Proportions of Transportation Methods used by STA304 students

STA304 - Group 1

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Introduction

The results we seek to estimate are the various proportions of students at UTM that use a certain transportation type for their commute, like the proportion of students that commute via public transit, by car, carpool, walking or the shuttle. The main results are the proportions of transportation methods used by students that have to travel different distances to get to campus, and the purpose of this study is to help determine the relationship between a students distance away from campus, and their method of transportation to get there. We want to answer whether there is actually a strong relationship between distance and method used for different methods, and our results will help us reach this answer.

Sampling

To get an estimate of our data, the students of STA304 (that have signed the consent form) were randomly sampled. For each student sampled, a questionnaire was sent via email to them, asking what their preferred method of commuting to UTM was, and their distance from campus. The results of these questionnaires were congregated to make up the data set. From this data set, the students were organized into sets by their preferred method of transportation, and for each of these sets, the proportions of students that have different travel distances based on that transportation method were calculated. In total, 104 students were surveyed.

Results

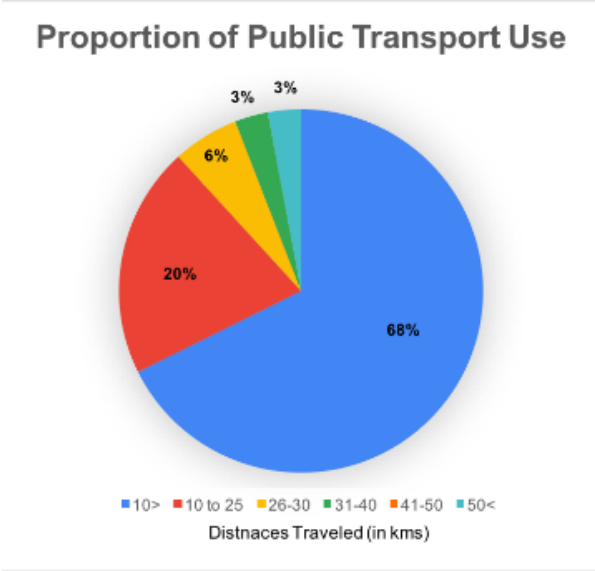

Figure 1: Proportion of Travel Distances for students using Public Transport

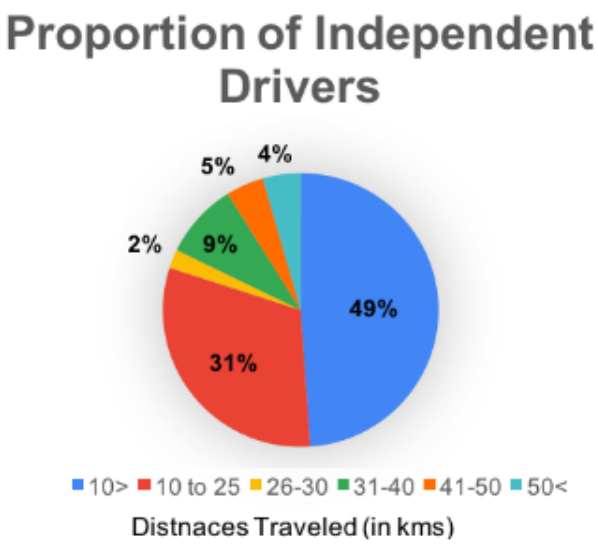

Figure 2: Proportion of Travel Distances for for students Driving Independently

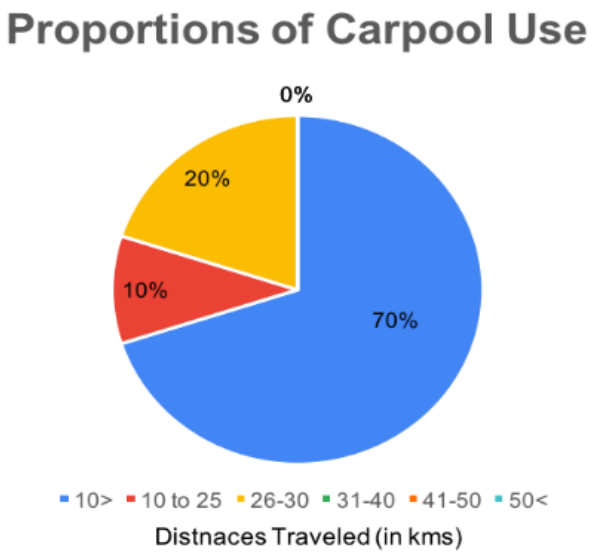

Figure 3: Proportion of Travel Distances for students Carpooling

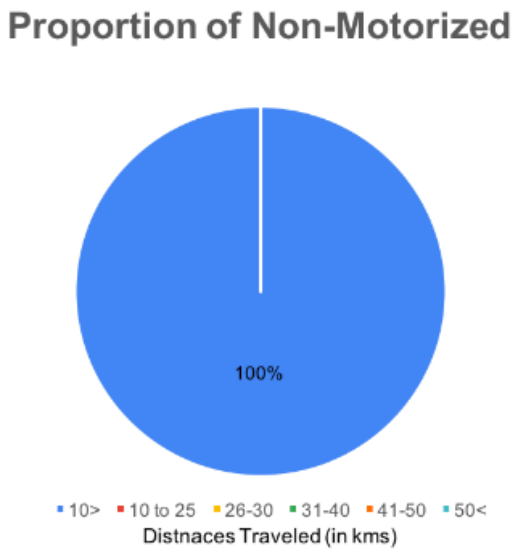

Figure 4: Proportion of Travel Distances for students using non-motorized transport (walking, biking, etc.)

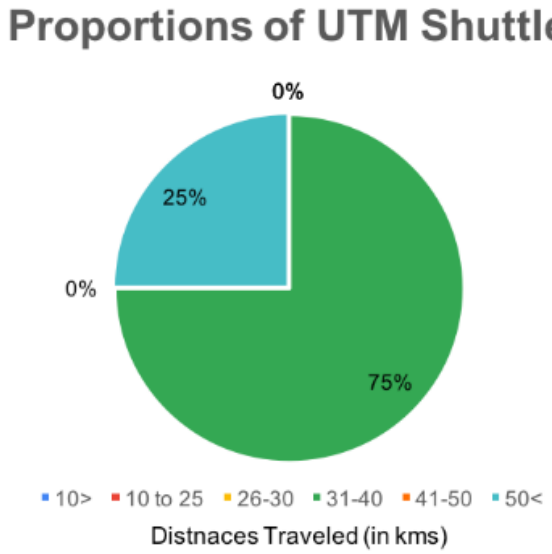

Figure 5: Proportions of Travel Distance for students using the UTM shuttle

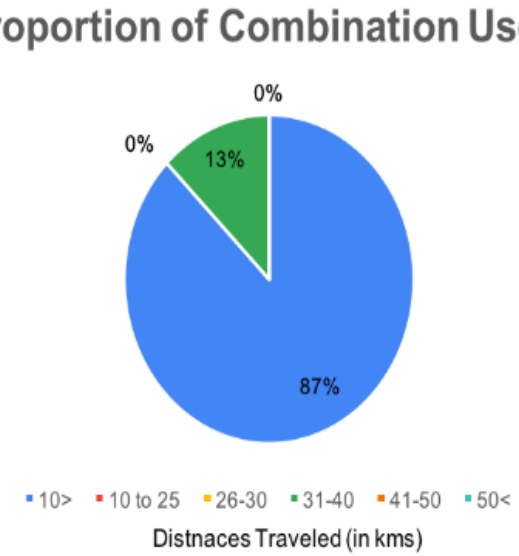

Figure 6: Proportions of Travel Distance for students using a combination of travel Methods (like bussing close by then walking)

Distance (in km)	Public Transportation	Drive independently	Carpool	Non-Motorized	UTM Shuttle	Combination of Methods	TOTALS
10>	23	22	7	3	0	7	62
10-25	7	14	1	0	0	0	22
26-30	2	1	0	0	0	0	3
31-40	1	4	2	0	3	1	11
41-50	0	2	0	0	0	0	2
50<	1	2	0	0	1	0	4
TOTALS	34	45	10	3	4	8	104

Figure 7: Table showing all numerical values in number of students. The columns represent the method of Transportation, and the rows represent the travel distance.

Looking at the above figures, it is apparent that the vast majority of the students sampled either commute via Public Transportation or Driving Independently, with the other methods

combined making up the minority. In addition, the vast majority of students sampled live less than 10 km away from campus, with that specific proportion always being the largest in all of the above charts. For those using public transport or driving, the proportion decreases as the distance increases, but with carpool, there is a higher proportion in the 25-30km range compared to the 10-25km range. Non-motorised transport is biased towards those less than 10km away, due to only being viable at that distance. This also applies to other transportation methods such as the use of the UTM shuttle only being a regular option if the student lives far away (in this case more than 30km away).

Limitations and Qualifications

Some limitations regarding the data and the calculation of the results include the travel distance data being potentially somewhat inaccurate, as no map of sort was given for participants to accurately determine their travel distance. The vast majority of students (around 60%) have travel distances less than 10km, meaning that sample sizes for other travel distances are smaller by comparison, leading to higher variance for proportions related to higher distances.

Conclusion

Overall, while there is a definite relationship between method used and proportions for travel distance for distance specific methods (like non-motorised transport or the UTM shuttle), this relationship is less defined for more general transportation methods, public transportation and independent driving. The distance proportions relative to the number of students at that distance are still fairly high. It follows that the main choice of transportation for STA304 students are public transit and driving regardless of distance, with the exception of more distance specific methods (non-motorised, UTM shuttle) being more convenient at those distances.