



Australian Government

Department of Infrastructure, Regional Development and Cities

Bureau of Infrastructure, Transport and Regional Economics



Spending by Australian households on owning and operating vehicles in 2015-16

At a glance

- According to the Australian Bureau of Statistics (ABS) Household Expenditure Survey 2015-16, Australian households spent an average of \$177.60 per week on owning and operating private vehicles in 2015-16 or \$9235 annually. This represents 12.7 per cent of total expenditure on goods and services.
- The main contributors to household spending on owning and operating vehicles were vehicle purchases (\$59.26 per week, on average), motor vehicle fuel, lubricants and additives (\$45.36), vehicle registration and insurance (\$35.55) and vehicle parts, servicing and crash repairs (\$27.72).
- Average weekly household expenditure on owning and operating vehicles was around \$94 per vehicle, with variable costs estimated to be about \$18 per 100 kilometres in 2015-16.
- Between 2009-10 and 2015-16, there was a nominal 7.6 per cent increase in household expenditure on owning and operating vehicles, corresponding to an increase of \$12.54 per household per week. This was mainly due to an increased spend of \$6.98 per week on vehicle registration and insurance and \$4.52 per week on vehicle purchases.
- Most of the observed increase in nominal spending was due to price increases. In real terms, the 2009-10 to 2015-16 increase in household expenditure on owning and operating vehicles amounted to \$3.93 per week (representing a 2.2 per cent growth rate).
- Since total household expenditure on all goods and services grew more rapidly than vehicle-related spending, the proportion of total expenditure attributable to owning and operating vehicles declined from 13.35 per cent in 2009-10 to 12.75 per cent in 2015-16. Much of this 0.6 percentage point decline is due to a 0.5 percentage point decline in the proportion spent on motor vehicle fuel, lubricants and additives, resulting from a \$1.32 drop in average weekly expenditure between 2009-10 and 2015-16.
- Household spending on diesel fuel increased by 48 per cent between 2009-10 and 2015-16, while petrol expenditure increased by just 2 per cent, and expenditure on LPG and other gas fuels fell by 55 per cent.
- Rural areas (including towns of less than 1000 population) had particularly high household expenditure on owning and operating vehicles of \$199 per week in 2015-16, which accounted for 15.8 per cent of their total expenditure. The high spending of rural households is largely due to a high spend on motor vehicle fuel (\$62 per week, compared to \$45, nationally), reflecting the combined effect of greater travel distances, higher fuel prices and more fuel-intensive vehicles in rural areas. Rural households comprise about 10 per cent of the Australian population.
- The outer suburbs of Sydney, Melbourne and Brisbane also had weekly household expenditure on owning and operating vehicles of \$199 in 2015-16, but because income and total expenditure is relatively high, this represents only 13.5 per cent of their total expenditure.

- Other regions with a particularly high weekly expenditure on owning and operating vehicles are the ACT (\$208) and Sydney (\$194). The proportion spent on owning and operating vehicles was very high for regional SA (16.4 per cent) and regional Victoria (16.2 per cent).
- For the capital cities, weekly expenditure on owning and operating vehicles increased by \$20.44 (12.8 per cent) between 2009-10 and 2015-16, while for regional Australia, it remained almost stable (declining by \$0.72, or 0.4 per cent). This discrepancy in the rate of expenditure change has led to capital city households spending 5 per cent more than regional households in 2015-16, whereas they spent 7 per cent less than regional households in 2009-10. Limited growth in the vehicle-related spending of rural households has also narrowed the expenditure gap between rural and urban households—rural households spent 23 per cent more than households in major urban areas (with a population of at least 100 000) in 2009-10, compared to 12 per cent more in 2015-16.
- There was a widespread decline across geographic areas in the proportion of total goods and services expenditure attributable to owning and operating vehicles. The decline was more pronounced for regional Australia (from 15.6 per cent in 2009-10 to 14.5 per cent in 2015-16) than it was for the capital cities (from 12.3 to 12.0 per cent). There was a particularly pronounced decline of 2.3 percentage points for rural areas.
- Average weekly household expenditure on motor vehicle fuel declined by 2.8 per cent nationally from 2009-10 to 2015-16. Most regions recorded modest changes, but there were significant declines in motor vehicle fuel expenditure for Melbourne (-11 per cent) and regional Tasmania (-19 per cent).
- The demographic groups with the highest average weekly expenditure on owning and operating vehicles are couple households that contain non-dependent children, the highest earning households and households containing five or more persons. Couples with only non-dependent children spent a particularly high proportion of their total expenditure on owning and operating vehicles (16.2 per cent).
- Average weekly expenditure on motor vehicle fuel, lubricants and additives was highest for households containing five or more persons (\$80), couples with dependent and non-dependent children (\$78) and couples with non-dependent children only (\$77). It represented a relatively high share of total expenditure for couples with non-dependent children only (4.3 per cent) and the lowest income households (4.1 per cent).
- Lone persons aged 65 and over had particularly low weekly expenditure on motor vehicle fuel (\$14) and on owning and operating vehicles (\$53).
- Several demographic groups recorded a relatively large increase in expenditure on owning and operating vehicles between 2009-10 and 2015-16, including the highest income households, three person households, and households whose main income source was their own unincorporated business. Households whose main income source was other government payments recorded the largest expenditure decline over the period (-\$12), as well as the largest decline in the proportion spent on owning and operating vehicles (-3.1 percentage points).

Background

This Information Sheet presents data on Australian households' expenditure patterns, based on the ABS *Household Expenditure Survey* (HES) for 2015-16. It updates BITRE Information Sheet 86 *Spending by Australian households on owning and operating vehicles* (BITRE 2017a), which relied on 2009-10 HES data. It details the composition of household expenditure on owning and operating vehicles and explores variation in the incidence of these costs across different types of households, such as capital city and regional households, and high income and low income households. This updated analysis also investigates changes in vehicle-related spending since 2009-10, with the aim of identifying any significant changes that have occurred for particular types of regions or particular demographic groups.

Average weekly household expenditure

This section presents the latest national estimates of average weekly household spending for the different goods and services categories, including transport. It also examines changes in the amount spent on these expenditure categories between 2009-10 and 2015-16.

The HES collected detailed expenditure data from 10 046 households' resident in private dwellings throughout Australia, comprising 23 626 persons aged 15 and over (ABS 2017a). The survey scope is representative of 97 per cent of the people living in Australia. Very remote areas are excluded from the scope of the HES (ibid). The HES estimates are subject to non-sampling and sampling error. Estimates for subgroups with a low population (e.g. the Northern Territory (NT) and the Australian Capital Territory (ACT)) and estimates for rarely acquired goods and services (e.g. caravan purchase) may have high Relative Standard Errors (RSEs) and should be treated with caution.¹

The survey captures the cost of goods and services acquired during the 2015-16 financial year, irrespective of when the goods and services were paid for or consumed. It only captures the cost of goods and services used for private purposes, with the costs of goods and services used for investment and business purposes excluded.

Table 1 summarises the average weekly expenditure on goods and services of Australian households in 2015-16, and shows how it compares to 2009-10. On average, Australian households spent \$1425 per week on goods and services in 2015-16, up from \$1236 in 2009-10, representing 15.3 per cent growth in nominal expenditure. Much of this increase in household spending can be attributed to inflation, as the consumer price index (CPI) increased by 14.2 per cent between 2009-10 and 2015-16 (ABS 2017b).

Table 1 Average weekly household expenditure on goods and services, Australia, 2009-10 and 2015-16

Expenditure category	Average weekly household expenditure on goods and services (\$)		Percentage change	Proportion of total goods and services expenditure (per cent)	
	2009-10	2015-16	2009-10 to 2015-16	2009-10	2015-16
Current housing costs (selected dwelling)	223.14	279.12	25.1	18.0	19.6
Domestic fuel and power	32.52	40.92	25.8	2.6	2.9
Food and non-alcoholic beverages	204.20	236.97	16.0	16.5	16.6
Alcoholic beverages	32.35	31.95	-1.2	2.6	2.2
Tobacco products	12.57	12.84	2.1	1.0	0.9
Clothing and footwear	44.38	43.75	-1.4	3.6	3.1
Household furnishings and equipment	57.00	57.87	1.5	4.6	4.1
Household services and operation	34.65	44.90	29.6	2.8	3.2
Medical care and health expenses	65.60	82.38	25.6	5.3	5.8
Transport	192.87	206.69	7.2	15.6	14.5
Communication	42.44	46.62	9.8	3.4	3.3
Recreation	153.94	171.85	11.6	12.5	12.1
Education	30.56	43.86	43.5	2.5	3.1
Personal care	24.06	28.64	19.0	1.9	2.0
Miscellaneous goods and services	86.01	97.08	12.9	7.0	6.8
Total	1 236.28	1 425.03	15.3	100.0	100.0

Source: ABS 2015-16 *Household Expenditure Survey*: Cat. No. 6535.0.

In 2015-16, the major household expenditure categories were Current housing costs (\$279 per week), Food and non-alcoholic beverages (\$237 per week), Transport (\$207 per week) and Recreation (\$172 per week).

The transport spend of Australian households grew by 7.2 per cent between 2009-10 and 2015-16. This reflects modest overall growth in the price of transport goods and services, as reflected in the CPI increase

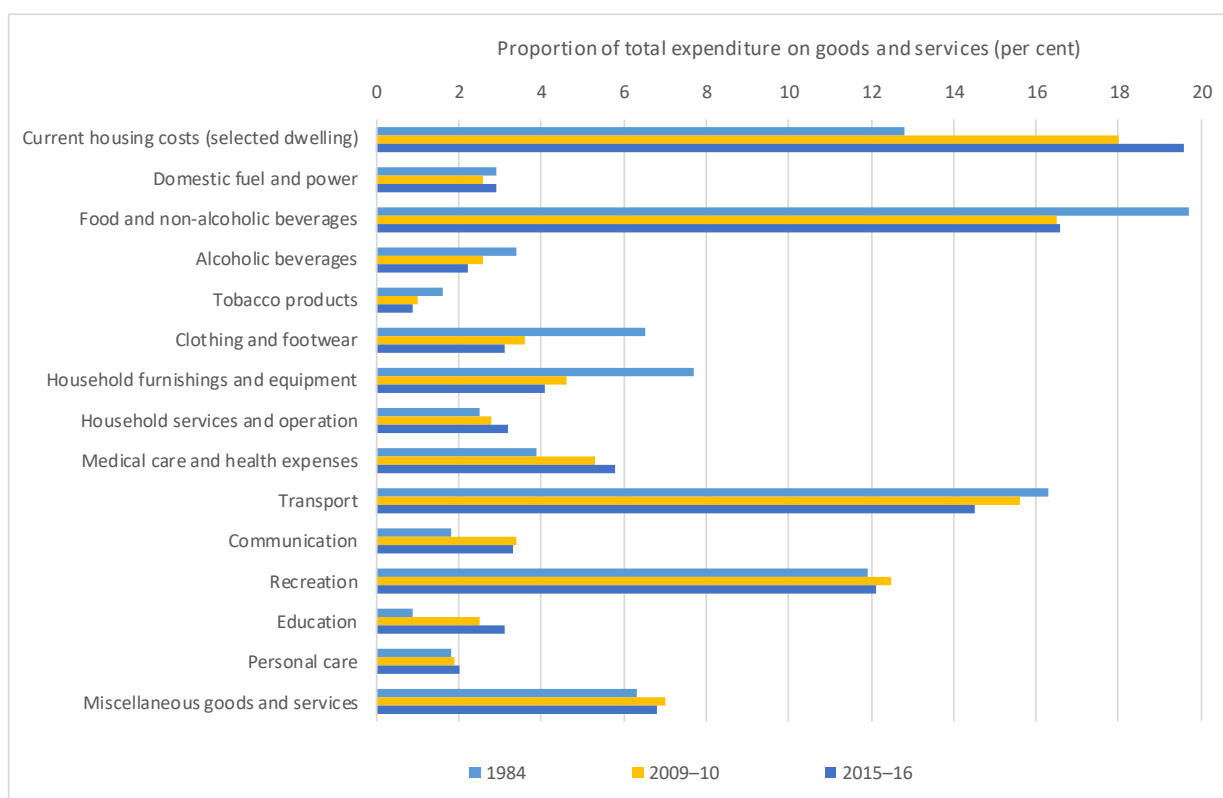
¹ Estimates known to have RSEs of 25 per cent or more are flagged.

for the Transport group of 4.5 per cent over the same period (ABS 2017b).² Many expenditure categories grew much more strongly than Transport, with particularly rapid spending growth evident for Education (43.5 per cent), Household services and operation (29.6 per cent), Domestic fuel and power (25.8 per cent), Medical care and health expenses (25.6 per cent) and Current housing costs (25.1 per cent). However, in 2015-16, Australian households spent slightly less on Clothing and footwear and Alcoholic beverages, than they did in 2009-10.

Figure 1 illustrates the proportion of total spending on goods and services that is attributable to each of the expenditure categories. It shows how the overall composition of household expenditure has changed, by comparing three points in time—1984, 2009-10 and 2015-16. Transport costs represent a declining proportion of total household expenditure, down from 16.3 per cent in 1984, to 15.6 per cent in 2009-10 and 14.5 per cent in 2015-16. Other expenditure categories showing a declining trend include Alcoholic beverages, Tobacco products, Clothing and footwear, and Household furnishings and equipment. The proportion spent on Food and non-alcoholic beverages fell considerably between 1984 and 2009-10, but remained relatively unchanged between the 2009-10 and 2015-16 surveys.

In contrast, there has been a large increase in the proportion spent on housing. Current housing costs represented just 12.8 per cent of total spending on goods and services in 1984, but now contribute 19.6 per cent of the total spend. There has also been a marked increase in the share of expenditure devoted to Medical care and health expenses, Education and Communication since 1984.

Figure 1 Proportion of weekly household expenditure on goods and services, Australia, 1984, 2009-10 and 2015-16



Source: ABS 2015-16 *Household Expenditure Survey*: Cat. No. 6535.0.

² The expenditure figures presented in this section are expressed in nominal terms. However, the analysis of expenditure on owning and operating vehicles in the following section does control for changes in prices by converting the nominal expenditure data into real terms using detailed CPI data.

Composition of expenditure on owning and operating vehicles

Coverage

The remainder of the analysis focuses on a subset of the HES Transport expenditure category—namely expenditure on owning and operating private vehicles (excluding holiday-specific expenses). Consequently, the HES Public transport fares, Fares (excluding holidays and public transport) and Delivery and freight charges sub-categories are excluded from the analysis. Holiday petrol purchases form part of the HES Recreation expenditure category, and are also excluded from the analysis. The interest component on loans for vehicles, while not in the HES Transport category, is included in BITRE's HES-based estimate of expenditure on owning and operating private vehicles.

The HES data includes the costs to households of salary-sacrifice arrangements, such as salary-sacrificed motor vehicles. While the published HES expenditure data includes the estimated value of goods and services provided by employers to their employees free or at a reduced cost for their own private use (referred to by ABS as 'non-cash benefits'), BITRE has specifically excluded these non-cash benefits from the household expenditure data presented from this point forward.³ Thus, BITRE's estimated expenditure on owning and operating vehicles excludes the value of employer-provided vehicles and parking.⁴ This exclusion is made because our analysis is focused on the transport expenses actually incurred by households, not on the transport costs borne by employers.⁵ Box 1 provides further information on transport-related salary-sacrificed expenditure and non-cash benefits.

The data presented in the remainder of this Information Sheet is based on BITRE analysis of customised HES data tabulations purchased from ABS, and so will not match data in ABS HES publications.

Box 1: Salary-sacrificed vehicles and employer-provided vehicles and parking

About 2.4 per cent of Australian households reported a salary-sacrifice vehicle arrangement in 2015-16. Salary-sacrifice vehicle expenses averaged \$8.42 per week across all Australian households. However, for the set of households with a salary-sacrifice vehicle arrangement, the expenses averaged \$340 per week. This is allocated by ABS across a range of HES expenditure items, including motor vehicle purchases, fuel, servicing and registration.

A much larger proportion of Australian households reported that they benefitted from use of a vehicle provided by an employer free or at reduced cost (7.9 per cent or 711 000 households). These non-cash benefits were valued at an average of \$270 per week for recipient households and \$21.39 per week across all Australian households. In the HES publications, the ABS allocates about 80 per cent of this expenditure to 'vehicle hire and leasing expenses (non-holiday)' and 20 per cent to 'motor vehicle fuel, lubricants and additives (not further defined)'.

About 2.4 per cent of Australian households benefitted from employer-provided parking. This non-cash benefit averaged \$63 per week for recipient households and \$1.48 per week across all Australian households.

The value of employer-provided vehicles and parking are excluded from BITRE's estimates of household spending on owning and operating vehicles. This exclusion amounts to \$22.87 per household per week, on average. Note that BITRE's expenditure estimates do, however, include household expenditure on salary-sacrifice vehicle arrangements.

Information on the 2009-10 contribution of salary-sacrifice vehicles and employer-provided vehicles and parking can be found in Box 1 of BITRE (2017a).

³ This results in an average weekly household expenditure figure of \$1393, which is 2.2 per cent below the published figure of \$1425.

⁴ This exclusion amounts to \$22.87 per household per week, on average.

⁵ Any associated fringe benefit tax (FBT) liability would initially be borne by employers. Employers may choose to pass the FBT cost on to employees. In 2015-16 this would have involved employees paying tax equivalent to 49 per cent of the value of the non-cash benefit.

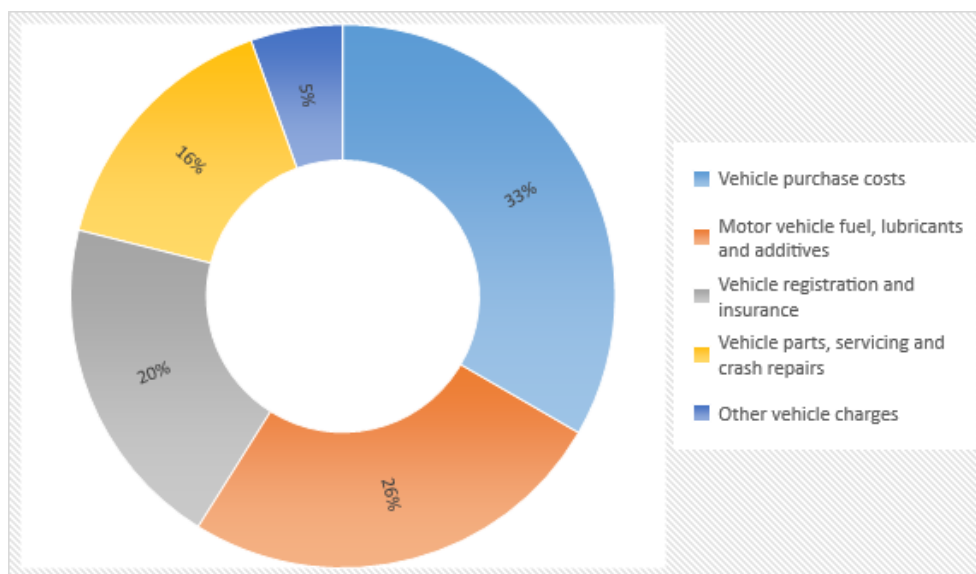
Expenditure components

Figure 2 shows how average weekly household expenditure on owning and operating private vehicles is distributed across the different expenditure items in 2015-16, while Table 2 presents a detailed breakdown of this expenditure for 2009-10 and 2015-16.

In 2015-16, average household expenditure on owning and operating private vehicles in Australia was \$177.60 per week, accounting for 12.7 per cent of total goods and services expenditure (Table 2). On average, Australian households spent \$9235 on owning and operating vehicles during 2015-16. This is equivalent to aggregate expenditure by Australian households of \$82.7 billion in 2015-16.

Figure 2 provides a breakdown of the \$177.60 per week that the average Australian household spent on owning and operating vehicles in 2015-16. Thirty-three per cent (or \$59.26) was spent on *Total vehicle purchase costs*, which includes motorcycle purchases, other motor vehicle purchases, caravan and trailer purchases, and the interest component of loans for vehicles. A further 26 per cent (or \$45.36 per week) was spent on *Motor vehicle fuel, lubricants and additives*, which includes petrol, diesel, LPG and other gas fuels, oil, lubricants and additives. *Vehicle registration and insurance* and *Vehicle parts, servicing and crash repairs* accounted for 20 per cent and 16 per cent of total expenditure on owning and operating vehicles, respectively (or \$35.55 and \$27.72 per week). The remaining 5 per cent of household expenditure on owning and operating vehicles relates to *Other vehicle charges*, which includes driver's licenses, parking fees, driving lessons, motor organisation subscriptions, road tolls, hire of accessories, and non-holiday vehicle hire and leasing expenses.

Figure 2 Contribution of expenditure items to total household expenditure on owning and operating vehicles, Australia, 2015-16



Note: BITRE has specifically excluded the value of employer-provided vehicles and parking from the household expenditure figures (see Box 1 for further information). Table 2 lists the detailed expenditure items which contribute to each category.

Source: BITRE analysis of ABS 2015-16 *Household Expenditure Survey* customised tabulations.

Table 3 details the change in nominal household expenditure on owning and operating vehicles between 2009-10 and 2015-16. There was a nominal 7.6 per cent increase in household expenditure on owning and operating vehicles over this period, corresponding to an increase of \$12.54 per household per week. However, average weekly household expenditure on all goods and services increased rather more rapidly (by 12.8 per cent). Consequently, the proportion of total household goods and services expenditure that was attributable to owning and operating vehicles declined from 13.35 per cent in 2009-10 to 12.75 per cent in 2015-16, representing a decline of 0.6 percentage points.

Table 2 Summary of average weekly household expenditure on owning and operating vehicles, Australia, 2009-10 and 2015-16

	2015-16			2009-10	
	Average weekly expenditure (\$)	Average annual expenditure (\$)	Aggregate annual expenditure (\$million)	Average weekly expenditure as share of total goods and services expenditure (per cent)	Average weekly expenditure (\$)
Vehicle purchase costs	59.26	3082	27 609	4.3	54.74
Motor vehicle purchase	51.84	2696	24 152	3.7	47.16
Other vehicle purchase	1.82	95	848	0.1	*2.20
Loans for vehicle - interest component	5.59	291	2604	0.4	5.39
Motor vehicle fuel, lubricants and additives	45.36	2359	21 133	3.3	46.68
Petrol	37.26	1938	17 359	2.7	36.52
Diesel fuel	5.35	278	2 493	0.4	3.62
LPG and other gas fuels	0.66	34	307	0.0	1.47
Oils, lubricants and additives	0.65	34	303	0.0	0.67
Motor vehicle fuel, lubricants and additives nfd	1.43	74	666	0.1	4.39
Vehicle registration and insurance	35.55	1849	16 563	2.6	28.57
Compulsory registration and insurance of motor vehicle (other than motor cycle)	19.29	1003	8 987	1.4	15.15
Other insurance of motor vehicle (other than motor cycle)	14.77	768	6 881	1.1	12.31
Compulsory registration and insurance of motor cycle, caravan and trailer	0.88	46	410	0.1	0.68
Other insurance of motor cycle, caravan and trailer	0.59	31	275	0.0	0.43
Vehicle parts, servicing and crash repairs	27.72	1441	12 915	2.0	26.74
Motor vehicle parts and accessories purchased separately	10.37	539	4 831	0.7	10.48
Crash repairs	1.21	63	564	0.1	1.21
Vehicle servicing (including parts and labour)	16.14	839	7 520	1.2	15.06
Other vehicle charges	9.73	506	4 533	0.7	8.33
Vehicle hire and leasing expenses (non-holiday)	1.31	68	610	0.1	1.63
Driver's licence	0.90	47	419	0.1	0.60
Parking fees	2.71	141	1 263	0.2	2.16
Driving lessons	*0.44	23	205	0.0	*0.25
Subscription to motor organisations	1.22	63	568	0.1	1.11
Road tolls	1.76	92	820	0.1	0.88
Vehicle charges (including hire of accessories) nec	1.38	72	643	0.1	1.70
Total cost of owning and operating vehicles (non-holiday)	177.60	9235	82 744	12.7^a	165.06

Note: Estimates differ from those in the HES publication as BITRE has specifically excluded the value of employer-provided vehicles and parking from the expenditure figures (see Box 1 for further information). Components may not sum to totals due to rounding. nfd = not further defined. nec = not elsewhere classified.

^a Total goods and services expenditure (excluding the value of employer-provided vehicles and parking) per household in 2015-16 was \$1393.34.

* Estimates known to have RSEs of 25 per cent or more are flagged, and should be treated with caution.

Source: BITRE analysis of ABS 2015-16 and 2009-10 *Household Expenditure Survey* customised tabulations and 2009-10 CURF data.

Table 3 Change in nominal average weekly household expenditure on owning and operating vehicles, Australia, 2009-10 to 2015-16

	Change in average weekly expenditure, 2009-10 to 2015-16 (\$)	Percentage change in average weekly expenditure, 2009-10 to 2015-16 (per cent)	Change in the proportion of total goods and services expenditure, 2009-10 to 2015-16 (per cent)
Vehicle purchase costs	4.52	8	-0.2
Motor vehicle purchase	4.68	10	-0.1
Other vehicle purchase	*-0.38	*-17	0.0*
Loans for vehicle - interest component	0.20	4	0.0
Motor vehicle fuel, lubricants and additives	-1.32	-3	-0.5
Petrol	0.74	2	-0.3
Diesel fuel	1.73	48	0.1
LPG and other gas fuels	-0.81	-55	-0.1
Oils, lubricants and additives	-0.02	-3	0.0
Motor vehicle fuel, lubricants and additives nfd	-2.96	-67	-0.3
Vehicle registration and insurance	6.98	24	0.2
Compulsory registration and insurance of motor vehicle (other than motor cycle)	4.14	27	0.2
Other insurance of motor vehicle (other than motor cycle)	2.46	20	0.1
Compulsory registration and insurance of motor cycle, caravan and trailer	0.20	29	0.0
Other insurance of motor cycle, caravan and trailer	0.16	38	0.0
Vehicle parts, servicing and crash repairs	0.98	4	-0.2
Motor vehicle parts and accessories purchased separately	-0.11	-1	-0.1
Crash repairs	0.00	0	0.0
Vehicle servicing (including parts and labour)	1.08	7	-0.1
Other vehicle charges	1.40	17	0.0
Vehicle hire and leasing expenses (non-holiday)	-0.32	-20	0.0
Driver's licence	0.30	51	0.0
Parking fees	0.55	25	0.0
Driving lessons	*0.19	*76	*0.0
Subscription to motor organisations	0.11	10	0.0
Road tolls	0.88	100	0.1
Vehicle charges (including hire of accessories) nec	-0.32	-19	0.0
Total cost of owning and operating vehicles (non-holiday)	12.54	8	-0.6

Note: Estimates differ from those in the HES publication as BITRE has specifically excluded the value of employer-provided vehicles and parking from the expenditure figures (see Box 1 for further information). Components may not sum to totals due to rounding. nfd = not further defined. nec = not elsewhere classified.

* Estimates known to have RSEs of 25 per cent or more are flagged, and should be treated with caution.

Source: BITRE analysis of ABS 2015-16 and 2009-10 *Household Expenditure Survey* customised tabulations and 2009-10 CURF data.

The increase of \$12.54 per week in household expenditure on owning and operating vehicles was largely due to increased expenditure of \$6.98 per week on *Vehicle registration and insurance* and \$4.52 per week on *Vehicle purchase costs*. Over the same period, there was a small decrease in household expenditure on *Motor vehicle fuel, lubricants and additives* (of \$1.32 per week) and small increases in expenditure on *Vehicle parts, servicing and crash repairs* and *Other vehicle charges* (of \$0.98 and \$1.40 per week, respectively).

At the most detailed expenditure item scale, the largest nominal changes in household expenditure were increases of \$4.68 per week on motor vehicle purchases and \$4.14 per week on compulsory registration and insurance of motor vehicles. Some expenditure items showed particularly rapid growth or decline between 2009-10 and 2015-16:

- Average weekly household expenditure on LPG and other gas fuels declined by 55 per cent, while expenditure on diesel fuel increased by 48 per cent, with petrol expenditure increasing by just 2 per cent. This shift towards diesel and away from LPG reflects changes in the fuel type mix of the passenger vehicle stock⁶, and removal of some government incentives for LPG vehicles.^{7,8}
- All four insurance-related expenditure items showed relatively high growth of 20–40 per cent. This reflects significant increases in the price of insurance services, with the CPI index for the Insurance expenditure class increasing by 27.8 per cent between 2009-10 and 2015-16 (ABS 2017b).
- Average weekly household expenditure on road tolls has doubled, reflecting the introduction of a number of new toll roads since 2009-10.
- Average weekly household expenditure on driver's licenses increased by 51 per cent (from \$0.60 to \$0.90 per household per week).

Most of the 0.6 percentage point decline in the proportion of total household goods and services expenditure spent on owning and operating vehicles was attributable to a 0.5 percentage point decline in the proportion spent on *Motor vehicle fuel, lubricants and additives*. The proportion spent on *Vehicle purchase costs* and *Vehicle parts, servicing and crash repairs* also declined (by 0.2 percentage points each). However, there was a modest increase in the proportion spent on *Vehicle registration and insurance* between 2009-10 and 2015-16.

Much of the \$12.54 nominal increase in weekly household expenditure on owning and operating vehicles is likely to be attributable to price increases. Between 2009-10 and 2015-16, the CPI shows a significant decline in the price of *Motor vehicles* (-7.9 per cent), alongside a slight decline in the price of *Automotive fuel* (-0.8 per cent), and rapid price increases for *Insurance* (27.8 per cent) and *Other services with respect to motor vehicles* (35.4 per cent) (ABS 2017b). Table 4 converts the 2009-10 expenditure figures for owning and operating vehicles into 2015-16 dollar values.⁹ It shows that, in real terms, the 2009-10 to 2015-16 increase in household expenditure on owning and operating vehicles amounted to \$3.93 per week (representing a 2.2 per cent growth rate). This confirms that most of the observed increase in nominal expenditure on owning and operating vehicles between 2009-10 and 2015-16 was due to price increases.

The exception is expenditure on vehicle purchase costs, which increased by \$4.52 per week (see Table 3), despite a significant decline in the price of motor vehicles. In real terms, vehicle purchase costs increased by \$8.86 per household per week. This is likely to reflect both an increase in the number of vehicles purchased by households and a shift towards more expensive vehicles.¹⁰ For all of the remaining expenditure components in Table 4, the percentage change in nominal expenditure was less than the percentage change in the relevant price index, resulting in a decline in real expenditure between 2009-10 and 2015-16.

The real decline (of 2 per cent) in motor vehicle fuel, lubricants and additives expenditure could reflect improved fuel efficiency or reduced vehicle use. Between 2010 and 2016, the ABS *Survey of Motor Vehicle Use* (SMVU) shows a 6 per cent decline in the average rate of fuel consumption of passenger vehicles (from 11.3 to 10.6 l/100km, which is a statistically significant change) (ABS 2017d). It also shows a 3 per cent decline

⁶ The proportion of passenger vehicles reliant on diesel fuel increased from 5.5 per cent in 2010 to 10.6 per cent in 2016, while the proportion reliant on petrol fell from 91.6 per cent to 87.2 per cent and the proportion reliant on other fuel (includes LPG and dual fuel) fell from 2.9 per cent to 2.2 per cent (ABS *Motor Vehicle Census* 2010 and 2016).

⁷ The Australian Government's rebate for LPG conversion came to an end in 2014.

⁸ The large decline in the 'not further defined' fuel item could also be a contributing factor. This may reflect a change in ABS coding practices across the two surveys.

⁹ Data for 2009-10 were inflated to 2015-16 dollar values using the four-quarter (September-June) average of the 'Consumer Price Index' (CPI), weighted average of eight capital cities, for the respective CPI expenditure classes (i.e. *Motor vehicles*, *Automotive fuel*, *Maintenance and repairs*, *Insurance*, *Spare parts and accessories*, and *Other services in respect of motor vehicles*).

¹⁰ Total purchases of new passenger vehicles (PVs) and sports utility vehicles (SUVs) increased by 17 per cent between 2009-10 and 2015-16 (ABS 2017c), much higher than the 7 per cent increase in the number of Australian households over the same period (ABS 2017a). There was a strong shift towards the generally more expensive SUVs, which increased their market share from 27 per cent of combined PV and SUV sales in 2009-10 to 46 per cent in 2015-16 (ABS 2017c).

in the average vehicle kilometres travelled per passenger vehicle, but there is evidence of an offsetting increase in the average number of vehicles owned by households.¹¹ Consequently, the improved fuel efficiency of vehicles appears to be the most likely explanation for the small real decline in fuel expenditure by households between 2009-10 and 2015-16.

Table 4 Change in average real weekly household expenditure on owning and operating vehicles, Australia, 2009-10 to 2015-16

Expenditure item	2015-16	2009-10	Change in real expenditure, 2009-10 to 2015-16	
	Average weekly expenditure (\$)	Average weekly expenditure, converted to 2015-16 dollar values (\$)	Change in average weekly expenditure (\$)	Percentage change in average weekly expenditure (per cent)
Vehicle purchase costs	59.26	50.40	8.86	17.6
Motor vehicle fuel, lubricants and additives	45.36	46.29	-0.93	-2.0
Vehicle registration and insurance	35.55	36.52	-0.97	-2.7
Vehicle parts, servicing and crash repairs	27.72	29.19	-1.47	-5.0
Other vehicle charges	9.73	11.28	-1.55	-13.7
Total cost of owning and operating vehicles (non-holiday)	177.60	173.67	3.93	2.2

Note: Estimates differ from those in the HES publication as BITRE has specifically excluded the value of employer-provided vehicles and parking from the expenditure figures (see Box 1 for further information). Data for 2009-10 were inflated to 2015-16 dollar values using the four-quarter (September-June) average of the 'Consumer Price Index' (CPI), weighted average of eight capital cities, for the respective CPI expenditure classes (i.e. *Motor vehicles, Automotive fuel, Maintenance and repairs, Insurance, Spare parts and accessories, and Other services in respect of motor vehicles.*)

Source: BITRE analysis of ABS 2015-16 and 2009-10 *Household Expenditure Survey* customised tabulations, ABS Cat. 6401.0 and 2009-10 CURF data.

Fixed and variable costs

The overall costs of owning and operating vehicles can be separated into fixed costs and variable costs. The fixed costs (which are unaffected by the amount a vehicle is driven) include *Total vehicle purchase costs, Vehicle registration and insurance*¹², *Driver's licence, Subscription to motor organisations* and *Vehicle charges (including hire of accessories) not elsewhere classified*. Variable costs are those which are dependent on vehicle use (tending to increase with vehicle mileage) and include *Motor vehicle fuel, lubricants and additives, Vehicle parts, servicing and crash repairs, Vehicle hire and leasing expenses (non-holiday), Parking fees, Driving lessons* and *Road tolls*. Variable costs can differ significantly between road users depending on the extent to which the car is used and the type of vehicle.

As mentioned earlier, average weekly household expenditure on owning and operating vehicles was \$177.60 for 2015-16 (refer Table 2). Table 5 shows that around 55 per cent (or \$98.31) was attributable to fixed costs, while 45 per cent (or \$79.31) was attributable to variable costs.

Australian households, on average, spent nearly \$98 per week on the fixed costs of owning and operating vehicles. Of this amount, around \$59 was spent on *Vehicle purchase costs* and \$36 on *Vehicle registration and insurance*. The remaining fixed costs together amount to \$3.50 per week (Table 5).

The main component of variable costs was *Motor vehicle fuel, lubricants and additives*, which cost \$45.36 per household per week and was responsible for 57 per cent of total variable costs. The other key component was *Vehicle parts, servicing and crash repairs* (\$27.72 per week and 35 per cent of variable costs).

¹¹ The SMVU identifies an 11 per cent increase in the size of the passenger vehicle stock between 2010 and 2016., The ABS *Census of Population and Housing* data for 2011 and 2016 point to a 4 per cent increase in the average number of motor vehicles per dwelling.

¹² All vehicle insurance costs are treated as fixed costs for the purposes of this analysis. However, it should be noted that for non-compulsory insurance, in some cases the policy price will depend on the distance travelled.

Table 5 Average weekly fixed and variable expenditure per household on owning and operating vehicles, Australia, 2015-16

Expenditure item	Average weekly expenditure per household		Average weekly expenditure per vehicle (\$)	Transport costs per vehicle per 100km (\$)
	Amount (\$)	Share (per cent)		
Fixed costs	98.31	55.3	51.85	
Vehicle purchase costs	59.26	33.4	31.26	
Vehicle registration and insurance	35.55	20.0	18.75	
Driver's licence	0.90	0.5	0.47	
Subscription to motor organisations	1.22	0.7	0.64	
Vehicle charges (including hire of accessories) nec	1.38	0.8	0.73	
Variable costs	79.31	44.7	41.83	17.76
Motor vehicle fuel, lubricants and additives	45.36	25.5	23.93	10.16
Vehicle parts, servicing and crash repairs	27.72	15.6	14.62	6.21
Vehicle hire and leasing expenses (non-holiday)	1.31	0.7	0.69	0.29
Parking fees	2.71	1.5	1.43	0.61
Driving lessons	*0.44	0.2	*0.23	*0.10
Road tolls	1.76	1.0	0.93	0.39
Total cost of owning and operating vehicles (non-holiday)	177.60	100.0	93.69	

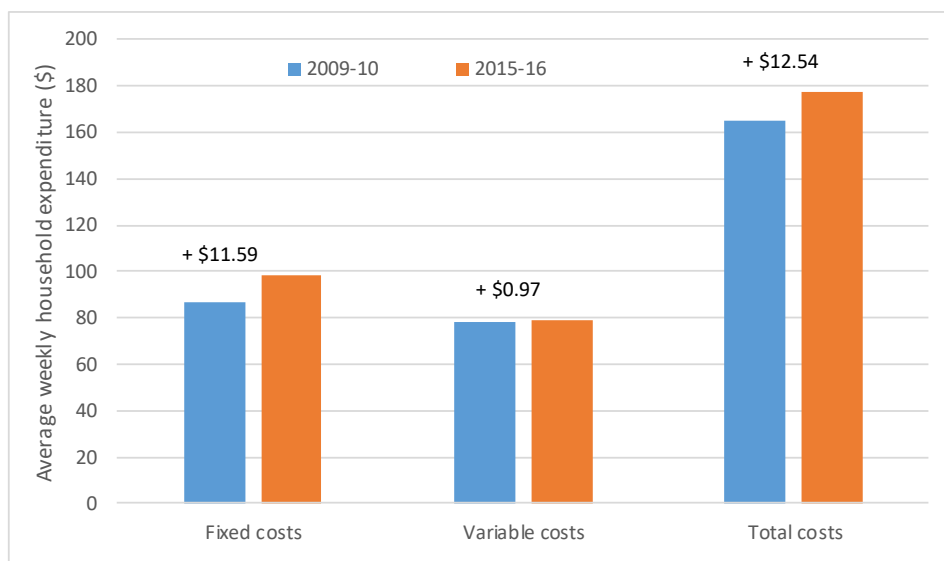
Note: Expenditure on owning and operating vehicles excludes non-cash benefits from employer provided vehicles and car parks. Components may not sum to totals due to rounding. nec= not elsewhere classified.

- ^a These are indicative estimates derived by bringing together two different data sources and should be used with caution. Calculations were made for an average of 1.79 motor vehicles (excluding motorcycles) per household (based on ABS *Census of Population and Housing 2016* data) and 0.11 motorcycles per household (based on ABS *Survey of Motor Vehicle Use 2016* ratio of motorcycles to passenger vehicles).
- ^b These are indicative estimates derived by bringing together multiple data sources and should be used with caution. Calculations have been made for an average of 1.90 motor vehicles per household (including motorcycles) and for an average distance per vehicle of 12 249 km. The distance figure relates to the average kilometres travelled by registered passenger vehicles and motorcycles (excluding light commercial vehicles) during the 12-month period ended 30 June 2016, sourced from the ABS *Survey of Motor Vehicle Use*.
- ^c All vehicle insurance costs are treated as fixed costs for the purposes of this analysis. However, it should be noted that for non-compulsory insurance, in some cases the policy price will depend on the distance travelled.
- * Estimates known to have RSEs of 25 per cent or more are flagged, and should be treated with caution.

Source: BITRE analysis of ABS 2015-16 *Household Expenditure Survey* customised tabulations; ABS *Census of Population and Housing 2016* data (extracted using Tablebuilder); and ABS *Survey of Motor Vehicle Use 2016* data (Cat. No. 9208.0, Table 4).

Between 2009-10 and 2015-16, almost all of the growth in nominal household expenditure on owning and operating vehicles was attributable to higher fixed costs. Figure 3 shows that \$11.59 of the \$12.54 weekly increase in expenditure on owning and operating vehicles was due to higher fixed costs, with only 8 per cent of the increased expenditure due to higher variable costs. Fixed costs increased by 13 per cent between 2009-10 and 2015-16, compared to a 1 per cent increase in the variable costs of owning and operating vehicles. The increase in fixed costs was due to increased expenditure on *Vehicle registration and insurance* and *Vehicle purchase costs* (see Table 3).

Figure 3 Fixed and variable costs of owning and operating vehicles, Australia, 2009-10 and 2015-16



Note: Expenditure data is expressed in nominal terms. BITRE has specifically excluded the value of employer-provided vehicles and parking from the household expenditure figures (see Box 1 for further information). Table 4 lists the detailed expenditure items which contribute to fixed costs and variable costs. Components may not sum to totals due to rounding.

Source: BITRE analysis of ABS 2015-16 and 2009-10 *Household Expenditure Survey* customised tabulations and 2009-10 CURF data.

The estimates presented in Table 5 of the average weekly expenditure for each vehicle and the average variable costs of a vehicle per 100 kilometres should only be considered indicative, since these two measures are calculated by bringing together multiple data sources that have different underlying scope and methodology and relate to different time periods.

- The average weekly expenditure was estimated to be around \$94 for each vehicle in 2015-16, of which 45 per cent was variable costs and the rest related to fixed costs.¹³
- On average, Australian households are estimated to have incurred variable costs of around \$18 per 100 kilometres (km) to run a vehicle in 2015-16.¹⁴

Type of motor vehicle fuel

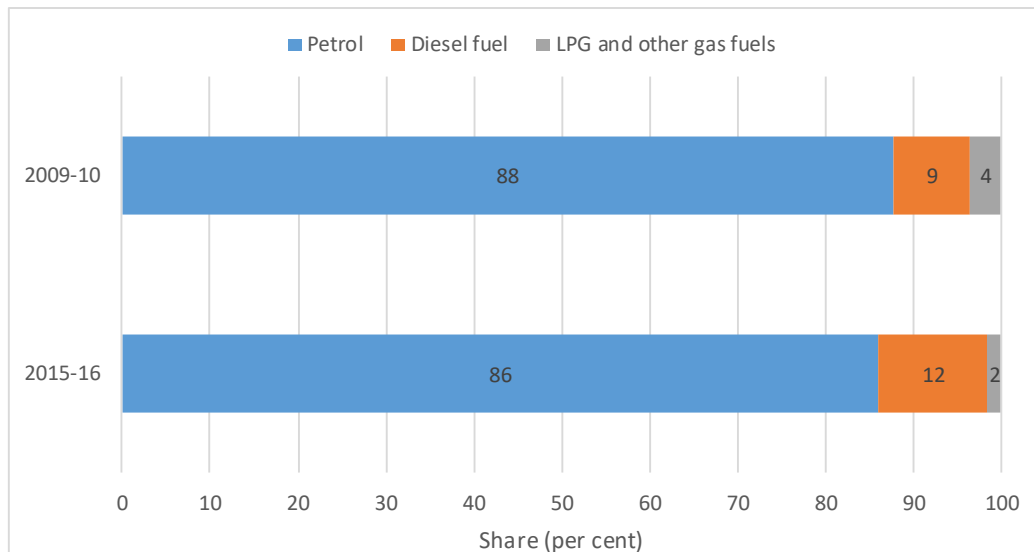
At the national level, average weekly household expenditure was \$37.26 for petrol, \$5.35 for diesel and \$0.66 for LPG and other gas fuels in 2015-16. The sum of \$43.27 is less than the motor vehicle fuel, additives and lubricants figure in Table 2 (of \$45.36), as it excludes spending on *Oil, lubricants and additives* and on *Motor vehicle fuel, lubricants and additives not further defined*.

Nationally, petrol comprises 86.1 per cent of fuel expenditure, while diesel has a 12.4 per cent share and LPG/other gas has a 1.5 per cent share in 2015-16. Figure 4 shows how this compares to the respective shares in 2009-10. Between 2009-10 and 2015-16 there has been a 3.7 percentage point increase in the proportion of the total fuel spend attributable to diesel, while the proportion spent on petrol declined by 1.7 percentage points and the proportion spent on LPG/other gas declined by 2.0 percentage points. The increased spend on diesel fuel reflects an increase in the proportion of the passenger vehicle fleet that is reliant on diesel fuel, from 5.5 per cent in 2010 to 10.6 per cent in 2016 (ABS 2017e). It also corresponds with a significant increase in sales of sport utility vehicles (SUVs) between 2009-10 and 2015-16 (ABS 2017c), as a much larger proportion of SUVs (than passenger vehicles) are fuelled by diesel. The reduced spend on LPG/other gas reflects a decline in the proportion of passenger vehicles that are reliant on other fuel (includes LPG and dual fuel) and the end of the Australian Government's rebate for LPG conversion in 2014.

¹³ This is similar to the estimate in BITRE (2017a) for 2009-10 of \$91 per vehicle.

¹⁴ This is similar to the estimate in BITRE (2017a) for 2009-10 of \$18 per 100km.

Figure 4 Proportion of total household motor vehicle fuel expenditure by fuel type, 2009-10 and 2015-16



Note: Total motor vehicle fuel expenditure excludes spending on oils, lubricants and additives and on motor vehicle fuel, lubricants and additives not further defined. Expenditure data is expressed in nominal terms. BITRE has specifically excluded the value of employer-provided vehicles and parking from the household expenditure figures (see Box 1 for further information).

Source: BITRE analysis of ABS 2015-16 and 2009-10 *Household Expenditure Survey* customised tabulations and 2009-10 CURF data.

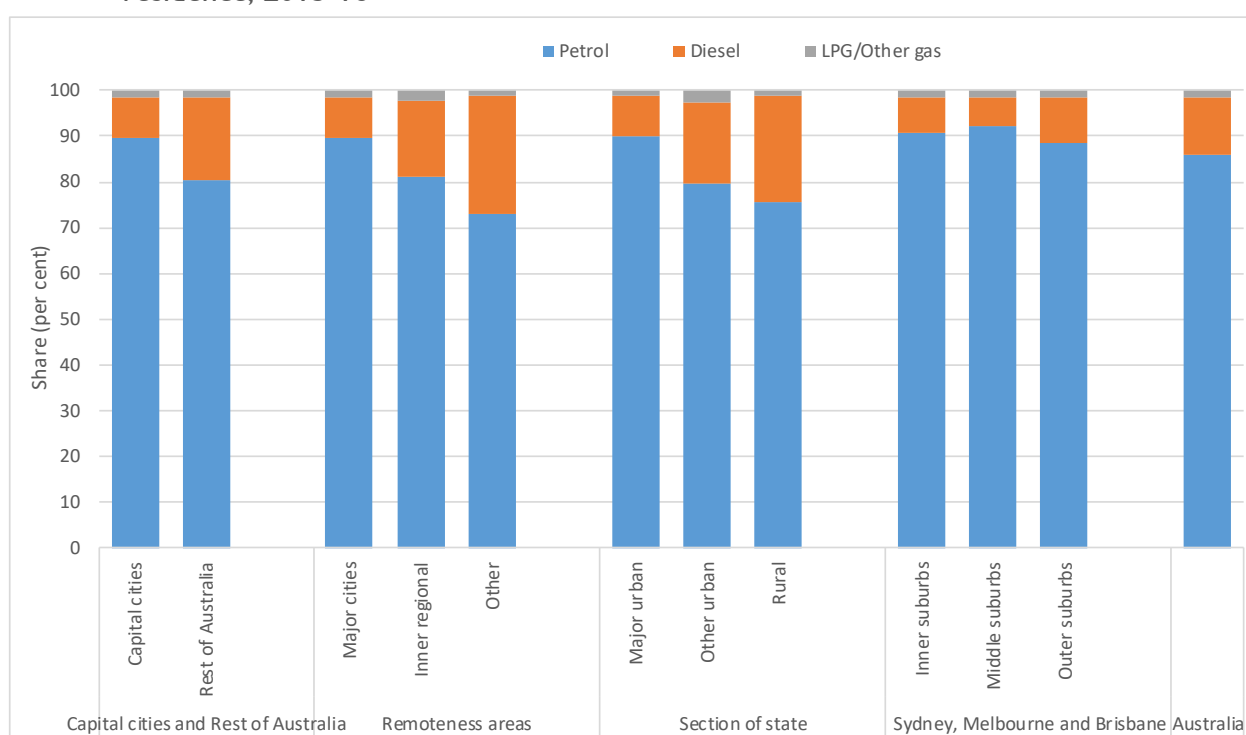
Box 2 provides information on how the composition of household motor vehicle fuel expenditure depends on the household's place of residence. A comparison of the 2015-16 data in Box 2 to the equivalent information for 2009-10 (see BITRE 2017a) reveals that there was an across-the-board increase in the proportion of the total fuel spend attributable to diesel. The increase in the diesel share was most pronounced for regional SA, regional WA and regional Tasmania, and for other urban centres of between 1000 and 99 999 population. There was also an across-the-board decline in the proportion of the total fuel spend attributable to LPG/other gas fuel, with the decline most pronounced for areas that had above-average LPG/other gas fuel use in 2009-10 (e.g. Victoria, Perth, regional SA).

Box 2: Household expenditure on different types of motor vehicle fuel in 2015-16

Figure BI shows average weekly household fuel expenditure by fuel type as a proportion of total fuel costs for capital cities and state balances, remoteness areas, section of state, and the inner, middle and outer suburbs of Australia's three largest cities (Sydney, Melbourne and Brisbane).

The proportion spent on the different fuel types differs between the capital cities and the rest of Australia. Petrol comprises 89.5 per cent of motor vehicle fuel expenditure by households in capital cities, while this share was 80.4 per cent in the state balances. The proportion spent on diesel was double in state balances compared to capital cities (18.0 per cent versus 9.0 per cent). The proportion spent on LPG/other gas was similar in state balances and in capital cities (1.5 per cent and 1.6 per cent, respectively).

Figure BI Proportion of total household motor vehicle fuel expenditure by fuel type, by place of residence, 2015-16



Notes:

1. The 'Capital cities' and 'Rest of Australia' figures exclude the NT, as Darwin could not be separated from the rest of the territory.
2. 'Other' Remoteness Areas include 'Outer regional' and 'Remote' Australia.
3. 'Major urban' refers to centres of more than 100 000 population, 'other urban' refers to centres of 1000 to 99 999 population, while 'rural' refers to small towns of less than 1000 population as well as rural areas.
4. Inner, Middle and Outer suburbs defined by BITRE based on Statistical Area Level 2 boundaries. Maps provided in Appendix.
5. The LPG and other gas fuel expenditure estimates for the less populated regions (e.g. Inner regional, Other urban, Rural, Inner suburbs) have relative standard errors of more than 25 per cent and should be used with caution.
6. Total motor vehicle fuel expenditure excludes expenditure on oils, lubricants and additives and motor vehicle fuel, lubricants and additives not further defined.

Source: BITRE analysis of ABS 2015-16 *Household Expenditure Survey* customised tabulations.

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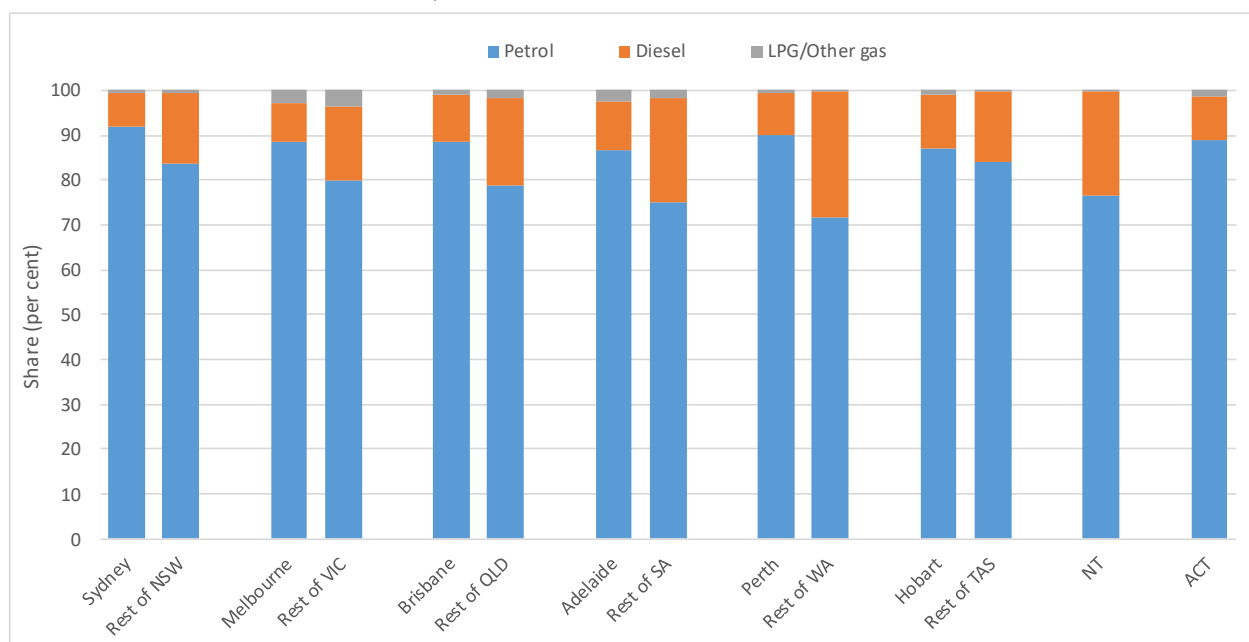
Box 2: Household expenditure on different types of motor vehicle fuel (continued)

The proportion of motor vehicle fuel expenditure spent on petrol declined with increasing remoteness, being 89.8 per cent for the major cities, 81.1 per cent for inner regional areas and 72.9 per cent for other areas. The share of diesel followed the opposite pattern, being lowest for the major cities (8.9 per cent), and higher for inner regional areas (16.6 per cent) and other areas (25.8 per cent). The section of state classification followed the same basic pattern as that observed for remoteness, with rural areas having a very low petrol share (75.4 per cent) and a very high diesel share (23.5 per cent). The outer suburbs of Australia's three largest cities have a slightly higher proportion of diesel fuel expenditure (at 10.0 per cent) than do the inner and middle suburbs of these cities (7.5 and 6.4 per cent, respectively).

Figure B2 shows average weekly household expenditure on each fuel type as a proportion of total fuel costs for individual capital cities and state balances. The petrol share is consistently higher in the capital cities than in the respective state balances, while the diesel share is consistently lower in the capital cities. Sydney households had the highest proportion spent on petrol (91.7 per cent) and households in regional WA had the lowest (71.6 per cent). For diesel fuel, the proportion was highest in regional WA (28.0 per cent) and the NT (23.0 per cent), and lowest in Sydney (7.5 per cent).

The very low expenditure on LPG and other fuel means that data is generally not sufficiently reliable to draw firm conclusions about variations in the LPG/other gas share by place of residence. Nevertheless, the available data does suggest that Victoria, Inner regional Australia and Other urban areas (with a population of between 1000 and 99 999) have relatively high LPG/other gas fuel shares. The share of LPG/other fuel was less than 5 per cent for all geographies considered in this breakout box.

Figure B2 Proportion of total household motor vehicle fuel expenditure by fuel type, by capital cities and state balances, 2015-16



Note: The LPG and other gas fuel expenditure estimates typically have relative standard errors of more than 25 per cent and should be used with caution. Total motor vehicle fuel expenditure excludes expenditure on oils, lubricants and additives and motor vehicle fuel, lubricants and additives not further defined.

Source: BITRE analysis of ABS 2015-16 *Household Expenditure Survey* customised tabulations.

How does the average weekly expenditure on owning and operating vehicles vary across different types of regions?

This section investigates how average weekly household expenditure on owning and operating vehicles varies across different types of regions. The results are presented at a range of geographic scales, including states and territories, individual capital cities and state balances, capital cities (in aggregate) and the rest of Australia, remoteness areas (i.e. Major cities, Inner regional, Other), section of state (i.e. Major urban, Other urban, Rural) and the inner, middle and outer sectors of Sydney, Melbourne and Brisbane. Considering the impact of a range of different regional characteristics (such as capital city status, remoteness, urban centre size and rurality), can provide insight into which regional characteristics have the greatest influence on household expenditure on owning and operating vehicles.

States and Territories, and individual capital cities and state balances

2015-16 results

Table 6 presents average weekly household expenditure on owning and operating vehicles for all states and territories as well as capital cities and state balances. In 2015-16, at the state and territory level, the highest average weekly household expenditures were recorded for the ACT (\$208) and the NT (\$188), while the lowest expenditure was in SA (\$145) and WA (\$159). SA and WA are the only jurisdictions for which there is a statistically significant difference from the national average of \$178 per week.

The average spending across all capital cities was \$181 per week, compared to \$172 per week in regional Australia. Households in Canberra (ACT) spent the most on owning and operating vehicles (\$208 per week), followed by Sydney (\$194 per week). Adelaide households had the lowest spending (\$145 per week), followed by regional SA (\$146 per week) and Perth (\$156 per week). Of the individual capital cities and state balances, only Adelaide, Perth and regional SA had a statistically significant difference from the national average of \$178 per week.

Another way of looking at this is to consider what proportion of total expenditure on goods and services is spent on owning and operating vehicles. This proportion is presented in Figure 5 for each of the states, territories, capital cities and state balances. At the national level, expenditure on owning and operating vehicles makes up 12.7 per cent of total weekly household expenditure on goods and services. Across the states and territories, the share is highest for Tasmania (14.4 per cent) and lowest for WA (11.4 per cent). While the average Tasmanian household spends less than the national average on owning and operating vehicles, their average household incomes and total spending are well below the national average (see Table 6), and thus the spend on owning and operating vehicles represents a high proportion of their total spending.

This proportion is lower for the capital cities (12.0 per cent) than for the rest of Australia (14.5 per cent). It is in fact lower in all capital cities compared to their respective state balances, with the largest difference observed for Adelaide and regional SA. Households in regional SA spent 16.4 per cent of total expenditure on owning and operating vehicles, while the proportion was also relatively high for households in regional Victoria (16.2 per cent). In contrast, Adelaide households spent only 11.4 per cent of their total expenditure on owning and operating vehicles, while Perth households spent just 11.0 per cent.

Table 6 Average weekly household expenditure on owning and operating vehicles, States and Territories, capital cities and state balances, Australia, 2015-16

Place of residence	Expenditure item (\$)					Total expenditure on owning and operating vehicles (\$)	Total expenditure on goods and services (\$)
	Vehicle purchase costs	Motor vehicle fuel, lubricants and additives	Vehicle registration and insurance	Vehicle parts, servicing and crash repairs	Other vehicle charges		
Sydney	70.87	43.35	40.00	26.91	12.95	194.08	1669.11
Rest of NSW	49.26	51.43	34.43	25.89	6.35	167.33	1193.21
New South Wales	62.58	46.45	37.86	26.52	10.42	183.82	1486.60
Melbourne	58.65	44.21	38.80	30.07	11.75	183.48	1473.21
Rest of VIC	72.82	46.47	31.45	29.45	8.40	188.55	1160.96
Victoria	62.36	44.80	36.88	29.90	10.88	184.81	1391.45
Brisbane	66.38	49.22	34.74	24.09	12.56	186.96	1448.62
Rest of QLD	64.29	44.73	32.17	26.36	6.20	173.76	1226.13
Queensland	65.27	46.84	33.38	25.29	9.19	179.96	1330.60
Adelaide	44.26	36.53	32.18	23.03	8.49	144.50	1268.03
Rest of SA	51.53	39.72	27.59	24.04	*2.92	145.79	889.64
South Australia	45.97	37.28	31.11	23.27	7.19	144.81	1179.39
Perth	*36.49	44.97	33.11	32.37	9.09	156.03	1417.76
Rest of WA	53.69	48.01	33.41	*29.19	*4.12	168.42	1306.85
Western Australia	40.05	45.60	33.17	31.71	8.06	158.60	1394.81
Hobart	61.26	46.81	31.20	29.71	5.62	174.59	1270.06
Rest of TAS	59.55	41.67	28.49	21.30	*2.55	153.56	1023.47
Tasmania	60.29	43.89	29.66	24.94	3.88	162.66	1130.19
Northern Territory	*60.80	45.65	29.87	43.18	*8.40	187.91	1636.75
Australian Capital Territory	55.94	52.79	44.05	*38.73	16.59	208.10	1641.30
Capital cities ^a	59.29	44.35	37.25	28.12	11.62	180.63	1504.40
Rest of Australia ^a	59.15	47.23	32.52	26.64	6.23	171.76	1181.89
Australia	59.26	45.36	35.55	27.72	9.73	177.60	1393.34

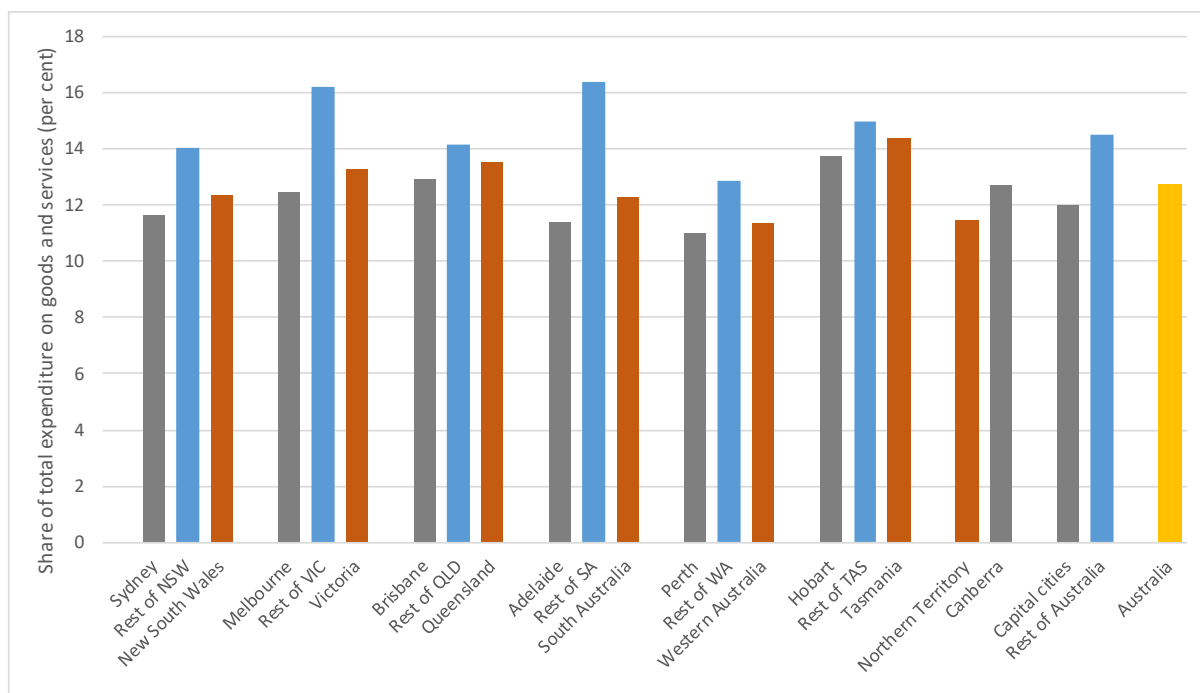
Note: Estimates differ from those in the HES publication as BITRE has specifically excluded the value of employer-provided vehicles and parking from the household expenditure figures (see Box 1 for further information). Components may not sum to totals due to rounding.

^a Excludes Northern Territory, as Darwin could not be separated from the rest of the territory.

* Estimates known to have RSEs of 25 per cent or more are flagged, and should be used with caution.

Source: BITRE analysis of ABS 2015-16 *Household Expenditure Survey* customised tabulations.

Figure 5 Proportion of total household expenditure due to owning and operating vehicles, states and territories, capital cities and state balances, 2015-16



Notes: The 'Capital cities' and 'Rest of Australia' figures exclude the Northern Territory, as Darwin could not be separated from the rest of the territory. BITRE has specifically excluded the value of employer-provided vehicles and parking from the household expenditure figures.

Source: BITRE analysis of ABS 2015-16 *Household Expenditure Survey* customised tabulations.

Table 6 also presents information on the different expenditure categories.

- Average weekly household expenditure on vehicle purchase costs was very similar for the capital cities and the rest of Australia (\$59 each).¹⁵
- Average weekly household expenditure on motor vehicle fuel, lubricants and additives was a little lower for the capital cities (\$44) than the rest of Australia (\$47). It was highest for the ACT (\$53) and lowest for Adelaide (\$37).¹⁶
- Average weekly expenditure on vehicle registration and insurance was a little higher in the capital cities (\$37) than in the rest of Australia (\$33). It was highest in the ACT (\$44) and Sydney (\$40) and lowest for regional SA and regional Tasmania (at \$28 each).¹⁶
- Average weekly expenditure on vehicle parts, servicing and crash repairs was slightly higher for the capital cities (\$28) than for the rest of Australia (\$27).

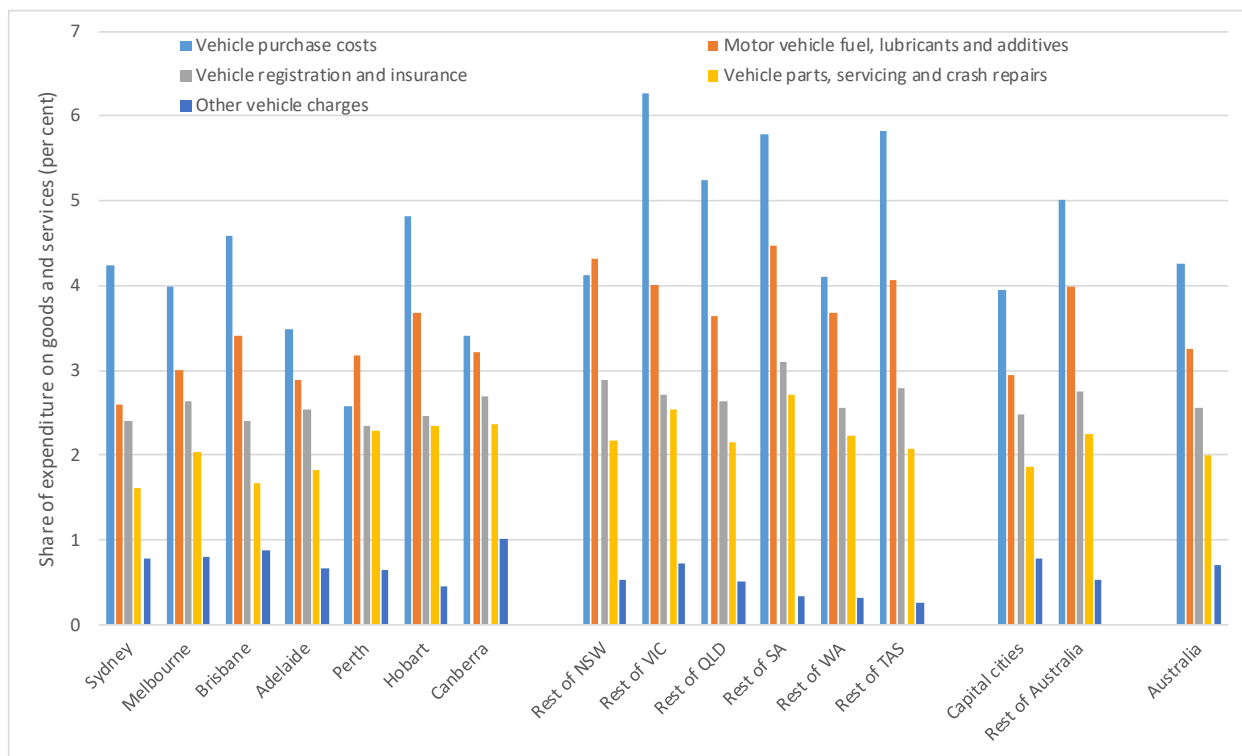
Figure 6 presents average weekly expenditure for each of these expenditure categories as a proportion of total weekly expenditure on goods and services for each of the capital cities and state balances.

The proportion spent on vehicle purchases varies a great deal across the capital cities and state balances. It tends to be lower in the capital cities than in the state balances (although rest of NSW is an exception with a share below the national average of 4.3 per cent). Households from regional Victoria spend a relatively high share of their total expenditure on vehicle purchases (6.3 per cent).

¹⁵ Note that the vehicle purchase costs estimates tend to have relatively high RSEs. Consequently, estimates may appear to be very high (such as the \$73 weekly expenditure in regional Victoria and the \$71 weekly expenditure in Sydney), despite there being no statistically significant difference from the national average of \$59 per week.

¹⁶ These estimates are significantly different from the national average at the 95 per cent confidence level.

Figure 6 Components of household expenditure on owning and operating vehicles as a proportion of total expenditure on goods and services, by capital cities and state balances, 2015-16



Notes: The 'Capital cities' and 'Rest of Australia' figures exclude the Northern Territory, as Darwin could not be separated from the rest of the territory. BITRE has specifically excluded the value of employer-provided vehicles and parking from the household expenditure figures.

Source: BITRE analysis of ABS 2015-16 Household Expenditure Survey customised tabulations.

Figure 6 shows that Motor vehicle fuel, lubricants and additives represents 3.3 per cent of total weekly household expenditure on goods and services at the national scale. On average, it represents 2.9 per cent of the total expenditure of capital city households, compared to 4.0 per cent for regional households. This implies that, as of 2015-16, fuel excise represented a larger proportion of the total expenditure of regional households than it did for capital city households. The proportion spent on motor vehicle fuel is consistently lower for the capital cities than it is for their respective state balances. Across the capital cities, the proportion spent on motor vehicle fuel ranges from a low of 2.6 per cent for Sydney to a high of 3.7 per cent for Hobart. For the state balances, it ranges from 3.6 per cent for the rest of Queensland to 4.5 per cent for the rest of SA.

The higher proportion spent on motor vehicle fuel in regional areas (4.0 per cent) compared to the capital cities (2.9 per cent) reflects:

- a 7 per cent higher average weekly spend on motor vehicle fuel in the rest of Australia; and
- a 21 per cent lower average weekly expenditure on goods and services in the rest of Australia (reflecting lower average incomes).

There are several factors that could contribute to the 7 per cent higher average weekly spend on motor vehicle fuel in regional areas, including higher fuel prices, higher vehicle kilometres travelled, and more fuel intensive vehicles. Internal BITRE estimates show that regional households travelled 9 per cent more vehicle kilometres per day than capital city households (44.5km versus 40.9km for 2010-2015). BITRE (2017b) concluded that the average rate of fuel consumption was 0.7 per cent higher for passenger vehicles and motorcycles registered in regional Australia in 2015-16, which reflects the greater prevalence of large passenger vehicles (with 6 or more cylinders) and older model vehicles in regional Australia.

The proportion spent on vehicle registration and insurance is quite stable across the capital cities and state balances, ranging from a low of 2.3 per cent in Perth to a high of 3.1 per cent in the rest of SA (Figure 6). It is generally lower for the capital cities (2.5 per cent) than for the rest of Australia (2.8 per cent).

The proportion spent on vehicle parts, servicing and crash repairs also tends to be lower for the capital cities (1.9 per cent) than for the rest of Australia (2.3 per cent). Sydney households spend a relatively low share of their total expenditure on vehicle parts, servicing and crash repairs (1.6 per cent), as do Brisbane households (1.7 per cent). Households from regional SA spent the highest proportion on vehicle parts, servicing and crash repairs (2.7 per cent).

Other vehicle charges represent just 0.7 per cent of total weekly household expenditure on goods and services. ACT households spend a relatively high proportion on other vehicle charges (1.0 per cent).

Changes between 2009-10 and 2015-16¹⁷

Nationally, the average weekly expenditure on owning and operating vehicles increased by \$12.54 between 2009-10 and 2015-16, representing a 7.6 per cent increase. For the capital cities, the average weekly household expenditure on owning and operating vehicles increased by \$20.44 (from \$160.19 to \$180.63), which represents a 12.8 per cent increase (see Table 7). In contrast, for regional Australia, it remained almost stable (declining by \$0.72 from \$172.48 to \$171.76, which represents a 0.4 per cent decline). Thus, while capital city households spent 7 per cent less than regional households on owning and operating private vehicles in 2009-10, by 2015-16 capital city households spent 5 per cent more than regional households.

Table 7 Change in average weekly household expenditure on owning and operating vehicles, capital cities and rest of Australia, 2009-10 to 2015-16

	Expenditure item					Total expenditure on owning and operating vehicles	Total expenditure on goods and services
	Vehicle purchase costs	Motor vehicle lubricants and additives	Vehicle registration and insurance	Vehicle parts, servicing and crash repairs	Other vehicle charges		
	Dollar change (\$)						
Capital cities	7.29	-1.32	7.28	4.63	2.56	20.44	197.78
Rest of Australia	-0.02	-1.15	6.41	-5.11	-0.84	-0.72	77.32
Australia	4.52	-1.32	6.98	0.98	1.40	12.54	157.97
	Percentage change (%)						
Capital cities	14.0	-2.9	24.3	19.7	28.3	12.8	15.1
Rest of Australia	0.0	-2.4	24.6	-16.1	-11.8	-0.4	7.0
Australia	8.3	-2.8	24.4	3.7	16.9	7.6	12.8

Note: Expenditure data is expressed in nominal terms. BITRE has specifically excluded the value of employer-provided vehicles and parking from the household expenditure figures (see Box 1 for further information). The 'Capital cities' and 'Rest of Australia' figures exclude the Northern Territory, as Darwin could not be separated from the rest of the territory.

Source: BITRE analysis of ABS 2015-16 and 2009-10 *Household Expenditure Survey* customised tabulations and 2009-10 CURF data.

This difference in growth rates between the capital cities and regional Australia is being driven largely by vehicle purchase costs and vehicle parts, servicing and crash repair costs. In 2009-10, regional households spent considerably more than capital city households on each of these items, but in 2015-16, the average expenditure of capital city households on each of these items now exceeds that of regional households. Average weekly expenditure on vehicle purchase costs increased by 14 per cent for capital city households, while remaining unchanged for regional households. Average weekly expenditure on vehicle parts, servicing and crash repairs increased by 20 per cent for capital city households, but declined by 16 per cent for regional households.

¹⁷ All change estimates in this section (and in the remainder of this Information Sheet) are nominal changes in expenditure, which do not adjust for changes in the price of the underlying goods and services between 2009-10 and 2015-16. Further information on relevant CPI changes between 2009-10 and 2015-16 is provided on page 9 of this Information Sheet.

In contrast, expenditure on motor vehicle fuel, lubricants and additives fell by between 2 and 3 per cent for both capital city and regional households, while vehicle registration and insurance costs have increased by about 24 per cent for both capital city and regional households.

NSW is a major driver of the difference in growth rates between the capital cities and regional Australia. Average weekly expenditure on owning and operating vehicles increased by 26 per cent for Sydney households, from \$153.87 in 2009-10 to \$194.08 in 2015-16. For regional NSW, it declined by 11 per cent, from \$187.79 in 2009-10 to \$167.33 in 2015-16. Divergent trends in average weekly vehicle purchase costs between Sydney and regional NSW were a key contributor. Vehicle purchase costs increased from \$46.40 in 2009-10 to \$70.87 in 2015-16 for Sydney households, while they declined from \$64.89 in 2009-10 to \$49.26 for regional NSW households.

Nationally, the proportion of total household goods and services expenditure that was attributable to owning and operating vehicles declined by 0.6 percentage points between 2009-10 and 2015-16. The decline was more pronounced for regional Australia (from 15.6 per cent in 2009-10 to 14.5 per cent in 2015-16) than it was for the capital cities (from 12.3 to 12.0 per cent), although regional households do continue to spend a higher proportion of their total expenditure on owning and operating private vehicles than capital city households. The decline was particularly pronounced for regional NSW (from 16.4 per cent to 14.0 per cent) and regional Tasmania (from 18.1 per cent to 15.0 per cent). In both regional NSW and regional Tasmania this reflects much lower expenditure on owning and operating vehicles, coupled with modest growth in total expenditure on goods and services.

Figure 7 focuses in on two expenditure categories that are of particular interest to this Department—motor vehicle fuel and vehicle registration and insurance.¹⁸

Average weekly household expenditure on motor vehicle fuel declined by 2.8 per cent nationally between 2009-10 and 2015-16, with a mix of increases and decreases observed across the individual capital cities and state balances. Most of these changes were modest in magnitude, amounting to less than \$5 (see Figure 7a). However, there was a statistically significant 11 per cent decline for Melbourne households, from \$49.90 per week in 2009-10 to \$44.21 per week in 2015-16, bringing expenditure more into line with that of Sydney households. There was also a significant 19 per cent decline for households in regional Tasmania.¹⁹

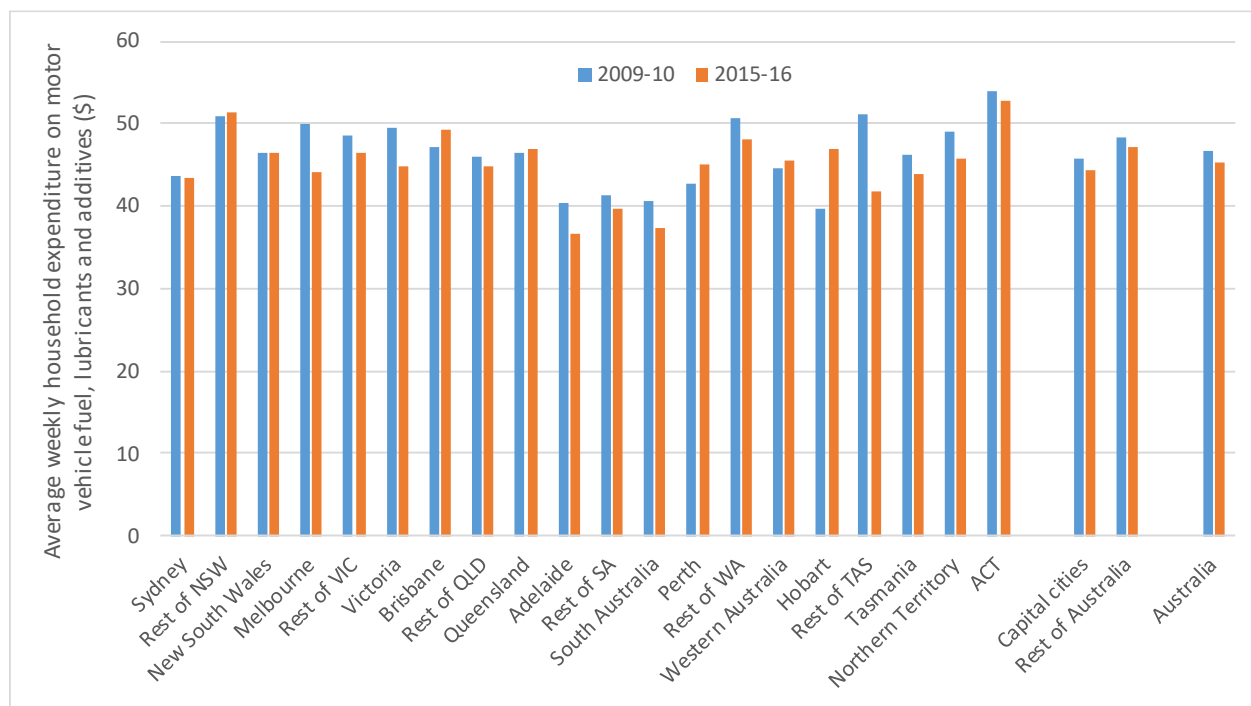
Average weekly household expenditure on vehicle registration and insurance increased by 24 per cent nationally between 2009-10 and 2015-16, and Figure 7b shows that all of the individual capital cities and state balances recorded an increase in expenditure. The only capital cities and state balances for which the increase was not statistically significant were Adelaide and regional SA. Between 2009-10 and 2015-16, the average weekly household expenditure on vehicle registration and insurance of SA households grew by just 12 per cent. In contrast, average weekly household expenditure on vehicle registration and insurance grew by between 32 and 35 per cent in each of Victoria, Tasmania, WA and the NT. Growth rates exceeded 40 per cent for households in regional Victoria and regional WA.

¹⁸ BITRE has information on RSEs (relative standard errors) for these two expenditure categories for both 2009-10 and 2015-16, enabling testing of the statistical significance of changes. Only changes that are significantly significant at the 95 per cent confidence level are highlighted in the text.

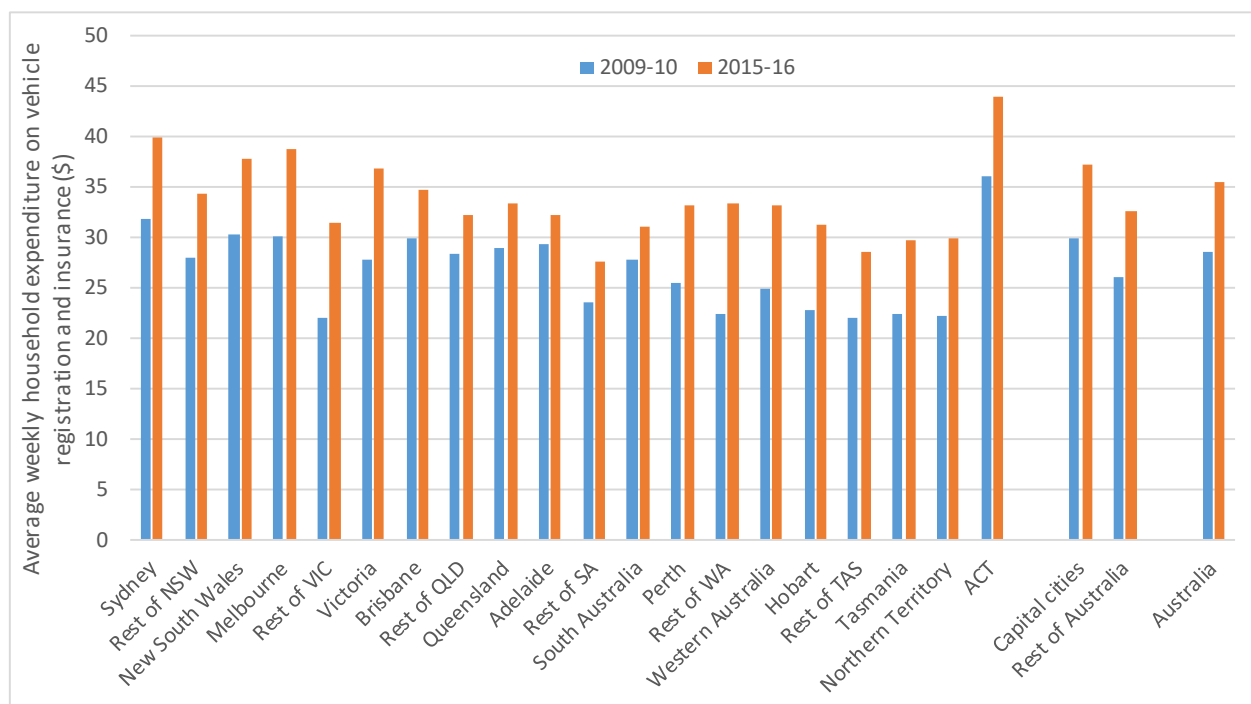
¹⁹ None of the other changes shown in Figure 7a were statistically significant at the 95 per cent confidence level.

Figure 7 Average weekly household expenditure on selected items, by capital cities and state balances, 2009-10 and 2015-16

a) *Motor vehicle fuel, lubricants and additives*



b) *Vehicle registration and insurance*



Note: Expenditure data is expressed in nominal terms. The 'Capital cities' and 'Rest of Australia' figures exclude the Northern Territory, as Darwin could not be separated from the rest of the territory. BITRE has specifically excluded the value of employer-provided vehicles and parking from the household expenditure figures.

Source: BITRE analysis of ABS 2015-16 and 2009-10 *Household Expenditure Survey* customised tabulations and 2009-10 CURF data.

Remoteness areas

This classification contains three categories based on the ABS Remoteness Structure: Major cities, Inner regional areas and Other areas (which include Outer regional and Remote areas). Very remote areas lie outside the scope of the HES.

2015-16 results

Table 8 shows that average weekly expenditure on owning and operating vehicles tends to be similar for inner regional households (\$179) and major cities households (\$178). Households in other remoteness areas have slightly lower expenditure (\$170) than Australian households as a whole (\$178), but this difference is not statistically significant. Average weekly household expenditure on all goods and services was highest in major cities (\$1485) and lowest in other areas (\$1119). Expenditure on owning and operating vehicles represented 12.0 per cent of total expenditure on goods and services in the major cities (due to higher incomes and higher total expenditure), compared to 14.8 per cent in inner regional areas and 15.2 per cent in other remoteness areas.

Households living in other remoteness areas had below-average expenditure on vehicle registration and insurance, vehicle parts, servicing and crash repairs and other vehicle charges.²⁰ Households living in inner regional areas exceeded the national average weekly expenditure on motor vehicle fuel, lubricants and additives. Average weekly household expenditure on vehicle registration and insurance and other vehicle charges decreased gradually from major cities to other remoteness areas.

Table 8 Average weekly household expenditure on owning and operating vehicles by expenditure type, remoteness areas, Australia, 2015-16

Expenditure item	Remoteness area			Australia
	Major cities	Inner regional	Other ^a	
	Average weekly expenditure (\$)			
Vehicle purchase costs	58.68	56.26	68.44	59.26
Motor vehicle fuel, lubricants and additives	43.72	51.51	45.20	45.36
Vehicle registration and insurance	37.06	32.91	30.31	35.55
Vehicle parts, servicing and crash repairs	27.69	31.21	21.69	27.72
Other vehicle charges	11.16	7.41	4.42	9.73
Total expenditure on owning and operating vehicles	178.30	179.26	170.07	177.60
Total expenditure on goods and services	1485.09	1207.48	1118.88	1393.34

Note: Estimates differ from those in the HES publication as BITRE has specifically excluded the value of employer-provided vehicles and parking from the household expenditure figures (see Box 1 for further information). Components may not sum to totals due to rounding.

^a Other Remoteness Areas include 'Outer regional' and 'Remote' Australia.

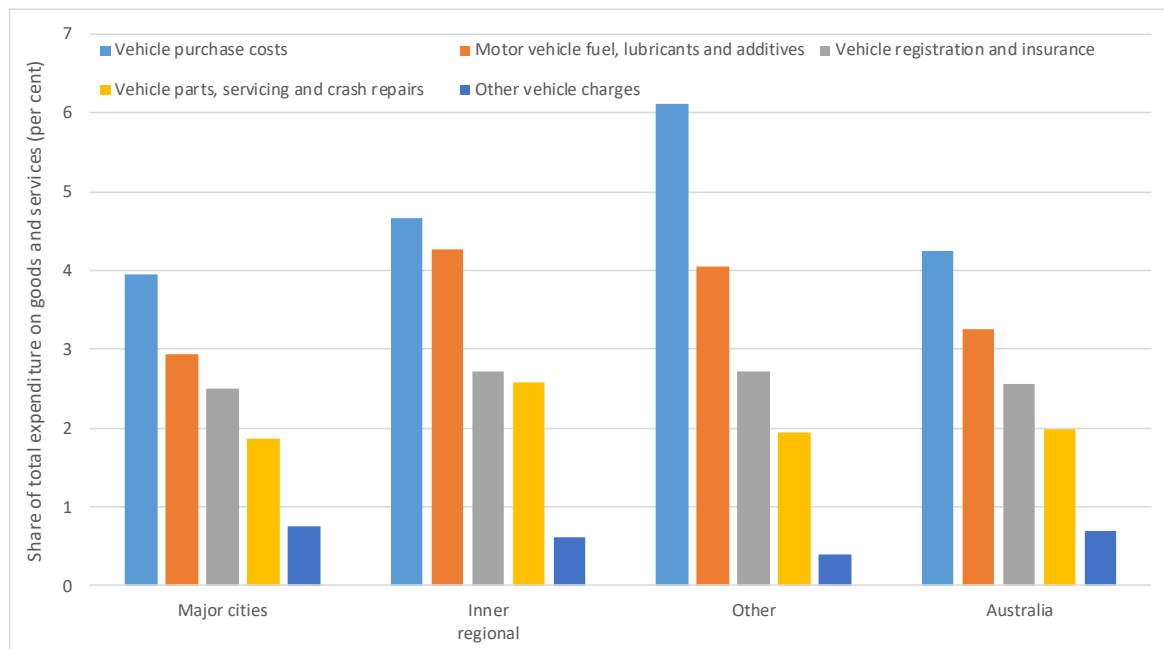
Source: BITRE analysis of ABS 2015-16 *Household Expenditure Survey* customised data.

Figure 8 expresses average weekly household expenditure on each of these items as a proportion of total weekly expenditure on goods and services. Vehicle purchase costs represent a relatively low proportion of total expenditure in the major cities (4.0 per cent), but this proportion rises across the remoteness classes, reaching 4.7 per cent for inner regional areas and 6.1 per cent for other remoteness areas. Motor vehicle fuel, lubricants and additives also represent a low proportion of total expenditure in the major cities (2.9 per cent) and a higher proportion of total expenditure in inner regional areas (4.3 per cent) and other remoteness areas (4.0 per cent). In contrast, vehicle registration and insurance is very stable across the remoteness classes. Vehicle parts, servicing and crash repairs represents a higher proportion of total expenditure in inner regional areas (2.6 per cent) than in the major cities or other remoteness areas (1.9 per cent each). Other vehicle charges represent a larger proportion of expenditure for the major cities (0.8 per

²⁰ Each of these differences are significantly different from the national average at the 95 per cent confidence level. Note, however, that the \$68 weekly expenditure on vehicle purchase costs does not differ significantly from the national average of \$59 per week.

cent), and a lower share for inner regional (0.6 per cent) and other remoteness areas (0.4 per cent), reflecting the greater prominence of parking fees and road tolls in urban areas.

Figure 8 Components of household expenditure on owning and operating vehicles as a proportion of total expenditure on goods and services, by remoteness area, 2015-16



Note: 'Other' Remoteness Areas include 'Outer regional' and 'Remote' Australia. BITRE has specifically excluded the value of employer-provided vehicles and parking from the household expenditure figures.

Source: BITRE analysis of ABS 2015-16 *Household Expenditure Survey* customised data.

Changes between 2009-10 and 2015-16

Table 9 summarises changes in expenditure on owning and operating vehicles across the remoteness classes between 2009-10 and 2015-16. The increase in household expenditure in the major cities exceeded that in inner regional and other remoteness areas, both in dollar terms and in percentage terms. For all three remoteness categories, the proportion of total household expenditure on goods and services that was attributable to owning and operating vehicles declined between 2009-10 and 2015-16. However, Figure 9 shows that the percentage point decline was a little larger for inner regional areas (-1.0 percentage points) than it was for the major cities (-0.7 percentage points) or other remoteness areas (-0.5 percentage points).

Table 9 Changes in average weekly household expenditure on owning and operating vehicles by remoteness area, 2009-10 to 2015-16

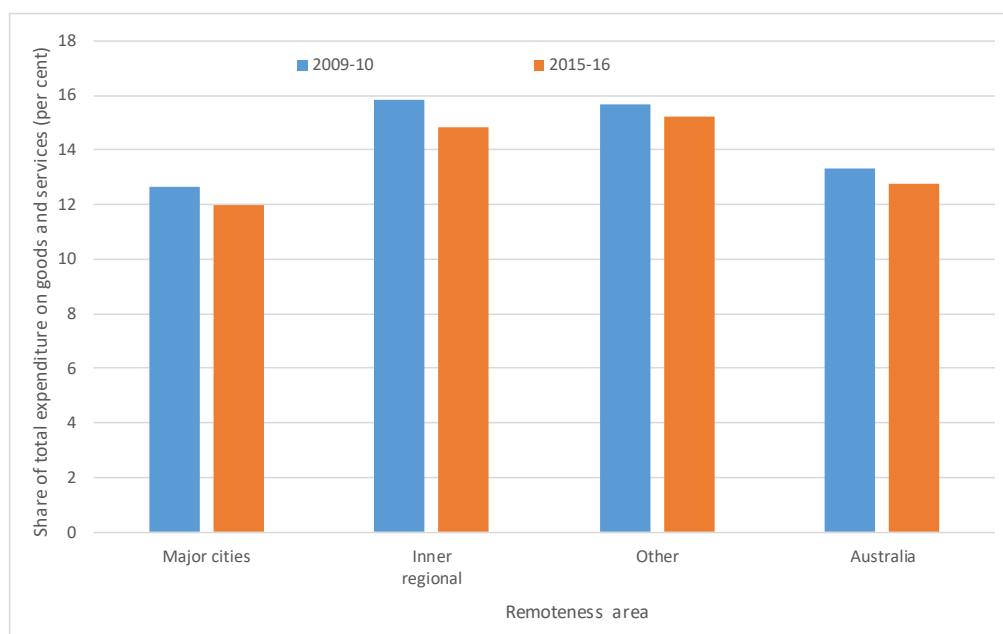
	Remoteness area			
	Major cities	Inner regional	Other ^a	Australia
Average weekly household expenditure on owning and operating vehicles, 2009-10 (\$)	163.29	169.66	160.07	165.06
Average weekly household expenditure on owning and operating vehicles, 2015-16 (\$)	178.30	179.26	170.07	177.60
Dollar change, 2009-10 to 2015-16 (\$)	15.01	9.60	10.00	12.54
Percentage change, 2009-10 to 2015-16 (per cent)	9.2	5.7	6.2	7.6
Proportion of total household expenditure on goods and services due to owning and operating vehicles, 2009-10 (per cent)	12.7	15.9	15.7	13.4
Proportion of total household expenditure on goods and services due to owning and operating vehicles, 2015-16 (per cent)	12.0	14.8	15.2	12.7
Percentage point change, 2009-10 to 2015-16 (per cent)	-0.7	-1.0	-0.5	-0.6

Note: Expenditure data is expressed in nominal terms. BITRE has specifically excluded the value of employer-provided vehicles and parking from the household expenditure figures (see Box 1 for further information).

a 'Other' Remoteness Areas include 'Outer regional' and 'Remote' Australia.

Source: BITRE analysis of ABS 2015-16 and 2009-10 *Household Expenditure Survey* customised tabulations and 2009-10 CURF data.

Figure 9 Average weekly household expenditure on owning and operating vehicles as a proportion of total expenditure on goods and services, remoteness areas, 2009-10 and 2015-16



Note: 'Other' Remoteness Areas include 'Outer regional' and 'Remote' Australia. BITRE has specifically excluded the value of employer-provided vehicles and parking from the household expenditure figures.

Source: BITRE analysis of ABS 2015-16 and 2009-10 *Household Expenditure Survey* customised tabulations and 2009-10 CURF data.

Section of state²¹

Household expenditure on owning and operating vehicles was also analysed to find out whether rural and urban characteristics of households are responsible for any variation in expenditure patterns. The classification used here consists of three categories: Major urban (population of 100 000 or more), Other urban (population of 1000 to 99 999) and Other areas (rural areas and towns of less than 1000 population). The 'other areas' can provide insight into whether expenditure patterns differ for rural parts of Australia, compared to the cities.

2015-16 results

Table 10 shows that in 2015-16, average weekly household expenditure on owning and operating vehicles was higher in other areas (\$199) than in major urban (\$177) and other urban areas (\$169). However, in 2015-16, none of these estimates were statistically significantly different from the national average.²² Average weekly household expenditure on goods and services was higher in major urban areas (\$1484) than in either other urban areas (\$1151) or other areas (\$1256). Consequently, a lower proportion of the total spend was attributable to owning and operating vehicles in major urban areas (11.9 per cent) than in other urban areas (14.7 per cent) or other areas (15.8 per cent).

Rural households have particularly high average weekly household expenditure on motor vehicle fuel, lubricants and additives (\$62, which is significantly higher than the national average of \$45). It is likely that this reflects a combination of higher vehicle kilometres travelled, more fuel-intensive vehicles, and higher fuel prices in rural locations.²³

Table 10 Average weekly household expenditure on owning and operating vehicles by expenditure type, Section of State, 2015-16

Expenditure item	Section of state			Australia
	Major urban	Other urban	Other ^a	
	Average weekly expenditure (\$)			
Vehicle purchase costs	58.24	59.69	65.93	59.26
Motor vehicle fuel, lubricants and additives	43.21	45.14	62.13	45.36
Vehicle registration and insurance	36.95	30.73	35.79	35.54
Vehicle parts, servicing and crash repairs	27.91	26.83	28.24	27.72
Other vehicle charges	10.99	6.76	6.84	9.73
Total expenditure on owning and operating vehicles	177.32	169.15	198.93	177.60
Total expenditure on goods and services	1484.05	1151.09	1255.86	1393.34

Note: Estimates differ from those in the HES publication as BITRE has specifically excluded the value of employer-provided vehicles and parking from the household expenditure figures (see Box 1 for further information). Components may not sum to totals due to rounding.

^a Other Section of State includes 'Bounded locality' and 'Rural balance'.

Source: BITRE analysis of ABS 2015-16 *Household Expenditure Survey* customised data.

Figure 10 shows the different expenditure items as a proportion of total weekly household expenditure on goods and services for major urban, other urban and other areas. Vehicle purchase costs represent a

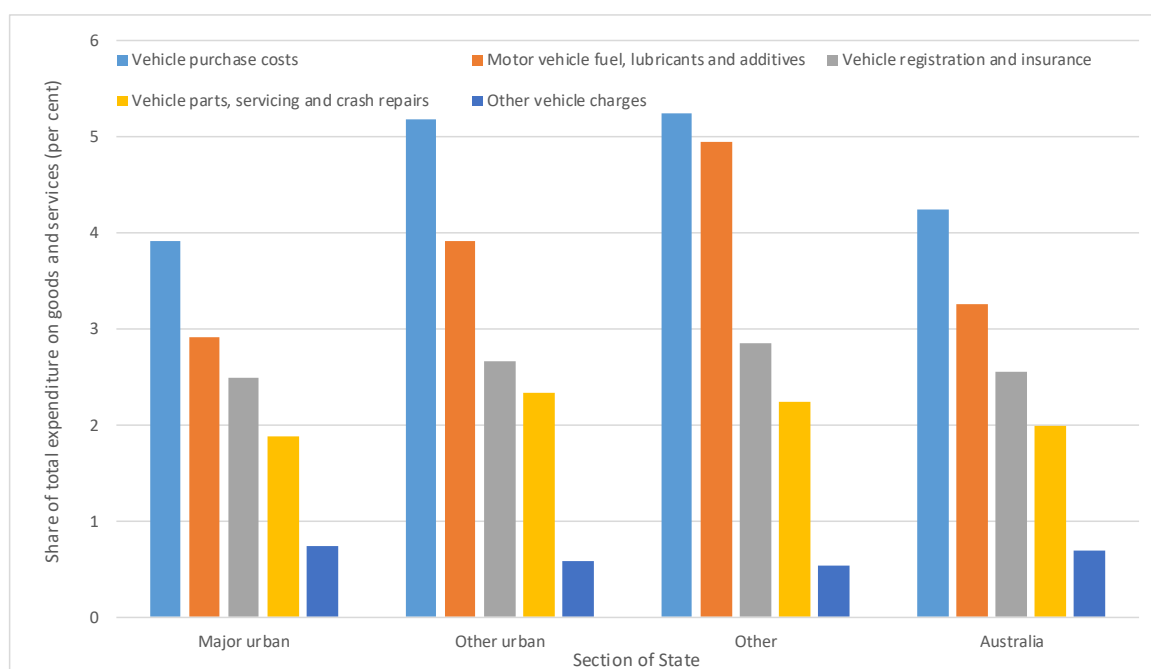
21 Section of State represents an aggregation of non-contiguous geographical areas of a particular urban/rural type. These categories comprise Major Urban (population clusters of 100 000 or more), Other Urban (population clusters of 1 000 to 99 999), Bounded Locality (200 to 999), Rural Balance (remainder of state/territory) and Migratory, and in aggregate cover the whole of Australia (ABS 2012).

22 Note that in 2009-10, average weekly household expenditure on owning and operating vehicles was significantly higher in other areas (\$197) than for Australia as a whole (\$164). In 2015-16, the expenditure of other areas exceeded the national average by \$21 per week (or 12 per cent), whereas in 2009-10 the gap was \$33 per week (or 20 per cent).

23 Internal BITRE estimates show that regional households had higher vehicle kilometres travelled (VKT) per day than capital city households, with predominantly rural regions tending to have relatively high daily VKT (e.g. WA Wheatbelt, South East Tasmania and Barossa-Yorke-Mid North SA). BITRE (2017b) concluded that the average rate of fuel consumption was 0.7 per cent higher for passenger vehicles and motorcycles registered in regional Australia in 2015-16, with rural and remote regions having the least fuel-efficient vehicles (e.g. WA Wheatbelt, WA Outback, SA Outback, Queensland Outback). BITRE (2014) provides evidence that prices are relatively stable for urban centres of more than 10 000 population, but tend to rise strongly as town size declines for towns of less than 5 000 population.

relatively low proportion of total expenditure in the major urban areas (3.9 per cent), and a higher proportion of total expenditure in other urban areas and other locations (both at 5.2 per cent). Motor vehicle fuel, lubricants and additives represent a relatively low share of total expenditure for major urban areas (2.9 per cent), a higher share for other urban areas (3.9 per cent), and a much higher share for other areas (4.9 per cent). The expenditure shares of the remaining three expenditure items show much less variation across the section of state categories.

Figure 10 Components of household expenditure on owning and operating vehicles as a proportion of total expenditure on goods and services, by Section of State, 2015-16



Note: 'Other' Remoteness Areas include 'Outer regional' and 'Remote' Australia. BITRE has specifically excluded the value of employer-provided vehicles and parking from the household expenditure figures.

Source: BITRE analysis of ABS 2015-16 *Household Expenditure Survey* customised data.

Changes between 2009-10 and 2015-16

Table 11 summarises changes in expenditure on owning and operating vehicles across the section of state categories between 2009-10 and 2015-16. The increase in household expenditure in the major urban areas exceeded that in other urban areas and in other (rural) areas, both in dollar terms and in percentage terms. The \$17.53 (or 11.0 per cent) increase for major urban areas in the average weekly expenditure on owning and operating vehicles was a statistically significant change, with the main contributor being the \$7.93 per week increase in vehicle registration and insurance expenditure.

For all three section of state categories, the proportion of total household expenditure on goods and services that was attributable to owning and operating vehicles declined between 2009-10 and 2015-16 (see Figure 11). The percentage point decline was much larger for other (i.e. rural) areas, at 2.3 percentage points, compared to a 0.5 percentage point decline for the major urban and other urban areas. In 2009-10, rural households spent a very high 18.1 per cent of their total expenditure on owning and operating vehicles. However, since then, growth in vehicle-related expenditure has been limited for rural households, and stronger for urban households (particularly those in major urban areas), leading to a partial closing of the expenditure gap between urban and rural households. A key contributor to the limited vehicle-related spending growth of rural households was the significant decline in spending on vehicle parts, servicing and crash repairs from an unusually high \$39.14 per week in 2009-10 to \$28.24 per week in 2015-16 (which is similar to the national average expenditure of \$27.72 per week).

Table II Changes in average weekly household expenditure on owning and operating vehicles by section of state, 2009-10 to 2015-16

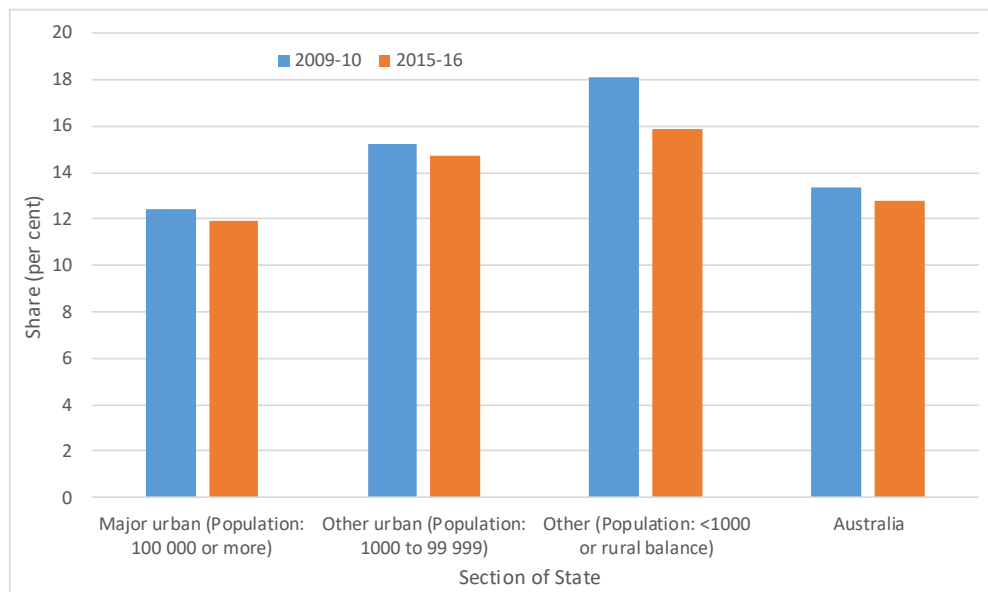
	Section of state			Australia
	Major urban	Other urban	Other ^a	
Average weekly household expenditure on owning and operating vehicles, 2009-10 (\$)	159.79	162.46	196.93	165.06
Average weekly household expenditure on owning and operating vehicles, 2015-16 (\$)	177.32	169.15	198.93	177.60
Dollar change, 2009-10 to 2015-16 (\$)	17.53	6.69	2.00	12.54
Percentage change, 2009-10 to 2015-16 (per cent)	11.0	4.1	1.0	7.6
Proportion of total household expenditure on goods and services due to owning and operating vehicles, 2009-10 (per cent)	12.4	15.2	18.1	13.4
Proportion of total household expenditure on goods and services due to owning and operating vehicles, 2015-16 (per cent)	11.9	14.7	15.8	12.7
Percentage point change, 2009-10 to 2015-16 (per cent)	-0.5	-0.5	-2.3	-0.6

Note: Expenditure data is expressed in nominal terms. BITRE has specifically excluded the value of employer-provided vehicles and parking from the household expenditure figures (see Box I for further information).

^a Other Section of State includes 'Bounded locality' and 'Rural balance'.

Source: BITRE analysis of ABS 2015-16 and 2009-10 *Household Expenditure Survey* customised tabulations and 2009-10 CURF data.

Figure II Average weekly household expenditure on owning and operating vehicles as a proportion of total expenditure on goods and services, Section of State, 2009-10 and 2015-16



Note: BITRE has specifically excluded the value of employer-provided vehicles and parking from the household expenditure figures.

Source: BITRE analysis of ABS 2015-16 and 2009-10 *Household Expenditure Survey* customised tabulations and 2009-10 CURF data.

Sectors of Sydney, Melbourne and Brisbane

This section presents average weekly household expenditure on owning and operating vehicles for the inner, middle and outer suburbs of Sydney, Melbourne and Brisbane using ABS 2015-16 *Household Expenditure Survey* customised data. It further disaggregates regional NSW into two sectors (Rest of Sydney Greater Metropolitan Area (GMA)²⁴ and Balance of NSW), while also disaggregating regional Queensland into two sectors (Rest of South East Queensland (SEQ)²⁵ and Balance of QLD).

This sectoral classification is based on that used in BITRE's series of cities reports (BITRE 2011, 2012, 2013a). The original classification was based on groupings of Statistical Local Areas (SLAs) from the 2006 ASGC (Australian Standard Geographic Classification), so the classification has been updated to reflect groupings of Statistical Area Level 2s (SA2s) from the 2011 ASGS (Australian Statistical Geography Standard). For Sydney and Melbourne, the Greater Capital City Statistical Area (GCCSA) has been subdivided into inner, middle and outer sectors. However, the results presented for Brisbane in this section do not reflect the GCCSA boundary, as the SA2s within the hinterland LGAs of Lockyer Valley, Scenic Rim and Somerset (which belong to the GCCSA) have instead been classified to the 'Rest of SEQ' region, rather than to Brisbane's outer sector.²⁶ Appendix 1 illustrates sectoral boundaries for the Sydney GMA, Melbourne and SEQ.

BITRE (2017a) presented 2009-10 HES expenditure estimates for Sydney and Melbourne's inner, middle and outer suburbs. As the sectoral geographic boundaries have been updated, the 2015-16 estimates are not strictly comparable to the previous estimates, and so this section does not include any analysis of expenditure change from 2009-10 to 2015-16.

Figure 12 illustrates how the average weekly household expenditure on owning and operating vehicles varied across sectors in 2015-16. Note that, at this detailed geographic scale, the data can have large margins of error, and the Inner sector estimates, in particular, should be treated with caution. However, Figure 12 does display a general pattern of relatively low expenditure on owning and operating vehicles in the Inner sector of all three cities, coupled with relatively high expenditure in the Outer sector. The expenditure gap between the Inner and Outer sectors is more pronounced for Melbourne, than it is for Sydney and Brisbane. While none of these estimates show a statistically significant difference from the national average, the consistency of the pattern across the three cities is noteworthy, as is the consistency of the pattern between 2009-10 and 2015-16 (see BITRE 2017a).

In an attempt to overcome data reliability issues, the right hand side of Figure 12 combines all three cities (i.e. Sydney, Melbourne and Brisbane). It shows that Inner sector households have average weekly expenditure on owning and operating vehicles of \$156 per week, which is 12 per cent below the national average of \$178 per week. This compares to \$185 per week for Middle sector households and \$199 per week for Outer sector households (which is 12 per cent above the national average). The key contributors to the \$43 gap in weekly expenditure on owning and operating vehicles between the Inner and Outer sectors are the lower Inner sector spends on motor vehicle fuel, lubricants and additives (\$25 gap) and on vehicle registration and insurance (\$15 gap) (see Figure 13).

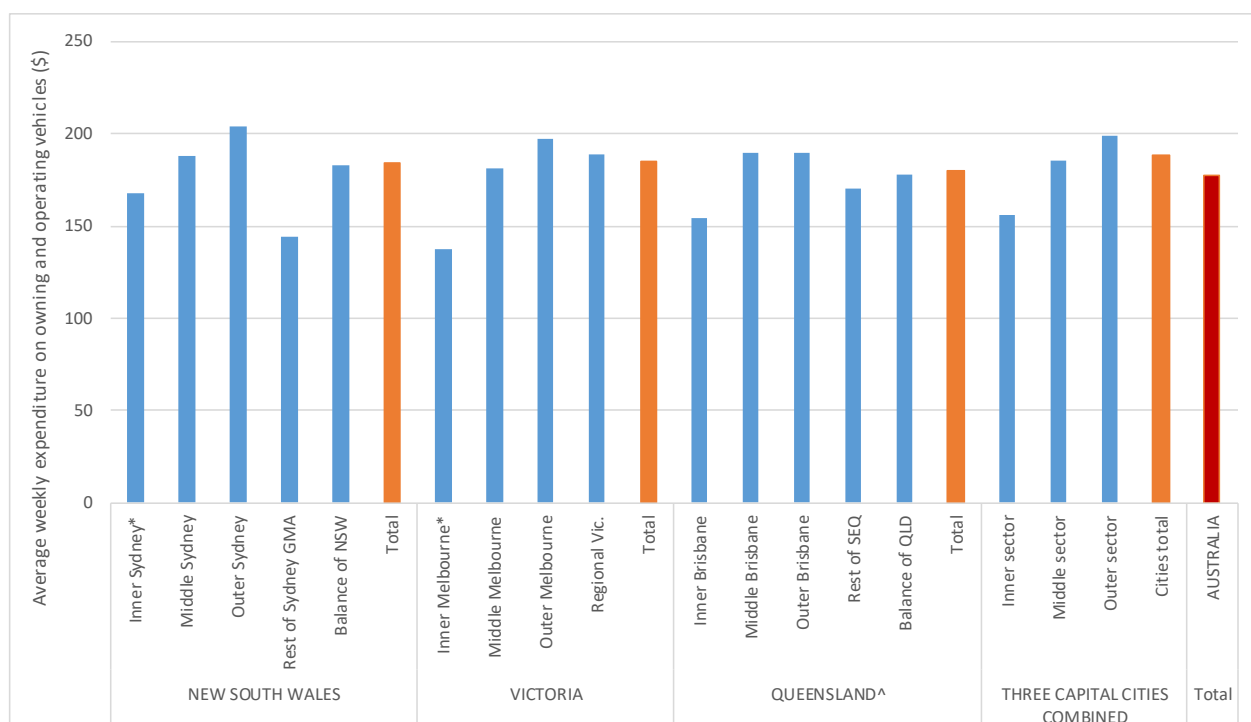
Another interesting feature of Figure 12 is the particularly low expenditure estimate for households in the Rest of the Sydney GMA (i.e. Illawarra and Lower Hunter). These households have average weekly expenditure on owning and operating vehicles of just \$144 per week, which is 19 per cent below the national average, and is a statistically significant difference (at the 95 per cent confidence level).

²⁴ The Rest of the Sydney GMA captures the Illawarra and the Lower Hunter, in line with NSW Government definitions.

²⁵ SEQ is defined to reflect the boundaries of the SEQ Regional Plan (Queensland Government 2017) and includes the following LGAs: Brisbane, Ipswich, Redland, Logan, Moreton Bay, Gold Coast, Sunshine Coast, Noosa, Lockyer Valley, Scenic Rim, Somerset and Toowoomba (part only).

²⁶ Consequently, the results for Brisbane in this section, relate to the geographic area covered by the combination of the Brisbane, Moreton Bay, Redland, Logan and Ipswich LGAs. This geographic area captures 97 per cent of the households in the Brisbane GCCSA.

Figure 12 Average weekly household expenditure on owning and operating vehicles by sector, Sydney Greater Metropolitan Area, Melbourne and South East Queensland, 2015-16



Notes: BITRE has specifically excluded the value of employer-provided vehicles and parking from the household expenditure figures (see Box 1 for further information). Sectors have been built from 2011 SA2 boundaries. Appendix 1 provides maps of the sectoral classification.

* Estimate has Relative Standard Error of between 25 and 50 per cent and should be used with caution.

[^] The results for Brisbane do not reflect the GCCSA boundary. SA2s within the hinterland LGAs of Lockyer Valley, Scenic Rim and Somerset (which belong to the GCCSA) have been classified to the 'Rest of SEQ' region, rather than to Brisbane's Outer sector.

Source: BITRE analysis of ABS 2015-16 *Household Expenditure Survey* customised data.

Figure 13 focuses in on two key components of average weekly household expenditure on owning and operating vehicles—motor vehicle fuel, lubricants and additives and vehicle registration and insurance. The HES expenditure estimates for these two expenditure items are relatively reliable at the sectoral scale, whereas estimates for the remaining expenditure items tend to have high RSEs and are not presented here.

Inner sector households in Sydney, Melbourne and Brisbane have average weekly expenditure on motor vehicle fuel, lubricants and additives that is significantly below the national average expenditure of \$45 per week (at the 95 per cent confidence level). Expenditure is particularly low for Inner Melbourne households at just \$22 per week, compared to \$27 for Inner Sydney households and \$34 for Inner Brisbane households. In Sydney and Melbourne, Middle sector household also have average weekly expenditure on motor vehicle fuel, lubricants and additives that is significantly below the national average (although the gap is less pronounced). In contrast, the Outer sectors of Sydney, Melbourne and Brisbane all have average weekly expenditure on motor vehicle fuel, lubricants and additives that exceeds the national average expenditure (just not to a statistically significant extent). The regional sectors within all three states similarly have average weekly expenditure on motor vehicle fuel, lubricants and additives that exceeds the national average expenditure, but not to a statistically significant extent.

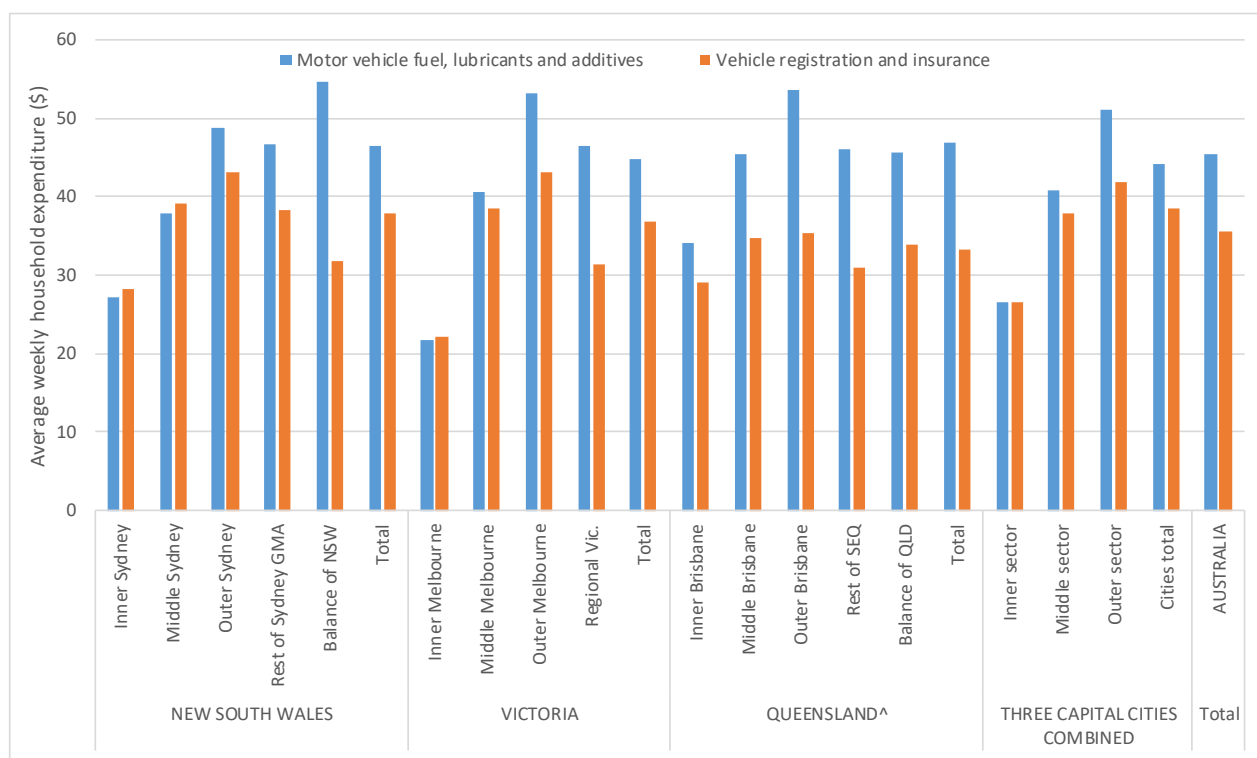
When all three cities are combined, Inner sector households spend an average of \$27 per week on motor vehicle fuel, lubricants and additives, compared to \$41 for Middle sector households and \$51 for Outer sector households. This sectoral variation in the fuel spend reflects greater public transport and active travel use by Inner sector residents and the longer average commuting distances of outer suburban residents. BITRE (2013b) reports that the private vehicle mode share of the journey to work in Sydney, Melbourne and Brisbane was 47–51 per cent for the Inner sector, 65–74 per cent for the Middle sector and 77–83 per cent for the Outer sector, reflecting limited use of public transport and active travel modes by Outer sector residents. Average commuting distances in these three cities range between 5 and 6 kilometres for the Inner sector, between 9 and 10 kilometres for the Middle sector and between 14 and 15 kilometres for Outer

sector residents (ibid). While Outer sector residents commute longer distances, they also have higher average commuting speeds (BITRE 2013b), which is likely to involve a lower rate of fuel consumption, and may partially offset the effect of longer commuting distances on the total fuel spend.

Figure 13 shows that vehicle registration and insurance expenditure follows a similar pattern to fuel expenditure, tending to be lowest in the Inner sector and highest in the Outer sector of the three cities. However, the sectoral gap is less pronounced for vehicle registration and insurance expenditure, and is of very limited magnitude in Brisbane. Expenditure on vehicle registration and insurance is significantly below the national average of \$36 per week for Inner Melbourne (\$22 per week), Inner Sydney (\$28 per week), regional Victoria (\$31 per week) and the rest of SEQ (\$31 per week). It is significantly above the national average for Middle Melbourne (\$38 per week) and Outer Melbourne (\$43 per week).

When all three cities are combined, Inner sector households spend an average of \$26 per week on vehicle registration and insurance, compared to \$38 for Middle sector households and \$42 for Outer sector households. The lower spend of inner city households is likely to reflect lower rates of vehicle ownership, which in turn reflects greater public transport accessibility as well as the effects of parking costs and parking availability in the inner suburbs. BITRE analysis of ABS *Census of Population and Housing 2011* data shows that the average number of vehicles per dwelling was 1.13 for Inner Sydney, compared to 1.51 for Middle Sydney and 1.76 for Outer Sydney, whereas for Inner Melbourne it was 1.06, compared to 1.62 for Middle Melbourne and 1.90 for Outer Melbourne. The gap in vehicle ownership between the Inner and Outer sectors was less pronounced for Brisbane, which is consistent with the data in Figure 13.

Figure 13 Average weekly household expenditure on motor vehicle fuel, lubricants and additives and vehicle registration and insurance, by sector, for Sydney Greater Metropolitan Area, Melbourne and South East Queensland, 2015-16



Notes: BITRE has specifically excluded the value of employer-provided vehicles and parking from the household expenditure figures (see Box 1 for further information). Sectors have been built from 2011 SA2 boundaries. Appendix 1 provides maps of the sectoral classification.

[^] The results for Brisbane do not reflect the GCCSA boundary. SA2s within the hinterland LGAs of Lockyer Valley, Scenic Rim and Somerset (which belong to the GCCSA) have been classified to the 'Rest of SEQ' region, rather than to Brisbane's outer sector.

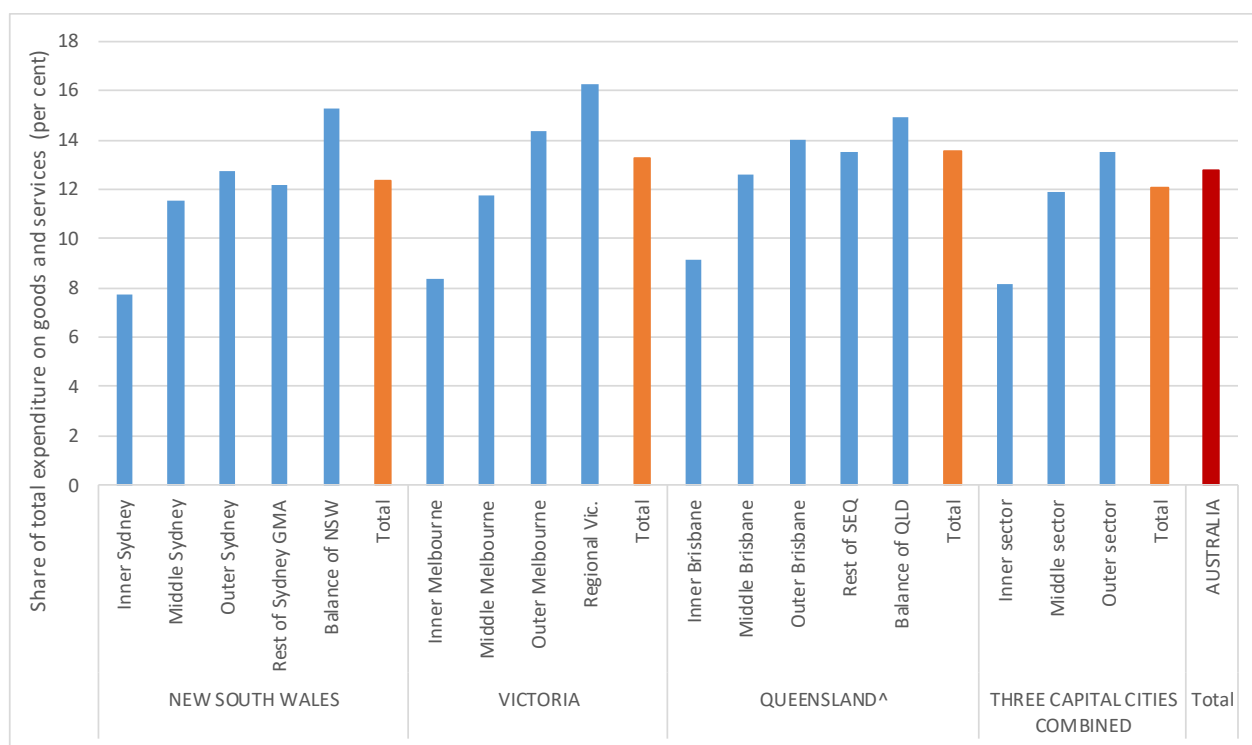
Source: BITRE analysis of ABS 2015-16 *Household Expenditure Survey* customised data.

Figure 14 shows how the proportion of total expenditure due to owning and operating vehicles varies across sectors for the Sydney GMA, Melbourne and SEQ. For all three cities, the proportion spent on owning and

operating vehicles is at its lowest for the Inner sector, higher for the Middle sector, and higher again for the Outer sector. When the three cities are combined, Inner sector households spend 8.1 per cent of their total expenditure on owning and operating vehicles, compared to 11.9 per cent for Middle sector households, 13.5 per cent for Outer sector households, and 12.7 per cent across all Australian households. For Sydney and Brisbane, the gap between the Inner and Outer sector in the proportion spent on owning and operating vehicles is 5 percentage points, while for Melbourne it is 6 percentage points. This gap primarily reflects sectoral differences in the proportion spent on motor vehicle fuel. Motor vehicle fuel represented just 1.4 per cent of total expenditure on goods and services across the Inner sectors of Sydney, Melbourne and Brisbane, compared to 2.6 per cent for the Middle sector and 3.5 per cent for the Outer sector.

For the Rest of the Sydney GMA and the Rest of SEQ, the proportion spent on owning and operating vehicles is similar to the national average. However, the proportion spent on owning and operating vehicles exceeds the national average for all three state balances (i.e. Balance of NSW, Regional Victoria and Balance of QLD).

Figure 14 Average weekly household expenditure on owning and operating vehicles as a proportion of total expenditure on goods and services, by sector, for Sydney Greater Metropolitan Area, Melbourne and South East Queensland, 2015-16



Notes: BITRE has specifically excluded the value of employer-provided vehicles and parking from the household expenditure figures (see Box 1 for further information). Sectors have been built from 2011 SA2 boundaries. Appendix 1 provides maps of the sectoral classification.

[^] The results for Brisbane do not reflect the GCCSA boundary. SA2s within the hinterland LGAs of Lockyer Valley, Scenic Rim and Somerset (which belong to the GCCSA) have been classified to the 'Rest of SEQ' region, rather than to Brisbane's outer sector.

Source: BITRE analysis of ABS 2015-16 *Household Expenditure Survey* customised data.

These results align with a recent ABS HES-based analysis of how spending patterns vary within the GCCSAs with respect to how easily residents can access a range of basic services (ABS 2017f). Households in very high and high accessibility areas²⁷ spent 12 to 13 per cent of their total expenditure on goods and services on transport costs, whereas households in moderate, limited or low accessibility areas spent 15 to 16 per cent

²⁷ More than 99 per cent of the population of Sydney, Melbourne and Brisbane's combined Inner sectors live in very high or high accessibility areas, while about 83 per cent of the population of the combined Middle sectors and 43 per cent of the population of the combined Outer sectors live in very high or high accessibility areas.

of total expenditure on transport costs.²⁸ Households in very high accessibility areas spent twice as much on public transport as those in other accessibility areas (\$12, compared to \$6-7 per week). They also spent much less on motor vehicle fuel and vehicle registration and insurance. Households living in limited/low accessibility areas²⁹ spent an average of \$69 per week on motor vehicle fuel, lubricants and additives, which is more than double the \$33 per week spend of those in very high accessibility areas. For vehicle registration and insurance, the average spend is \$45 per week in limited/low accessibility areas, compared to \$30 per week in very high accessibility areas (ibid).

Overall, a key message from this section is that inner city households and households that live in highly accessible locations have low average weekly expenditure on owning and operating vehicles, compared to the average Australian household, and they also spend a relatively small proportion of their total expenditure on owning and operating vehicles. At the same time, outer suburban households have relatively high expenditure on owning and operating vehicles and a high proportion being spent on owning and operating vehicles. The gap in vehicle-related spending between inner and outer suburban households is principally due to higher expenditure on motor vehicle fuel by outer suburban residents, with higher expenditure on vehicle registration and insurance also making a significant contribution. The higher fuel expenditure reflects outer suburban households having higher vehicle kilometres travelled (VKT) per household,³⁰ due to a combination of factors, such as longer average commuting distances, greater reliance on private vehicles (as reflected in lower public transport and active travel mode shares) and larger average household size (reflected in a higher number of vehicles per household).

Summary of spatial differences

2015-16 results

Rural areas (including towns of less than 1000 population) have a high weekly expenditure on owning and operating vehicles and allocate a high proportion of their total spending to this item. Rural areas have average weekly expenditure of \$199 on owning and operating vehicles in 2015-16, which represents 15.8 per cent of their total expenditure. This compares to the national average weekly spend of \$178, which represents 12.7 per cent of total expenditure. The high spending of rural households on owning and operating vehicles is largely due to a high spend on motor vehicle fuel (\$62 per week, compared to \$45, nationally). The higher spend on fuel reflects the tendency for residents of rural locations to have relatively high commuting distances (BITRE 2015),³¹ face relatively high fuel prices (BITRE 2014) and have more fuel-intensive vehicles (BITRE 2017b). Rural households represent about 10 per cent of the Australian population (based on 2016 *Census of Population and Housing* data).

The outer suburbs of our largest cities also have a relatively high weekly expenditure on owning and operating vehicles. The outer suburbs of Sydney, Melbourne and Brisbane have an average weekly expenditure of \$199 on owning and operating vehicles, but because incomes and total expenditures are relatively high, this represents only 13.5 per cent of their total expenditure. Thus, while outer suburban households spend a similar amount to rural households on owning and operating vehicles, this represents a much lower proportion of total expenditure for outer suburban households than it does for rural households.

²⁸ Transport costs include public transport fares and fare and freight charges as well as the costs of owning and operating vehicles. Note that the ABS' estimates of transport costs include the value of employer-provided vehicles and parking, whereas these items are excluded from BITRE's estimates of the costs of owning and operating private vehicles.

²⁹ About 23 per cent of the population of Sydney, Melbourne and Brisbane's combined Outer sectors live in low or limited accessibility areas, compared to 4 per cent for the combined Middle sectors and 0 per cent for the combined Inner sectors.

³⁰ BITRE has previously generated internal estimates of average VKT per household for all Australian Statistical Area Level 4s (SA4s) for the 2010-2015 period. Average VKT per household per day was lowest for inner city SA4s such as Melbourne Inner, Brisbane Inner City and Sydney City and Inner South. Average VKT per household per day was highest for a mix of mining-based regions (e.g. Fitzroy and Mackay in Queensland) and outer suburban and urban fringe areas. Examples of outer suburban and urban fringe SA4s with particularly high estimates include Outer South West Sydney, Central Coast, Sydney Outer West and Blue Mountains, Baulkham Hills and Hawkesbury and Mandurah.

³¹ Inland country and coastal country areas (defined as SA2s located outside significant urban areas of 10000 or more population) and remote areas had average commuting distances well above 20 kilometres in 2011, while the average commuting distances of the capital cities ranged between 11 and 15 kilometres.

Other regions with a particularly high weekly expenditure on owning and operating vehicles are the ACT (\$208) and Sydney (\$194). The proportion spent on owning and operating vehicles was very high for regional SA (16.4 per cent) and regional Victoria (16.2 per cent).

The main type of region with particularly low weekly expenditure on owning and operating vehicles is the inner suburbs of our largest cities. The inner suburbs of Sydney, Melbourne and Brisbane have an average weekly expenditure of \$156 on owning and operating vehicles, which represents just 8.1 per cent of their total expenditure. This reflects much lower spending than the average Australian household on both motor vehicle fuel and vehicle registration and insurance. This occurs because inner city households tend to own fewer vehicles and have low daily VKT, with greater use of public transport and active travel modes for commuting purposes.

Other regions with a particularly low weekly expenditure on owning and operating vehicles are the Rest of the Sydney GMA (\$144), Adelaide (\$145), SA (\$145), regional SA (\$146), regional Tasmania (\$154) and Perth (\$156). The proportion spent on owning and operating vehicles was relatively low for Perth (11.0 per cent).

Expenditure on motor vehicle fuel is of particular interest in this study. Average weekly expenditure on motor vehicle fuel, lubricants and additives is at its highest for rural households (\$62) and for that part of NSW that lies outside the Sydney GMA (\$55). Motor vehicle fuel represents a particularly high proportion of total expenditure in rural areas (4.9 per cent), NSW excluding the Sydney GMA (4.6 per cent) and regional SA (4.5 per cent). In contrast, motor vehicle fuel represented just 1.4 per cent of total expenditure on goods and services across the inner suburban households of Sydney, Melbourne and Brisbane.

Changes between 2009-10 and 2015-16

Nationally, the average weekly household expenditure on owning and operating vehicles increased by \$12.54 (or 7.6 per cent) between 2009-10 and 2015-16. For the capital cities, it increased by \$20.44 (12.8 per cent), while for regional Australia, it remained almost stable (declining by \$0.72, which represents a 0.4 per cent decline). This discrepancy in the rate of expenditure change has led to capital city households spending 5 per cent more than regional households in 2015-16, whereas they spent 7 per cent less than regional households in 2009-10. For major urban areas, expenditure on owning and operating vehicles increased by \$17.53 per week (11.0 per cent), compared to \$6.69 (4.1 per cent) for other urban areas, and \$2.00 (1.0 per cent) for rural areas. This minimal growth in vehicle-related expenditure for rural households has led to a partial closing of the expenditure gap between urban and rural households since 2009-10.

These differences in expenditure growth rates are largely driven by vehicle purchase costs and vehicle parts, servicing and crash repair costs. For example, in 2009-10, regional households spent considerably more than capital city households on each of these items, but in 2015-16, the average expenditure of capital city households on each of these items now exceeds that of regional households.

Average weekly household expenditure on motor vehicle fuel declined by 2.8 per cent nationally between 2009-10 and 2015-16. Most regions recorded modest changes, amounting to less than \$5. However, there was a significant 11 per cent decline for Melbourne households, from \$49.90 per week in 2009-10 to \$44.21 per week in 2015-16, bringing expenditure more into line with that of Sydney households. There was also a significant 19 per cent decline for households in regional Tasmania.

Nationally, the proportion of total goods and services expenditure that was attributable to owning and operating vehicles declined by 0.6 percentage points between 2009-10 and 2015-16. The decline was widespread across the different geographic areas. It was more pronounced for regional Australia (from 15.6 per cent in 2009-10 to 14.5 per cent in 2015-16) than it was for the capital cities (from 12.3 to 12.0 per cent). The percentage point decline was also much larger for rural areas, at 2.3 percentage points, than it was for major urban and other urban areas (which both experienced a 0.5 percentage point decline).

How does average weekly expenditure on owning and operating vehicles vary across different types of households?

The level and composition of household expenditure is closely linked to the social and demographic characteristics of household members. This section examines how average weekly expenditure on owning and operating vehicles varies across different types of households. The specific demographic characteristics considered are lifecycle group, household size, household income, main income source and housing tenure.³²

Lifecycle groups³³

Table 12 illustrates how average weekly household expenditure on owning and operating vehicles varies across the different lifecycle categories. Average weekly expenditure on owning and operating vehicles was highest for households consisting of a couple with dependent and non-dependent children (\$297), followed by households consisting of a couple with non-dependent children only (\$294). Couples with non-dependent children had the highest proportion of goods and services expenditure on owning and operating vehicles (16.2 per cent).

Table 12 Average weekly household expenditure on owning and operating vehicles by lifecycle group, Australia, 2015-16

Lifecycle group	Expenditure item (\$)					Total expenditure on owning and operating vehicles (\$)	Total expenditure on goods and services (\$)	Proportion of total expenditure due to owning and operating vehicles (per cent)
	Vehicle purchase costs	Motor vehicle fuel, lubricants and additives	Vehicle registration and insurance	Vehicle parts, servicing and crash repairs	Other vehicle charges			
Lone person aged under 35	20.64	22.99	16.95	*11.40	5.37	77.34	825.43	9.4
Couple only, reference person aged under 35	77.52	46.73	37.46	27.75	13.02	202.48	1535.20	13.2
Couple with dependent children - Youngest child under 5	82.25	51.33	37.92	28.59	11.31	211.37	1758.96	12.0
Couple with dependent children - Youngest child 5 to 14	101.46	58.50	42.25	35.78	16.78	254.77	2022.70	12.6
Couple with dependent children - Youngest child 15 to 24	83.84	62.55	52.66	47.73	14.74	261.53	1971.64	13.3
One parent with dependent children	33.34	39.56	26.43	*21.25	5.11	125.69	1173.00	10.7
Couple with dependent and non-dependent children	94.14	77.57	67.06	44.18	14.24	297.18	2219.18	13.4
Couple with non-dependent children only	101.89	77.38	61.82	39.39	13.26	293.74	1808.87	16.2
Couple only, reference person aged 55-64	48.52	44.10	40.13	24.48	10.51	167.62	1393.90	12.0
Couple only, reference person aged 65 and over	39.94	32.18	31.72	32.14	6.51	142.49	1069.20	13.3
Lone person aged 65 and over	12.27	14.17	14.11	10.05	2.08	52.68	535.34	9.8
All households	59.26	45.36	35.55	27.72	9.73	177.60	1393.34	12.7

Note: Estimates differ from those in the HES publication as BITRE has specifically excluded the value of employer-provided vehicles and parking from the household expenditure figures (see Box 1 for further information). 'Not applicable' lifecycle category excluded from the table, but included in the 'All households' total. Components may not sum to totals due to rounding.

* Estimate has a relative standard error of between 25 and 50 per cent and should be used with caution.

Source: BITRE analysis of ABS 2015-16 *Household Expenditure Survey* customised data.

32 In analysing the 2009-10 HES data, BITRE (2017a) considered an additional demographic variable, namely the age of the household reference person. As this variable did not add a great deal of insight beyond what is captured by the lifecycle group variable, it was omitted from the 2015-16 HES analysis.

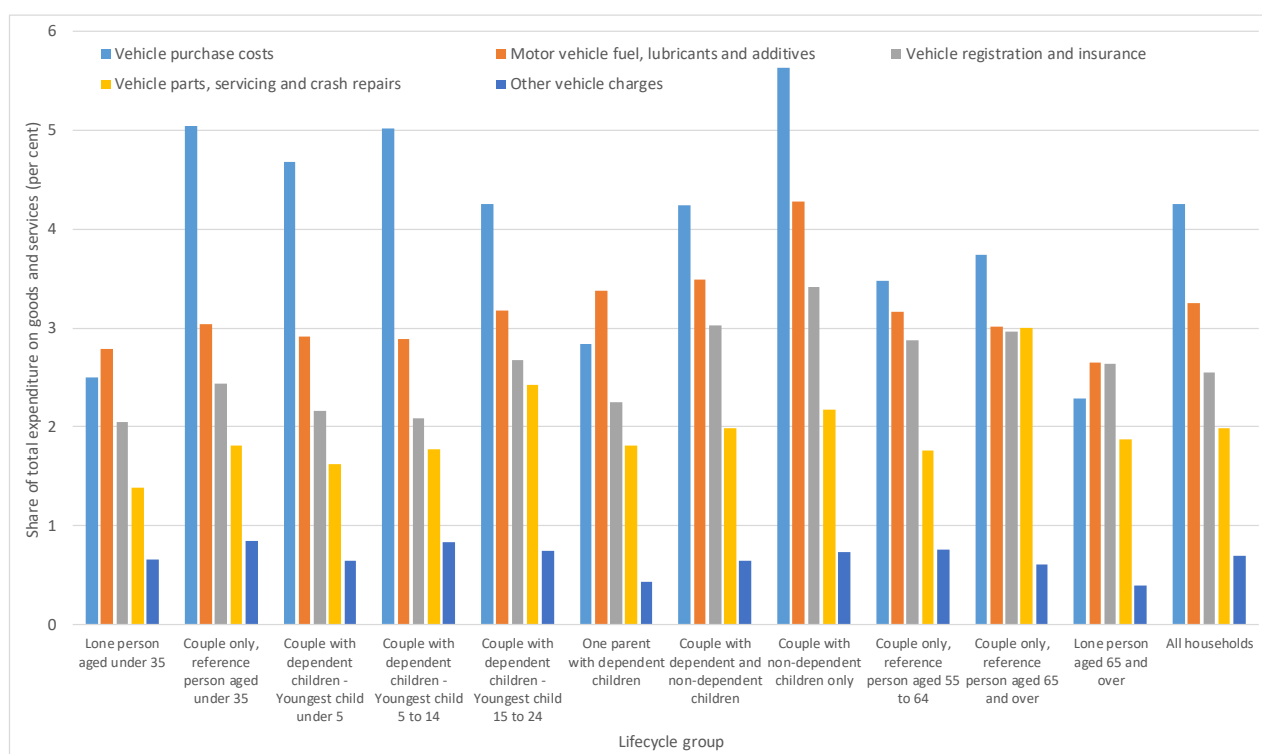
33 The ABS lifecycle categories changed between 2009-10 and 2015-16. In 2009-10, the couple with children categories were defined based on the age of the eldest child, whereas in 2015-16 they are defined based on the age of the youngest child. Consequently, this section does not include an analysis of expenditure change for lifecycle categories between 2009-10 and 2015-16.

In contrast, lone persons aged 65 years and over had a much lower average weekly expenditure on owning and operating vehicles (\$53) than other lifecycle groups, and their average weekly expenditure on goods and services was also lower (\$535). Other household types with relatively low expenditure on owning and operating vehicles include lone persons aged under 35 (\$77) and lone parent households (\$126). Lone person households aged under 35 or 65 and over both spent less than 10 per cent of their weekly goods and services expenditure on owning and operating vehicles.

Average weekly household expenditure on motor vehicle fuel, lubricants and additives was particularly high for couples with dependent and non-dependent children (\$78) and couples with non-dependent children only (\$77). It was particularly low for lone persons aged 65 and over (\$14) and lone persons aged under 35 (\$23). Average weekly household expenditure on vehicle registration and insurance followed a similar pattern.

Figure 15 expresses the different expenditure items as a proportion of total goods and services expenditure. Households consisting of a couple with non-dependent children had the highest share spent on both vehicle purchase costs and motor vehicle fuel, lubricants and additives (5.6 per cent and 4.3 per cent, respectively). Couple-only households with non-dependent children also had the highest proportion spent on registration and insurance (3.4 per cent), which is likely to be due to a larger number of vehicles owned by these households, reflecting a larger number of individuals of driving age within the household. Lone persons aged 65 and over had the lowest share spent on vehicle purchases and fuel, closely followed by lone person households aged under 35.

Figure 15 Components of household expenditure on owning and operating vehicles as a proportion of total expenditure on goods and services, by lifecycle group, Australia, 2015-16



Note: 'Not applicable' lifecycle category excluded from the analysis, but included in the data for 'All households'. BITRE has specifically excluded the value of employer-provided vehicles and parking from the household expenditure figures.

Source: BITRE analysis of ABS 2015-16 Household Expenditure Survey customised data.

Because the lifecycle categories changed between 2009-10 and 2015-16, this section does not include an analysis of expenditure change for lifecycle categories between 2009-10 and 2015-16.

Household size

2015-16 results

Table 13 presents average weekly household expenditure on owning and operating vehicles by household size in Australia during 2015-16, while Figure 16 shows this expenditure as a proportion of total weekly expenditure on goods and services for the different household size categories.

Average weekly expenditure on owning and operating vehicles is lowest for one person households (\$77) and rises with household size, peaking for households containing five or more persons (at \$270). Single person households had the lowest weekly expenditure across all expenditure items, with 2 person households having the second lowest weekly expenditure for all expenditure items. Households consisting of 3, 4 and 5 or more persons had above-average weekly expenditure across all expenditure items, but for some items the spending differences between 3, 4 and 5 or more person households were quite modest (see Table 13).

Expenditure on owning and operating vehicles ranged from 10.9 per cent of the total expenditure on goods and services of lone person households to 13.9 per cent of the total expenditure of 3 person households. Households of 2, 4 and 5 or more persons each spent close to the national average proportion of their total expenditure on owning and operating vehicles (i.e. around 12.7 per cent). The proportion of total expenditure spent on vehicle purchase costs followed a similar pattern, being lowest for lone person households and highest for 3 person households (see Figure 16). Households consisting of 5 or more persons spent a relatively high proportion of their total expenditure on motor vehicle fuel, lubricants and additives. However, the proportion spent on vehicle registration and insurance was very stable across the household size categories.

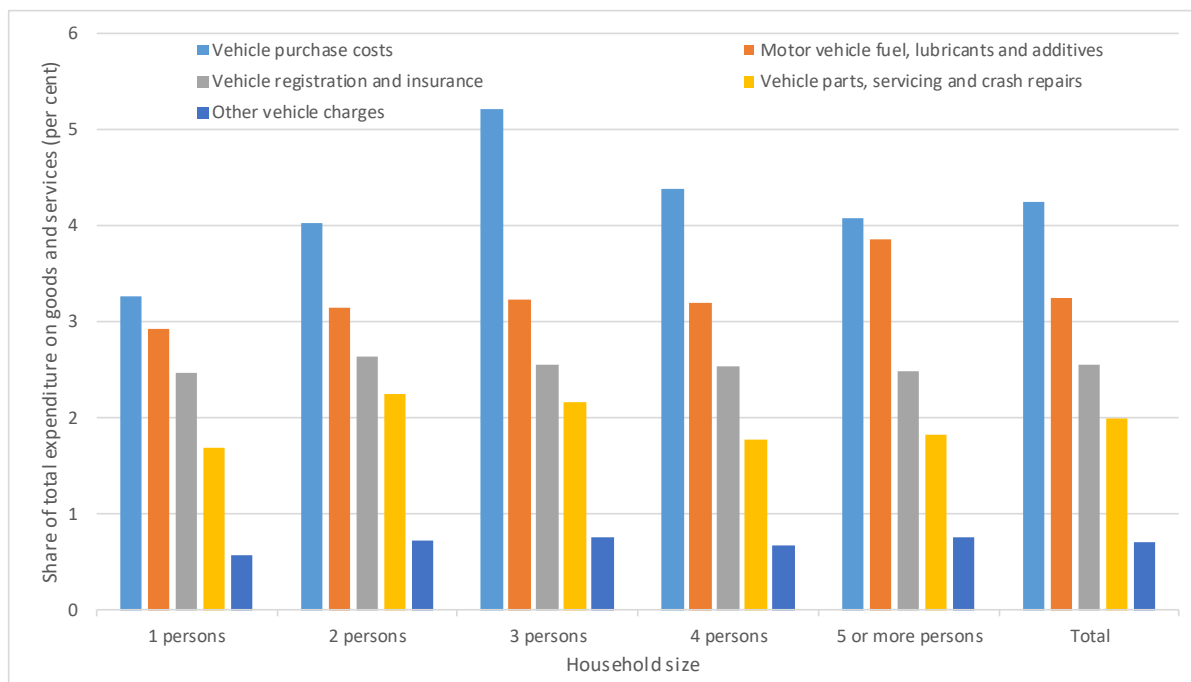
Table 13 Average weekly household expenditure on owning and operating vehicles by number of people in the household, Australia, 2015-16

Household size	Expenditure item (\$)					Total expenditure on owning and operating vehicles (\$)	Total expenditure on goods and services (\$)	Proportion of total expenditure due to owning and operating vehicles (per cent)
	Vehicle purchase costs	Motor vehicle fuel, lubricants and additives	Vehicle registration and insurance	Vehicle parts, servicing and crash repairs	Other vehicle charges			
1 person	22.93	20.57	17.34	11.93	3.95	76.71	703.69	10.9
2 persons	52.04	40.65	33.99	29.04	9.24	164.93	1289.70	12.8
3 persons	87.59	54.41	42.87	36.24	12.59	233.71	1681.38	13.9
4 persons	84.08	61.33	48.67	34.04	12.73	240.84	1917.90	12.6
5 or more persons	84.63	79.94	51.43	37.79	15.82	269.62	2074.59	13.0
All households	59.26	45.36	35.55	27.72	9.73	177.60	1393.34	12.7

Note: Estimates differ from those in the HES publication as BITRE has specifically excluded the value of employer-provided vehicles and parking from the household expenditure figures (see Box 1 for further information). Components may not sum to totals due to rounding.

Source: BITRE analysis of ABS 2015-16 *Household Expenditure Survey* customised data.

Figure 16 Components of household expenditure on owning and operating vehicles as a proportion of total expenditure on goods and services, by number of people in the household, Australia, 2015-16



Note: BITRE has specifically excluded the value of employer-provided vehicles and parking from the household expenditure figures.

Source: BITRE analysis of ABS 2015-16 *Household Expenditure Survey* customised data.

Changes between 2009-10 and 2015-16

Table 14 summarises changes in expenditure on owning and operating vehicles across the household size categories between 2009-10 and 2015-16. Three person households recorded the largest increase in expenditure, both in dollar terms and in percentage terms. The \$43 (or 23 per cent) increase was the only significant change in the average weekly expenditure on owning and operating vehicles across the household size categories. Three person households also recorded the strongest growth in total expenditure across all goods and services (\$231, or 16 per cent).

The proportion of total household expenditure on goods and services that was attributable to owning and operating vehicles increased by 0.8 percentage points for 3 person households between 2009-10 and 2015-16. It declined for all of the other household size categories, with the decline most pronounced for single person households (Table 14).

Table 14 Changes in average weekly household expenditure on owning and operating vehicles by household size, 2009-10 to 2015-16

	Household size					
	1 person	2 persons	3 persons	4 persons	5 or more persons	All households
Average weekly household expenditure on owning and operating vehicles, 2009-10 (\$)	79.65	157.01	190.76	227.57	263.34	165.06
Average weekly household expenditure on owning and operating vehicles, 2015-16 (\$)	76.71	164.93	233.71	240.84	269.62	177.60
Dollar change, 2009-10 to 2015-16 (\$)	-2.94	7.92	42.95	13.27	6.28	12.54
Percentage change, 2009-10 to 2015-16 (per cent)	-3.7	5.0	22.5	5.8	2.4	7.6
Proportion of total household expenditure on goods and services due to owning and operating vehicles, 2009-10 (per cent)	12.3	13.5	13.1	13.4	14.1	13.4
Proportion of total household expenditure on goods and services due to owning and operating vehicles, 2015-16 (per cent)	10.9	12.8	13.9	12.6	13.0	12.7
Percentage point change, 2009-10 to 2015-16 (per cent)	-1.4	-0.8	0.8	-0.8	-1.1	-0.6

Note: Expenditure data is expressed in nominal terms. BITRE has specifically excluded the value of employer-provided vehicles and parking from the household expenditure figures (see Box 1 for further information).

Source: BITRE analysis of ABS 2015-16 and 2009-10 *Household Expenditure Survey* customised tabulations and 2009-10 CURF data.

Household income

2015-16 results

Equivalised disposable household income estimates adjust the disposable household income data 'by equivalence factors to standardise them for variations in household size and composition, while taking into account the economies of scale that arise from the sharing of dwellings' (ABS 2017g). All households were ranked by their equivalised disposable incomes from the lowest to the highest, and the households were then put into five groups (quintiles). Each quintile had an equal number of households. This section analyses how average weekly household expenditure on owning and operating vehicles varies across the equivalised disposable income quintiles.³⁴

Table 15 presents itemised average weekly household expenditure on owning and operating vehicles by equivalised household disposable income quintile, while Figure 17 shows these expenditure items as a proportion of total expenditure on goods and services for the equivalised disposable household income quintiles.

In 2015-16, households in the lowest equivalised disposable income quintile spent on average \$89 per week on owning and operating vehicles, with expenditure rising across the income quintiles, reaching a maximum of \$291 per week for those in the highest quintile (see Table 15). This general pattern of expenditure rising across the quintiles is evident for each of the expenditure items, although motor vehicle fuel expenditure levels off at the fourth quintile.

While average weekly household expenditure on owning and operating vehicles rises strongly across the income quintiles, the proportion of total expenditure spent on owning and operating vehicles shows less variation across the income quintiles. The 40 per cent of households with the lowest incomes spend a below-average proportion of their total expenditure on owning and operating vehicles. This occurs largely because the lower income households spend a lower proportion of their total expenditure on vehicle purchase costs.

³⁴ BITRE's analysis of the 2009-10 HES data examined household expenditure on owning and operating vehicles by both gross income quintile and equivalised disposable income quintile (BITRE 2017a). As the two variables led to very similar conclusions, the 2015-16 analysis is based solely on equivalised disposable income quintiles.

Table 15 Average weekly household expenditure on owning and operating vehicles by equivalised disposable household income quintile, Australia, 2015-16

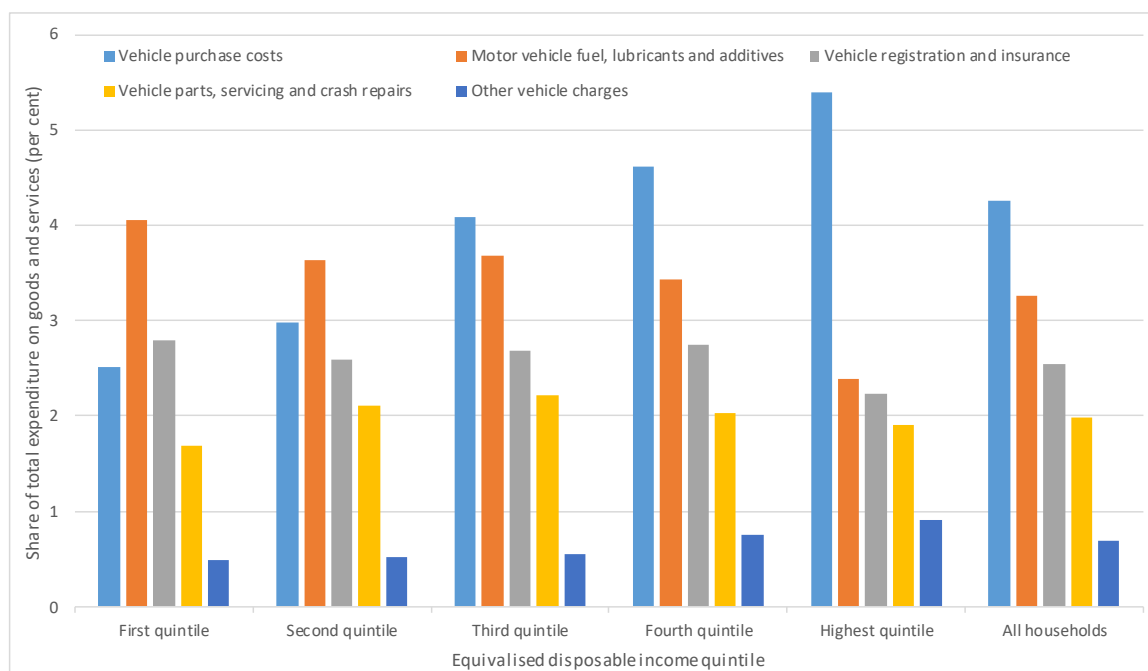
Equivalised disposable income quintile	Expenditure item (\$)					Total expenditure on owning and operating vehicles (\$)	Total expenditure on goods and services (\$)	Proportion of total expenditure due to owning and operating vehicles (per cent)
	Vehicle purchase costs	Motor vehicle fuel, lubricants and additives	Vehicle registration and insurance	Vehicle parts, servicing and crash repairs	Other vehicle charges			
First	19.35	31.17	21.51	13.04	3.77	88.84	769.04	11.6
Second	32.55	39.72	28.32	22.98	5.62	129.17	1091.59	11.8
Third	55.70	50.17	36.62	30.17	7.58	180.24	1362.69	13.2
Fourth	74.02	54.99	43.88	32.41	12.16	217.45	1601.66	13.6
Highest	122.27	54.13	50.44	43.19	20.53	290.53	2265.40	12.8
All households	59.26	45.36	35.55	27.72	9.73	177.60	1393.34	12.7

Note: Estimates differ from those in the HES publication as BITRE has specifically excluded the value of employer-provided vehicles and parking from the household expenditure figures (see Box 1 for further information). Components may not sum to totals due to rounding.

Source: BITRE analysis of ABS 2015-16 *Household Expenditure Survey* customised data.

Figure 17 reveals that the proportion spent on vehicle purchase costs rises strongly across the quintiles, standing at 2.5 per cent for those in the first quintile and increasing systematically across the quintiles to reach 5.4 per cent for those in the top income quintile. The proportion spent on other vehicle charges such as parking and tolls also increases systematically across the income quintiles. In contrast, the proportion spent on motor vehicle fuel, lubricants and additives is at its highest for the first income quintile (4.1 per cent), relatively flat for the middle quintiles (3.4-3.7 per cent), and low for the top income quintile (2.4 per cent). The proportion spent on vehicle registration and insurance follows a similar pattern, but with less pronounced variation—it is highest for the first income quintile (2.8 per cent) and lowest for the top income quintile (2.2 per cent). The proportion spent on vehicle parts, servicing and crash repairs does not vary a great deal across the income quintiles, but is lowest for households in the first income quintile.

Figure 17 Components of household expenditure on owning and operating vehicles as a proportion of total expenditure by equivalised disposable household income quintile, Australia, 2015-16



Note: BITRE has specifically excluded the value of employer-provided vehicles and parking from the household expenditure figures.

Source: BITRE analysis of ABS 2015-16 *Household Expenditure Survey* customised data.

Changes between 2009-10 and 2015-16

Table 16 summarises changes in expenditure on owning and operating vehicles across the equivalised disposable income quintiles between 2009-10 and 2015-16. The highest income quintile recorded the largest increase in expenditure on owning and operating vehicles, both in dollar terms (\$38 per week) and in percentage terms (15 per cent). Households in the top income quintile also recorded the strongest growth in total expenditure on all goods and services (\$398, or 21 per cent).

The proportion of total household expenditure on goods and services that was attributable to owning and operating vehicles declined across all of the income quintiles, with the decline most pronounced for households in the second income quintile (-1.9 percentage points). Households in the second income quintile recorded a \$5.36 (4 per cent) decline in weekly spending on owning and operating vehicles between 2009-10 and 2015-16. This was largely driven by the \$5.54 (12 per cent) decline in weekly spending on motor vehicle fuel, lubricants and additives over the same period.

Table 16 Changes in average weekly household expenditure on owning and operating vehicles by equivalised disposable income quintile, 2009-10 to 2015-16

	Equivalised disposable income quintile					All households
	First	Second	Third	Fourth	Highest	
Average weekly household expenditure on owning and operating vehicles, 2009-10 (\$)	81.61	134.53	164.05	202.55	252.40	165.06
Average weekly household expenditure on owning and operating vehicles, 2015-16 (\$)	88.84	129.17	180.24	217.45	290.53	177.60
Dollar change, 2009-10 to 2015-16 (\$)	7.23	-5.36	16.19	14.90	38.13	12.54
Percentage change, 2009-10 to 2015-16 (per cent)	8.9	-4.0	9.9	7.4	15.1	7.6
Proportion of total household expenditure on goods and services due to owning and operating vehicles, 2009-10 (per cent)	12.4	13.8	13.7	13.9	13.5	13.4
Proportion of total household expenditure on goods and services due to owning and operating vehicles, 2015-16 (per cent)	11.6	11.8	13.2	13.6	12.8	12.7
Percentage point change, 2009-10 to 2015-16 (per cent)	-0.9	-1.9	-0.4	-0.4	-0.7	-0.6

Note: Expenditure data is expressed in nominal terms. BITRE has specifically excluded the value of employer-provided vehicles and parking from the household expenditure figures (see Box 1 for further information).

Source: BITRE analysis of ABS 2015-16 and 2009-10 *Household Expenditure Survey* customised tabulations and 2009-10 CURF data.

Main sources of gross household income

2015-16 results

This section presents average weekly expenditure on owning and operating vehicles by the main source of household income. The income source categories are wages and salaries, own incorporated businesses, age pensions, other government payments³⁵ and other sources³⁶.

Table 17 shows that households whose main income source was employee income spent around \$216 per week on owning and operating vehicles, higher than for any other income source. Households that relied on employee income had the highest weekly expenditure on each of the expenditure items, apart from vehicle parts, servicing and crash repairs. Households whose main income source was the age pension had the lowest weekly spend on owning and operating vehicles (\$70), followed by households whose main income source was other government payments (\$83). These two income source categories had the lowest weekly spend on each of the individual expenditure items.

³⁵ Includes Disability support pension, Veteran affairs pension, Family tax benefit, Parenting payment, and Unemployment and student allowances.

³⁶ Income other than wages and salaries, own unincorporated business income and government payments. This includes income received as a result of ownership of financial assets (interest, dividends), and of non-financial assets (rent, royalties) and other current receipts from sources such as superannuation, child support, workers' compensation and scholarships (ABS 2011, p.93).

Households with a main income source of age pension or other government payments also devoted a relatively small proportion of their total expenditure to owning and operating vehicles (11.5 and 10.9 per cent, respectively). Households whose main income source was their own unincorporated business spent the highest proportion on owning and operating vehicles (13.5 per cent, compared to 12.7 per cent across all households).

Table 17 Average weekly household expenditure on owning and operating vehicles by main source of household income, Australia, 2015-16

Main income source	Expenditure item (\$)					Total expenditure on owning and operating vehicles (\$)	Total expenditure on goods and services (\$)	Proportion of total expenditure due to owning and operating vehicles (per cent)
	Vehicle purchase costs	Motor vehicle fuel, lubricants and additives	Vehicle registration and insurance	Vehicle parts, servicing and crash repairs	Other vehicle charges			
Employee income	73.99	54.64	42.51	32.19	12.72	216.02	1664.98	13.0
Own unincorporated business income	76.02	50.73	33.08	*35.63	7.78	203.24	1507.36	13.5
Age pension	12.77	22.09	17.93	14.85	2.33	69.98	607.25	11.5
Other government	17.30	30.08	19.76	12.07	*4.06	83.28	763.46	10.9
Other income	68.59	34.47	34.26	30.81	8.10	176.23	1397.47	12.6
All households ^b	59.26	45.36	35.55	27.72	9.73	177.60	1393.34	12.7

Note: Estimates differ from those in the HES publication as BITRE has specifically excluded the value of employer-provided vehicles and parking from the household expenditure figures (see Box 1 for further information). Components may not sum to totals due to rounding.

^a Other government payments include Disability support pension, Veteran affairs pension, Family tax benefit, Parenting payment, and Unemployment and student allowances.

^b Total includes households with zero or negative income, which are not shown separately in the table due to data quality issues.

* Estimate has a relative standard error of between 25 and 50 per cent and should be used with caution.

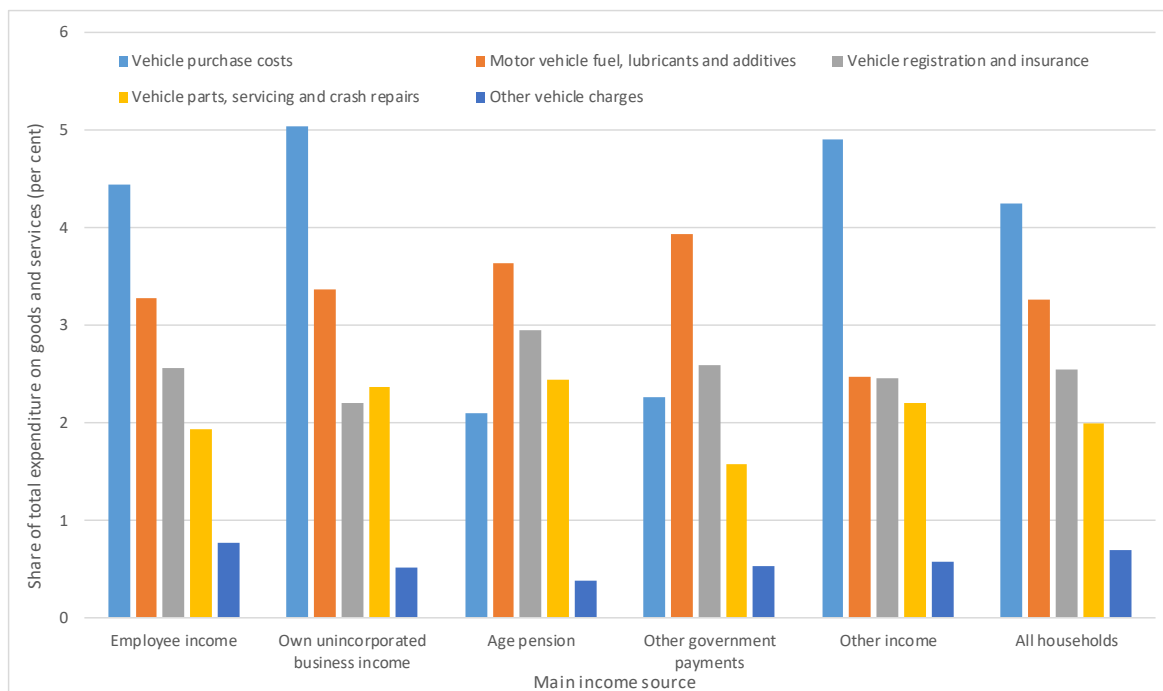
Source: BITRE analysis of ABS 2015-16 and 2009-10 *Household Expenditure Survey* customised tabulations and 2009-10 CURF data.

From Figure 18 it is apparent that the proportion of total expenditure that is due to vehicle purchases varies widely across the main income source categories. Vehicle purchases represent 2.1 per cent of the total expenditure of age pension households and 2.3 per cent of the total expenditure of households whose main income source is other government payments. This low spend on vehicle purchases is a key reason why households that are reliant on government payments devote a relatively low proportion of their total expenditure to owning and operating vehicles. By contrast, vehicle purchase costs represent 5.0 per cent of the total expenditure of households whose main income source is own unincorporated business income.

Motor vehicle fuel, lubricants and additives account for a relatively high share of the total expenditure of age pension households (3.6 per cent) and households whose main source of income is other government payments (3.9 per cent), and a much lower share of the total expenditure of households that rely on other income sources (2.5 per cent).

The proportion spent on vehicle registration and insurance did not vary a great deal across the income source categories but was highest for those relying on age pensions (3.0 per cent). The shares of expenditure on vehicle parts, servicing and crash repairs and other vehicle charges are also quite stable across the income source categories.

Figure 18 Components of average weekly household expenditure on owning and operating private vehicles as proportion of total expenditure, by main source of household income, Australia, 2015-16



Note: BITRE has specifically excluded the value of employer-provided vehicles and parking from the household expenditure figures.

Source: BITRE analysis of ABS 2015-16 *Household Expenditure Survey* customised data.

Changes between 2009-10 and 2015-16

Table 18 summarises changes in expenditure on owning and operating vehicles between 2009-10 and 2015-16 across the income source categories. Households whose main source of income was their own unincorporated business recorded the largest increase in expenditure on owning and operating vehicles, both in dollar terms (\$32 per week) and in percentage terms (19 per cent). These households saw a 1.3 percentage point increase in the proportion of total expenditure that was attributable to owning and operating vehicles between 2009-10 and 2015-16. Households whose main source of income was other government payments recorded a \$12 decline in expenditure on owning and operating vehicles (-12 per cent). These households saw a 3.1 percentage point decline in the proportion of total expenditure that was attributable to owning and operating vehicles, with a reduced spend on vehicle parts, servicing and crash repairs the major contributor to this result.

Table 18 Changes in average weekly household expenditure on owning and operating vehicles by main source of household income, 2009-10 to 2015-16

	Main income source					
	Employee income	Own unincorporated business income	Age pension	Other government payments	Other income	All households
Average weekly household expenditure on owning and operating vehicles, 2009-10 (\$)	201.22	170.85	62.94	94.80	160.17	165.06
Average weekly household expenditure on owning and operating vehicles, 2015-16 (\$)	216.02	203.24	69.98	83.28	176.23	177.60
Dollar change, 2009-10 to 2015-16 (\$)	14.80	32.39	7.04	-11.52	16.06	12.54
Percentage change, 2009-10 to 2015-16 (per cent)	7.4	19.0	11.2	-12.2	10.0	7.6
Proportion of total household expenditure on goods and services due to owning and operating vehicles, 2009-10 (per cent)	13.7	12.2	11.5	14.0	12.4	13.4
Proportion of total household expenditure on goods and services due to owning and operating vehicles, 2015-16 (per cent)	13.0	13.5	11.5	10.9	12.6	12.7
Percentage point change, 2009-10 to 2015-16 (per cent)	-0.7	1.3	0.0	-3.1	0.2	-0.6

Note: Expenditure data is expressed in nominal terms. BITRE has specifically excluded the value of employer-provided vehicles and parking from the household expenditure figures (see Box 1 for further information).

Source: BITRE analysis of ABS 2015-16 and 2009-10 *Household Expenditure Survey* customised tabulations and 2009-10 CURF data.

Tenure type

2015-16 results

Table 19 presents average weekly household expenditure on owning and operating vehicles by tenure type in Australia during 2015-16, while Figure 19 shows this expenditure as a proportion of total weekly expenditure on goods and services for the different types of tenure.

Table 19 shows that households where the owner had a mortgage spent \$235 per week on owning and operating vehicles, higher than for any other type of housing tenure. While home owners with a mortgage had above-average expenditure across all of the expenditure items, vehicle purchase costs were particularly high at \$84 per week (compared to the national average of \$59 per week). Households that rented from state or territory housing authorities had the lowest weekly expenditure on owning and operating vehicles (\$71), as well as the lowest total expenditure on goods and services (\$641 per week). They also spent the lowest proportion of their total expenditure on owning and operating vehicles (11.0 per cent).

Figure 19 illustrates the high proportion of the total expenditure of home owners with a mortgage that is allocated to vehicle purchase costs, compared to the other tenure types. Households who rent from a state or territory housing authority spent a relatively high proportion of their total expenditure on motor vehicle fuel, lubricants and additives and a relatively low proportion of vehicle parts, servicing and crash repairs and other vehicle charges. Renters (both private and public) spent a relatively low proportion of their total expenditure on vehicle registration and insurance.

Table 19 Average weekly household expenditure on owning and operating vehicles by tenure type, Australia, 2015-16

Tenure type	Expenditure item (\$)					Total expenditure on owning and operating vehicles (\$)	Total expenditure on goods and services (\$)	Proportion of total expenditure due to owning and operating vehicles (per cent)
	Vehicle purchase costs	Motor vehicle fuel, lubricants and additives	Vehicle registration and insurance	Vehicle parts, servicing and crash repairs	Other vehicle charges			
Owner with a mortgage	83.86	58.48	45.13	33.65	13.71	234.83	1773.92	13.2
Owner without a mortgage	41.85	37.43	33.85	28.49	6.90	148.50	1123.22	13.2
All renters	48.19	38.14	26.10	19.71	7.90	140.02	1228.70	11.4
Do not rent from state or territory housing authority	50.90	39.89	27.68	21.26	8.65	148.38	1299.44	11.4
Rent from state or territory housing authority	np	23.53	12.96	6.79	1.68	*70.66	641.08	11.0
Other ^a	*37.74	33.35	27.75	*26.94	*6.74	132.52	986.93	13.4
All households	59.26	45.36	35.55	27.72	9.73	177.60	1393.34	12.7

Note: Estimates differ from those in the HES publication as BITRE has specifically excluded the value of employer-provided vehicles and parking from the household expenditure figures (see Box 1 for further information). Components may not sum to totals due to rounding.

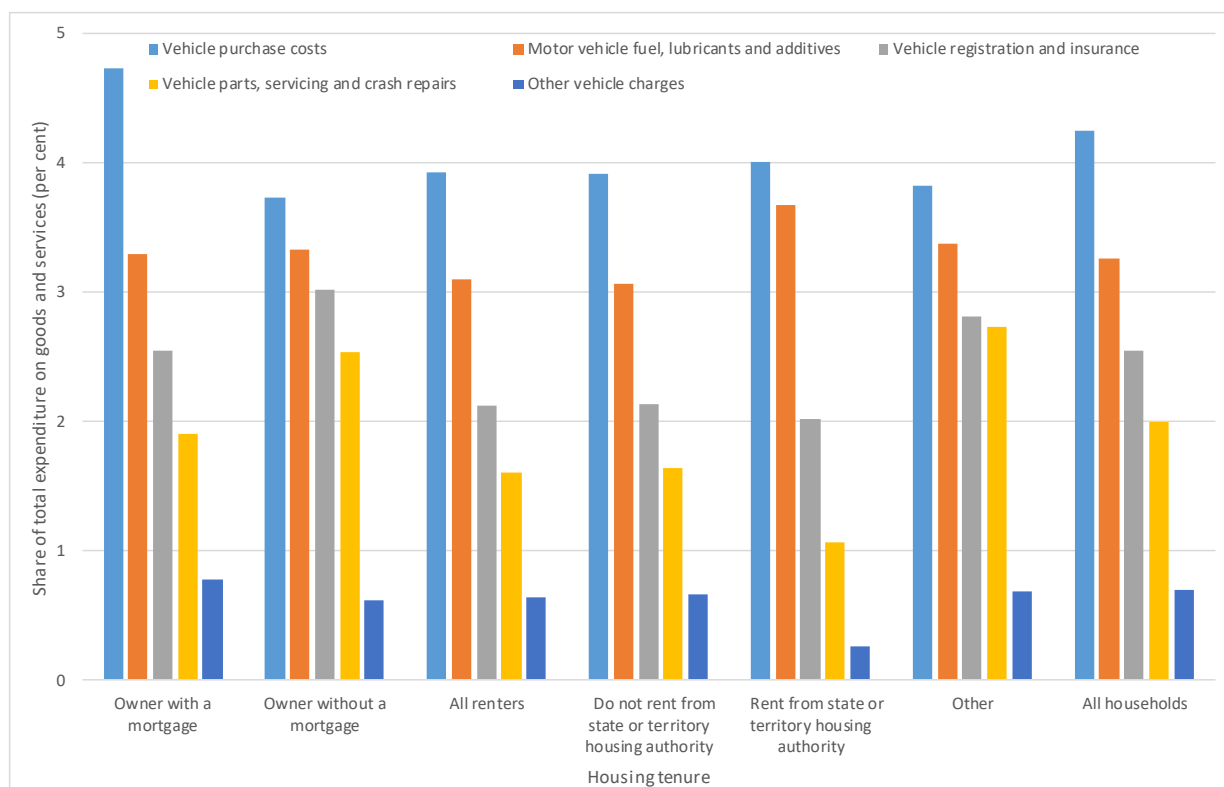
^a 'Other' includes rent free and excludes households which are an owner (with or without a mortgage) or a renter (ABS 2017a).

np Estimate has a relative standard error of more than 50 per cent and is of no practical value, so it has not been published.

* Estimate has a relative standard error of between 25 and 50 per cent and should be used with caution.

Source: BITRE analysis of ABS 2015-16 *Household Expenditure Survey* customised data.

Figure 19 Components of household expenditure on owning and operating vehicles as a proportion of total expenditure, by tenure type, Australia, 2015-16



Note: 'Other' includes rent free and excludes households which are an owner (with or without a mortgage) or a renter (ABS 2017a). BITRE has specifically excluded the value of employer-provided vehicles and parking from the household expenditure figures.

Source: BITRE analysis of ABS 2015-16 *Household Expenditure Survey* customised data.

Changes between 2009-10 and 2015-16

Table 20 summarises changes in expenditure on owning and operating vehicles between 2009-10 and 2015-16 across the housing tenure categories. Households who are home owners with a mortgage recorded the largest dollar increase in expenditure on owning and operating vehicles (\$22 per week). Households who rent from a state or territory housing authority recorded a larger percentage increase,³⁷ but continued to have much lower weekly expenditure on owning and operating vehicles than any other tenure category.

Most of the tenure categories experienced a decline in the proportion of total expenditure attributable to owning and operating vehicles between 2009-10 and 2015-16, with the decline most pronounced for private renter households (1.5 percentage points). However, households who rent from a state or territory housing authority recorded a 0.5 percentage point increase in the proportion of total expenditure attributable to owning and operating vehicles, reflecting a higher spend on vehicle purchase costs, motor vehicle fuel and vehicle registration and insurance in 2015-16.

Table 20 Changes in average weekly household expenditure on owning and operating vehicles by tenure type, 2009-10 to 2015-16

	Tenure type						
	Owner with a mortgage	Owner without a mortgage	All renters	Do not rent from state or territory housing authority	Rent from state or territory housing authority	Other ^a	All households
Average weekly household expenditure on owning and operating vehicles, 2009-10 (\$)	212.69	138.68	139.11	151.54	59.50	120.18	165.06
Average weekly household expenditure on owning and operating vehicles, 2015-16 (\$)	234.83	148.50	140.02	148.38	*70.66	132.52	177.6
Dollar change, 2009-10 to 2015-16 (\$)	22.14	9.82	0.91	-3.16	11.16	12.34	12.54
Percentage change, 2009-10 to 2015-16 (per cent)	10.4	7.1	0.7	-2.1	18.8	10.3	7.6
Proportion of total household expenditure on goods and services due to owning and operating vehicles, 2009-10 (per cent)	13.4	13.9	12.7	12.9	10.5	14.0	13.4
Proportion of total household expenditure on goods and services due to owning and operating vehicles, 2015-16 (per cent)	13.2	13.2	11.4	11.4	11.0	13.4	12.7
Percentage point change, 2009-10 to 2015-16 (per cent)	-0.1	-0.7	-1.3	-1.5	0.5	-0.6	-0.6

Note: Expenditure data is expressed in nominal terms. BITRE has specifically excluded the value of employer-provided vehicles and parking from the household expenditure figures (see Box 1 for further information).

^a 'Other' includes rent free and excludes households which are an owner (with or without a mortgage) or a renter (ABS 2017a).

* Estimate has a relative standard error of between 25 and 50 per cent and should be used with caution.

Source: BITRE analysis of ABS 2015-16 and 2009-10 *Household Expenditure Survey* customised tabulations and 2009-10 CURF data.

Summary of demographic differences

2015-16 results

Average weekly expenditure on owning and operating vehicles varies widely according to household demographic characteristics, with lifecycle group, household size, household income, main income source and housing tenure all having a significant influence on household spending on owning and operating vehicles. The demographic groups with a particularly high average weekly spend in 2015-16 are:

- Couples with dependent and non-dependent children (\$297)
- Couples with non-dependent children only (\$294)
- The twenty per cent of highest earning households in terms of equivalised disposable income (\$291)
- Households containing five or more persons (\$270)
- Couples with dependent children: youngest child aged 15 to 24 (\$262).

³⁷ Due to a high Relative Standard Error, this change was not statistically significant at the 95 per cent confidence level.

Thus, it is couples with children of driving age—along with the highest earning households and the largest households—who stand out with the highest weekly expenditure on owning and operating vehicles. Together, the three lifecycle groups that contain couples with children of driving age comprise 1.1 million households (12.2 per cent of all households), with the higher spend likely to reflect ownership of more vehicles than the other types of households.

Some of these demographic groups have relatively high average incomes and total expenditures. Expressing expenditure on owning and operating vehicles as a proportion of total expenditure on goods and services provides a guide to the types of households where this expenditure has the greatest impact on the household budget. Couples with only non-dependent children spent a particularly high proportion of their total expenditure on owning and operating vehicles (16.2 per cent), compared to the 12.7 per cent share for all households. None of the other demographic groups analysed spent over 14 per cent of their total expenditure on owning and operating vehicles.

Lone persons aged 65 and over had particularly low weekly expenditure on owning and operating vehicles (\$53), as did those reliant on the age pension as their main income source (\$70), households who rented from a state or territory housing authority (\$71)³⁸, lone person households aged under 35 (\$77) and single person households (\$77).

Average weekly expenditure on motor vehicle fuel was highest for households containing five or more persons (\$80), couples with dependent and non-dependent children (\$78) and couples with non-dependent children only (\$77). Motor vehicle fuel, lubricants and additives accounted for 3.3 per cent of the total expenditure of Australian households, but represented a higher share of total expenditure for couples with non-dependent children only (4.3 per cent) and households in the lowest equivalised disposable household income quintile (4.1 per cent).

Average weekly expenditure on motor vehicle fuel was particularly low for lone persons aged 65 and over (\$14), one person households (\$21), those reliant on the age pension (\$22), lone persons aged under 35 (\$23) and those renting from a state or territory housing authority (\$24). Motor vehicle fuel represented a particularly low share of total expenditure for the twenty per cent of households with the highest equivalised disposable incomes (2.4 per cent).

Changes between 2009-10 and 2015-16

Between 2009-10 and 2015-16, average weekly household expenditure on owning and operating vehicles increased by \$12.54 (or 7.6 per cent). Some demographic groups experienced a much larger expenditure increase, including:

- Three person households: \$43 weekly increase (23 per cent)
- The twenty per cent of households with the highest equivalised income: \$38 weekly increase (15 per cent); and
- Households whose main income source was their own unincorporated business: \$32 weekly increase (19 per cent).

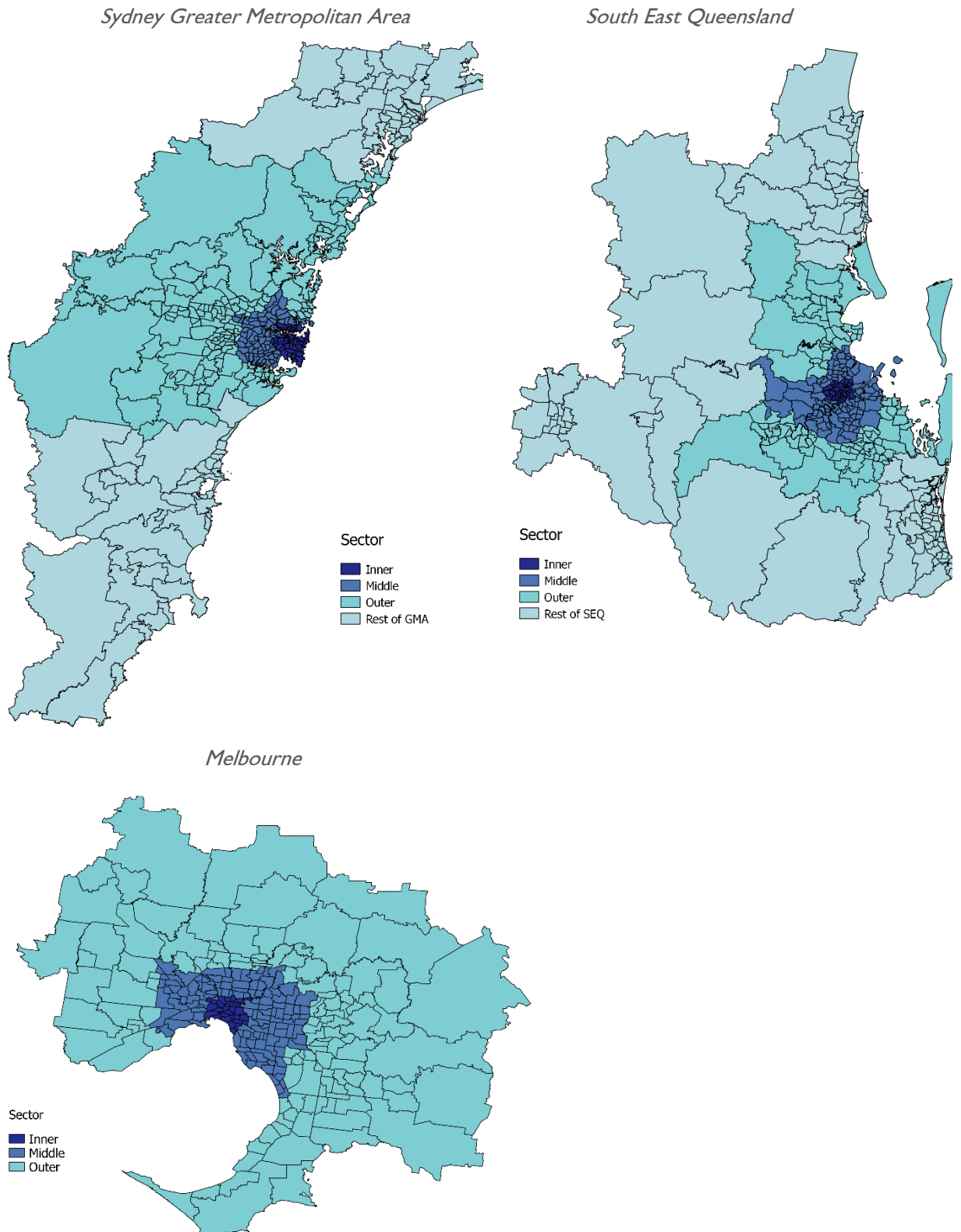
Other demographic groups recorded a decline in average weekly expenditure on owning and operating vehicles over the period, with the decline being most pronounced for households whose main income source was other government payments (-\$12 or -12 per cent).

Nationally, the proportion of total goods and services expenditure that was attributable to owning and operating vehicles declined by 0.6 percentage points between 2009-10 and 2015-16. The decline was fairly widespread, and was most pronounced for households in the second equivalised disposable income quintile (-1.9 percentage points) and households whose main income source was other government payments (-3.1 percentage points). However, some demographic groups went against this trend and recorded an increase in the proportion spent on owning and operating vehicles, most notably households whose main income source was their own unincorporated business (+1.3 percentage points).

³⁸ This estimate has a relative standard error of between 25 and 50 per cent and should be used with caution.

Appendix I Sectoral boundaries

Map I Sectoral classification of Sydney Greater Metropolitan Area, Melbourne and South East Queensland



Notes: Based on sectoral classification used in BITRE's series of cities reports (BITRE 2011, 2012, 2013a), updated to reflect groupings of SA2s from the 2011 ASGS. For Sydney and Melbourne, the GCCSA has been subdivided into inner, middle and outer sectors. For Brisbane, the SA2s within the hinterland LGAs of Lockyer Valley, Scenic Rim and Somerset (which belong to the GCCSA) have been classified to the 'Rest of SEQ' region, rather than to Brisbane's outer sector.

Source: BITRE analysis.

Abbreviations and acronyms

ABS	Australian Bureau of Statistics
ACT	Australian Capital Territory
ASGC	Australian Standard Geographic Classification
ASGS	Australian Statistical Geography Standard
BITRE	Bureau of Infrastructure, Transport and Regional Economics
Cat. No.	Catalogue number
CPI	Consumer Price Index
CURF	Confidentialised Unit Record File
e.g.	for example
FBT	Fringe Benefits Tax
GCCSA	Greater Capital City Statistical Area
GMA	Greater Metropolitan Area (of Sydney)
HES	Household Expenditure Survey
i.e.	that is
km	kilometres
LGA	Local Government Area
l/100km	litres per 100 kilometres
LPG	Liquid Petroleum Gas
nec	not elsewhere classified
nfd	not further defined
np	not published
NSW	New South Wales
NT	Northern Territory
PV	Passenger Vehicle
QLD	Queensland
RSE	Relative Standard Error
SA	South Australia
SA2	Statistical Area Level 2
SA4	Statistical Area Level 4
SEQ	South East Queensland
SLA	Statistical Local Area
SMVU	Survey of Motor Vehicle Use
SUV	Sports Utility Vehicle
TAS	Tasmania
VIC	Victoria
VKT	Vehicle Kilometres Travelled
WA	Western Australia

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