the survey and completed measures about anxiety, depression, burnout, financial strain, quality of supervisory relationship, impact of COVID-19 stressors, rank ordering of graduate school stressors, and participant recommendations for improving wellness.

The key findings of this evaluation are:

54% of respondents report symptoms consistent with moderate or severe anxiety

43% of respondents report symptoms consistent with moderate or severe depression

20% of respondents report experiencing high burnout on all three subscales.

Burnout Subscales

69% of respondents report high emotional exhaustion

68% of respondents report high cynicism

45% report low professional efficacy

15% of respondents report severe financial strain

Most respondents are extremely satisfied with their supervisory relationships

The most stressful aspects of graduate school were:

Thesis, dissertation, MRP or other required research
Balancing work/school and family
Coursework
Finances

The most endorsed COVID-19 pandemic experiences:

I felt more isolated from other people
I experienced exhaustion from constant social interactions through a screen (“Zoom fatigue”)
The pandemic made it difficult for me to perform work or other things I needed to do

Students most strongly endorsed the following recommendations to improve their wellness:

Support for tuition decrease or waiver
Psychological services geared towards graduate students
Additional bursaries for students in financial need
Formal vacation time

We propose five recommendations to YSGS, Ryerson University, and graduate programs:

1 Enhance counselling services geared towards graduate students

- **Recommendations at the university level.** To start, conduct a needs assessment to determine what graduate students identify as important gaps in services. One straightforward solution may be to create a separate online hub for graduate student mental health and wellness resources. We also strongly recommend that group therapy be offered through the Centre for Student Development and Counselling (CSDC), that is restricted to graduate students, in order to avoid graduate students overlapping services with undergraduate students (i.e., to mitigate risk of graduate students completing therapy alongside students they may be teaching and evaluating).
- **Recommendations at the program level.** Ensure Graduate Program Directors (GPDs) and Graduate Program Administrators (GPAs) have knowledge of the mental health and wellness services available for graduate students, and how referral processes work (e.g., counselling services, Ryerson Safe House, Ryerson Students Union funds for psychological therapy).

2 Continue to address financial support for graduate students in greatest need

- **Recommendations at the university level.** Consider offering bursaries targeted to at-risk graduate student populations (e.g., those who self-identify as a person with a disability, or who have dependents). Continue to evaluate current communication strategies and consider new strategies that encourage graduate students to be aware of, and apply for financial bursaries.
- **Recommendations at the program level.** Ensure GPDs and GPAs are aware of financial bursaries and financial supports, and have communication strategies in place to make graduate students aware of potential opportunities.

3 Endorse a cultural shift towards greater work-life balance supported by policy

- **Recommendations at the university level.** Consider implementation of an annual mandatory minimum two-week vacation for graduate students. Additionally, implement guidelines or policies for expected work hours, meeting times, email policies and policies for sick days. Implementation of these policies will require further discussion and considerations.
- **Recommendations at the program level.** Incorporate flexible work practices. This may include completing program milestones at different points in the program, options to work remotely, flexible deadlines, accommodations, and having discussions about when/if evenings and weekends are appropriate or necessary for academic-related tasks.

4 Ongoing professional development for faculty supervisors

- **Recommendations at the university level.** Consider ongoing professional development for faculty on best practices in supporting graduate students in a supervisory role. Provide training to faculty advisors on new and existing policies that can support graduate student mental health (e.g., vacation time).

5 Continue to evaluate the mental health of graduate students

- **Recommendations at the university level.** We recommend that YSGS continue to conduct formalized evaluations of graduate student mental health on an ongoing basis, e.g., every three years, in an effort to identify patterns and changes in student well-being and encourage and evaluate intervention strategies.

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1. Introduction

The pursuit of completing a graduate degree can be an enriching and stimulating endeavour. For many students, however, the experience of graduate school can be fraught with difficulty and may potentially pose a serious threat to their well-being (Evans et al., 2018; Levecque et al., 2017). Graduate students may face hardships that are inherent to their role, such as heavy workloads, undertaking challenging research and coursework, balancing multiple ongoing roles (e.g., research projects, lecturing or teaching assistantships, preparing grant applications), managing concerns about career prospects, low income, and navigating expectations from self and others (Johnson et al., 2008). Further, many graduate students must juggle these demands alongside roles in their personal lives, such as balancing household responsibilities, prioritizing a relationship with a spouse, or possibly caring for children or aging parents (Pop & Wiest, 2016).

Previous studies have illustrated that these challenges can contribute to graduate students facing increased risk for negative health outcomes. For instance, Evans and colleagues (2018) found that graduate students were six times more likely to experience anxiety and depression compared to the general population. Many studies have similarly reported high prevalence of these disorders in graduate student samples (Garcia-Williams et al., 2014; Hyun et al., 2006; Rummell, 2015). Graduate students also experience high degrees of chronic physical health symptoms including fatigue, headaches, and back pain, with some studies finding self-reported prevalence rates of greater than 60% for these symptoms (Mazurek Melnyk et al., 2016; Rummell, 2015).

Since the onset of the COVID-19 pandemic, life difficulties and mental health concerns have worsened for both the general population and for graduate students. Within the general population, levels of moderate-to-severe depression symptoms increased from 5% pre-pandemic to 15% in early 2021, while levels of moderate-to-severe anxiety symptoms increased from 3% to 13% (Centre for Chronic Disease Prevention, 2017; Statistics Canada, 2013; 2021). Meanwhile, some North American research reports that

graduate student levels of depression increased from 13% pre-pandemic to 32% in late 2020, and levels of anxiety increased from 23% to 39% (Jones-White et al., 2021; Chirikov et al., 2021).

Despite awareness of these widespread challenges and the potential consequences, there is limited research examining graduate student well-being in a Canadian context (Park et al., 2021). Similar to many Canadian universities, Ryerson University has not undertaken a comprehensive evaluation of graduate student mental health and well-being since the establishment of the School of Graduate Studies in 1997. In better understanding areas where their graduate students are flourishing as well as areas where they may be struggling, the university can more confidently make evidence-informed decisions that support a positive student experience.

To this end, in early 2020, following a student-led initiative to evaluate the well-being of Ryerson University graduate students within the Psychology department (the results of which are available in Park et al., 2021), two leaders of this evaluation connected with YSGS to discuss the prospect of designing an evaluation of graduate student mental health and well-being at the university-wide level. Amidst the onset of the COVID-19 pandemic in March 2020, and following further discussion with the YSGS Associate Dean of Student Affairs and YSGS Vice-Provost and Dean, the decision was made to conduct such an evaluation via an online survey available to all Ryerson University graduate students.

The purpose of the present evaluation was to generate knowledge on the mental health and well-being of the graduate student population at Ryerson University. Designed to investigate a wide variety of areas having an impact upon student well-being (such as mental health symptoms, finances, and the student-supervisor experience), this evaluation was the first of its kind at Ryerson University and represents a commitment to graduate student wellness, by both the institution and YSGS. Our hope is that the findings from this descriptive report will help us to best utilize institutional resources and

guide planning for new initiatives and enhanced supports that will positively benefit the lives and academic experiences of graduate students.

2. Methods

2.1 Project Conceptualization

In spring 2020, the lead investigators attended a series of meetings with the YSGS Associate Dean of Student Affairs (Dr. Nancy Walton) to discuss the evaluation focus, methodology, timeline, and related matters. It was decided that the most feasible and accessible format for an evaluation, particularly considering the remote learning constraints in place due to the COVID-19 pandemic, was administration of an online survey. While a longitudinal study design was discussed (i.e., administering the survey at multiple timepoints to investigate change over time), the decision was made to administer a cross-sectional (i.e., single time point) survey. Additionally, there was agreement that the survey should reflect a broad view of well-being that incorporated not only measurement of mental health symptoms (e.g., depression, anxiety, burnout) but also social and educational well-being variables (e.g., student-supervisor relationship satisfaction, financial strain) as well as a scale that investigated the potential impact of the COVID-19 pandemic.

2.2. Stakeholder Consultations

Following the initial discussions in spring 2020, the decision was made to include relevant stakeholders in the survey's development. Consultations were conducted individually with the Faculty Associate Deans of Graduate Studies ($n = 6$) in summer 2020 to develop relevant survey items that would capture the experiences of graduate students across all Faculties. Each consultation lasted approximately 60 minutes and aided in the development of the "Core+1" survey design.

What is the “Core+1” survey design?

- The “**Core**” survey items were administered to all graduate student participants.
 - The “**+1**” survey items were tailored to graduate students within each Faculty.
- In other words, students from the Faculty of Science only received the +1 survey items specifically developed for Faculty of Science graduate students.

This report focuses on the Core survey items. Faculty Associate Deans have been provided with Faculty-specific survey results for internal review and development purposes.

2.3. Survey Development and Review

Literature reviews of published, peer-reviewed research articles were conducted in order to identify the most valid and psychometrically sound tools to measure key mental health and well-being constructs. Many of the measures chosen were sourced from peer-reviewed journal articles, predominantly those using graduate student samples, or from government or university research reports focusing on graduate student well-being. Throughout the process of this literature review, consultations continued with the Associate Dean of Student Affairs and a Clinical and Research Consultant (Dr. Kelly McShane).

Several drafts of the “Core+1” survey were developed by the lead investigators and reviewed by the Associate Dean of Student Affairs, the Faculty Associate Deans of Graduate Studies, and the Clinical and Research Consultant. The finalized survey was reviewed and approved by all stakeholders.

In early fall 2020, the lead investigators and YSGS Associate Dean of Student Affairs composed and submitted an application to the Ryerson University Research Ethics

Board (REB) summarizing the evaluation's proposed methodology, consent procedures, measures, and data management and dissemination plans.

All aspects of the study were approved (REB #2020-398).

2.4. Data Collection

In November 2020, all graduate students enrolled in master's and doctoral programs at Ryerson University were invited to participate in the 20-minute online survey. The survey was hosted via a secure online platform, Qualtrics XM (Qualtrics, 2019), and was made available to participants for one month.

Several recruitment strategies were utilized. Primarily, graduate program directors and graduate program assistants emailed eligible students a brief description of the survey and the corresponding survey link. Secondly, Ryerson official social media accounts advertised the survey on Twitter and Facebook. Thirdly, a survey description and link were made available through GRADCentral, the online D2L portal available to all graduate students. Finally, various graduate student groups at Ryerson were contacted directly, informed of the purpose of the survey, and provided information on how to complete it. In order to verify that all participants were members of the Ryerson University community, participants were required to log in using their Ryerson University credentials to access the survey link. Participants who chose to provide their email address were entered into a draw to win one of 10 \$100 gift cards to a grocery store.

2.5. Measures

All participants who clicked on the survey link were presented with the following eight measures. Participants were able to skip any individual question(s) within these measures if desired and were able to continue with and complete the survey despite skipping any question(s).

Participants were informed of their option to skip questions in the survey consent landing page outlining their rights as a survey participant, and describing the voluntary

and anonymous nature of the survey. This consent page outlined the purpose of the evaluation, data security measures, data management and dissemination plans, and provided links to crisis and counselling services in the event that participants experienced any distress in response to the survey. Participants were also presented with the lead investigators' contact information and encouraged to reach out if they had questions or concerns.

Demographic Questionnaire

Participants completed a demographics questionnaire asking about their age, gender, ethnic origin, relationship status, household living arrangements, whether they had children, and whether they had dependents excluding children that relied on their care (for example, an older relative). They were also asked to indicate whether they identified as a racialized person, a person with a disability, or 2SLGBTQ+. In addition, they were asked about several school-related factors: their Faculty, program, year of program, whether they were a full-time or part-time student, whether they were an international student, and how they paid for their living expenses during the academic year.

Demographic information was collected for two reasons. First, it allowed for a comprehensive description of the sample of graduate students who completed the survey, and whether this sample was reflective of the graduate student population at the university. Second, it allowed for investigation of whether mental health and well-being variables differed based on these demographic variables (for example, whether financial strain differed based on students' age, gender, relationship status, international student status).

Generalized Anxiety Disorder - 7-item (GAD-7; Spitzer et al., 2006)

The GAD-7 is a seven-item questionnaire that assesses the presence of worry and anxiety symptoms over the last two weeks. Items are scored on a four-point Likert scale ranging from 0 (*not at all*) to 3 (*nearly every day*). Respondents are categorized as having minimal (total score of 0-4), mild (5-9), moderate (10-14), or severe (15-21) anxiety.

The GAD-7 has been determined by previous research to show a high degree of internal consistency, that is, how well the individual survey items correspond to accurately gauge the construct of interest (in this case, anxiety symptoms). Internal consistency statistics for a measure (Cronbach's alpha/ α) are typically calculated and reported in each study using that measure, with a corresponding rating scale reflecting the acceptability of the result (see Tavakol & Dennick, 2011 for further information). In the current study, internal consistency was determined to be excellent (Cronbach's $\alpha = .923$).

The GAD-7 was chosen for use in this study due to its high frequency of use in research and clinical settings and its frequent presence in the extant anxiety literature, its short length, its reliance on diagnostic symptoms of anxiety as determined by the Diagnostic and Statistical Manual of Mental Disorders (DSM-5; APA, 2013), as well as its use by the lead investigators in previous evaluations of graduate student wellness (see Park et al., 2021).

Patient Health Questionnaire - 9-item (PHQ-9; Kroenke et al., 2001)

The PHQ-9 is a nine-item questionnaire that assesses the presence of depression symptoms over the last two weeks. Items are scored on a four-point Likert scale ranging from 0 (*not at all*) to 3 (*nearly every day*). Respondents are categorized as having no or minimal (total score of 0-4), mild (5-9), moderate (10-14), moderately severe (15-19) or severe (20-27) depressive symptoms. In the current study, internal consistency was excellent (Cronbach's $\alpha = .900$).

The PHQ-9 was chosen for use in this study due to its status as the most used screening tool for depression in clinical settings (Levis et al., 2019), its frequent presence in the extant depression literature, its short length, and its use by the lead investigators in previous evaluations of graduate student wellness (see Park et al., 2021).

Maslach Burnout Inventory - Student Survey (Revised) (MBI-SS; Schaufeli et al., 2002)

The MBI-SS is a 15-item questionnaire that assesses symptoms of burnout and engagement in university studies. The scale comprises three subscales: exhaustion (feeling physically or mentally fatigued; sample item: “I feel emotionally drained by my studies”), cynicism (feeling skeptical, doubtful, or disparaging; sample item: “I doubt the significance of my studies”) and professional efficacy (feeling that one’s vocational efforts are effective and productive; sample item: “I can effectively solve the problems that arise in my studies” [reverse coded]). All items are scored on a 7-point Likert scale ranging from 0 (*never*) to 6 (*always*). As directed by the MBI-SS Scoring Manual (Schaufeli et al., 2002), items in the professional efficacy subscale were reverse-coded, that is, scored in the opposite direction (if a participant responded with a 0, it was re-coded as a 6; if they responded with a 1, it was re-coded as a 5, etc.). This allows all three subscales to commonly reflect “negative” or challenging constructs. In the current study all three subscales showed high internal consistency, with Cronbach’s α coefficient values of .922, .926, and .810.

Based on a respondent’s responses to each subscale, they are categorized as experiencing low, moderate, or high levels of exhaustion, cynicism, and professional inefficacy. See Table 2 in section 3.4 of this report for the cut-off scores for low, moderate, and high for each subscale. As reported by Costa and colleagues (2012), a participant is categorized as having burnout if they report high levels on all three subscales. Using less stringent criteria (as reported by Kajjimu et al., 2021) a participant may be categorized as having burnout if they report high levels on at least two subscales.

The MBI-SS was chosen for use in this survey as it is the leading measure of burnout and has been frequently present in the extant burnout literature for nearly 40 years (Maslach et al., 1997). It has also been used internationally in many previous evaluations of student wellness (see Hu & Schaufeli, 2009; Schaufeli et al., 2002).

Financial Strain Scale (Revised) (as cited in Ullah, 1990)

The financial strain scale is a four-item scale that has been used in several studies examining student or other financially challenged populations (e.g., Creed & MacIntyre, 2001; Park et al., 2021; Swords & Ellis, 2017; Ullah, 1990). The four original items in the scale include, “Do you have serious financial worries?”, “Are you often not able to do the things you like to do because of shortages of money?”, “Are you often not able to do the things you need to do because of shortages of money?”, and “Are you often not able to manage on the money you have?”. In this study, we added one additional item “Does your current financial situation make you feel uncomfortable or uneasy?” Participants were asked to consider their financial experiences over the past four weeks and respond on a 5-point Likert scale ranging from 1 (*never*) to 5 (*all the time*). Final scores were calculated by item summation, yielding a possible total score that ranged between 5 and 25. In the current study, internal consistency of the revised scale was excellent (Cronbach’s $\alpha = .930$).

The financial strain scale was chosen for use in this study due to the specificity and applicability of its items to the present population of interest and its use by the lead investigators in previous evaluations of graduate student wellness (see Park et al., 2021).

The Short Supervisory Relationship Questionnaire (S-SRQ; Cliffe et al., 2014)

The S-SRQ is an 18-item questionnaire that assesses the quality of a supervisory relationship from the point of view of the supervisee. The scale comprises three subscales: safe base (i.e., the supervisor is viewed as trusted and respectful; sample item: “My supervisor was respectful of my views and ideas”), reflective education (i.e., the supervisor is viewed as caring about the student’s progress; sample item: “My supervisor paid close attention to the process of supervision”), and structure (i.e., the supervisor is viewed as being organized and effective; sample item: “Supervision sessions were focused”). Items are scored on a seven-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Final scores were calculated by item summation, yielding a possible total score that ranged between 18-126. In the current

study all three subscales showed high internal consistency, with Cronbach's α coefficient values of .966, .923, and .826.

Before accessing the S-SRQ, participants were provided with the question "Do you have a supervisor or advisor who oversees your work/progress in graduate studies at Ryerson University? (e.g., academic supervisor)." If participants indicated yes, they were presented with the S-SRQ; if participants indicated no, they were not presented with the S-SRQ and continued to the next section of the survey.

The S-SRQ was chosen for use in this study due to its short length and its applicability for graduate students across a variety of academic disciplines, in contrast to most existing questionnaires exploring the student-supervisor relationship, which are more specific to graduate students undergoing training in clinical therapy (such as the Supervisory Satisfaction Questionnaire [Ladany et al., 1996] and the Role Conflict and Role Ambiguity Inventory [Olk & Friedlander, 1992]).

Impact of the COVID-19 Pandemic: Experiences and Reactions. Measured via the Stanford Acute Stress Reaction Questionnaire (Revised) (SASR-R; Cardeña et al., 2000).

As the administration of this survey occurred during the COVID-19 pandemic, and the mental health and well-being variables of interest were likely influenced by this ongoing global health crisis, we included a questionnaire assessing the potential impact of the COVID-19 pandemic. The Stanford Acute Stress Reaction Questionnaire (SASR) was chosen for this purpose. The SASR is a 30-item measure used to examine the impact of an acute stressful or traumatic event; the investigator can insert the name of the specific event (in this case, "the COVID-19 pandemic") into each of the measure's items.

In this evaluation, 10 of the original items from the SASR were used (e.g., "I had repeated and unwanted thoughts of the COVID-19 pandemic"). In addition, three items designed by the lead investigators were added, thus forming the SASR-Revised (SASR-R). These three additional items explored how the pandemic may have affected

variables specific to the Ryerson University graduate student experience: “I experience exhaustion from constant social interactions through a screen (sometimes this is referred to as Zoom fatigue)”; “Because I am living in a different time zone due to COVID-19 (e.g., living internationally), I experience difficulty attending courses, meetings, etc.”; “Because of COVID-19, I experience difficulty accessing on-campus facilities and resources, e.g., historical books not available online, technology, etc.”. All items on the SASR-R (i.e., the 10 items from the original SASR and the three newly-added items) were scored on a 6-point Likert scale ranging from 0 (*not experienced*) to 5 (*very often experienced*).

The SASR was chosen for use in this study as it has been used in a variety of existing research examining the impact of an acute stressful event, including several research studies examining individuals’ response to the COVID-19 pandemic (see Rajkumar, 2020).

Rank Order: What is Most Stressful About Graduate School?

Participants were presented with the question, “Which aspect of graduate school do you find the most stressful?” and were provided with a list of 15 graduate school domains (for instance: course work, finances, balancing work/school with family). Participants were asked to “drag and drop” each domain into a box, arranging them in order from most stressful to least stressful. Alternatively, participants were able to indicate that a domain did not apply to them by dragging and dropping it into a “Not applicable to me” box.

Based on the order indicated by each participant, each domain was assigned a rating score, with lower scores indicating a more stressful domain (e.g., the domain indicated to be the most stressful was given a score of 1, the second most stressful domain was given a score of 2). The domains were derived and modified from Rummell (2015) and a full list is reported alongside each item’s mean rating score in Table 7 in the Results section.

This question and the domains were developed by the lead investigators for use in a previous evaluation of graduate student wellness (see Park et al., 2021) and modified for use in the present study.

Graduate Student Recommendations for Improving Well-Being

Participants were presented with the prompt, “Below are several suggestions of ways in which Ryerson University and/or YSGS can better support graduate student mental health. To what degree do you support the following recommendations?” Participants were then provided with a list of 10 recommendations (for instance: provide additional bursaries for students in financial need, offer additional career development resources, ensure the provision of psychological services geared toward graduate students). Participants were asked to rate their support for each recommendation on a 5-point Likert scale ranging from 1 (*strongly oppose*) to 5 (*strongly support*).

Participants were then asked, “What are your top three recommendations for ways in which the university and/or YSGS can better support graduate student mental health? Please select 3 options” and were provided with the same list of 10 recommendations, from which they could select up to three.

A full list of the recommendations is reported in Table 8 in the Results section. This question and the domains were developed by the lead investigators specifically for use in the present study.

2.6. Data Management and Dissemination

The raw survey data were accessible only to the lead investigators. Upon the conclusion of data collection, the data were downloaded to a password-protected computer on a secure server and were subsequently deleted from the online survey platform. The data were then anonymized by deleting the IP Address and location data that were automatically collected via Qualtrics XM. At no point were the raw data shared with other researchers, and all results disseminated through any channels were displayed only in aggregate form. All data are securely stored and will be securely

destroyed after 10 years. Participants were informed of this data management strategy in the survey introduction/consent page.

This document represents the ultimate dissemination of the Core survey results. Initial versions of findings from the study have been disseminated in various ways. Findings from the Short Supervisory Relationship Questionnaire (S-SRQ) were shared at a Ryerson University January 2021 GRADSkills Workshop entitled “*Navigating the Student-Supervisor Working Relationship: Strategies and Skills.*” Findings from the core survey were shared with the Faculty Associate Deans in Spring 2021, and with the wider community at the Ryerson University Senate Committee of the Whole in June 2021. These findings will also be shared in two upcoming peer-reviewed journal articles (Park et al., *in prep*; Sibalis et al., *in prep*).

3. Results

3.1. Participant Demographics

In total, 515 participants accessed the online survey. There were 2,926 eligible participants across the university, which reflects a 17.6% response rate.

Not all participants completed every measure in the survey. We analyzed data that were collected before the participant ended the survey, unless the participant checked a box indicating that they would like to remove their data from the dataset. The number of participants who completed each measure is reported as the n in the results section.

Participants ranged in age between 21 and 61 years ($M = 28.19$, $SD = 6.11$) and the sample was predominantly women (72.9%). Given that 53.3% of graduate students at Ryerson University currently identify as women, the results of the present survey show an over-representation of women.

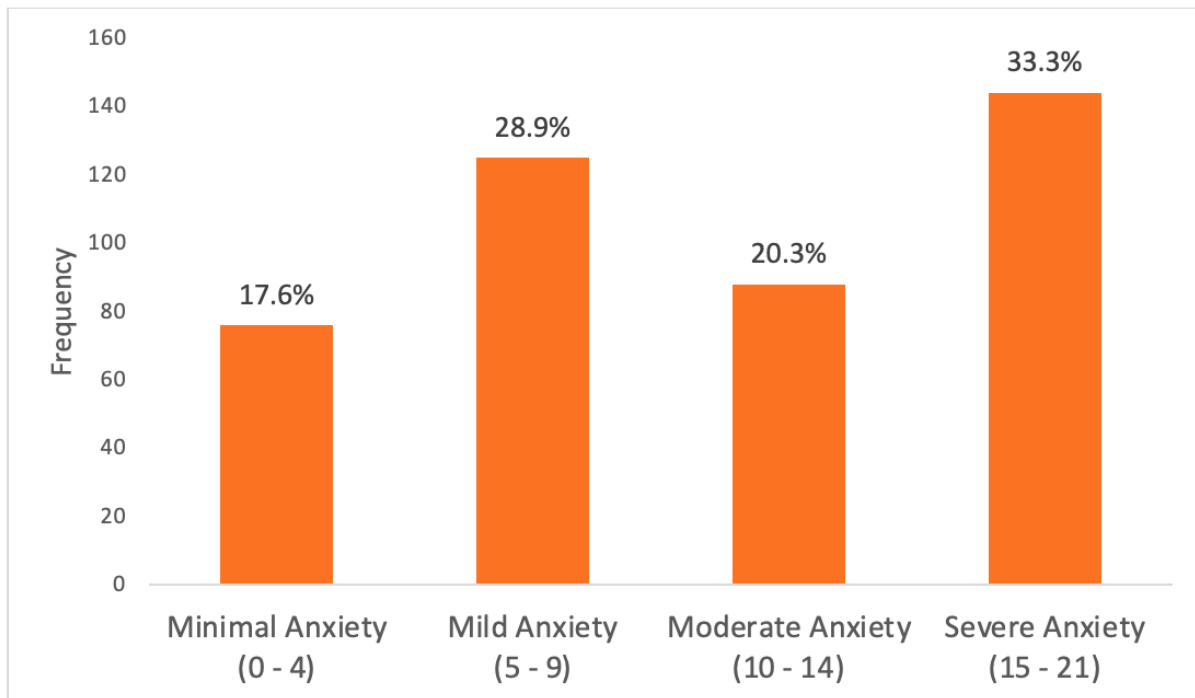
Students were also asked to self-identify with several diversity, equity and inclusion constructs. A total of 33.3% indicated that they self-identify as a racialized person, 13.7% indicated that they self-identify as a person with a disability, and 17.9% indicated that they self-identify as a member of the 2SLGBTQ+ community. Please see [Table 1](#) in the Supplementary Materials for full demographic information of participants.

3.2. Anxiety

54% of respondents report symptoms consistent with moderate or severe anxiety

- The goal in using this measure was to identify how many students experience symptoms of anxiety
- Possible scores range from 0 (indicating no symptoms of anxiety) to 21 (indicating symptoms consistent with severe anxiety)
- The mean score for all participants was **11.12** ($SD = 6.34$), $n = 433$ ([Figure 1](#))

Figure 1. Frequency of anxiety scores.

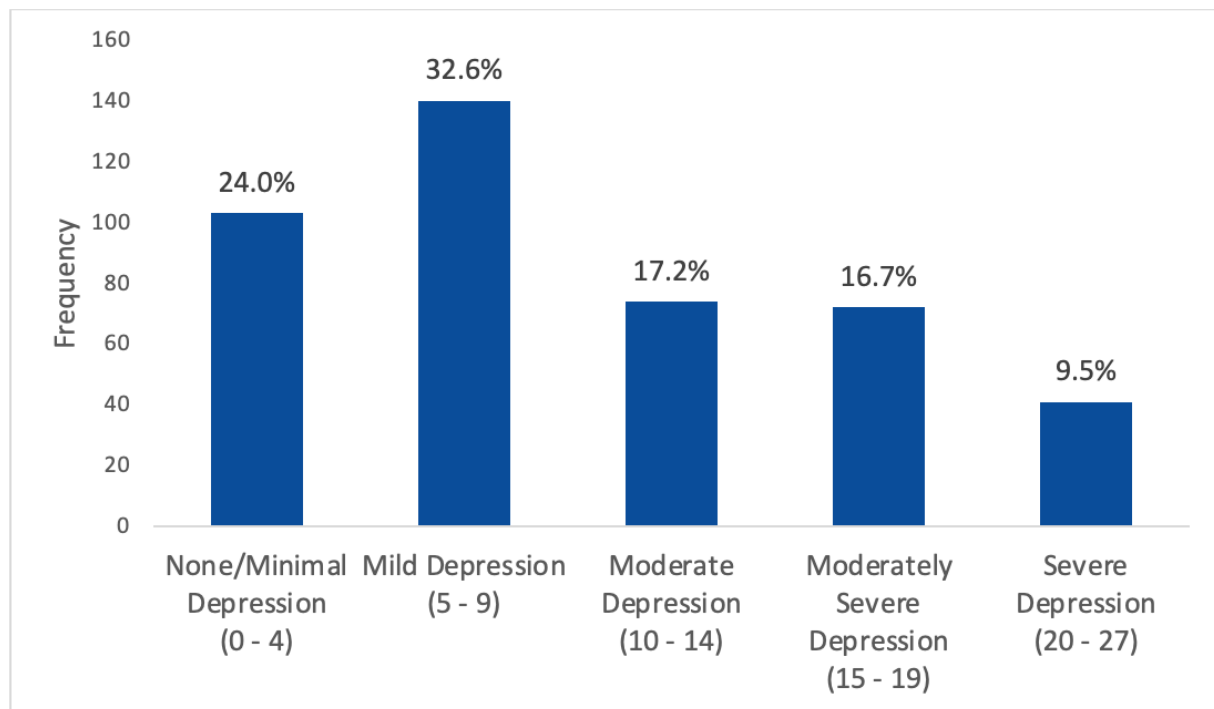


3.3. Depression

43% of respondents report symptoms consistent with moderate or severe depression

- The goal in using this measure was to identify how many students experience symptoms of depression
- Possible scores range from 0 (indicating no symptoms of depression) to 27 (indicating symptoms consistent with severe depression)
- The mean score for all participants was **9.73** ($SD = 6.64$), $n = 430$ (see [Figure 2](#))

Figure 2. Frequency of depression scores.



Thoughts of Self-Harm and/or Suicidal Ideation

- Based on the one item from the depression scale (PHQ-9) about thoughts of self-harm or suicidal ideation, 20% reported having these thoughts at least some of the time, and 3.7% of respondents report having these thoughts “every day”

3.4. Burnout

20% of respondents report experiencing high burnout on all three subscales.

42% of respondents report experiencing high burnout on two of the three subscales.

Burnout Subscales

**69% of respondents report high emotional exhaustion
68% of respondents report high cynicism
45% report low professional efficacy**

- The goal of this measure was to identify how many students in our sample experience burnout
- Respondents are considered “high” on the emotional exhaustion subscale if they score higher than 14, “high” on the cynicism subscale if they score higher than 6, and high on the professional efficacy subscale if they score lower than 23.
- The overall mean on the MBI-SS was 39.36 ($SD = 14.73$), $n = 437$
 - Exhaustion subscale, $M = 18.79$ ($SD = 6.99$)
 - Cynicism subscale, $M = 10.86$ ($SD = 6.30$)
 - Professional efficacy subscale, $M = 9.96$ ($SD = 5.83$)

Categorizing Burnout

- A total of 20.1% of respondents score “high” on all three subscales of burnout

- Using less stringent criteria, 41.9% of respondents scored “high” on two of the three subscales of burnout
- As outlined in [Table 2](#), most students scored in the highest category for emotional exhaustion and cynicism (69.2% and 67.8%, respectively)
- Furthermore, many students scored low in professional efficacy (44.6%), suggesting that these students do not feel a sense of personal accomplishment and effectiveness in their abilities

Table 2. *Prevalence of burnout in three subscales.*

Subscale	Category*	%
Emotional Exhaustion (n = 448)	Low (0-9)	9.8%
	Moderate (10-14)	21.0%
	High (>14)	69.2%
Cynicism (n = 453)	Low (0-1)	0%
	Moderate (2-6)	32.2%
	High (>6)	67.8%
Personal Efficacy (n = 444)	Low Efficacy (>27)	44.6%
	Moderate Efficacy (23-27)	30.0%
	High Efficacy (<23)	25.5%

* Scores from Costa et al., 2012

3.5. Financial Strain

15% of respondents report severe financial strain.

- The goal in using this measure was to identify how many students experience high financial strain

- Possible scores range from 5 (indicating no financial strain) to 25 (indicating severe financial strain)
- The mean was **12.12** ($SD = 5.92$), $n = 435$
- See [Table 4](#) in Supplementary Materials for the frequency of responses with every question on the financial strain scale

<i>Minimal/No Financial Strain</i>	<i>Mild Financial Strain</i>	<i>Moderate Financial Strain</i>	<i>Severe Financial Strain</i>
39%	31%	16%	15%

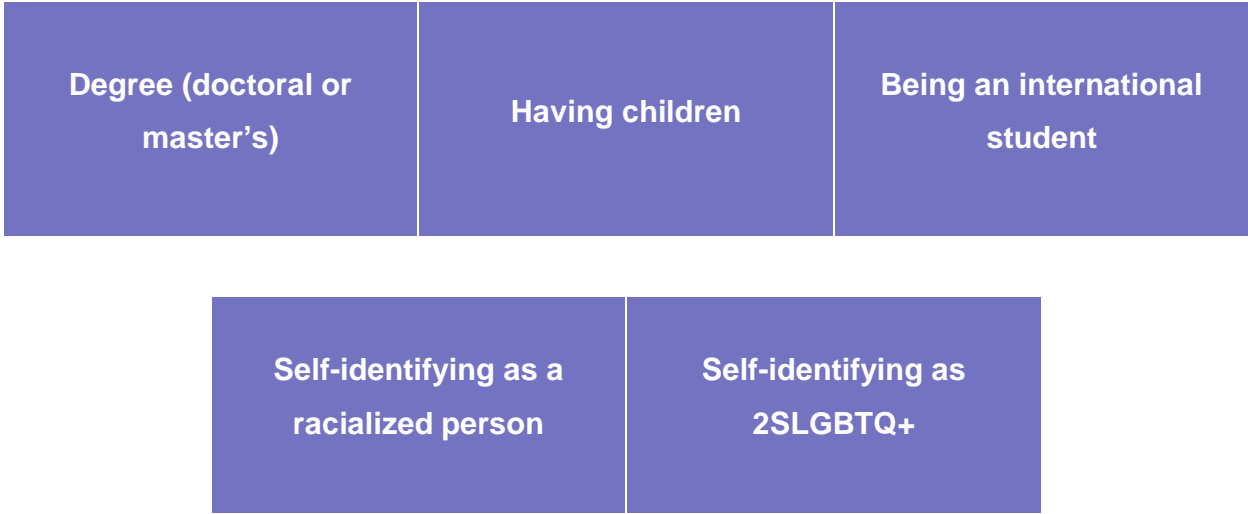
3.5.1. Financial Strain and Participant Descriptors

- We were interested in identifying which students were more like to experience financial strain compared to students who were less likely to experience financial strain
- One-way ANOVAs and t-tests were run using statistical software. The ANOVAs and t-tests compared different group descriptors to see if there were any group differences on financial strain scores. See [Appendix A](#) for more information on statistical analysis.

Participant descriptors that significantly predicted financial strain in the present sample included the following:

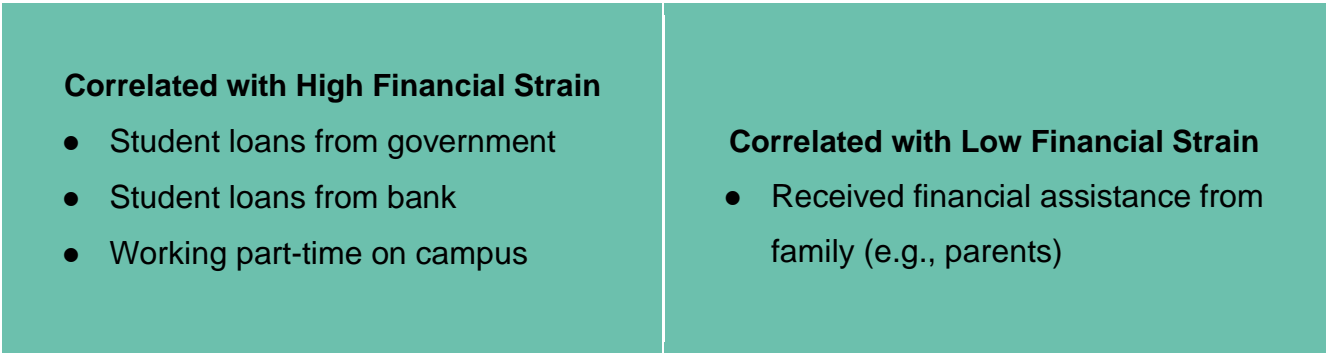
Self-identifying as a person with a disability	Householding living arrangement (e.g., living with roommates)	Having dependents, that are not children, that rely on your care (e.g., an elder relative)
-------------------------------------------------------	----------------------------------------------------------------------	---------------------------------------------------------------------------------------------------

Participant descriptors that did not significantly predict financial strain in the present sample included the following:



How are living expenses paid for?

- Responses to the question “How are living expenses paid for?” were correlated with financial strain (see [Table 5](#))



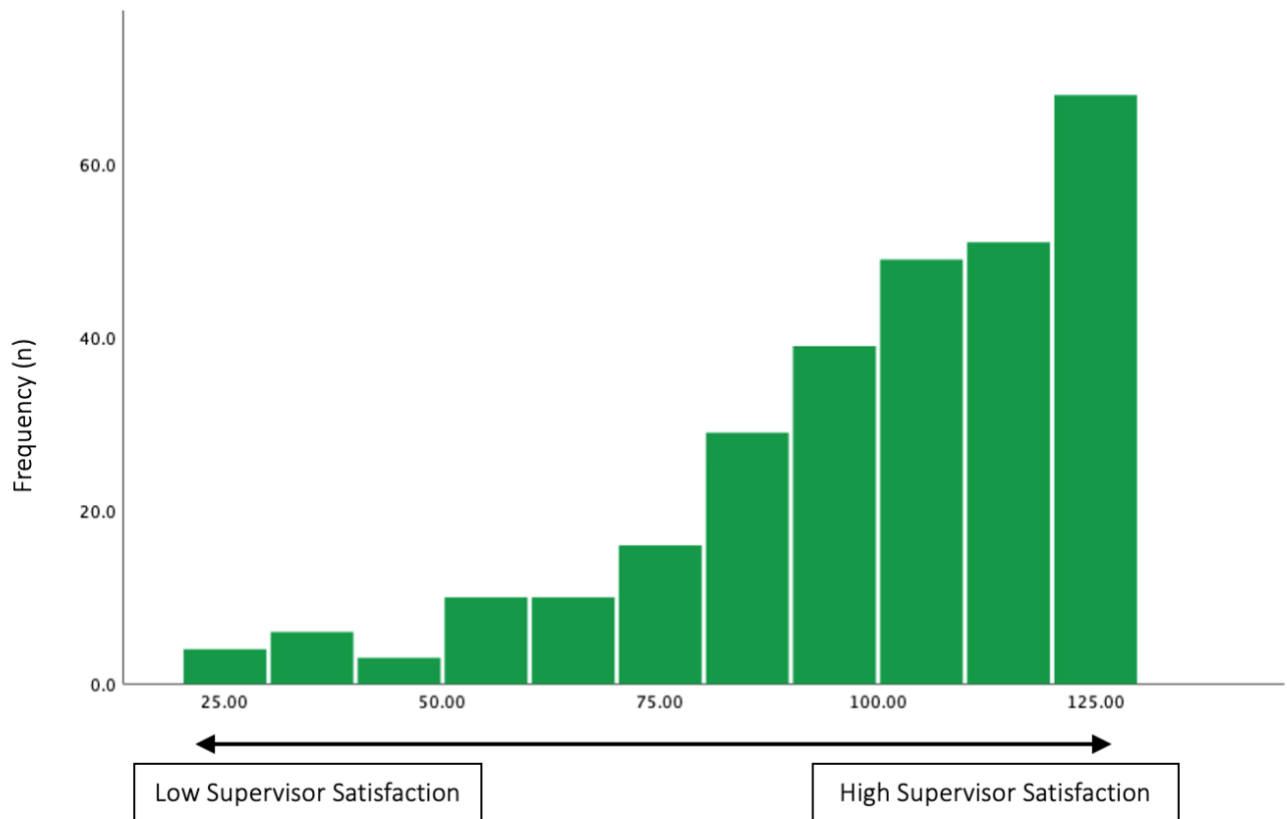
3.6. Supervisory Relationship

56% of respondents are extremely satisfied with their supervisory relationships

4% are extremely dissatisfied with their supervisory relationships

- The goal in using this measure was to identify satisfaction with current academic supervisor
- Possible scores range from 18 (indicating low satisfaction) to 126 (indicating excellent satisfaction)
- The mean score with the current sample was 99.29 ($SD = 23.55$) and the mode (most commonly reported) response was 120, indicating that many students report excellent satisfaction with supervisors ($n = 285$, See [Figure 4](#))
- When the possible scores on the scale are divided into quartiles:
 - 4.2% are extremely dissatisfied with their supervisory relationship ($n = 12$)
 - 11.6% are slightly dissatisfied ($n = 33$)
 - 28.1% are mostly satisfied ($n = 80$)
 - 56.1% of respondents are extremely satisfied ($n = 160$)

Figure 4. Summed responses on the supervisory satisfaction scale.



3.7. Impact of the COVID-19 Pandemic: Experiences and Reactions

- The original stress reaction scale has been modified for the purposes of this evaluation. All survey items are outlined in [Table 6](#) ($n = 407$).
- Possible scores on each survey item range from 0 (not experienced) to 5 (very often experienced)

Respondents endorsed experiencing the following reactions/experiences the most during the COVID-19 pandemic:

1. I felt more isolated from other people because of COVID-19

2. I experienced exhaustion from constant social interactions through a screen (sometimes this is referred to as “Zoom fatigue”)

3. The COVID-19 pandemic made it difficult for me to perform work or other things I needed to do

3.8. Most Stressful Aspects of Graduate School

The most stressful aspects of graduate school were:

**Thesis, dissertation, MRP or other required research
Balancing work/school and family
Coursework
Finances**

Relationship with peers was the least stressful aspect of graduate school

- The frequency of respondents who selected each domain as the number one most stressful aspect of graduate school is reported in [Table 7](#) ($n = 382$)
- Students were able to select “not applicable” for items that did not apply to them.
- The following domains were removed due to low applicability (i.e., less than 100 respondents indicated that the domain was applicable to them)

- Creative major projects (e.g., digital media, film and photography, documentaries, design studios)
- Lecturing/teaching a course
- Clinical work or training

Table 7. *Most stressful aspects of graduate school.*

Rank Order	Domain	# of students who put domain as #1
1	Thesis, dissertation, MRP or other required research	127
2	Balancing work/school and family	65
3	Coursework	52
4	Finances	45
5	Balancing work/school and other social roles	29
6	Group work	14
7	Relationships with supervisors	12
8	Practicum/internship placements	10
9	Comprehensive requirement	9
10	Teaching or research assistantships	8
11	Lack of access to support resources (e.g., statistical consultation, photo and film editing services, etc.)	8
12	Relationships with peers	3

- These findings are in line with previous research. A systematic review reported that the main stressors for graduate students were difficulty balancing high academic workloads, financial stress, balancing work with personal and family roles, and managing the supervisory relationship (Flaviane et al., 2018).

3.9. Participant Wellness Recommendations for Improving Mental Health

Students most strongly endorsed the following recommendations to improve their wellness:

**Support for tuition decrease or waiver
Psychological services geared towards graduate students
Additional bursaries for students in financial need
Formal vacation time**

- The top wellness recommendations were based on the highest frequency of top 3 recommendations for improving graduate student mental (See [Table 8](#))

Table 8. Rank order of most endorsed recommendations.

Rank Order	Recommendation	# of students who put recommendation in top 3
1	Support for a tuition decrease or waiver	314
2	Psychological services geared toward graduate students	181
3	Additional bursaries for students in financial need	170
4	Formal vacation time (e.g., two-week vacation time submitted to program administrators)	138
5	Additional career development resources	100
6	Increased physical space for graduate students (e.g., graduate lounge, when campus resumes to in-person meetings)	72
7	Supervision workshops for faculty and mentors (e.g., providing strength-based feedback, modelling self-care)	70
8	More social events specifically for graduate students	55
9	Writing support for graduate students	48
10	Access to statistical consultation services for graduate students	43

4. Discussion and Recommendations

4.1. Summary of Findings and Integration with Literature

Psychological Distress

In summary, many graduate students at Ryerson University experience psychological distress. In the present sample, 54% of respondents reported symptoms consistent with moderate or severe anxiety, 43% of respondents reported symptoms consistent with moderate or severe depression and 20% of respondents are experiencing high rates of burnout.

Although these numbers may appear high, they are aligned with other research conducted on graduate student mental health. Evans and colleagues (2018) surveyed over 2,000 graduate students from over 26 countries to understand the mental health concerns of graduate students. A total of 41% of graduate students from diverse fields of study reported moderate to severe symptoms of anxiety and 39% reported moderate to severe symptoms of depression. Likewise, in a large international meta-analysis of 15,626 participants across 9 studies, 17% of PhD students reported clinically significant symptoms of anxiety. Within the same international meta-analysis, 24% of PhD students reported clinically significant symptoms of depression across 23,469 participants in 16 studies (Satinsky et al., 2021). Thus, high rates of anxiety and depression are common for the graduate student population, even prior to the COVID-19 pandemic.

Burnout is also pervasive in academia. A study conducted by Nagy and colleagues (2019) found that the majority of biomedical doctoral students at a college in the United States reported moderate levels of burnout. Similarly, a study conducted by Swords and Ellis (2017) found that 75% of psychology doctoral students reported experiencing symptoms of burnout, which was markedly higher than normative samples. Furthermore, in a Canadian sample of psychology graduate students, 60% met proposed criteria for burnout (Park et al., 2021). The categorization of whether an individual is considered “burnt out” or not was calculated differently in each of these

samples. In our sample, we used stringent burnout criteria and found that 20% of respondents are experiencing high rates of burnout on all three burnout subscales. The most common symptoms of burnout were high emotional exhaustion and high cynicism, which were reported by 70% of respondents on both subscales. Also concerning, 45% of respondents report low professional efficacy, which means that almost half of our respondents do not feel accomplished or effective in their work.

Some professionals have begun labelling the high levels of distress in the graduate student population a “mental health crisis” (Evans et al., 2018, p. 283). The source of psychological distress in graduate student education is multifaceted. Charles et al., (2021) found that financial concerns, poor relationship with mentor and perceived institutional discrimination were associated with symptoms of depression, whereas, protective factors included social support, supportive departmental climate, and optimism about future career prospects.

Financial Stress

Financial strain is perceived as insufficient money to cover necessary expenses or financial hardship (Swords & Ellis, 2017). In our sample of Ryerson graduate students, 15% of respondents reported experiencing severe financial strain. In our findings, “finances” was ranked as the fourth most common stressful aspect of graduate school. Finally, when participants were provided the opportunity to endorse wellness recommendations, the number one wellness recommendation was support for a tuition decrease/waiver and the number three wellness recommendation was to provide additional bursaries for students in financial need.

In our sample, we also found differences on participant descriptors that influenced financial strain.

- Respondents in our sample were significantly **more likely** to experience financial strain if they:
 - self-identified as a person with a disability
 - live with non-relatives (e.g., roommates, shared accommodations)

- have dependents who are not children that rely upon their care (e.g., an elder relative)
- receive student loans from government (e.g., OSAP)
- receive student loans from the bank (e.g., a line of credit)
- and/or are working part-time on campus
- Respondents in our sample were significantly **less likely** to experience financial strain if they:
 - lived in a relative's home (e.g., with parents)
 - and/or received financial assistance from family

Experiencing financial strain during graduate studies is not exclusive to Ryerson University. Several journal articles have reported that finances are a noteworthy source of stress for graduate students (e.g., Charles et al., 2021; Oswald & Riddock, 2007; Short et al., 2019). A study conducted by the Council of Graduate Schools found that 60% of master's students and 55% of PhD students reported feeling stressed about their financial situations and approximately one third of graduate students (28% of master's and 36% of PhD students) expressed difficulty meeting their basic monthly expenses (Denecke et al., 2016). In a sample of American graduate students, 21.8% of participants reported experiencing *very low* food security due to financial constraints. As expected, graduate students who experienced low food security had significantly higher levels of depression, anxiety, and stress (Coffino et al., 2020).

In our sample, we found that financial strain was also positively significantly correlated with anxiety, depression and burnout. In summary, financial strain is a common experience in graduate studies and financial strain is associated with psychological distress. When developing intervention strategies to improve graduate student well-being, increasing financial support may be a fruitful avenue to explore.

Supervisory Relationship

In our sample of Ryerson graduate students, most respondents were highly satisfied with the quality of their supervisory relationship. Over half (56%) of respondents were

extremely satisfied with their academic supervisors. However, a small minority (4%) of students experienced extremely low satisfaction with their supervisor. Furthermore, twelve graduate students (3.1%) reported that their relationship with their supervisor was their number one source of stress in graduate studies. To summarize, most graduate students at Ryerson University have overwhelmingly positive experiences with their supervisors. However, a small minority of participants ($n = 12$) reported extreme dissatisfaction and high sources of stress from their academic supervisors. It is also worth noting that the surveys administered to graduate students only inquired about *current* academic supervisors. Thus, our results may not have captured the experiences of graduate students who changed supervisors (possibly due to low satisfaction) and did not capture experiences with faculty outside of the supervisory relationship (e.g., professors teaching a course).

It has been proposed that the role of the supervisory relationship is imperative for graduate student success (Heath, 2002). Academic supervisors provide their expertise and knowledge, guide a student in developing their research skills, and invest time to support completion of a thesis or dissertation (Heath, 2002). Previous research has shown that supervisory relationships can also influence a student's time to completion of their degree. For example, Gruzdev and colleagues (2020) found supervisors who are considered to be "hands off" (e.g., have low engagement with students' research projects, do not offer feedback, do not inform students of opportunities such as scientific events or conferences) are associated with longer expected times to graduate for mentees. Previous research has also found that some academic supervisors may engage in problematic behaviours. In a Canadian sample of psychology graduate students, a total of 21% of participants reported that their current academic supervisor was engaging in workplace bullying behaviours (Yamada et al., 2014). Obviously, these behaviours influence the wellness of the students. Goodboy and colleagues (2015) found that workplace bullying by a graduate faculty member (i.e., belittlement, punishment, managerial misconduct, and exclusion tactics) was positively related to graduate student burnout. Finally, the supervisory relationship can influence attrition rates. Low satisfaction with supervisors can lead to burnout, which may then lead to

thoughts of dropping out (Cornér et al., 2017; Nagy et al., 2019). Given the importance of the supervisory relationship, it is encouraging to see mostly positive supervisory relationships reported in our sample.

4.2. Recommendations

Prior to suggesting future recommendations, we will briefly outline the existing mental health and wellness supports that are operating at Ryerson University.

- The CSDC offers individual and group counselling, crisis support, community referrals, and mental health outreach. These services are free for Ryerson students who are not on leave.
- ThriveRU, developed by Dr. Diana Breacher, incorporates principles of positive psychology and the five factor model of resilience to improve student wellness. ThriveRU resources include training sessions, workshops, meditation recordings, and workbooks.
- In response to the COVID-19 pandemic, Ryerson University partnered with keep.meSAFE which offers virtual counselling 24/7 through chat or telephone.
- The Graduate Student Tuition and Ancillary Fee Voucher was also made available for graduate students, which provided the opportunity for graduate students whose progress was delayed due to circumstances surrounding COVID-19 to apply for a one-semester tuition waiver.
- Consent Comes First provides support to Ryerson community members who have experienced sexual violence and/or gender-based violence. Consent Comes First can help navigate legal, housing and health services, provide safety planning, explore self-care resources, connect to financial support, and various other resources for gender-based violence.
- Ryerson Safe House provides free and confidential support for immediate risk of physical, sexual or emotional abuse. Ryerson Safe House can assist with fleeing unsafe living conditions and/or support students who have been made suddenly homeless as a result of extreme circumstances.
- The Ryerson Graduate Students' Union also has negotiated several benefits in the Green Shield Health Plan. Currently included in the health benefits plan is

\$1,000 per year that can be used towards psychological therapy. This allows students to access their own mental health professionals, if desired.

- GPDs and GPAs are an excellent first point of contact for graduate students. They can provide information about all available supports for students' individual circumstances.

1. Enhance counselling services geared towards graduate students

Rationale: Participants in the study strongly endorsed more counselling services specifically targeted for graduate students (i.e., this wellness recommendation was ranked as the second highest recommendation in [section 3.9.](#)). Furthermore, given reported high rates of psychological distress, counseling services may aid in reducing anxiety, depression, and burnout and in managing stress.

Although on-campus counselling services are available for graduate students (including one counsellor dedicated to graduate students), we recommend further research to identify why graduate students expressed a greater need for counselling services. Some potential barriers may include a lack of awareness of available services, not feeling as though the services would be useful, confidentiality or privacy concerns, or stigmatization around accessing services at the university.

A needs assessment evaluation may be beneficial for determining which gaps in services graduate students feel exist. Graduate students are often considered *non-traditional students* due to their various situations in their lives which may differentiate them from undergraduate students. While graduate students and undergraduate students may share academic experiences (e.g., coursework), graduate students also have additional, and unique stressors (e.g., working more independently, and in highly competitive environments). Tailoring counselling services to these needs, and marketing the services to graduate students, may result in greater uptake in services. Similarly, an online graduate student wellness hub (separate from academic services)

may be a useful resource for uniting all available mental health resources into one easily accessible location.

Recommendations at the university level. To start, conduct a needs assessment to determine what graduate students identify as important gaps in services. One straightforward solution may be to create a separate online hub for graduate student mental health and wellness resources. We also strongly recommend that group therapy be offered through the CSDC, that is restricted to only graduate students, in order to avoid graduate students overlapping services with undergraduate students (i.e., to mitigate risk of graduate students completing therapy alongside students they may be teaching and evaluating).

Recommendations at the program level. Ensure GPDs and GPAs have knowledge of the mental health and wellness services available for graduate students, and how referral processes work (e.g., counselling services, Ryerson Safe House, Ryerson Students Union funds for psychological therapy).

2. Financially support graduate students in greatest need

Rationale: Participants in the study strongly endorsed support for a tuition decrease or waiver (the highest wellness recommendation in [section 3.9.](#)) as well as financial bursaries for students in financial need (third highest recommendation in [section 3.9.](#)). Furthermore, 15% of students in our sample reported severe financial strain. We also found that financial strain positively and significantly correlated with psychological distress (anxiety, depression, and burnout) in our sample.

In our survey, we identified participant descriptors that were most highly predictive of financial strain. Given limited university resources, we recommend financial bursaries be targeted towards these identified at-risk populations (e.g., those who self-identify as a person with a disability or those who have dependents that rely on their support).

Targeting graduate students in financial need is a complex undertaking. Anecdotally in our work, we have heard from faculty and graduate students alike that graduate students feel uncomfortable applying for financial aid for fear that someone else may be in greater need. Also anecdotally, some graduate students have reported not having the time to complete lengthy bursary applications and/or the emotional wherewithal to disclose deeply personal challenges and circumstances, which may not be worthwhile if their application ends up rejected. Streamlining processes to encourage graduate students to apply for bursaries requires further discussion and consideration.

Recommendations at the university level. Consider offering bursaries targeted to at-risk graduate student populations (e.g., those who self-identify as a person with a disability, or who have dependents). Continue to evaluate current communication strategies and consider new strategies that encourage graduate students to be aware of, and apply for financial bursaries.

Recommendations at the program level. Ensure GPDs and GPAs are aware of financial bursaries and financial supports, and have communication strategies in place to make graduate students aware of potential opportunities.

3. Endorse a cultural shift towards greater work-life balance with policy change

Rationale: Effective graduate school training has been described as a “springboard for future opportunities” (Chrzanowski & Poudyal, 2019, p.331). Graduate education can be a fulfilling time for learning new skills, networking with professionals, and improving future career prospects in areas of interest. However, the current academic climate can be experienced as prioritizing productivity over well-being (Bartlett et al., 2021). Scarce funding and academic job opportunities have made the academic environment highly competitive. Consequently, many researchers find themselves working evenings and weekends to meet research, teaching and administrative workload demands (Bartlett et al., 2021). High work hours reduce time for self-care and fostering a cultural shift in academia will require systematic changes at many levels. Improving work-life balance

with graduate students may improve productivity, efficiency, reduce attrition rates and improve emotional health (Chrzanowski & Poudyal, 2019; Schmidt & Hansson, 2018). Ryerson University should consider broad institutional changes to signal that work-life balance is an important value for graduate students.

Recommendations at the university level. Consider implementation of an annual mandatory minimum two-week vacation for graduate students (this wellness recommendation was ranked as the fourth highest recommendation in [section 3.9.](#)). Additionally, implement guidelines or policies for expected work hours, meeting times, email policies and policies for sick days. Implementation of these policies will require further discussion and considerations.

Recommendations at the program level. Incorporate flexible work practices. This may include completing program milestones at different points in the program, options to work remotely, flexible deadlines, accommodations, and having discussions about when/if evenings and weekends are appropriate or necessary for academic-related tasks.

4. Ongoing professional development for faculty supervisors

Rationale: Although the majority of respondents were highly satisfied with their supervisors, it is imperative to ensure that all student-supervisor relationships are productive, constructive, and supportive. To address these challenges, we recommend ongoing professional development for all faculty supervisors focused on topics such as encouraging supportive interactions with graduate students, providing strength-based feedback on a regular basis, ensuring ongoing availability and openness to students and their ideas, and providing effective mentorship.

Recommendations at the university level. Consider ongoing professional development for faculty on best practices in supporting graduate students in the

supervisory role. Consider implementing policies to support supervisors in attending a minimum of one workshop annually.

5. Continue to evaluate the mental health of graduate students

Rationale: Investing time and resources in evaluations of mental health and well-being of graduate students is important and well-needed. Evaluating the mental health of graduate students will undoubtedly identify areas that need improvement as well as identify current strengths and supports.

Recommendations at the university level. We recommend that YSGS continue to conduct formalized evaluations of graduate student mental health, on an ongoing basis, e.g., every three years, in an effort to identify patterns and changes in student well-being, and to encourage and evaluate intervention strategies.

5. References

- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). <https://doi.org/10.1176/appi.books.9780890425596>
- Bartlett, M. J., Arslan, F. N., Bankston, A., & Sarabipour, S. (2021). Ten simple rules to improve academic work–life balance. *PLoS Computational Biology*, *17*(7), e1009124–e1009124. <https://doi.org/10.1371/journal.pcbi.1009124>
- Cardeña, E., Koopman, C., Classen, C., Waelde, L. C., & Spiegel, D. (2000). Psychometric properties of the Stanford Acute Stress Reaction Questionnaire (SASRQ): A valid and reliable measure of acute stress. *Journal of Traumatic Stress*, *13*(4), 719–734. <https://doi.org/10.1023/A:1007822603186>
- Centre for Chronic Disease Prevention, Pelletier, L., O'Donnell, S., McRae, L., & Grenier, J. (2017). The burden of generalized anxiety disorder in Canada. Le fardeau du trouble d'anxiété généralisée au Canada. *Health Promotion and Chronic Disease Prevention in Canada: Research, Policy and Practice*, *37*(2), 54–62. <https://doi.org/10.24095/hpcdp.37.2.04>
- Charles, S. T., Karnaze, M. M., & Leslie, F. M. (2021). Positive factors related to graduate student mental health. *Journal of American College Health*, 1–9. <https://doi.org/10.1080/07448481.2020.1841207>
- Chirikov, I., Soria, K. M., Horgos, B., & Jones-White, D. (2020). *Undergraduate and Graduate Students' Mental Health During the COVID-19 Pandemic*. UC Berkeley: Center for Studies in Higher Education. <https://campusmentalhealth.ca/wp-content/uploads/2021/03/Undergraduate-and-Graduate-Students-Mental-Health-During-the-COVID-19-Pandemic.pdf>
- Chrzanowski, S. M., & Poudyal, R. (2019). Attrition in graduate school versus other health professional programs: Etiologies and solutions. *Medical Science Educator*, *29*(1), 329–331. <https://doi.org/10.1007/s40670-018-00673-2>
- Cliffe, T., Beinart, H., & Cooper, M. (2016). Development and validation of a short version of the Supervisory Relationship Questionnaire. *Clinical Psychology & Psychotherapy*, *23*(1), 77–86. <https://doi.org/10.1002/cpp.1935>
- Coffino, J. A., Spoor, S. P., Drach, R. D., & Hormes, J. M. (2020). Food insecurity among graduate students: Prevalence and association with depression, anxiety

- and stress. *Public Health Nutrition*, 24(7), 1889-1894.
<https://doi.org/10.1017/S1368980020002001>
- Cornér, S., Löfström, E., & Pyhältö, K. (2017). The relationships between doctoral students' perceptions of supervision and burnout. *International Journal of Doctoral Studies*, 12, 91-106. <https://doi.org/10.28945/3754>
- Costa, E. F. D. O., Santos, S. A., Santos, A. T. R. D. A., Melo, E. V. D., & Andrade, T. M. D. (2012). Burnout Syndrome and associated factors among medical students: a cross-sectional study. *Clinics*, 67, 573-580.
[https://doi.org/10.6061/clinics/2012\(06\)05](https://doi.org/10.6061/clinics/2012(06)05)
- Creed, P. A., & Macintyre, S. A. (2001). The relative effects of deprivation of the latent and manifest benefits of unemployment on the well-being of unemployed people. *Journal of Occupational Health Psychology*, 6(4), 324– 331.
<https://doi.org/10.1037//1076-8998.6.4.324>
- Denecke, D., Feaster, K., Okahana, H., Allum, J., & Stone, K. (2016). *Financial education: Developing high impact programs for graduate and undergraduate students*. Washington, DC: Council of Graduate Schools.
- Evans, T. M., Bira, L., Gastelum, J. B., Weiss, L. T., & Vanderford, N. L. (2018). Evidence for a mental health crisis in graduate education. *Nature Biotechnology*, 36(3), 282-284. <https://doi.org/10.1038/nbt.4089>
- Flaviane Cristina Rocha Cesar, Sousa, E. T., Luana Cássia Miranda Ribeiro, & Lizete Malagoni de Almeida Cavalcante Oliveira. (2018). Graduate school stressors: An integrative literature review. *Cogitare Enfermagem*, 23(4), e57460. <https://doi.org/10.5380/ce.v23i4.57460>
- Garcia-Williams, A. G., Moffitt, L., & Kaslow, N. J. (2014). Mental health and suicidal behavior among graduate students. *Academic Psychiatry*, 38(5), 554-560.
<https://doi.org/10.1007/s40596-014-0041-y>
- Goodboy, A., Martin, M., & Johnson, Z. (2015). The relationships between workplace bullying by graduate faculty with graduate students' burnout and organizational citizenship behaviors. *Communication Research Reports*, 32(3), 272-280.
<https://doi.org/10.1080/08824096.2015.1052904>

- Gruzdev, I., Terentev, E., & Dzhaferova, Z. (2020). Superhero or hands-off supervisor? An empirical categorization of PhD supervision styles and student satisfaction in Russian universities. *Higher Education*, 79(5), 773-789.
<https://doi.org/10.1007/s10734-019-00437-w>
- Heath, T. (2002). A quantitative analysis of PhD students' views of supervision. *Higher Education Research and Development*, 21(1), 41-53. <https://doi.org/10.1080/07294360220124648>
- Hu, Q., & Schaufeli, W. B. (2009). The factorial validity of the Maslach burnout inventory–student survey in China. *Psychological Reports*, 105(2), 394-408.
<https://doi.org/10.2466/PRO.105.2.394-408>
- Hyun, J. K., Quinn, B. C., Madon, T., & Lustig, S. (2006). Graduate student mental health: Needs assessment and utilization of counseling services. *Journal of College Student Development*, 47(3), 247-266.
<https://muse.jhu.edu/article/197830/pdf>
- Johnson, B., Batia, A. S., & Haun, J. (2008). Perceived stress among graduate students: Roles, responsibilities, & social support. *Vahperd Journal*, 29(3), 31-36.
<https://link.gale.com/apps/doc/A180748348/AONE?u=anon~e033d8f5&sid=googleScholar&xid=9d469aa5>
- Jones-White, D. R., Soria, K. M., Tower, E. K., & Horner, O. G. (2020). Factors associated with anxiety and depression among US doctoral students: Evidence from the gradSERU survey. *Journal of American College Health*, 1-12.
<https://doi.org/10.1080/07448481.2020.1865975>
- Kajjimu, J., Kaggwa, M. M., & Bongomin, F. (2021). Burnout and associated factors among medical students in a public university in Uganda: A cross-sectional study. *Advances in Medical Education and Practice*, 12, 63.
<https://doi.org/10.2147/AMEP.S287928>
- Kroenke, K., Spitzer, R. L., & Williams, J. B. (2001). The PHQ-9: validity of a brief depression severity measure. *Journal of General Internal Medicine*, 16(9), 606-613. <https://doi.org/10.1046/j.1525-1497.2001.016009606.x>
- Ladany, N., Hill, C. E., Corbett, M. M., & Nutt, E. A. (1996). Nature, extent, and importance of what psychotherapy trainees do not disclose to their supervisors. *Journal of Counseling Psychology*, 43(1), 10-24.

<https://doi.org/10.1037/0022-0167.43.1.10>

Levecque, K., Anseel, F., De Beuckelaer, A., Van der Heyden, J., & Gisle, L. (2017). Work organization and mental health problems in PhD students. *Research Policy*, 46(4), 868-879. <https://doi.org/10.1016/j.re-spol.2017.02.008>

Levis, B., Benedetti, A., & Thombs, B. D. (2019). Accuracy of Patient Health Questionnaire-9 (PHQ-9) for screening to detect major depression: Individual participant data meta-analysis. *BMJ*, 365: l1476. <https://doi.org/10.1136/bmj.l1476>

Maslach, C., Jackson, S. E., & Leiter, M. P. (1997). *Maslach Burnout Inventory*. Scarecrow Education.

Mazurek Melnyk, B., Slevin, C., Militello, L., Hoying, J., Teall, A., & McGovern, C. (2016). Physical health, lifestyle beliefs and behaviors, and mental health of entering graduate health professional students: Evidence to support screening and early intervention. *Journal of the American Association of Nurse Practitioners*, 28(4), 204-211. <https://doi.org/10.1002/2327-6924.12350>

Nagy, G. A., Fang, C. M., Hish, A. J., Kelly, L., Nicchitta, C. V., Dzirasa, K., & Rosenthal, M. Z. (2019). Burnout and mental health problems in biomedical doctoral students. *CBE Life Sciences Education*, 18(2), ar27-ar27. <https://doi.org/10.1187/cbe.18-09-0198>

Olk, M. E., & Friedlander, M. L. (1992). Trainees' experiences of role conflict and role ambiguity in supervisory relationships. *Journal of Counseling Psychology*, 39(3), 389. <https://doi.org/10.1037/0022-0167.39.3.389>

Oswalt, S. B., & Riddock, C. C. (2007). What to do about being overwhelmed: Graduate students, stress and university services. *The College Student Affairs Journal*, 27(1), 24. <https://files.eric.ed.gov/fulltext/EJ899402.pdf>

Park, K. E., Sibalis, A., & Jamieson, B. (2021). The Mental Health and Well-Being of Master's and Doctoral Psychology Students at an Urban Canadian University. *International Journal of Doctoral Studies*, 16, 429-447. <http://ijds.org/Volume16/IJDSv16p429-447Park6878.pdf>

Pop, K. J., & Wiest, L. R. (2016). Balancing Family Responsibilities and Graduate School Demands. *Educational Research: Theory and Practice*, 28(2), 40-42.

<https://files.eric.ed.gov/fulltext/EJ1252572.pdf>

- Rajkumar, R. P. (2020). COVID-19 and mental health: A review of the existing literature. *Asian Journal of Psychiatry*, 52, 102066. <https://doi.org/10.1016/j.ajp.2020.102066>
- Rummell, C. M. (2015). An exploratory study of psychology graduate student workload, health, and program satisfaction. *Professional Psychology, Research and Practice*, 46(6), 391-399. <https://doi.org/10.1037/pro0000056>
- Satinsky, E. N., Kimura, T., Kiang, M. V., Abebe, R., Cunningham, S., Lee, H., Lin, X., Liu, C. H., Rudan, I., Sen, S., Tomlinson, M., Yaver, M., & Tsai, A. C. (2021). Systematic review and meta-analysis of depression, anxiety, and suicidal ideation among PhD students. *Scientific Reports*, 11(1), 14370-14370. <https://doi.org/10.1038/s41598-021-93687-7>
- Schaufeli, W. B., Martínez, I. M., Pinto, A. M., Salanova, M., & Bakker, A. B. (2002). Burnout and engagement in university students: A cross-national study. *Journal of Cross-Cultural Psychology*, 33(5), 464-481. <https://doi.org/10.1177/0022022102033005003>
- Schmidt, M., & Hansson, E. (2018). Doctoral students' well-being: A literature review. *International Journal of Qualitative Studies on Health and Well-being*, 13(1), Article 1508171. <https://doi.org/10.1080/17482631.2018.1508171>
- Short, K. J., Goetz, J. W., Cude, B. J., Sperling, L., Welch-Devine, M., & Chatterjee, S. (2019). A case for graduate student financial education. *College Student Journal*, 53(1), 47.
- Spitzer, R. L., Kroenke, K., Williams, J. B., & Löwe, B. (2006). A brief measure for assessing generalized anxiety disorder: the GAD-7. *Archives of Internal Medicine*, 166(10), 1092-1097. <https://doi.org/10.1001/archinte.166.10.1092>
- Statistics Canada (2013). *Canadian community mental health survey: Mental health, 2012*. <https://www150.statcan.gc.ca/n1/daily-quotidien/130918/dq130918a-eng.htm>
- Statistics Canada (2021). *Symptoms of mental health disorders during the COVID-19 pandemic*. <https://www150.statcan.gc.ca/n1/daily-quotidien/210318/dq210318a-eng.htm>

- Swords, B. A., & Ellis, M. V. (2017). Burnout and vigor among health service psychology doctoral students. *The Counseling Psychologist, 45*(8), 1141-1161. <https://doi.org/10.1177/0011000017747548>
- Tavakol, M., & Dennick, R. (2011). Making sense of Cronbach's alpha. *International Journal of Medical Education, 2*, 53. <https://doi.org/10.5116/ijme.4dfb.8dfd>
- Ullah, P. (1990). The association between income, financial strain and psychological well-being among unemployed youths. *Journal of Occupational Psychology, 63*(4), 317–330. <https://doi.org/10.1111/j.2044-8325.1990.tb00533.x>
- Yamada, S., Cappadocia, M. C., & Pepler, D. (2014). Workplace bullying in Canadian graduate psychology programs: Student perspectives of student-supervisor relationships. *Training and Education in Professional Psychology, 8*(1), 58-67. <https://doi.org/10.1037/tep0000015>

6. Supplementary Materials

Table 1. *Demographic characteristics*

Characteristic	<i>n</i>	Percentage
Gender (<i>n</i> = 502)		
Women	366	72.9%
Men	121	24.1%
Gender nonconforming	11	2.2%
Not listed above	1	0.2%
Prefer not to disclose	3	0.6%
Ethnicity (<i>n</i> = 515) ¹		
White	283	55.0%
Asian	146	28.3%
South Asian	35	6.8%
Black	19	3.7%
Caribbean	14	2.7%
Latin American	12	2.3%
Indigenous	6	1.2%
None of above	7	1.4%
Prefer not to disclose	14	2.7%
Relationship Status (<i>n</i> = 502)		
Single	189	37.6%
In a romantic relationship	174	34.7%
Married/common law	124	24.7%
Divorced	3	0.6%
Widowed	2	0.4%
Not listed above	4	0.8%
Prefer not to disclose	6	1.2%
Do you have children? (<i>n</i> = 499)		
No	440	88.2%
Yes	59	11.8%
Prefer not to disclose	0	0%

Excluding children, do you have other dependents that rely on your care? (<i>n</i> = 502)		
No	442	88.0%
Yes	53	10.6%
Prefer not to disclose	7	1.4%
Program (<i>n</i> = 487)		
Master's	381	78.2%
Doctoral	106	21.8%
Prefer not to disclose	0	0%
Full-Time or Part-Time (<i>n</i> = 488)		
Full-time	448	91.8%
Part-time	38	7.8%
Prefer not to disclose	2	0.4%
International student (<i>n</i> = 489)		
Yes	36	7.4%
No	452	92.4%
Prefer not to disclose	1	0.2%

¹cumulative percentage totals 104.1% as several participants selected more than one ethnicity.

Table 4. Frequency percentage for each item on financial strain scale.

	1 Never	2	3	4	5 All the time
1. Do you have serious financial worries?	23.9%	24.3%	21.1%	14.7%	16.1%
2. Are you often not able to do the things you LIKE to do because of shortages of money?	28.3%	25.1%	20.7%	14.0%	12.0%
3. Are you often not able to do the things you NEED to do because of shortages of money?	44.3%	26.6%	14.4%	6.0%	8.7%
4. Are you often not able to manage on the money you have?	47.9%	25.2%	14.2%	4.8%	7.8%
5. Does your current financial situation make you feel uncomfortable or uneasy?	26.6%	23.2%	18.8%	12.4%	19.0%

Appendix: Group Differences on Financial Strain

A series of one-way ANOVAs and t-tests were run using SPSS. The ANOVAs and t-tests compared different group descriptors to see if there were any group differences on financial strain scores.

A. Below are the analysis demonstrating participant descriptors that did significantly predict financial strain:

1. Self-identifying as a person with a disability; $F(2, 434) = 7.019$, $p = .001$. Those with a disability were more likely to experience greater financial strain ($M = 14.49$, $SD = 6.70$) compared to those without a disability ($M = 11.65$, $SD = 5.66$).

2. Household living arrangement; $F(3, 423) = 4.206$, $p = .006$. Those living in a relative's home (e.g., with parents) had the lowest financial strain ($M = 10.94$, $SD = 5.29$), whereas those living with non-relatives (e.g., roommates, shared accommodations) experienced the highest financial strain ($M = 13.81$, $SD = 6.23$). The difference between these two groups was significant after running a post-hoc analyses using Bonferroni corrections ($p = .004$). Living alone and living with partner/dependents were not statistically different from other living arrangements on financial strain (i.e., living in a relative's home, living with non-relatives).

3. Having dependents who are not children that rely on your care (for example, an elder relative); $F(1, 428) = 18.393$, $p < .001$. Those who have dependents who are not children that rely on their care reported significantly greater financial strain ($M = 15.51$, $SD = 6.49$) compared to those who do not have dependents that rely on their care ($M = 11.62$, $SD = 5.67$).

4. Relationship Status; $F(6, 434) = 2.65$, $p = .016$. Respondents who selected that their relationship status was "not listed above" experienced greater financial strain ($M = 23.00$, $SD = 3.46$, $n = 3$) compared to those who reported as single ($M = 12.06$, $SD = 5.83$, $n = 170$), in a romantic relationship ($M = 11.91$, $SD = 5.81$, $n = 151$), or are

married/common-law ($M = 12.04$, $SD = 5.97$, $n = 101$). There were no significant differences on financial strain between respondents who selected single, romantic relationship or married/common-law relationship status. *However, since only three participants selected relationship status as “not listed above,” we interpret these results with caution, and do not consider them in our key findings.*

B. Below are the analysis demonstrating participant descriptors that did not significantly predict financial strain:

- Degree (doctoral or master's); $t(432) = -.364$, $p = .716$
- Have children; $t(430) = 1.71$, $p = .088$
- Being an international student; $t(432) = 1.122$, $p = .263$
- Self-identify as a racialized person; $F(2, 434) = .493$, $p = .611$
- Self-identify as 2SLGBTQ+; $F(2, 434) = 2.449$, $p = .088$

Table 5. How are living expenses paid for? Descriptives and correlations with financial strain

		%	Pearson's r^1	p
Student loans from government (e.g., OSAP)	Yes	35.7%	.250	< .001**
	No	64.3%		
Student loans from the bank (e.g., line of credit)	Yes	94.2%	.106	.028*
	No	5.8%		
Federal or provincial scholarships	Yes	19.8%	-.013	.785
	No	80.2%		
Department, program or university funding (e.g., RGF)	Yes	35.5%	.013	.792
	No	64.5%		
Family assistance (e.g., parents)	Yes	25.8%	-.116	.015*
	No	74.2%		
Spouse employment	Yes	11.7%	.021	.660
	No	88.3%		
Working Full-Time	Yes	12.6%	-.012	.795
	No	87.4%		
Working Part-Time On Campus	Yes	39.6%	.104	.030*
	No	60.4%		
Working Part-Time Off Campus	Yes	76.3%	.083	.084
	No	23.7%		

¹ correlation with financial strain

** Sig at < .01

* Sig at < .05

Terms:

Pearson's r	Measures the strength of the relationship between two variables.
P value	The probability that there is no difference in financial strain between the two variables. The lower the p value, the more likely it is that there is a difference in financial strain scores.

Table 6. *Impact of the COVID-19 Pandemic: Experiences and Reactions Measured via the Stanford Acute Stress Reaction Questionnaire – Revised*

0	1	2	3	4	5
Not experienced	Very rarely experienced	Rarely Experienced	Sometimes experienced	Often experienced	Very often experienced

1. I tried to avoid feelings about the COVID-19 pandemic.	0	1	2	3	4	5
2. I had repeated distressing dreams of the COVID-19 pandemic.	0	1	2	3	4	5
3. The COVID-19 pandemic made it difficult for me to perform work or other things I needed to do.	0	1	2	3	4	5
4. I tried to avoid conversations about the COVID-19 pandemic.	0	1	2	3	4	5
5. I had a bodily reaction when exposed to reminders of the COVID-19 pandemic.	0	1	2	3	4	5
6. I tried to avoid thoughts about the COVID-19 pandemic.	0	1	2	3	4	5
7. I had repeated and unwanted thoughts of the COVID-19 pandemic.	0	1	2	3	4	5
8. The COVID-19 pandemic caused problems in my relationships with other people.	0	1	2	3	4	5
9. I had difficulty concentrating because of COVID-19.	0	1	2	3	4	5
10. I felt more isolated from other people because of COVID-19.	0	1	2	3	4	5
11. I experience exhaustion from constant social interactions through a screen (sometimes this is referred to as “Zoom fatigue”).	0	1	2	3	4	5
12. Because I am living in a different time zone due to COVID-19 (e.g., living internationally), I experience difficulty attending courses, meetings, etc.	0	1	2	3	4	5
13. Because of COVID-19, I experience difficulty accessing on-campus facilities and resources (e.g., historical books not available online, technology, etc.).	0	1	2	3	4	5