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Short-trip travel behaviour among young adults in Greater Melbourne: Bicycles vs. cars

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1 Introduction

Entry into adulthood is a critical time for travel socialisation, where habits and skills of travelling independently are cemented (Hopkins et al., 2021, Smart and Klein, 2017). Recent studies have shown that young adults today exhibit different travel patterns compared to previous generations (Zhang and Jiang, 2020). Over-reliance on cars as a primary mode of transport contributes to numerous problems, including climate change, air and noise pollution, traffic congestion, socioeconomic disparities, and health issues (Miner et al., 2024). In contrast, a large-scale modal shift toward bike riding could bring public health, economic, social, and environmental benefits (Gössling, 2020). However, in Greater Melbourne, only 2% of trips are made by bike (Beck et al., 2021), even though 84% of young adults report being interested in cycling (Pearson et al., 2022). This suggests a window of opportunity, where more active and sustainable transport practices might replace the dominance of private car use in many developed countries, including Australia. The aims of this study were: 1) to identify the demographic and trip characteristics associated with young adults' decisions to choose a bike or car for short-distance trips and 2) to identify the characteristics of young adults who are potentially amenable to a modal shift from cars to bikes.

2 Method

We conducted a retrospective observational study using Victorian Integrated Survey of Travel and Activity (VISTA) data for 2012- 2020 for Greater Melbourne. We included individuals aged between 18 to 24 years who resided in Greater Melbourne. We restricted the analysis to short trips, defined by Bhowmick et al. (2024) as average trips distance of 7km or less, made by either bicycle or by car. To address the first aim, we conducted descriptive statistics and logistic regression, and for the second aim, we conducted a cluster analysis using a k-mode approach.

3 Results

Overall, there were 27,263 short trips included in analysis, of which 26,243 (96%) were made by car and 1,021 (4%) were made by bike. The majority of bike riders (60%) were males. Geographically, bike riders resided predominantly in the middle (65%) and inner (27%) regions of Greater Melbourne, while car users primarily resided in the outer (53%).

A large portion of short trips made by bicycles were work-related (45%), followed by trips to access education (17%). In contrast, short trips made by car were more evenly distributed

across destinations. The logistic regression showed that sex, trip distance, trip purpose, and residential location were all associated with trips made by bike.

The cluster analysis showed five distinct demographic sub-groups who took short car trips were distinguished based on education and work practices, laballed as follow:

- Cluster 1 (11%): ***'TRADES PEOPLE & STUDENTS'***
- Cluster 2 (18%): ***'FEMALE PROFESSIONAL WORKERS'***
- Cluster 3 (29%): ***'CASUAL WORKERS & STUDENTS IN MIDDLE AREAS'***
- Cluster 4 (12%): ***'MALE PROFESSIONAL WORKERS'***
- Cluster 5 (30%): ***'CASUAL WORKERS & STUDENTS IN OUTER AREAS'***

4 Conclusions

Bike riding is predominantly a male activity in which the residential location and trip purposes play a crucial role in the uptake of bike riding. Policymakers and future researchers should acknowledge the inherent "trip messiness" of young people's daily lives. It is essential to address their diverse needs—such as juggling multiple jobs, student responsibilities, and social activities—across various locations, especially since the current cycling network does not adequately meet their biking demands. This study provides foundational evidence on sub-groups of young adults that are amenable to a modal shift to bike riding. Further research is required to identify the specific characteristics, circumstances, preferences, and needs especially in the non-student population to increase the uptake of bike riding.

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