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TRANSPORT FINDINGS

Longing to Travel: Commute Appreciation during COVID-19

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Findings

Based on a survey of 197 Sydneysiders undertaken during the COVID-19 Lockdown, this study shows time spent in transport was missed the most by public transport users, followed by push bike users, e-bike users, pedestrians, and finally drivers. Men missed time spent in transport more than women. It also finds that for public transport users, the more transfers, the less they miss time spent commuting.

1 HYPOTHESES

This study examines travel, and lack thereof, that occurred during Sydney's COVID-19 Lockdown which began in earnest March 23, 2020 and began to be lifted May 15, 2020. While the stay-at-home for non-essential travel order was not as rigid in Sydney as in other parts of the world, it still affected travel significantly. This paper assesses how much respondents missed their time spent in transport during the COVID-19 lockdown period. We pose the following hypotheses:

1. *Time spent in transport will be missed more by people who walk and cycle than by people who use public transport or drive. Drivers will miss it the least*. We believe that people with an active transport mode will miss it the most as it was a time that allowed them to take a break and relax (Gatersleben and Uzzell 2007) more than modes which require active engagement in the navigation and control tasks, and because bicyclists and pedestrians (and train riders) are often the happiest commuters (St-Louis et al. 2014) (compared to car, bus, and metro users). Public transport users could also more easily carry out parallel activities (work, social activities, leisure ...). On the other hand multitasking is more complicated while driving.

2. *The more transfers public transport users have to make, the less they will miss commuting times.* Transfers require attention and make the trip more complicated and stressful. Studies shows that transfers in a public transport system have a tremendous impact on the perceived transfer cost (Guo and Wilson 2011).

2 METHODS AND DATA

The analysis is based on data from an online survey, mostly spread via social media from April 2nd to May 1st 2020. We only use parts 1, 4, and 5 of the survey for this study (Aoustin 2020). In the fourth part of the survey,

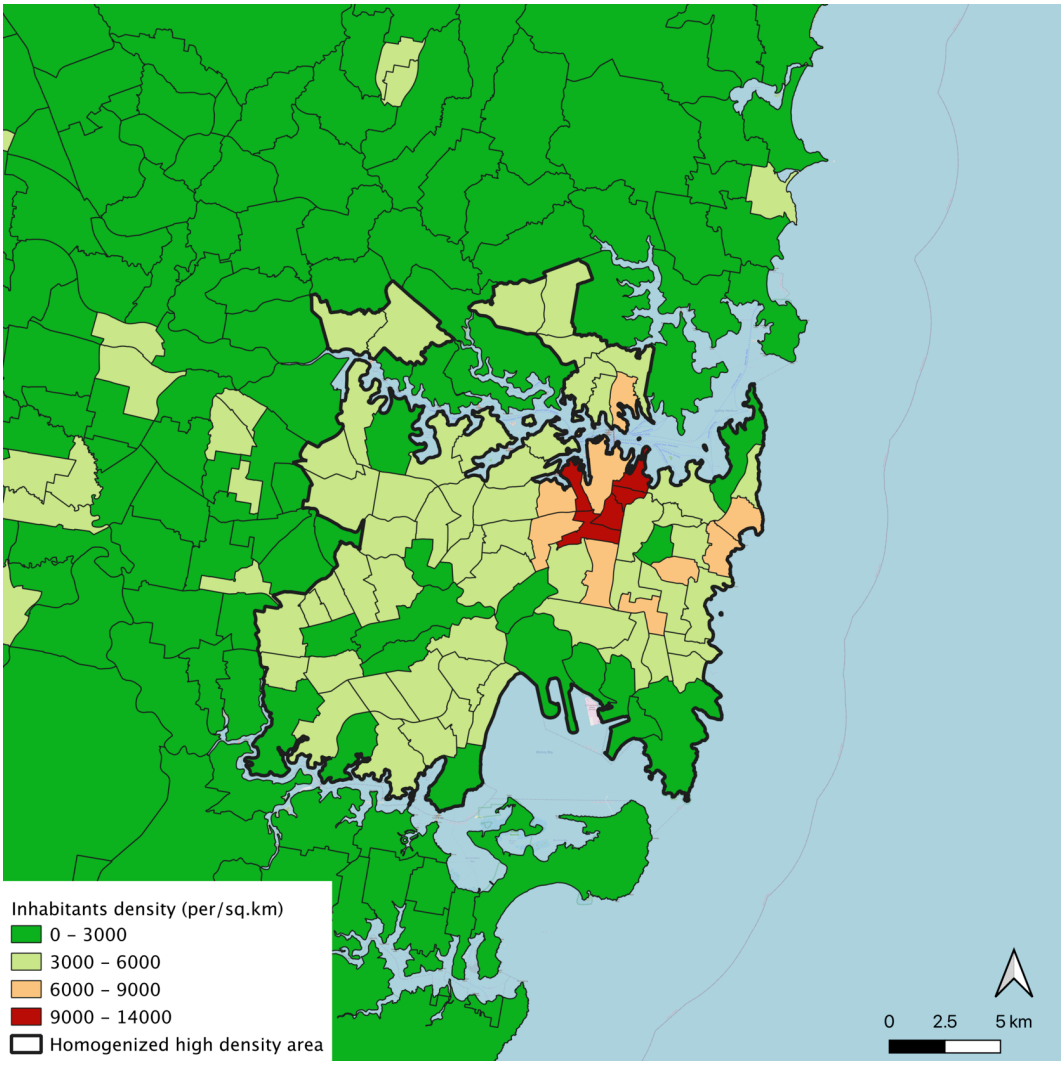

Figure 1: Population density in Sydney homogenized high density area

respondents were asked questions on their shopping behaviour, their work, and their travel behaviour during the lockdown. Answers to those questions are analysed according to the answers obtained in part 1 and 5. Part 1 has questions on the trip they undertake most often, and part 5 on personal characteristics. For public transport users, the number of transfers was estimated using Google Maps directions for the origin and destination of their trips. For analysis using part 1, we excluded respondents with inconsistent answers (Aoustin 2020).

Respondent characteristics are compared to the population from Sydney's most densely populated neighborhoods (Australian Bureau of Statistics 2020), where 77% of them live, shown in Figure 2.

A third of the collected sample is between 20 and 29 years old, which makes it younger than the actual population; 94% are workers, students, or both; 44% earn $2500 (AUD) or more per week per household, when only 32% of the high density area population earns a similar amount. Concerning the transport

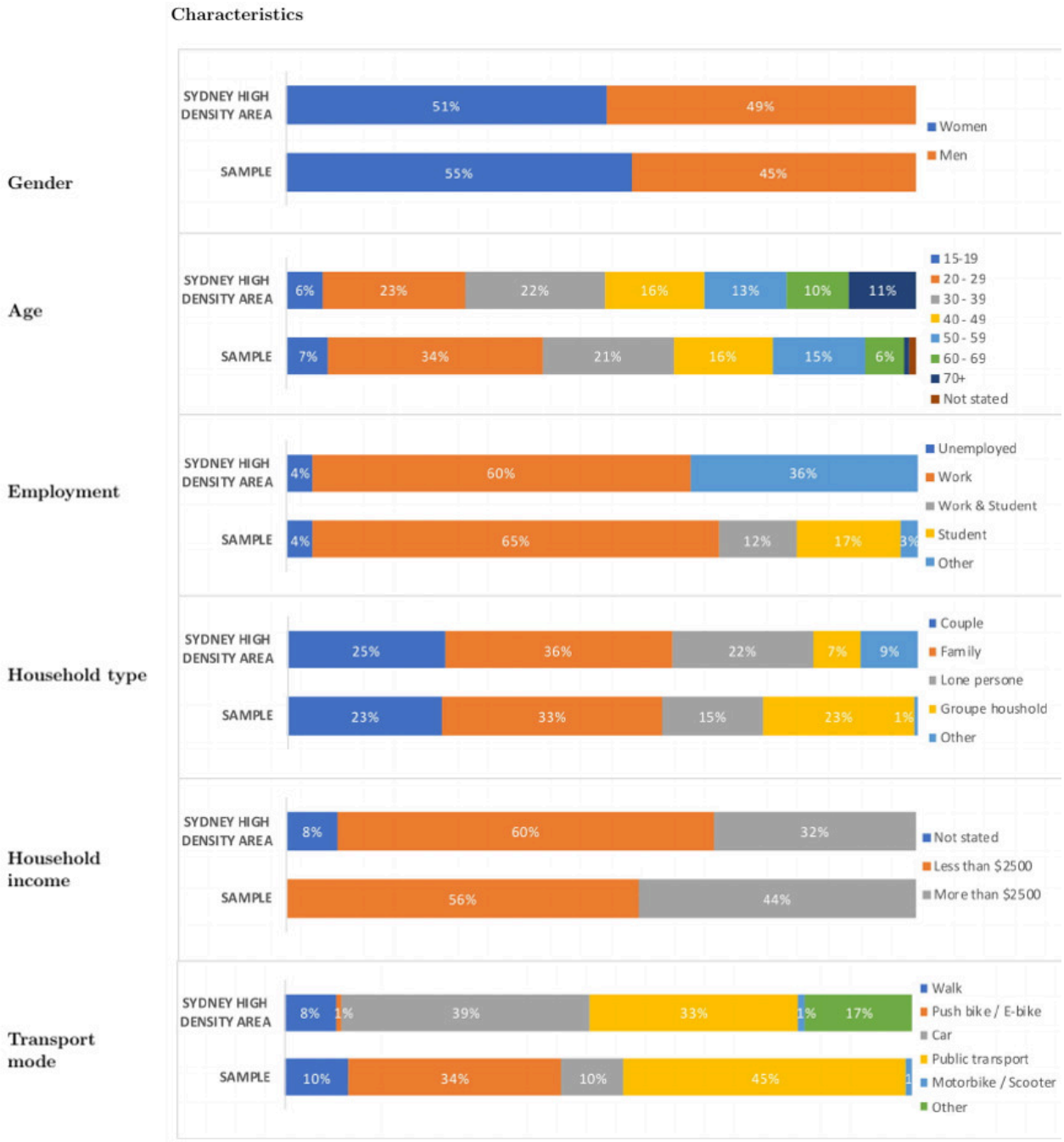

Figure 2: Comparison of the Sample and Sydney High Density Area Population Characteristics

mode, the sample over-represented cyclists as 34% of the sample are push bike (conventional unpowered bicycle) or e-bike users, while those transport modes are usually used by only 1% of the population for work trips. However, since we carry out the analysis by mode, the modal use weightings are not critical.

3 FINDINGS

3.1 General behaviour during COVID-19 lockdown

The initial results of the survey confirm those of the various surveys carried out on changes in people's behaviour during the lockdown (Beck and Hensher 2020; Lock 2020). First, 81% of the respondents replied that they travel less. Also 14% of them said they use another mode of transport. Only 12% did not change their travel behaviour (more than one answer was allowed).

During lockdown in Sydney, most of the residents were allowed to leave their homes to exercise and engage in "essential shopping". Respondents were asked questions about their shopping behavior: 44% of them did not change their purchase pattern, 37% changed the quantity of items, 23% went to different shop locations, 19% bought different types of products and only 2% changed the frequency with which they went shopping (more than one answer was allowed). Looking at the mode of transport used to go shopping, the use of public transport decreased from 7% to 2%, in favour of push bikes (+1%), car (+2%), online orders (+1%) and other (+1%).

Respondents were asked about their place of work. Before the lockdown, 44% of them had never worked-at-home and only 12% worked-at-home for 3 days or more per week. During the lockdown, only 14% still never worked-at-home, and 61% worked-at-home for 3 days or more per week. Among them, 50% worked-at-home for 5 days or more, full time at home. COVID-19 cost 8% of respondents their job.

3.2 Time appreciation during COVID-19 Lockdown

To understand how respondents experienced the decrease in time spent in transport (figure 3), they were asked the following question :

If you travel less, how much do you now miss the time you spend travelling ? From 7 = I really miss it, to 1 = I don't miss it at all.

We observe 51% of the respondents said they missed this time a little or not at all (answer 1 to 3), 17% were indifferent (answer 4) and 32% missed it (answer 5 to 7).

If we consider the gender, the proportion of women who don't miss time spent in transport (57% answer 1 to 3) is greater than the men's proportion (34% answer 1 to 3). The gap between men and women is more significant for public transport users, as there are more extreme answers (answers 1 and 7): 10% of men and 33% of women don't miss this time at all (answer 1), and 17% of men and 9% of women miss it very much (answer 7).

If we look at the appreciation of travel time according to the transport mode used, 40% of public transport users, 36% of push bike users, 28% of e-bike users, 23% pedestrians and 12% car drivers miss this time. Thus, it can be seen that those who missed this time are those who could use the time spend

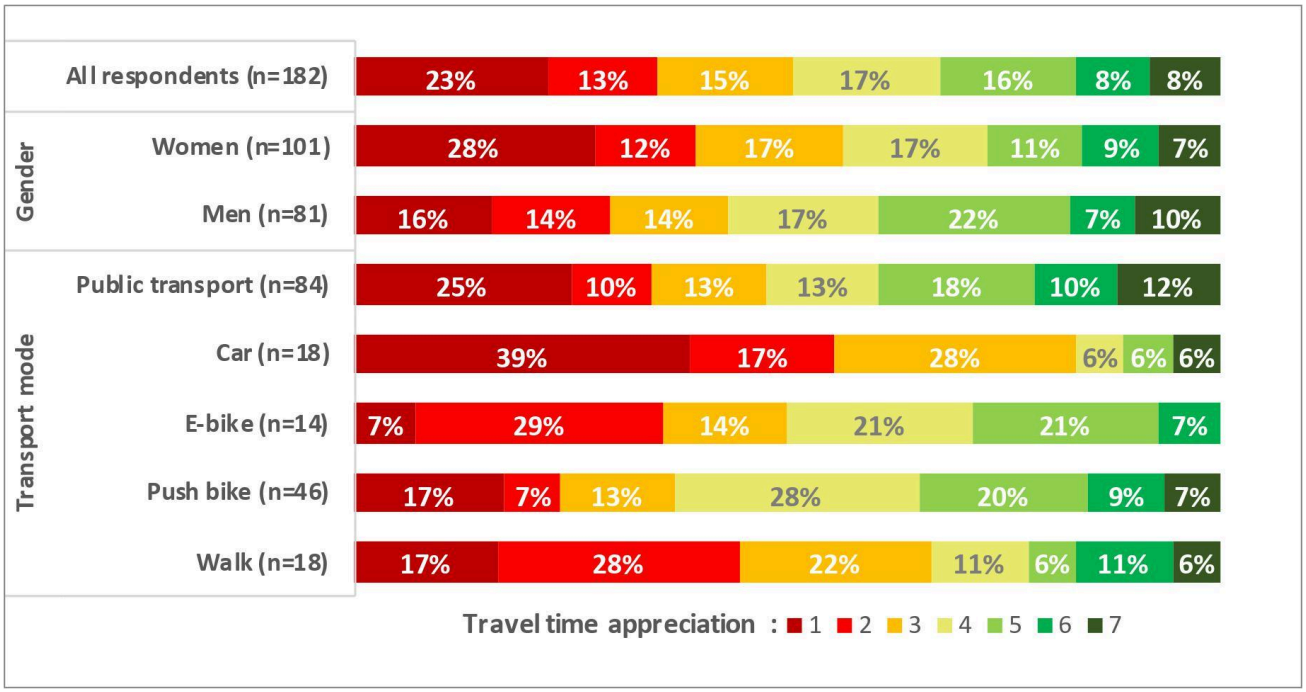

Figure 3: Respondents travel time appreciation on a 1-7 scale: 1 indicates respondent did not miss time spent traveling at all; 7 indicates they missed it very much.

travelling for other purposes than going from a place to another: public transport is a passive transport mode where the user can engage in other tasks while in motion. Bicycle users can take advantage of this time for physical exercise. The car, on the other hand, is less suitable for multi-tasking, as only certain simultaneous activities are possible (phone calls, listening to music, radio, etc.).

Drivers do miss time spent in transport least, which supports hypothesis 1. Public transport users miss it more than active transport users, but the difference between those two groups is not significant considering the sample size.

3.2.1 TIME APPRECIATION AND DURATION

To assess the appreciation of travel time depending on the duration of the travel, respondents were grouped depending if their travel time appreciation was negative (answers 1-3 on a 1-7 scale), neutral (4) or positive (answers 5-7). A t-test was performed between the travel times of the respondents who did not miss time spent in transport (answers 1-3) and the respondents who did miss it (answers 5-7). The outcome of this test shows that the means of the travel times of these two groups are not significantly different. These two groups have similar average travel times (35 minutes for those who miss the time in transport and 39 minutes for those who don't), but very different variances (respectively 549 and 269 minutes). It suggests that people who appreciate travelling have travel times closer to the average than the others, and that the ones with very short or very long travel times appreciate it less. Indeed, the

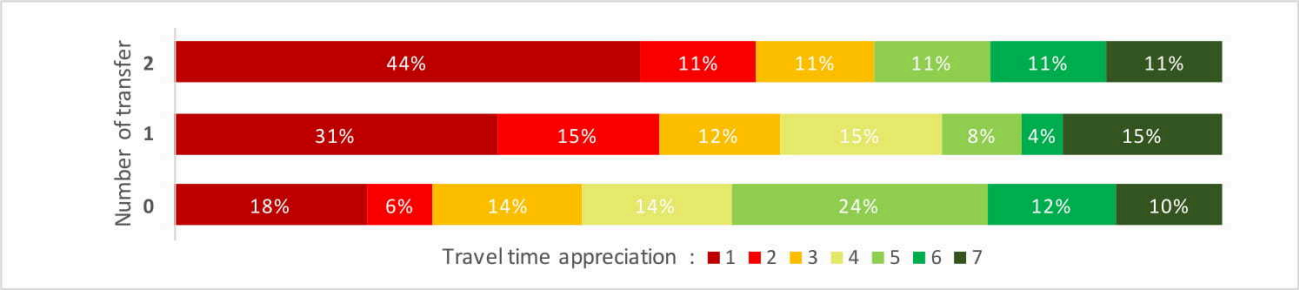

Figure 4: Public transport users' answer on how much they miss transport depending on the number of transfer they have to make. 1 indicates respondent did not miss time spent traveling at all; 7 indicates they missed it very much.

most appreciated trips are of intermediate duration: the respondents who miss travel time the most (answer 7) all have trips between 25 and 65 minutes, while the other categories are more widespread. This is consistent with the theory of the Positive Utility of Travel (Redmond and Mokhtarian 2001). If the journey is too short, it will not necessarily have much impact in everyday life because it does not allow performing other tasks and is too short to be considered as a meaningful break between activities. On the other hand, none of the respondents with a travel time of more than 75 minutes reported missing this time. We see that 32% of the respondents with trips longer than one hour don't miss transport time at all (answer 1), when only 21% of the others don't miss it at all.

3.2.2 TIME APPRECIATION ON PUBLIC TRANSPORT

The percentages in figure 4 indicate that the more transfers respondents make, the less they miss the time spent in transport. Indeed, 44% of those who have to make two transfers do not miss this time at all (answer 1), against 31% of those who have one transfer, and 18% of those who have a direct connection.

The correlation between time appreciation and the number of transfers was tested using an ordered logistic regression, with the travel time appreciation as a dependent variable, and the number of transfers required and the travel time stated by the respondent as explanatory variables (table 1). The resulting model is fairly unreliable ($p = 0.152$) (Score Chi-Square Test). The number of changes gives $p = 0.055$ and the value for the travel time stated gives $p = 0.596$. We cannot clearly corroborate hypothesis 2 "The more transfers public transport users have to make, the less they will miss commuting times." but we can reject the notion that stated travel time is linearly related to missing the commute. Ideally the hypothesis would be re-tested on a larger sample.

Table 1: Ordered logistic regression

Statistic	DF	Chi-square	Pr > Chi
Test of null hypothesis H0: Y=0			
-2 Log(Likelihood)	2	3.740	0.154
Score	2	3.764	0.152
Wald	2	3.676	0.159
Explanatory variables analysis			
Number of transfers	1	3.674	0.055
Travel time stated	1	0.282	0.596

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