

Assessing Financial Well-being of Undergraduate University Students during COVID-19 Pandemic

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Abstract

The COVID-19 pandemic poses financial challenges for students worldwide, especially for those in higher education where free and universal access is not guaranteed. Students in developed economies, a long-neglected group for pandemic studies, are not exceptions. The motivation of this study is to examine subjective financial well-being of undergraduate students during the COVID-19 pandemic. Accordingly, we conducted a self-administered survey composed of 31 questions that assesses students' demographic information and impact of COVID-19 on their financial status. The sample includes 655 students enrolled at the University of Toronto Mississauga during the academic year 2020-2021. The survey results show that most students are concerned about the impact of COVID-19 on the ability to meet overall financial obligations or essential needs. Using factor analysis, we further identified relevant matters of subject associated with this concern on subjective financial well-being: 1) concern on tuition costs and financial obligation; and 2) concern on living and traveling costs. The result clearly identifies the associations between university students' perceptions of financial well-being and its associated matters, and how these relations differ by students' demographic information. We conclude that educational leadership, local community, and the government should use their judgement to reduce students' financial distress by offering different types of financial supports with regards to student demographics.

Keywords: COVID-19, financial well-being, higher education, pandemic

1. Introduction

The coronavirus disease (COVID-19) pandemic led to lockdowns and social distancing policies in more than 200 countries, which inevitably plunged global economy into worst recession since World War II (World Bank, 2020; Nayak et al., 2021). This recession has created widely different experiences across regions, demographic groups, and industries (Congressional Research Service, 2021; Gilfillan, 2020). The education sector is one of the most affected sectors by COVID-19 (IVAC, 2020; Sintema, 2020; UNESCO, 2020). With respect to rising concerns on education financing, the federal government of Canada issued the Canada Emergency Student Benefit (CESB) in 2020 (CRA, 2020; Bryant et al., 2020). CESB provided financial supports to post-secondary students, and recent post-secondary and high school graduates who were unable to find work due to COVID-19. Applicant received \$1,250 for a 4-week period for a maximum of 16 weeks, between May 10 and August 29, 2020. In addition, universities announced the Emergency Grants. For instance, University of Toronto offers the COVID-19 Emergency Undergraduate Grant to assist current domestic and international students impacted by COVID-19 and those who need immediate short-term financial relief due of unexpected expenses.

The goal of this paper is to quantitatively explore the financial status of undergraduate students in developed countries during COVID-19 pandemic. Assessing financial well-being of students is of great importance considering the extension of COVID-19 pandemic period and potential spillovers (e.g., student achievement and

mental-health issues). Prior educational studies on pandemic impacts focused on assessing non-financial aspects, including enrollment patterns, academic and work performance, and health and psychological prospects (Engzell et al., 2021; Nichol, 2005; Pier et al., 2021; Rose et al., 2021; Sundarasan et al., 2020; Wang, 2020). Moreover, excluding few US studies, previous pandemic-related studies mainly captured the cases of developing countries like Sierra Leone and Guinea (Smith, 2021; Yanoh Kay Jalloh & Raschid, 2018). However, COVID-19 pandemic is a singular event where economic activities among advanced economies are predicted to shrink deeper than those of developing countries (World Bank, 2020). The results of our survey try to provide implications for the cases of developed countries and to inform pandemic-related policy to educational leadership, local community, and the government.

2. Literature Review

2.1 Debt Level and Financial Well-being of Students in Canada

In 1990s, the government made major cuts to grants and deregulated tuition fees for some programs and for international students in most provinces of Canada (Rexe, 2015). Since then, tuition fees and student debts have been continuously increasing. The average undergraduate tuition fees more than tripled from academic year 1990-1991 to 2018-2019 (Rouf, 2019). Accordingly, mounting evidence suggests a growing number of young adults are going through financial hardship due to student debts (Canadian Federation of Students, 2015; Robson & Loucks, 2018). High school graduates not enrolled in state costs as the major barrier (Malatest & Associates, 2007).

Student demographics are closely tied to students' ability to pay for higher education and meet other financial obligations without using up their saving or accruing high levels of debt. The shift in financial responsibility for higher education from the state to individuals and their families indicates importance of paying attention to students' socioeconomic status (SES) in assessing students' financial well-being (Furstenberg et al., 2004). As families differ in their ability to financially support their children, students' use of debt and financial status will vary, affecting students from low-SES backgrounds in higher rates (Chawla & Uppal 2012). Thus, in assessing the relations of COVID-19 Pandemic and financial well-being of undergraduate students, our research will account for students' demographic information.

2.2 Pandemics and Higher Education

College students require special attention as they heavily rely on part-time or summer jobs as a primary source of income. Consequentially, many expect that the pandemic's effect on labour market (e.g., reduced job opportunities, sharp decrease in student employment rate) will have a significant negative impact on students, especially about their financial future (Wall, 2020). Nevertheless, there is a dearth in quantitative research on evaluating the financial impact of pandemics and the effectiveness of pandemic-related education financing policies. One study offered an insight that students, especially those with a cancelled or delayed work placement, reported being very or extremely concerned about the pandemic's impact on their personal finances (Doreleyers & Knighton, 2020). The limitation of this study was that the crowdsourced data was used, without sampling principles. Consequentially, the findings cannot be applied to overall college student population in Canada.

2.3 The Present Study

Our study tries to overcome some of the limitations highlighted in prior studies by conducting a survey with a proper sampling method. In designing the study, we focus on assessing the concept of subjective financial well-being (SFWB), an important factor to consider in human development. Consisting of a perception and evaluation of an individual's own financial situation, SFWB is positively correlated with overall subjective well-being, as well as mental and physical health (Sorgente & Lanz, 2017; Shim et al., 2009; Tay et al., 2017). In specific, our study addresses following research questions:

1. How concerned are Canadian undergraduate students about the impact of COVID-19 on their SFWB?
2. What are the financial factors that are substantially associated with COVID-19 pandemic?
3. How do these financial factors and students' SFWB vary according to student demographics?

Along with the description of subjects, give the mended size of the sample and number of individuals meant to be in each condition if separate conditions were used. State whether the achieved sample differed in known ways from the target population. Conclusions and interpretations should not go beyond what the sample would warrant.

3. Research Methodology

3.1 Survey Instrument

A survey design can help to provide quantitative descriptions of individuals' perceptions (Klassen et al., 2012). Accordingly, we conducted a survey with appropriate questions to assess undergraduate students' perceptions about the impact of COVID-19 on their financial well-being. The questionnaire was comprised of 31 questions which were organized into three main sections: demographic information, financial concerns, and potential spillovers from financial impact. More details about the questions are given in the following sections.

Before analyzing the survey results, we ensured an internal consistency of test items using Cronbach's alpha. Cronbach's alpha values computed for each category of items are ranged between the preferred value of 0.7 and 1, indicating all survey questions in the categories are internally consistent and reliable (Santos, 1999). The obtained values for categories of the impact of comprehensive costs, including the current concern of tuition costs, savings, increased debts as well as plan to cover the tuition cost, savings, living expenses, increased debts, and a reliance on financial support lost jobs, overall concern of the academic planning is 0.93 based on the ratings of students. Also, the Cronbach's alpha for items of current living accommodation, living expenses, traveling costs as well as plan for the living accommodation, living expenses, and traveling costs that is the subject of an impact on living of students are calculated to be 0.93 as well. Thus, the Cronbach alpha values of the items belonging to its own categories are over 0.7 for the minimum threshold and conclude that the analysis and survey results become eligible and decent for statistical analysis to be obtained with.

3.2 Data and Sample

Data were collected from students at University of Toronto Mississauga during the academic year 2020-2021, the year when the higher education industry was severely hit by the COVID-19 pandemic. A web survey was shared with various department undergraduate advisors to provide the link for all students throughout officially designated email addresses to be voluntarily answered by filling out the survey. At the end, our study has a sample size of 655 students (population size is 15000). The number of individuals who participated in the study is considered an appropriate sample size to represent the population (Krejcie & Morgan, 1970). Of the 655 students in the sample, domestic students accounted for 77% of the sample size. Most students (76%) are living with family. In addition, 53% of students are not employed. Among all students in our analytical sample, only 6% of the students received undergraduate grants. Full sample descriptive statistics can be found in Table 1.

Table 1. Covariate statistics for overall 655 participants

Covariate	Total (n=655, %)
Gender	
Female	447 (69%)
Male	199 (30%)
Prefer not to self-describe	9 (1%)
Living status	
Living with roommates or alone	157 (24%)
Living with family	498 (76%)
Student status	
International	148 (23%)
Domestic	507 (77%)
Employment status	
Not employed	346 (53%)
Part-time	253 (39%)
Full-time	56 (9%)
Undergraduate grant	
Yes	38 (6%)
No	617 (94%)

3.3 Data Measures

Figure 1 summarizes the main measures used in our analysis, excluding a demographic information described in Table 1, and shows the proportion of observations for each measure using a plot 4-likert type items. Primary variables of interest in our analysis include 13 items related to students' concern about the ability to meet overall financial obligation and essential needs, the impact of COVID-19 on tuition fee, increased debt and decreased

saving, and the impact of pandemic on covering traveling costs, living expenses, and accommodation. The variable name and coding of the above variables were as follows:

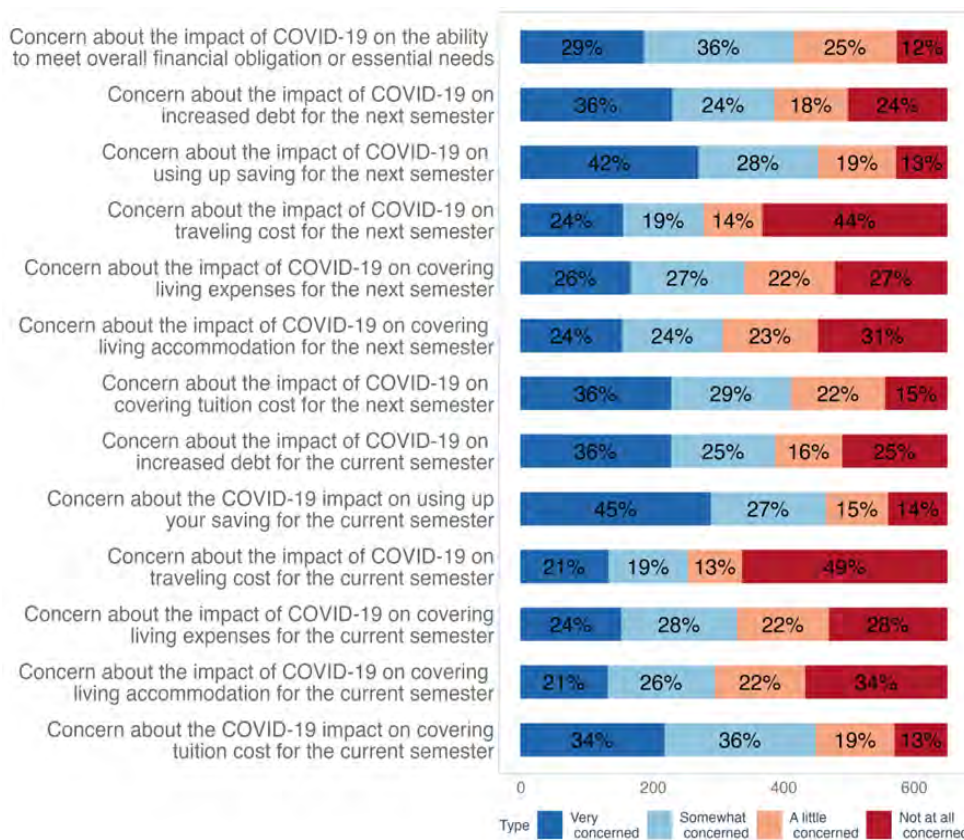


Figure 1. Survey questions and ratings overview

4. Data Analysis and Results

A quantitative methodology with large sample size is an appropriate method for our analysis. This could help understand various items affecting students’ financial status through observation and numerical data collected from a large sample and further provide insights on why students behave the way do (Sears & Cairns, 2010). To be specific, we first present a one-sided z-test with a significance level of 5% to test if most students are concerned with any financial concerns associated with the impact of COVID-19. Second, we conducted a factor analysis to discuss different factors on students’ financial status. Third, we employed chi-squared tests to investigate whether the patterns of relations among variables developed through factor analysis diverges significantly from that for the observed sample data (Ellickson & Hays, 1990). All analyses were conducted with R version (4.1.2).

4.1 The z-Test: Concern about Impact of COVID-19 on Students’ Financial Situations

For a clear analysis in the z-test, we grouped responses into 2 groups: 1) a group of students with financial concerns – students who responded each item with “very or extremely concerned” or “some-what concerned”; and 2) a group of students without financial concerns – students who responded each item with “not at all concerned” or “a little concerned”. In the one-sided z-test, the group of students without financial concerns corresponds to a “not success” and the group of students with financial concerns corresponds to a “success”. Then we considered the following hypothesis:

$$H_0: p = 0.5 \quad \text{vs.} \quad H_a: p > 0.5,$$

where p is the population proportion of students with financial concerns.

From Figure 1, if we consider the question on current coverage of tuition costs, the number of students with financial concerns is 453 with a p-value is less than 0.0001. This is highly significant (significance level = 0.05, 1-sample proportion test). That is, there is enough evidence to conclude that most students have not received any

support from their family and friends to pay for the tuition fees. On the other side, if we consider the question on covering living accommodation, 298 students have answered they have financial concerns and 357 students have answered that they do not have financial concerns. The result shows a p-value to be greater than 0.05. Hence, there is not enough evidence to conclude that most students are concerned to cover living accommodation. Figure 2 summarizes the significance of each item's test along with questions corresponding to p-values.

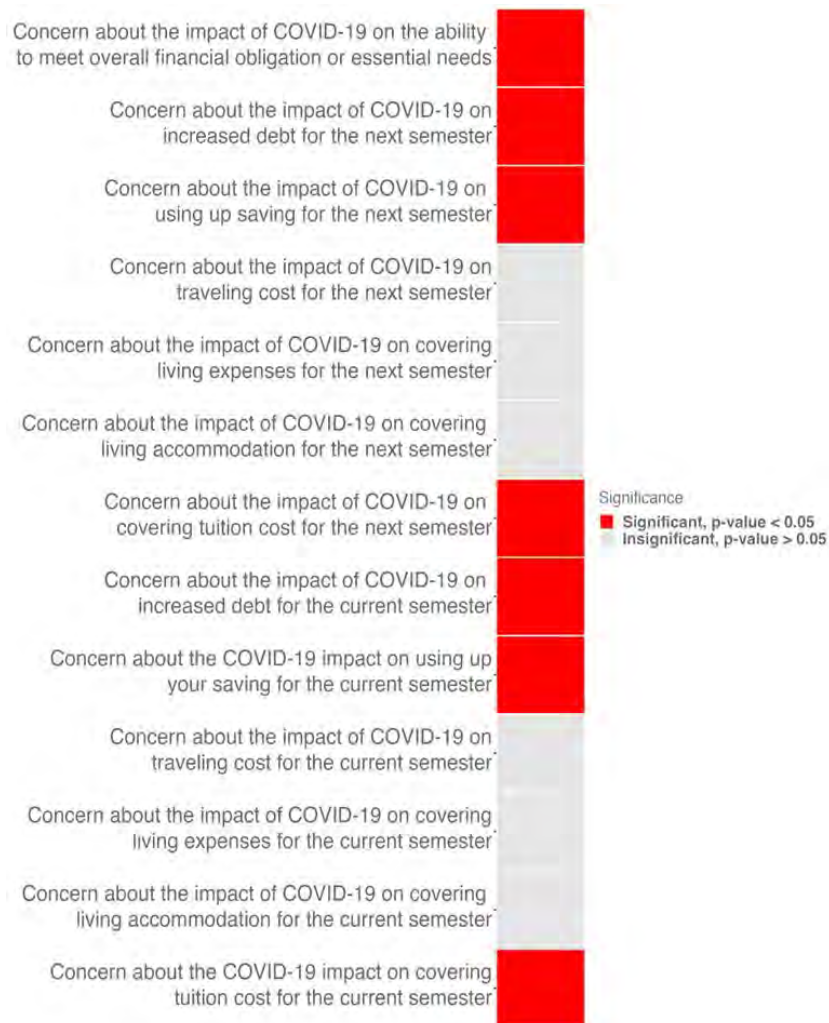


Figure 2. A chart of the result of the one sample z-test for proportion test for the 13 items

After determining the significant/insignificant variables in Figure 2, we proceed to implement factor analysis to group the questions that have same characteristics into main factors. This would also provide a better explanation to study the relationship between the covariates listed in Table 1 and the factors formed via factor analysis.

4.2 Factor Analysis: Association between Ratings and Variables of Interest

Factor analysis is typically used to identify interrelationships among items and group items that are part of unified concepts into factors whose number is determined by the scree plot (Jason et al., 2002). In our study, the scree plot given in the Figure 3 suggests that the number of appropriate factors should be 2. The grouped items for the first factor are represented as "Concern on tuition costs and financial obligation", where it is composed of current concern tuition fees, living accommodation, expenses, debts, traveling costs etc. The grouped items for the second factor are represented as "Concern on living and traveling costs". An overview of all items with corresponding 2 factors are described in the Table 2.

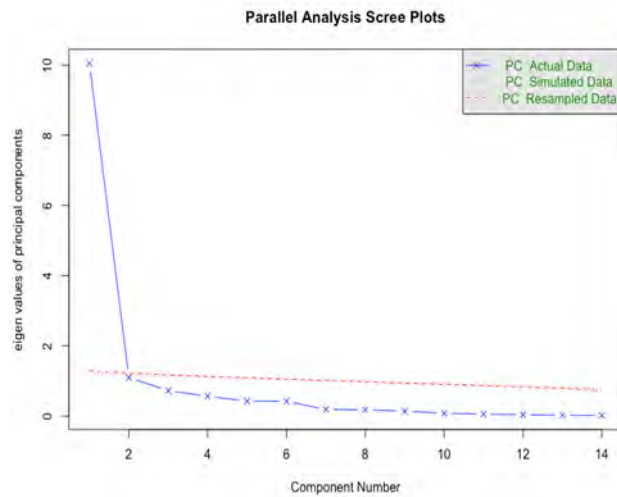


Figure 3. A graph of parallel analysis scree plot

The numerical measure of items with values over 0.3 is considered to be significant for the corresponding factor (Fabrigar et al., 1999). For the items with numerical measures for each factor are omitted if the values are below 0.4 to avoid any ambiguity. Also, the number of factors is determined by the parallel analysis of scree plot for the optimal number 2 as the factor analysis of both resampled and original dataset meets for an intersection which is the closest point to 2 of the horizontal axes (Mair, 2018).

Table 2. A 2-factor analysis model based on the principal component method

Question	Factor 1	Factor 2
Factor 1. Concern on tuition costs and financial obligation		
1-1. For the current semester, how concerned are you about the impact of COVID-19 on covering your tuition cost	0.666	*
1-2. For the current semester, how concerned are you about the impact of COVID-19 on using up your saving	0.676	*
1-3. For the current semester, how concerned are you about the impact of COVID-19 on your increased debt	0.817	*
1-4. For the next semester, how concerned are you about the impact of COVID-19 on covering your tuition cost	0.676	*
1-5. For the next semester, how concerned are you about the impact of COVID-19 on using up your saving	0.727	*
1-6. For the next semester, how concerned are you about the impact of COVID-19 on your increased debt	0.843	*
1-7. For the next semester, how concerned are you about the impact of COVID-19 on your ability to meet your overall financial obligation and essential needs	0.720	*
Factor 2. Concern on living and traveling costs		
2-1. For the current semester, how concerned are you about the impact of COVID-19 on covering your living accommodation	*	0.749
2-2. For the current semester, how concerned are you about the impact of COVID-19 on covering your living expenses	*	0.731
2-3. For the current semester, how concerned are you about the impact of COVID-19 on your traveling cost	*	0.731
2-4. For the next semester, how concerned are you about the impact of COVID-19 on covering your living accommodation	*	0.809
2-5. For the next semester, how concerned are you about the impact of COVID-19 on covering your living expenses	*	0.773
2-6. For the next semester, how concerned are you about the impact of COVID-19 on your traveling cost	*	0.746

Based on the overall frequencies, a 2-factor model is employed. The described factors are distinct by containing no overlapping items. The name of each factor reflects the characteristics of grouped items. The 2-factor model is “Concern on tuition costs and financial obligation”, and “Concern on living and traveling costs”. Also, the items in the factor differ by the ratings for its corresponding factor.

It follows from Table 2 that Factor 1 (i.e., Concern on tuition costs and financial obligation) includes questions on both current and planning of tuition costs, debts, savings and financial obligations that is included in the generalized category of factor 1. Within the factor, a large proportion of students are worried about the impact on the payment of tuition fees and the increase of debts. Research indicates a clear correlation between student debt and students dropping out of their university programs. A longitudinal study of 13,000 university students from six universities (four from Ontario, one from Quebec and one from British Columbia) found that the more students were dependent on student loans, the fewer credits they accumulated and the more likely they were to drop out (McElroy, 2005).

As for Factor 2 (i.e., Concern on living and traveling costs), it involves items on coverage of living costs and tuition fees. These items in the proportion plot consist of mostly “Not at all concerned” and “A little concerned”. McElroy’s (2005) findings are corroborated by Cooke (2004) who found that program completion rates declined from 59% to 8% among students with loans and no grants as debt levels increased from less than \$1,000 to \$10,000 per year. Other studies have found that, among students who drop out, 21% cited financial reasons as the main cause (Malatest & Associates, 2007).

4.3 Chi-square test: Association between Covariates and the two Factors

In this section, the association of the covariate for the participants with items are analyzed by the chi-square test. There are 4 covariates: student status (international or domestic), gender, living status (students are living alone or living with friends/family and employment status) and employment status (unemployed, employed part-time or full-time). By the chi-square test, we examine whether the two factors formed in Section 5.2 depend by each of these covariates. The goal is to observe what specific covariates of students makes a difference in the ratings of 13 items. Note that, for simplicity, the significant items are recorded as “red” while insignificant items are recorded as “grey”. Here the significance level is 0.05. The overall significance of covariate with 2 factors are shown in the Figure 4.



Figure 4. A chart of chi-square test for 4 categories

For instance, from Figure 4, Factor 1 and Factor 2 do not depend on the gender but they depend on living status by the significant *p*-values. However, the living status of students has an association with 13 items, indicating a statistical significance of living status to be different for most items related to concern and coverage of costs. Hence, there is a difference to be observed; whether students are living alone or with family, differentiates students to concern with tuition costs and plans of living costs. The cuts to university funding, the conversion of grants to loans, the rapid rise in tuition fees, and the removal of bankruptcy protection happened with little public debate regarding the impact of these changes on students. The resulting rise in student debt and the impacts on accessibility of post-secondary education, on the educational experiences of students, and on the economy is not well understood. There is mounting evidence of financial hardship experienced by a growing number of students and alumnae because of student debts (Canadian Federation of Students, 2015; Baldwin & Parkin, 2007).

5. Recommendations

In the data analysis and overview of ratings, we observed that students during COVID-19 at University of Toronto Mississauga confronted with the financial problems within tuition costs, overall financial obligations and living as well as travel costs. Thereby, for financial impact on the students, some of the following points are recommended to mitigate the negative impact on students.

- Students with low satisfaction ratings are classified as concerned about tuition and overall financial obligations. Institutions could offer for financial support in the form of grants, subsidies, or scholarships to help students in need to encourage the continuation of their education.
- Students who are living with their families are severely concerned about the increases in living and travel costs compared to students who are living alone or roommates. For these students, more information on living accommodations, expenses and traveling costs could be provided by the educational institution by the government and institutional outreach programs.
- Undoubtedly international and domestic students are eligible for different scholarships/funding and are involved with different types of support and financial systems. Considering the global impact of COVID-19 on international students, there is a possibility for drastically increased debts leading to decreased enrollment rates. It is recommended that educational institutions create waiver plan for international students to help protect at risk students from onerous increases in tuition fees.
- Most domestic students are vulnerable to the increase of tuition fees and financial obligation due to limited savings and restricted earnings during the COVID-19 pandemic. For those who lose their jobs and are vulnerable to the increased tuition costs, a special request system for financial support and a mitigation plan of the extension of fees to be charged could be applied. For administrative purposes and effective communication, university students of relevant studies could be hired to provide work/study programs.

6. Conclusion

The main aim of the research was to study and document the challenges and probable solutions that students faced outside of distance education due to the impact of COVID-19 by distinguishing several categorical factors. As post-secondary education systems continue to face the ever-evolving challenges of the pandemic, there could be future research devoted to better assessment tools or strategies to achieve higher student ratings for less concern and enhance the financial support of students.

From the results of categorical data analysis, this paper presents issues of COVID-19 impact for University of Toronto Mississauga students and identifies how there exists a quantitative difference among categorical education problems within groups of students. Moreover, we are still living in the era of pandemic in which economic impacts continue to evolve and students are going through university education requiring substantial financial support.

While some differences in students' status is an unsolvable problem such as economic differences between international students and domestic students' course fees, the support of educational institutions for financial opportunity would benefit many students allowing them to continue their educations.

Similarly, students who live independently are more vulnerable to increased costs. If institutional support and plans could prioritize more opportunities to mitigate living costs and additional fees for self-reliant students, then there would be hope that more students could complete their post-secondary educations.

Likewise, a key factor is to identify which groups of students to prioritize for financial support. The prioritized groups must be balanced with less financially vulnerable groups for the continuation of post-secondary education. Hence, the focus should be on the balance of coexistence by planning for the needs of and supporting of educational institutions and university students by the provincial government. Within the improvement in financial support for students and lowering the financial obligation for students, we expect to find financial solutions for many students.

7. Ethical Statment

Comprehensive from the ethics standard at University of Toronto Mississauga (UTM, 2020), this project has been authorized based on the approved number: 2020-003 from the ethics review committee by the University of Toronto.

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