



*Middle East Technical University*

*Department of Statistics*

**STAT 365**  
**SURVEY SAMPLING TECHNIQUES**  
**TERM PROJECT**

The Factors that Affect the Hitchhiking  
Culture on METU Campus

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## **ABSTRACT**

This report delves into the intricate dynamics surrounding the decline of hitchhiking culture, exploring its multifaceted facets from the perspectives of both hitchhikers and drivers. With an emphasis on security concerns, personal preferences, and behavioral aspects, the study navigates through the intricacies that contribute to this cultural shift. The significance of this report lies in its comprehensive analysis, shedding light on the varied factors influencing the decline of hitchhiking and providing valuable insights for policymakers, transportation enthusiasts, and the public. The report addresses the pressing issues faced by hitchhikers and drivers, offering a nuanced understanding of the challenges that have led to a perceptible shift in this mode of transportation. The findings emphasize the need for a safer and more inclusive hitchhiking environment. Through rigorous statistical analysis which was made by using ANOVA, Hypothesis testing, Kruskal-wallis, and t-test, the report contributes to a comprehensive understanding of the challenges and motivations influencing hitchhiking.

### **1. Introduction**

Xi Shen (2012) emphasizes that a university is an existing form of culture, which results in the necessary attention paid to the campus culture, and campus culture is the combination of various cultures on campus created jointly by all university person and accumulated in the long-term practice of school-running. The campus culture in a university is characterized by individuality, academic features, opening, leading, variety, and creativity (Shen, 2012).

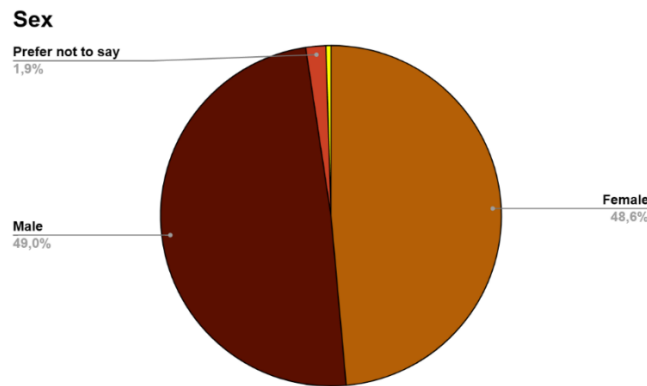
For instance, Middle East Technical University has lots of different cultures from the Pride March to the hitchhiking culture, from spring festivals to the snowball fight culture among dormitories. It is undoubted that a university's identity cannot be restricted into a logo or strapline. That is why, the preservation of these diverse cultures should become paramount for fostering a rich and vibrant environment for students.

This report delves into the dynamics impacting the hitchhiking culture among METU students, examining factors ranging from weather conditions, personal appearance, and security concerns to traffic situations and beyond. Moreover, this research offers insights into the reasons behind the gradual decline of hitchhiking culture within the METU campus over the years. By doing so, the investigation seeks to contribute to the understanding of the evolving dynamics of campus culture and the preservation of cultural diversity within the university community.

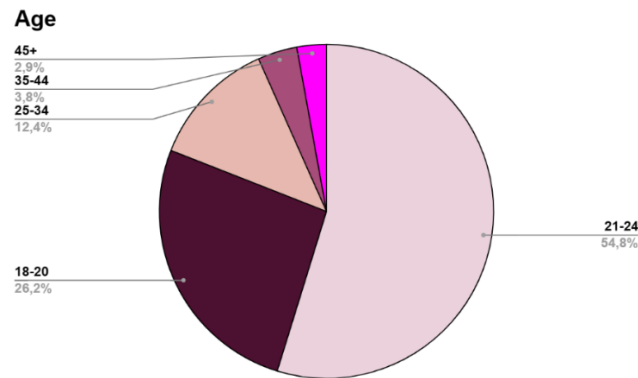
**Keywords:** Hitchhiking Culture, Middle East Technical University, Cultural Preservation.

### 1.1. Data description

The data set was collected by the project owners, comprises 210 observations and encompasses 12 general questions, along with 5 questions tailored for hitchhiker and an additional 4 for drivers. In fact, out of 308 Metu students reached by post-stratification sampling method, 210 filled the questionnaire and out of 210 respondents, 103 (49%) were males and 102 (48.6%) were female while 5 (2.4%) respondents did not want to say their sex.

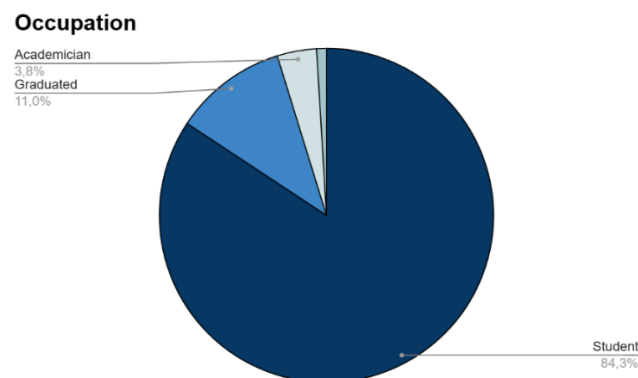


Demographically, the study cohort reveals that a majority of participants, constituting 54.8%, fall within the age bracket of 21-24. A substantial portion, representing 26.2%, falls between 18-20, while 12.4% are aged 25-34. A smaller proportion is distributed among the 35-44 age group (3.8%), and an equivalent percentage belongs to the 45 and over category (2.9%). Additionally, a negligible fraction, comprising 2.4%, chose not to disclose their gender identity.



Furthermore, the comprehensive 29-column dataset, derived from the survey, included a wealth of information about METU components. Notably, upon closer examination of the data, it becomes apparent that respondents who have been on campus for 1-3 years, with an average of 46.7, exhibit a higher rate compared to those with 4-6 years of campus experience (29%). The percentage decreases to 11.4% for respondents with more than 7 years on campus and 12.9% for those with less than 1 year of stay.

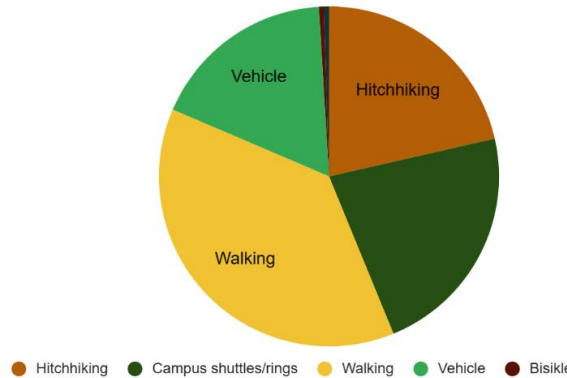
Moreover, in the realm of occupation, among the 210 respondents, the distribution is as follows: 84.3% identified as students, 11% as graduates, 3.8% as academicians, and 1% as administrative staff, with the remaining participants falling under various other occupational categories.



On campus, people predominantly rely on walking (37.6%), followed by vehicles (17.6%), campus shuttles/rings (22.4%), hitchhiking (21.4%), taxis (0.5%), bicycles and minibuses.

Moreover, in broader terms, 76.2% of respondents engage in hitchhiking, while 23.8% of respondents assume the role of drivers within the campus transportation landscape.

**Transportation in Campus**



**Pie Chart of Categories**



## 1.2. Research questions

- 1.2.1. Which variables have the most effect on the decline of Hitchhiking?
- 1.2.2. Is there a relationship between the duration of individual's time on campus and their perspectives on the decline of Hitchhiking?
- 1.2.3. Is there a significant difference in the means levels of security concerns between females and males? Is there an impact on hitchhiking?
- 1.2.4. Is there a significant difference between the means of the frequency at which individuals engage in hitchhiking and the frequency with which vehicle owners are willing to pick up hitchhikers?

## 1.3. Aim of the study

This research seeks to unravel the diminishing hitchhiking culture on the campus of the Middle East Technical University. Recent years have witnessed a significant decline in hitchhiking at METU, prompting an exploration of the underlying factors contributing to this shift. The study aims to delve into the perspectives of various participant groups, including graduates, academicians, administrative staff, and students, to provide a thorough understanding of the evolving on-campus transportation habits. Through a comprehensive analysis, the study aims

to contribute valuable insights into the broader context of evolving transportation preferences within academic and institutional settings. The findings are expected to shed light on the complexities surrounding the decline of hitchhiking culture and may inform future policies and initiatives related to on-campus transportation. Overall, this research aspires to contribute to the broader scholarly discourse on changing transportation behaviours within educational institutions.

## **2. Literature Review**

This study aims to provide information and related factors about the hitchhiking trends of Middle East Technical University students. The hitchhiking, in general, is affected by various reasons and there has been researches about the trends.

### **Hitchhiking Trends**

Hitchhiking, by definition, travel by getting free lifts in passing vehicles. Though getting free lifts from vehicles is tough thing, there are various factors that increase getting a lift. In a study conducted by Guéguen (2007), the physical attractiveness of a female researcher hitchhiking was altered as part of a field study involving 1200 automobile drivers. The results showed that, in comparison to female drivers, men drivers were more likely to pull over for female hitchhikers. Furthermore, men drivers' acceptability of hitchhiking was impacted by increasing physical beauty, whereas female drivers were not significantly affected when the hitchhiker was a woman.

Examining the eye contact made by the hitchhiker and the way that hitchhiking is signaled is another intriguing discovery. Eye contact was shown to cause more cars to stop, and the classic thumbs-up was found to be the most effective hitchhiking signal. Physical attractiveness cues are positively correlated with drivers' acceptance of hitchhiking, both male and female (Morgan, Lockard, Fahrenbruch, and Smith, 1975). A related study indicates that the hitchhiker's smile

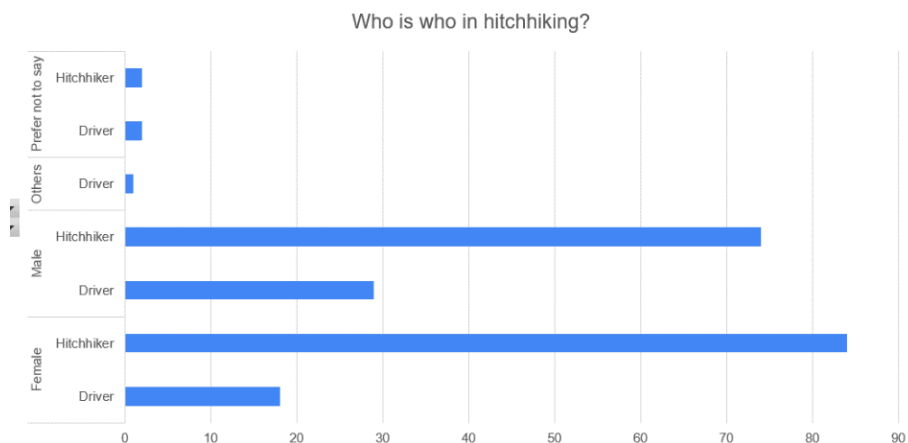
has a big impact on getting a ride in a car. According to earlier research, men who do not grin have the lowest acceptance rate, whereas women who smile have the best acceptance rate (Morgan et al., 1975).

Apart from the above listed variables, environmental elements like the weather or the locality where hitchhiking occurs can significantly impact the acceptance of hitchhikers. The effect of sunlight on drivers' inclination to pick up hitchhikers was examined in a study. Drivers were more likely to pick up hitchhikers on sunny days than on cloudy ones, the results showed. Because sunlight creates a favorable mood that may incentivize drivers to participate in helpful conduct, researchers explored this observation (Gueguen and Stefan, 2013).

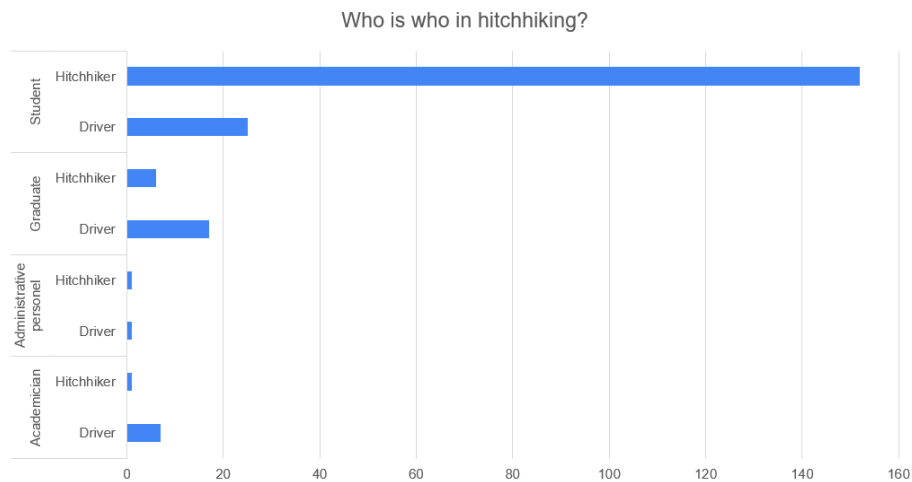
### 3. Results and Findings

#### 3.1. Exploratory Data Analysis

To see who hitchhikes more and who picks up hitchhikers, we conducted two horizontal bar charts.

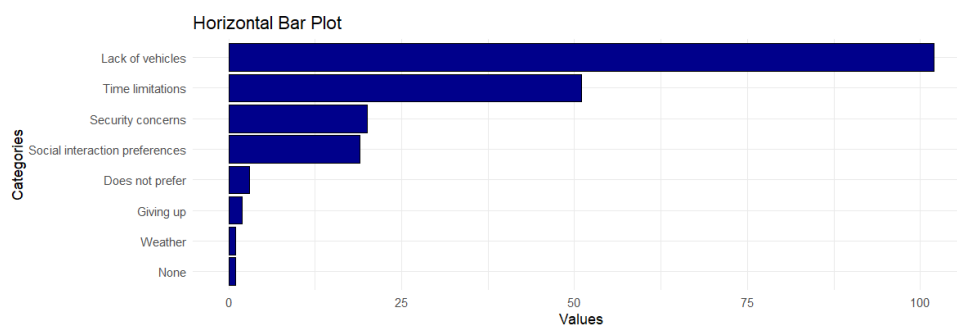
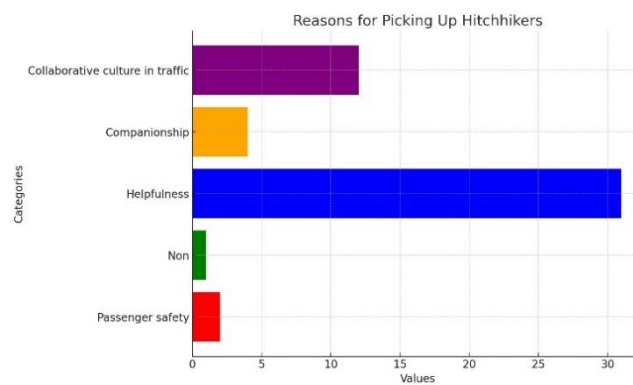






As you can see from the charts, students are more likely to hitchhike while graduates and academicians are more likely to pick up hitchhikers. Although both females and males have large proportion of being a hitchhiker, male drivers' numbers are larger than female drivers.

To see the reasons why hitchhikers decrease hitchhiking and drivers' incentives, two horizontal bar charts were conducted:



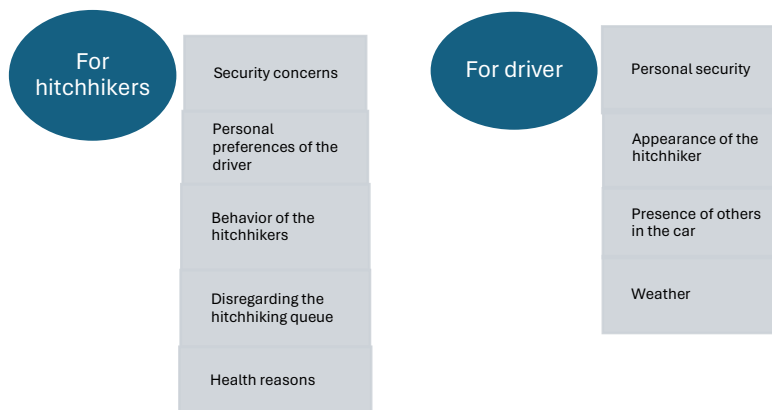
As you can see from the charts, lack of vehicles is the biggest issue from hitchhiker's point of view. And for drivers, helpfulness is the biggest incentive for picking up hitchhikers.

### 3.2. Confirmatory Data Analysis

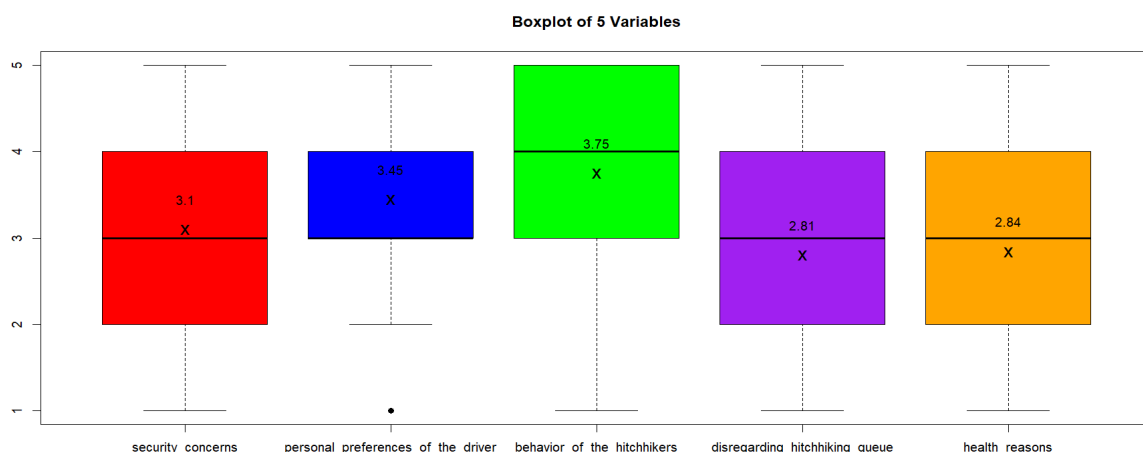
Q1.

In the first research question, our purpose was to find which variables have the most effect on the decline of hitchhiking. We wanted to investigate this matter separately for both hitchhikers and those who give rides, which are drivers.

Our variables for hitchhiker and driver are shown below:



The mean of the answers given to the Likert questions from 1 to 5 according to five variables that are asked to **hitchhikers** are shown below:



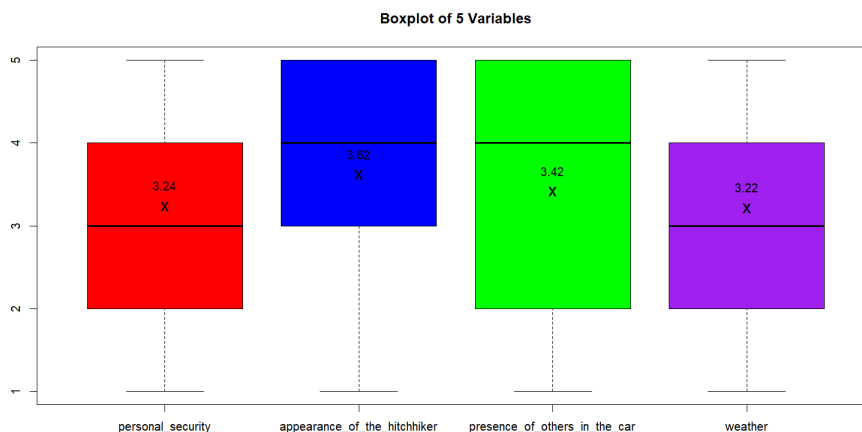
(As it can be seen, 'personal preferences of the driver' variable has an outlier.)

To compare the means of these five variables, hypotheses are states as the following:

$H_0$ : The means of the five variables are equal.

$H_A$ : The means of the five variables are not equal.

To compare the means of the variables, we conduct Kruskal-Wallis test. After conducting the test, we find out that p-value is 2.756e-14. Since p-value is less than 0.05, we reject Null Hypothesis, and we may conclude that there was statistically significant difference between the means of five variables. They do not matter the same according to hitchhikers. The mean of the answers given to the Likert questions from 1 to 5 according to five variables that are asked to **drivers** are shown below:



To compare the means of these four variables, hypotheses are states as the following:

$H_0$ : The means of the four variables are equal.

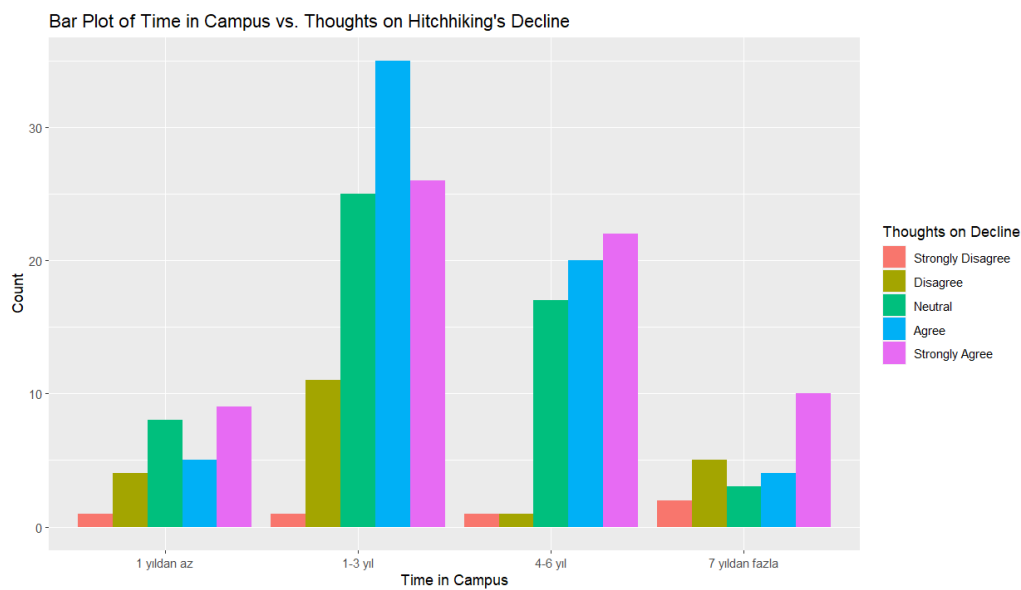
$H_A$ : The means of the four variables are not equal.

To compare the means of the variables, we conduct Kruskal-Wallis test. After conducting the test, we find out that p-value is 0.4475. Since p-value is bigger than 0.05, we fail to reject Null H

hypothesis and we may conclude that there was no statistically significant difference between the means of these four variables. They all matter the same according to the drivers.

Q2.

In the second question, our purpose was to find whether there was a significant difference between the means of people's thought on the decline of hitchhiking, in terms of their time in campus.



Hypotheses are stated:

$H_0$ : The means of people's thought on the decline of hitchhiking according to their time in campus are equal.

$H_A$ : The means of people's thought on the decline of hitchhiking according to their time in campus are not equal.

An ANOVA test was conducted, and we found that p-value is 0.308, which is greater than 0.05.

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
time_on_campus	3	4.15	1.384	1.208	0.308
Residuals	206	236.04	1.146		

Thus, we do not have enough evidence to reject null hypothesis. There is no significant difference between the means of people's thought on the decline of hitchhiking according to their time in campus.

Q3.

In the third question, our purpose was to find whether there was a difference between security concern levels of males and females and whether it influences hitchhiking or not. At first hypothesis were conducted to see if there was a difference between the means.

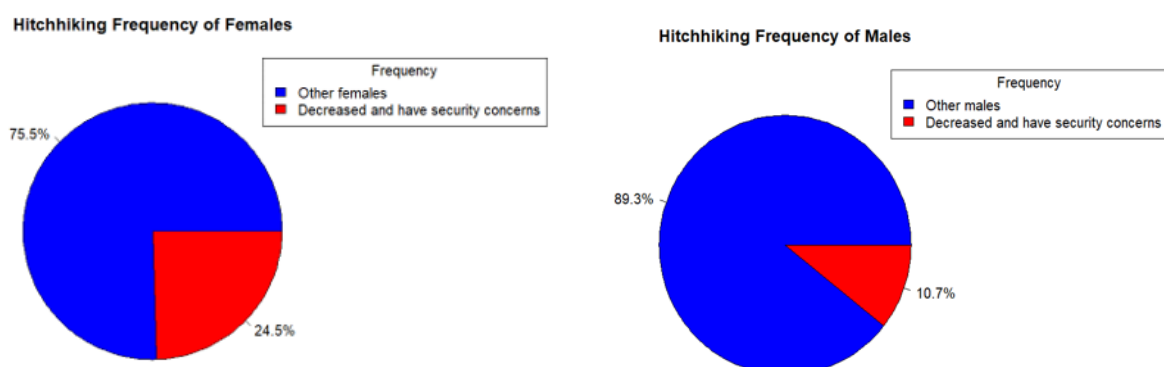
$H_0$ : The means of security concern levels of females and males are equal.

$H_A$ : The means of security concern levels of females and males are not equal.

Welch Two Sample t-test

```
data: female$securityconcernslevel and male$securityconcernslevel  
t = 2.6983, df = 203, p-value = 0.007557
```

By applying t-test, we can the p-value is less than 0.05, which means we should reject the null hypothesis. There is a significant difference between the means. What about its influence on hitchhiking? We tried to show the percentage of females and males who have decreased hitchhiking and have security concern levels as medium and high to their overall gender.



As you can from the pie charts, females have larger percentage (25.4%) of people who have decreased hitchhiking and also have security concern levels as medium and high than males (10.7%)

Q4.

In the fourth question, our purpose was to find whether there was a significant difference between means of hitchhiker's hitchhiking frequency and driver's hitchhiking frequency.

$H_0$ : The means of hitchhiking frequency of hitchhiker and driver are equal.

$H_A$ : The means of hitchhiking frequency of hitchhiker and driver are not equal.

A t-test was conducted:

Welch Two Sample t-test

```
data: hitchhiker$changeinhitch and otostopalan$changeinhitch2  
t = 2.8376, df = 86.351, p-value = 0.005664
```

As you can see, p-value is 0.005664. It is less than 0.05 and thus, we have enough evidence to reject null hypothesis. What are the means? It was a Likert question from -2 to +2. For hitchhikers, it's -0.0625 and for drivers, it's -0.4, which means drivers have decreased hitchhiking more than hitchhikers.

#### 4. Conclusion

In examination of the findings, it is evident that several variables play a pivotal role in the decline of hitchhiking, particularly from the perspective of hitchhikers. Notably, significant differences were observed in security concerns, personal preferences of the driver, behavior of the hitchhikers, disregard for the hitchhiking queue, and health reasons. The remarkably high mean associated with the behavior of hitchhikers underscores its substantial influence on the decline of hitchhiking culture. This behavior encompasses a spectrum, ranging from potential damage to the vehicle to the demeanor exhibited toward the driver. For instance, some vehicle

owners expressed dissatisfaction with muddy shoes and the unpleasant smell of cigarette smoke during our survey. Following closely is the impact of personal preferences of the driver, weather it involves a preference for solo drives or consideration of sexism. Conversely, factors such as disregarding the hitchhiking queue and health reasons emerged as comparatively less influential.

For drivers, the results revealed a lack of significant difference in the impact of personal security, the appearance of the hitchhiker, the presence of others in the car, and weather on the decline of hitchhiking. Surprisingly, these factors were found to be equally consequential in the drivers' perception of the decline of hitchhiking, with the appearance of the hitchhiker carrying the largest mean. Among female participants, security concerns emerged as a noteworthy factor contributing to the decline in hitchhiking, with nearly 25% reporting a reduction in hitchhiking frequency due to elevated security concerns.

Additionally, an intriguing pattern surfaced as drivers exhibited a greater reduction in the frequency of picking up hitchhikers, with a mean of -0.4, in contrast to the hitchhikers' more modest decrease in hitchhiking frequency, reflected by a mean of -0.0625. This discrepancy in means sheds light on the perceptible impact of drivers on the decline of hitchhiking and offers insight into the heightened significance attached to the availability of vehicles for hitchhikers, as elucidated in the exploratory analysis. Furthermore, an analysis of individuals' time on campus revealed no discernible impact on their perspectives regarding the decline of hitchhiking. This observation emphasizes the independence of one's perception on this cultural shift from the duration of their campus.

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## Appendices

### The Factors that Affect the Hitchhiking Culture on METU Campus

This survey was conducted within the scope of STAT365 course to examine the factors affecting the hitchhiking culture on METU campus. This information collected for academic purposes will be kept anonymous and will not be shared within third parties in any way.

General Questions:

1. *What is your gender?*
  - a. *Male*
  - b. *Female*
  - c. *other*
  - d. *Prefer not to say.*
2. *What is your age?*
  - a. *18-20*



*b. 21-24*

*c. 25-34*

*d. 35-44*

*e. 45+*

*3. What is your profession?*

*a. Student*

*b. Academician*

*c. Graduated*

*d. Administrative staff*

*e. Other*

*4. How long have you been on campus?*

*a. Less than 1 year*

*b. 1-3 years*

*c. 4-6 years*

*d. 7 or more years*

*5. Do you think that there is a significant decrease in hitchhiking culture?*

*a. 1*

*b. 2*

*c. 3*

*d. 4*

*e. 5*

*6. Which transportation do you prefer the most?*

*a. Walking*

*b. Bicycle*

*c. Vehicle*

- d. Hitchhiking*
  - e. Taxi*
  - f. Minibus*
  - g. Campus shuttles/buses*
  - h. other*
7. *What is your average duration of your daily on-campus commute?*
- a. Less than 15 minutes*
  - b. 15-30 minutes*
  - c. 30-45 minutes*
  - d. 45 minutes or more*
8. *How often do you perceive the impact of the decline in hitchhiking culture on your campus life?*
- a. Never*
  - b. Very rarely*
  - c. Occasionally*
  - d. Frequently*
  - e. Very frequently*
9. *How do you envision the future of on-campus hitchhiking culture?*
- a. Flourishing and expanding*
  - b. Remaining stable*
  - c. Declining gradually*
  - d. Rapidly diminishing*
10. *How would you rate the level of security concerns, on a scale from 1 to 5?*
- a. 1 - Very low*
  - b. 2 – Low*

- c. 3 – Moderate
- d. 4 – High
- e. 5 – Very high

11. How would you consider yourself on campus as:

- a. Hitchhiker
- b. Driver

*Questions for Hitchhiker:*

1. How frequently do you hitchhike on campus?

- a. Never
- b. Rarely
- c. Occasionally
- d. Frequently
- e. Very frequently

2. How has the frequency of your hitchhiking changed in the past year?

- a. Increased significantly.
- b. Increased slightly.
- c. Remained the same.
- d. Decreased slightly.
- e. Decreased significantly.

3. Please give the following factors affecting the hitchhiking a value between 1 (low value) to 5 (high value).

- a. Security concerns
- b. Personal preferences of the driver
- c. Behavior of the hitchhiker
- d. Health reasons

- e. Disregarding the hitchhiker queue*
- 4. What are the primary obstacles preventing you from hitchhiking?*
  - a. Safety concern*
  - b. Time constraints*
  - c. Lack of drivers*
  - d. Social interaction preferences (shyness, social stigma, sexism)*
  - e. other*

*Question for Driver:*

1. *How frequently do you pick up hitchhikers?*
  - a. *Never*
  - b. *Rarely*
  - c. *Occasionally*
  - d. *Frequently*
  - e. *Very frequently*
2. *Have you reduced picking up hitchhikers in the past year?*
  - a. *Not at all/ Remained the same*
  - b. *Slightly reduced*
  - c. *Moderately reduced*
  - d. *Significantly reduced*
  - e. *Completely stopped*
3. *What encourages you the most to pick up hitchhikers?*
  - a. *Desire to help others*
  - b. *Companionship*
  - c. *Passenger safety*
  - d. *Culture of mutual assistance in traffic*

*e. Other*

4. Please give the following factors, affecting the situation of picking up hitchhiker, a value between 1 (low value) to 5 (high value).

*a. Personal security*

*b. Appearance of the hitchhiker (sexism)*

*c. Presence of others in car*

*d. Weather*

*e. Other*