

# **Travel & Lifestyle Impacts of New Bus Services in Outer Suburban Melbourne**

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## **1 Introduction**

Transport disadvantage in urban Australia has been strongly associated with the fringe of cities (Gleeson and Randolph 2002; Hurni 2005). A number of studies have highlighted gaps between the lack of public transport service in fringe urban Australia and the prevalence of transport disadvantage in these areas (Currie 2004; Dodson et al. 2004; Currie and Senbergs 2007). Disadvantaged communities on the urban fringe have been seen to face financial pressures as a result of car ownership and use. The term 'forced car ownership' has been used to describe low income families with poor access to public transport who have no option but to spend a high share of income on owning and running a car (Banister 1994; Currie and Senbergs 2007). More recent research has highlighted the financial stress faced by fringe urban disadvantaged communities as a result of increasing fuel prices and mortgage rates (Dodson and Snipe 2006). Overall these factors have led to a call for increases in public transport service provision in urban fringe Australia to provide a more cost effective mobility option for disadvantaged Australians (BIC 2003).

In 2006 the Victorian State Government announced one of the largest ever investment programs in the provision of increased bus services in middle and fringe metropolitan Melbourne (DOI (Department of Infrastructure) 2006). Some \$1.4B of new service investment over 10 years is committed including an increase in local bus service levels of 22% by 2010. A major rationale for this investment is improving transport choices for socially disadvantaged Australians living on the urban fringe.

While a strong social needs rationale and commitment now exists for investing in improved fringe urban public transport there is surprisingly limited evidence on what the likely impacts of this investment will be on disadvantaged communities.

This paper presents a summary of a research project aimed at understanding the transport and social impacts of providing new bus services in fringe urban Melbourne (Bell et al. 2006). The research included a series of surveys to assess the impacts of three new bus routes introduced in January 2006 in the Pakenham area of Melbourne. This paper describes the context for new bus service provision including a summary of the scale of service changes introduced. It then outlines the survey methodology deployed to understand bus user and community impacts of the services. The results of the surveys undertaken are then described. The paper concludes with a discussion of the implications of these findings for public transport service development related to addressing social need.

## **2 Context**

### **2.1 Geographic**

Pakenham is located 57 km from Melbourne CBD in a growing part of Melbourne's urban fringe. It had population of around 13,000 in 2001 (ABS (Australian Bureau of Statistics) 2001) but has increased to an estimated 21,000 (+62%) by 2006. Table 1 contrasts socio-

economic indicators for Pakenham with those for Melbourne as a whole. This indicates that Pakenham has:

- A higher share of low income families
- Significantly more younger people and subsequently a lower average age
- A lower rate of households without a car but an average overall rate of car ownership per household
- More blue collar employment and a significantly lower share of white collar employment.

**Table 1: Demographics (Melbourne Metro and Pakenham)**

DEMOGRAPHIC	PAKENHAM	MELBOURNE
< 19 years	35.8%	26.6%
20-59 years	53.1%	57.2%
60+ years	11.4%	16.2%
Ave Age	30 years	35 years
Zero Cars/household	7.9%	9.6%
Ave. Cars/household	1.6	1.6
Family Income <\$500 p.w.	19.3%	17.5%
Employed full-time	60.4%	61.5%
Employed part-time	30.6%	29.0%
Unemployed	6.2%	6.6%
Professional	21.6%	40.3%
Labour/Clerical	76.5%	57.5%

Source: (ABS (Australian Bureau of Statistics) 2001)

## 2.2 Transport Supply

Before the introduction of the new bus routes in January 2006, the only urban public transport in Pakenham was:

- The rail service operating between Pakenham station and Melbourne CBD;
- School bus routes operating for children only; and
- Bus route 826 (Figure 1) which provided 11 weekday trips (zero on weekends) to Fountain Gate Shopping Centre (approx 18 km towards Melbourne at Narre Warren).

There were no bus route services available to the general public within Pakenham.

Three new bus services were introduced on January 30, 2006 (Figure 2) along with an upgraded service on route 826 to Fountain Gate Shopping Centre (renamed routes 926).

All services offered an hourly frequency (approximately) from around 6:30 am till 7:00 pm on weekdays. Saturday services were provided on an hourly basis from around 8:00 am till around 4:00 pm. No services were provided on Sundays.

Overall the bus service upgrade represented about a 103% increase in vehicle kms offered in the area. Service offered on the existing route 826 was increased by 26% on the upgraded route 926. Bus vehicle trips departing Pakenham station increased from 70 per week to 314 per week +349%.

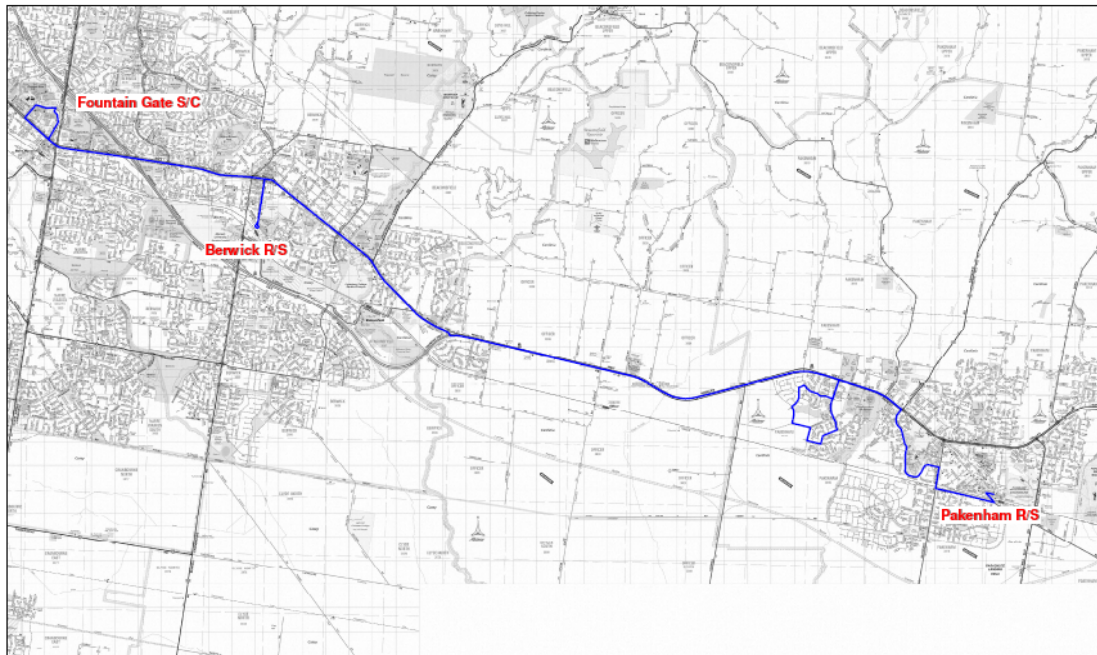
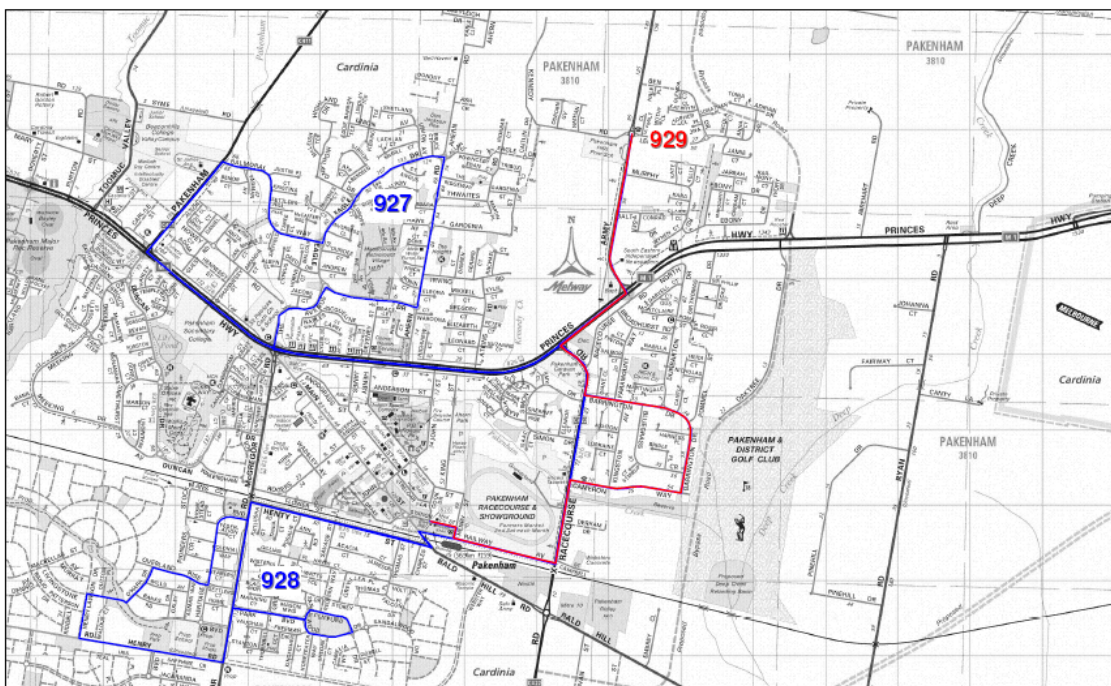


Figure 1: Route 926 (Pakenham – Fountaingate)



927 - Pakenham to Pakenham North    928 - Pakenham to Pakenham South  
 929 - Pakenham to Army Road

Figure 2: New Bus Routes (927,928,929) Pakenham Township

### 2.3 Transport Demand

The study was undertaken some 4-5 months after the bus service upgrade commenced. Hence patronage adjustments to new services was in the early to mid-stages of 'ramp up'. Nevertheless some 384 boardings per weekday were recorded and 90 on Saturdays (or 2,010 per week). Overall bus service passenger utilization was low with weekday services recording values of some 0.67 boardings per bus km and Saturday services recording 0.29 boardings per bus km. This is low compared to the Melbourne bus system wide average of

around 1.2 boardings per km (Currie 2003) however is reasonable compared to outer area bus service levels (boardings per Vkms of 0.59 have been recorded for the nearby Yarra Ranges shire and the Dandenong ranges).

### **3 SURVEY METHODOLOGY**

Impacts of new bus routes were assessed using a telephone interview survey of bus users (recruited via an on-board bus interview), a random telephone survey of the general Pakenham community and also via focus groups. All were conducted after the improved bus services had been introduced.

#### **3.1 Bus User Telephone Survey**

A total of 123 bus passengers were selected for interview out of 437 passengers on board buses (a sample of 28%). The recruitment sample was considered to represent a reasonable spread of users. During recruitment a series of short questions were asked to determine the characteristics of the bus market (trip purpose, gender, age and access distance to buses). Out of this sample 69 passengers agreed to partake in the telephone survey (56% of those interviewed). Out of this 55 were ultimately successfully surveyed.

#### **3.2 Random Community Telephone Survey**

The community telephone survey commenced on June 5<sup>th</sup> with the aim of identifying 400 surveys equally distributed between bus users, potential bus users and non users. The bus user sample was recruited either directly from the survey or via those selected from the on board survey.

The bus user telephone survey covered the following questions:

- Bus usage profile (trip purpose, trip frequency, day of travel)
- Previous travel arrangements prior to bus improvements
- New activities undertaken as a result of bus service improvements
- Attitudinal views on bus service attribute importance and performance of current services relative to these.

The telephone survey of bus non-users and bus potential users covered questions on:

- Travel mode
- Reasons for not using buses
- Sensitivity to fuel prices
- Factors which might influence them to use buses.

In total 133 bus users, 133 potential users and 135 non-users were covered in the sample.

#### **3.3 Focus groups**

Two focus groups were conducted with a sample of users and non users – to explore a range of issues in more detail. Focus groups provided the opportunity for participants to discuss more fully and more openly the many and varied issues arising with bus services than in a phone survey. The structure of the focus groups was such as to provide information and feedback on the following:

- The drivers of bus usage;
- Acceptable service levels;
- The extent to which the provision of transport services promotes feelings of social inclusion/exclusion; and
- Specific strategies for a successful bus service in outer suburban areas.

## 4 RESULTS

The central research question covered in this paper concerns the impacts of new bus services on socially disadvantaged residents in Pakenham. Only results relevant to this objective are covered. Readers interested in the findings of the other research questions should consult the research report (Bell et al. 2006).

### 4.1 Market Penetration

Table 2 shows the result of a market penetration analysis derived from the frequency of use results from the bus user survey. In total, bus services are used (at some time) by an estimated 2,331 people (11% of Pakenham population). High frequency users (at least 2 days per week) represent a core of about 150 people. Occasional users (less than 1 day in two weeks) represent over 1,700 residents.

**Table 2: Market Penetration Analysis**

User Trip Frequency	Share of Users	Representative Boardings (per week)	Estimated Boardings (per person per week)	No. of People
	<i>p = from survey</i>	<i>q = p * 2,010</i>	<i>b</i>	<i>= q/b</i>
4-5+ days/week	24%	483.6	9	54
2-3 days/week	23%	468.5	5	94
1 day/week	19%	377.8	2	189
1 day/2 weeks	12%	241.8	1	242
< than 1 day in 2 weeks	22%	438.3	0.25	1,753
TOTAL	100%	2,010.0		2,331

### 4.2 User and Non User Profile

Table 3 shows the general characteristics of bus users and non users (including potential users) from the telephone survey. It also shows the distribution of selected characteristics for the Pakenham community as a whole. This suggests that the bus user market is characterized by:

- A substantially higher share of riders from zero car households (25% compared to 3% of non users and 8% of all households)
- Younger age riders (21% aged 14 to 24 compared to 4% of non-users and 17% of the community as a whole). The survey did not include people below the age of 15. However the on bus recruitment sample suggested that 30% of all bus users were aged below 24 (including those aged below 15). For the general population this share is 39%. Overall this is suggestive of a high representation of teenage and younger 20's riders.
- A higher share of persons aged over 60
- A significantly higher share of students and retired people as riders
- A significantly higher share of people with zero or low incomes.

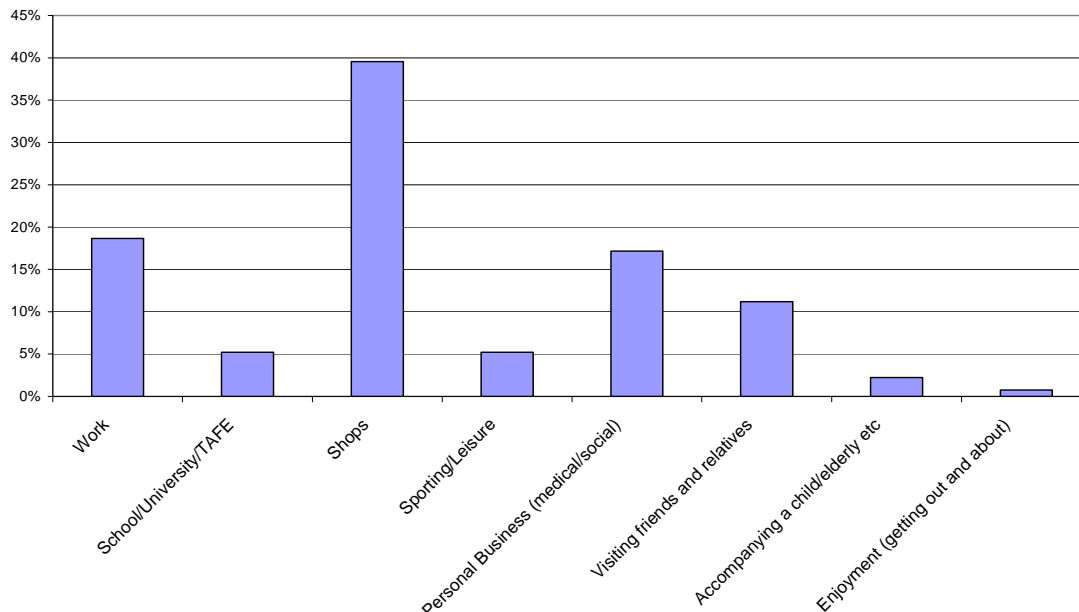
### 4.3 User Trip Purpose

Figure 3 shows the range of trip purposes as reported in the survey. The main purpose of trips is "shopping", followed by "going to work" and "personal business". "Visiting friends" also

rates highly. The share of trips to school/University and TAFE are low because children <14 are not surveyed.

**Table 3: Demographic Characteristics – Survey Respondents**

Category	Number	% Users	% Non Users	Pakenham
<b>TOTAL</b>	401	33%	67%	100%
Male	124	33.1%	29.9%	49%
Female	277	66.9%	70.1%	51%
Years in house (average)	8.2	6.8	8.9	??
Persons per h'hold (ave)	2.8	2.7	2.8	2.7
<b>CARS/HOUSEHOLD</b>				
AV.	1.7	1.3	1.9	1.6
Zero	42	24.8%	3.4%	8.4%
One	149	40.6%	35.4%	40.4%
Two +	210	34.6%	61.2%	41.2%
<b>AGE</b>				
14 to 24	38	20.6%	4.3%	17.1%
25 to 44	102	16.8%	31.0%	36.6%
45 to 59	133	27.5%	37.6%	26.8%
60 +	116	35.1%	27.1%	19.4%
<b>OCCUPATION</b>				
Blue Collar	99	21.1%	28.2%	
White Collar	94	10.5%	25.4%	
Unemployed	8	4.5%	0.8%	
Pensioner	35	14.3%	6.3%	
Retired	67	16.5%	17.9%	
Student	24	14.3%	2.0%	
Home duties	70	18.8%	17.9%	
Other	4	0.0%	1.6%	
<b>PERSONAL INCOME</b>				
Up to \$19,999	153	59.6%	37.6%	
\$20,000 to \$39,999	92	22.8%	29.2%	
\$40,000 to \$59,999	55	12.3%	18.1%	
\$60,000 to \$79,999	27	3.5%	10.2%	
\$80,000 to \$99,999	7	0.9%	2.7%	
\$100,000 or more	6	0.9%	2.2%	

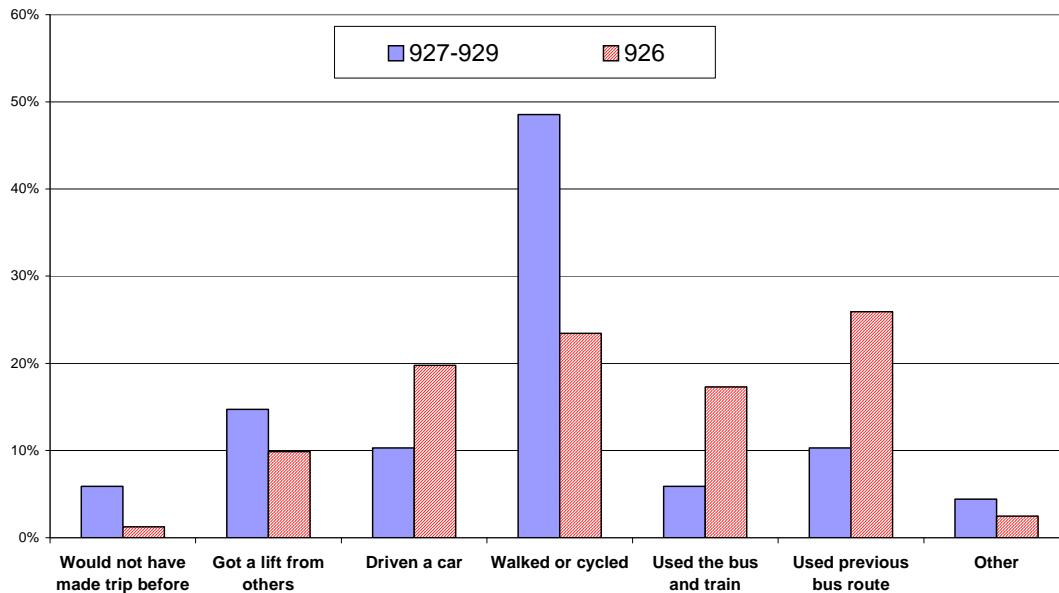


**Figure 3: Trip Purpose – Bus Users**

**4.4 Travel Impacts of New Bus Services – Existing Users**

Figure 4 shows the previous travel arrangements of current bus users prior to the upgrade of bus services. Data is shown for the new routes (routes 927 to 929) and also for the enhanced route (926). This indicates that:

- In general, bus users would have been able to achieve their trips prior to the new bus enhancements. In general users of the new routes would have walked or cycled.
- Car use in terms of getting a lift and driving was a common means of traveling prior to introducing the new bus services.
- Only a small share of the users of the new bus routes (3%) would not have been able to complete their travel if the bus routes had not been supplied.
- The major difference between previous travel options for new bus route and enhanced bus route users was that new route users would have had to use other alternatives than a bus.

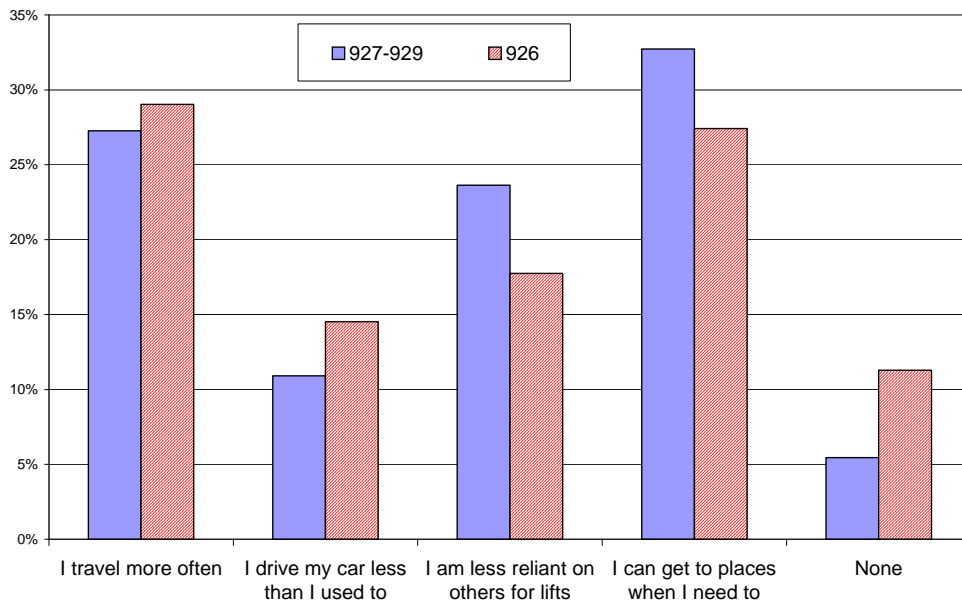


**Figure 4: Bus User Travel Arrangements Prior to Service Enhancement**

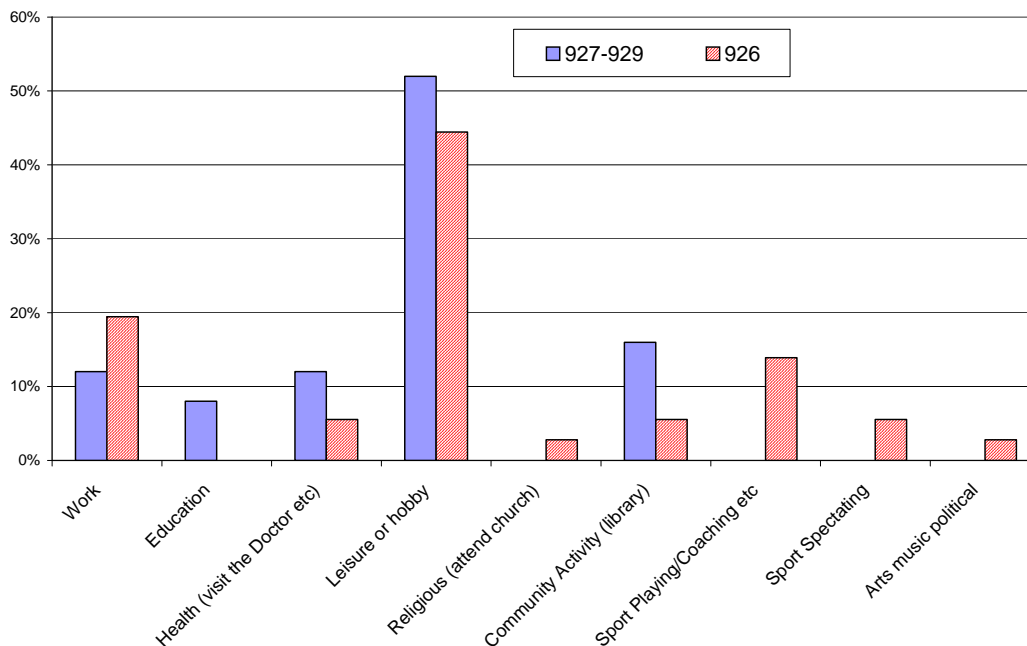
The survey asked bus users: “If the introduction of new services has changed the way they travel (and in what way)? Some 59% of respondents noted a change. Figure 5 shows the reported changes. The responses suggest bus upgrades have increased mobility (travel more often), accessibility, self-reliance and choices. Over a quarter of the users (28%) now have increased mobility, 30% can get to places when they need to, some now choose not to use their car (13%) and 20% are less reliant on others for lifts. A sizeable number reported that “they travelled more often” – contradicting the finding that trip generation was low. The most likely explanation is that the low trip generation (3-5%) was measured in response to the “reference trip” whereas the results shown in Figure 5 refers more generally to travel within Pakenham.

Figure 6 shows the participation in new activities that were reported to be previously difficult or impossible. This indicates that improved access to leisure or hobby activities was a major outcome for those who accessed new activities. However work, health and community

activities were a small, but important, subset of new activities achieved, particularly for those with new bus routes.



**Figure 5: Stated Travel Impacts of Bus Upgrades – Bus Users**



**Figure 6: New Activities – Bus Users Noting New Activities**

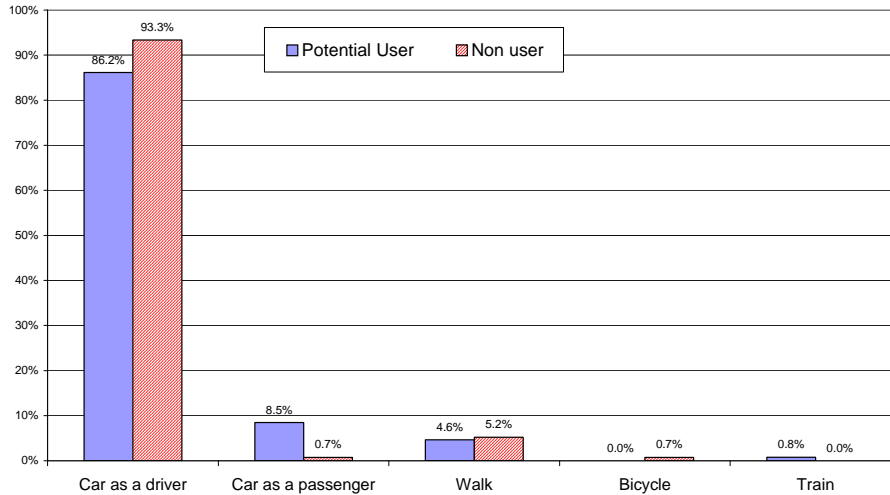
Overall it is clear that while the new services have allowed people to travel more often, the major impact has been to increase convenience and independence. This suggests that many people find ways to make essential trips despite travel difficulties. This behaviour has been termed ‘coping’ behaviour (Faulkner and Rimmer 1982). The new services appear to have allowed for an improved way to travel – people moving from accepting lifts from others,



driving themselves, walking and using other previously less convenient forms of public transport.

#### 4.5 Non Users

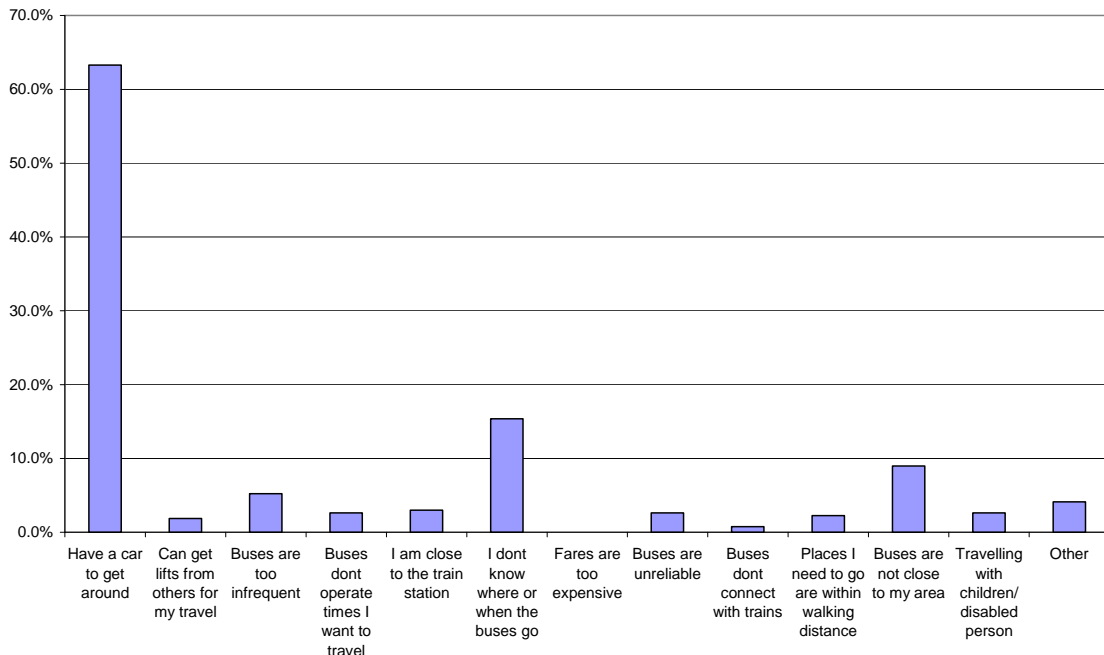
Figure 7 shows the current travel arrangements of non bus users. This is divided into groups who consider themselves potential users of buses in the future. Car driving dominates travel. A slightly larger number of potential users are currently car passengers. Only 50% of non users were aware of the introduction of the new services and only 19% were aware of



changes made to route 926.

**Figure 7: Ways of Travelling Around Pakenham – Non Users**

Figure 8 shows the reasons given for not using buses by non-users. Availability of a car dominates. In addition around 20% stated that either “they don’t know where and when the buses go” or “buses are not close to my area”.



**Figure 8: Reasons for not using buses in Pakenham**

Non-users were asked questions associated with the need to “give a lift” to others. 52% reported that “they regularly provide lifts for other people in the household”. Of these, 9% claimed that the introduction of new buses into the area had resulted in “a little” decrease in the need for giving lifts. Based on the 2001 Census (ABS (Australian Bureau of Statistics) 2001) and the increase in population to 2006 since this time, we estimate there are some 10,000 private cars in the Pakenham area. If 9% of non-users now use their car less for ‘lift giving’ then around 900 vehicles (or 9%) of 10,000 vehicles are being used less.

#### 4.6 Focus Groups

The two study focus groups were necessarily qualitative in nature and aimed to discuss a range of bus service issues. From the purposes of this paper, two major aspects were of value:

- The nature of bus use by the bus market and how bus use related to lifestyle
- The perceived benefits of improved services.

The defining characteristic of bus users in the focus groups was their dependence on the service to meet basic needs, such as commuting to work and shopping. This dependence was typically expressed in terms of reliance. Some quotes elaborate the views of participants:

“We don’t have a car so we use it [*the bus*] constantly. I use it for work and for going shopping.....going out leisurely “

“...it’s very isolating because there isn’t as many shops to go to have a browse, there’s not enough around here for people to do, you walk, I’m a walker and I’m an outdoor person but I find I’m a bit more isolated here in Lakeside and I depend on the buses to get me to where I want to go .... to keep me out of the isolation.”

“I rely on the buses to get me to and from work and to all my groceries and pay the bills, I’m pretty reliant on it.”

Their reliance meant that many bus users structured their lives around the bus service both in terms of places to visit, and times at which such travel could be undertaken.

“I just couldn’t go to places I wanted to go, couldn’t just jump in the car and back in 5 minutes and things like that. .. sometimes, there’s things on at Fountain Gate and you’re, especially on Sundays and you can’t get out to them”

“The 929, the last bus on a Saturday is 3.40 which to my mind is ridiculous.”

There were several expressed feelings of social isolation; and associated comments on the quality of life for themselves and their families.

“...in my position, I have to limit going out at night, I couldn’t possibly go out at night... so here it’s a bit different and I feel isolated”

“I have teenagers too and if they want to go out at night it’s very difficult to know that they’re going to be able to get safely home... I find it much harder here without having a car here, more difficult than I was there [my previous house], I didn’t have to worry about the girls getting home safely”

“...a lot of those people in their 80’s+ and they really need that bus to come down to Pakenham to do social things, they really can’t afford to pay taxis to come down from the retirement villages, I mean they’re comfortable ....around them but actually to get down you know by taxi it costs them and they can’t afford .... Some of them have regular doctor visits and they can’t always get there because the bus doesn’t ...”

A range of positive comments were made regarding the new bus service upgrades:

“It’s nice to get off the train and just walk across the park...and to see a bus there that you can just jump on and go straight home, it’s not easy for me to walk from Pakenham railway station, it’s a good 25 minute walk

“... now I just get off the train, jump on the bus and I’m home within 5 or 10 minutes. That’s a saving. “

“I used to catch the bus at .....6.20am and before the buses came, we’ve only got one car so my wife had to wake up early in the morning, take me to the railway station and drive back home so it’s from that point of view, it’s great and also meeting people catching the bus early in the morning, usually there’s about 4 or 5 other people on the bus so it’s good for socialising within the area so I like that.”

While these results are necessarily anecdotal they do relate to the telephone survey findings of increased convenience associated with bus services and associated benefits of lower lift giving for both users and non-users.

## **5 CONCLUSIONS**

A strong social research rationale now exists for investing in improved fringe urban public transport on the basis of social needs. This has been responded to by the Victorian Government who have committed over \$1.4B in new bus services over the next 10 years. However there is little evidence on how these services will act to address the transport needs of disadvantaged communities on the urban fringe.

This paper has presented the results of a survey of the impacts of providing new bus services to under-serviced areas of outer Melbourne. The major aim of the paper was to identify the impacts of these services on transport disadvantaged groups in Pakenham.

Research findings suggest that bus services are important for socially disadvantaged groups in Pakenham. Ridership is highly represented by young and older age groups, people with no car available for travel and those with low incomes.

The new bus service improvement package represented a considerable increase in service (of between 103% to over 300% depending on how it is measured). However it is an increase in service from a very low base (technically no local public transport was available prior to the upgrade). The service offered, a base hourly headway with no Sunday service, is hardly high. However it is certainly an improvement.

It is clear that the new service upgrades are well received by both the community as well as bus users. While patronage utilisation of new bus services is low to modest, analysis suggests that over 2,300 residents, representing over 11% of the community, use buses at some time.

The major stated user benefit of new bus services has been an increased range of access to places and increased travel frequency. However previous mode questions suggested trip generation was modest at about 3-5%. These results are somewhat conflicting and may reflect a technical difference of response to the questions presented or a market perception bias towards a positive outcome.

In general previous mode responses suggested that prior to the bus upgrade most users managed to make trips primarily by walking, bike and lift giving. The major benefit in this case has been improved convenience and independence. These results support the view that people often don't stop making trips just because they don't have public transport. They 'cope' as best they can with the transport they can get. This is consistent with the 'coping' strategies proposed by Faulkner (Faulkner 1978) and is supported by the levels of reported lift giving (over 50% on a regular basis in the community survey). This suggests that a major social benefit of bus services is that it frees up families from the burden of extensive 'coping' strategies. Almost 9% of the general population sample reported at least a little reduction in lift giving as a result of provision of new bus services (even though the bus service levels offered were modest). The survey showed that 35% of bus users had shifted from walking and cycling, implying that quite a significant amount of walking and cycling in the community was addressing basic transport needs.

Although previous mode questions have highlighted relief from the burden of 'coping' strategies, user stated benefits have emphasised that a wider range of places are now accessible and travel frequency has increased. The major new activities accessed were leisure related. However a small subset of work, health and community activities were also identified as now available because of improved bus services.

In general these findings are supportive of investment in improved bus services aimed at to addressing social and transport needs on the urban fringe. A major policy question remains 'is it worth the investment?'. Bus service utilisation is quite modest to low but not appreciably lower than similar urban fringe locations. The survey was undertaken shortly after service introduction and in the mid stages of patronage 'ramp up'. Hence patronage may yet build to a higher level in time. In the end the 'viability' of the funding depends on the goals to which government aspire and the degree to which voters support these views at the ballot box. This study has suggested that there are appreciable social and transport benefits associated with the investments made. Since this was the rationale for this investment the results of this research suggest the investment is justified.

Patronage monitoring of the new services have continued since the initial review was completed in June 2006. The most recent patronage data shows more than double the patronage in March (than in the same time in the previous year), confirming that the new services take time to obtain their full potential and emphasising the need for adequate promotion of the new services.

## **6 Acknowledgements**

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