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The Perception of Access in Sydney

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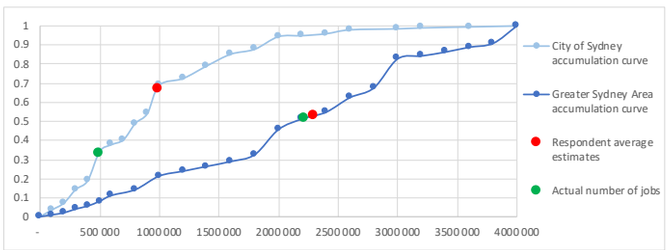
Abstract: Ensuring good access is a key element of land-use planning, allowing people to move around and access different services. This project focuses on the perception of access, as people base their transport mode choice on it. The context of lockdown due to COVID-19 also made it possible to question individuals about their habits. This study is based on an online survey of 197 people and 7 interviews. The results show that the population generally overestimated the attractiveness of the center of Sydney compared to the entire agglomeration, as well as the access to work from home. They also overestimated the access to work offered by public transport compared to that offered by cycling. Overall, they overestimated travel times compared to Google Maps, especially for the trips made by car, and the trips made by pedestrians on short journeys. Estimates of public transport users are more scattered. Cycling generally has a positive image, but long distances and the danger of a fragmented cycling network deter many residents. During the COVID-19 lockdown, commuting times were missed more by public transport users and cyclists, then by electric bicycle users, pedestrians and finally motorists. The number of changes in public transport appears to have more impact on the appreciation of transport than the travel time. Finally, the sketches made by the respondents during the interviews show a difference between public transport users and others in the way they picture their usual journeys, especially in the elements used for orientation. The use of color coding to describe the level of comfort on a bicycle trip during the interviews suggests that the main sources of discomfort came from the confrontation with road traffic. This method proved effective in obtaining a near-exhaustive description of the advantages and disadvantages of a journey. Carried out on a larger scale and with other means of transport, it is a good way of obtaining an overview of the perception of the city and its travel possibilities by its inhabitants.

1.1. Perception of access to jobs



Cumulative distribution curve of the respondents estimates of the number of job in Greater Sydney Area and in the City of Sydney

Transport mode estimated	Greater Sydney Area estimate rate	City of Sydney estimate rate
Walk	4.3	2.2
Push bike (all network)	1.5	0.8
Push bike (low stress network)	2.2	1.1
Public transport	4.0	1.7
Car	0.9	0.7

Estimate rates of the job access for each transport mode estimated

$$\text{Estimate rate} = \frac{Average\ respondents'\ access\ estimate}{Average\ real\ access}$$

➔ Overall overestimation of the attractiveness of the City of Sydney
➔ Neither the place of residence nor the transport mode used regularly by the respondent had a significant impact on the respondents' estimates
➔ Significant overestimation of the access to jobs in Sydney Greater area, and to a smaller extent also for the City of Sydney
➔ Respondents rated public transport as more efficient than cycling, while calculations show the opposite

1.2. Perception of travel time

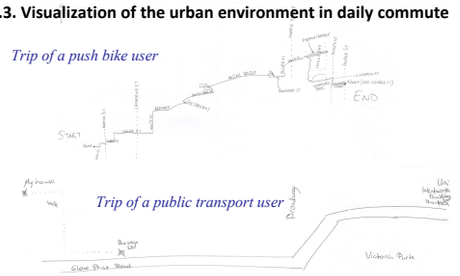
Transport mode estimated / Transport mode used	Walk	Push bike	E-bike	Car	Public transport	**Total**	Total without the mode used by the respondent
Walk	**1.36 (0.62)**	2.09 (1.50)	1.71 (0.95)	2.55 (1.63)	2.20 (1.22)	**1.98 (1.28)**	**2.14 (1.35)**
Push bike	0.98 (0.34)	**1.10 (0.41)**	0.90 (0.34)	1.76 (0.63)	1.36 (0.57)	**1.22 (0.56)**	**1.26 (0.59)**
E-bike	1.11 (0.45)	1.37 (0.49)	**1.10 (0.56)**	1.75 (0.74)	1.42 (0.64)	**1.35 (0.61)**	**1.41 (0.62)**
Car	1.01 (0.42)	1.46 (0.62)	1.29 (0.56)	**1.74 (0.75)**	1.44 (0.50)	**1.39 (0.62)**	**1.30 (0.55)**
Public transport	1.08 (1.09)	1.41 (0.74)	1.18 (0.69)	1.68 (1.02)	**1.16 (0.55)**	**1.30 (0.64)**	**1.34 (0.93)**
Motorbike	1.09 (1.03)*	1.15 (0.81)*	1.18 (1.06)*	0.92 (0.33)*	1.29 (0.73)*	**1.12 (0.87)***	**1.12 (0.87)***
Total	**1.08 (0.81)**	**1.40 (0.79)**	**1.17 (0.66)**	**1.79 (0.99)**	**1.36 (0.71)**	**1.36 (0.84)**	**1.38 (0.81)**

Average and (standard deviation) of the accuracy ratio R1 for every mode estimated, depending on the mode used by the respondent (= non-representative)*

$$\text{Accuracy ratio : R1} = \frac{Respondent\ travel\ time}{Google\ Maps\ travel\ time}$$

➔ Global overestimation of travel times, especially for car travel times
➔ Pedestrians have the highest overestimation compared to Google Maps
➔ Overestimation is higher for transport modes that the respondents do not use, except for car users
➔ Pedestrians & public transport users have the highest standard deviations for transport mode they did not use

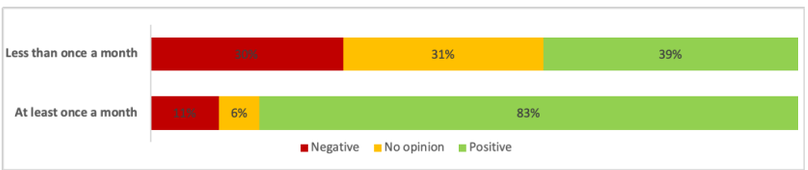
1.3. Visualization of the urban environment in daily commute



➔ Significant difference between public transport users' sketches and the others' sketches
➔ Scale of distances are biased by the attention required for each section of the road
➔ Landmarks are associated with a limited knowledge of the area

2.1. Image of cycling in Sydney

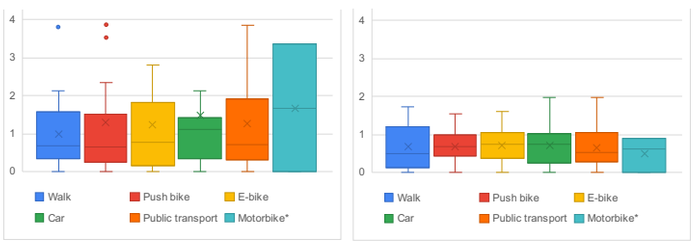
Respondent's cycling participation : 43% cycle less than once a month, 57% cycle more than once a month



Respondents' image of cyclists in Sydney (depending on their cycling participation)

➔ Respondent's made an emphasis on benefits of cycling for health and had a main concern on safety

2.1. Image of cycling facilities



R2 distribution for the estimates of roads equipped with bike facilities (left) and low traffic roads (right) in a 2km radius of the respondent's residence, depending on the transport mode they use

2.3 Comparison of cycling with public transport travel times

Respondents travel time estimates / Google Maps travel time estimates	Push bike < PT	Push bike = PT	Push bike > PT	**Total**
Push bike < PT	49%	8%	10%	**66%**
Push bike = PT	1%	1%	1%	**2%**
Push bike > PT	8%	5%	19%	**32%**
Total	**57%**	**13%**	**30%**	**100%**

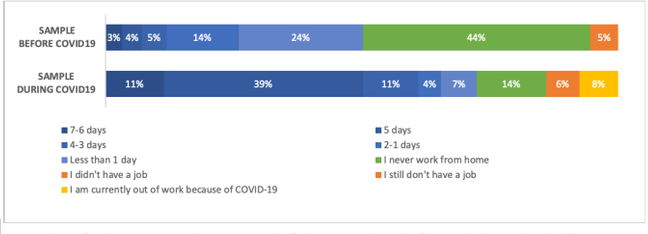
Comparison of public transport and push bike travel time estimates

➔ Respondents estimated the percentage of low traffic roads better than the percentage of roads equipped with bike facilities
➔ Estimates of the proportion of low-traffic roads is a knowledge that can be acquired on maps
➔ Estimates of the proportion of road equipped with bike facilities requires on-the-ground experience

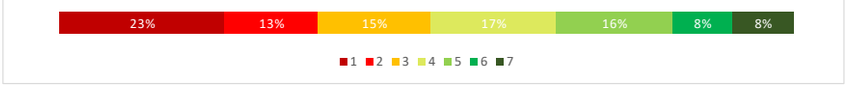
➔ Push bikes are mostly slower than cars, but faster than public transport for 66% of all the respondents, and 84% of those with trips shorter than 10km

3. Impacts of COVID-19 on travel behavior

➔ 81% of the respondents replied that they travel less, 14% used another transport mode, 12% did not change their travel behaviour



Number of telecommuting days per week of the respondents before and during the lockdown



Respondent's answer on how much they miss transport time (Red = not at all, to Green = very much)

➔ Respondent's who miss transport time the most are the ones that use a transport mode allowing simultaneous activities Respondents who miss transport time & those who don't have similar average travel times (35 & 39 minutes), but different variance (549 & 269 minutes)
➔ 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
➔ Among public transport users, the more transfer they must make, the less they miss transport time