#Proposal

##Question of Interest:  
Does an MDS student’s academic background – prior to MDS – determine how satisfied they would be with the program?

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##Survey

In order to investigate the above question, we would like to conduct a survey with questions such as the following:

1. What is your level of satisfaction with the MDS program?
2. What is your primary language of communication (in all forms – speaking, reading, writing)?
3. What is your highest level of education prior to MDS?
4. Was your highest level of education – prior to MDS - amongst the STEM(Science, Technology, Engineering and Mathematic) academic disciplines?
5. What was the year of graduation for your highest level of education prior to MDS?

Additionally, we would also like account for Gender and Age, as these might be confounding variables that might affect both the response variable (level of satisfaction with the MDS program) and certain explanatory variables, such as whether the individual chose a STEM related field because of their age or gender.

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##Analysis

We would like to conduct one-way ANOVA tests to see whether any of the groups of our explanatory variables - (For example: For highest level of education we might have groups of Bachelors, Masters and PhDs) – have different levels of mean satisfaction with the MDS program. This would allow us to test whether any group(s) - of a particular explanatory variable - have a mean satisfaction that is statistically significant and different from the other groups i.e. being in a certain group of this explanatory variable has an effect on whether you will be satisfied with MDS.

It is important to remember that the one-way ANOVA test simply tells us whether there is a difference of means between the groups and not which group(s) in particular are different. Hence, for explanatory variables with more than two levels of categories/groups - like the highest level of education, which has three groups – we would also have to conduct pair-wise t-tests in order to determine which categories/groups have a mean i.e. statistically different.

At this stage of our analysis, we would also have to keep track of our degrees of freedom, while simultaneously being cognizant of the multiple comparisons and the possibility of Type 1 errors being introduced due to our significance (⍺) level. We could account for this by using the Bonferroni Adjustment which takes into account the Familywise Error Rate (FWER) or False Discovery Rate(FDR) based method such as the Benjamini-Hochberg (BH) procedure.

Furthermore, we would also like to conduct two-way or 2-way ANOVA tests, time permitting, to check whether there are any pairs of our explanatory variables that exhibit main effects or interaction effects with other variables on the response variable.

The idea of a main effect is that given the effect of our first variable, does the second variable (whose main effect we are measuring) still have a statistically significant effect on the mean satisfaction with MDS. Like with the one-way ANOVA tests, we would have to conduct pair-wise t-tests to determine which groups in particular had a statistically different mean from each other, and we would have to accommodate for multiple comparisons given that t-test have an ⍺% or significance level percent chance of type-1 errors

Finally, we would also like to perform some EDA and pursue visualizations at the beginning to build our hypotheses, as well as after our ANOVA tests to visualize the variation in our group means.

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##Research Ethics  
  
Keeping in line with the UBC Office of Research Ethics document on Using Online Surveys, we have decided to not include any direct identifiers apart from serial numbers to identify the participants of our survey. This prevents us from collecting personal information such as a person’s name to identify them. In doing so, we prevent a person from being directly identified.

However, since we are collecting personal information from our respondents we would require to use online survey tools that store the answers to our questions within Canada at a server. For this reason, we will use UBC-hosted version of Qualtrics, which is fully compliant with the BC Freedom of Information and Protection of Privacy Act (FIPPA) because the survey data is kept secure and is stored and backed up in Canada

Under the FIPPA, “personal information” is defined as “recorded information about an identifiable individual other than contact information.”