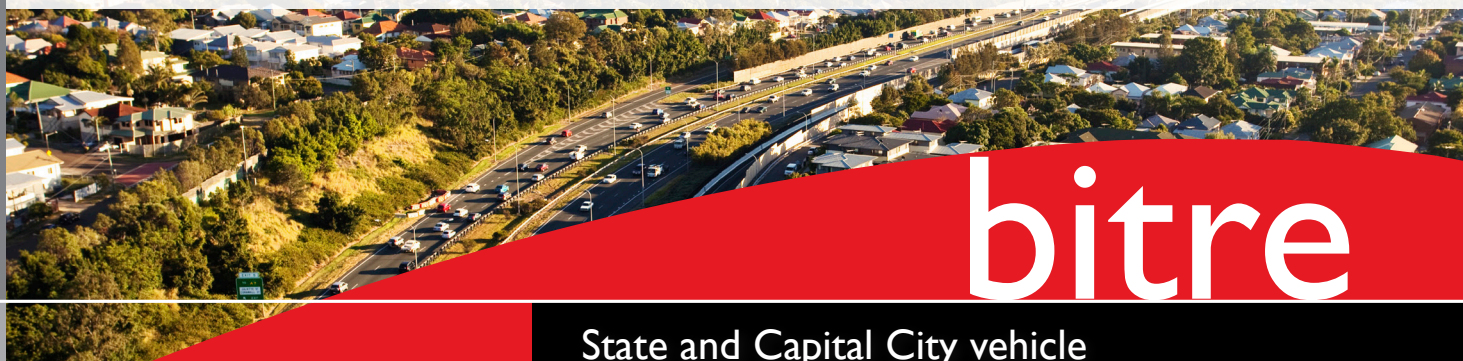




Australian Government

Department of Infrastructure and Transport

Bureau of Infrastructure, Transport and Regional Economics



State and Capital City vehicle kilometres travelled, 1990–2012

At a glance

This Information Sheet presents estimates of the number of vehicle kilometres travelled (VKT) in Australia between 1990 and 2012. VKT estimates are available for each state and capital city, and for different vehicle and fuel types.

Fuel intensity estimates have also been developed for the same time period.

1. Introduction

Research Report 124 (BITRE 2011) presents a methodology for estimating the number of vehicle kilometres travelled (VKT) in Australia in each state and territory by vehicle type by fuel type. The vehicle types are passenger cars (cars), light commercial vehicles (LCV), motorcycles, rigid trucks, articulated trucks and buses. Fuel type is broken down into three classes, petrol, diesel and LPG.

The current analysis uses this methodology to update the values presented in Research Report 124 to reflect new data that has been made available since the publication of that report. Updated estimates are presented for VKT and fuel intensity by vehicle type by fuel type for each state, territory and capital city for financial years between 1990 and 2012 (i.e. financial year 1989/1990 to financial year 2011/2012).

While examples in this information sheet focus on Australian aggregate and NSW VKT values, tables containing the complete set of information on VKT and fuel intensity by state, vehicle type and fuel type are available on the BITRE website at www.bitre.gov.au.

2. Methodology

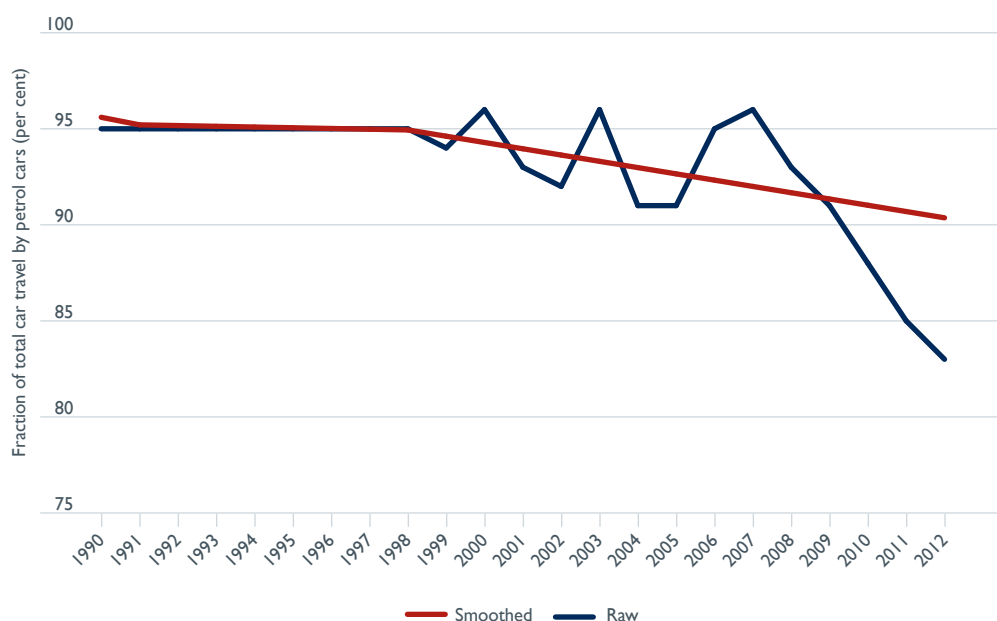
The methodology from Research Report 124 (BITRE 2011) has been used to calculate new VKT estimates, incorporating new data on actual fuel sales from the Department of Resources, Energy and Tourism (RET) and the 2010 issue of the Australian Bureau of Statistics' Survey of Motor Vehicle Use (SMVU).

Briefly, the methodology involves:

1. Calculating the fraction of total VKT used by each vehicle type and fuel type for each state and territory using data from SMVU 2010 by vehicle type and fuel type. The VKT fractions for previous years were taken from the analysis of previous SMVUs included in BITRE 2011. Note that the actual VKT values from the SMVU are not used, only their relative proportions.
2. Manually smoothing the VKT fraction estimates to fit the apparent trend in the data. As an example of this process, Figure 2.1 shows the raw and smoothed values of the VKT fraction for petrol cars in NSW. This smoothing was conducted independently of that used to develop the smoothed estimates presented in BITRE 2011.
3. Calculating the fuel intensity by vehicle type by fuel type for each state (see section 3 for more details)

4. Estimating total road transport fuel use using these fuel intensity and VKT estimates and comparing it with total fuel sales to determine a fraction of fuel used by road transport per state
5. Smoothing and projecting this transport fuel fraction to estimate VKT using fuel sales reported by RET
6. Using this fuel sales data together with estimates of fuel intensity and vehicle fuel use fractions to estimate VKT (see section 4 for more details)

Figure 2.1 VKT fraction of petrol cars in NSW, 1990 to 2012

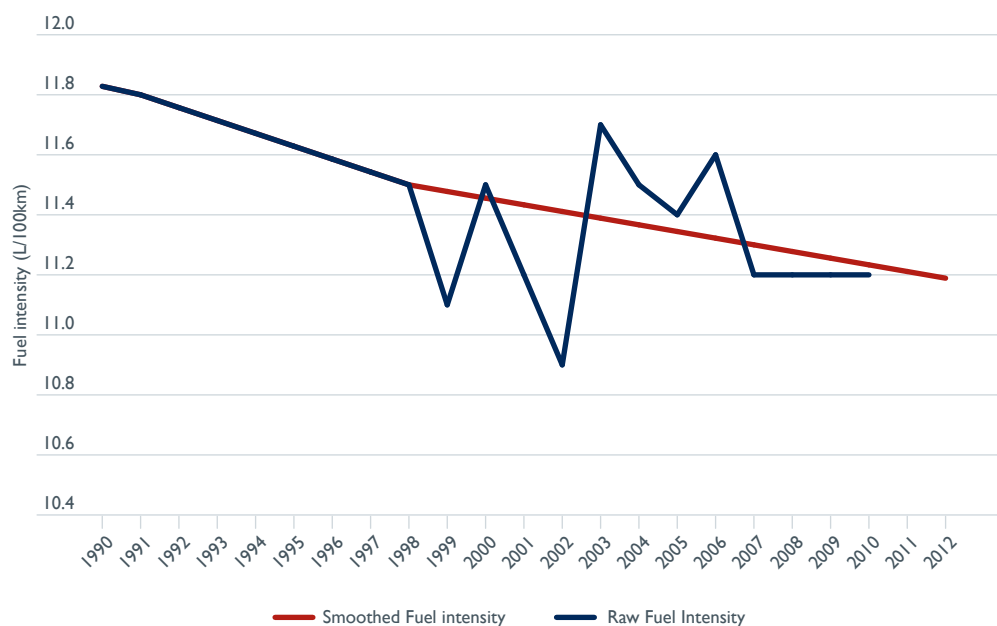


For further detail on the methodology used to calculate these estimates, see BITRE 2011.

3. Fuel Intensity estimates

An important element of VKT estimation is determining the average fuel intensity of vehicles in the Australian fleet. Fuel intensity is the average amount of fuel consumed by a vehicle per 100 kilometres travelled. Incorporating additional information from the 2010 SMVU, the estimates for fuel intensities for all vehicle types have been updated from the values presented in BITRE 2011 using the method presented in that report. As with the VKT fractions, the fuel intensity data was smoothed using a manual process to reduce the noise inherent to the survey. Figure 3.1 shows the raw and smoothed fuel intensity time series for petrol cars in NSW between 1990 and 2012. We can see that average fuel intensity for petrol cars has been decreasing across the period, in line with expectations about the changing nature of the fleet and improvements to vehicle technology.

Figure 3.1 Raw and smoothed fuel intensity for petrol cars in NSW, 1990 to 2012



Fuel intensity values for Australia as a whole were calculated as the weighted average of state fuel intensities per vehicle type per fuel type. Figure 3.2 shows that the Australian average fuel intensity has decreased for cars of all fuel types since 1990, with a strong decline in fuel intensity between 2001 and 2012 being apparent for LPG cars. Figure 3.3 shows the smoothed fuel intensity for cars of all fuel types for NSW only, which shows that fuel intensity values and their trends differ in different parts of Australia, highlighting the importance of calculating VKT on a per-state basis.

Figure 3.2 Fuel intensity for cars, Australia, 1990 to 2012

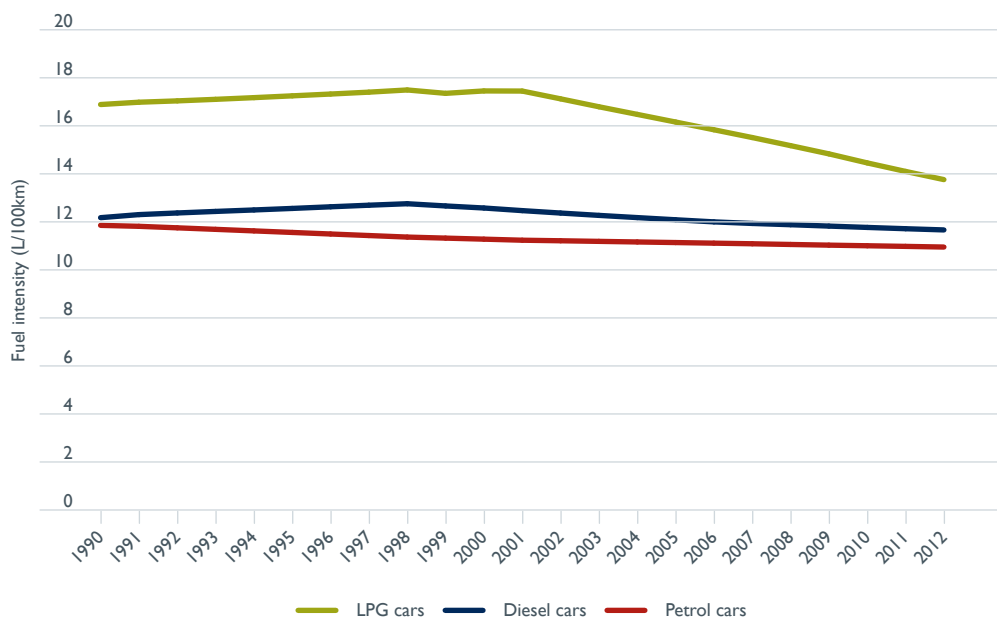
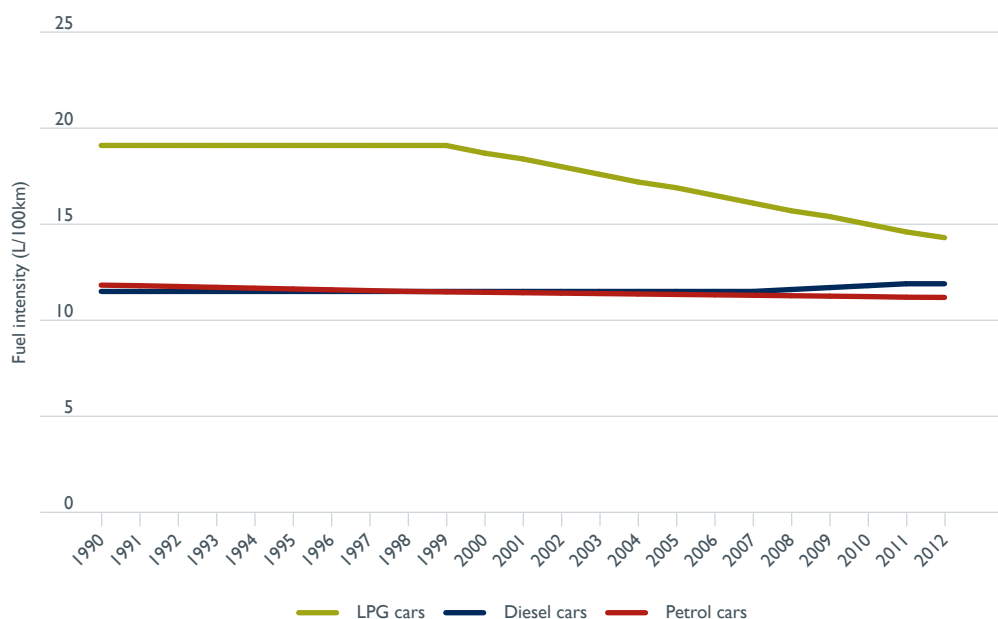


Figure 3.3 Fuel intensity for cars, NSW, 1990 to 2012



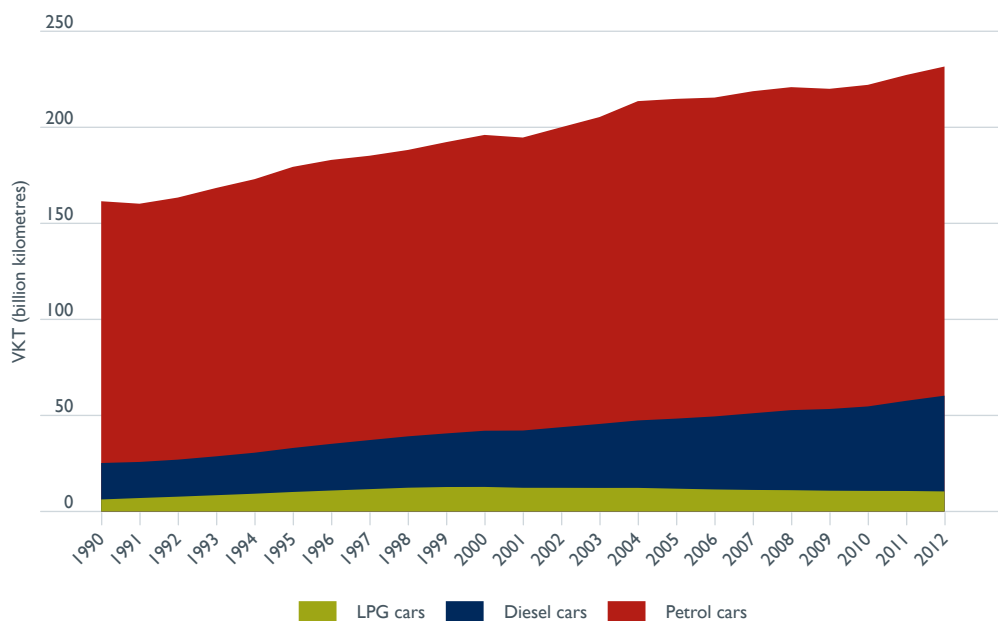
The fuel intensity values for each state, vehicle type and fuel type are available online at www.bitre.gov.au.

4. Annual VKT estimates

Having updated the fuel intensity measures, VKT estimates were derived based on fuel sales data using the methodology outlined above.

Figure 4.1 shows the VKT for all of Australia, split by fuel type. The stacked graph shows the trends in VKT between 1990 and 2012. A general upward trend in VKT can be observed, with a few periods of slower increase or even decline, particularly in 1990–1991, 2001–2001 and 2008–2009. The most recent of these correspond to the global financial crisis. The slowing effect of this major global event appears to be lessening, with total VKT increasing from 2010. Total VKT for all fuel types has increased from 161.51 billion kilometres in 1990 to 230.37 billion kilometres in 2012.

Figure 4.1 VKT by fuel type, Australia, 1990 to 2012



The distribution of total VKT among different vehicle types for Australia as a whole is shown in Figure 4.2. Cars are clearly the dominant vehicle type across Australia, contributing more to total VKT than all other vehicle types combined. To make it easier to observe trends in other vehicle types, Figure 4.3 presents the contribution of non-car vehicles to Australia's total VKT. We can observe that LCV-based VKT has continued increasing, while car-based VKT growth has slowed since 2004. VKT by other vehicle types has increased at a slower rate, increasing the gap between car or LCV based travel and that of other vehicle types.

Figure 4.2 VKT by vehicle type, Australia, 1990 to 2012

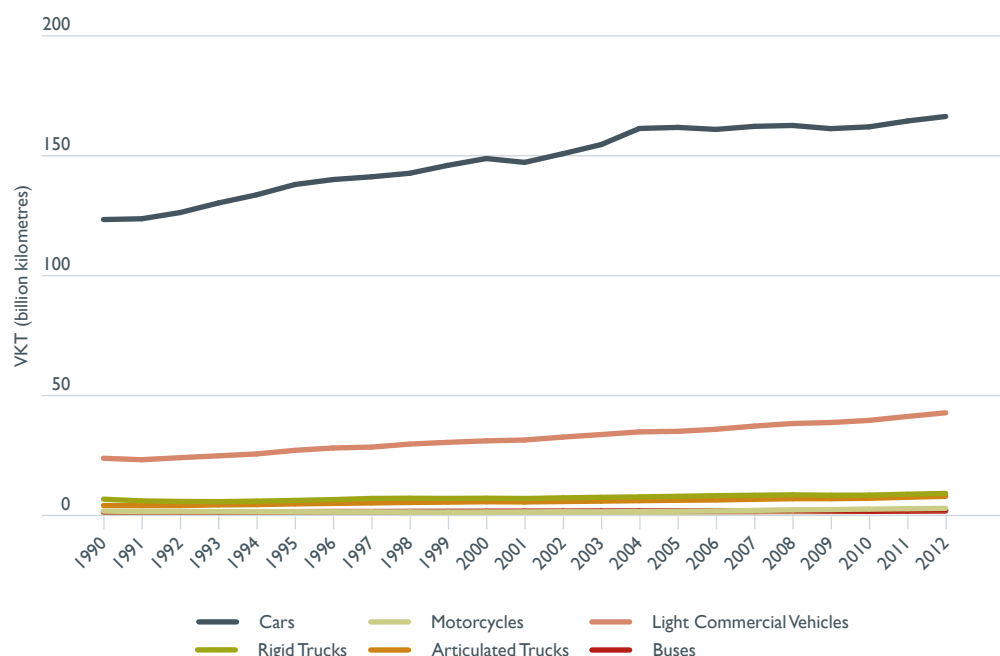
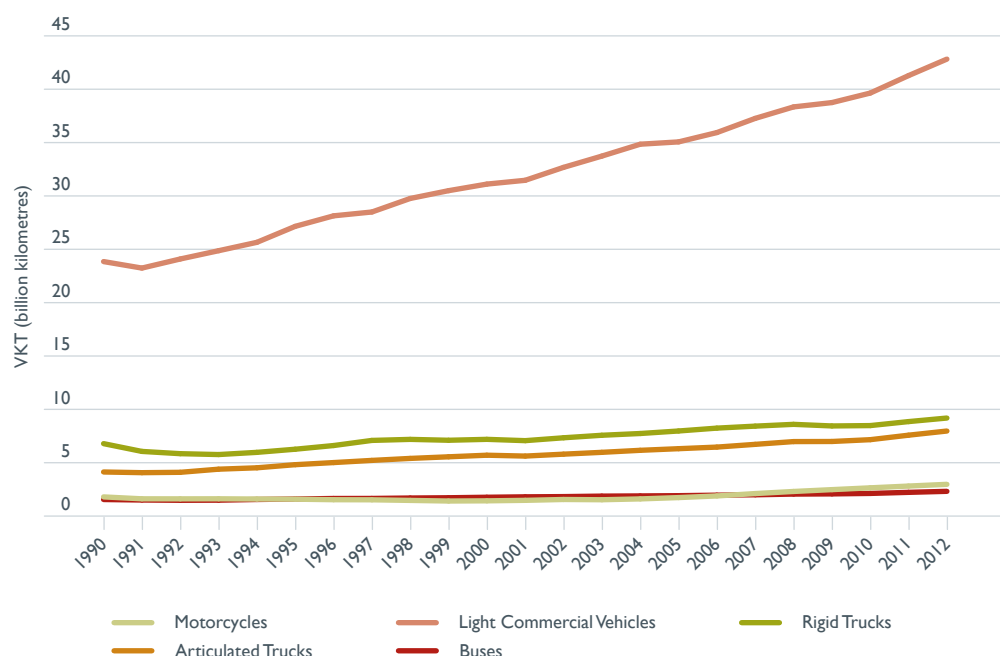


Figure 4.3 VKT by vehicle type (excluding cars), Australia, 1990 to 2012



Figures 4.4 and 4.5 present the total VKT for NSW by vehicle type in a similar way to the previous two figures. These figures show generally similar trends to those exhibited in Australia as a whole, although growth in NSW has generally been slower in percentage terms than the Australian average.

Figure 4.4 VKT by vehicle type, NSW, 1990 to 2012

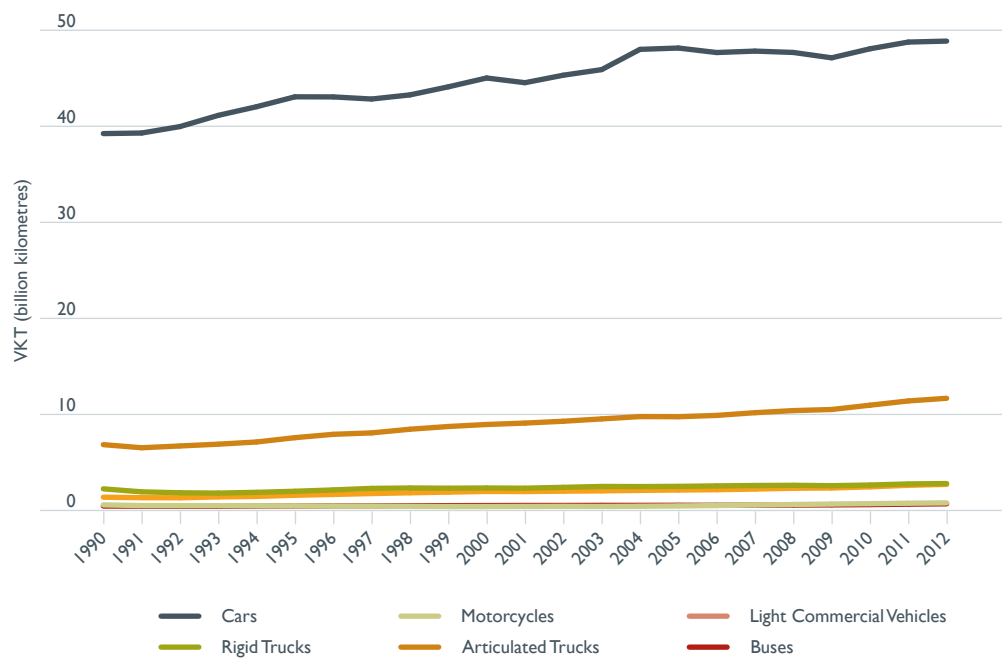


Figure 4.5 VKT by vehicle type (excluding cars), NSW, 1990 to 2012

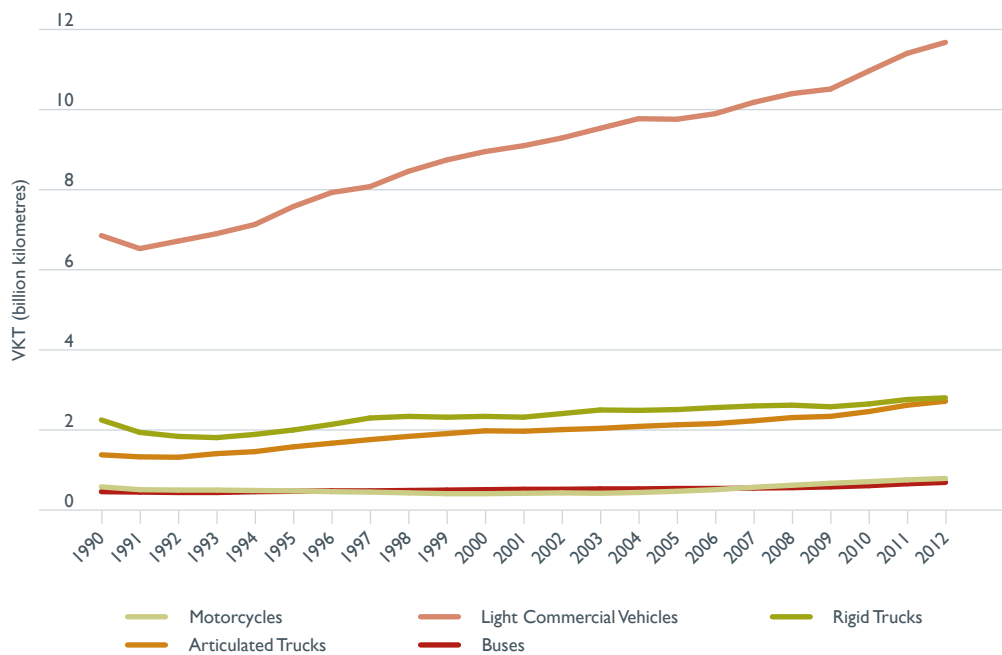
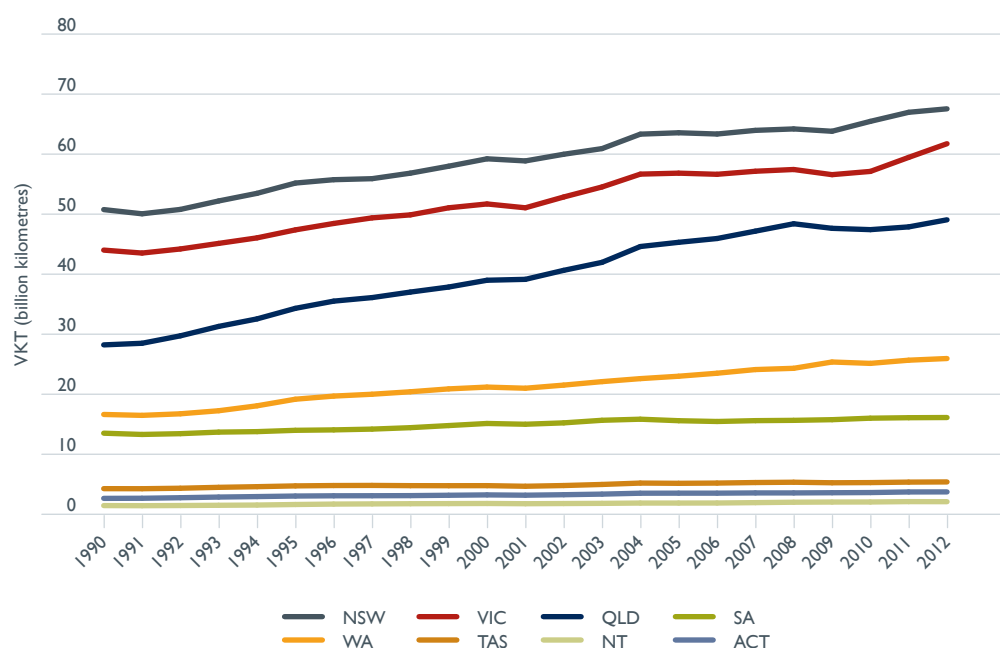


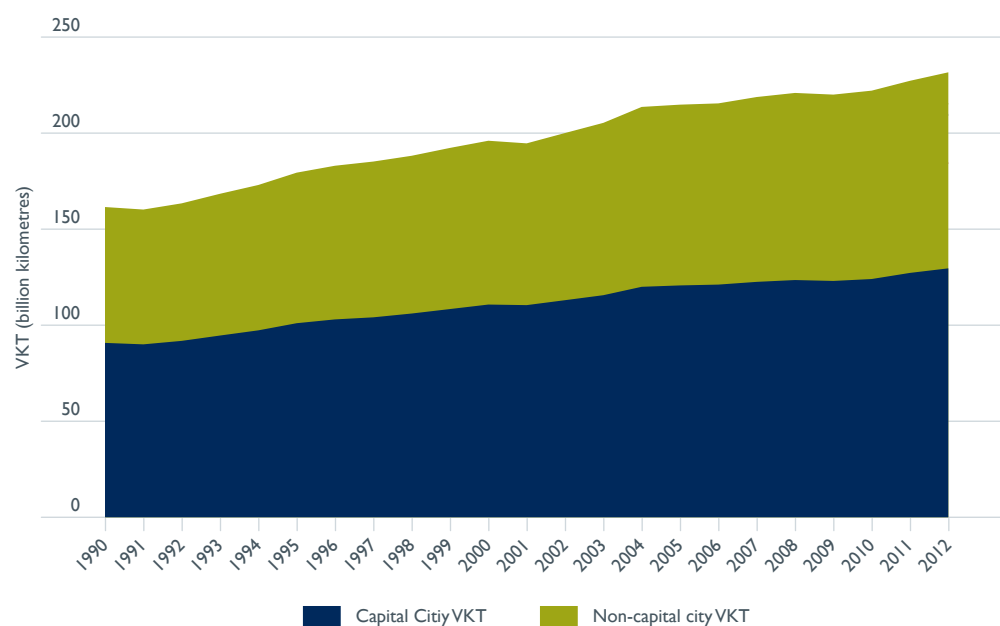
Figure 4.6 shows the VKT for all vehicle types for each state and territory from 1990 to 2012. The three largest states, NSW, Victoria and Queensland have exhibited similar behaviour across the period, with changes in the growth rate occurring at similar times. The impact of the global financial crisis can be seen here to differ in the three biggest states, with the behaviour from 2008 to 2012 differing markedly in each of them.

Figure 4.6 Total VKT by state, 1990 to 2012



The proportion of VKT in capital cities as a proportion of total VKT is presented in figure 4.7. Capital city VKT trends are visibly smoother than total VKT, particularly during downturns such as the global financial crisis. Overall, capital city VKT has remained a relatively constant proportion of Australia's total VKT.

Figure 4.7 Capital city VKT as a proportion of total VKT, 1990 to 2012



Tables 4.1 and 4.2 show the total VKT per state and per capital city from 1965–2012 respectively. Pre-1990 values are taken directly from Research Report 124 (BITRE 2011).

Table 4.1 Total VKT (billion kilometres) by state/territory, 1965 to 2012

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Australia
1965	19.29	15.39	7.58	5.68	4.54	1.70	0.20	0.45	54.82
1966	20.36	16.19	8.01	5.95	4.87	1.80	0.22	0.51	57.91
1967	21.52	17.04	8.46	6.18	5.30	1.90	0.24	0.57	61.21
1968	22.72	17.91	8.91	6.41	5.75	1.99	0.29	0.64	64.62
1969	24.53	19.22	9.61	6.79	6.39	2.11	0.36	0.73	69.74
1970	26.30	20.50	10.26	7.17	7.02	2.23	0.44	0.83	74.74
1971	27.72	21.45	10.75	7.42	7.49	2.30	0.51	0.92	78.54
1972	29.28	22.78	11.51	7.76	8.03	2.42	0.57	1.03	83.38
1973	30.20	23.65	12.15	8.00	8.42	2.50	0.61	1.13	86.67
1974	31.96	25.24	13.22	8.60	9.09	2.65	0.68	1.26	92.71
1975	33.15	26.38	14.10	9.08	9.65	2.75	0.67	1.37	97.15
1976	33.98	27.48	14.94	9.49	10.17	2.83	0.75	1.47	101.10
1977	35.60	28.97	15.83	9.98	10.91	2.96	0.84	1.57	106.65
1978	36.79	30.05	16.70	10.29	11.49	3.07	0.89	1.64	110.92
1979	38.15	30.76	17.55	10.40	11.84	3.15	0.94	1.70	114.50
1980	38.86	30.84	18.18	10.28	11.97	3.16	0.99	1.72	116.00
1981	39.94	31.30	19.12	10.27	12.16	3.19	1.04	1.76	118.77
1982	41.76	32.99	20.60	10.68	12.79	3.32	1.12	1.86	125.11
1983	41.21	33.15	20.85	10.69	12.73	3.33	1.12	1.89	124.98
1984	43.26	34.73	21.91	11.28	13.45	3.52	1.21	2.00	131.36
1985	45.14	36.22	22.79	11.80	13.94	3.69	1.28	2.11	136.99
1986	45.93	37.46	23.59	12.15	14.35	3.79	1.34	2.21	140.81
1987	46.47	38.63	24.20	12.36	14.64	3.82	1.37	2.28	143.75
1988	48.26	40.91	25.65	12.87	15.43	3.97	1.40	2.41	150.90
1989	49.85	42.99	27.29	13.32	16.16	4.12	1.42	2.55	157.71
1990	50.76	44.01	28.22	13.51	16.63	4.27	1.45	2.65	161.51
1991	50.06	43.52	28.49	13.30	16.48	4.26	1.43	2.67	160.21
1992	50.79	44.20	29.73	13.43	16.74	4.34	1.46	2.76	163.44
1993	52.20	45.13	31.30	13.69	17.25	4.49	1.50	2.87	168.43
1994	53.47	46.05	32.55	13.77	18.07	4.60	1.54	2.95	173.00
1995	55.18	47.38	34.31	13.99	19.17	4.73	1.63	3.04	179.41
1996	55.74	48.45	35.51	14.06	19.69	4.79	1.70	3.08	183.02
1997	55.91	49.38	36.10	14.19	20.00	4.81	1.73	3.09	185.20
1998	56.83	49.88	37.02	14.43	20.41	4.77	1.76	3.11	188.21
1999	57.99	51.06	37.86	14.78	20.89	4.76	1.78	3.17	192.29
2000	59.22	51.70	38.99	15.13	21.19	4.77	1.80	3.23	196.04
2001	58.87	51.06	39.14	15.00	21.00	4.67	1.76	3.18	194.68
2002	59.98	52.86	40.64	15.23	21.52	4.79	1.79	3.26	200.05
2003	60.92	54.53	41.97	15.66	22.10	4.97	1.82	3.36	205.34
2004	63.33	56.67	44.61	15.84	22.60	5.20	1.87	3.51	213.63
2005	63.56	56.83	45.31	15.59	23.00	5.16	1.87	3.52	214.82
2006	63.35	56.64	45.94	15.46	23.50	5.20	1.88	3.52	215.48
2007	63.96	57.15	47.17	15.60	24.11	5.29	1.94	3.56	218.78
2008	64.20	57.44	48.40	15.65	24.32	5.34	2.01	3.56	220.92
2009	63.81	56.58	47.64	15.76	25.37	5.25	2.04	3.59	220.04
2010	65.46	57.12	47.42	16.01	25.14	5.28	2.05	3.62	222.11
2011	66.97	59.46	47.88	16.09	25.67	5.36	2.11	3.72	227.24
2012	67.55	61.74	49.06	16.12	25.95	5.39	2.10	3.73	231.65

Table 4.2 Total VKT (billion kilometres) by capital city, 1965 to 2012

	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra	Total
1965	9.80	8.52	2.84	3.36	2.59	0.51	0.07	0.44	28.13
1966	10.45	9.02	3.04	3.55	2.81	0.54	0.08	0.49	29.99
1967	11.10	9.56	3.25	3.71	3.08	0.58	0.09	0.56	31.92
1968	11.82	10.11	3.46	3.87	3.37	0.61	0.11	0.63	33.98
1969	12.88	10.93	3.78	4.12	3.79	0.65	0.14	0.72	37.01
1970	13.94	11.76	4.11	4.38	4.21	0.69	0.17	0.82	40.08
1971	14.77	12.31	4.33	4.57	4.52	0.72	0.21	0.90	42.33
1972	15.62	13.08	4.68	4.81	4.87	0.76	0.23	1.01	45.07
1973	16.13	13.60	4.97	5.00	5.13	0.78	0.26	1.11	46.99
1974	17.08	14.52	5.42	5.43	5.58	0.84	0.29	1.25	50.41
1975	17.74	15.36	5.75	5.76	5.95	0.89	0.25	1.36	53.08
1976	18.22	16.20	6.14	6.04	6.28	0.94	0.31	1.46	55.59
1977	19.07	17.24	6.50	6.35	6.72	1.01	0.34	1.55	58.78
1978	19.69	18.07	6.87	6.53	7.07	1.08	0.36	1.63	61.30
1979	20.38	18.63	7.23	6.57	7.28	1.12	0.38	1.69	63.26
1980	20.71	18.79	7.41	6.44	7.37	1.14	0.40	1.71	63.96
1981	21.17	19.18	7.71	6.39	7.50	1.17	0.43	1.74	65.29
1982	22.15	20.34	8.29	6.63	7.91	1.22	0.47	1.85	68.86
1983	21.96	20.41	8.44	6.66	7.94	1.23	0.47	1.88	68.98
1984	23.10	21.28	8.91	7.03	8.42	1.30	0.51	1.98	72.55
1985	24.21	22.12	9.31	7.37	8.74	1.37	0.55	2.09	75.77
1986	24.79	23.10	9.82	7.59	9.03	1.43	0.59	2.19	78.55
1987	25.26	23.94	10.12	7.74	9.24	1.44	0.61	2.26	80.61
1988	26.33	25.40	10.76	8.07	9.75	1.49	0.63	2.40	84.83
1989	27.19	26.72	11.43	8.38	10.27	1.54	0.64	2.53	88.72
1990	27.66	27.37	11.78	8.52	10.57	1.60	0.65	2.64	90.79
1991	27.29	27.11	11.88	8.41	10.44	1.59	0.65	2.66	90.03
1992	27.70	27.59	12.38	8.51	10.63	1.63	0.67	2.75	91.84
1993	28.46	28.23	12.99	8.67	11.03	1.70	0.69	2.86	94.62
1994	29.16	28.88	13.50	8.71	11.66	1.75	0.71	2.94	97.32
1995	30.12	29.81	14.23	8.85	12.45	1.79	0.76	3.03	101.04
1996	30.53	30.34	14.77	8.87	12.83	1.82	0.80	3.08	103.02
1997	30.67	30.69	15.05	8.94	13.03	1.82	0.82	3.09	104.10
1998	31.19	31.31	15.51	9.08	13.25	1.79	0.84	3.11	106.08
1999	31.89	32.03	15.83	9.30	13.55	1.78	0.85	3.17	108.41
2000	32.60	32.70	16.30	9.52	13.75	1.79	0.86	3.23	110.75
2001	32.44	32.80	16.37	9.45	13.62	1.75	0.84	3.18	110.45
2002	33.07	33.53	16.99	9.56	13.97	1.79	0.85	3.25	113.02
2003	33.60	34.21	17.54	9.83	14.37	1.85	0.87	3.36	115.62
2004	35.00	35.35	18.65	9.91	14.73	1.94	0.90	3.50	119.99
2005	35.14	35.65	18.88	9.72	14.99	1.92	0.89	3.51	120.71
2006	34.92	35.85	19.09	9.65	15.27	1.93	0.91	3.51	121.14
2007	35.19	36.04	19.51	9.69	15.68	1.95	0.94	3.56	122.56
2008	35.38	36.26	19.94	9.67	15.75	1.97	0.98	3.56	123.51
2009	35.14	35.65	19.56	9.73	16.44	1.94	0.99	3.59	123.04
2010	36.00	35.93	19.42	9.87	16.26	1.94	1.00	3.62	124.04
2011	36.82	37.47	19.75	9.91	16.57	1.97	1.03	3.71	127.23
2012	37.15	38.90	20.11	9.93	16.77	1.98	1.02	3.73	129.60

Digital versions of complete data tables disaggregated by fuel and vehicle type are available on the BITRE website at www.bitre.gov.au.

Summary

Updates to the VKT estimates presented in Research Report 124 have been made, utilising newly available sources of data. Both VKT and fuel intensity estimates have been constructed for each vehicle type and fuel type, allowing for detailed analysis of changes in Australia's road-based travel. These estimates are available online at www.bitre.gov.au.

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© Commonwealth of Australia 2012
ISSN 1440-9593
ISBN 978-1-921769-99-3
November 2012/INFRA 1597

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This publication should be attributed in the following way; Bureau of Infrastructure, Transport and Regional Economics (BITRE), 2012, *State and Capital City vehicle kilometres travelled, 1990–2012*, Information Sheet 44, BITRE, Canberra

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