

# **The Preference of Wine Education Market between Hong Kong and Shanghai-Beijing**

Written by: Group 7

Lina Gao, Yu-Fen Huang, Wei Tang, Rhea Vettithanam, Mingzhe Yu

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## **Summary**

We recommend opening a wine school in Hong Kong instead of Shanghai-Beijing. The data analysis found that the implementers and the decision makers in Hong Kong are more willing to pay for wine education than Shanghai-Beijing. Almost 1/3 of them prefer attending wine class. The data also showed that the respondents in Hong Kong have better wine knowledge than those in Shanghai-Beijing. Therefore, Hong Kong is a better place to open a wine school at present.

## **I. Introduction**

This study investigates the potential wine education markets by identifying the similarities and differences between Hong Kong (HK) and Shanghai-Beijing (SB). The market survey was conducted by Synovate in June 2005. Both decision makers (“DMs” *i.e.*, owners or managers) and implementers (“IMs” *i.e.*, staff such as waiters and waitresses) were taken the survey. Considering the similarity of the response between DM and IM in HK or SB, we combined them to perform the statistical analysis. The key results are summarized in Table 2 and figure 1-5 in Appendix.

## **II. Methods**

To compare the difference between HK and SB, several statistical tests were performed.  $\alpha=0.05$  was used to determine the significance unless noted differently. To run a Chi-Square test, we have to make several assumptions about the data given. One, the two populations have a homogeneous variance; two, the populations are normally distributed; and three, data is independently sampled. But some assumption may not be meet under certain circumstance for some data set. Therefore, a more proper test was applied for certain data set, which includes Fisher’s Exact Test, Wilcoxon test and Cochran-Mantel-Haenszel test.

### ***I. Chi-Square Test***

Chi-Square Test is used to examine the association between categorical variables if the expected values in any category are large than 5. The typical question that can be addressed is whether there is association or dependence between two categorical variables, or whether two or more proportions different from each other.

### ***II. Fisher’s Exact Test***

Similar to the Chi-Square Test, Fisher’s Exact Test is also a test used for the analysis of contingency tables. Usually, it is applied when the sample sizes are small.

### ***III. Wilcoxon Test***

Unlike Fisher’s Exact Test and Chi-Square test, the Wilcoxon test is a nonparametric statistical test. It is based solely on the order in which the observations for the different categories fall. It doesn’t need any population distribution assumption. Because it does not deal with parameters, it belongs to nonparametric analysis. However, compared with the parametric test, the Wilcoxon test is less powerful.

### ***IV. Cochran-Mantel-Haenszel test***

Cochran-Mantel-Haenszel test is used for the analysis of stratified categorical data. The most common case is to test multiple 2 by 2 tables of independence. Especially when we need to combine repeated study performed at different time, we need to evaluate their

difference and determine whether they are similar enough to be pooled together. Then Cochran-Mantel-Haenszel test should be considered as one possible choice.

Because most of the data are simple 2 by 2 table in this study, Chi-Square Test, Fisher's Exact Test, and Wilcoxon test were the primary tools.

### **III. Hypotheses, Data, and Results**

The following hypotheses were tested using the appropriate statistical analysis with the corresponding data set in the survey

**Hypothesis No.1:** Is there a difference between HK and SB total scores? (table 37)

$H_0$  : *total scores are independent of region*

$H_1$  : *total scores are not independent of region*

To identify if the wine scores are independent of regions, we ran a Cochran-Mantel-Haensel test. The SAS output indicates CMH=13.4490, and P-value equals 0.0002; this means the total score and area is related even if there is no the third categorical controlling variable. If we analyze deeper with the Wilcoxon two-sample test, the P-value of the exact test to two-sided test is less than 0.0001, so it means the median total scores of SB and HK are significantly different. The P-value of one-sided also less than 0.0001, so HK area (group 2) has significant higher score than SB area.

Result: There is a difference between HK and SB total scores. (HK>SB). Compared to SK, HK on average has a higher score (mean = 64.87) than SB (mean = 41.79).

**Hypothesis No.2:** Is there a difference in the confidence of wine knowledge between HK and SB? (table 15)

$H_0$  : *confidence in wine knowledge is independent of region*

$H_1$  : *confidence in wine knowledge is not independent of region*

Fisher's Exact test was applied to test the hypothesis because some of the counts were less than 5 in the table. Based on the p-value (p=0.1845), we can not reject the null hypothesis - there is no significant difference in the confidence of wine knowledge between SB and HK. This is interesting because while HK had significantly higher scores, they were only as confident as SB in their knowledge of wine; one can also conclude that the people of SB have inflated confidence in their wine knowledge.

Result: There are no significant difference in the confidence of wine knowledge.

**Hypothesis No.3:** Is staff competence statistically different between HK and SB? (table 25)

$H_0$  : *Staff competence is independent of region*

$H_1$  : *Staff competence is not independent of region*

Fisher's Exact test was applied to test the hypothesis because some of the counts are less than 5 in the table. Since the p-value=0.0939 and it is greater than alpha ( $\alpha=0.05$ ), we cannot reject the null hypothesis that staff competence is independent of region. This is an interesting result as it was proven in Hypothesis No.1 that the people of SB scored lower than the people of HK. Even though HK had a higher score, staff competence is perceived to be the no different from SB. In HK, we can take advantage of the disparity in perceived competence to actual score through effective marketing to create a successful wine course.

Result: There are no significant differences in staff confidence between HK and SB.

**Hypothesis No.4:** Is there an association in willingness to pay to learn more by region? (table 20)

$H_0$  : *there is no association between willingness to pay and region*

$H_1$  : *there is an association between willingness to pay and region*

The appropriate test to answer this question was a chi-square test of independence. P-value is 0.0004; as it is less than the significant level, we reject the null hypothesis. There is an association between willingness to pay and region. Decision makers and implementers are more willing to pay for wine courses in HK than in SB. Almost 63% of people took the survey in HK are willing to pay to learn, whereas only 35% of people in SB showed their willingness to pay. Practically speaking, willingness to pay is one of the most important factors in choosing an area to offer a course. If people are not willing to pay for the course, the course will fail without adequate demand.

Result: There is an association between willingness to pay and region (HK>SB)

**Hypothesis No.5:** Is there any difference in how much people are willing to pay between HK and SB? (table 21)

$H_0$  : *the median difference in how much one is willing to pay by region is zero*

$H_1$  : *the median difference in how much one is willing to pay by region is not zero*

We ran Cochran-Mantel-Haensel Test which indicated CMH=10.1286, and P-value of 0.0015; this means the association of willing to pay per year and area is strong even if there is no third categorical controlling variable. We also ran a Fisher test; the p-value of the exact test is 0.0005 to two-sided test, which is less than 0.05, so it means the cost of SB and HK are significantly different. Also, we also can refer to the p-value of one-sided test is 0.0002 which is less than significance level 0.05, so HK area has significantly higher cost than SB area.

Result: The association of willing to pay per year and area is strong. And the cost of SB and HK are significantly different, lastly, HK area has significantly higher cost than SB area.

**Hypothesis No.6:** Is there any difference in how better wine knowledge will translate in the workplace between HK and SB? (table 16)

$H_0$  : *The types of achievements is independent of region*

*H<sub>1</sub> : The types of achievements is not independent of region*

Because some of the values in the table are below 5, we use Fisher's exact test to test the significance of the relationship. The two-sided p-value is .0036, so the null hypothesis is rejected; the proportion of achievements associated with better wine knowledge is dependent on region. While the people of HK believe higher wine knowledge translates to better customer service, the people of SB recognize the profits that can be made for the company by having more knowledge of wine. A higher proportion of people in SB believe that more knowledge can provide job security or even promotions. Logistically, the fact that there is a difference in how people are benefited from a wine course by region means that the marketing of the wine course should be different. The best way to market a wine course in HK is to emphasize improvements in customer interactions.

Result: There is a difference in how better wine knowledge will translate in the workplace between HK and SB. (HK>SB)

**Hypothesis No.7:** Is there a difference in preferred format to learn wine knowledge between SB and HK (table 19)

*H<sub>0</sub> : There is no significant difference in preferred format to learn between SB and HK*

*H<sub>1</sub> : There is a significant difference in preferred format to learn between SB and HK*

Because most of the data with the value larger than 5, Chi-Square test was used to test the hypothesis. A very small p-value was obtained, 0.004, which indicates that there is a statistically significant difference in preferred wine class format between SB and HK. The three preferred primary learning formats in HK are 31% class, 24% leisure or reading, and 35% wine tasting. For SB, the dominant learning format is 40% leisure or reading and 30% wine tasting. Only 12.5% of people prefer wine class in SB. It further indicates that HK is a better place to hold the wine class than SB. Another interesting thing is almost an equal number of people prefer online class to traditional wine class in SB. However, online class is not that popular in HK. But the sum of people interested in the online classes and traditional classes in SB is almost the same as the number of people preferring traditional classes in HK.

Result: There is a significant difference of preferred format to learn between SB and HK (HK prefers wine tasting and class; SB prefers leisure or reading and wine tasting)

**Hypothesis No.8:** Is there any difference of people's interest to learn more wine knowledge between SB and HK (table 17)

*H<sub>0</sub> : There is no significant difference in people's interest to learn more between SB and HK*

*H<sub>1</sub> : There is a significant difference in people's interest to learn more between SB and HK*

Because some of the values in the table are below 5, we use Fisher exact Test which indicates p-value equals 0.1134. Since the p-value is greater than the significance level, we fail to reject the null hypothesis; there is no significant difference between SB and HK in terms of people's interest to learn more about wine.

Result: There are no significant differences in people's interest to learn more between HK and SB.

We also found those hypotheses have no difference in SB vs HK:

1. Source of knowledge of wine (table 8);
2. Satisfaction with formal wine course in China (table 9);
3. People's interest to learn more wine knowledge (table 17);
2. Areas of wine like to learn more (table 18);
4. Level of interest in obtaining recognized qualification on wine (table 22);

#### IV. Conclusion

Based on the survey data, we made the following conclusions:

- (1) HK is a better place to have a wine school than SB at present because HK is more willing to pay for wine education and they are willing to pay more than SB.
- (2) Traditional wine class will be a good format for the wine school in HK since it is still regarded as one of the primary preferred formats by people in HK. But wine tasting events are also popular.
- (3) People in HK think wine knowledge will bring better customer service in the wine industry than people in SB. Therefore, we should market the wine course as a class that improves customer interaction.
- (4) It seems like that SB is not willing to pay for traditional classes. Because there is a gap in SB's knowledge and perceived competence, there is potential in the wine education market in SB in the near future, especially if the courses are online.

#### V. Appendix I

Table 1. Statistic tests for survey data

	Hypothesis	Chi-square	wilcoxon	Fisher	CMH test
Table 37	H1		P<0.0001		P = 0.0002
Table 15	H2			P=0.1845	
Table 25	H3			P=0.0939	
Table 20	H4	P=0.0004			
Table 21	H5		P=0.0005		P=0.0015
Table 16	H6			P=0.0036	

Table 19	H7	P=0.004			
Table 17	H8			P=0.1134	
Table 8		P=0.44			
Table 9		P=0.45	P=0.64		
Table 18		P=0.5152			
Table 22		P=0.47			
Table 26		P=0.6995	P=1.000		

## Appendix II

Fig 1. H1 (Table 37): Total score for SB (Group 1) and HK (Group 2)

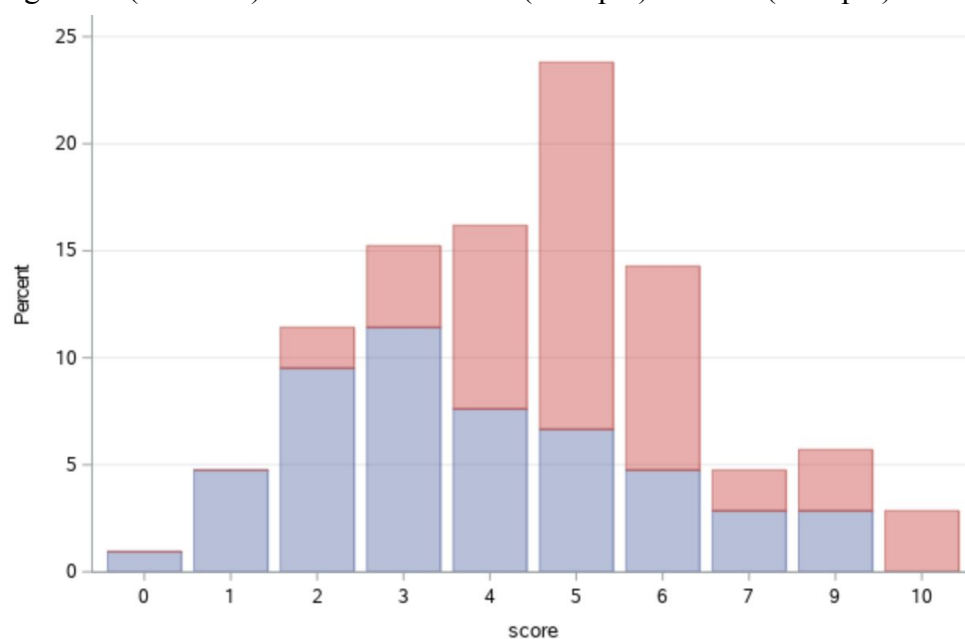


Fig 2. H4 (Table 20) : Willingness to pay to learn more between SB (Group 1) and HK (Group 2)

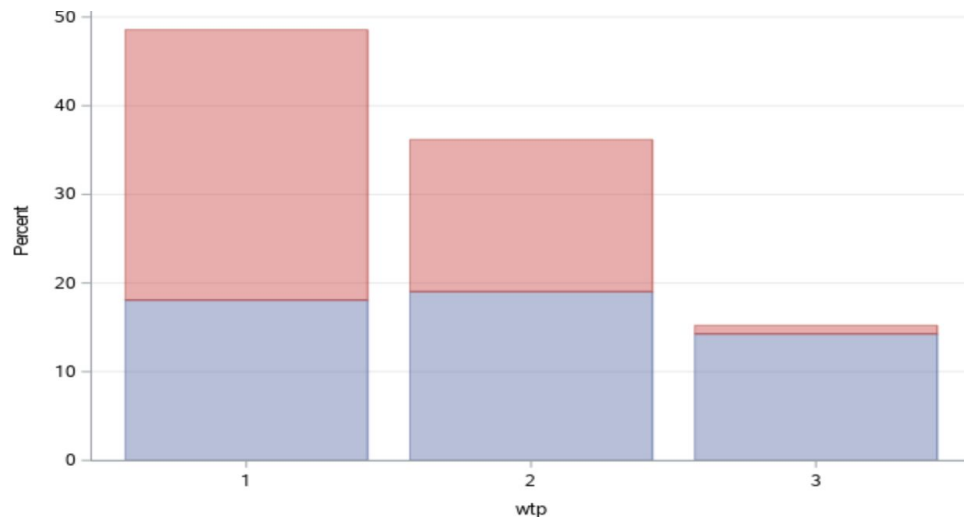


Fig 3. H5 (Table 21): willing to pay between SB (Group 1)and HK (Group 2)

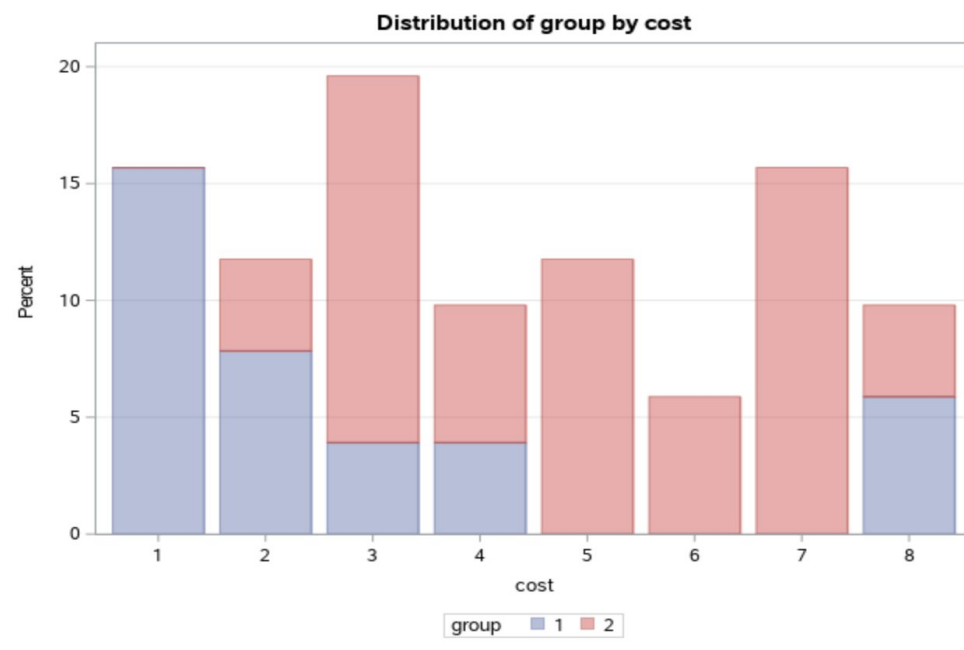


Fig 4. H6 (Table 16): Wine knowledge between HK(Group 2) and SB(Group 1)



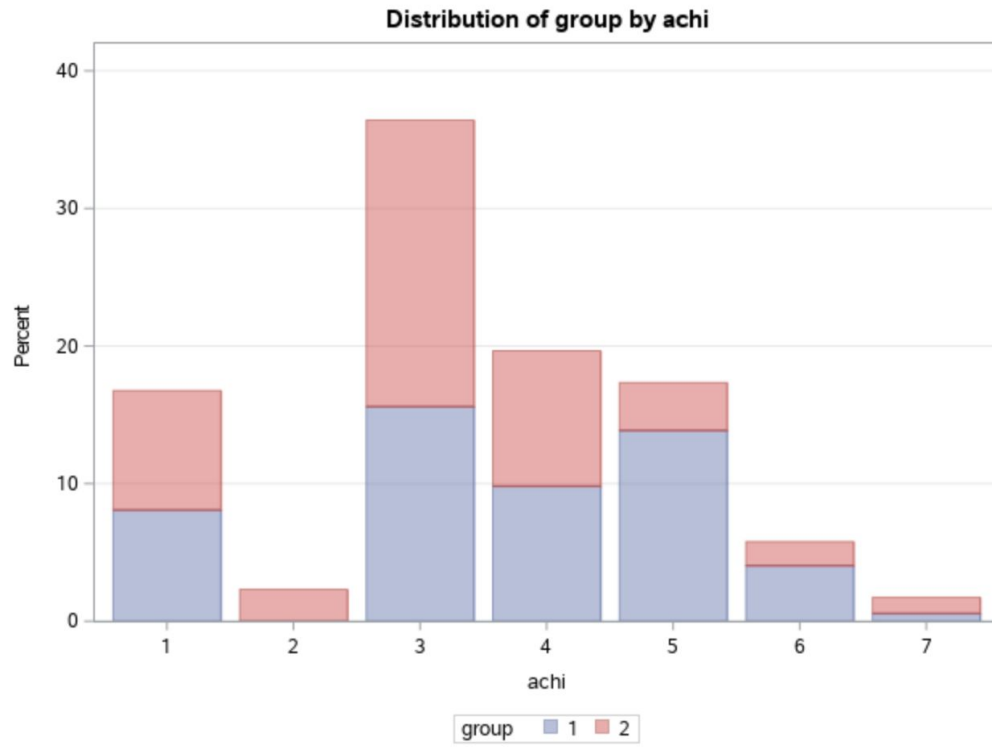


Fig 5. H7 (Table 19): Preferred format to learn wine knowledge between SB(Group 1) and HK(Group 2)

