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The Public Transport Usage of Two Melbournes

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Abstract

Until the last few years, Melbourne has undergone a substantial job redistribution with increased growth in financial and business services jobs in the CBD and a renaissance in residential population in its inner regions. This trend was identified in the 'From Doughnut City to Café Society' document, published in 1998 by the then Department of Infrastructure. More recently, unprecedented population growth in Melbourne's outer reaches has joined with the ongoing surge in inner city jobs to increase the demand for commuter transport. Household economics, consumer preferences and road congestion have funnelled this demand for commuter transport into public transport where facilities and frequent services are more accessible.

With Zones 1 and 2 (Melbourne 1 and 2) as a proxy for inner and outer Melbourne, this paper analyses public transport use and changes in income using ABS collections including the supplementary survey on Household Water, Energy Use and Conservation survey for Victoria (ABS Catalogue No. 4602), Household Expenditure Survey and Census. The data collected shows the trends surrounding the dynamic economic and demographic shift in the city structure, in addition to the factors affecting public transport use in Melbourne.

There are clear differences between Melbourne 1 and 2 users of public transport in income, public transport expenditure and propensity for public transport use.

1. Introduction

This paper follows on the 'From Doughnut City to Café Society,' a 1998 publication that examined the demographic and economic trends in Melbourne over the past decades. During the seventies, Melbourne spread outwards with the widespread adoption of the motor car. Since the mid 1980s, gentrification of inner suburbs has occurred – having rediscovered the benefit of reduced travel time and the increased business and financial services employment opportunities in the CBD. The next stage of the story, told using ABS statistics with a new concentric geography based on public transport fare zones, explains the surge in public transport usage.

Metropolitan public transport in Melbourne is based on a zonal fare scheme of travel, which is coordinated and administered by Metlink. Department of Transport (DOT) investigated differences in the population characteristics of the two zones by commissioning the Australian Bureau of Statistics (ABS) to create a customised geography corresponding to the two zones referred to as Zones 1 and 2 (referred to throughout this paper as Melbourne 1 and 2). ABS used census collector district geographic boundaries to convert these zones to statistical geographies, enabling DOT to examine spatial variations in public transport use. It should be noted that prior to March 2007, there were 3 zones covering the public transport network in Melbourne. For the purposes of this investigation which starts in 2001, Zone 2 has been expanded to include Zone 3 as well.

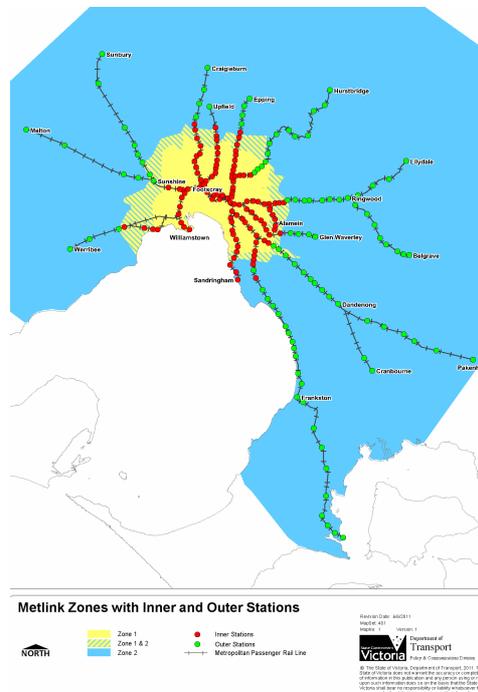
The objectives of this paper are:

1. To determine public transport usage between two Melbournes;
2. To examine income and expenditure characteristics of public transport users between them;
3. To compare workplace locations for both zones, focusing primarily on those using public transport; and
4. To discuss trends that can impact on future public transport demand for both zones.

2.1 Melbourne 1 and 2

Melbourne's public transport ticketing system is divided into two main fare zones. Metropolitan Public Transport Zones 1 and 2 (Melbourne 1 and Melbourne 2) cover 98% of the population of the Melbourne Major Statistical Region (MSR)¹. Based on the 2006 census, Melbourne 1 and Melbourne 2 have a population of 1.1 million and 2.3 million, respectively, representing 32% and 66% of the Melbourne MSR. Melbourne 1 comprises the pre war suburbs generally located around a network of train and tram services, which provide relatively high levels of access to services and activities. However, more than twice as many people live in the post-war middle and outer suburbs of Melbourne, where activities and services are beyond walking distance and with generally lower levels of access to public transport services². In terms of spatial coverage, Melbourne 1 covers approximately 1,485 sq km compared to 5,382 sq km in Melbourne 2. Melbourne 1 and Melbourne 2 also accounts for 32% (553,850) and 65% (1.0 million), respectively, of the total number of resident workers in the Melbourne MSR based on place of enumeration per Census 2006 data. Melbourne 1 has 674,566 jobs in its workplaces compared to Melbourne 2 which has 807,306. Melbourne 1 had 120,716 more jobs than resident workers in 2006, adding to the transport task by the need to move these commuters between zones twice a day.

Figure 1 Melbourne 1 and Melbourne 2 with Inner and Outer Stations



Source: DOT

¹ Australian Bureau of Statistics (2009)

² Betts (2007)

There is a marked difference in use of different transport modes across the two Melbournes owing to the structure of the network itself and/or access to the service. Table 1 provides the estimated average weekly boardings for trains, trams and buses across inner and outer suburbs³. The inner and outer suburbs classification is more or less similar to the two transport zones, and as such, can be considered as proxy indicators (see Figure 1 for details).

Bus usage is more prevalent in the outer suburbs, accounting for 65% of average weekday boardings in 2008-09, up from 63% in 2005-06. Bus patronage in the outer areas of Melbourne has grown at a higher rate than the inner areas. In 2008-09, average weekday bus patronage in the outer areas grew by 9% from the previous year, compared to 5% growth in the inner areas of Melbourne, reflecting the substantial increase in bus services in the outer areas.

Tram is predominantly an inner area transport mode. The outer areas have 3% of tram stops and also account for 3% of patronage. Inner areas account for 97% of estimated average tram patronage on weekdays in 2008-09. For trains, 67% of average weekday patronage in 2008-09 came from inner areas. However, when considering the average AM peak patronage, inner and outer areas comprise 52% and 48% of patronage, respectively in 2008-09. As with bus patronage, train patronage in outer areas has been growing at a higher rate compared to inner areas. From 2002-03 to 2007-08, average AM peak patronage in outer areas expanded by 33%, compared to 27% in inner areas while average weekday patronage in outer areas grew by 40% compared to 36% in inner areas.

Table 1: Estimated Average Weekday Patronage, 2005-06 and 2008-09

Location	2005-06			Total	2008-09			Total
	Bus	Train	Tram		Bus	Train	Tram	
Inner	85,272	346,475	480,262	912,009	99,116	472,072	551,696	1,122,884
Outer	142,714	164,063	15,238	322,014	198,508	229,425	17,504	445,438
Total	227,985	510,538	495,500	1,234,023	297,625	701,497	569,200	1,568,322

*Tram Inner and Outer Average Weekday Patronage estimated using percentages from 2005-06 Inner and Outer Melbourne Tram Patronage Metlink OD Survey (3% of tram patronage in Outer Areas)

Source: DOT PTD, Author computations

3. Public Transport Usage across Melbournes 1 and 2

3.1 Public Transport Use for Melbournes 1 and 2

The ABS State Supplementary Survey (SSS) - Household Water, Energy Use and Conservation for Victoria was conducted in October 2009 throughout the state, collecting information on public transport use, as well as household water and energy sources, insulation, energy use, swimming pools and gardens. The survey was a supplement to the Monthly Population Survey which is based on a multistate area sample of private dwellings and a list sample of non-private dwellings. A full response was collected from 4,259 people (93% of sample size). The supplementary survey's public transport use component covers the two main transport zones. The scope of the public transport chapter includes only people aged 18 years and over usually residing in Metropolitan Public Transport Zones 1 and 2 within Melbourne MSR.

³ "Inner" Melbourne tram stops and stations fall within the following LGA's - Melbourne, Stonnington, Port Philip, Yarra, Glen Eira, Bayside, Borrondara, Darebin, Moreland, Moonee Valley, Maribyrnong, Hobsons Bay

3.1.1 Incomes of People using Public Transport

The SSS shows that Melbourne 1 has proportionately more residents with an annual household income above \$110,000 (29%) than Melbourne 2 (21%).

Table 2: Distribution of Persons by Household Income and Residence, 2009

Annual Household Income	Number of Persons (%)		
	Melbourne 1	Melbourne 2	Melbourne 1 and 2
Less than \$25,000 per year	14%	14%	14%
\$25,000 to less than \$50,000 per year	15%	20%	18%
\$50,000 to less than \$70,000 per year	14%	16%	15%
\$70,000 to less than \$110,000 per year	22%	24%	23%
\$110,000 or more per year	29%	21%	24%
Total	100%	100%	100%

*Total includes no source of income, don't know income or refused to answer income question.

Source: 2009 SSS Household Water, Energy Use and Conservation for Victoria, ABS

3.1.2 Frequency of Public Transport Use

Based on the SSS, of the 3 million people (aged 18 years and over) living in Melbourne 1 and 2, 1.1 million (37%) used public transport in the last month. Of those who used public transport in the last month, 499,000 people (45%) usually used public transport three to seven days a week.

Table 3 shows that Melbourne 1 had a higher proportion of public transport users in the last month (55%) than Melbourne 2 (28%). Melbourne 1 also had a higher proportion of frequent public transport users (people usually using public transport three to seven days a week), with 28% compared with 11% in Melbourne 2 (see Table 4).

Figure 2 provides the frequency of public transport use by annual household income for both Melbournes. Around 19% of Melbourne 1 and 2 residents with household income lower than \$25,000 per year use public transport more frequently (three to seven days a week) compared to those with higher household income levels.

Around 33% of Melbourne 1 residents with annual household income of \$25,000 to less than \$50,000 per annum use public transport three to seven days a week, the highest among all income levels, followed by those with income of \$70,000 to less than \$110,000 per year at 31%. For Melbourne 2 residents, the highest frequent public transport use is among those with annual household income less than \$25,000 per year (13%), followed by those with annual household income of \$110,000 or more (12%).

Table 3 Summary of Public Transport Use, Melbourne 1 and 2, 2009

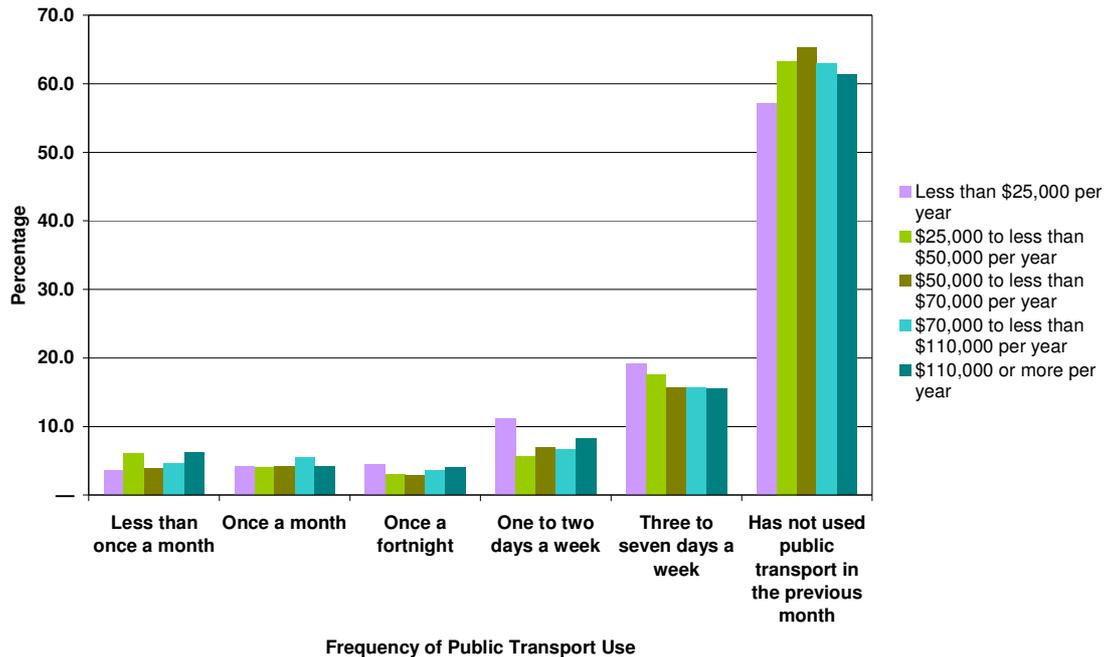
Frequency of Public Transport Use	Melbourne 1 (%)	Melbourne 2 (%)	Melbourne 1 and 2 (%)
Used Public Transport in Previous Month*	55.1	28.2	37.4
Has not used public transport in the previous month	44.3	71.3	62.1
Total**	100	100	100

*includes respondents who don't know frequency of public transport use in previous month

**includes respondents who don't know whether they've used public transport in the previous month

Source: 2009 SSS Household Water, Energy Use and Conservation for Victoria, ABS

Figure 2 Frequency of Public Transport Use by Annual Household Income, Melbourne 1 and Melbourne 2, 2009⁴



Source: 2009 SSS Household Water, Energy Use and Conservation for Victoria, ABS

Table 4 Percentage of Melbourne 1 and Melbourne 2 Residents using PT Three to Seven days a week by Household Income

Annual household income	% using PT three to seven days a week	
	Melbourne 1	Melbourne 2
Less than \$25,000 per year	30.8	13.0
\$25,000 to less than \$50,000 per year	33.2	11.5
\$50,000 to less than \$70,000 per year	29.4	9.4
\$70,000 to less than \$110,000 per year	31.0	8.1
\$110,000 or more per year	20.0	12.2
Total	28.0	10.7

Source: 2009 SSS Household Water, Energy Use and Conservation for Victoria, ABS

3.1.3 Reasons for Public Transport Use

The SSS also looks into the reasons cited by consumers from both Melbournes for using and not using public transport. Among those who have used public transport in the month prior to the survey from both Melbournes, the overwhelming reason for public transport use is the convenience, less stress and reduced travel time factor. Lack of private transport was the second highest reason cited for public transport use.

Among Melbourne 1 residents who used public transport over the previous month, 12% cite the proximity of public transport as a main reason for use compared to only 8% for Melbourne 2 users, suggesting Melbourne 1 residents have greater public transport accessibility than Melbourne 2 residents. Around 24% of Melbourne 1 residents cited unavailability of private transport as the main reason for public transport use, compared to 20% among Melbourne 2 residents. Around 14% of Melbourne 2 residents cited cost (cheaper than own transport) as a main reason for public transport use, compared to 10% of Melbourne 1 residents, which is in line with the results discussed in the earlier section

⁴ * - estimate has a relative standard error greater than 25% to 50% and should be used with caution;

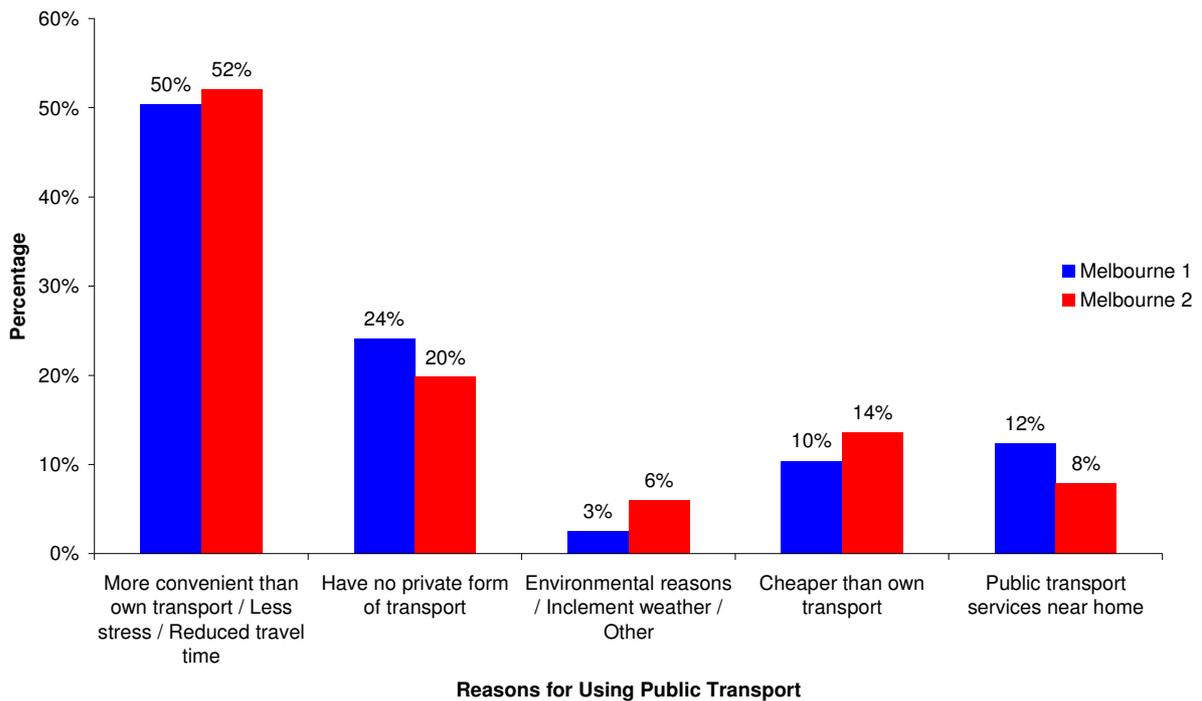
showing that those with household income of less than \$25,000 are more frequent users of public transport for Melbourne 2.

For those residents in Melbourne 1 and 2 that use public transport three to seven days a week, the main reasons cited were unavailability of private transport, proximity to public transport services near their home and affordability compared to their own transport. There is not much difference between Melbourne 1 and Melbourne 2 users regarding the reasons for frequent use of public transport.

The availability of company vehicles or preference for private vehicles is the main reason cited by those who do not use public transport from both Melbournes. The survey does not indicate the number of those with company vehicles (which would have been an interesting point).

Across all income levels and location, the preference for private vehicles/availability of company vehicles and inadequate, inconvenient and “unavailability” of public transport are the dominant factors cited for not using public transport. 74% of Melbourne 2 residents and 72% of Melbourne 1 residents who did not use public transport cited preference for private vehicles/availability of company vehicles as the main reason for not using public transport. The inadequacy, inconvenience and unavailability of public transport was cited as a main reason for not using public transport by 21% of Melbourne 2 residents and 19% of Melbourne 1 residents who did not use public transport.

Figure 3 Main Reasons for Public Transport Use, Melbourne 1 and Melbourne 2 residents who have used Public Transport over the previous month, 2009



Source: 2009 SSS Household Water, Energy Use and Conservation for Victoria, ABS

3.1.4 Public Transport Expenditure – Melbournes 1 and 2

Melbourne 1 and Melbourne 2 residents who travel to work solely by public transport had a 48% increase in average nominal weekly travel cost of public transport⁵ from 1996 to 2006. However, Melbourne 1 residents who travelled to work by public transport without a car

⁵ Weighted average of weekly Metlink ticket, derived from Experimental Journey to Work Income and Expenditure tables

posted a 60% increase in median weekly income from 1996 to 2006 (\$529 to \$847) while Melbourne 2 residents had a slightly lower increase of 51% over the same period (\$502 to \$756). As such, Melbourne 1 residents spent 3.27% of their median income on journey to work travel by public transport in 2006 compared to 5.55% among Melbourne 2 residents (see Table 5).

Table 5 Weekly Transport and Public Transport Fares Expenditure by Metlink Melbournes, HES, 2003-04 \$

Census Year	Melbourne 1	Melbourne 2
1996	3.54%	5.66%
2006	3.27%	5.55%

Source: ABS Journey to Work Data 1996 and 2006

The Household Expenditure Survey details average weekly household expenditure on goods and services by capital cities. In 2003-04, Melbourne households' weekly public transport expenditure share against all transport expenditure was the second highest after Sydney. The weekly transport expenditure of Melbourne households was the fourth highest among all capital cities.

The ABS consultancy on 2003-04 HES expenditure for the two Melbournes looked at weekly household expenditure by housing tenure, family composition, income, labour force status and age of household reference person. Compared with their Melbourne 1 counterparts, weekly transport expenditure in 2003-04 is significantly higher for Melbourne 2 households. Motor vehicle purchase, fuel and vehicle charges are some of the weekly expenditure items that contribute to the difference between Melbourne 1 and Melbourne 2 households. The HES estimates suggest that public transport expenditure is higher in Melbourne 1 than Melbourne 2.

Table 6 Weekly Transport and Public Transport Fares Expenditure by Metlink Melbournes, HES, 2003-04 \$

Weekly Household Expenditure Item	Melbourne 1				Melbourne 2			
	Labour Force Status		Gross annual household income		Labour Force Status		Gross annual household income	
	Working	Not Working	\$0 to \$49,999	\$50,000 a year or more	Working	Not Working	\$0 to \$49,999	\$50,000 a year or more
Transport	139.64	93.27	61.19	168.99	184.81	140.17	89.54	213.97
PT Fares	9.27	*8.01	4.3	*10.28	5.71	3.99	2.87	5.94

* Estimate has a relative standard error between 25% and 50% and should be used with caution

Source: ABS HES 2003-04 Consultancy

A more current snapshot of public transport expenditure can be determined by comparing the average weekly earnings⁶ with that of the Melbourne 1, Melbourne 2 and Melbourne 1+2 fares. The full time Victorian average weekly earnings for November 2010 is \$963.80 (ABS 2010a). A weekly Melbourne 1, Melbourne 2, and Melbourne 1+2 full fare ticket represents 3.13%, 2.16% and 5.29% of the average weekly earnings, respectively as at November 2010. Melbourne 1+2 full fare ticket is considered because, according to journey to work data from the 2006 census, 80% of those living in Melbourne 2 who took public transport were working in a Melbourne 1 location. Since there is no capital cities breakdown in average weekly earnings, these figures must be treated with caution.

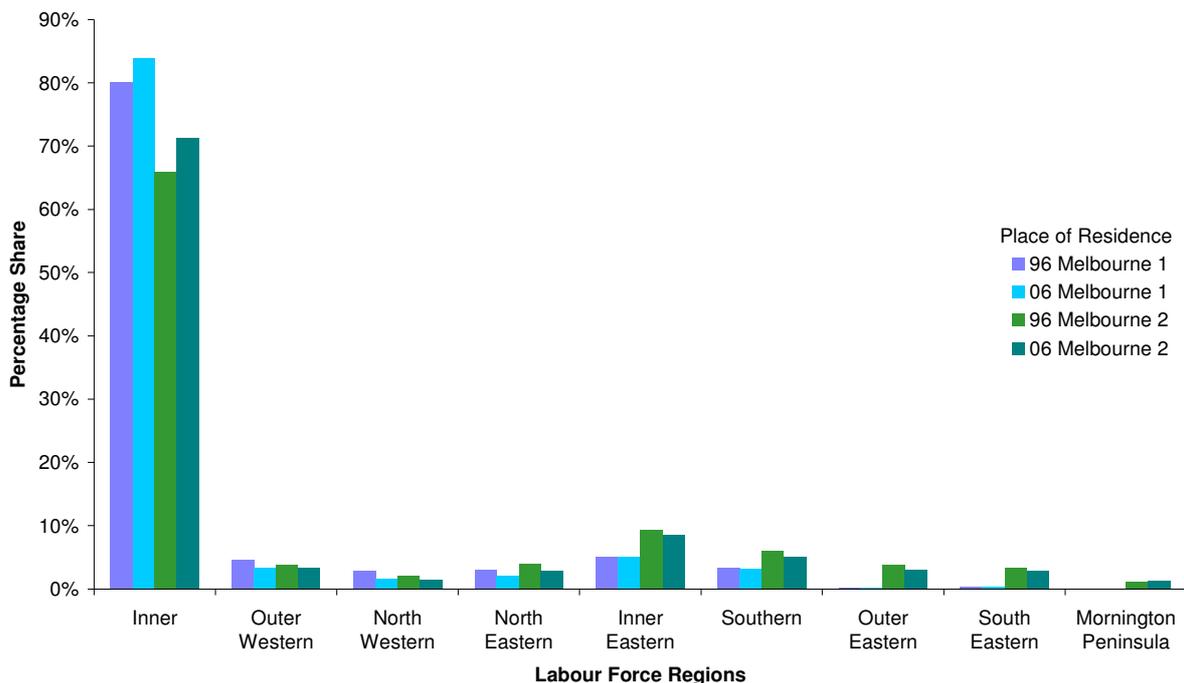
⁶ Australian Bureau of Statistics (2010)

3.1.5 Workplace of Public Transport Users – Melbournes 1 and 2

The inner Melbourne labour force region (LFR) is the dominant work destination for public transport (without car) users. In 1996, 80% and 66% of journeys to work from Melbournes 1 and 2 were headed to the Inner Melbourne area. This has since increased to 84% for Melbourne 1 and 71% for Melbourne 2 in 2006 (see Figure 4). Inner Melbourne also accounts for a sizeable share of other journeys to work where public transport is a component. In 2006, 88% of all park-and-ride journeys are to the Inner Melbourne LFR⁷.

The South Eastern LFR had the highest growth in journeys to work to locations in Metlink Melbourne 1 from 1996 to 2006, with a 72% increase followed by Inner Melbourne at 59%. Inner Melbourne and Inner Eastern LFRs had the highest growth rate in journeys to work from 1996 to 2006 for Metlink Melbourne 2, growing by 50% and 29%, respectively.

Figure 4 Job Locations by Labour Force Region, Melbourne 1 and 2, 1996 and 2006



Source: ABS Census, 1996 and 2006

In terms of median distance travelled to get to work by car, workers in Melbourne 2 generally have to travel further to work compared to Melbourne 1 workers. Table 6 shows the weighted mean distance travelled to work of selected SLAs (statistical local areas) in 2006. Cardinia, Yarra Ranges and Melton are SLAs belonging to Melbourne 2 while Yarra, Boroondara, Port Philip and Stonnington are Inner Melbourne metropolitan areas and under Melbourne 1. This trend in car travel could be the same for those who get to work by public transport.

4. Trends affecting Public Transport Usage

4.1 Melbourne Expansion

At June 2010, there were an estimated 4.08 million people residing in MSR, an increase of 79,000 people or 2.0% since June 2009⁸. This is the ninth consecutive year that the city has had the biggest growth of any city in Australia. Melbourne statistical district accounted for

⁷ Shin et al (2009)

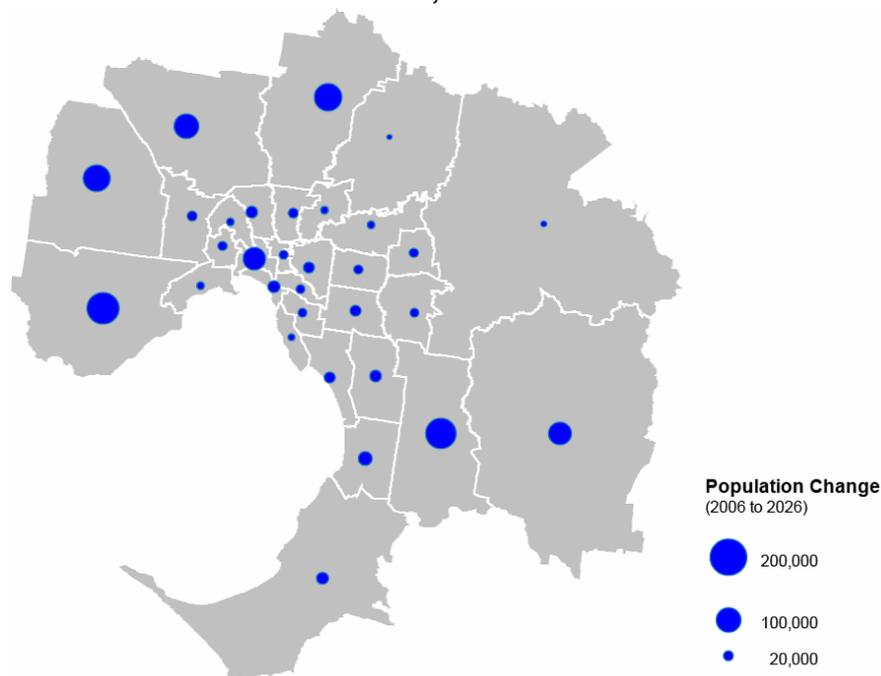
⁸ Australian Bureau of Statistics (2011)

73.5% of the state's population as at June 2010 and 79.6% of the state's population growth from June 2009 – June 2010. This significant population growth has contributed to the increased demand for public transport. In a 2008 study commissioned by the Department of Transport, population growth was the most significant single factor that affected patronage growth across all modes from 2002 to 2007⁹.

Melbourne local government area experienced a relatively fast growth rate of 3.6% (3,400 people) in 2009-10, the eighth highest among all the local government areas (LGAs) in Victoria¹⁰. However, its 2009-10 growth rate was lower than the annual rate of 4.6% for the five years to June 2010.

The fringe suburbs of Melbourne such as Wyndham, Melton, Cardinia and Whittlesea, in percentage terms, were among the fastest growing municipalities in Australia in 2009-10, with a combined population growth of 7% (33,216 persons)¹¹. Since 2001, Wyndham alone has added almost 70,000 people in Melbourne's south-west fringe. This is in line with the population projections from 2006 to 2026 as shown in Figure 5.

Figure 5 Population Growth from 2006 to 2026, Melbourne Statistical Division



Source: Victoria in Future 2008 Melbourne – (MSD)

The urban expansion is coupled with the preference for single detached dwellings for the majority of new housing developments in the outer areas¹². These factors lead to a greater separation between residential areas and locations of employment, greater use of cars for mobility, higher costs of transport and vulnerability to oil price rises, and a loss of productive agricultural land or habitat¹³. Also, this represents a challenge to the government in terms of coping with demand for access to services such as public transport.

The document 'From Doughnut City to Café Society' (Department of Infrastructure, 1998) pointed out the revival of population growth in the inner city as one of the trends in Melbourne's urban development five to ten years prior to 1998 that represented a substantial shift from earlier patterns. As shown by the recent population figures, while inner city

⁹ Bell, D (2008)

¹⁰ Australian Bureau of Statistics (2011)

¹¹ Ibid

¹² Infrastructure Australia (2010)

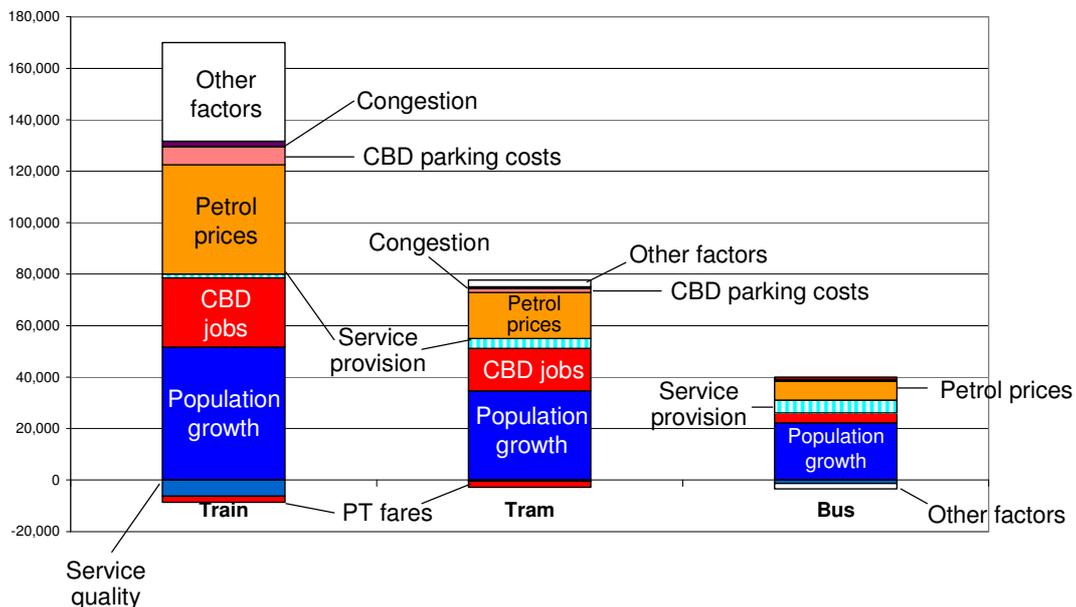
¹³ Ibid

population is growing, it is growing at a slower rate than what is being experienced on the fringe suburbs, putting added pressure on the transport needs of these suburbs, particularly on public transport.

4.2 Increase in Transport Costs

The increase in household transport costs over the years has certainly contributed to the growth in public transport patronage. Private transport cost (parking costs, car running costs and petrol) was the third most cited reason for increased usage of public transport according to market research done by Metlink and DOT. The SSS also cites cheaper cost of public transport relative to private transport as the fourth and third most stated reason for public transport use among Melbourne 1 and Melbourne 2 residents, respectively. Rising petrol costs was one of the major factors that influenced increased public transport use across all modes, especially for trains and trams from 2002 to 2007 as shown in Figure 6¹⁴.

Figure 6 Factors affecting patronage growth in Melbourne by Transport Mode, 2002-2007



Source: Bell, 2008 as shown in Gaymer, 2010

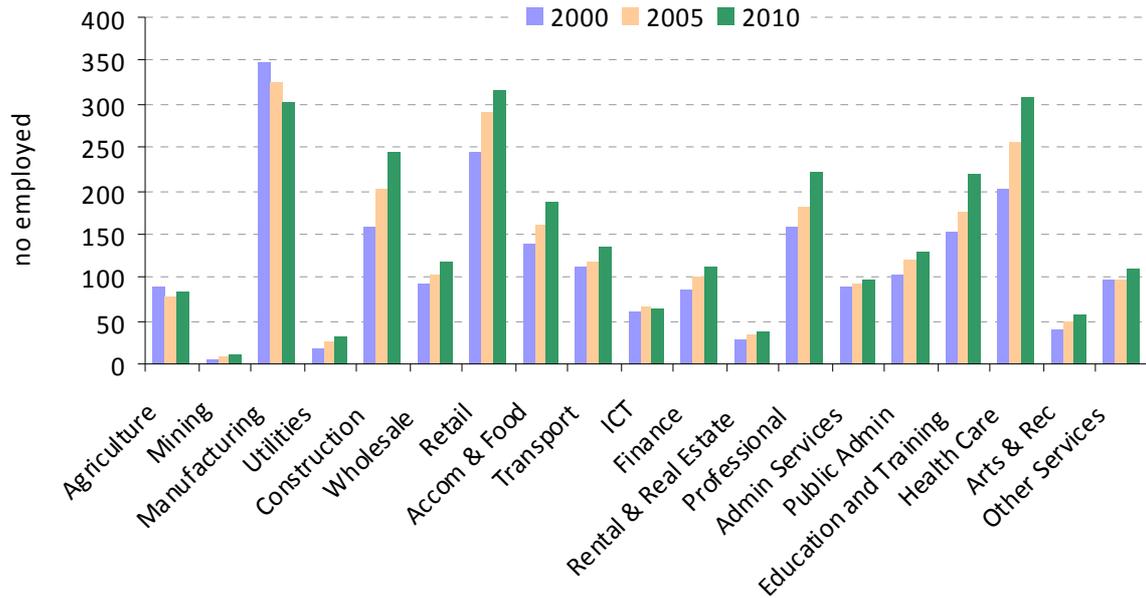
4.3 Economic Change

Looking at Victorian employment by industry (Figure 7), we see a declining trend for the manufacturing and agriculture sectors. In the past ten years, there has been strong employment growth in the services sector such as professional, finance, insurance, real estate, retail and health care.

Figure 8 shows the percentage change in number of workers per industry by transport zone from 1996 to 2006 based on Census data. There has been a decline in number of workers for the agriculture, fisheries and forestry, mining, communication services and manufacturing industries. By 2006, retail trade overtook manufacturing in terms of employee numbers. Melbourne 1 posted a higher percentage increase in number of employees in electricity, finance, property, government and agriculture sectors. The decline in number of manufacturing employees was more pronounced among those residing in Melbourne 1. For the agriculture industry, the decline in number of employees was confined to those not residing in Melbourne 1 (Melbourne 2 and remainder suburbs).

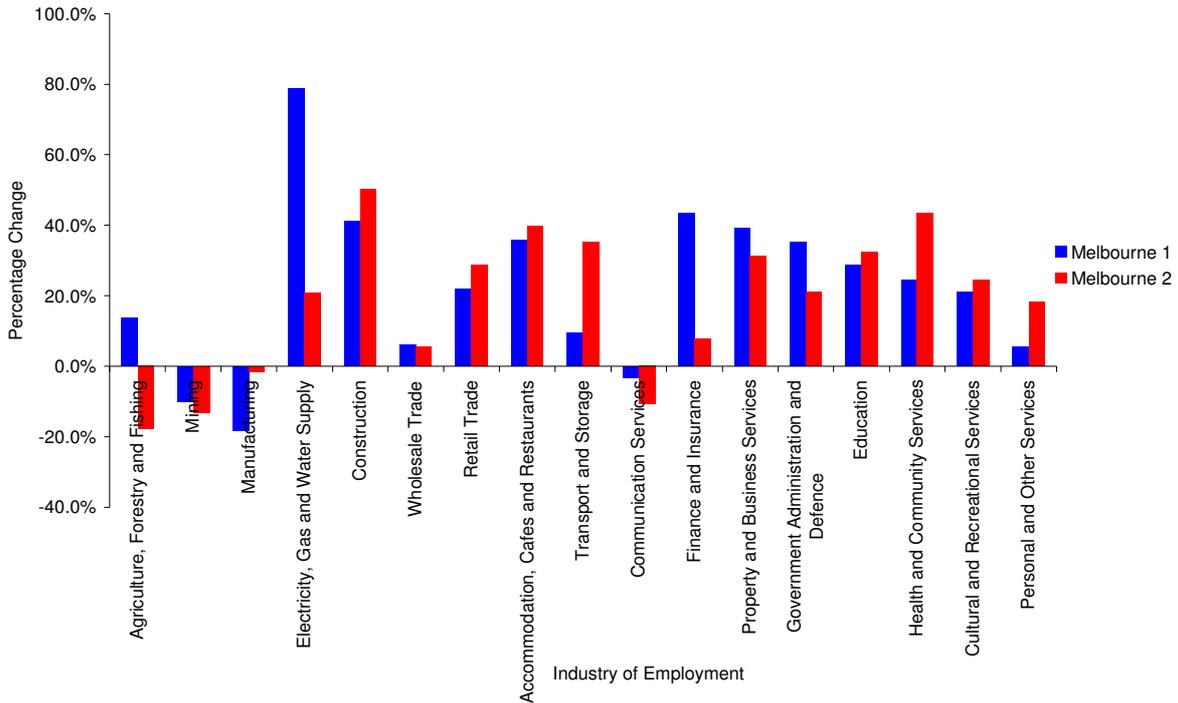
¹⁴ Bell, D (2008)

Figure 7 Victorian employment by industry, 2000-2010



*four quarter average used
Source: ABS 6291.0.55.003 Labour Force

Figure 8 Percentage Change in Employment by Industry and Transport Zones, 1996 to 2006



Source: ABS Census

Within Melbourne, there are quite diverging patterns of employment by industry. The transition to a knowledge-based or service oriented economy in Melbourne occurs at varying degrees. Retail trade employment is becoming decentralised, with large concentrations found in Monash and Casey local government areas (LGAs). Emerging suburbs such as Melton and Wyndham also posted high increase in retail trade employment from 1996 to 2006. As of 2006, Casey, Brimbank and Greater Dandenong LGAs had the highest number of workers in the manufacturing sector. Melton and Wyndham had significant increase in number of workers in the manufacturing sector as well for the period 1996-2006.

The jobs growth in the Melbourne CBD has been significant over the past years as well. A 2008 study concluded that growth in CBD jobs was one of the main factors that contributed to the increase in public transport patronage in Melbourne from 2002 to 2007 (see Figure 7)¹⁵. This is reflected in the journey to work patterns discussed earlier. Growth in CBD jobs was a more significant factor in the growth of train and tram patronage compared to bus.

Coupled with the rise of new suburbs and increasing population, the shifts in employment across Melbourne is an important factor that needs to be taken into consideration in the provision of effective and efficient transport services. Journey to work is a significant trip purpose and the increasing population and rise of new suburbs in outer areas would most likely mean an increase in demand for transport services.

4.4 Behavioural Shift towards Public Transport Use

While population growth, increase in petrol prices and other private transport costs and jobs growth in the CBD have contributed significantly towards increasing public transport use, there have been other factors that have influenced changes in consumer behaviour towards public transport.

Research on Melbourne's transport choices (Metlink, 2010) found that 18% of Melbourne's residents reported a recent increase in public transport use, compared with only 12% reporting a decrease¹⁶. Similarly, future outlook for public transport pointed to more growth, with 14% indicating they expected to use public transport more often in the next twelve months compared with only 6% expecting less usage. There is also considerable agreement that people believe that public transport will play a more important role in meeting transport needs in the future, with 62% of respondents agreeing with the statement that people will rely more on public transport than their cars in the future (Metlink, 2010).

Convenience, change in circumstances (e.g. new job) and cost (petrol, parking, and car running costs) were three of the main reasons why respondents increased public transport usage. This reiterates the results from the SSS as shown in Figure 4. Also, environmental awareness/concern has been an increasingly important reason why public transport usage has increased in Melbourne. In 2008, environmental concerns became the second most stated reason for reduced vehicle usage, based on market research undertaken by DOT and Metlink¹⁷.

With increasing road congestion, it is reasonable to expect that there will be a shift away from car use in the near future. According to RACV's market research¹⁸, in 2008, 89% of survey respondents believed that congestion in the road network is worse than it was five years ago. The research also states that 85% of respondents expect congestion to get worse in five years time, up from 80% in 2006. Congestion is also costly, with BTRE estimating the social costs of congestion in Melbourne at \$3.0 billion in 2005. This is projected to increase to \$6.1 billion in 2020¹⁹.

A market segmentation project undertaken by DOT in 2009 identified six attitudinal segments in the Melbourne market in relation to transport mode choice²⁰. These segments are PT lifestylers, PT works for me, PT rejectors, Car works for me, Convertibles and Agnostics. "PT lifestylers" and "PT works for me" are more aligned to public transport due to environmental concerns and the opportunity to undertake activities in transit, respectively. "PT rejectors" and "Car works for me" are more aligned towards car use due to a low opinion of public

¹⁵ Bell, D (2008)

¹⁶ Metlink (2010)

¹⁷ Gaymer, S (2010).

¹⁸ RACV. Congestion on Victorian Roads.

http://www.racv.com.au/wps/wcm/connect/internet/primary/road+safety/roads+_+traffic/congestion

¹⁹ Bureau of Transport and Regional Economics, 2007

²⁰ Gaymer, S (2010)

transport and preference towards flexibility and speed of car travel. “Convertibles” are potential users of public transport, only if there are significant improvements in service quality and frequency. “Agnostics” are not particularly engaged in the transport debate and do not hold strong views one way or the other. These segments have roughly the same size, representing between 15% and 19% of the Melbourne market. The study found that improving the quality of public transport services will attract strong demand from certain segments, with improvements in train reliability increasing demand most notably among the convertibles and PT rejectors segment. This is in sharp contrast to Figure 7 which shows service provision and service quality as relatively small factors contributing to the increased public transport usage from 2002 to 2007.

5. Discussion and Conclusion

This paper has shown differences in transport use and expenditure and income levels across the two Melbournes. Compared to Melbourne 2 residents, those in Melbourne 1 generally have higher incomes, with 51% earning more than \$70,000 annually, compared to 45% for Melbourne 2 residents. Melbourne 1 residents are more frequent users of public transport, with 28% reporting using public transport three to seven days a week, more than double the rate of use in Melbourne 2. Melbourne 1 had 120,716 more jobs than resident workers in 2006, giving rise to the need to transport commuters from Zone 2 daily, and the authors feel that this number has since increased.

Melbourne 2 residents are more cost-conscious, while Melbourne 1 residents are more likely to cite proximity to public transport and lack of private transport. Inner area residents (as a proxy for Melbourne 1) rely on trams and trains, with trains and bus being the dominant transport modes for outer area residents, which could be due to factors such as ease of access and/or frequency of service.

The ABS geography for Melbournes 1 and 2 is the first customised geography based on transport zones. This will be of use to the Department in pursuing further research around transport. The 2011 Census of Population and Housing, 2009 Household Expenditure Survey and the 2011 State Supplementary Survey on Household Water, Energy Use and Conservation are among the upcoming ABS products that would be very useful for research and policy formulation purposes.

The relevance of the geography to transport planning is highlighted by the *Transport Integration Act 2010*, which has, as one of its objectives, the integration of land use and transport planning. What is presented in this paper is not only a small sample of the transport related research that can be done using the geography but also an input into transport policy making for the DOT, especially in the areas of public transport provision. These factors need to be considered and kept in mind for future transport planning initiatives.

Among those who did not use public transport over the past month, there is a slightly higher percentage of Melbourne 2 users (21%) who cited the inconvenience, unavailability and inadequacy as reasons for not using public transport compared to those in Melbourne 1 (19%). In absolute terms, this represents a considerable potential market for public transport.

The market segmentation study indicates that improvements to public transport reliability should bring an increase in public transport use. This all points to considerable scope in increase public transport use for both Melbourne 1 and 2 users. Doing so would be responsive to certain objectives of the *Transport Integration Act 2010*, such as economic and social inclusion and economic prosperity.

The 2009 state supplementary survey on Household Water, Energy Use and Conservation was the first survey of its kind to be implemented in any of the states. There's an opportunity for other states to replicate the survey using the already established template. DOT is supporting the conduct of the 2011 State Supplementary Survey, the results of which would provide a basis of comparison for the 2009 version. Again, the customised geography gives

an indication of the spatial variation in attitudes and use of public transport. There might be considerable scope to undertake a more detailed survey on Melbourne's public transport usage patterns and attitudes on a finer level than the transport zone geographical classification. Providing that level of detail would allow for a more specific and targeted approach in transport policy and programs. The preference for private vehicles/availability of company vehicles, the main reason for non-use of public transport, needs to be explored in detail. Currently, we are unable to properly attribute which of the two factors are more dominant or relevant in terms of influencing non-use of public transport.

Further research could be done on other matters such as the possibility of a trade-off by Melbourne 1 residents for higher housing costs for lower transport costs compared to Melbourne 2, using the ABS geography for internal administrative data sets such as public transport patronage and revenue streams, the impact of improvement in transport services, including public transport on Melbourne 1 and Melbourne 2 households and investigating the extent to which workplaces and jobs relocate to Melbourne 2 areas to minimise commuting costs. Also worth investigating is an economic analysis on transport investment across all modes for the two Melbournes.

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