Student's preference on carpooling in Universiti Malaya

Yuen Choon Wah[1*], Mohamad Aidil Arbaie Bin Abas[1]
Department of Civil Engineering, Faculty of Engineering, University of Malaya, Kuala Lumpur, Malaysia[1]
[*]E-mail address: yuencw@um.edu.my

ABSTRACT

This study is to understand student's preference whenever they carpool in university. On top of that, promoting this program to the students is essential to make carpooling a preferable transportation mode. To be able to understand the current situation, questionnaires are distributed around the university. The sample would be random from different faculty, age and place of staying (whether in campus or outside of campus). The questions will be distributed around in the university through WhatsApp since the questions is in Google Form. Student's main factor they consider whenever they carpool is cost. Daily expenditure of a student can affect one's daily task. In order to sustain for their whole student life, they tend to plan and keep track of their expenses. Student's safety can also be an issue especially when it comes to be a passenger of an unknown driver. People can take advantage to the passengers since the passenger cannot do anything to protect themselves. Police can't really help if the victim cannot identify at least the plate number. Cleanliness of the vehicle is also a concern for vehicle's owner. Most owners claim that they are unlikely to use their vehicle when it is just washed and cleaned. Suggestion as a rule in policy is made to make as beneficial for both driver and passenger. Method of promoting such method is essential to make students aware for its beneficial for others and environment.

Keywords: Carpooling, Cost, Safety, Student

1. INTRODUCTION

Carpooling has always been used throughout the generations [1], [2]. Despite that, many of us did not implemented this efficiently as the environment has gone worse over the years. For over the years, the number of vehicles has increase and this can cause traffic to be congested. If this changes keeps going, congestion can occur more often and it can bring disadvantages to both environment and road users (pedestrians and drivers)[3], [4]. Despite the convenience of this method, it is rather for someone to travel with their own personal transport.

Carpool can be defined as one of the method of transportation similar to the public transportation such as taxis and buses [5]. This method requires the driver to pick up other passengers to a destination. There are some condition when using this method but mainly the condition is that the final destination of all passengers and driver has to be on the same route with each other. In order to apply this method, the efforts needed to form, coordinate, maintain, ad gracefully terminate a pooling arrangement – and the effort to go through the cycle once again [6].

In this study which is mainly targeted in university campus area specifically in University of Malaya [7], [8]. University campus can be defined as a "small city" because they commonly have their own communities, typical daily activities such as working, studying, and business

even possessed their own independent infrastructure facilities (roadway, water supply, electrical supply sewerage system, etc.) [9]. University of Malaya is located in Kuala Lumpur which is the capital city of Malaysia [10], [11]. There is a significant number of vehicles in the campus. Not only staffs and students of the campus, even outsiders pass through the campus and not to mention public transportations such as bas and taxi. This could be challenging to create changes in terms of vehicles uses on the road especially when it is located in the middle of a city where vehicles commonly pass through the campus.

University of Malaya provide its own public transportation (bus station) that is serve to provide transportation for the students to reach their destination around the campus [12]. Not only that, other public transportation such as taxis and public buses easily accessible for the students to travel outside of campus. All of these services are essentials to the community where it is as efficient as travelling with private vehicle. Not only that, these services can help in various aspect especially in environmental aspect. Providing this will reduce carbon dioxide emission thus, providing better air quality [13], [14], [15].

2. THEORY AND METHODS

2.1 Theory

In a study done by Ben Barkow, psychology of carpooling is important since it involves people's preference in transportation mode choice [6], [16]. To make this method more preferable, it is crucial to identify people's preference and expectation when it comes to carpooling. One of the key factor in mode choice is formality. This aspect explains how should passengers and drivers interact and how far can it be considered as rude. It is important because it involves people's comfort in traveling. Besides that, payment is considered in this study [17], [18]. They would consider this method if only the travel cost in carpooling make significantly efficient as compared to traveling solo. Lastly would be route choice [19], [20]. Since carpooling involves more than a driver, pick-up passengers is required. It is preferred if the pickup point is along the final destination or the passengers have to meet at the driver's starting point. Both method create more comfortable traveling experience. These factors play a major role in mode choice to make traveling more efficient and friendly for others.

In a study done by Peter van der Waerden [21], carpooling to him is the best option in the Netherlands with limited land space that cause frequent traffic congestion. It is unnecessary for the citizen to face this and as well bring disadvantages in many aspect such as environmental factor [4]. In this study, carpool attraction to the people is required and needs to be understood to increase the chance this method to be implemented. There are several factors such as travel time, travel cost and carpooling flexibility [18], [21]. These factors are the most influential that changes people's preference on transportation and carpooling attractiveness.

In study done by Norsyuhadah Norzalwi and Amiruddin bin Ismail (2011) [9], university can be considered as a small city since it fulfils the characteristic of a common city that fills with facilities especially transportation facilities. Students and staffs are the road users in the "city" are prone to their preference in transportation choice. It is necessary to understand their preference and their opinion regarding the facilities. In the campus itself has their set of complains by the users and require some attention in order to make the facilities more accessible and comfortable for other users. Environmental suggestion are also being introduced by the user which explains that the users considered their initiative to make the road travel experience more environmental-friendly and probably more efficient as compared to the conventional way of traveling. Bicycle hub is one of the suggestion and it is one of the initiative for the user to travel around. These initiatives are essential as it brings benefits for the user and it can be improved to create friendlier road using experience in the future.

2.2 Methods

Two ways of conducting this survey in order to reach target number of respondent are existing group on WhatsApp and on-field distribution [8]. In existing group, it is selected by number of members that are from different faculties. This is to ensure that there are various faculties and able to understand student's view from different faculty. Geographically, different students have different concern and one of the factors that contribute to this is the location of the faculty.

For on-field distribution, survey form would be directly distributed to the students at the respective faculty. One method of it is to exchange phone numbers between students. This will allow Google Form link to be sent to the respondent [8]. The students are required to distribute the data in their respective groups to expand the number of respondent.

To analyze the survey data, first is to separate between different categories are students who did not bring their vehicle to campus and students who did bring their vehicle to campus [11]. These two categories are the general category in this survey. In each of the category, there are different section are location of their stay, weekly frequency on transportation, and situational case. These sections are essential for both category in order to understand student's perspective depending on the situation they are facing. It is also explain their reaction on certain occasion which made them to choose the type of transportation.

Besides that, there also a question regarding the concern whenever they choose to carpool. This sort of question is important to identify their insecurity toward such mode [22]. This also helps to identify the major problem that requires to be solved in order to gain student's interest in using carpooling as one of their alternative to get anywhere.

These informations are separated into tables to create charts. This is to create better understanding on their percentage of all the circumstances. With the existing number of respondents, comparing between charts is one of the way to identify the relationships between charts. The relationships will be able to create solutions that is necessary in order to gain interest of the students [23].

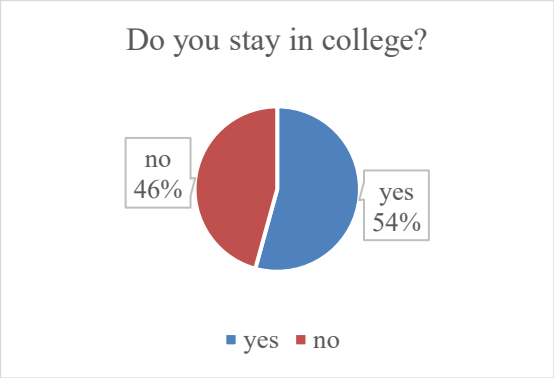


Figure 1 : Percentage of students that bring their vehicle to campus

3. RESULTS AND DISCUSSION

After 2 weeks of conducting survey, there are some results that are relatable to the previous studies. In the survey, 2 categories were divided; student who don't own a vehicle and students who owns a vehicle. This will allow to identify student's perspective regarding their situation. Figure 1 shows percentage of the students who bring their vehicle to the campus. Majority of them with 54% bring their vehicle to campus. It is either motorcycle or car that is available for them. It is interesting to find in this number sample that more than half of the percentage do bring their vehicle to campus. As far as it concerns, student's perspective on carpooling has not

change drastically. This method of transportation has been commonly used in the campus. However, this method are usually used as transport to go outside of campus. This is understandable since University of Malaya is consider as a small campus and distance between college and faculty is not too far to walk. From the survey, the numbers are relatively equal between students who don't have a vehicle and own a vehicle.

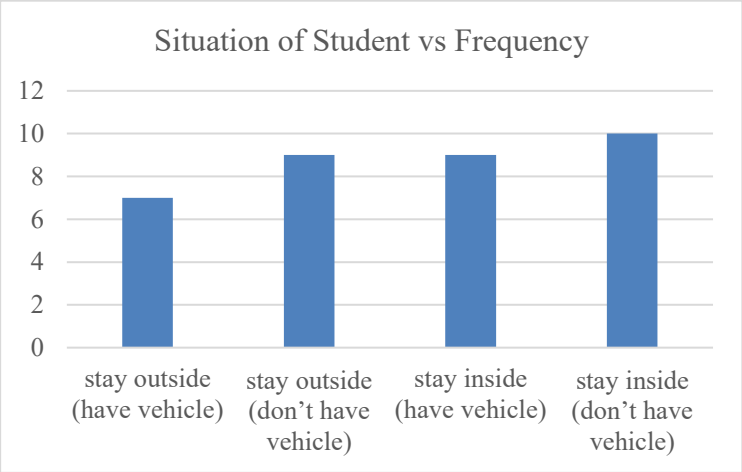


Figure 2 : Situation of student vs frequency

The Figure 2 shows the student's situation and the frequency of each of the situation. In this situation, it can be used as a control data which any changes that have been made will not be affected by this data. Next control data is regarding student's expenditure on transportation. This data explains their average amount they spent on transportation. Mainly it is spent on petrol cost, toll payment, and trip cost for the public transport such bus.

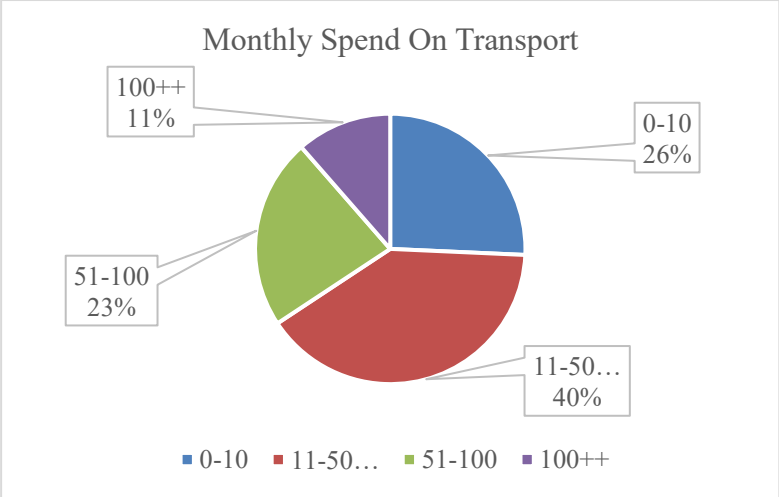
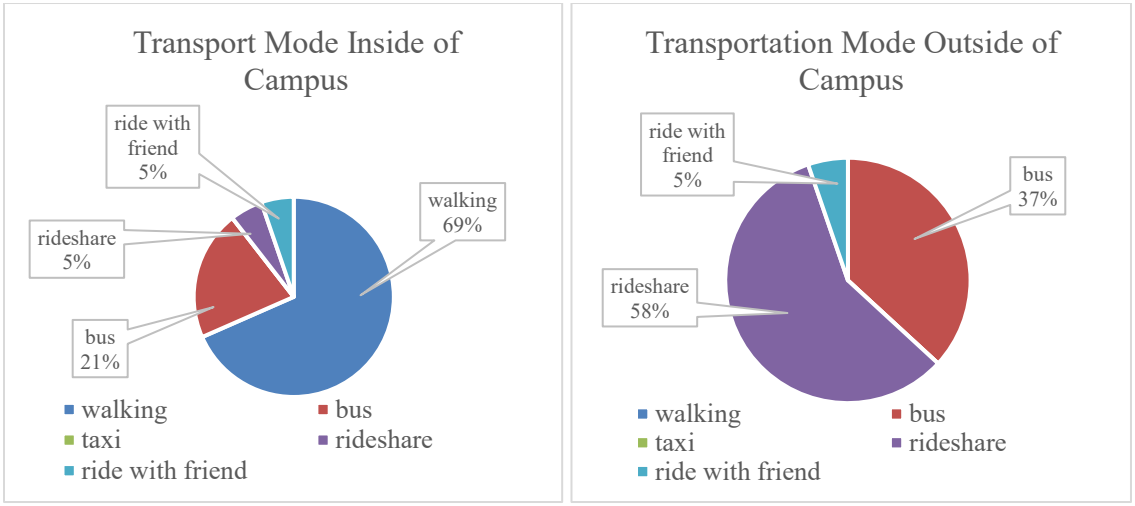


Figure 3 : Students expenditure on transport

From the Figure 3, 40% of the students spent around RM 11-RM 50 monthly on their trip, 26% of the students spent RM 0-RM 10, 23% of students spent RM 51- RM 100, and 11% of students spent more than RM 100 for their trip. This data would be useful in terms of student's expenditure with the proposed policy that could be implemented in the campus.

Some students that doesn't have any vehicle in the campus uses the provided public transport such as buses. Buses that is provided are free and can be used to travel around the campus. Other method that is used to travel around is by walking. Usually students walk whenever the distance to the preferred destination is not far. Since the campus is consider as a

small campus, some would prefer to walk to faculty. The Figure 4 (a) shows the percentage of students that use variety of transportation mode. Majority of students with 69% prefer to walk in campus, along with 21% using bus, and 5% using both rideshare (Grab Car, Uber, My Taxi) and carpool with friends and 0% using taxi. Figure 4 (b) shows student's choice whenever they need to travel outside of the campus. Majority students with 58% use rideshare as transportation mode outside of campus, whereas other 37% and 5% of students use bus and carpool with friends respectively Both of these data shows student's choice which it is correlate with their expenditure on transport per month. The expenditure towards transportation increases as higher the frequency of using any vehicle whether if it is private vehicle or public transport.



(a) (b)

Figure 4: (a) Transport mode used inside the campus; (b) Transportation mode used outside of campus

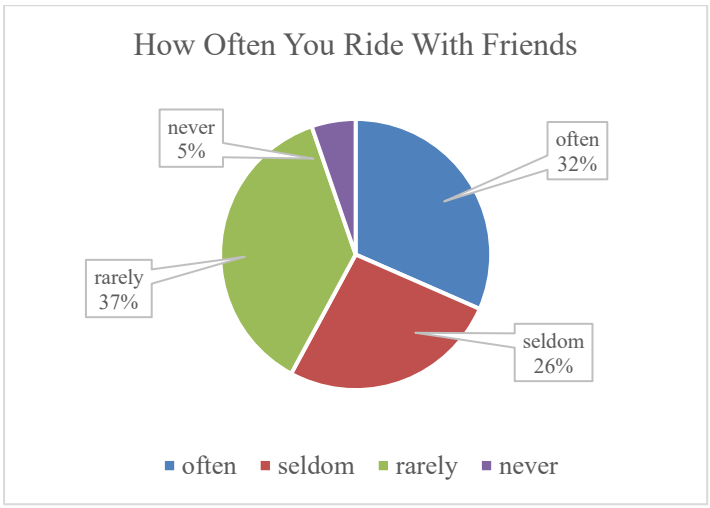
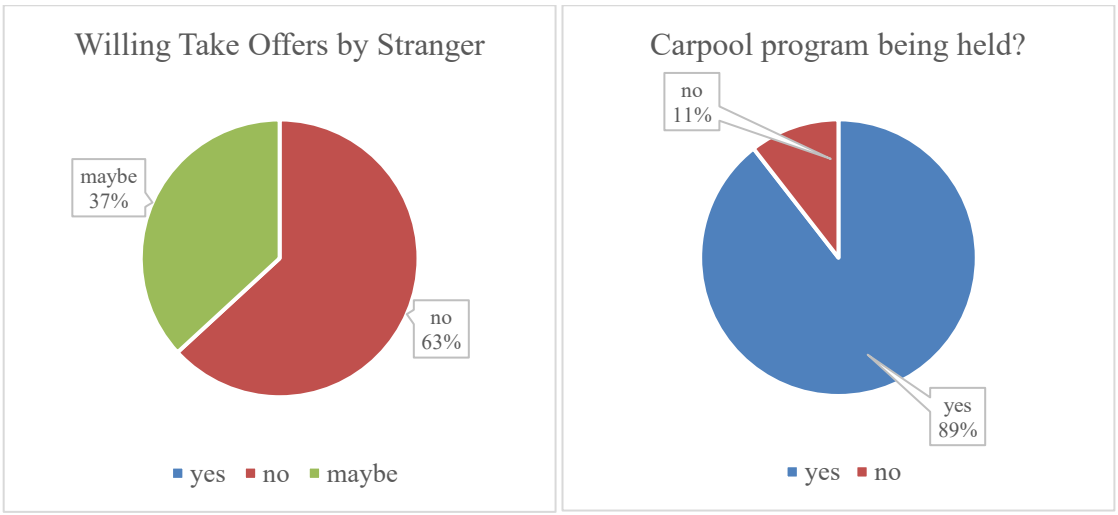


Figure 5: Frequency of carpooling

Figure 5 shows their frequency of carpooling with friends. Majority students with 37% rarely carpool with their friends. 32% of students says that they often carpool with their friends. Other 26% and 5% are seldom and never ride with their friends respectively. This explains how frequent they travel outside of campus which they are some students who hardly goes anywhere and some loves to go outside of campus. This is because that University of Malaya is near to the main city of Kuala Lumpur where there are a lot of attraction such as malls, restaurants, and other tourist attraction. This frequency also affected by student's expenditure. Students have a

tendency to be aware of their daily expenditure. This includes transportation and going for activities outside of campus. Hence, one of the reason for rarely carpool among friends.

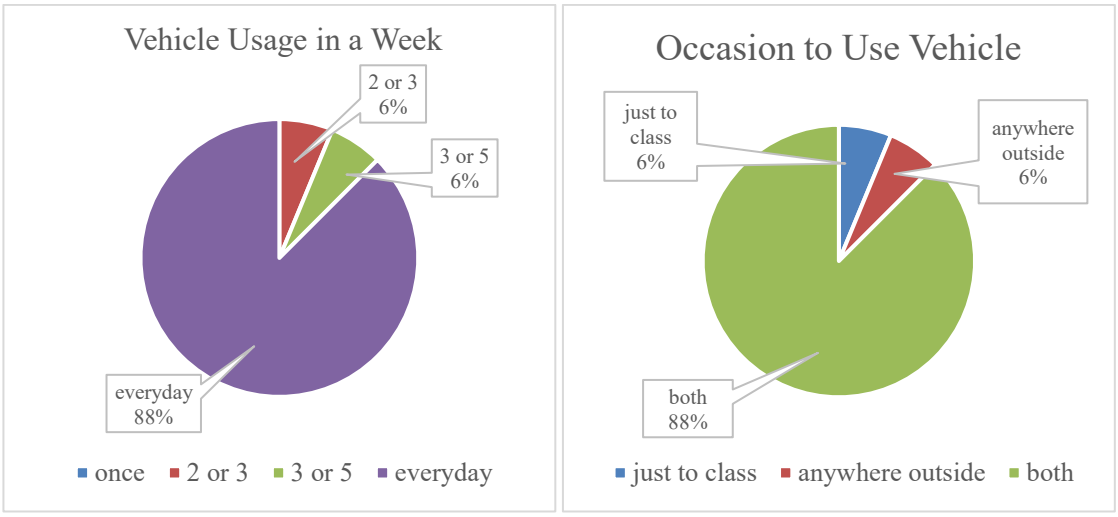


(a) (b)

Figure 6: (a) opinions on taking offers be strangers, (b) opinion on starting a carpooling program

Figure 6 (a) shows percentage on students whether they willing to take offers by strangers to send them to their desired destination. Majority students with 63% reject their offers whereas others with 37% would consider depending on their situation. This is interesting since no students would accept the offer. This is because that students are aware of their safety and taking offers from strangers is not ideal since there are safer option such as taking public transport or at least call their friends to pick them. But majority, they would rather reject the offers by them. The Figure 6(b) explains the percentage of the students who would accept or deny of holding carpooling program. Majority of them agrees that carpooling program should be held in the campus and 11% disagree with the statement. This is interesting because there are students that thinks it is unnecessary to hold this program. One of the possibilities is that there are sufficient number of campus buses available in the campus. The buses travel around the campus and having this program could be redundant. Besides that, they disagree with this probably because it will also cause more parking issues as this issues has been one of the major problems faced by the campus.

There are students that brings vehicles like motorcycles and cars to campus. These students use their vehicle to travel around the campus as well as traveling outside of campus. They also occupy majority of the parking spots in campus which it can be a problem due to parking space issue. In order to optimize this issue, utilizing the vehicles by helping students that didn't bring their vehicles to their destination. Not only it helps them, the driver can reach their destination as well without any issue. First, understanding the situation is crucial for carpooling program could operate efficiently.



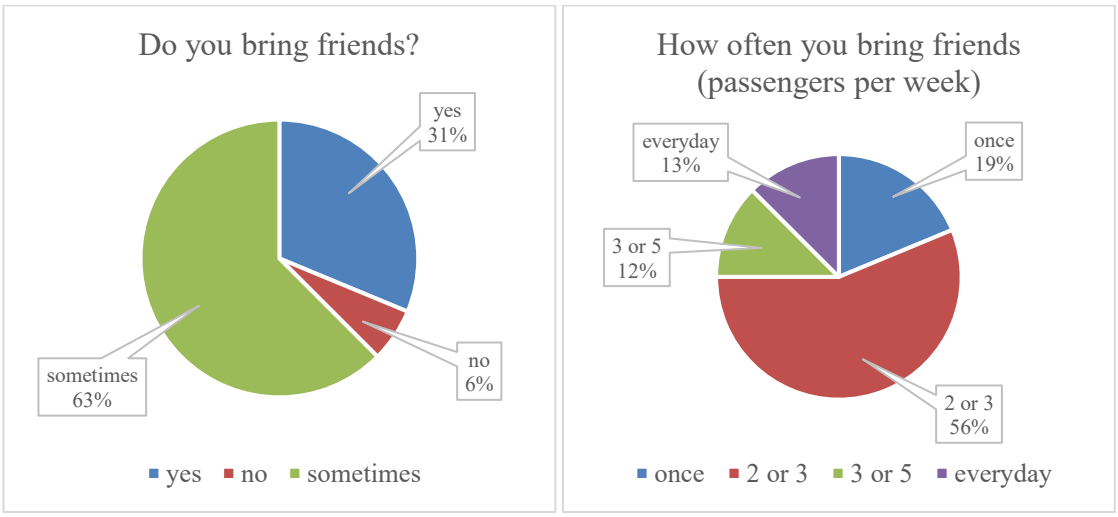
(a) (b)

Figure 7: (a) vehicle usage in a week, (b) occasion to use a vehicle

Figure 7 (a) shows student's vehicle usage in a week. Majority students use their vehicle everyday with 88%. Other 6% of students use 2 or 3 times as well as 3 to 5 times in a week. In conclusion, students use their vehicle on a daily basis. However, there are students that don't occasionally use their vehicle, as if the vehicle is only used to travel outside of campus. This is still reasonable since not all students are acquire to travel far just to get to their destination inside of campus. Besides that, no students said that they only use it once a week. This means that students do travel and not just having it to stay at a parking lot. This data will be useful to utilise the parking spot to specific use only by the carpool drivers. Not only it will be beneficial for the students, number of cars in the campus may reduce. Figure 7 (b) explains on student's occasion on using a vehicle. Majority of them use their vehicle to travel both inside and outside of campus with percentage of 88%. Other 6% would either use it only inside or outside of campus. Having a private vehicle available in campus can be convenient for students in terms of going to class or just travel outside of campus to fulfil their needs. This data could also be interpreted as how parking lot is utilised by the students. Students that travel both inside and outside of campus indicates that the parking lot is not always occupied by them as often. Whereas to those that only use either outside or inside of campus occupies it less frequent. This interpretation will be useful for a carpool program where parking lot will always be available for participants and can be utilised fully by them. However, it could cause some disadvantages to those who live far from campus. Double parking is a common phenomenon when it comes to parking issue especially cars. This phenomenon needs to be address to prevent it from become critical.

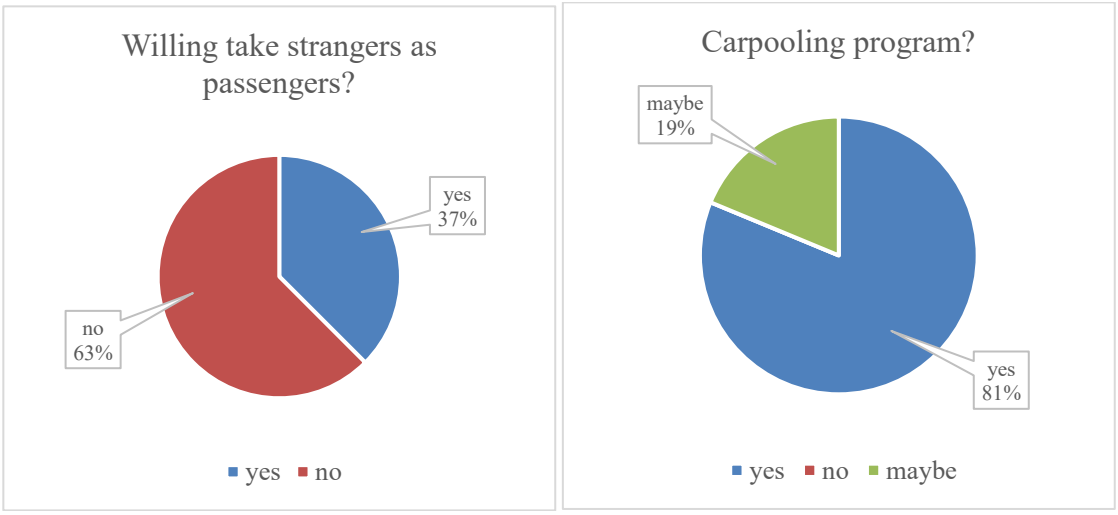
Figure 8(a) explains on drivers bringing their friends on their travel. Majority of students would sometimes bring their friends on their travel with a percentage of 63%. 31% of them would always bring their friends every time they would go anywhere. Another 6% would not bring their friends along. This percentages occurs due to the circumstances of their scenario every time they would to go anywhere. There are some circumstances where passengers are not require hence they travel alone. However, if there are errands that requires extra hands, they would travel with passengers in this case their friends to tag along. This data can be concluded that carpooling method do being implemented among students. However, this method can only occur on certain situation which it depends on the task at hand. Carpooling program is usually implemented with a purpose of transporting students to desired destination which mainly would be used to go to faculties for classes. In this situation, this method can be implemented among students. Figure 8(b) explains the frequency of bringing friends per week. From the chart, 56%

of them bring friends with estimation of 2 to 3 times per week. 19% of them bring friends once a week. 13% of them bring friends every day for a week. Lastly, 12% of them bring friends 3 to 5 times in a week. This data explains in detail on how frequent carpooling method is being implemented. In this case, they commonly bring friends twice or three times in a week in average. Carpooling method is not commonly practise whether to travel around the campus or otherwise. There are students that brings passengers more frequent than others which indicates their frequency of them using their vehicles.



(a) (b)

Figure 8: (a) bringing friends on their travel, (b) frequency bringing friends per week



(a) (b)

Figure 9: (a) willingness taking strangers as passengers, (b) whether to create carpooling program

The Figure 9(a) explains student's willingness to take strangers as their passengers. 63% of them would not invite strangers or random pedestrians for a ride. The rest 37% of them would consider offering a ride to them. This is mainly due to purpose of such offer corresponds to the situation. Offering a ride along in a random situation would highly be rejected. Such responds are influenced by safety of the pedestrians. Random offers without a clear motive can raise suspicions for them. Hence, safety precautions were considered. Figure 9(b) chart shows student's responds on carpooling program. Majority 81% would agree to participate in a carpooling program. The rest 19% would consider participate in the program. This data is equal

to the previous finding, where majority would accept this program to be conducted in campus. It can be concluded that students in campus have interest in such program and would like this program to be held. This acceptance will increase the chance that this program would be a success.

There are many aspects that needs to overcome in order to secure such mode to be more sustainable and reliable.One of the aspects is safety. This aspect is one of the reasons students don't prefer carpooling. Most students would agree that riding with random driver or passenger is not preferable since they are numerous of possibility that may occur such as kidnap and robbery. This is understandable by many students that riding with random people may intrude both drivers and passenger's safety. To ensure the safety, it is advisable to take it among friends. Travel among friends ensure safety of both drivers and passengers by creating secure environment for both of them. Securing safety of both passengers and driver will ensure that carpooling will remain sustainable.

Besides that, time management is one of the aspects that requires understanding in order carpooling to be reliable. To be able to rely on carpooling as an alternative transport, it is required that passengers and driver's time are align. To travel, lift-off time for both passenger and driver has to be same. This can be an issue since students from different faculty has different time schedule even students from different department has the same scenario. The only suitable type of students that can implement carpooling is among classmates. Chances of implement is high since the subjects are at least 70% similar among classmates. Likely the time class starts for both passenger and driver is high and traveling together is recommended. At this rate, carpooling can be implemented efficiently.

Travel route also require attention when it comes to carpooling. Traffic congestion can be an issue for drivers especially during peak hour. Alternative route is necessary for the drivers during the hour. Picking up passengers can be challenging especially the route to them is consider "too difficult". To tackle such issue, it is recommended to choose passengers that lives along the route towards the same or along the targeted destination. It is also advised to choose passengers that go to the most common destination. This is to ensure that carpooling can be implemented effectively.

4. CONCLUSIONS

Carpooling has been implemented among students, and popularizing this method is essential to create better and more sustainable alternatives for traveling between places. This mode of travel offers numerous benefits, particularly in environmental aspects, while also reflecting students' opinions and responses toward various conditions related to its implementation. The main concern among most students is safety, which often discourages them from adopting carpooling as their daily transportation method on campus. Since many students are uncomfortable with the idea of riding with strangers, carpooling among friends appears to be the most acceptable and practical approach. This policy ensures the program remains well-regulated and fair for both the university and its students. Proper justification should not only benefit the institution but also accommodate students' needs and convenience to increase participation. For long-term sustainability, the program must remain flexible and adaptive to changing conditions. Further studies are needed to analyze carpooling in greater depth, as students' perspectives may evolve over time alongside changing trends and new information. As the program continues to develop, innovative and creative promotion strategies, particularly through technology, are recommended to attract new students and maintain engagement. Embracing such innovations will not only enhance transportation efficiency but also help address issues of traffic congestion and limited parking spaces. By implementing new approaches to mobility, universities can create a more comfortable,

productive, and environmentally conscious campus environment while achieving institutional objectives.

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