

# **The Impact of Education, Immigration, and Childhood Upbringing on Entrepreneurial Intentions**

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## **Abstract**

This paper discusses how factors such as education, immigration, and upbringing impact entrepreneurial intentions of university students in Canada. After analyzing two sets survey questionnaires completed by over 200 students and one set of interviews with 20 current entrepreneurs, the results of this study show that immigration, family background, and personal finances influence entrepreneurial intentions, while academic courses and extracurriculars failed to prove a significant correlation. Compared to most studies that only use theoretical intention models, this study incorporated practical insight from entrepreneurs to pinpoint factors that are most important in discussing entrepreneurial intentions.

## **Introduction**

Entrepreneurs create jobs, reduce poverty, and stimulate the economy. Companies with less than 100 employees contribute to 51% of the Canadian GDP and more than 40% of Canadians say that starting a business and becoming self-employed would be the most rewarding career path for them (Source). Entrepreneurship by definition is “the process of creating something new with value by devoting the necessary time and effort, assuming the accompanying financial, psychic, personal, and social risk, and receiving the resulting rewards” (Hisrich, Peters & Sheperd, 2008). It is clear based on this description that entrepreneurship is a career that encompasses a multitude of variables that result in financial or personal rewards. One subsector within entrepreneurship is the study of entrepreneurial intentions. Entrepreneurial intention is the liaison between considerations for entrepreneurship and entrepreneurial activities carried out by an individual (Ajzen, 1991). The topic of entrepreneurial intentions has been studied widely in many western countries, as well as developing nations in South East Asia, and Africa; however, it has not been discussion in countries where culture diversity and immigrants contributes significantly to the local population, like Canada. While public policy generally suggests that entrepreneurship education is the main factor that positively contributes to entrepreneurship (European Commission, 2006), other factors like childhood upbringing, immigration also heavily correlate with entrepreneurial intentions. A common empirical phenomenon is that offspring of self-employed individuals display a greater propensity to become entrepreneurs due to greater personal wealth and additional human capital, such as stronger network and reputation (Dunn & Holtz-Eakin, 2000). Though the topic of immigration and entrepreneurship has been heavily studied, there is still limited quantitative analysis conducted on the correlation due to the lack of databases available. However, in 2013 an Israeli Economist Yaron Zelekha was able to find clear evidence that immigration has significant positive impact on entrepreneurship within the United States, unveiling empirical data through analyzing datasets collected via LinkedIn (Zelekha, 2013). The topics related to education, immigration, and upbringing have been repetitively mentioned in many research studies, but a research study that focuses on the combined impact on entrepreneurial intentions is yet to be completed.

This research paper is designed to spark additional conversations related to the relationship between education, childhood upbringing, immigration, and entrepreneurial intentions for students at Canadian post-secondary institutions. This topic is important because post-secondary students are the driving force of the Canadian economy and represent the incoming workforce. Through analyzing literature and compiling a list of survey questions in summer 2019, I was able to collect data from more than 100 students to complete preliminary research. In summer 2020, I was able to enhance this project through utilizing a mixed methodology of interviews with current entrepreneurs and a revised survey questionnaire changed based

on the interview results. This project combines both the theory of past researchers as well as the practical advice of current entrepreneurs, which will shed light to this topic from a different perspective.

After completing the research project, the results of the study showed that models established by previous researchers are an effective measurement of entrepreneurship, and personal variables such as immigration and financial circumstances correlate to previous exposure to entrepreneurship. Surprisingly, academic courses and business extracurriculars do not correlate to entrepreneurial intentions. This research study provides a holistic perspective on entrepreneurship by focusing on many variables that are commonly used to discuss entrepreneurial intentions and also incorporate insight provided by current entrepreneurs.

## **Literature Review and Hypothesis Development:**

### Entrepreneurship Studies

In entrepreneurship related studies, there has been a shift in interest from studying the traits of existing entrepreneurs to studying factors that lead to entrepreneurial ventures to explain entrepreneurial behavior more effectively (Autio et al., 2001). Researchers have utilized intention models to generate quantifiable results, which highlight the new era of entrepreneurial intentions.

### Entrepreneurial Intentions:

Entrepreneurial intentions can be interpreted as the range of motivational factors that influence the willingness to engage in entrepreneurship, and to which efforts will be planned and mobilized to reach the goal (Ajzen, 1991). The Theory of Planned Behavior (TPB), identified by Ajzen, was designed to study the intention for people to engage in entrepreneurial activities. The model was based on the idea that humans are rather rational with their decisions and individual intentions may or may not result in certain behaviors. Three variables, including the participants' attitude towards behavior, subjective norm, and perceived behavioral control, were used to study intentions related to entrepreneurial behavior (Ajzen, 1991). Shapero and Sokol are also early founders of entrepreneurial intention models who have used three variables, perceived desirability, perceived feasibility, and propensity to act, to determine entrepreneurial intentions. The main difference between the two models lie in TPB's additional focus on reasoned action on beliefs, attitudes, and social norms, while the Shapero's model focused on perceptions of feasibility (Ajzen, 2011, Mwiya, 2014). Psychological literature has proved that intention is the best predictor of human behavior and an indication of how willing the individual is to plan and carryout the behavior (Baggozi et al, 1989); thus, it's reasonable to say that stronger entrepreneurial intentions are likely to result in entrepreneurial decisions (Ajzen, 1991).

### Entrepreneurial Education:

There exists a strong focus on the study of entrepreneurial education, as education helps develop interest and increases exposure to self-employment opportunities. The increase in exposure will alter the attitude towards entrepreneurship, making it easy to identify intentions (difficult to measure) through one's attitude towards the entrepreneurship (easy to measure) (Krueger Jr et al., 2000). Research shows that attitudes and intentions are perception based, which means that they are learnable (Krueger & Brazeal, 1994, Lo, 2011). This result means that education is the direct channel to change people's attitude and entrepreneurial intention and is paramount in fostering entrepreneurs in the long run.

In a 2013 study conducted by Karali, the results showed that students who have attended entrepreneurship programs showed that their attitude towards entrepreneurial behavior is positive and significantly correlated with entrepreneurial intentions after completion of study. The cross-sectional study analyzed university students from 17 European countries who come from a diverse range of programs and was able to offer

unique insight to show that entrepreneurial education increases students' intention towards entrepreneurial behavior (Karali, 2013).

### Immigration and entrepreneurship

In an OECD report on migrant entrepreneurship, immigrants in OECD countries are on average only slightly more entrepreneurial than natives. Immigrants in countries such as Australia, the United Kingdom, and the Scandinavian countries are 1.5 to 2.9 percentage points higher than natives, whereas countries such as Portugal, Spain, Italy, and others have a relatively lower self-employment rate than natives. Under these conditions, the issue of perceived feasibility of becoming self-employed is crucial when immigrants enter a foreign country's labour market (OECD, 2010). Following the research of Krueger et al. (1993, 2000), perceived feasibility is the most important indicator in explaining entrepreneurial intentions. The correlation between immigration and entrepreneurship has generated mixed reviews. In one study conducted on a sample of Israeli respondents, the individual's risk-taking propensity is positively related to the perceived feasibility of becoming an entrepreneur and is not related to the individual's immigrant or native status (Kushnirovich et al, 2017). Other studies explained that the evidence is mixed on the question whether immigrants are more entrepreneurial compared to their native counterparts (Naude et al, 2017). However, immigration policies, cultural differences, financial position, and most importantly risk, all contribute to entrepreneurial decisions, resulting in varying results under different socioeconomic settings. This is why research in this field is crucial in changing immigration policies and programs for newcomers.

### Upbringing and Entrepreneurship

While education is the channel to increase exposure and attitude towards entrepreneurship, upbringing is the process of shaping an individual's preferences and characteristics to become entrepreneurs. It is commonly known that children of entrepreneurial parents are more likely to become entrepreneurs themselves and several studies have confirmed this phenomenon (Hout and Rosen (2000), Dunn and Holtz-Eakin (2000), Laspita et al. (2012)). The most popular explanation for this positive correlation is human capital, where the offspring of entrepreneurs gain relevant experience working at their parents' firms thereby getting a comparative advantage and early exposure (Lentz and Laband (1990), Dunn and Holtz-Eakin (2000)). Additional factors such as "inherit preferences" due to genetic factors (Nicholaou and Shane (2010) and social factors such as parents serving as role models for their offspring also contribute to this phenomenon (Hout and Rosen, 2000). Personal wealth also relaxes financial constraints to start entrepreneurial ventures, resulting in a decrease in riskiness of entrepreneurial activities (Dunn & Holtz-Eakin, 2000). However, there is very little empirical evidence to justify the correlation between upbringing and entrepreneurial decisions, and most papers focus on identifying the importance of parents serving as role models for their children rather than the correlation (Hoffmann et al).

In general, most of the research conducted in this sector only focuses on one specific aspect of entrepreneurial intentions. Whether that be perceived feasibility, education, immigration, or upbringing, it is difficult to understand how a multitude of factors impact people's entrepreneurial decisions. This research study is designed to provide a more holistic interpretation on entrepreneurial intentions and is further enhanced with a practical analysis of interview responses from current entrepreneurs.

### Hypothesis:

Based on the academic literature, it is expected that all factors mentioned above are somewhat relevant in discussing entrepreneurial intentions. However, I hope to use empirical data to test whether these variables are truly correlated with entrepreneurial intentions.

H1: Entrepreneurial intentions models developed by previous researchers can provide strong correlational evidence of an individual's entrepreneurial intentions

H2: Previous exposure to entrepreneurship through academic courses and/business extracurriculars have a positive correlation with entrepreneurial intentions

H3: Immigration influences entrepreneurial intentions

H4: Upbringing and personal finances influence entrepreneurial intentions

## **Overview of Research**

This research project is funded by the Laidlaw Scholars Foundation and follows the research timeline provided by the program. The study is 16 weeks long and is divided evenly between summer 2019 (July – August) and summer 2020 (June – August). Summer 2019 was mainly focused on literature review paired with a preliminary survey questionnaire distributed to undergraduate university students across the Greater Toronto Area (GTA) to test the effectiveness of the research methodology. The results for summer 2019 served as a preliminary study that is used to improve the research methodology for the following summer. In summer 2020, a mixed methodology was used by conducting interviews with current entrepreneurs and interview results were channeled into a revised questionnaire that was distributed to students across the GTA and Vancouver. Thus, the majority of this research paper focuses on summer 2020 findings.

The following two questions are the key dependent variables in this study and are used to identify entrepreneurial intentions through summer 2019 and summer 2020:

1. Have you ever thought about starting your own business?
2. How likely would you start your own business in the next 5 years?

## Summer 2019 Research

### Methodology:

The target population was university students. A survey questionnaire created on SurveyMonkey was distributed to students mainly via social media platforms like Facebook, Instagram, and WeChat; certain professors teaching summer school also helped distribute the questionnaire to their classes which generated higher response rates. Students who participated in the study had a chance to win \$50 dollars' worth of Starbucks gift cards, which served as an incentive when advertising online. The total sample size was 103 students, with 63.2% of the students in business and economics programs, 30.1% in STEM programs, and the remaining in humanities programs.

The survey questionnaire contained 23 questions and was mostly based upon Sharpero's intentions model on perceived feasibility (Appendix III). There were a few additional questions related to immigration, high school experiences, and relocation that were added to identify other variables that resulted in entrepreneurial intentions. All responses were measured based on the 5-point Likert scale, True and False, or in numerical responses.

Data analysis for the student was completed via Excel using the Data Analysis Toolkit through creating correlation matrixes and multivariable regression models to calculate the correlation, p-value, confidence interval, and intercepts. The threshold for determining whether a variable is significant is  $p\text{-value} < 0.1$ . I chose this threshold because it is commonly known as the largest acceptable value when determining whether a variable is marginally significant.

## Results:

I was able to collect 103 survey responses, of which 98 were used in this study. After conducting a correlational test, I was able to identify 14 variables that were correlated to the two main dependent variables.

	Have you ever thought about starting your own business?	How attractive is it for you to start your own business?	If you started your own business, how would you feel about doing it?	If you started your own business, how tense would you be?	If you started your own business, how enthusiastic would you be?	How practical is it for you to start your own business?	How hard do you think it would be to start your own business?	If you started your own business, what do you think your workload would be?	If you start your own business, how certain of success are you?	Do you think you know enough to start your own business?	Did you parents ever start their own business?	Do you come from an immigrant background?	How many different cities/towns have you live in?	Did you take any courses related to business or entrepreneurship in high school?	Did you have any work experiences in high school? (Employed/ Self-employed)	Did you participate in business related extracurriculars? (Business Cases, Clubs, Summer I would describe my life experiences prior to entering university as easy.	Compared to my peers, my life experiences have been challenging (e.g. loss of a parent, divorce, I've had to overcome a lot to get where I am today.	1.000	
1.000																			
0.708	1.000																		
0.642	0.529	1.000																	
0.572	0.504	0.545	1.000																
0.074	0.116	0.051	0.156	1.000															
0.174	0.175	0.193	0.220	0.206	1.000														
0.561	0.570	0.449	0.440	0.319	0.166	1.000													
0.253	0.318	0.170	0.187	0.323	0.168	0.301	1.000												
-0.006	0.006	0.116	0.043	0.182	0.044	-0.044	0.306	1.000											
0.339	0.311	0.209	0.336	0.162	0.144	0.392	0.363	0.055	1.000										
0.275	0.288	0.133	0.225	0.336	0.299	0.361	0.319	0.032	0.194	1.000									
0.251	0.109	0.175	0.271	-0.197	0.052	0.164	0.019	0.032	0.152	-0.035	1.000								
0.035	0.069	0.004	0.006	0.145	0.084	-0.004	-0.028	0.165	-0.138	-0.026	-0.133	1.000							
0.235	0.317	0.173	0.218	0.214	0.092	0.284	0.114	0.040	0.143	0.200	0.061	0.088	1.000						
0.271	0.299	0.170	0.114	0.048	0.052	0.209	-0.075	0.055	-0.051	0.277	-0.017	0.189	0.089	1.000					
-0.115	-0.073	-0.082	0.033	0.092	0.208	-0.055	0.070	-0.106	-0.047	0.240	-0.162	-0.031	-0.020	0.137	1.000				
0.289	0.311	0.182	0.169	0.071	0.135	0.268	0.031	-0.102	0.054	0.250	0.046	-0.017	0.028	0.343	0.198	1.000			
0.123	0.108	0.158	0.104	0.018	0.014	0.184	0.091	-0.084	0.055	-0.003	0.017	0.146	0.137	0.039	0.119	0.048	1.000		
-0.096	-0.026	-0.152	-0.169	-0.051	0.155	-0.219	-0.027	-0.129	0.060	-0.032	0.034	-0.101	0.017	-0.062	0.029	-0.069	-0.301	1.000	
0.043	0.062	-0.162	0.048	0.001	0.164	-0.052	0.099	0.072	0.211	0.105	-0.033	-0.114	0.066	0.056	0.036	0.034	-0.285	0.468	1.000

*Dependent Variable & Question 1: Have you ever thought about starting your own business?*

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.776
R Square	0.602
Adjusted R Square	0.535
Standard Error	0.811
Observations	98

ANOVA					
	df	SS	MS	F	Significance F
Regression	14	82.465	5.890	8.967	0.000
Residual	83	54.525	0.657		
Total	97	136.990			

Based on the 98 survey responses, the multivariable regression analysis shows that these 14 variables generate an R-squared of 0.602, meaning that the model can explain 60.2% of the variance in the data.

	Coefficients	SE	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	-1.002	0.575	-1.742	0.085	-2.146	0.142	-2.146	0.142
<b>How attractive is it for you to start your own business?</b>	0.379	0.088	4.291	<b>0.000</b>	0.203	0.554	0.203	0.554
<b>If you started your own business, how would you feel about doing it?</b>	0.255	0.138	1.849	<b>0.068</b>	-0.019	0.530	-0.019	0.530
<b>How practical is it for you to start your own business?</b>	0.179	0.092	1.956	<b>0.054</b>	-0.003	0.362	-0.003	0.362
If you start your own business, how certain of success are you?	0.116	0.127	0.913	0.364	-0.136	0.367	-0.136	0.367
Do you think you know enough to start your own business?	0.077	0.096	0.797	0.428	-0.115	0.268	-0.115	0.268
Did you parents ever start their own business?	0.082	0.245	0.335	0.739	-0.405	0.569	-0.405	0.569
Previous Business Experience	0.150	0.251	0.596	0.552	-0.350	0.650	-0.350	0.650
Do you come from an immigrant background?	0.092	0.143	0.646	0.520	-0.192	0.377	-0.192	0.377
How many different cities/towns have you live in?	0.035	0.082	0.425	0.672	-0.128	0.198	-0.128	0.198
Did you take any courses related to business or entrepreneurship in high school?	0.246	0.190	1.290	0.201	-0.133	0.624	-0.133	0.624
Did you have any work experiences in high school? (Employed/ Self-employed)	-0.258	0.182	-1.419	0.160	-0.621	0.104	-0.621	0.104
Did you participate in business related extracurriculars? (Business Cases, Clubs, Summer Programs)	0.241	0.188	1.282	0.203	-0.133	0.614	-0.133	0.614
Compared to my peers, my life experiences have been challenging (e.g. loss of a parent, divorce, economic hardship)	0.017	0.066	0.251	0.802	-0.115	0.148	-0.115	0.148
I've had to overcome a lot to get where I am today.	0.065	0.067	0.975	0.333	-0.068	0.198	-0.068	0.198

There are three questions in the dataset that have p-values that are less than 0.1: “How attractive is it for you to start your own business”, “If you started your own business, how would you feel about doing it”, and “How practical is it for you to start your own business”. The p-value for the first question is 0.00049, which means that this variable is very statistically significant. These three questions were copied directly from Sharpero’s entrepreneurial intentions model and demonstrate the effectiveness of the original entrepreneurial intentions model.

*Dependent Variable & Question 2: How likely would you start your own business in the next 5 years?*

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.729
R Square	0.531
Adjusted R Square	0.452
Standard Error	0.894
Observations	98

ANOVA					
	df	SS	MS	F	Significance F
Regression	14	75.270	5.376	6.720	0.000
Residual	83	66.404	0.800		
Total	97	141.673			

The second regression model uses the same variables as the first but has a lower r-squared value. However, the R-squared is still very strong since the model can explain 53.1% of the variance in the data.

	<i>Coefficients</i>	<i>SE</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	-1.608	0.635	-2.533	0.013	-2.871	-0.345	-2.871	-0.345
<b>How attractive is it for you to start your own business?</b>	0.234	0.097	2.404	<b>0.018</b>	0.040	0.428	0.040	0.428
<b>If you started your own business, how would you feel about doing it?</b>	0.303	0.152	1.991	<b>0.050</b>	0.000	0.606	0.000	0.606
<b>How practical is it for you to start your own business?</b>	0.274	0.101	2.706	<b>0.008</b>	0.073	0.475	0.073	0.475
If you start your own business, how certain of success are you?	0.099	0.140	0.705	0.483	-0.179	0.377	-0.179	0.377
Do you think you know enough to start your own business?	0.041	0.106	0.389	0.698	-0.170	0.252	-0.170	0.252
Did you parents ever start their own business?	-0.146	0.270	-0.542	0.590	-0.684	0.391	-0.684	0.391
Previous Business Experience	-0.019	0.277	-0.068	0.946	-0.571	0.533	-0.571	0.533
Do you come from an immigrant background?	0.093	0.158	0.589	0.557	-0.221	0.407	-0.221	0.407
How many different cities/towns have you live in?	0.128	0.091	1.409	0.163	-0.053	0.308	-0.053	0.308
Did you take any courses related to business or entrepreneurship in high school?	0.309	0.210	1.472	0.145	-0.109	0.727	-0.109	0.727
Did you have any work experiences in high school? (Employed/ Self-employed)	-0.260	0.201	-1.293	0.200	-0.660	0.140	-0.660	0.140
Did you participate in business related extracurriculars? (Business Cases, Clubs, Summer Programs)	0.328	0.207	1.584	0.117	-0.084	0.740	-0.084	0.740
Compared to my peers, my life experiences have been challenging (e.g. loss of a parent, divorce, economic hardship)	0.094	0.073	1.285	0.202	-0.052	0.240	-0.052	0.240
I've had to overcome a lot to get where I am today.	0.016	0.074	0.211	0.834	-0.131	0.163	-0.131	0.163

Similar to the results listed in the first regression model, the first three variables are also the only ones that are statistically significant (all with p-values less than 0.05), meaning that both dependent variables yield similar interpretations of entrepreneurial intentions.

Overall, the strong positive R-squared is a positive sign, meaning that the models listed are effective in accounting for the variance in the data.

However, given the large number of variables (14), the result of only three statistically significant variables means that further improvements are needed to ensure that the regression models can maintain a high R-squared while generating more statistically significant results.

The sample size of 103 and the large number of variables makes it difficult to evaluate the effectiveness of each variable. While prior researchers were able to collect samples that were in the four-digit range, a sample of approximately one hundred people will not be impactful. Thus, an increase in sample size or a change in questions is needed to improve the model results.

## **Summer 2020**

### **Methodology:**

Summer 2020 utilizes a mixed methodology approach. Through interviewing current entrepreneurs and channeling the interview responses in the revised survey, this methodology brings in a more practical element in identifying entrepreneurial intentions compared to the traditional theoretical models presented by previous researchers by identifying how factors such as individual financial performance, risk tolerance, and previous work experiences impacted their entrepreneurial decisions. The interview portion is designed to pose open ended questions to entrepreneurs to identify any variables that were overlooked by theoretical intention models (Appendix IV). The interviews are generally 30 minutes long where entrepreneurs answer a dozen pre-made questions under a conversational setting. This helped uncover how personal reasons resulted in entrepreneurial decisions.

These entrepreneurs were mainly recruited via LinkedIn, a professional networking platform. I cold outreached to approximately 40 entrepreneurs and conducted interviews with 20 individuals who operate

small to medium size businesses across Canada in a variety of industries. Most of the conversations were recorded with permission to help identify details that were discussed during these conversations.

A general qualitative analysis was conducted on the interview responses and I incorporated some of the key discussion points into the survey questionnaire.

The revised questionnaire (Appendix V) was created on Qualtrics and has 25 questions, but only 4 questions were the exact same as the 2019 questionnaire due to the insights provided by entrepreneurs. The dependent variables are still the same as the original to ensure standardized results.

The recruitment process for survey responses is similar to summer 2019. The revised survey questionnaire targets the same student population and uses the same social media platforms. However, the prize value has increased from \$50 to \$100, which potentially resulted in a higher response rate. Additionally, I also reached out to students directly to gauge their interest, and these direct messages are the leading factor that resulted in more survey responses. The total sample size for summer 2020 is 145 students, where 75% of the students were enrolled in business and commerce related programs, 17% are enrolled in STEM programs, and 7% were enrolled in humanities programs. The student distribution is also similar to last year as I was able to access more business students due to my personal background. The low participation rate of humanities students is likely due limited marketing within humanities-related student organizations.

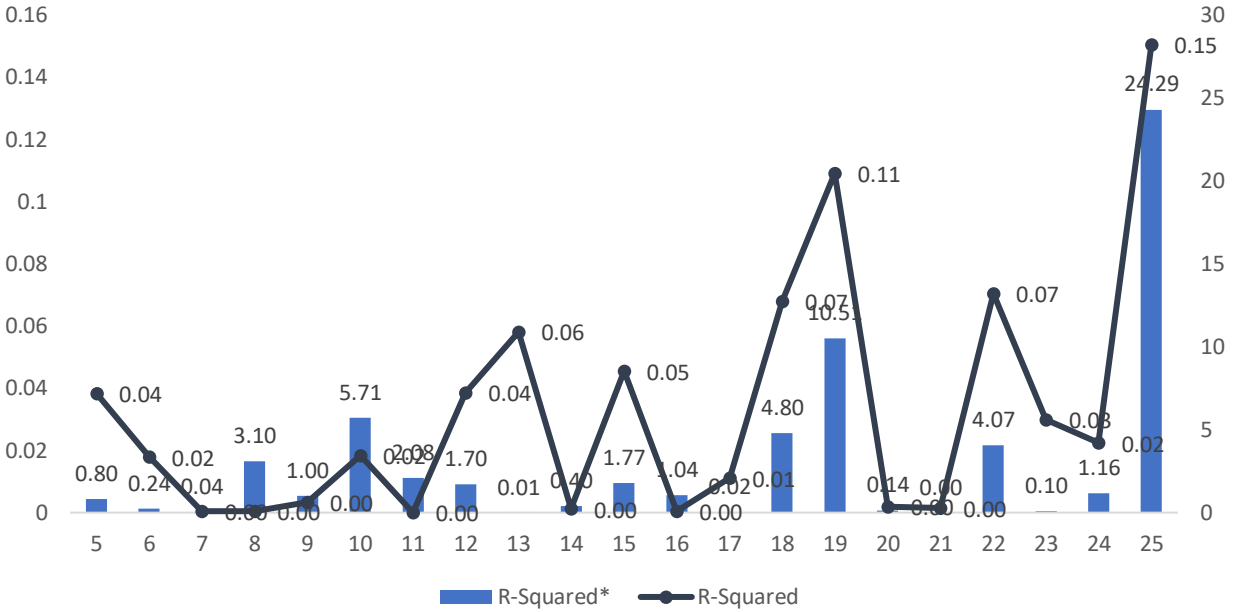
Data analysis was completed in a two-pronged approach. The first step was to filter the questions by predictive strength to remove any extraneous variables. The variables were evaluated on two fronts, R-square of each independent variable with the dependent variable, and R-squared\*, the percentage increase in R-squared of the entire regression without the individual variable compared to the R-squared of the entire regression including the individual variable. Then, I utilized Python to calculate the results. This process was completed 63 times for all 23 independent variables to capture the effect of each variable on the two dependent variables *“Have you ever thought about starting your own business”* and *“How likely would you start your own business in the next 5 years”*. This first step is important because I am looking to find the most important variables that can explain entrepreneurial intentions, and R-squared is the best way to measure the variable’s relevance.

After identifying 10 variables that generated the highest R-squared or R-squared\*, I created a regression model via Excel to identify the significance of each variable. This step is exactly the same as summer 2019’s methodology.

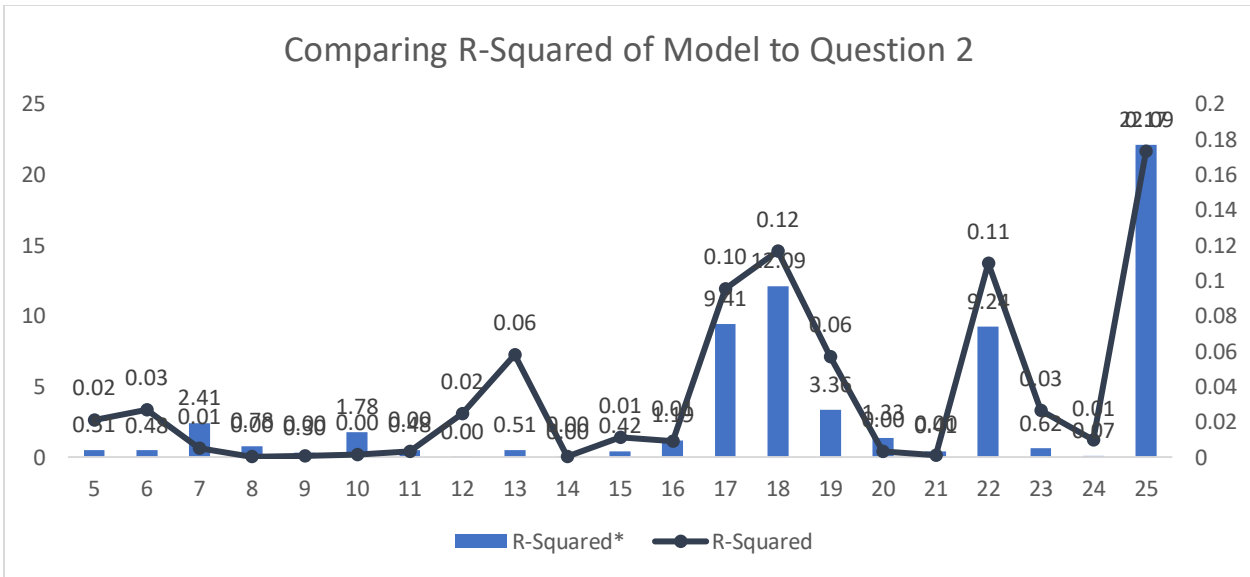
### Results:

To select the variables that we will consider further for regression analysis, we chose the ones with high R-squared and R-squared\*. In general, these two were positively correlated. On some occasions, we had to make a choice between choosing the variable with high R-squared vs R-squared \*. To do so, we trained separate models, one including the question with high R-squared and one including the question with high R-squared\*. This allowed us to determine high R-squared\* as a better indicator of predictive power. For example, in the first model, Question 11 had a very high R-squared\* but low R-squared, while Question 12 had a low R-squared\* but high R-squared. After applying the aforementioned method, Question 11 generated higher predictive power. However, since both Question 11 and Question 12 demonstrated higher significance compared to other variables, both were included in the final list of 10 variables. The same process was completed for question 2 and the top 10 variables with the highest R-squared\* were selected for the final multivariable regression model.

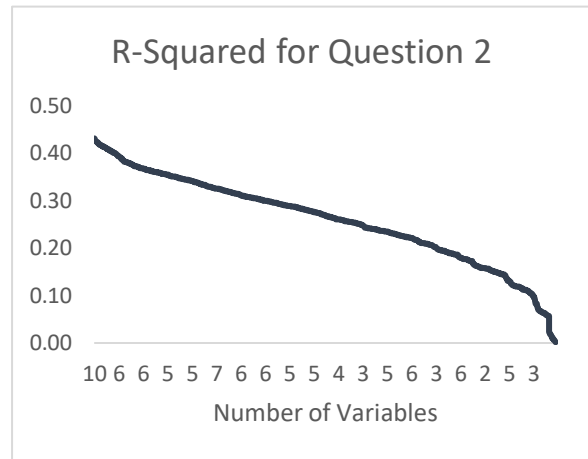
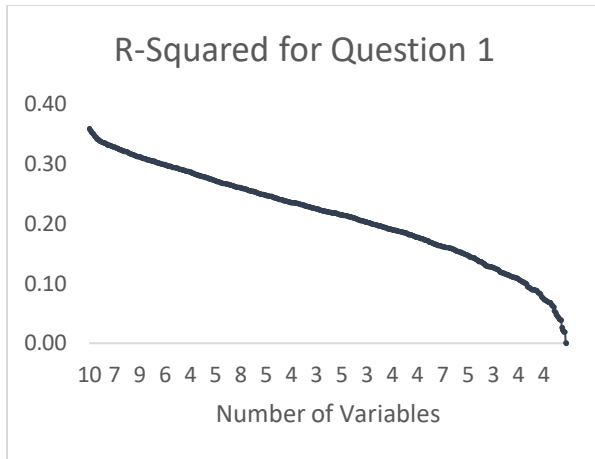
### Comparing the R Squared of Model to Question 1



### Comparing R-Squared of Model to Question 2



I wanted to see if the most significant variables can be further filtered out by seeing if there is a subset of the 10 chosen variables that accounts for a high amount of variance in the output values. To do so, we trained regression models on all 1, 024 possible subsets of feature variables and ranked them based on the highest R-squared value followed by the least number of variables within each given combination. The most optimal situation is to use the least number of variables while yielding the highest R-squared possible.



The combination that generated the highest R-squared was naturally the one with all 10 variables, however, for the Question 2, reducing the number of variables by 2 only decreased the R-squared marginally. After testing out the four combinations (Question 1 vs 10 variables, Question 1 vs 8 variables, Question 2 vs 10 variables, Question 2 vs 8 variables) in total for both dependent variables, the following diagrams show the best possible output, while ensuring the highest number of *statistically significant* variables.

*Dependent Variable & Question 1: Have you ever thought about starting your own business?*

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.614
<b>R Square</b>	<b>0.377</b>
Adjusted R Square	0.329
Standard Error	0.484
Observations	142

ANOVA					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	10	18.525	1.853	7.916	0.000
Residual	131	30.658	0.234		
Total	141	49.183			

For the first dependent variable (Question 1), the model's R-squared is 0.377, meaning that the model can explain the variability of output 37.7% of the time.

	<i>Coefficients</i>	<i>SE</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
Intercept	3.328	0.455	7.320	0.000	2.428	4.227
Have you been involved in any business-related extracurricular or professional experiences (work, internships) in university?	0.125	0.104	1.209	0.229	-0.080	0.330
<b>Do you come from an immigrant background?</b>	-0.065	0.033	-1.932	<b>0.055</b>	-0.131	0.002
How many different cities have you lived in?	-0.086	0.072	-1.196	0.234	-0.227	0.056
<b>Did your parents start a business of their own?</b>	-0.194	0.086	-2.258	<b>0.026</b>	-0.364	-0.024
Please estimate your annual household income range:	0.033	0.030	1.114	0.267	-0.026	0.092
<b>Would your parents support you if you told them that you decided to start your own business in the next 5 years?</b>	-0.129	0.068	-1.891	<b>0.061</b>	-0.263	0.006
<b>Rate your level of risk tolerance on the following scale:</b>	0.086	0.024	3.567	<b>0.001</b>	0.038	0.134
<b>Do you think you have the adequate skill sets needed to start your own business?</b>	-0.169	0.090	-1.885	<b>0.062</b>	-0.346	0.008
Are you confident in your ability to achieve success in whichever field you are planning to pursue?	-0.057	0.101	-0.564	0.574	-0.258	0.143
<b>Do you currently have a business idea?</b>	-0.405	0.087	-4.673	<b>0.000</b>	-0.577	-0.234

When examining the p-value of this 10-variable model, we can see that there are 6 variables that are statistically significant (p-value < 0.1): “Do you come from an immigrant background”, “Did your parents start a business of their own”, “Would your parents support you if you told them that you decided to start your own business in the next 5 years”, “Rate your level of risk tolerance”, “Do you think you have the adequate skill sets needed to start your own business”, and “Do you currently have a business idea”.

The last variable about business idea generated a p-value of 0.0000075, which implies that it is highly significant in this model.

*Dependent Variable & Question 2: How likely would you start your own business in the next 5 years?*

SUMMARY OUTPUT

<i>Regression Statistics</i>	
Multiple R	0.652
<b>R Square</b>	<b>0.425</b>
Adjusted R Square	0.391
Standard Error	0.898
Observations	145

<i>ANOVA</i>					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	8	81.087	10.136	12.564	0.000
Residual	136	109.713	0.807		
Total	144	190.800			

The second model here uses eight variables instead of 10. This is because the R-squared for the 10 variable model is 0.434 while the R-squared for the 8 variable model is 0.425. Thus, I decided to use the one with the lower variables since there is no significant difference (10 variable model is Appendix IV). The R-squared of 0.425 implies that the following model can explain the variability in output 42.5% of the time. This result is actually higher than the previous model that answered question one, implying that Question 2, “Estimate the likelihood of starting your business in the next 5 years”, is a better question to ask when researching entrepreneurial intentions.

	<i>Coefficients</i>	<i>SE</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
Intercept	6.721	0.707	9.507	0.000	5.323	8.120
Did you have any professional experiences in high school (employed/self-employed)?	0.126	0.076	1.652	0.101	-0.025	0.277
Do you come from an immigrant background?	-0.096	0.061	-1.570	0.119	-0.218	0.025
Were you given any financial pressure in high school or university?	-0.317	0.213	-1.489	0.139	-0.739	0.104
<b>Compared to your peers, would you say your life experiences have been challenging and you have overcome a lot to get to where you are today?</b>	-0.581	0.171	-3.394	<b>0.001</b>	-0.920	-0.243
<b>Would your parents support you if you told them that you decided to start your own business in the next 5 years?</b>	-0.463	0.126	-3.686	<b>0.000</b>	-0.712	-0.215
<b>Rate your level of risk tolerance on the following scale:</b>	0.088	0.043	2.062	<b>0.041</b>	0.004	0.172
<b>Do you think you have the adequate skill sets needed to start your own business?</b>	-0.581	0.162	-3.577	<b>0.000</b>	-0.902	-0.260
<b>Do you currently have a business idea?</b>	-0.751	0.159	-4.737	<b>0.000</b>	-1.065	-0.437

There are five variables that are statistically significant in this model: “*Compared to your peers, would you say your life experiences have been challenging and you have to overcome a lot to get to where you are today*”, “*Would your parents support you if you decided to start your own business in the next 5 years*”, “*Rate your level of risk tolerance on the following scale*”, “*Do you think you have the adequate skill sets needed to start your own business*”, and “*Do you current have a business idea*”.

Interestingly, this eight-variable model yielded the same statistically significant variables as the ten-variable model, and four of the five variables in this model are the same as the model for Question 1.

The results for summer 2020 show that both Question 1 and 2 can be explained via intention models. While the R-squared is not as high as summer 2019’s data results, we can confidently say there this model captures more variables that are important in determining entrepreneurial intentions. Specifically, parental support, level of risk tolerance, adequate skill sets, and having a business idea are the four key determinants in estimating an individual’s entrepreneurial intentions. Immigrant background, parents’ business experience, and difficult life experiences can also serve as input variables when calculating entrepreneurial intentions.

### **Discussion and Conclusion:**

To summarize, throughout the 16 weeks of the research project, I was able to research the correlation between childhood upbringing, immigration, education, and entrepreneurial intentions. This research project defers from previous studies because of its specific focus on Canadian post-secondary students within the Greater Toronto Region and its ability to combine a multitude of topics that previously were only researched independently.

Through conducting data analysis via excel, the regression model from summer 2019’s survey questionnaire showed that the attractiveness, excitement, and practicality of starting a business are important in finding entrepreneurial intentions. These three factors are identical to the ones used in Sharpero’s intentions model, thereby confirming the first hypothesis (H1) of “*Entrepreneurial intentions models developed by previous researchers can provide strong correlational evidence of an individual’s entrepreneurial intentions*”.

The preliminary research conducted in summer 2019 is the foundation for summer 2020’s research. After revising the research methodology and incorporating an interview component with current entrepreneurs, I was able to add additional factors that were not identified by existing intentions models.

The research results of summer 2020 proved that the revised model is a better as there were more statistically significant variables that contributed to entrepreneurial intentions. The results of summer 2020 showed that parental support, risk tolerance, relevant skills, and having a business idea are important in explaining entrepreneurial intentions because they were statistically significant in answering both research questions. Additional variables such as immigrant background, parents' entrepreneurial background, and difficult life experiences are also important in explaining entrepreneurial intentions.

Summer 2020's results do not support the second hypothesis (H2) of "*Previous exposure to entrepreneurship through academic courses and/business extracurriculars influence entrepreneurial intentions*" and confirmed that the third and fourth hypothesis (H3, H4) "*Immigration influences entrepreneurial intentions*" and "*Upbringing and personal finances influence entrepreneurial intentions*" are true.

#### Limitations of the Study:

The biggest limitation of this research study is the small sample size, while many existing research studies have four-digit participation rates due to amount of time dedicated to data collection and the amount of facility support given with the distribution process, I had limited methods of reaching out to students and recruiting them for this research study. Additionally, since most students who interact with me on social platforms share similar commerce backgrounds, it is likely that my data might be somewhat skewed. Additionally, the survey questionnaire platform was also different for summer 2019 and summer 2020. Students trusted the latter platform "Qualtrics" more than "Survey Monkey" because it is affiliated with the University of Toronto.

#### Implications of Results:

The results of this study can contribute to the current academic literature by providing a prospective on Canadian post-secondary students' entrepreneurial intentions. It also shows that the traditional theoretical model is not the only method in determining entrepreneurial intentions and that there are factors that were omitted in the existing framework. By identifying the variables listed above, we can see that previous exposure to entrepreneurship or education might not have a direct impact on entrepreneurial intentions. Adequate skills developed for entrepreneurship might not come from school or extracurriculars and that public policy should focus on other methodologies in promoting entrepreneurship in post-secondary students. While there have been mixed opinions regarding whether immigration impacts entrepreneurial decisions, my research confirms that immigration does influence entrepreneurial intentions of students studying in Canada. Students childhood upbringing and financial wellbeing also contributes to their entrepreneurial intentions.

## Appendix:

### I. Q1, 8 Variables:

#### SUMMARY OUTPUT

<i>Regression Statistics</i>	
Multiple R	0.586
R Square	0.343
Adjusted R Square	0.303
Standard Error	0.493
Observations	142

#### ANOVA

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	8	16.862	2.108	8.673	0.000
Residual	133	32.321	0.243		
Total	141	49.183			

	<i>Coefficients</i>	<i>SE</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
Intercept	2.797	0.416	6.716	0.0000	1.973	3.621
Have you been involved in any business-related extracurricular or professional experiences (work, internships) in university?	0.143	0.105	1.360	0.1761	-0.065	0.351
How many different cities have you lived in?	-0.072	0.073	-0.983	0.3272	-0.216	0.072
Did your parents start a business of their own?	-0.220	0.087	-2.534	<b>0.0124</b>	-0.391	-0.048
Please estimate your annual household income range:	0.047	0.029	1.605	0.1108	-0.011	0.106
Rate your level of risk tolerance on the following scale:	0.094	0.024	3.848	<b>0.0002</b>	0.046	0.143
Do you think you have the adequate skill sets needed to start your own business?	-0.174	0.091	-1.907	<b>0.0587</b>	-0.354	0.006
Are you confident in your ability to achieve success in whichever field you are planning to pursue?	-0.065	0.103	-0.633	0.5278	-0.269	0.139
Do you currently have a business idea?	-0.406	0.087	-4.662	<b>0.0000</b>	-0.578	-0.233

### II. Q2, 10 Variables

<i>Regression Statistics</i>	
Multiple R	0.659
<b>R Square</b>	<b>0.434</b>
Adjusted R Square	0.392
Standard Error	0.898
Observations	145

#### ANOVA

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	10	82.857	8.286	10.286	0.000
Residual	134	107.943	0.806		
Total	144	190.800			

	<i>Coefficients</i>	<i>SE</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
Intercept	6.486	0.740	8.771	0.000	5.023	7.948
Did you have any professional experiences in high school (employed/self-employed)?	0.121	0.077	1.584	0.116	-0.030	0.273
Do you come from an immigrant background?	-0.088	0.062	-1.419	0.158	-0.210	0.035
If yes, how would you rate their experience of starting the business?	-0.054	0.059	-0.911	0.364	-0.172	0.063
Were you given any financial pressure in high school or university?	-0.331	0.222	-1.488	0.139	-0.771	0.109
<b>Compared to your peers, would you say your life experiences have been challenging and you have overcome a lot to get to where you are today?</b>	-0.572	0.173	-3.307	<b>0.001</b>	-0.915	-0.230
<b>Would your parents support you if you told them that you decided to start your own business in the next 5 years?</b>	-0.437	0.127	-3.441	<b>0.001</b>	-0.688	-0.186
<b>Rate your level of risk tolerance on the following scale:</b>	0.086	0.043	2.014	<b>0.046</b>	0.002	0.171
If you did not find a job/internship, would you be in facing any financial pressures and difficult circumstances?	0.173	0.173	0.998	0.320	-0.170	0.515
<b>Do you think you have the adequate skill sets needed to start your own business?</b>	-0.540	0.165	-3.279	<b>0.001</b>	-0.866	-0.214
<b>Do you currently have a business idea?</b>	-0.765	0.159	-4.806	<b>0.000</b>	-1.079	-0.450

### III. Survey Questionnaire for Summer 2019

- Program (choose one):
  - Business Related Major
    - Business, Economics
  - Humanities and Arts
    - History, Philosophy, English, East Asian Studies, Geography, Sociology, and others
  - Natural Sciences
    - Biology, Physics, Chemistry, and Geology
  - Engineering
    - Mechanical Engineering, Electrical Engineering, and others
  - Math and Physical Sciences
    - Computer Science, Mathematics, Statistics, and others
- Year of Study:
  - First
  - Second
  - Third
  - Fourth
  - Graduate Program

#### Entrepreneurial intentions

- Have you ever thought about starting your own business?
  - Never thought about it at all
  - Rarely thought about it
  - Sometimes thought about it
  - Regularly think about it
  - Seriously thought about it
- Estimate the likelihood that you'll start your own business in the next 5 years
  - Very unlikely
  - Unlikely
  - Undecided
  - Likely
  - Very likely

- Estimate the likelihood that you'll start your own business in the next 10 years
  - Very unlikely
  - Unlikely
  - Undecided
  - Likely
  - Very likely

Perceived desirability

- How attractive is it for you to start your own business?
  - Very unattractive
  - Somewhat unattractive
  - Neutral
  - Somewhat attractive
  - Very attractive
- If you started your own business, how would you feel about doing it?
  - I'd hate doing it
  - I'd not enjoy doing it
  - I feel neutral towards doing it
  - I'd enjoy doing it
  - I'd love doing it<sup>[SEP]</sup>
- If you started your own business, how tense would you be?
  - Very tense
  - Somewhat tense
  - Uncertain
  - Somewhat relaxed
  - Very relaxed
- If you started your own business, how enthusiastic would you be?
  - Very unenthusiastic
  - Somewhat unenthusiastic
  - Neutral
  - Somewhat enthusiastic
  - Very enthusiastic

Perceived feasibility

- How practical is it for you to start your own business?
  - Not very practical
  - Somewhat practical
  - Uncertain
  - Practical
  - Very practical
- How hard do you think it would be to start your own business?
  - Very hard
  - Somewhat hard
  - Uncertain
  - Somewhat easy
  - very easy
- If you started your own business, what do you think your workload would be?
  - Very high
  - Somewhat high
  - Uncertain
  - Somewhat low
  - Very low

- If you start your own business, how certain of success are you?
  - Very certain of failing
  - Somewhat certain of failing
  - Uncertain
  - Somewhat certain of success
  - Very certain of success
- Do you know enough to start your own business?
  - I know absolutely nothing
  - I think I know something
  - Uncertain
  - I think I know most things
  - I think I know everything

#### Exposure to family business

- Did your parents ever start their own business?
  - Yes/no
- If yes, how would you rate their experience of starting their own business?
  - Positive/negative/neutral

#### Immigration

- Do you come from an immigrant background?
  - No (Entire family is born and raised in Canada)
  - First Generation (You are an immigrant, a foreign-born resident who has relocated and become a citizen or permanent resident in a new country)
  - 1.5 Generation (Arrived in Canada as a child or adolescence with immigrant parents)
  - Second generation (Born in Canada, parents were first generation immigrants)
  - I am an international student
- In how many different cities/towns have you lived?
  - One
  - Two – Three
  - Four – Five
  - More than five

#### High school experiences

- Did you take any courses related to business or entrepreneurship in high school?
  - Yes/no
- Did you have any professional experiences in high school? (Employed/ Self-employed)
  - Yes/no
- Did you participate in business related extracurriculars? (Business Cases, Clubs, Summer Programs)
  - Yes/no

#### Difficult childhood

- I would describe my life experiences prior to entering university as easy.
  - Strongly disagree
  - Somewhat disagree
  - Uncertain
  - Somewhat agree
  - Strongly agree
- Compared to my peers, my life experiences have been challenging (eg loss of a parent, divorce, economic hardship).
  - Strongly disagree
  - Somewhat disagree
  - Uncertain

- Somewhat agree
- Strongly agree
- I've had to overcome a lot to get where I am today.
  - Strongly disagree
  - Somewhat disagree
  - Uncertain
  - Somewhat agree
  - Strongly agree

#### IV. Interview Questions for Summer 2020

1. Can you tell me about the process of becoming an entrepreneur? What was happening in your life back then that resulted in your interest to start your own business?
2. What was going on in your family life/personal life/work life when you made up your mind to become an entrepreneur?
3. Do you think your educational background and experience in academia helped significantly with starting and managing a business?
4. Do your parents own a business? Were you involved in your parents' business growing up?
5. What is one factor that might have been overseen by non-entrepreneurs that directly contribute to your success? → Some people become entrepreneurs; others choose to become employees. What is the main difference between you and those people?
6. If you were to do an explicit comparison between you and your friends who chose to work in corporate and only corporate, what would that look like?
7. What key skills should students develop in university and high school to prepare themselves to become successful entrepreneurs?
8. What do you think university students need to consider before becoming self-employed entrepreneurs?
9. What should high schools, universities do to encourage more people to become entrepreneurs?

#### Optional Questions:

- a. How did your interest in becoming an entrepreneur start?
- b. In your opinion, can entrepreneurship be taught?
- c. In what ways should the current education curriculum change?
- d. Many governments are looking into ways of getting more people to become entrepreneurs and starting their own companies, and education is one of the solutions used. What is your view on these efforts?
- e. What would you have done differently?
- f. What do you see yourself doing 5-10 years down the road?
- g. Do you enjoy your time working at xxx?
  - a. *What do you mean by "bad experience"? Can you elaborate on that?*
- h. How did you start your initiative? How did you find your team?

#### V. Survey Questionnaire for Summer 2020

- Program (choose one):
  - Business Related Major
    - Business, Economics
  - Humanities and Arts

- History, Philosophy, English, East Asian Studies, Geography, Sociology, and others
- Natural Sciences
  - Biology, Physics, Chemistry, Geology, and others
- Engineering
  - Mechanical Engineering, Electrical Engineering, and others
- Math and Physical Sciences
  - Computer Science, Mathematics, Statistics, and others

#### Entrepreneurial intentions

- Have you ever thought about starting your own business?
  - Never Thought about it
  - Sometimes thought about it
  - Seriously considered it
- Estimate the likelihood that you will start your own business in the next 5 years
  - Very unlikely
  - Unlikely
  - Undecided
  - Likely
  - Very likely

#### Business Knowledge

- Were you part of any business or entrepreneurial clubs or organizations in high school?
  - Yes
  - No
- Have you taken basic business or entrepreneurial courses in high school or external organizations?
  - Yes
  - No
- Did you have any professional experiences in high school (employed/self-employed)?
  - Yes
  - No
- Have you been involved in business-related extracurriculars or professional experience in university?
  - Yes
  - No
- Have you taken any business-related courses in university?
  - Yes
  - No
- Immigration
- Do you come from an immigrant background?
  - No (Entire family is born and raised in Canada)
  - First Generation (You are an immigrant, a foreign-born resident who has relocated and become a citizen or permanent resident in a new country)
  - 1.5 Generation (Arrived in Canada as a child or adolescence with immigrant parents)
  - Second generation (Born in Canada, parents were first generation immigrants)
  - I am an international student
- How many different cities have you lived in?

- One
- Two – Three
- Four – Five
- More than five

#### Family/Upbringing

- Did your parents start a business of their own?
  - Yes
  - No
- If yes, how would you rate their experience of starting their own business?
  - Positive
  - Negative
  - Neutral
  - N/A
- Would you say that you grew up in a financially comfortable state?
  - Income brackets is fine
  - But many students don't know
- Please estimate your annual household income range:
  - 0 to 60,000
  - 60,000 – 120,000
  - 120,000 – 180,000
  - 180,000 – 240,000
  - Higher than 240,000
  - I choose not to answer
- Were you given any financial pressure in high school or university?
  - Yes
  - No
- Compared to your peers, your life experiences have been challenging and you had overcome a lot to get to where you are today.
  - Strong agree
  - Somewhat agree
  - Neutral
  - Somewhat disagree
  - Strongly disagree
- Would your parents be supportive if you decided to start your own business in the next 5 years?
  - Yes
  - Maybe
  - No

#### Risk & Financial Circumstances

- Rate your level of risk tolerance on the following scale
  - Insert scale from 0 (risk averse) to 10 (risk loving)
- If you did not find a job/internship, would you be in facing any financial pressures and difficult circumstances?
  - Yes
  - No
- Do you have any student loans that you are required to pay off yourself upon graduation?
  - Yes

- No

Own Perception/Ideas

- Do you think you have the adequate skillsets needed to start your own business?
  - Yes
  - No
- Do you think your educational background (high school & university curriculum) has provided you with enough knowledge for you to become an entrepreneur?
  - Yes
  - No
- Are you confident in your ability to achieve success in whichever field you are planning to pursue?
  - Yes
  - No
- Do you currently have a business idea?
  - Yes
  - No

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