

Petrol expenses vary widely across Australian households

Last week we released research on the effect of rising petrol prices on Australian industries. This paper sets out some more detail on household petrol consumption and the distribution of that consumption.

Key points

Australian households buy around three quarters of all petrol and 6% of all diesel sold in Australia. Each household buys an average of 35.2 litres of petrol each week (based on Q1 2008 data), spending the equivalent of 3% of total national household income on automotive fuel.

However, these aggregate data hide wide variations in fuel consumption between individual households:

- 10% of households own no vehicle and presumably, buy no petrol.
- 39% of households have one vehicle and buy an estimated average of around 26 litres of petrol per week.
- 35% of households have 2 vehicles and buy an estimated average of around 52 litres of petrol per week.
- 15% of households have 3 or more vehicles and buy an estimated average of 78 litres of petrol per week. Not unexpectedly, couples with dependent children, families with older children and multiple-family households are more likely to own 3 or more vehicles.
- A quarter of the 90% of households that own a vehicle drive less than 10,000 kms per year in their own vehicle(s), while a third drive more than 20,000 kms per year.
- Passenger cars located in capital cities drive more kms per year, on average, than those in regional cities or rural areas.

Petrol expenditure is likely to be highest for large households that own multiple vehicles and live in capital city locations.

Average household petrol consumption

Most of Australia's petroleum consumption is in the form of petrol, diesel or LPG for automotive vehicles — 77% by volume in 2006-07. Based on vehicle ownership, use and fuel consumption, we estimate that around 75% of total automotive petrol sales and 6% of diesel sales, by volume, can be ascribed to household use — equivalent to about 57% of our total petroleum consumption, by volume.

In the first 3 months of 2008, an average of 366.46 million litres of petrol was purchased nationally per week. An estimated 75% of this volume was bought by households (274.845ML). This means each of Australia's 7.8 million households bought an average of 35.2 litres of petrol each week. The RBA estimated an average weekly household petrol purchase of 35 litres per week in 2005, so this volume does not appear to have changed greatly over the last 3 years.

Household diesel purchases in addition to this petrol were small, at just 6% of total weekly diesel sales (337ML). Household diesel sales amounted to an average of 20.2ML per week in total, or 2.6 litres per household, in the first three months of 2008.

With petrol costing an average of \$1.16 per litre nationally over the first three months of 2008, Australian households spent an average of \$40.80 each, or \$318.8 mn in aggregate, per week on petrol.

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Inside:

Average household petrol consumption
Distribution of petrol consumption
Data and information sources
Contacts

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Total petrol consumption is stable.

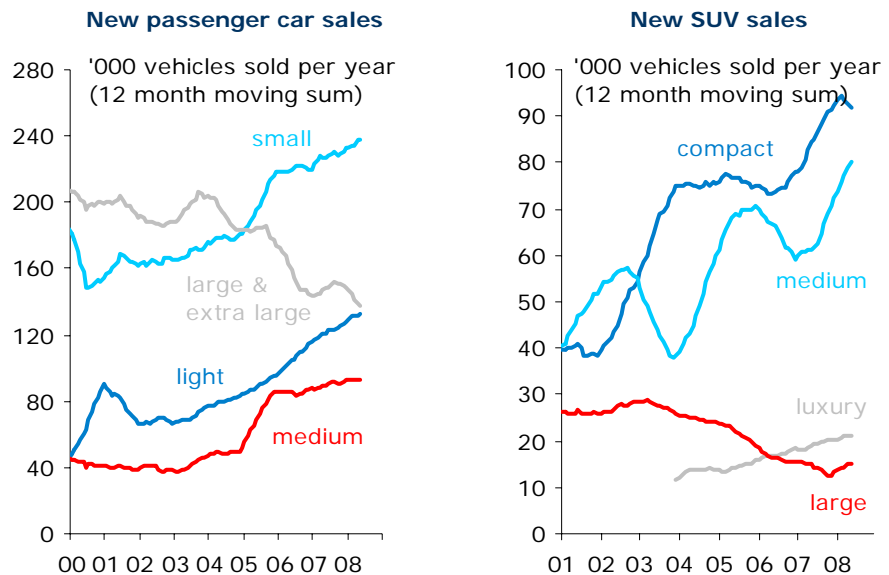
Petrol consumption per capita and per passenger vehicle has fallen.

The rising petrol cost is driving the growing popularity of smaller cars.

Population growth has been running at around 1.3% p.a. and the national passenger car fleet (including SUVs) has been growing at 2.6% p.a. on average over the past five years, so a stable total volume of petrol consumed means that petrol consumption per capita has been coming down by at least 1.3% p.a., while petrol consumption per passenger car has decreased even further. This is probably due to a combination of better vehicle fuel efficiency, more 'efficient' driving, reduced total on-road kilometres and more private passenger vehicles (mainly SUVs) using diesel instead. Diesel consumption has been rising steadily over this period, although most of this is due to business not household demand.

Petrol is generally acknowledged to have a relatively low price elasticity (that is, the volume of petrol consumed does not change greatly in immediate response to price changes). But, over time, rising petrol prices have definitely played a role in altering drivers' behaviour and preferences in ways that reduce per capita petrol consumption. Certainly, petrol prices have been a factor in changing the types of new vehicles that Australians prefer to buy (but probably not the record numbers of new vehicles purchased) in favour of smaller, more efficient cars.¹

The influence of petrol prices – smaller cars growing in popularity



Source: FCAI.

Distribution of petrol consumption

Naturally, there are wide variations around this average of 35 litres per week, with large households, households with multiple cars and households in capital city and urban fringe locations typically buying more petrol.

One indicator of likely petrol consumption by households is vehicle ownership. In March 2006 (latest data), 90% of Australia's 7.9 million dwellings (including second homes) housed at least one registered vehicle, including cars, SUVs, utes, vans, motorbikes, motorhomes and even a few trucks. If the 10% of households that own no vehicles are removed from the equation, then the average weekly petrol consumption of the remaining households with vehicles was closer to 38 litres per week for the period 2005 to 2008.

As could logically be expected, the number of vehicles owned by each household reflects differences in household size and structure:

- 10% (820,000 households) owned no vehicles and presumably, consumed little or no petrol. The number and proportion of households with no car is however, gradually falling (it was 13% in 1996). Households with no car are more likely to be lone person households (27% of whom have no car) or

90% of Australia's 7.9 million households own at least one automotive vehicle.

Households that own vehicles buy an average of 38 litres of petrol per week, plus 2 litres of diesel.

¹ ANZ Economics and Markets research, *Motor Vehicle Outlook*, Feb 2008.

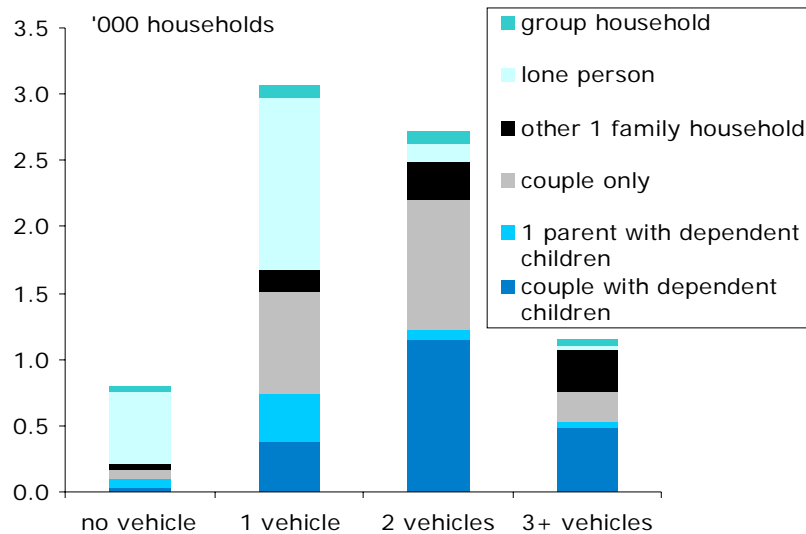
Three-quarters of Australian households own one or two vehicles.

15% own 3 or more vehicles.

'non-family' group households (19% of whom have no car). Among family households, single parent households are more likely to have no car (13%).

- 39% (3.1 million households) had one vehicle, including 66% of single parent families and 65% of lone person households;
- 35% (2.8 million households) had two vehicles, including 56% of couples with dependent children and 48% of 'couple only' households.
- 15% (1.2 million households) owned 3 or more vehicles, including 56% (52,000) of multiple family households, 40% (328,500) of 'other' family households (typically with non-dependent children) and 24% (487,000) of couples with dependent children.²

Number of vehicles owned by main household types (2006)



Source: ABS, 4602.0 Environmental Issues: People's Views and Practices, Mar 2006.

Looking at fuel consumed per non-business vehicle instead of per household, an estimated 275ML of petrol was consumed per week by approximately 10 million cars and SUVs, 460,000 motorcycles, 40,000 campervans and up to 500,000 'light commercial' vehicles (such as vans and utes) in Q1 2008. Excluding the 500,000-odd motorcycles and campervans (which are generally second vehicles and not the primary transport vehicle for their household), this equates to 26.2 litres of petrol per private vehicle per week, plus about 2 litres of diesel.

Indicative distribution of petrol costs — households by number of vehicles

No of vehicles	No of households (and %)	Average petrol per week (litres)	Average cost per week, at \$1.50/litre
None	820,100 (10.3)	zero	zero
1	3,092,900 (38.9)	26.2	\$39.30
2	2,796,400 (35.2)	52.4	\$78.60
3 or more	1,235,200 (15.5)	78.6	\$117.90
ALL	7,944,700 (100.0)	35.0	\$52.50

Source: ABS, DISR and ANZ Economics and Markets Research.

Assuming (for calculation purposes only) that all privately-owned vehicles consume about the same petrol on average per week, an indicative distribution of petrol consumption can be calculated, as shown in the table below. This implies that 10% of households consume no petrol, 39% consume 26 litres, 35% consume 52.4 litres and 15% consume 78.6 litres per week. This translates

² ABS 4602.0, *Environmental Issues: People's Views and Practices*, Mar 2006.

Non-business passenger cars (and SUVs) are each driven an average of 8,200 kms per year.

into a cost range of zero to \$118 per week in typical petrol expenses, at \$1.50 per litre. And each 10 cent rise in the price of petrol will mean extra fuel expenses of between zero and \$7.86 per week, or zero and \$408.72 per year.

Individual households within each car ownership group will consume more or less than these averages, depending on the fuel efficiency of their car(s) and how many kilometres they drive. Non-business passenger cars are driven an average of 8,200 kms per year and have an average fuel economy of 11.2 litres of petrol per 100kms.

Small and light passenger cars generally use far less petrol per km than larger cars and SUVs (see table below). As noted above, this difference in fuel efficiency and the growing popularity of smaller cars has helped keep total petrol consumption relatively stable, despite ever-growing numbers of people and cars on our roads. This has been countered somewhat however, with the strong growth in sales of SUVs, which have higher fuel costs than large passenger cars.

Average vehicle operating costs, current models, 2008

Vehicle type*	Fuel cost, cents per km	Total average cost, cents per km
Light passenger	8.7	47.4
Small passenger	9.2	59.5
Medium passenger	12.4	74.6
Large passenger	12.2	81.4
Compact SUV	13.2	75.6
Medium SUV	14.8	89.1
Large SUV	18.7	126.1
4x2 ute (commercial)	14.4	71.7
4x4 ute (commercial)	14.8	78.2

* average cost for all vehicles of each type in RACV's 2008 survey. Based on an average annual travel distance of 15,000kms and 5 years' of ownership.
Source: RACV.

Capital city cars are, on average, driven more than cars in regional cities or rural locations.

Somewhat surprisingly, the average kms travelled per passenger car is *higher* in capital cities than in regional areas, at 11,800 kms per car in cities, compared to 8,000 in regional urban areas and 9,600 in non-urban areas. This may be because rural households are driving vehicles other than passenger cars (such as utes or trucks) as well or instead of their car, or because they do not have a daily commute to work adding to their kilometre count.

An indicative range of kilometres is shown in the table below. For passenger cars, the average kilometres travelled in 2006 for non-business use was 8,200kms. Light commercial vehicles (vans and utes) travelled an average of 6,700 kms per year for personal use, while private-use motorcycles travelled an average of 3,100 kms per year. Around a third of all households drove their vehicles (one or more) 20,000kms or more per year. Unfortunately, Australian data on kms travelled are not regular enough to indicate household responses to climbing petrol prices in terms of kms driven. But anecdotally, many report they are driving less where possible (e.g. by using more public transport or walking).

Kilometres travelled by households that own a registered vehicle (2006)

kms per year, '000	'000 households	% of households
<5	774.5	10.9
5-10	1,043.2	14.6
10-15	1,239.4	17.4
15-20	884.4	12.4
20-25	912.0	12.8
25-30	414.5	5.8
30+	1,018.4	14.3
Don't know	838.2	11.8
<i>Average kms for all private passenger cars: 8,200 kms per year</i>	7,124.6	100.0

Source: ABS, 9210.055001, *Survey of Motor Vehicle Use 2006*, Oct 2007.

Data and information sources

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