Travel Survey: Case study and Conduct in UIC

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Abstract
This paper intends to investigate the relationship between gender and various features of travel among UIC students, as well as the circumstances surrounding travel both before and after the COVID-19 epidemic (2020). For the purpose of conducting the online survey, we created an electronic questionnaire using the Wenjuanxing platform and sent it to UIC students in a predetermined sample frame with a total of 241 valid questionnaires were collected after a week of collection. We get the following results by statistical analysis techniques like the chi-square independence test: In UIC, males are more likely to travel independently with short travel time and lower costs, but females are more likely to plan their own trips with long travel time and high costs. Additionally, there have been significant changes in UIC students' travel patterns both before and after the outbreak. Less than 40% of students have traveled less frequently than once per year since the outbreak, compared to the vast majority who went at least once annually before the epidemic. And even if the outbreak is no longer being prevented or controlled, the majority of students still don't want to travel.

Keywords: COVID-19 Epidemic, UIC, Travel Survey, Gender, Statistical Analysis

1 Introduction

The tight epidemic prevention and control that lasted for nearly three years came to an end in December 2022 when the nation and provinces annulled the itinerary code and health code. The COVID-19 outbreak has had a significant influence on the nation and its citizens since January 26, 2020: the government has spent a significant amount of money on epidemic prevention and control, and people are unable to work or travel normally. It may be said that a lot of people have forgotten what life was like before the outbreak. We think that the two factors that are most impacted are work and travel, so we're using travel surveys to learn more about the travel-related information of UIC students.

In order to gather basic data on UIC students (such as gender, department, and grade), basic travel preferences (such as travel mode, average cost, and travel style), and travel data before and after the epidemic, we studied the 2002 German National Travel Survey (GNTS), which taught us how to complete a travel survey. We then designed our own travel survey based on our actual resources and available channels.

2 Survey Design

We must establish the fundamental facts, including the population, population frame, and sampling unit, prior to constructing the questionnaire. We define the population as all students at UIC and the sample unit as a single student because our goal is to understand the fundamental travel scenario of UIC students. At the same time, we submitted an application to AR to collect the most trustworthy population frame—a list of all students at UIC. We choose Cluster Sampling as our sampling approach since we lack the channels and resources to allow every UIC student to take part in the survey. We can opt to create an

electronic questionnaire and publish it to the WeChat group for collecting because each floor of each unit building in UIC has a dedicated administrator and WeChat group, which means that our survey method is a web-based survey. Additionally, we chose 360 male and female students from the 720 students on the second, third, and fourth floors of the two dormitory buildings V26 and V27 to make up our sample frame. The table below shows the fundamental survey settings that have so far been established.

Table 1: Basic info of Survey

Parameters	Values
Population	All students in UIC
Population Frame	Name list from AR
Sample Unit	A single student in UIC
Sample Frame	All students on the 2nd, 3rd and 4th floors of the V26 and V27
Sampling Method	Cluster Sampling
Survey Method	Web-based Survey

We develop the questionnaire based on the basic data we have learned about the population and sample of this trip survey. We selected the most practical and effective web-based electronic questionnaire after taking into account the time and financial costs. The preliminary questionnaire on the Wenjuanxing platform has been designed and is composed of the four sections listed below.

1. The respondent's basic information, including gender, grade, department, etc.

2. Preferences of respondents for many aspects of travel, including travel style, expense, and manner.

3. The respondents' travel habits both before and after the COVID-19 epidemic (2020-01-26), including their frequency of travel and their motivations for doing so.

4. Travel readiness of respondents following the end of the COVID-19 shutdown.

We have 30 items in our preliminary survey, 20 of which are multiple-choice and the other 12 are open-ended. We sent this survey to six target WeChat groups, but sadly, we only received 8 valid questionnaires within the allotted two days, which means that the answers are all in line with the meaning of the question and there is no random filling. As a result, we stopped the questioning right away and reflected on it. In order to get feedback on our questionnaire, we randomly chose 8 of the remaining invalid respondents, leaving us with the remaining 8 valid respondents. In order to get feedback on our questionnaire, we got 8 legitimate respondents and then randomly chose 8 of the remaining invalid respondents. They typically think that some questions are repetitive and there are too many open questions, so they are unwilling to take too much time to properly consider and fill in. We modified the questionnaire in the following ways in response to their comments:

1. Depending on the question's purpose, edit or eliminate duplicate-content questions. For instance, inquiring about the frequency of travel before and after the epidemic are two questions that should be maintained since, despite being quite similar, it serves two distinct functions.

2. Remove or change all open questions. The questionnaire only left three open-ended questions, which related to the respondent's hometown, favorite travel destination prior to the epidemic, and desired destination following the lifting of the epidemic prevention and control.

After making changes to the questionnaire, we resent it to six targeted WeChat groups and included lucky red envelopes to pique students' willingness to participate. We received 241 valid questionnaires after a week of collection, and the response rate was 0.33.

3 Data Analysis

3.1 Basic Respondent Information

Among the 241 interviewees, there are 143 males and 98 females; 33, 72, 85, and 51 for the first grade, second grade, third grade, and fourth grade; from FST, FBM, FHS, and SCC The numbers of the four departments are 139, 54, 18, and 30 respectively.

3.2 The effect of gender on each travel feature

We must process the data before we can examine how gender affects various features of travel. The admissions brochure for UIC states that the ratio of males to females is about 3:7. Therefore, we must change the sample's male to female ratio to match the population's ratio. We need randomly sample the sample once again to obtain a subsample of size 100, of which 30 are males and 70 are females, as there are 143 males and 98 females in the original sample. Next, we evaluate the effect of gender on the travel features in UIC using this sub-sample rather than the sample.

3.2.1 Gender & Like degree of travel

Visualize the statistics of 100 students' like degrees of travel first. There are 20 people who dislike traveling and 51 people who enjoy it, as can be seen in the graph below. Additionally, 29 respondents stated that their trip experience was typical, meaning that it made no difference whether they went or not.

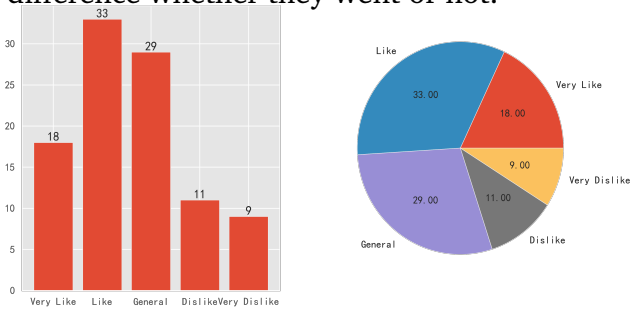

Figure 1: Travel like distribution in the questionnaire

Next, we make the two variables of gender and like degree of travel into a contingency table to visually observe the relationship between the two variables.

Table 2: Contigency table of gender and like degree of travel

	Vary like	Like	General	Dislike	Vary Dislike	Total
Male	18(5.4)	8(9.9)	3(8.7)	1(3.3)	0(2.7)	30
Female	0(12.6)	25(23.1)	26(20.3)	10(7.7)	9(6.3)	70
Total	18	33	29	11	9	100

The expected values for each category have been calculated and are shown in the table above in parenthesis. With a chi-square score of 54.0031 and a P value of 5.2548×10^{-11} with the degree of freedom of $(4-1) \times (2-1) = 4$, the null hypothesis of chi-square independence test, which means gender is not related to like degree of travel, can be rejected. Therefore, we can draw the conclusion that like degree of travel is associated to gender among UIC students.

3.2.2 Gender & Travel Style

We then investigate the connection between gender and travel style. A contingency table with two variables—gender and travel style—is shown in the table below. The table shows that males are more likely to travel alone compared to traveling with family and friends. Furthermore, if they are traveling alone, they will favor joining a tour group. The majority of females, whether they plan their own vacation or join a tour group, are reluctant to travel alone. However, they are more likely to plan their own vacations when they are traveling with family and friends.

Table 3: Contigency table of gender and travel style

	Alone + Design the travel	Alone + Join the tour group	With family or friends + Design the travel	With family or friends + Join the tour group	Total
Male	4	19	7	0	30
Female	0	5	40	25	70
Total	4	24	47	25	100

3.2.3 Gender & Travel Time

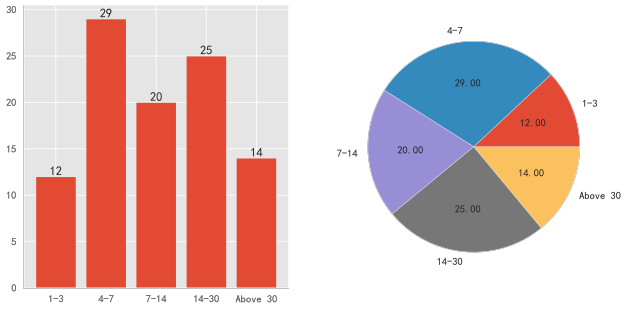

Figure 2: Travel time distribution in the questionnaire

The option of travel time in 100 samples is depicted in the above figure. It is clear that the majority of respondents believe that the ideal travel time should be between 4 and 7 days, and that the most popular range is between 4 and 30 days, indicating that trips that are either too short ($\leq$ 3 days) or too long ($\geq$ 30 days) are not very well-liked.

The following table is the contingency table of the two variables gender and travel time, and the values in brackets are expected values. With a chi-square score of 67.4876 and a P value of 7.6933×10^{-14} with the degree of freedom of $(4-1) \times (2-1) = 4$, the null hypothesis of chi-square independence test, which means gender is not related to travel time, can be rejected. Therefore, we can draw the conclusion that travel time is associated to gender among UIC students. In addition, the data shows that males are more likely to favor short-term travel whereas females favor long-term travel.

Table 4: Contigency table of gender and travel time

	1-3 days	4-7 days	7-14 days	14-30 days	Above 30 days	Total
Male	12(3.6)	18(8.7)	0(6)	0(7.5)	0(4.2)	30
Female	0(8.4)	11(20.3)	20(14)	25(17.5)	14(9.8)	70
Total	12	29	20	25	14	100

3.2.4 Gender & Travel Cost

The following table lists the trip cost options for the 100 samples' various genders. The unit of travel cost in the questionnaire is yuan per person per day (including all expenses like food, accommodation, transportation, scenic spot tickets, etc.), which can eliminate the effect of travel days on the total cost and better estimate the level of travel cost. The table shows that males spend less on travel than females do, on a relative basis. The majority of males travel for less than 500 yuan per person per day, while the majority of females spend more than 500 yuan per day on travel.

Table 5: Contigency table of gender and travel cost

	Below 200	200-500	500-1000	Above 1000	Total
Male	4	21	5	0	30
Female	0	14	43	13	70
Total	4	35	48	13	100

3.3 Travel situation before and after the epidemic

We then choose 241 respondents as a sample once more to investigate the estimation of UIC students' travel status before and after the outbreak after examining the relationship between gender and travel attributes. According to the survey findings, more than 90% of the samples stated that before the COVID-19 epidemic began in 2020, there was an average of more than one trip per year, with entertainment and social interaction serving as the primary motivations. Additionally, the majority of the respondents selected the southwest of China as their preferred travel location prior to the pandemic.

Figure 3: Favorite vacation spots of respondents before the COVID-19 outbreak

88 out of the 241 respondents had traveled since the COVID-19 outbreak in 2020, and 86% of them do it less frequently than once a

year. The main reason the remaining 153 respondents did not travel was because of the epidemiological Blockade and them associated security concerns.

3.4 Willingness to travel after the epidemic is lifted

The COVID-19 regulation has been lifted as of December 2022, therefore daily living and travel will no longer be impacted. However, our survey's findings revealed that 65% of respondents claimed they currently have no plans to travel. We can infer that most UIC students don't have travel plans in the near future because they are concerned about contracting an infection from coming into contact with the epidemic control.

4 Conclusion

Infection with COVID-19 began on January 26, 2020. People's daily lives and jobs have been significantly impacted by this extremely serious viral disease. The toxicity of the new crown virus has significantly diminished over time. The government made the decision to work on epidemic prevention and control in December 2022 in order to get people's lives back to how they were before the outbreak.

This paper attempts to investigate UIC students' preferences for travel aspects and how gender affects those preferences. I also learnt about the UIC students' travel circumstances both before and during the pandemic, as well as their readiness to travel once the epidemic preventative and control measures are lifted.

Our poll found that UIC males are more likely to travel alone, with short travel distances and lower costs, whereas females are more likely to travel with friends and family, with longer distances and higher costs. Additionally, there have been significant changes in UIC students' travel patterns both before and after the outbreak. Less than 40% of students have traveled less frequently than once per year since the outbreak, compared to the vast majority who went at least once annually before the epidemic. In the end, the majority of students still have no intention of traveling even when the epidemic prevention and control has been abolished.

The outbreak is not entirely over just because COVID-19 is no longer under control. Naturally, the status of people's lives will be entirely returned to before the outbreak with the implementation of universal immunization.

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Appendix A Survey Design

Parameters	Values
Population	All students in UIC
Population Frame	Name list from AR
Sample Unit	A single student in UIC
Sample Frame	All students on the 2nd, 3rd and 4th floors of the V26 and V27
Sampling Method	Cluster Sampling
Survey Method	Web-based Survey

Appendix B Survey Questionnaire

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**************************Basic Info of You****************************

Question  1: What is your gender?
             1. Male
             2. Female

Question  2: What is your grade?
             1. Year 1
             2. Year 2
             3. Year 3
             4. Year 4

Question  3: Which faculty do you belong to?
             1. FST
             2. FBM
             3. FHS
             4. SCC

Question  4: Where is your hometown? (Format: xx province xx city)

************Your preferences for various features of travel************

Question  5: What is your like degree of travel?
             1. Vary Like
             2. Like
             3. General
             4. Dislike
             5. Vary Dislike

Question  6: How did you obtain travel-related information in
             preparation for your trip?
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1. Social Media. Such as Little Red Book, Weibo, etc.
2. Traditional media. such as newspapers, television, etc.
3. Recommended and Shared by Friends and Family

Question 7: What is your favorite style of travel?
1. Alone + Design the travel
2. Alone + Join the tour group
3. With family or friends + Design the travel
4. With family or friends + Join the tour group

Question 8: What do you think is the most suitable travel time?
1. 1-3 days
2. 4-7 days
3. 8-14 days
4. 15-30 days
5. Above 30 days

Question 9: What is the average cost per person per day for your past trips? (Including food, transportation, accommodation and all other expenses)
1. Below 200
2. 200-500
3. 500-1000
4. Above 1000

**********Travel information before the pandemic**********

Question 10: What was your average annual travel frequency before the epidemic?
1. Less than once
2. Once to three times
3. More than three times

Question 11: Where was your favorite place to travel before the pandemic?

Question 12: What was the reason for your last trip before the pandemic?
1. Shopping
2. Play
3. Study Exchange
4. Internship/Social Practice

**********Travel information after the pandemic**********

Question 13: Have you ever traveled after the epidemic?
1. Yes (Skip to Quetsion 14)
2. No (Skip to Quetsion 15)

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Question 14: What was your average annual travel frequency after the
             epidemic?
             1. Less than once
             2. Once to three times
             3. More than three times

Question 15: What is the reason for not traveling after the epidemic?
             1. No time
             2. No money
             3. Worried about the lockdown
             4. Lose interest in travel

**********Willingness to travel after the lockdown is lifted**********

Question 16: Now that the epidemic control has been lifted nationwide,
             will you travel in a short time?
             1. Yes (Skip to Question 17)
             2. No

Question 17: Where would you like to go on your next travel?
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