Factors Influencing Mainland Chinese Student's Choice of University between Shanghai and Hong Kong

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Abstract

Several studies have attempted to analyze influential factors behind students' choice of university. Factors such as academic reputation, job prospects, teaching quality, and geographical proximity were identified. This paper aims to investigate the factors influencing mainland Chinese students' choice between universities in Hong Kong and universities in Shanghai. Hypothesized factors include scholarship, location, geographical proximity to the university and some social-demographic variables such as gender, language, and family income. Applying logistic regression, we concluded that gender, family income, relative geographical proximity, and a previous visit to the city of the university have significant effects on whether students choose universities in HK.

1. Introduction

Mainland China has a vast higher education market and has become one of the largest sources of international students worldwide. A survey conducted in 2001 by China's National Bureau of Statistics revealed that more than 60 percent of Chinese families invest one-third of their income in their children's education (Bodycott, 2009).

As a Special Administrative Region of China, Hong Kong is an active player in this market, competing with international universities to recruit intelligent Chinese students. In 2011, the Hong Kong government clearly stated that the recruitment of 'non-local students' as a critical ingredient of being an educational hub (Cheng et al., 2011). This vision has facilitated the implementation of admission policies and scholarship schemes (i.e., Hong Kong Jockey Club Scholarship Scheme) to attract more non-local students to study in Hong Kong. According to the University Grants Committee (2017) statistics, mainland students account for 71.3% of HK's non-local students from the academic year 2011/2012 to 2016/2017.

This paper investigates the factors influencing mainland Chinses students' choice between universities in Hong Kong and universities in Shanghai. Hypothesized factors include scholarship, location, geographical proximity to the university and some social-demographic variables such as gender, language, and family income.

2. Literature Review

Several empirical studies have attempted to analyze influential factors behind student's choice of university. The subject of research and institutions targeted vary across studies, so do the hypothesized and identified factors.

Today, there are three widely considered college choice models. The economic model assumes that prospective students make college choice decisions through a cost-benefit analysis. The status attainment model is deeply rooted in a sociological paradigm that focuses on how social variables such as family, peers, and school environments shape college choice

(Mathew, 2016). Finally, the information processing model considers the student as an information gatherer, processing agent, and decision-maker (Hossler et al., 1999).

Mangan et al. (2010) applied bivariate association techniques to analyze the relevance of social class and students' choice of university. They found that social class is strongly associated with the type of university students intend to apply. Other factors, such as examination grade and geographical proximity of a higher-ranking university, also directly affect university choice.

In Soutar and Turner's research (2002), 259 final year high-school students were asked to rate the importance of 10 factors when they were required to choose from a set of hypothetical universities. Thereafter four crucial factors were identified: course suitability, academic reputation, job prospects, and teaching quality.

The present study focuses on more objective factors, such as distance and income, and compares their effects on the actual choice made by students, with the options they considered while still in high school, as the questionnaire was sent to undergraduate students, which is composed of mostly multiple-choice and close-ended questions.

Furthermore, there are few studies examining influential factors behind the choice of university between Hong Kong and Shanghai. Despite the similarity between Hong Kong and Shanghai, such as in the function of the city (regional financial center) and education quality, questions like why students choose Hong Kong over Shanghai remain mostly unanswered. This research attempts to provide answers for those questions.

3. Methodology

Data of this primary research came from two versions of online surveys[1], respectively targeted at mainland undergraduate students from three universities in Shanghai, and those from three universities in Hong Kong. The survey was sent out on March 12th, 2020 and closed on April 3rd. 234 responses were collected (98 from Hong Kong, 136 from Shanghai).

The survey consists of 17 multiple choice questions, three close-ended questions, and two open-ended questions, which collect information on family income, availability of scholarship, high school location, a previous visit to HK, previous consideration to study in HK before Gaokao[2], etc. Location of student's high school was then used to compute its shortest distance to Shanghai and Hong Kong, as well as the class of the city[3] where the school is located. Table 1 provides the descriptive statistics of variables used in this study.

Table 1 Descriptive statistics (n=98 for HK, n= 136 for SH)

[1]For content and subject of the survey, see Appendix A.

[2]China's National College Entrance Examination, commonly known as Gaokao, is an academic examination held annually in the People's Republic of China.

[3]Classified based on China's city tier system.

Variable name	Description	HK		SH	
		mean	SD	mean	SD
Gender **	Gender: 1-M, 0-F	0.1837	0.3892	0.5000	0.5018
DisToHK	Distance to HK (from the city of respondent's high school) in km	1570.8	1756.1	1293.2	459.6
DisRatio**	DisToHK/(DisToHK+DisToSH)	0.5773	0.2907	0.7200	0.2554
Below2**	1 for class of city (of respondent's high school) that is below 2, 0 otherwise	0.1429	0.3517	0.3015	0.4606
Cantonese*	1 for being able to speak Cantonese before college entrance exam, 0 otherwise	0.1020	0.3043	0.0221	0.1474
Income**	Annual family income (10K RMB)	76.04	131.6	28.67	46.50
Siblings**	Number of siblings	0.5043	0.5841	0.7200	0.2554
Visit**	1 for having visited HK before college entrance exam, 0 otherwise	0.6429	0.4816	0.2500	0.4346
Scholar**	1 for having an admission scholarship of respondent's university, 0 otherwise	0.2551	0.4382	0.1103	0.3144
Considered**	1 for having considered to study in HK before college entrance exam, 0 otherwise	0.8876	0.3173	0.4044	0.4926

t-test for difference in means: ** p value < 0.01, * p value < 0.02

Distribution of Income and DisRatio are provided in Figure 1 and Figure 2.

Figure 1

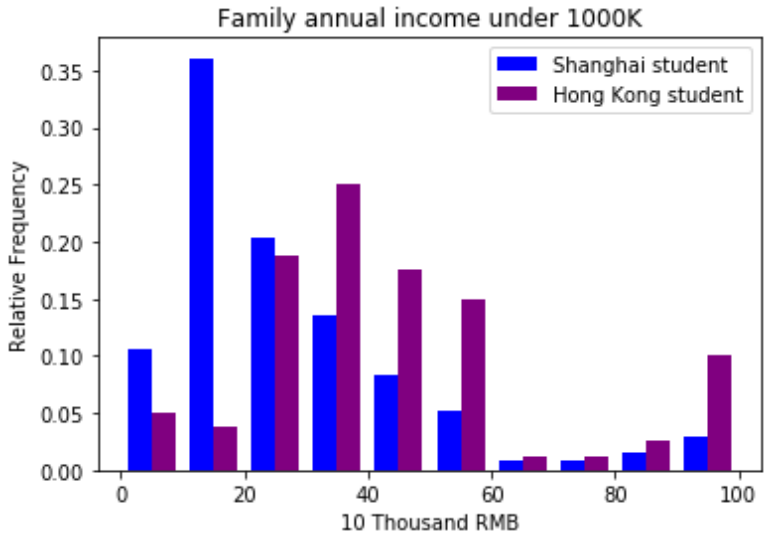
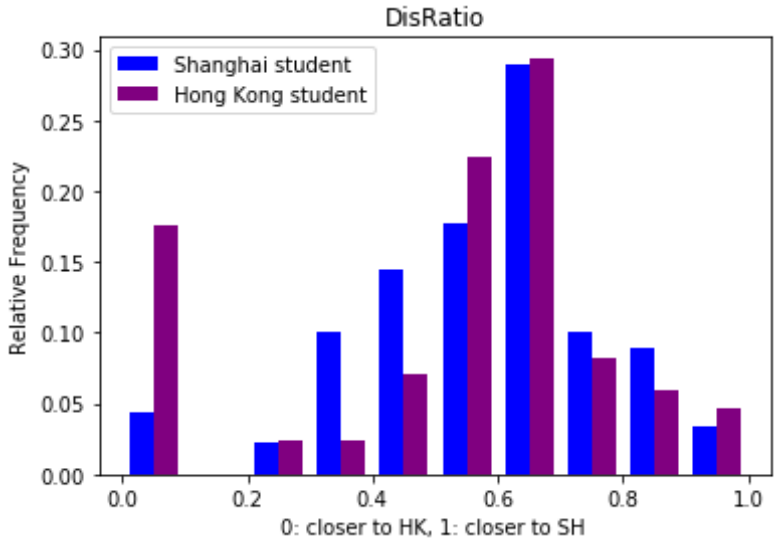


Figure 2



The effects of several factors on students' consideration of studying in HK and their final choice between universities from Shanghai and Hong Kong were studied through three logistic models. The factors include Gaokao score, scholarship, previous visits to HK, distance from high school to university, as well as some socio-demographic variables, such as gender, language, class of city, family income and number of siblings.

In logistic regression, for independent variables x_1, x_2, …,x_r , binary independent variable y, and p≡ P(y=1), the logistic funtion is

$$p = \frac{e^{\beta_0+\beta_1 x_1+\beta_2 x_2+\cdots+\beta_r x_r}}{1+e^{\beta_0+\beta_1 x_1+\beta_2 x_2+\cdots+\beta_r x_r}}$$

The estimates are evaluated in the form of odds ratio.

$$OddsRatio(x_i)=\frac{Odds(x_i=1)}{Odds(x_i=0)}=\frac{\frac{P(y=1|x_i=1)}{P(y=0|x_i=1)}}{\frac{P(y=1|x_i=0)}{P(y=0|x_i=0)}}=exp(\beta_i)$$

We used the variables presented in Table 1. Before the regression, variable Income is checked for normality. Its skewness is 5.78, suggesting it is highly skewed to the right.

Nature log of income is taken, and skewness becomes -1.88. The dependent variables are checked for degree of multicollinearity using variance inflation factor (VIF). No strong multicollinearity is found.

	Gender	DisRatio	DisToHK	Visit	Below2	Cantonese	ln^{Income}	Siblings	Considered	Scholar
VIF	1.15	1.39	1.09	1.32	1.30	1.31	1.38	1.07	1.21	1.04

4. Data Analysis and Results

4.1 The First Model

The first model considered gender, relative distance of high school to Hong Kong (DisToHK/DisToHK+DisToSH), previous visit to HK, class of city of student's high school, speaking Cantonese, family income, numbers of siblings, scholarship and previous consideration of studying in Hong Kong before Gaokao as explanatory variables. An interaction term Gender*DisRatio is added to investigate the gender difference in the effect of relative distance on student's choice of university.

The dependent variable is the city of student's university, 1 being Hong Kong, 0 being Shanghai. The equation of the model is given by (1), and the results of the estimation are shown in table 2.

$$P(School=1|\vec{X})=\frac{1}{1+e^{-(\beta_0+\vec{\beta}\vec{X})}}$$, where

$$\vec{\beta}\vec{X}=\beta_1 Gender+\beta_2 DisRatio+\beta_3 G*DisRatio+\beta_4 Visit+\beta_5 Below2+\beta_6 Cantonese+\beta_7 ln^{Income}+\beta_8 Siblings+\beta_9 Considered+\beta_{10} Scholar \quad (1)$$

Table 2

	Odds Ratio	Std. Error
Intercept	0.05	0.0623
Gender *	0.11	0.1228
DisRatio **	0.06	0.0565
G*DisRatio	5.49	8.5517
Visit *	2.25	0.8747
Below2	0.72	0.3712
Cantonese	2.54	2.6046
ln^{Income} ***	2.66	0.6796
Siblings ^	0.50	0.1936
Considered ***	7.44	3.2726
Scholar ^	2.49	1.2722

^ p-value < 0.1

* P-value < 0.05

** p-value < 0.01

*** p-value < 0.001

For estimates at 0.1% significance level, if student's household income increases by 100%, the odds of going to a university in HK will increase by 166%. The increase is likely to be the result of higher tuition fee and living expenses in HK. And if a student considered to study in HK before Gaokao, the odds of going to a university in HK is 149% higher than those who did not.

For estimates at 5% significance level, if a student has visited HK before Gaokao, its odds of going to a university in HK will be 125% higher than a student who has not. The odds of a male student going to study in HK is 89% less than the odds of a female, which may be because the three Shanghai universities rank higher in engineering, where the proportion of male student is higher.

A student living in Shanghai in high school has the odds of going to HK that is 96% lower than a student living in HK in high school. The interaction term G*DisRatio is bigger

than 1, suggesting that the effect of relative distance to HK compared with Shanghai is weaker among male students.

At 10% significant level, the estimates suggest one more sibling will decrease the odds of going to university in HK by 50%. The odds of going to HK for students having a scholarship is 149% bigger than for students without any scholarship. It can be explained by the fact that the amount of scholarship provided by universities in HK is larger than those in Shanghai, which makes HK's scholarship more attractive.

According to the result, if in high school a student is from a city whose class is below 2, its odds of going to HK will decrease by 28%. And the odds of a student able to speak Cantonese before Gaokao is 154% higher than that of a student who cannot. However, these two results are not statistically significant at 10% level.

4.2 The Second Model

The second model used consideration of studying in HK before Gaokao as independent variable, 1 if the student considered to study in HK before Gaokao, 0 if not. The explanatory variables are the same as in the first model, except DisRatio and its interactive term are changed to DisToHK/100 and G*DisToHK/100, since the dependent variable is only about HK's university and is irrelevant to Shanghai's university. And DisToHK is scaled down by 100 as $\overline{\text{DisToHK}}$ is 1475. The regressor Scholar is dropped as scholarship is usually provided after Gaokao. The dependent variable itself is dropped from the regressors. The equation of the model is given by (2) and the results of the estimation are presented in table 3.

$$P(Considered=1|\vec{X})=\frac{1}{1+e^{-(\beta_0+\vec{\beta}\vec{X})}}$$, where

$$\vec{\beta}\vec{X}=\beta_1 Gender+\beta_2 DisToHK/100+\beta_3 G*DisToHK/100+\beta_4 Visit+\beta_5 Below2+\beta_6 Cantonese+\beta_7 ln^{Income}+\beta_8 Siblings \quad (2)$$

Table 3

	Odds Ratio	Std. Error
Intercept	0.37	0.2509
Gender ***	0.08	0.0584
DisToHK/100 ^	0.97	0.0149
G*DisToHK/100 **	1.13	0.0525
Visit **	2.79	0.9704
Below2	1.03	0.3917
Cantonese	2.46	2.1464
ln^{Income} **	1.67	0.3261
Siblings	1.07	0.2766

^ p-value < 0.1

* P-value < 0.05

** p-value < 0.01

*** p-value < 0.001

Compared with the first model, the effect of gender is more significant both statistically and in terms of odds ratio, suggesting female students are more likely to consider studying in HK. However, the odds ratio of DisToHK and its interaction term close to 1 suggests that distance has no effect on whether students once considered to study in HK or not, and the effect has no difference between gender. Higher family income still increases the odds of considering to study in HK, although the effect is smaller than that in the first model (Odds Ratio is 1.67 compared to 2.66). The effects of having visited HK before Gaokao and speaking Cantonese on considering to study in HK are similar to those on actually studying in HK. But in this model, the variable Visit may encounter the problem of reverse causality, if

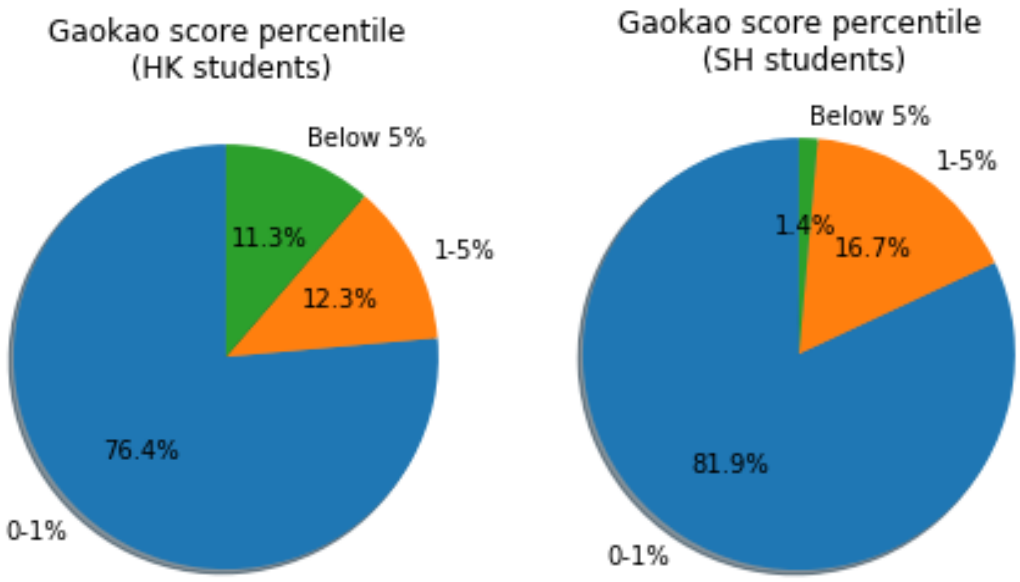
visiting HK is influenced by consideration of studying in HK. The class of city of student's high school and number of siblings have no apparent effects on whether students considered to study in Hong Kong both statistically and in terms of odds ratio.

4.3 The Third Model

In order to test the effect of Gaokao score percentile on student's choice of university, international students and students from Tongji University are dropped out of the sample, since Tongji University is far behind other 5 universities in terms of QS World University Ranking (265 compared to 40 (average of the other 5 universities)). The size of the remaining sample is reduced from 234 to 178 (73 from HK, 105 from SH).

The third model is similar to the first one, with an additional dependent variable, 1%, which equals 1 when the student's Gaokao score is at top 1% in its province, equals 0 when below. The distribution of student's Gaokao score is shown in Figure 3. The equation of the model is given by (3) and the results of the estimation are shown in table 4.

Figure 3



$$P(School=1|\vec{X})=\frac{1}{1+e^{-(\beta_0+\vec{\beta}\vec{X})}}$$, where

$$\vec{\beta}\vec{X}=\beta_1 Gender+\beta_2 DisRatio+\beta_3 G*DisRatio+\beta_4 Visit+\beta_5 Below2+$$

$$\beta_6 Cantonese+\beta_7 ln^{Income}+\beta_8 Siblings+\beta_9 Considered+\beta_{10} Scholar+\beta_{11} 1\%$$

(3)

Table 4

	Odds Ratio	Std. Error
Intercept	0.08	0.1318
Gender ^	0.09	0.1164
DisRatio *	0.04	0.0564
G*DisRatio	7.12	12.9412
Visit *	2.25	1.1147
Below2	0.72	0.3923
Cantonese	0.43	0.8050
ln^{Income}**	2.34	0.6659
Siblings ^	0.38	0.1919
Considered ***	7.71	3.7789
Scholar *	3.13	1.8166
1%	1.28	0.6878

^ p-value < 0.1

* P-value < 0.05

** p-value < 0.01

*** p-value < 0.001

The result gives an insignificant odds ratio of 1.28, suggesting an above-1% Gaokao Score does not have an apparent effect on student's choice of universities between Hong Kong and Shanghai. The estimates of other variables are similar to those in the first model.

4.4 Qualitative Analysis of Reasons Behind a Hypothesized Second Chance

At the end of questionnaire, students were asked if they were given a second chance

to choose universities freely between HK and Shanghai, which one they would choose and why. In Figure 4 and Figure 5 we summarized the reasons by certain factors and calculated their relative frequencies.

Figure 4

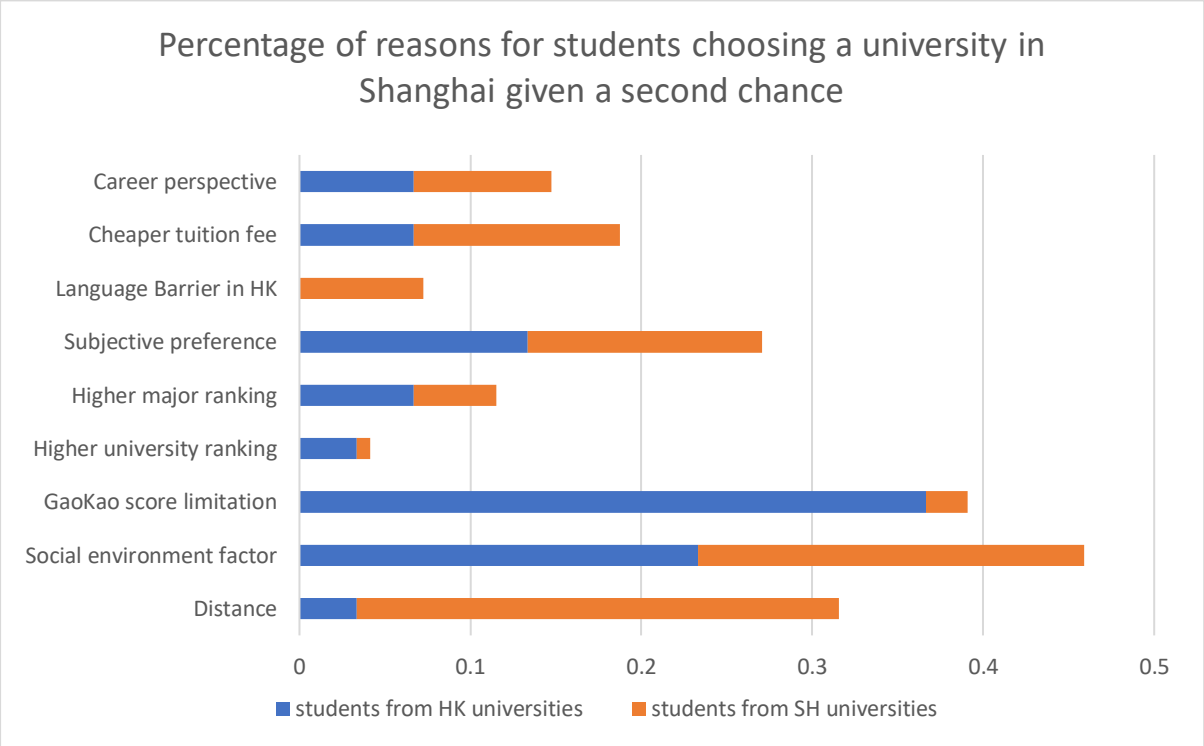
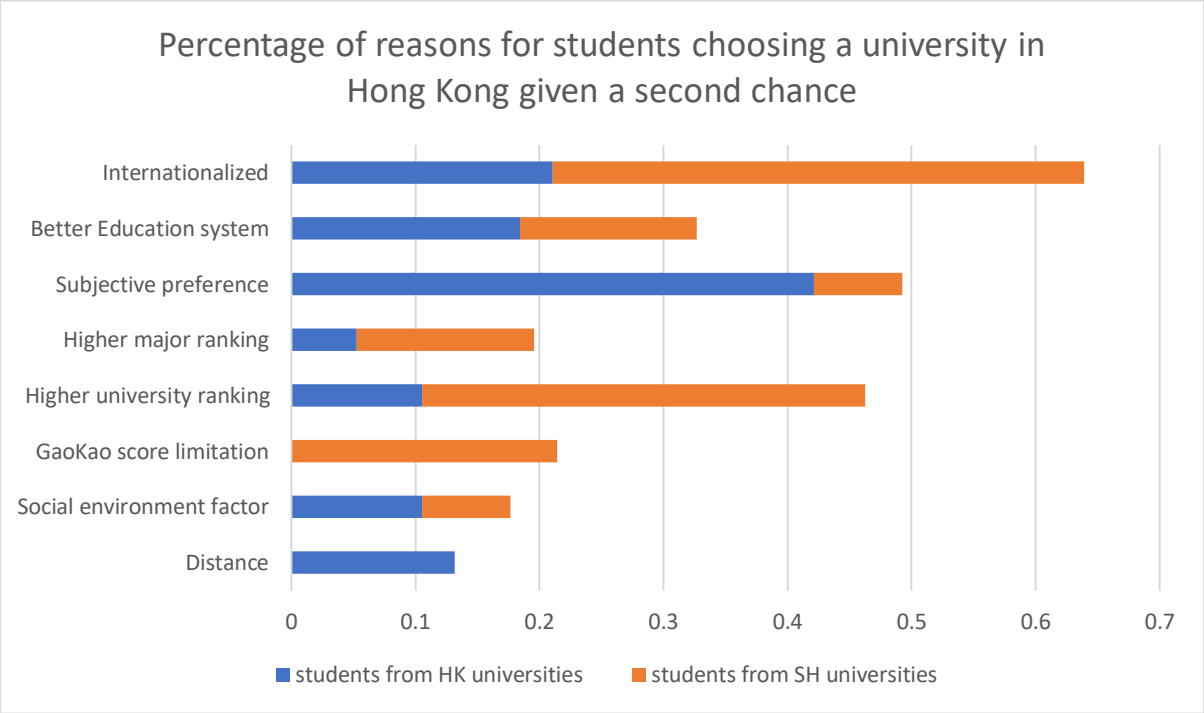


Figure 5



Subjective preference: preference for a university or city with no reason provided

Higher major ranking: higher ranking of a specific major of a university

Higher university ranking: higher ranking of general performance of a university

Gaokao score limitation: student's Gaokao score failed to meet the requirement of the chosen school in the past

Social environment factor: preference for a society, culture, political system, etc.

The results indicate that "Gaokao score limitation" and "Social environment factor" are two major factors students choosing Shanghai over Hong Kong. The reason behind social environment factor may be the considerable difference between the society of Hong Kong and mainland China in terms of culture and political system, and that mainland Chinese students are more familiar to mainland's lifestyle. Higher percentage in Gaokao score limitation may indicate that more of students from HK universities are dissatisfied with their high school academic record.

Moreover, among students choosing universities in Hong Kong, degree of internationalization is the major factor. It may be because of their plans of going aboard for further education and the fact that Hong Kong have an education system more similar to that

in the west.

5. Conclusion

In conclusion, throughout the three models, the effects of gender, family income, and a previous visit to HK are significant both statistically and in terms of odds ratio. Being a female, having a higher family income or visiting HK before Gaokao will increase the odds of both considering HK universities and studying in HK. Furthermore, the effect of income on considering to study in HK is smaller than that on actually going to HK.

Relative distance significantly affects student's choice between HK and Shanghai, and its effect is weaker for male students, whereas distance to HK has little effect on whether student once considered to study in HK or not.

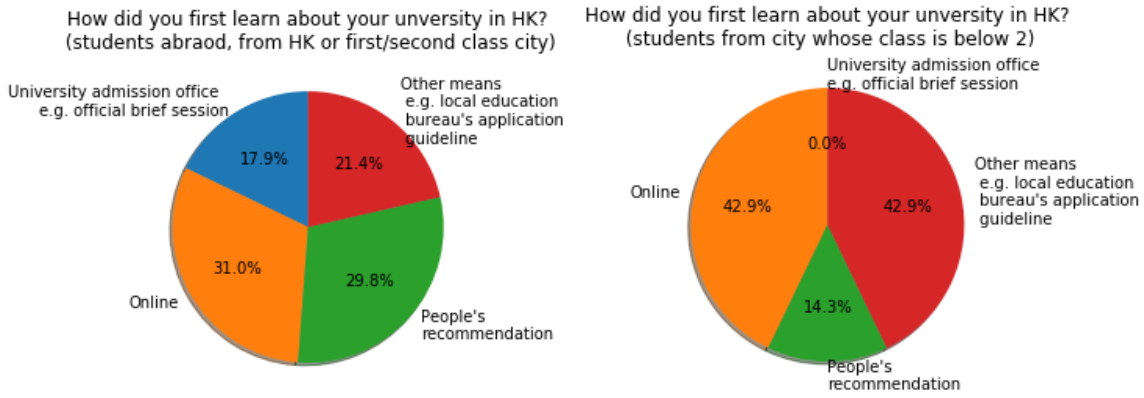
At 10% significant level, having a admission scholarship or less siblings increase the odds of going to HK, while the effect of a class of city below 2 and speaking Cantonese are statistically insignificant in all three models.

6. Discussion

The result reveals that higher household income and admission scholarship availability are associated with higher odds of enrolling in universities in HK, which illustrates the importance of scholarship for universities to recruit talented students from low-income families. The three HK universities in the study may consider adjusting their admission scholarship scheme from merit-based to need-based if they intend to encourage students from low-income families.

The regression shows that a previous visit to Hong Kong increases the odds of choosing a university in Hong Kong. It may suggest campus tour opportunities offered by university to high school students are effective in increasing student's chance of going to the university. Moreover, data from the study suggests the service of admission offices from HK universities is less accessible for students from city whose class is below 2, shown in Figure 6. If students getting information from official channels increases the chance of them enrolling in the university, universities in HK may consider increasing their accessibility for students in low-class cities, through online brief sessions for example. Further study could focus on investigating the effectiveness of university's different means of advertising, such as campus tours and official brief sessions.

Figure 6



References

Baohua Y. & Kun Z. (2016). 'It's more foreign than a foreign country': adaptation and experience of Mainland Chinese students in Hong Kong. *Tertiary Education and Management*, 22:4, 300-315, DOI: 10.1080/13583883.2016.1226944

Bodycott, P. (2009). Choosing a higher education study abroad destination: What mainland Chinese parents and students rate as important. *Journal of Research in International Education*, 8(3), 349-373.

Cheong Cheng, Y., Cheung, A., & Yeun, T. (2011). Development of a regional education hub: The case of Hong Kong. *International Journal of Educational Management*, 25(5), 474-493.

Hossler, D., Schmit, J. & Vesper, N. (1999). *Going to college: how social, economic, and educational factors influence the decisions students make.* Johns Hopkins University Press.

Mangan, J., Hughes, A., Davies, P., & Slack, K. (2010). Fair access, achievement and geography: Explaining the association between social class and students' choice of university. *Studies in Higher Education*, *35*(3), 335-350. doi:10.1080/03075070903131610

Mathew, Z. (2016). *Studying abroad: Understanding the factors influencing the study abroad decision, country, and university choice of international students from India.* (Publication No. 10106135) [Doctoral dissertation, Indiana State University]. ProQuest Dissertations and Theses Global.

Soutar, G. N., & Turner, J. P. (2002). Students' preferences for university: A conjoint analysis. *International journal of educational management,* 16(1), 40-45.

https://doi.org/10.1108/09513540210415523

University Grants Committee. (2017). General statistics on UGC-funded institutions. Retrieved April 13, 2020 from http://cdcf.ugc.edu.hk/cdcf/indepthAnalysis.do

Appendix A: Online Survey

The survey was targeted at mainland undergraduate students from three universities in Shanghai (Fudan University, Shanghai Jiao Tong University and Tongji University) and those from three universities in HK (Hong Kong University, Hong Kong University of Science and Technology and the Chinese University of Hong Kong). The sample sizes of different universities following the previous order are 36, 70, 30, 34, 22, 43.

Questionnaire for HK students (using CUHK as a template):

1.Were you admitted into CUHK through the Gaokao system?

A, Yes

B, No

2.Gender:

A, Male

B, Female

3.You are a:

A, Freshman

B, Sophomore

C, Junior

D, Senior

4.You are now:

A, Single

B, Not Single

5. Your major is:

A, Medicine

B, Law

C, Liberal Arts

D, Social Science

E, Business

F, Science
G, Engineering
H, Else

6. Most ideal city to work in after graduation:
A, Hong Kong
B, Shanghai
C, Shenzhen
D, Beijing
E, Abroad
F, Elsewhere
H, Don’t know yet

7. The city where your high school is located:
(fill in the blank)

8. Do you understand Cantonese before college?
A, Yes
B, No

9. Percentile of your GaoKao score in your province:
A, Top 0.5%
B, Top 1%
C, Top 5%
D, Top 10%

10. Have you ever been to Shanghai and HK before college?
A, Both
B, Only Shanghai
C, Only HK
D, Neither

11. Had you considered applying for Shanghai’s universities?
A, Yes, I had always wanted to go to university in Shanghai
B, Yes, I had
C, No

12.When did you hear of CUHK:

A, Before GaoKao

B, Before GaoKao, and always wanted to study in Hong Kong

C, After GaoKao

D, After GaoKao, and always wanted to study in Hong Kong

13. How did you hear of CUHK:

A, CUHK brief session

B, Internet

C, Friends & Seniors

D, Parents & Relatives

E, Teachers

F, Local education bureau's application guideline

H, Else

14. Parents' annual income (unit: 10K RMB):

(Fill in the blank)

15. Monthly living expenses in college (unit: 1K RMB):

(Fill in the blank)

16. How many siblings do you have?

A, 0

B, 1

C, 2

D, 3

E, Above 3

17. Were you qualified for CUHK's Admission Scholarship?

A, Yes, full scholarship

B, Yes, half scholarship

C, No

18. If you were free to choose between CUHK and one of the universities in Shanghai when you applied for college years ago, which one would you choose?

A, CUHK

B, One of Shanghai's universities +which one?

18.1 For answer b: Why do you stick to your choice?
(Fill in the blank)

18.2 For answer a: Why do you change your choice?
(Fill in the blank)

Questionnaire for SH students (using Fudan U as a template):

1. Gender:
A, Male
B, Female

2. You are a:
A, Freshman
B, Sophomore
C, Junior
D, Senior

3.You are now:
A, Single
B, Not Single

4. Your major is:
A, Medicine
B, Law
C, Liberal Arts
D, Social Science
E, Business
F, Science
G, Engineering
H, Else

5. Most ideal city to work in after graduation:
A, Hong Kong
B, Shanghai
C, Shenzhen
D, Beijing
E, Abroad
F, Elsewhere

H, Don’t know yet

6. The city where your high school is located:
(Fill in the blank)

7. Do you understand Cantonese before college?
A, Yes
B, No

8. Percentile of your GaoKao score in your province:
A, Top 0.5%
B, Top 1%
C, Top 5%
D, Top 10%

9. Have you ever been to Shanghai and HK before college?
A, Both
B, Only Shanghai
C, Only HK
D, Neither

10. Had you considered applying for HK’s universities before Gaokao?
A, Yes, I had always wanted to go to university in HK
B, Yes, I had
C, No

11.Were you familiar with CUHK’s admission policy and its criterion for admission scholarship?
A, Yes, both
B, Only the admission policy
C, Only the criterion for admission scholarship
D, No

12. Have you heard of Fudan before GaoKao exam?
A, Yes, and always wanted to go to Fudan
B, Yes
C, No

13. How did you hear of Fudan University:

A, CUHK brief session

B, Internet

C, Friends & Seniors

D, Parents & Relatives

E, Teachers

F, Local education bureau's application guideline

H, Else

14. Parents' annual income (unit: 10K):

(Fill in the blank)

15. Monthly living expenses in college (unit: 1K):

(Fill in the blank)

16. How many siblings do you have?

A, 0

B, 1

C, 2

D, 3

E, Above 3

17. Do you have Fudan U's admission scholarship?

A, Yes

B, No

18. If you were free to choose between one of the three universities in Hong Kong and Fudan University when you applied for college years ago, which one would you choose?

A, One of HK's universities +which one

B, Fudan University

18.1 For answer b: Why do you stick to your choice?

(Fill in the blank)

18.2 For answer a: Why do you change your choice?

(Fill in the blank)

19. If you were given one of HK universities' full scholarship and free to choose between one

of the three universities in Hong Kong and Fudan University when you applied for college years ago, which one would you choose?

A, One of HK's universities +which one?

B, Fudan University

19.1 For answer b: Why do you stick to your choice?

(Fill in the blank)

19.2 For answer a: Why do you change your choice?

(Fill in the blank)