STA304H5 Proposal

Chris Cheong, Qinhui Huang, Cheuk Hin Leung,
Kevin Ni, Ian Quan, Mingrui Yang, Yupeng Zhan

October 5, 2023

1. **Project Title**: Analyzing the relationship between personal finance and academic performance

2. **Target Population**: All UTM students enrolled in STA304H5 in Fall 2023

3. **Mean, Proportion, and Total**

   Mean: We will estimate the average of different personal finance indicators (e.g. income, rent, tuition, etc.) within different categories measuring academic performance (e.g. CGPA range)

   Proportion: We will estimate the proportion of students who feel financially stressed in the current academic period, and within those students, we can also estimate the proportions of different possible reasons contributing to their financial stress (e.g. tuition, rent, food, sustainability/stability of income sources, etc.). We can also calculate these proportions conditioned on the students' CGPA range we collected through the questionnaire.

   Total: We will estimate the total number of students who feel financially stressed and have a low GPA/CGPA

4. **Sample Size:** 50

5. **Sample Frame:** Fall 2023 STA304H5 LEC0101 and LEC0102

6. **Sample Unit:** a Fall 2023 STA304H5 student

7. **Sampling Method**: Since the population given our research topic is not homogeneous, we will use stratified random sampling and divide the population into 2 strata: international students and domestic students. The reason why we identified these 2 strata is that their tuition levels are drastically different and putting them within the same group for analysis may produce biased results in our regression analysis.

8. **Possible Hypotheses:**
   A two-tailed hypothesis testing will be conducted on target parameters to detect both positive and negative effects of personal finance on STA304H5 student's academic performance.

- **Null Hypothesis:** Personal finance has **NO** influence on STA304H5 student's academic performance.

- **Alternative Hypothesis:** Finance has a positive/negative effect on STA304H5 student's academic performance.

9. **Data Collection Methodology:**
   We plan to post a questionnaire link on Piazza and distribute the questionnaire link to STA304H5 students during in-person office hours(Tue 10:00 am -10:50 am DH3036 and Thu 11:30 am-12:30 pm DH3036), after midterms, and after lectures(After Tue 1 pm IB150 and Thur 11:00 am CC1140).

   The questionnaire can be viewed through the following link:
   https://docs.google.com/forms/d/1pDdGNU3pYZI0DF1zB8_CJsjUmU6U4Irt6WYdQSNL5Vc/edit

10. **Advance Methodology**: We will use Cronbach Alpha method to assess the internal consistency and reliability of our questionnaire. This way we can measure the quality of the questionnaire and have a higher confidence that the questions are able to capture the population characteristic we are interested in; and reusing this questionnaire in different sample groups will produce consistent results.

   We will also run different types of regression analyses (e.g. logistic, polynomial, fixed-effects, etc.) and determine which regression model would be the best fit given the data collected with statistical tools like (adjusted) R-squared or residual analysis.