Relocation case study: Facilitating multi-modal journeys for healthy transitions

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Abstract

The Australian Road Research Board (ARRB) is preparing to relocate from its current suburban location 25 km east of Melbourne to the inner-city. A direct public transport route is not currently available and congestion moving into the city is increasing. The move will be a drastic change for the majority of ARRB's community due to longer and more complex commutes.

A case study was undertaken to understand the transport concerns of staff, with an emphasis on the last leg of the journey. Qualitative and quantitative data was collected via a survey involving 95 staff members. The viability of walking and cycling was evaluated as well as driving and public transport options.

An outcome of this study is an improved understanding of how people perceive different transport options before trialling them. ARRB intends to use the findings to address some of the specific transport challenges which are associated with the relocation. These findings could also have broader application to accessibility challenges amongst the wider community.

Introduction

Following the announcement in November 2016 of the planned relocation of the Victorian head office of the Australian Road Research Board (ARRB), from Vermont South to Port Melbourne, staff were invited to participate in an internal research project that was conducted as part of the 2017/2018 Summer Internship program. The aim of the project was to evaluate a number of transport options relevant to the new commute. A total of 117 staff were contacted, of which 95 (or about 82%) responded, including 32 females and 63 males.

This study focussed on discussions around transport options specific to the commuting plans for ARRB staff who were working at Vermont South from December 2017 to January 2018. Staff who left or joined the organisation at any time during this period were not excluded from the discussion nor from the results presented in this paper. Many aspects of the staff's perception of their transport options were considered as part of this study including:

- travel modes, times of travel, and anticipated commute plans
- time, cost and convenience
- last leg of the journey
- group travel – carpooling and ride sharing
- other considerations.

This paper presents the findings relevant to active travel, i.e. cycling, walking and public transport. It is anticipated that the findings relating to driving and group transport preferences will be presented in a subsequent research paper.

Method

The research involved three main elements:

- creating a map using quantum geographic information system (QGIS) software, to provide a visual representation of the spread of staff residences across Melbourne and its surrounds
- researching the transport options staff would potentially consider feasible for travel to the new office
- a staff survey.

The staff survey was circulated in early December 2017; there were 95 respondents.

Creating a map using QGIS

A list of current staff members based in Victoria was obtained from the HR department. Only staff who consented to be involved in the survey participated. Staff names, their employment type and their residential suburb were provided in a Microsoft Excel spreadsheet. Each of these residential suburbs, as well as the location of the new site in Port Melbourne, were then overlaid onto a Google Maps GIS layer.

This information also enabled the approximate commute time from certain suburbs to be calculated using Google Maps. The information was inserted into an Excel spreadsheet, along with the corresponding distances. This was undertaken with the aim of identifying staff members who lived close to one another in order to explore more locally-based transit options such as carpooling.

The map was incorporated into a poster of A1 size, which was placed on display around the office. The content of the poster was enhanced to capture the attention of staff and to initiate and facilitate conversations regarding journey plans, and also to encourage staff involvement. This was essential because the results of the survey would be used in subsequent stages of the project.

Researching existing transport options

This involved investigating the existing and potential transport options staff might consider for their future commute following the office relocation. Costs and timetables for various forms of transport available in both the public and private sector were obtained and collated.

Developing the survey questions

Soon after the poster was placed on display, preparation of the survey questions began. The survey would be circulated to all Victorian staff, inviting them to contribute their ideas and opinions. It was intended to assist in categorising their common concerns and transport interest areas, and to gauge the viability of the various transport options which were being collated. The survey questions were developed following input from senior researchers and engineers within the company. Online survey development software, SurveyMonkey, was used as the platform to distribute the survey via weblink. A preliminary draft of the survey was sent to a small pool of employees, who were asked to trial the questions and make suggestions for possible changes, additions or deletions.

Survey participants were made aware that their responses would be collated but would not be publicly attributed to individuals. The questionnaire topics included:

- travel options and preferences:
    - last leg of the journey
- time, cost and convenience
- group travel facility.

The employment status of each of the respondents was important when considering transport options as some staff work flexible hours and days throughout the week, and this may influence their transport preferences.

The survey consisted of a total of 21 questions, 12 of which were multiple-choice questions requiring straightforward data, thus enabling an easy and quick analysis. Three types of multiple-choice questions were utilised including single and multiple answer, ranking, and rating scale questions.

The multiple-choice questions provided structured answers; however, most questions included an additional comments box to allow respondents to clarify their reasoning where necessary and also for situations where the question might have not been relevant to the respondent. The remaining nine questions were open-ended, requiring respondents to provide their own response.

Collating results from staff survey

The fixed-answer multiple-choice questions in the survey were collated using Excel to build an understanding of the proportion of staff who were interested in certain modes. The survey questions which involved an open-ended response were analysed in Excel using the following process:

- responses were scanned to identify commonly recurring themes and response categories
- responses were then allocated to one of a limited number of categories
- the frequencies of the different responses were determined
- analysis was checked to ensure a consistent and thorough categorisation process.

Limitations and Assumptions

The main limitations to the study were that the sample size was small (95), and only residential suburbs rather than specific home addresses were requested for privacy reasons. The views reported in this study were reflective of the opinions of staff employed in December 2017 who participated in the survey. The views of staff who left ARRB at any time following the release of the survey were not excluded from the analysis.

Findings

Residential distribution of employees

The residential distribution of employees is shown in Figure 1. For the purposes of preparing the poster, an initial map was generated which included all suburbs where staff resided. The map was subsequently updated to include only the information relevant to the 95 survey respondents. It can be seen from the Figure that many staff are located in the south-eastern suburbs of Melbourne[1].

Existing transport options

The new office site at Port Melbourne is located on the fringes of Melbourne's Central Business District (CBD), approximately 3.5 km from the closest train station, Southern Cross in the central CBD. Port Melbourne currently has limited accessibility via public transport from Southern Cross station, with non-direct public buses servicing the area approximately every 15-30 minutes. The buses are overcrowded during peak times.

After considering the transport options available from locations beyond Southern Cross, in addition to driving in a single-occupancy vehicle, the following list was compiled:

- carpool
- taxi/Uber/Goget car
- minivan/charter/shuttle bus
- ferry
- motorbike/scooter (manual, electric)
- public transport (bus, train, tram)
- bicycle (manual, electric, folding)
- walking.

The data collated regarding cycling, walking and public transport options is the main focus of this paper.

[1] The office at Vermont South opened in 1972.

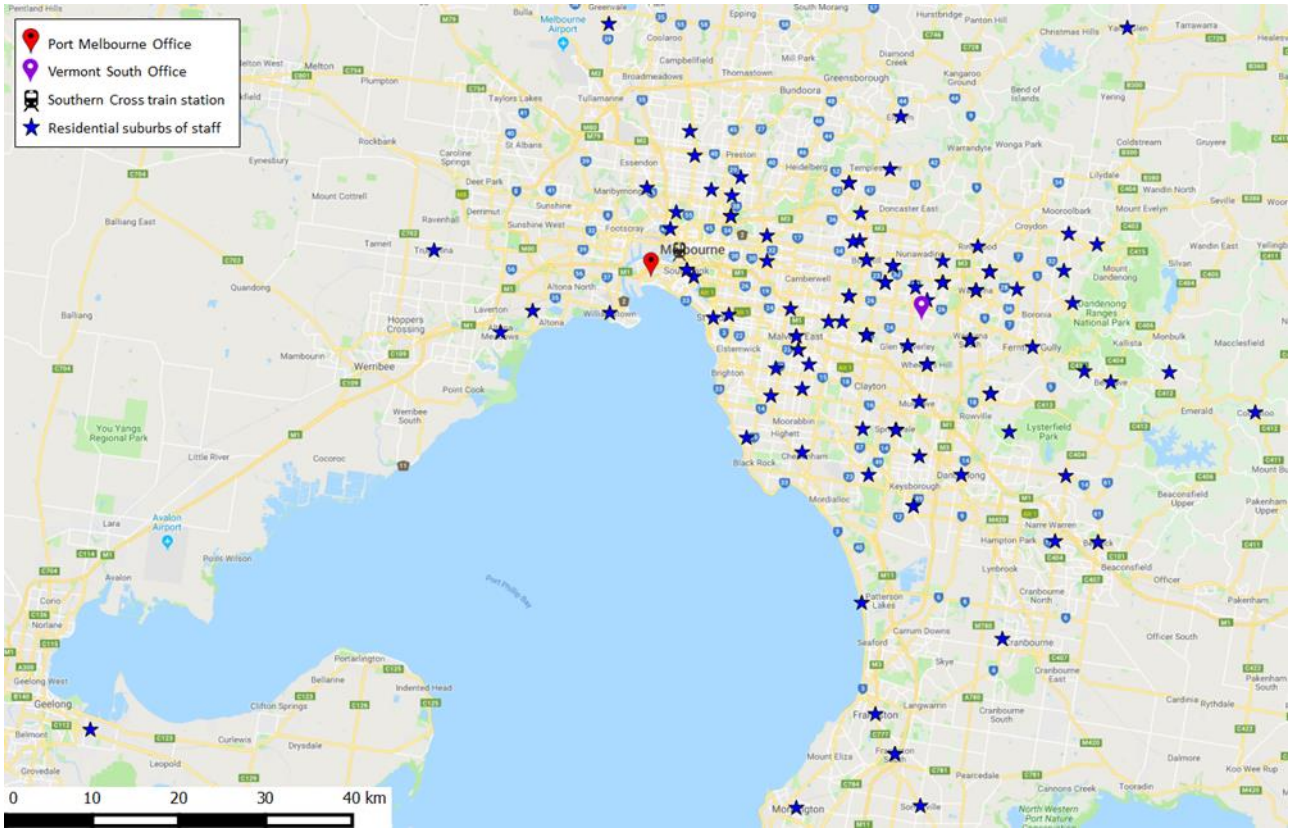

Figure 1: Map showing residential suburbs of staff across Melbourne. New office location in Port Melbourne, closest train station in Melbourne's CBD, and existing office location in Vermont South are also marked as indicated in the legend.

Employment status

As shown in Figure 2, the survey respondents included 73 full-time staff, 17 part-time staff, three casual staff and two vacation students.

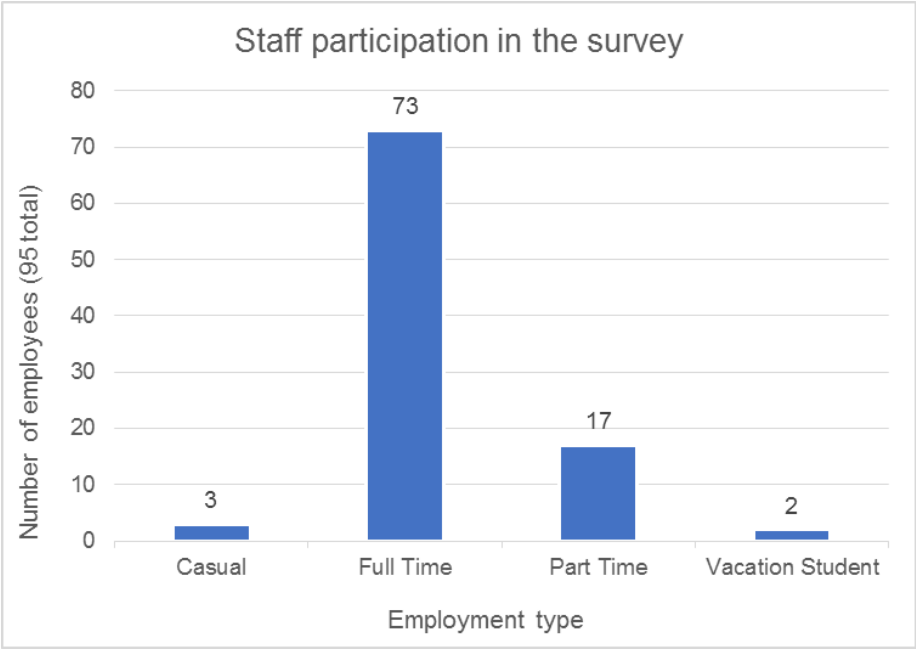

Figure 2: Survey participation breakdown of staff employment type based on total of 95 respondents.

Travel options and preferences

The survey included five questions relating to the transport mode preferences of ARRB staff for the overall commute to work. These were:

- Question 2: What is your current mode of transport to Vermont South?
- Question 4: At this stage, what is your preferred (option which appeals to you the most) mode of transport to Port Melbourne?
- Question 5: At this stage, what is your anticipated (option you'll most likely use) mode of transport to Port Melbourne?
- Question 6: If there's a difference in your answers to Questions 4 & 5, please indicate why.
- Question 7: Please indicate the steps involved in your anticipated commute plan to Port Melbourne, e.g. drive to train station, take train to Southern Cross, catch bus to Port Melbourne, walk to office.
- Question 7 (continued): When compared to your current mode of transport to Vermont South, how much MORE/LESS do you estimate this commute plan will cost you in AUD per day?

The relationship between respondents' current mode of transport to Vermont South (survey question 2) and their nominated preferred and anticipated modes of transport to Port Melbourne (survey question 4 and 5 respectively) are indicated in Figure 3.

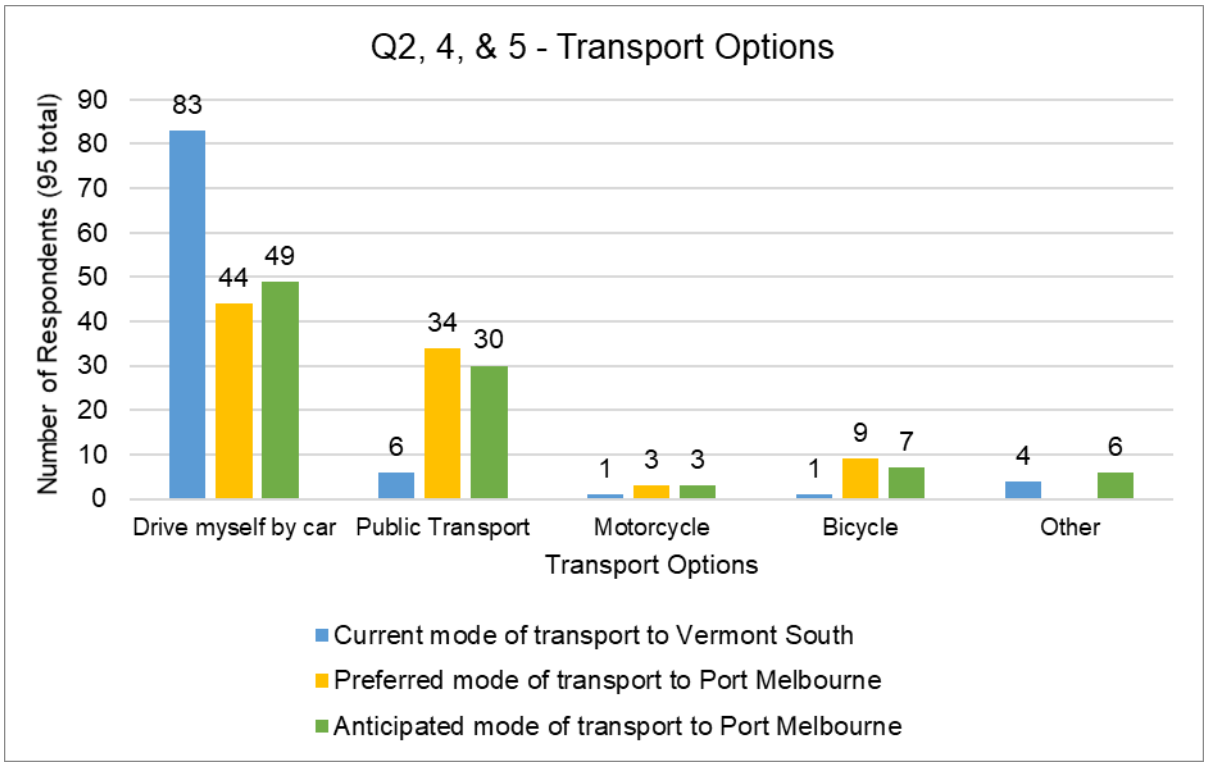

Figure 3: Breakdown of current, preferred and anticipated transport modes based on 95 respondents who completed survey questions 2, 4 & 5.

Figure 3 shows that a significant number of staff intend to shift from driving to public transport. Of the 95 respondents to survey question 2, only six indicated that they currently take public transport to Vermont South.

When considering that public transport options tend to require some travel by walking and/or cycling, the responses to survey questions 2, 4 and 5 suggest that the office relocation is expected to involve incorporation of active travel into the commute for an additional 30 staff (24 by public transport and six cyclists).

For those respondents who indicated a difference in their preferred and anticipated commute modes, survey question 6 was included to understand the reasons why. There was reasonable similarity between the total number of respondents preferring to use certain transport modes and also anticipating their use in their overall commute. However, the reasons given did shed some light on the limitations of active travel perceived by respondents.

When those who had shown a preference to cycle for their overall commute were asked why they anticipated that they would use an alternative mode of travel, all five respondents gave reasons (Figure 4). These tended to relate to time restrictions, weather and safety considerations. Similarly, the respondents who had indicated that they anticipated to cycle but preferred other travel modes gave reasons which related to the accessibility issues of their preferred other forms of transport (Figure 5).

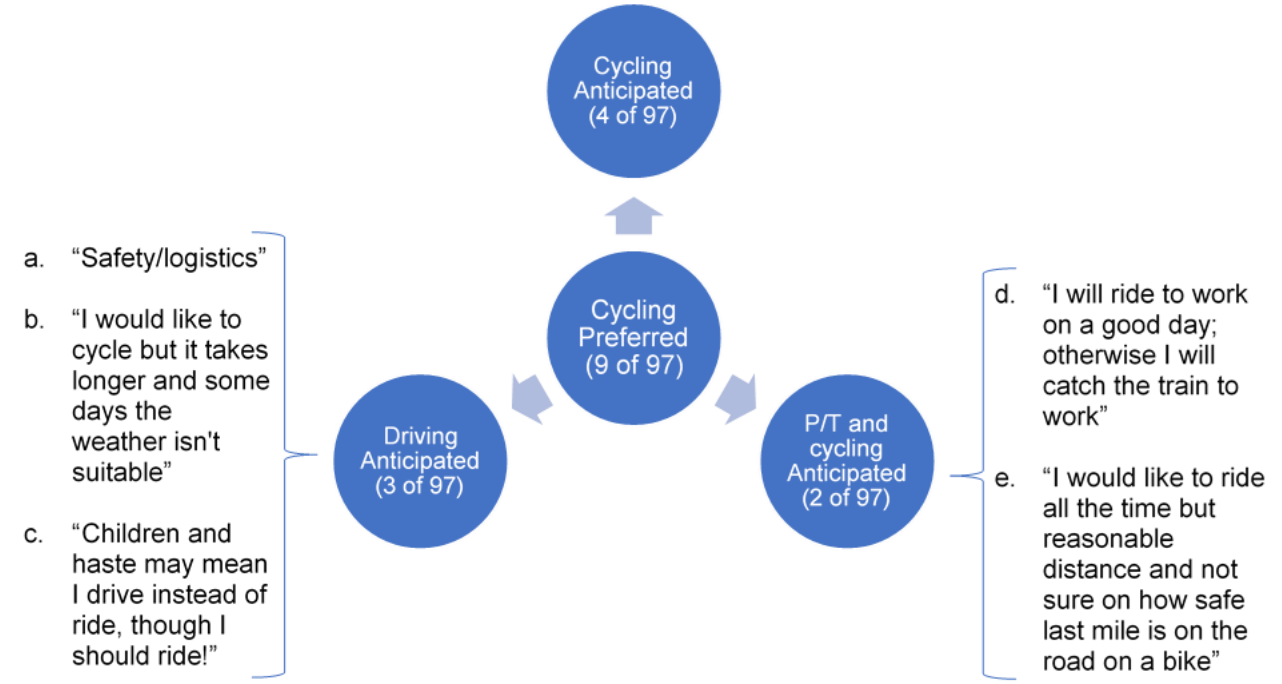

Figure 4: Breakdown of respondents who indicated a preference for cycling for their overall commute; Those indicating a preference for cycling who anticipated that they would likely use an alternative mode of transport gave reasons as indicated.

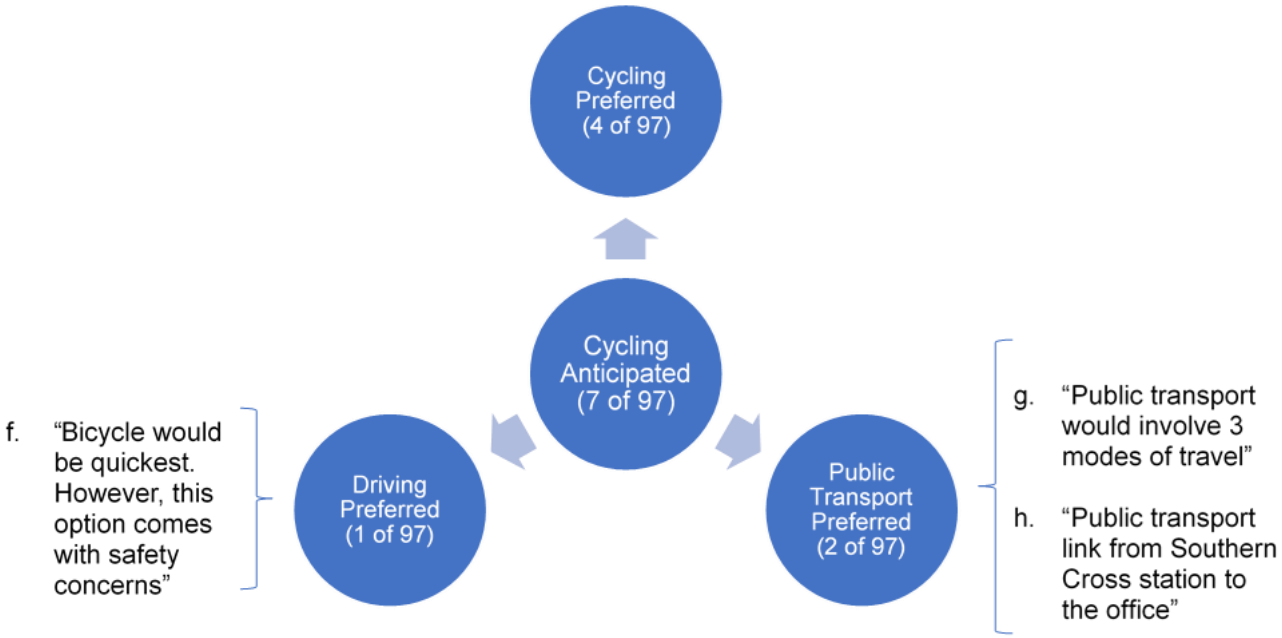

Figure 5: Breakdown of respondents who indicated that they anticipated to cycle for their overall commute; Those who also indicated a preference for an alternative mode of transport gave reasons as indicated.

As shown in Figure 6, when those respondents who had shown a preference for public transport for their overall commute were asked why they anticipated that they would use an alternative mode of transport, all 14 gave reasons. These tended to relate to time restrictions and, in most cases, dissatisfaction with the current accessibility, reliability and/or the multiple interchanges required, to reach the new office.

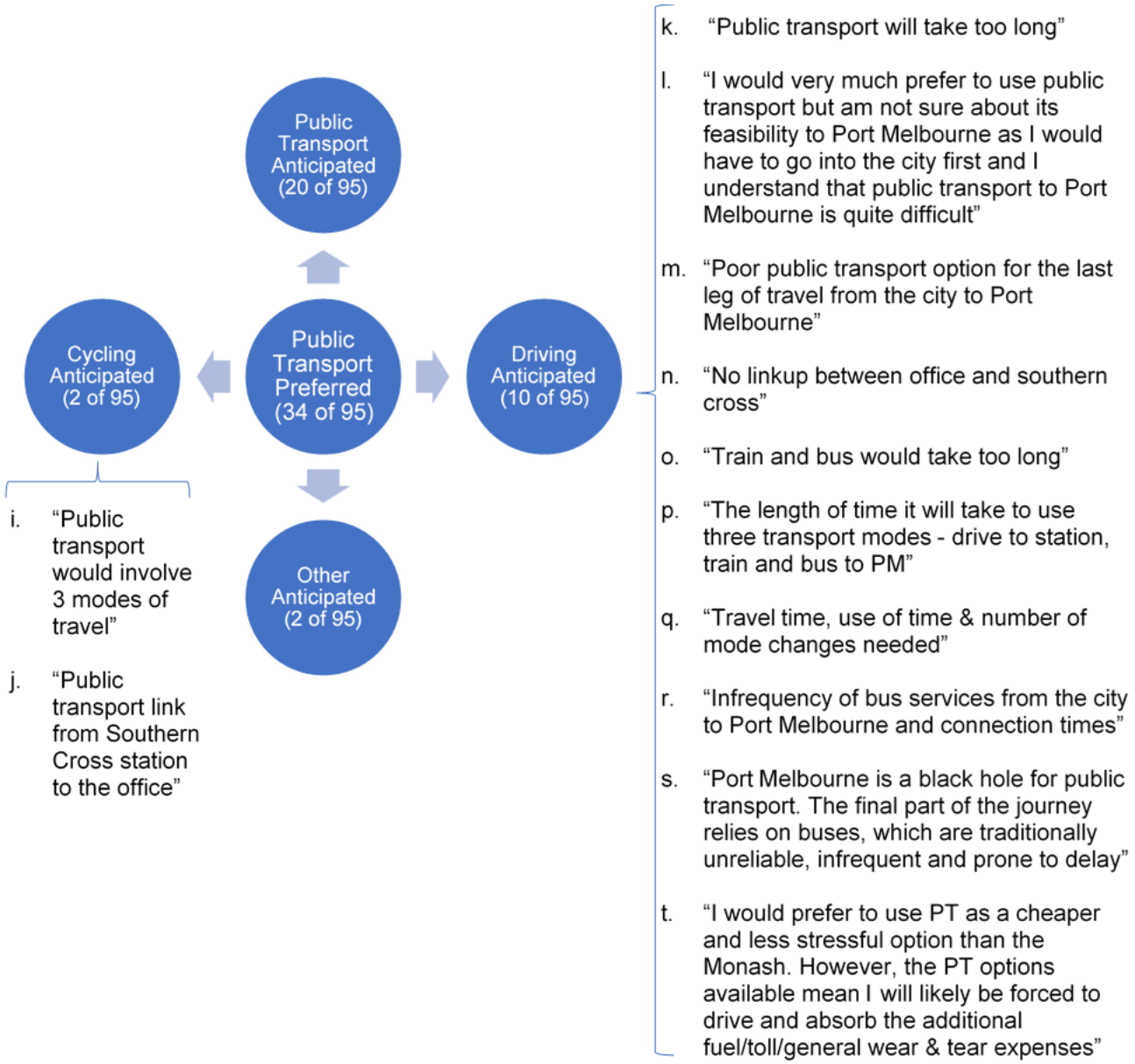

Figure 6: Breakdown of respondents who indicated a preference for public transport for their overall commute; Those indicating a preference for public transport who anticipated that they would likely use an alternative mode of transport gave reasons as indicated.

When respondents were asked to indicate the steps involved in their anticipated commute plan (survey question 7), 40 out of 86 respondents included active travel as part of their commute plan as shown in Figure 7.

Figure 7: Summary of commute plan options based on the 86 respondents who completed this question.

When respondents were asked to compare their commute plan with their current mode of transport to Vermont South (survey question 7 continued), 71 of the 85 respondents indicated that their travel costs would increase. Of these 71 respondents, 40 were from the driving category and 31 were including active travel in their commute. Eight respondents indicated it would decrease and six were unsure or thought it would remain unchanged.

Travel options and preferences – last leg of the journey

The survey included four questions relating to travel mode preferences in relation to the last leg of the commute to work from Southern Cross station to the Port Melbourne office. This was an opportunity to focus in on staff preferences regarding active travel from a common and likely starting point, while excluding the option of driving a single-occupancy vehicle. These were:

- Question 13: If the last leg of your journey was from Southern Cross station to Port Melbourne, which currently available transport options would you consider most favourable? Please rank the options from the most preferred (1) to the least preferred (5).
- Question 14: In relation to Question 13 above, please indicate the reason(s) behind your ranking.
- Question 15: In relation to Question 13, would daylight saving influence your choice?
- Question 16: In relation to Question 13, which would be the most influential factor in your choice of transport? (from Southern Cross station to Port Melbourne office). Please specify the reason(s) for your choice.

The relationship between respondents' most influential factors (survey question 16) in their nominated choice of transport (survey question 13) is indicated in Figure 8.

Of the 86 respondents to survey question 13, 31 ranked active travel options as their most favourable option for the last leg from Southern Cross station (Figure 8). Overall, cycling tended to be considered more feasible than walking by respondents, who often commented that the last leg was too far and that it would take too long to walk. Of the 21 respondents who rated cycling and walking as their least favourable options (ranking of 4 or 5 for both), weather, distance/time and safety concerns tended to be mentioned.

When asked about influential factors for the last leg of their commute, time was consistently the most common choice across every transport mode, except for those respondents who indicated that walking was their most favourable option, where flexibility was the most popular answer.

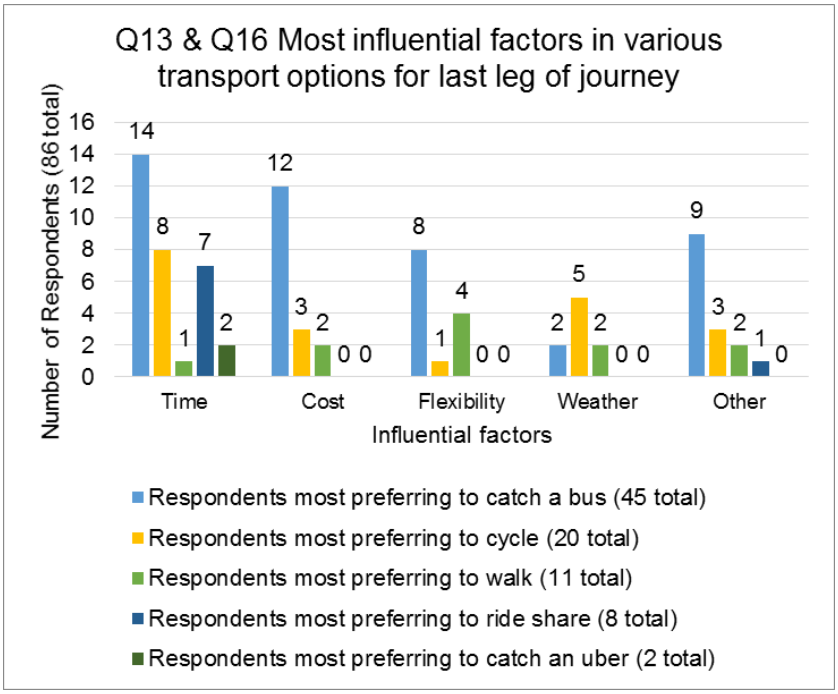

Figure 8: Breakdown of respondents' most influential factors in the choice of transport for the last leg of the journey (survey question 16) based on the most preferred choice of transport indicated by the 86 respondents who completed survey question 13.

When asked to rank their options for the last leg of the journey from their most preferred (1) to their least preferred (5) (survey question 13), 20 respondents ranked cycling as their most favourable option for the last leg of their journey. The reasons they gave (survey question 14) tended to relate to it being the fastest and cheapest mode for the last leg and/or they noted the health benefits; some also indicated that they considered public transport unreliable. The following are some of the reasons given by the respondents:

- "Fast and cheap".
- "The walk and cycle options are good exercise, the ride share and Uber are quick, the bus is a boring wait!".
- "Prefer exercise in between".
- "I won't be catching public transport, takes too long".
- "Happy to go under my own steam, but cycling is a lot quicker than walking".
- "Cycling would be quickest, walking takes too long".
- "Bus service not regular enough, 3 km a little too long for walk to work".
- "Exercise. But need somewhere to store bike safely at Southern Cross station".
- "Cycling is fun and quick. walking will be so long, and bus is not reliable".
- "Cycling is the quickest method (approx. 16 minutes) compared to bus (minimum 23 minutes)".

For the 11 respondents who ranked walking as their most favourable commute option for the last leg of the journey from Southern Cross station, the reasons they gave tended to relate to the perceived health benefits:

- "Weather dependent, exercise options".
- "I heard bus is always full and you can't get on. Walking or cycling is good for health".
- "Walking is good exercise, I don't cycle (nor do I think it particularly safe on Melbourne's roads) and I dislike the Uber Company".
- "If my commute is going to be long, I need to get in some exercise, so walking is my preferred option".
- "(1) incorporate exercise into commute, and it takes little longer than the bus (2) bus is scheduled, so reliable – provided you aren't working late or starting really early. (5) cycling is dangerous, particularly in peak hour (CBD) and in a truck-rich environment (Port Melbourne)".

When asked if daylight saving would influence the respondents' choice of transport for the last leg, 17 of 85 indicated that it would (Figure 9).

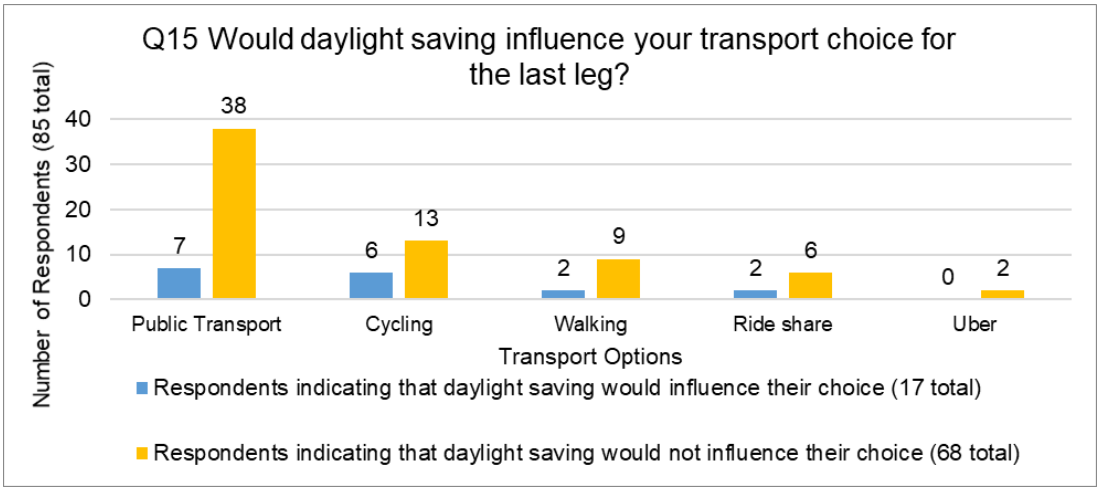

Figure 9: Influence of daylight saving on the choice of transport options for the 86 respondents who completed survey questions 13 and 15.

As shown in Figure 9, those who ranked cycling as their most favourable commuting option for the last leg were seen to be proportionally more concerned about daylight saving. The impacts of daylight saving were also perceived more acutely by women. While 14 of the 34 respondents who indicated a preference for active modes in their overall commute and 14 of the 30 respondents who anticipated using active modes in their overall commute were women, when asked about the last leg of their commute, women were represented by 12 of the 17 respondents who indicated that daylight saving would influence their choice.

The reasons women gave were all related to safety concerns:

- "Don't want to be traveling in the dark by foot or cycle as a female".
- "I wouldn't want to cycle to the station in the dark at the end of the work day, if a bus wasn't available I would probably take an Uber".
- "Do not like to travel in the dark".
- "Walking is safer for women in daylight and well patronised routes".
- "Personal safety; perceived weather conditions".
- "More dangerous to ride a bike on the road at night".

Generally, the responses from the males tended to be less focused on safety and more logistics based:

- "I would do more earlier starts".
- "Cycling obviously safer in daylight than in darkness".
- "I may prefer to wait for the bus when it's darker, colder and wetter".
- "I would be more likely to use a bike during daylight saving time".

Discussion

Whilst the sample size was small, the techniques used to engage staff participation and interest during the transition period before moving to a different office location were found to be effective in generating some significant insights. In terms of the methodology, it was established that:

- the poster display and subsequent survey were effective techniques to engage staff participation and discussion
- based on the residential suburbs of staff, in combination with the investigation into existing transport options, most staff were of the opinion that the new site at Port Melbourne would be more difficult and costlier to access compared to their existing commute to Vermont South.

In order to reduce the impact of the office relocation on staff overall, and in particular for those staff who showed some level of inclination towards active travel, the following are relevant:

- Many staff who have previously driven to work in Vermont South are planning to use active modes of travel to commute to the new office in Port Melbourne. The last leg of the journey from Southern Cross station to Port Melbourne is an area of common concern to many staff who noted the infrequency and unreliability of the bus which services the route between Southern Cross station and Port Melbourne. Staff planning to drive could also be encouraged to take public transport if this could be improved.
- In addition to accessibility issues, concerns around safety, weather and travel times were identified as common themes for those who indicated a preference for active modes for their overall commute, but anticipated driving or using less active modes.
- Those respondents who chose walking and/or cycling as their most favourable option for the last leg of their commute tended to note the health benefits in their reasoning. Those favouring cycling also identified that it was their fastest or cheapest option. Walking was considered to be generally not feasible for the last leg of the journey in this study, as 3.5 km was perceived to be too far and to take too long. For those where walking was their most favourable choice for the last leg, weather and flexibility tended to be the most influential factors in their choice rather than time, which was the most popular choice for all other travel options. To encourage staff who are concerned with the time commitment involved in walking, the benefits of exercise and consideration of alternative ways to make better use of this time through “walking meetings” or similar could potentially assist.
- Daylight saving tended to influence choices of transport for the last leg, particularly for women. This indicates that there are more complex challenges for commuters in the darker, colder months. Additional public transport options and later starts/earlier finish times may reduce the impact of these issues.

Conclusions

The analysis undertaken as part of this study resulted in an improved understanding of staff concerns and anticipated travel modes. It is difficult to draw conclusions based on the small sample size and diversity of opinions. However, in this study the perceived motivation to pursue active modes of travel tended to be associated with one or more of the following factors:

- fine weather
- reduction of overall commute time
- acknowledgement of the health benefits
- dissatisfaction with public transport alternatives.

Conversely, reduced motivation or negative comments regarding active modes tended to be associated with one or more of the following factors:

- poor weather
- increased commute time where health benefits were less likely to be mentioned
- concern about safety
- time/flexibility implications.

To gain further understanding of employees' perceptions it is recommended that a follow-up study be conducted. Flexible hours, improvements to the last leg of the journey, support during the non-daylight saving months and a focus on opportunities for time gains could all reap benefits in terms of staff satisfaction and improve the uptake of active travel modes.

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Declaration of competing interests

The author declares no competing financial interests.