

Serving Passengers – Are You Being Served?

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1 Introduction

Serve passenger trips comprised 17% of all trips made by Sydney residents on an average weekday in 2006. In terms of distance travelled, these trips also made up a substantial 13% of all trips. Of these trips, an overwhelming majority (89%) were made in a private vehicle.

'Serve passenger' trips can broadly be defined as 'dropping off / picking up someone' (e.g. dropping off a spouse at the train station) or 'accompanying someone' (e.g. accompanying an elderly parent to a doctor's appointment). Serve passenger trips can be undertaken by any mode of transport. Serve passenger car trips are often undertaken within the context of a given household, and they differ from car-pooling trips and other vehicle sharing trips. The defining difference is with respect to the driver's purpose of travel. In the case of car-pooling to work, both the driver and passenger *share* a purpose of 'commuting'. As for other examples of vehicle sharing, like in the case of a couple going out to the theatre, both driver and passenger *share* a purpose of 'social/recreation'. In these examples, the drivers *share* the same purpose as their passenger(s) and hence their purposes are *not* to serve passengers.

Indeed, in Sydney in 2006, households engaged in vehicle sharing car trips in a variety of ways². In the greatest number of instances (39%), the driver served a household passenger. The driver shared the same purpose of travel with at least one passenger in 37% of all trips. Furthermore, passengers accompanied drivers (e.g. a parent going shopping and the child(ren) going along for the ride) in 14% of cases. Finally, in 9% of shared household car trips, the driver and passengers had different purposes (e.g. a parent and child are going to the mall – one is going shopping and the other is going to the movies).

Aside from constituting the largest portion of shared household car trips, this paper will focus on serve passenger *car* trips because they have a concerning impact on the environment; their VKT (vehicle kilometres travelled) are potentially doubled in cases where the serve passenger car trip is a dedicated trip followed by a return journey home. Indeed, the data showed that of all serve passenger car trips, over a third were associated with another trip back home.

In Sydney, serve passenger car trips alone equated to an estimated 15 million VKT on an average weekday and 11.2 million VKT on an average weekend day in 2006 (see Table 1 on page 4). In a year, this accounted for 5.1 billion VKT or approximately 1.2 million tonnes of CO₂³ emissions.

Serve passenger car trips also affect our society in other ways. As later discussion will show, many trips are to drive children to school. This growing trend since the 1970s has

¹ Opinions expressed in this paper are those of the authors and do not represent the NSW Ministry of Transport.

² See section 5.5.1 on restructuring data for a more detailed description of how this type of analysis was undertaken.

³ This method of calculating greenhouse gas emissions is used by the NSW Department of Environment and Climate Change. The average emissions intensity: 231 grams CO₂-e per km. This was converted into tonnes.

other implications; school children are switching from healthy and sustainable modes, such as walking, to being car passengers (van der Ploeg HP, Merom D, Corpuz G, Bauman AE., 2008). This impacts children's general health and well-being as well as safety in school zones (Morris, Wang and Lilja, 2001).

Given the strong association of serve passenger trips with car use and its sizeable share to overall trip-making, this paper seeks to understand its characteristics. The analysis may also inform various policies, such as those relating to voluntary travel behaviour change (VTBC).

2 Aim of this paper

Using the Transport Data Centre's Sydney Household Travel Survey (NSW Ministry of Transport), this paper investigates the nature of 'serve household passenger' car driver trips (on an average weekday), including:

- Time of day travelled
- Distance travelled
- Driver and household profile (e.g. age, sex, household type)
- Passenger profile (e.g. age, trip purpose)

The paper begins with a broad analysis of car driver trips in Sydney, including recent trends. By initially understanding the broad picture, it is then possible to examine serve passenger trips in context. Given the predominance of private vehicle serve passenger trips, this paper will then focus on private vehicle *driver* trips, including analyses by socio-demographic characteristics. This method of only counting driver trips will avoid any double counting of car trips and their associated characteristics⁴.

Moreover, following broad analyses, only vehicle driver trips for which the passenger is from the same household as the driver will be included in the detailed analyses. Because the Household Travel Survey (HTS) can only capture information for both drivers *and* passengers who are in the same household, it is necessary to narrow the focus of the analysis to household trips⁵ using household vehicles. In this way, profiles and purposes of passengers being served can be explored and quantified. (See the section on 'Passenger profiles – Restructuring the data' for more detail.) This will be the first time that serve household passenger travel in Sydney will be explored in such detail.

⁴ For example, in terms of VKT the distance traveled by the driver *and* passenger who made the same trip in the same household vehicle will not be counted twice.

⁵ Although the HTS captures the fact that non-household members may have been passengers in a private vehicle trip, data for the non-household passenger (e.g. demographics, their purpose for travel), is not captured. Therefore, it is not possible to link non-household passengers to the drivers who are serving them.

3 The Sydney Household Travel Survey (HTS)

The HTS is the largest and most comprehensive source of personal travel data for the Sydney Greater Metropolitan Area (GMA). This area includes the Sydney and Illawarra Statistical Divisions and the Newcastle Sub-Statistical Division (Figure 1). Analysis included in this paper will explore the use of household vehicles in serve passenger driver trips across the entire GMA.

The HTS is the longest running household travel survey in Australia, having been running continuously since 1997. Detailed trip information for each day of the year, as well as socio-demographic information, is collected by face-to-face interview. For further details about the HTS, its scope, coverage and methodology, see TDC (2008).

Most of the analyses presented in this paper are based on the 2006 estimates which represent five years of pooled data collected from June 2002 to June 2007 weighted to 30 June 2006 population. The total sample for this time period consists of 15,500 households, 40,000 individual respondents and 173,000 unlinked trips.

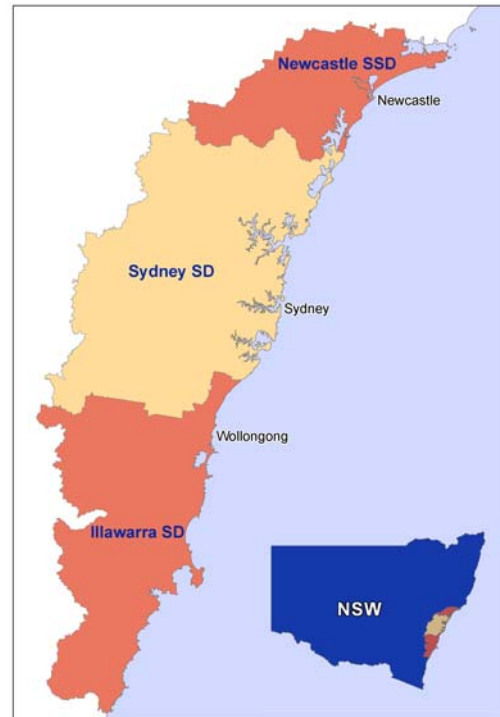


Figure 1 Sydney Greater Metropolitan Area

4 Broad analysis

4.1 Broad trends

On an average weekday in 2001, car drivers served passengers in 1.76 million trips or 19% of all car driver trips. In 2006, the corresponding figure was over 2.02 million trips, equal to 20% of all car driver trips. This represents an annual average growth rate of 2.8% over this time period – greater than the growth of car driver trips in total (1.6%) and greater than the population growth (0.9%) during that same period. The growth in VKT associated with weekday serve passenger trips also exceeded that of total weekday VKT and population. (See Table 1.)

As compared to weekdays, there were roughly half the number of serve passenger car trips on an average weekend day in 2001 (1.01 million) and in 2006 (1.12 million). The annual average growth was 2.0%. Such growth was lower than the growth in all car driver trips on weekends in this same time period (2.3%), but still faster than the growth in population. The proportion of serve passenger trips was almost 14% of all weekend car driver trips in 2001 and 2006. Thus, as compared to weekend car driver trips, weekday serve passenger trips account for a larger proportion of car driver trips and are growing at a faster rate. Because of these issues, detailed analyses are limited to weekday serve passenger trips⁶.

⁶ Detailed analyses also focused on weekday travel, as weekday sample counts were substantially higher than weekend sample counts.

Table 1 Number of serve passenger car trips and VKT, 2001 and 2006

		2001 ⁷	2006	AAGR ⁸ 2001 - 2006
Population⁹		4,902,000	5,138,000	0.9%
Number of serve passenger car trips	Weekday	1,758,000	2,017,000	2.8%
	Weekend	1,011,000	1,117,000	2.0%
Total car driver trips	Weekday	9,527,000	10,289,000	1.6%
	Weekend	7,259,000	8,140,000	2.3%
% of car driver trips being serve passenger car trips	Weekday	18.5%	19.6%	
	Weekend	13.9%	13.7%	
VKT of serve passenger car trips (kms)	Weekday	13,058,000	15,050,000	2.9%
	Weekend	9,819,000	11,243,000	2.7%
VKT of all car driver trips (kms)	Weekday	101,673,000	109,887,000	1.6%
	Weekend	79,617,000	91,616,000	2.8%
% of total VKT attributed to serve passenger car trips	Weekday	12.8%	13.7%	
	Weekend	12.3%	12.3%	

4.2 Socio-demographic characteristics

There were marked differences on the average number of serve passenger car driver trips across various socio-demographic characteristics¹⁰. As previously described, fewer such trips are made on weekends, as compared to weekdays. However, different patterns emerged across the socio-demographic groups on these different days.

The main findings (as illustrated in Figures 2a-2h on the following pages) are:

- Women made statistically more serve passenger car trips than men on weekdays. This figure equalised on weekends. (Figures 2a-2b)
- On weekdays, unemployed persons, those keeping house and part-time/voluntary/casual workers (those who have more discretionary time than full-time workers in particular) made statistically more serve passenger car trips than full-time workers, pensioners, and students. On weekends, the differences are slight. (Figures 2c-2d)
- Households with children made statistically more serve passenger car trips than those without children. This finding is particularly pronounced on weekdays. Although not featured in Figure 2a-2h, drivers aged 31-50 made statistically more trips than their younger and older counterparts. This is consistent with such drivers being from households with children. (Figures 2e-2f)
- Households with two vehicles statistically made the most serve passenger car trips during the week as compared to households with fewer or more vehicles. This phenomenon was not experienced on weekends. (Figures 2g-2h)

⁷ 2001 estimates represent five years of pooled data collected from 1997 – 2002.

⁸ AAGR – Annual average growth rate

⁹ Figures in the table were rounded, but percentages were calculated from original unrounded data.

¹⁰ Analysis involved the use of 95% confidence intervals. These were constructed using data that were weighted but *normalised* to execute proper statistical tests of significance particularly when comparing means. The estimates were normalised by using a normalising factor equal to the sample size divided by the population size or the sum of weights (n/N). The confidence intervals and statistical tests are presented graphically. Differences in the means are statistically significant between groups where the confidence intervals do not overlap within a given graph.

Weekday

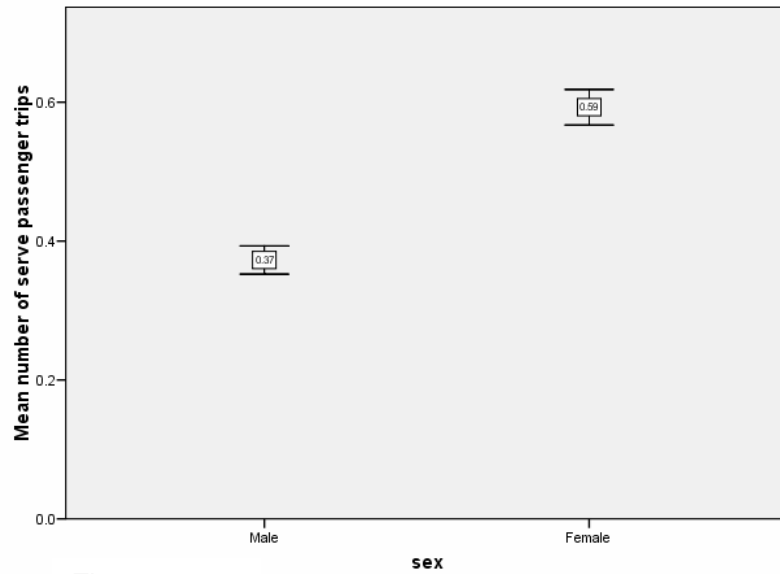


Figure 2a

Error Bars: 95% CI

Weekend

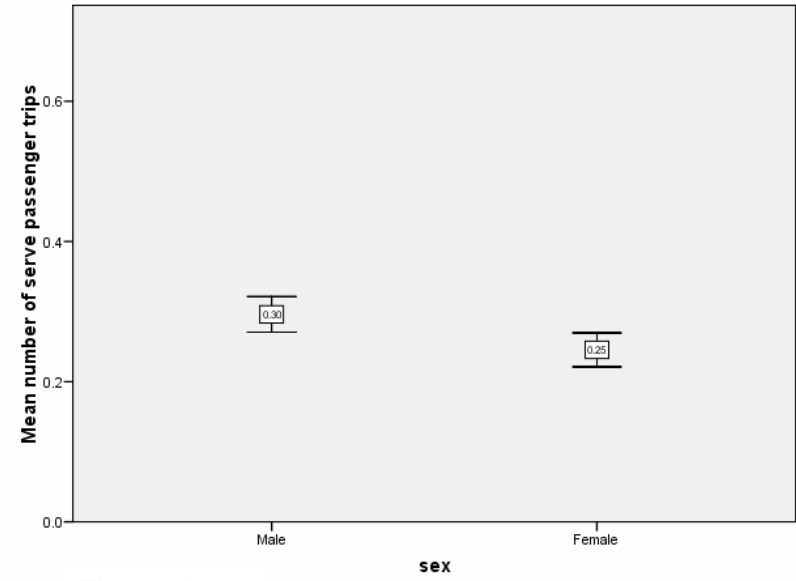


Figure 2b

Error Bars: 95% CI

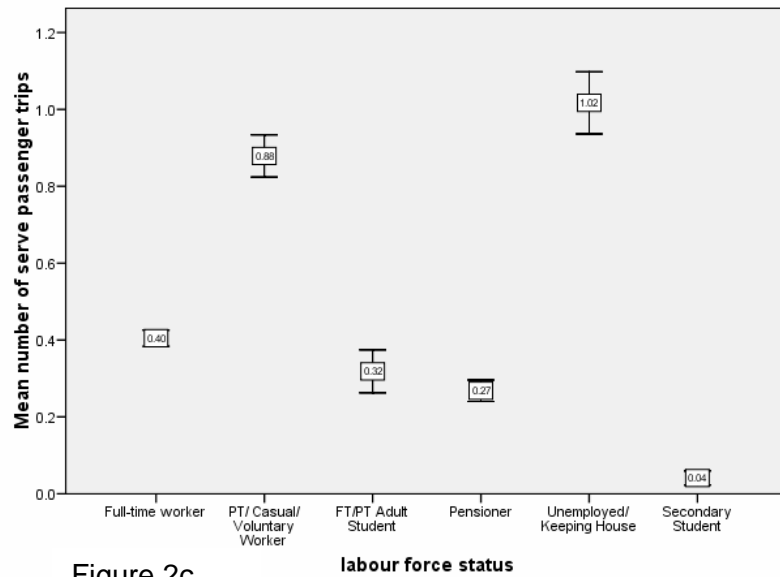


Figure 2c

Error Bars: 95% CI

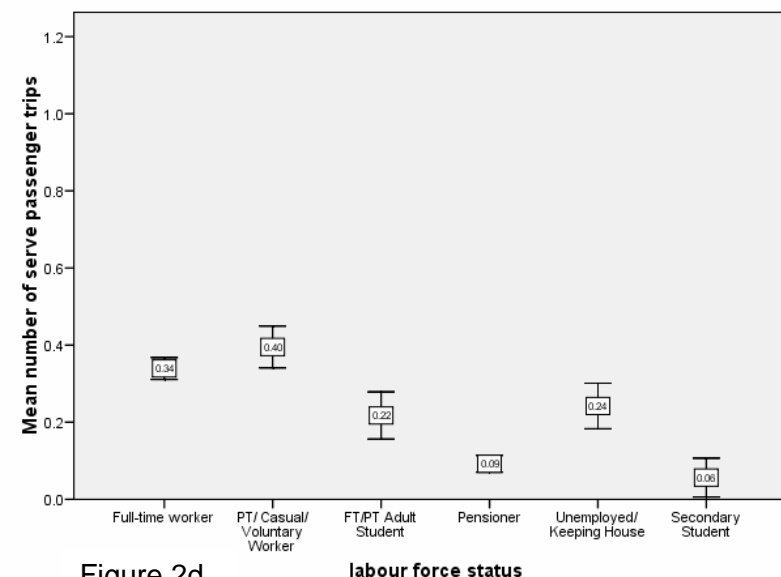


Figure 2d

Error Bars: 95% CI

Weekday

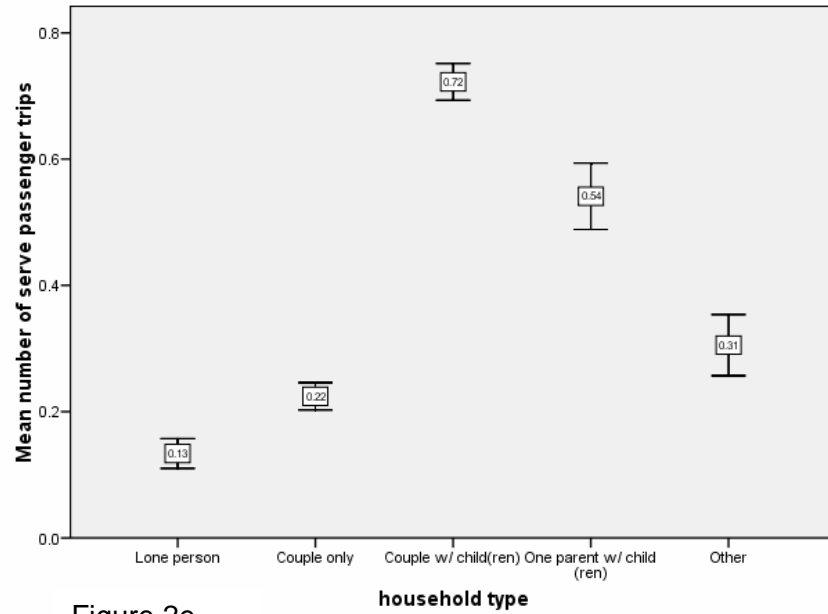


Figure 2e

Error Bars: 95% CI

Weekend

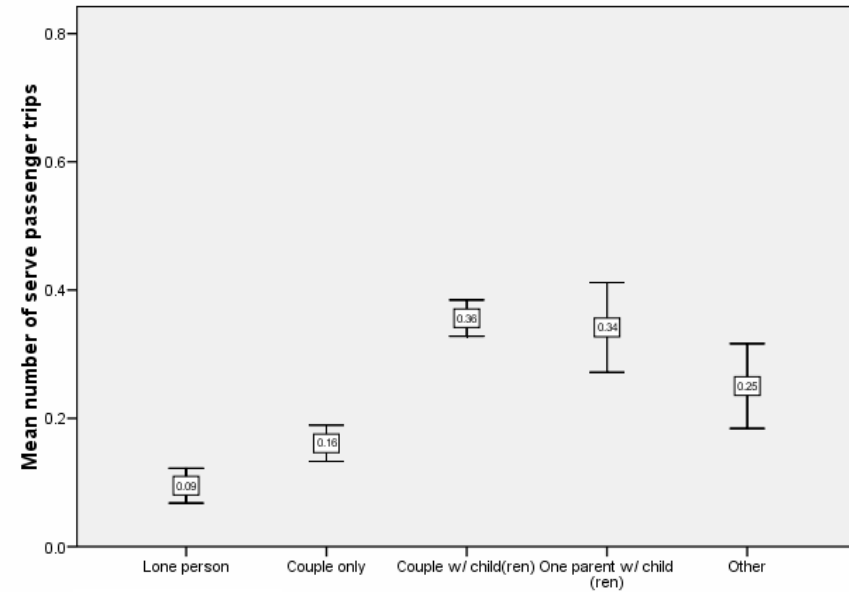


Figure 2f

Error Bars: 95% CI

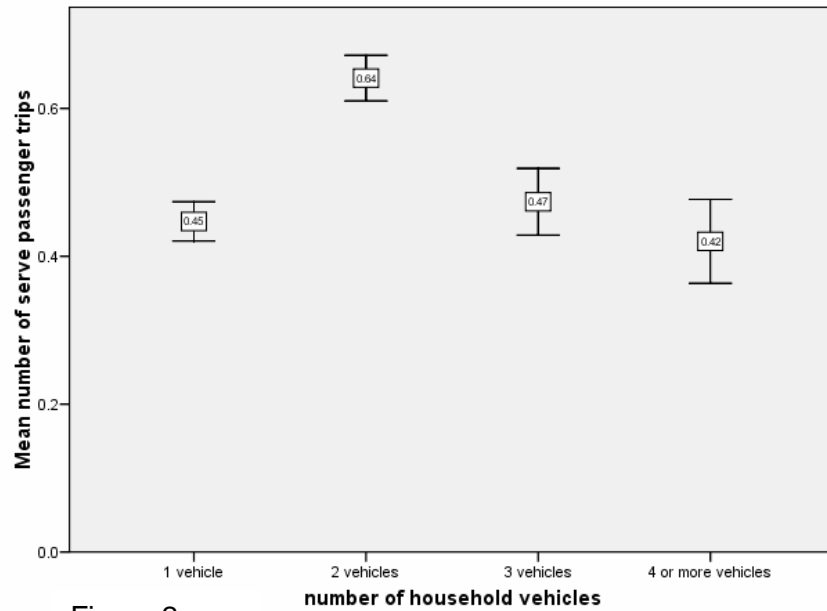


Figure 2g

Error Bars: 95% CI

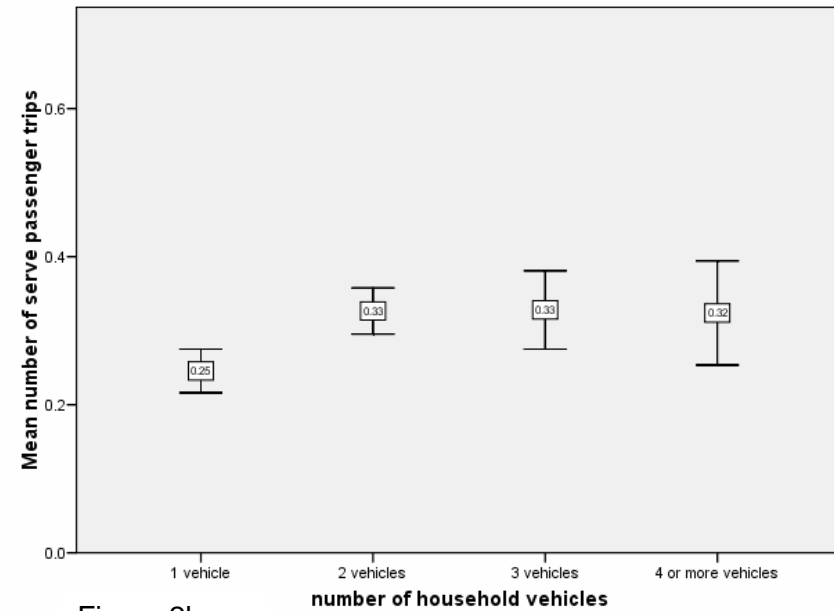


Figure 2h

Error Bars: 95% CI

5 Detailed analysis

5.1 Time of day travelled

As shown in Figure 3, there were distinct peaks for all car driver trips at 8:30am, 3:00pm and 5:00pm. Such peaks were closely mirrored by serve household passenger trips, except that the first afternoon peak was 30 minutes earlier and the later afternoon peak was less prominent. In general, car trips to serve household passengers peaked around the schools' starting and finishing times. This is confirmed in later analysis that demonstrates that a substantial proportion of the chauffeured passengers had a purpose of education.

On an average weekday in Sydney in 2006, over a third (36%) of serve household passenger car trips were made during the morning peak¹¹. This figure was particularly influenced by the high proportion of 'drop off / pick up' trips as opposed to 'accompanying' trips. In relation to all car driver trips in the am peak, serve household passenger car trips accounted for a substantial 28%, suggesting that its impact in the morning congestion cannot be ignored. As discussed later, many of these trips were part of the school run and were relatively short in distance. Although not analysed here, such trips could be fairly localised.

In the afternoon peak¹², serve household passenger car trips comprised 19% of all car driver trips. This remains a sizeable contribution during this high demand period.

Given that the served passengers are often travelling during peak periods when alternative public transport services have the highest frequency, the potential to switch is present and probably at its greatest likelihood compared to other times. However, the fact that these trips are occurring mostly during these periods when alternative modes are clearly available may also suggest that there are other factors influencing the choice to serve passengers by car. Such factors could be related to cost or capacity issues relating to public transport during peak periods. Alternatively, such factors could be influenced by the drivers' attitudes and travel behaviours. In a qualitative study of the culture surrounding women's travel behaviours, Dowling (2000) found that one of the current cultures of modern suburban mothering is to involve their children in schools and formal activities which give their children the best opportunities, regardless of the proximity or location of such activities. She described the car as simultaneously being a "space of mothering and a facilitator of mothering ideals" (p351). These factors could be explored quantitatively in future studies to help understand and address what may become intransigent behaviours resulting from people's busier lifestyles and parenting values.

¹¹ Departing from one's origin between 6:31am and 9:30am

¹² Departing from one's origin between 3:01pm and 6:00pm

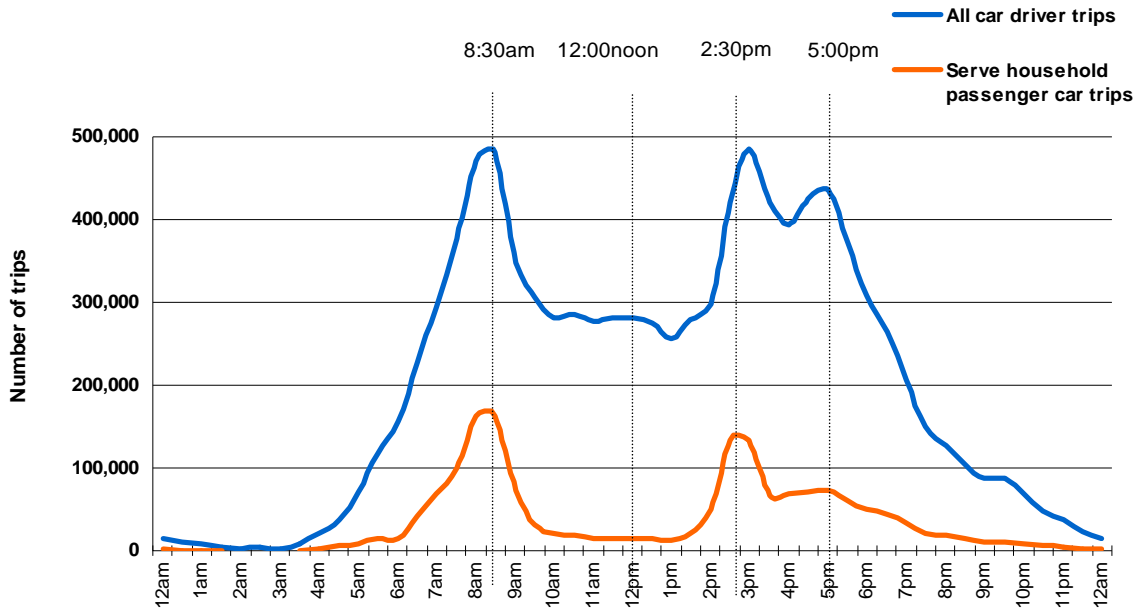


Figure 3 Number of car driver trips and serve household passenger car trips, by time of day, average weekday 2006

5.2 Distance travelled

In 2006, over half (54%) of serve household passenger car trips on weekdays were less than 5 kms. The average length of such trips was 6.9 kms, with a SD of 8.1 kms, and a median of 4.5 kms. Serve passenger car trips tended to be shorter and showed less variability in their distances than car driver trips in general. For all car driver trips, 41% were less than 5 kms, the average was 10.6 kms, with a SD of 13.7 kms, and a median of 6.3 kms.

As illustrated in Figure 4, a high proportion of serve household passenger car trips were less than 2 kms (23%). Such short trips could arguably be undertaken by more active forms of transport, like walking or cycling.

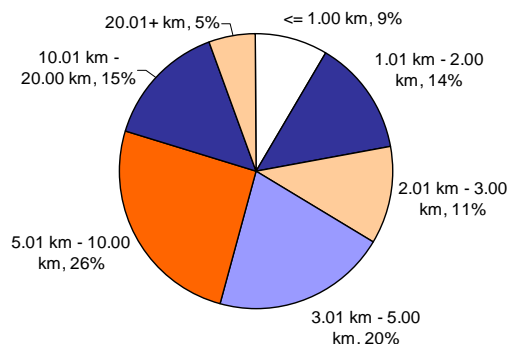


Figure 4 Proportion of serve household passenger car trips by distance, average weekday 2006

5.3 Driver and household profiles¹³

Who made the 1.7 million serve household passenger car trips on an average weekday in Sydney in 2006? Consistent with findings at the broad level, car drivers serving household passengers on an average weekday were predominately female (58%).

As to the household characteristics of these chauffeuring drivers, the majority (69%) consisted of couples with children. More than half (53%) were a couple with at least one child under the age of 15. These drivers' average household size was 3.7 people (compared to the average household size of 2.7 across the GMA).

Households making serve passenger car trips had an average of 2.0 vehicles per household (compared with 1.5 across the GMA). A third of these drivers were from households which had one vehicle, half where there were two vehicles and one in eight from households which had three vehicles.

These household drivers had an average age of 43-years old (52% were aged between 35 and 49) and the overwhelming majority of drivers were married/de facto (81%), consistent with earlier findings about couples with children. Most of these drivers worked, either full-time (43%) or part-time (26%). A further 13% kept house. For some of these drivers, who worked full or part-time, the purpose of their next trip was to go to work (12%); hence, their trips chains involved serving a household passenger on their way to work. Although trip chaining was not explicitly examined in this study, the complexity of such behaviour in relation to serving passengers in conjunction with commuting to work could be explored in more depth in future analysis.

Amongst household drivers making household serve passenger trips, the high ratio of private vehicles to householders affords high mobility. These findings are consistent with Dowling's (2000) qualitative study of suburban Sydney women's travel behaviour in which she found that "time was deemed to be worth the extra financial burden [of running another car]" (p351). Her respondents wanted to minimise travel time, keep to a schedule and were therefore unwilling to potentially double their travel time by using public transport. Furthermore, such mothers were time-poor and had negative views about public transport, viewing time spent waiting for/using public transport as 'wasted time'.

5.4 Passenger profiles

5.4.1 Restructuring the data

Looking explicitly at the passengers being served, and in particular what their purpose of travel is, posed some challenges. Data were originally set up at the trip level from each individual's perspective. However, the driver and passenger(s) needed to be linked to the same trip. Using the statistical software package, SPSS, the data were restructured by converting cases to variables. Specific trip characteristics were used to create unique records at the 'household car trip' level.

¹³ Analysis for serve passenger drivers was done at the driver level. Any individual who undertook a serve household passenger car driver trip was included. Each driver was only counted once.

Veh ID	Depart time	Mode	Purpose
1	8.30-8.39	driver	serve pass.
1	8.30-8.39	pass.	social
1	8.30-8.39	pass.	social
2	9.00-9.09	driver	serve pass.
2	9.00-9.09	pass.	medical
3	8.40-8.49	driver	serve pass.
3	8.40-8.49	pass.	serve pass.
3	8.40-8.49	pass.	education
4	8.50-8.59	driver	serve pass.
4	8.50-8.59	pass.	education

Veh ID	Depart time	Mode.1	Mode.2	Mode.3	Purpose.1	Purpose.2	Purpose.3
1	8.30-8.39	driver	pass.	pass.	serve pass.	social	social
2	9.00-9.09	driver	pass.	...	serve pass.	medical	...
3	8.40-8.49	driver	pass.	pass.	serve pass.	serve pass.	education
4	8.50-8.59	driver	pass.	...	serve pass.	education	...




Figure 5 Example of how serve passenger trip level data were restructured to form unique household car trip level data

In the HTS interview, drivers and passengers each recount their description of their trips separately. In the case of children under the age of 15, one of the adults in the household responds on their behalf. Data are captured by the interviewers for one person at a time (not one trip at a time). Because of these factors, the same car trip might be remembered slightly differently by each driver/passenger.

Certain unique household car trip characteristics were fairly straightforward to identify, as they were likely to be consistently reported by the driver/passenger(s): vehicle ID, the number of passengers in the car, the number of household passengers in the car, and even the distance travelled¹⁴. The departure time was the most difficult, yet essential, trip characteristic needed to identify a unique household car trip. This was a key element needed to distinguish unique car trips, as there were drivers who made multiple trips of the same distance, in the same vehicle, serving the same number of passengers more than once in the day.

Using unweighted counts, there were an initial 5,530 weekday serve passenger driver trips that used a household vehicle and were from a fully responding household¹⁵. Using this as the base, several attempts were made at creating a unique household car trip. Namely, we attempted to use exact departure time recorded, departure time grouped into 10-minute intervals and departure time grouped into 15-minute intervals.

¹⁴ Trip distance is calculated by the NSW Ministry of Transport’s Transport Data Centre (TDC) based on kilometres between travel zone centroids. Each trip origin and destination is coded to a travel zone and then the trip length is calculated based on the road network distance between the origin and destination zone centroids. For intra-zonal trips, the distance is estimated using a formula based on the area of the zone. For more information, see TDC (2008). Because the trip distances are calculated, drivers and passengers will have the precise trip distance allocated to their trip (assuming they provided roughly the same origin/destination points).

¹⁵ Elsewhere in this paper, partially responding households were included in the analysis (however, individuals are always fully responding). To optimise the data restructure and thus align the drivers with the passengers, only fully responding households were included in the ‘Passenger profiles’ section.

Ultimately, the optimal method was to group departure time into 10-minute intervals, resulting in 4,754 useable cases. This approach yielded the maximum number of unique household car trips. Thus, by using this approach, 4,754 (86%) of the original car driver trips were retained. The remainder were lost due to the imprecision of the original departure time recorded (e.g. where the driver reported having departed at 8.09am and the passenger reported having departed at 8.11am) or other factors being reported differently by the driver and the passenger(s). Moreover, the expected total number of passengers was 8,120 (based on the number of household passengers reported by the driver). After restructuring the data, the final number of household passengers was 6,924 – 85% of the expected household passenger count. Data for these passengers were used for the following analyses.

5.4.2 Passenger demographics¹⁶

Over two-thirds of household passengers being served were children – 21% were under 5 years old and 47% were 5-14 years old. Consistent with this, 78% of passengers were in full-time education. Overall, there was a fairly even split between the sexes; however, this was particularly true amongst children, who were the majority of passengers. The gender split changed with the age of passengers – as the age of the passengers increased, so did the proportion of female passengers.

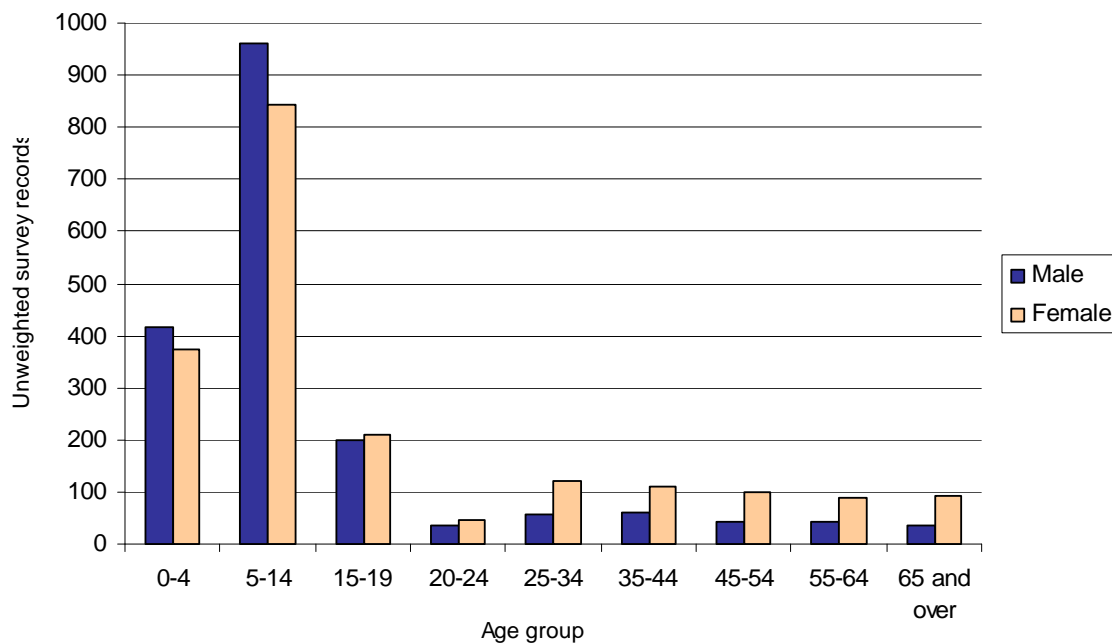


Figure 6 Age group of household passenger being served by gender, average weekday 2006

Where the serve passenger driver was the main HTS respondent of these serve passenger trips (which was the case for 59%), we were able to identify the passengers' relationship to the driver. The majority of passengers (86%) were the drivers' children. Eleven percent of passengers were the spouse. Given that we were looking specifically at serve passenger trips involving household members, these figures were not unexpected.

¹⁶ Because of the limitations of who was included in the passenger analysis, data have not been weighted in the 'Passenger demographics' section. Furthermore, all analysis in this section was done at the passenger level.

5.4.3 Passenger purposes¹⁷

With respect to the passengers' purposes, the most common purpose was in fact to serve other passengers (35%). Looking more closely at this, the notion of passengers serving other passengers is primarily accounted for in terms of 'accompanying someone' (29%), as opposed to 'dropping off/picking up someone' (6%). An example of 'accompanying someone' in this context would be an infant, who could not be left at home on their own, 'coming along for the ride' as his/her parent is driving his/her sibling to school. Another example of how passengers could serve other passengers would be in the case of two children being dropped off at different places, say two different schools. In such a scenario, the second child to be dropped off would be undertaking a serve passenger trip (accompanying someone else) before being dropped off him/herself. Given the complex structure of the data, it is not possible to explore served passengers' next purpose and thus quantify such examples.

After serving other passengers, served passengers' second most common reason for travelling was for education/childcare (34%). Social and recreation purposes (including sport and entertainment) were also common amongst passengers (13%). Children today tend to be more involved in structured social and recreational activities, as opposed to playing outside in their neighbourhood streets as in previous generations (Dowling, Gollner and O'Dwyer 1999; Dowling 2000). Participating in these types of formal activities contributes to trip-making.

Commuting and changing modes of travel (e.g. being dropped off at the train station), accounted for 6% and 5% of passengers' purposes, respectively.

Table 2 Served household passengers' trip purpose, average weekday 2006

Passengers' purpose of travel	Percent
Serve other passenger (accompany/drop-off)	35.0%
Education/childcare	34.2%
Social/recreation (including sport)	12.6%
Commute to main or second job	5.6%
Personal business (including medical/dental visit)	5.8%
Change mode (e.g. being dropped at a train station, bus stop or ferry wharf in order to continue with one's trip)	4.6%
Shopping	1.6%
Other	0.6%
Total	100.0%

6 Summary and discussion

The broad level analysis shows that on average, those in couple with children households make the most serve passenger car trips, followed by those in one parent households and other types of households. This indicates that the presence of children in the households appears to be an important factor in the number of serve passenger car trips being made. This finding is confirmed by the age profile of the passengers being driven, mainly in the 0-14 age group, and the purpose of their trips which is largely for education, childcare, social and recreation (including sporting activities).

¹⁷ Because of the limitations of who was included in the passenger analysis, data have not been weighted in this section; however, purposes have been analysed at the trip level. Served passengers who made more than one trip would be counted accordingly.

Interestingly, more serve passenger car trips are undertaken by women than men. These findings echo those found in other countries, such as that reported by Sullivan and O'Fallon (2003). They noted that female drivers are more likely than male drivers to have household children as vehicle occupants in the three largest urban areas in New Zealand. Similarly, it was shown in San Francisco that the gender of the driver was a more robust predictor of child-serving household trips than race or ethnicity (Mauch and Taylor, 1997).

That Sydney women engaged in more serve household passenger car trips than men is consistent with the fact that Australian mothers spent more time caring for their children than fathers in 2006 (ABS, 2006). In a given week, mothers engaged in more than double the amount of time caring for children (59 hours and 40 minutes) than fathers (27 hours and 12 minutes¹⁸). Furthermore, mothers spent nearly three times the amount of time as fathers in travel associated with child care (3 hours and 6 minutes for mothers compared to 1 hour and 8 minutes for fathers).

This gender difference in the Sydney data, however, only occurs on weekdays. On weekends, the serve passenger car trip-making is equalised between sexes. This suggests that this role is better shared on days when other demands, particularly from work, are lessened.

The evidence that women undertake more serve passenger car trips than men on weekdays when demands such as work and others are probably highest suggests that the car is likely being used to save time. This was certainly found in a qualitative study by Dowling, Gollner and O'Dwyer's (1999) that showed Sydney mothers use the car as a 'management tool' to enable them to juggle their complex daily routines. This was particularly true for suburban mothers with young children who valued the ability to enroll their children in structured activities and therefore required a car to "fulfill higher priorities". It was also suggested that travel was "instigated by individual children's needs" (p 108) and public transport was too rigid, unsafe (e.g. lack of restraints for children) and cumbersome (e.g. maneuvering prams up steps, etc). The high proportion of served children by private vehicles in this quantitative analysis lends weight to Dowling *et al.*'s work.

Consistently, a study commissioned by the NSW Department of Environment and Conservation (2007) reported that parents were slightly less likely than people without children to have reduced fuel-consumption or vehicle emissions. However, on a more positive note, parents are generally more likely than people without children to take on other environmentally-friendly activities, such as reducing energy and water consumption, avoiding excess packaging and plastic bags, and re-using goods, amongst other behaviours. It may therefore be possible for policy to tap into parents' positive attitudes towards the environment and extend their behaviours to more sustainable travel choices.

The analysis in this paper not only shows that children are the ones largely being served to attend school and their other activities but also that most of these car trips occur during the peak periods. This replicates findings in Melbourne (Morris, Wang and Lilja, 2001). Some are dropping off their children on their way to work but more are making dedicated serve passenger trips.

These findings have policy implications, particularly in the assessment and management of peak hour travel. Such data can also influence policies regarding voluntary travel behaviour change, like TravelSmart, which seeks to reduce VKT and shift travel to more sustainable

¹⁸ Times include primary and secondary activities (e.g. engaging in more than one activity at a time.)

modes. Specific alternative modes to school include “walking school buses”¹⁹, cycling to school or car-sharing, etc.

It is important, however, to validate and substantiate these findings with more detailed information about the factors that influence the choice of the car to serve the household’s travel needs. There are clearly other issues such as those expressed by some Sydney mothers about their children’s safety in terms of walking to school unescorted; driving their children to school gives them peace of mind (Dowling, 2000). Formalised “walking school buses”, as implemented by TravelSmart Australia could be more widely adopted in light of this. Alternatively, programs like the state of Victoria’s *Ride2School* program, launched in 2007, aim to get 34,000 children riding or walking to school at least once a week and to ultimately change the habits of 250,000 school children. As part of the program, safety measures, like planned cycle routes on quieter roads, new zebra crossings, volunteers staffing new routes in the official stages, are being put into place. Additionally, access to bicycles for school children and bicycle storage facilities at schools are being provided. Such a structured program not only promotes sustainable travel practices, but it also has the potential to reverse current trends relating to increased serve household passenger car trips as well as reducing associated VKT and emissions.

Although results from the TravelSmart pilot program in NSW are inconclusive (Stopher, Swann and Bertoia, 2006), some initial positive findings suggest that behaviour change in Sydney suburbs is possible. Encouragingly, in their study of Melbourne’s school children’s travel patterns, Morris, Wang and Lilja (2001) suggest that school travel can be specifically targeted for mode change. School travel is regular (with respect to fixed times, days and locations) and shares a well-defined target group, whose travel can be influenced through school/education.

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¹⁹TravelSmart Australia defines a “Walking School Bus™” as follows: a group of primary school children who walk to and from school along a safe and enjoyable set route, accompanied by a minimum of two parent driver/supervisors per ‘bus’. One parent ‘drives’ at the front of the bus, while the other parent supervises at the rear. Additional parents may be needed depending on the local requirements. The walking bus picks up ‘passengers’ along the way at designated ‘bus stops’. See: <http://www.travelsmart.gov.au/schools/schools2.html> for more details.

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