



SURVEY OF MOTOR VEHICLE USE

AUSTRALIA

EMBARGO: 11.30AM (CANBERRA TIME) THURS 21 OCT 2004

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INQUIRIES

- For further information about these and related statistics, contact the National Information and Referral Service on 1300 135 070.

NOTES

ABOUT THIS PUBLICATION

This publication presents estimates from the 2003 Survey of Motor Vehicle Use (SMVU). It contains statistics on passenger vehicle, motor cycle, truck and bus use for characteristics such as distance travelled, fuel consumption and area of operation.

The data were collected in four quarterly sample surveys conducted by the Australian Bureau of Statistics (ABS) over the period 1 November 2002 to 31 October 2003.

Beginning with the 2000 SMVU, the collection period changed from the 12 months ended 31 July to the 12 months ended 31 October.

COMPARISONS WITH PREVIOUS SURVEY RESULTS

This survey has been designed to provide a measure of total distance travelled and tonne-kilometres for each state/territory of registration by type of vehicle. While comparisons are made between 2003 survey results and earlier iterations of the SMVU, the survey has not been designed to provide accurate estimates of change.

Care should be taken in drawing inferences from changes in data over time as movements may be subject to high relative standard errors. Therefore the resulting estimates of movements may not be considered statistically significant. There is also potential for increased volatility in the estimates due to minor changes in estimation methodology. See Explanatory Notes paragraphs 14 and 15.

Additional information about the reliability of the level and movement estimates is given in Technical Note: Data Quality.

DATA REVISIONS

Revisions were made to 2000 data in Table 20 contained in *Survey of Motor Vehicle Use: Data Cubes, Australia, 2002* (cat. no. 9210.0.55.001). The revised data are available on the ABS web site <<http://www.abs.gov.au>>.

Peter Harper
Acting Australian Statistician

ABBREVIATIONS

'000	thousand
ABS	Australian Bureau of Statistics
ACT	Australian Capital Territory
ASGC	Australian Standard Geographical Classification
ATFCC	Australian Transport Freight Commodity Classification
Aust.	Australia
CNG	compressed natural gas
GCM	Gross combination mass
GVM	Gross vehicle mass
km	kilometre
LPG	liquefied petroleum gas
no.	number
NSW	New South Wales
NT	Northern Territory
Qld	Queensland
RSE	relative standard error
SA	South Australia
SE	standard error
Tas.	Tasmania
Vic.	Victoria
WA	Western Australia

SUMMARY OF FINDINGS

NUMBER OF VEHICLES

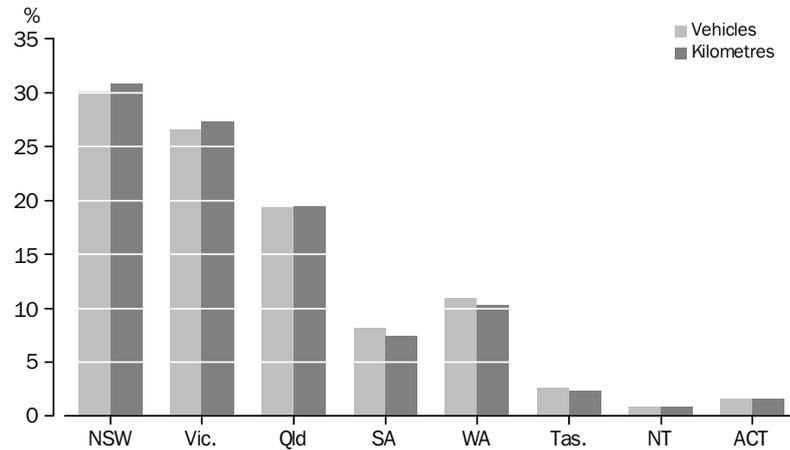
In the 12 months ended 31 October 2003 there were an estimated 13.2 million vehicles registered in Australia. This is an increase of 1.2 million vehicles (9.8%) since the 12 months ended 31 July 1999. New South Wales had the largest share of vehicles registered (30.0%), followed by Victoria (26.6%) and Queensland (19.3%). The majority of vehicles on the road were passenger vehicles (79.1%).

KILOMETRES TRAVELLED

Motor vehicles in Australia travelled an estimated 201,497 million kilometres in the 12 months ended 31 October 2003. This is an increase of 16.4% (28,444 million kilometres) since the 12 months ended 31 July 1999 and represents an average annual increase of 3.9%.

The state/territory proportion of total kilometres travelled closely relates to the number of registered vehicles in each state/territory. New South Wales had the largest share of total kilometres travelled (30.8%) and the largest number of registered vehicles.

NUMBER OF VEHICLES AND TOTAL KILOMETRES TRAVELLED, Percent by state/territory—Year ended 31 October 2003

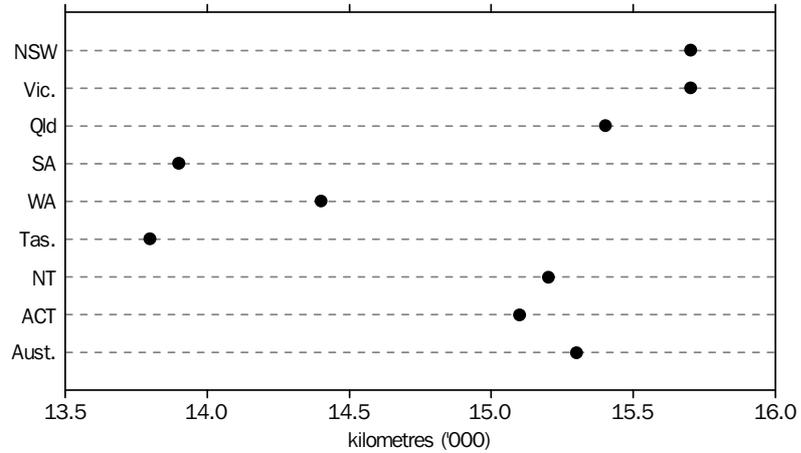


Australian registered motor vehicles each travelled an average of 15,300 kilometres in the 12 months ended 31 October 2003. New South Wales (15,700 kilometres), Victoria (15,700 kilometres) and Queensland (15,400 kilometres) were above the national average, while vehicles registered in Tasmania travelled the least number of kilometres (13,800).

SUMMARY OF FINDINGS *continued*

KILOMETRES TRAVELLED *continued*

AVERAGE KILOMETRES TRAVELLED, Motor vehicles by state/territory of registration—Year ended 31 October 2003



Passenger vehicles accounted for 75.3% of the total distance travelled. The highest proportion of total distance travelled was recorded for passenger vehicles registered in the Australian Capital Territory (85.1%) with the lowest in the Northern Territory (59.6%).

Since 1999, the total distance travelled by passenger vehicles has increased by an average of 3.4% per year.

Personal and other use accounted for 52.7% of the total kilometres travelled by passenger vehicles in Australia during 2003. Travel to and from work (24.9%) and business use (22.4%) accounted for the remaining kilometres travelled by passenger vehicles.

Freight carrying vehicles accounted for 46,280 million kilometres travelled (23.0%) in the 12 months ended 31 October 2003. Of this, light commercial vehicles accounted for 70.6% of the kilometres travelled, rigid trucks for 16.8%, and articulated trucks for 12.6%.

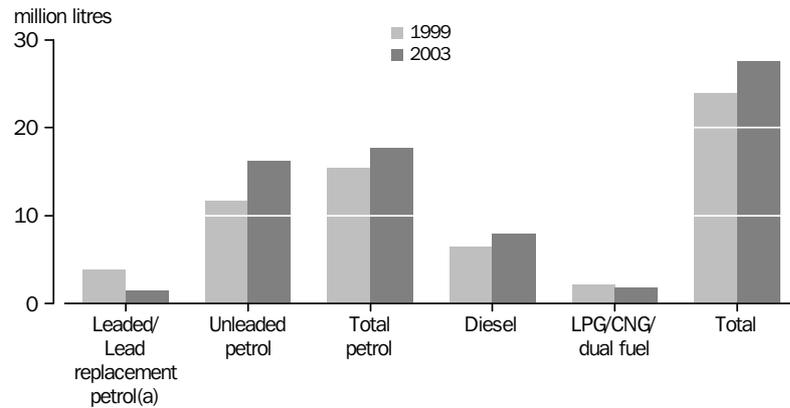
FUEL CONSUMPTION

Registered motor vehicles in Australia consumed 27,564 million litres of fuel in the 12 months ended 31 October 2003. This is an increase of 14.7% (3,526 million litres) since the 12 months ended 31 July 1999. Over the same period, the estimated number of motor vehicles in Australia increased by 9.8% and kilometres travelled increased by 16.4%.

SUMMARY OF FINDINGS *continued*

FUEL CONSUMPTION *continued*

TOTAL FUEL CONSUMPTION, Type of fuel—Years ended 31 July 1999 and 31 October 2003

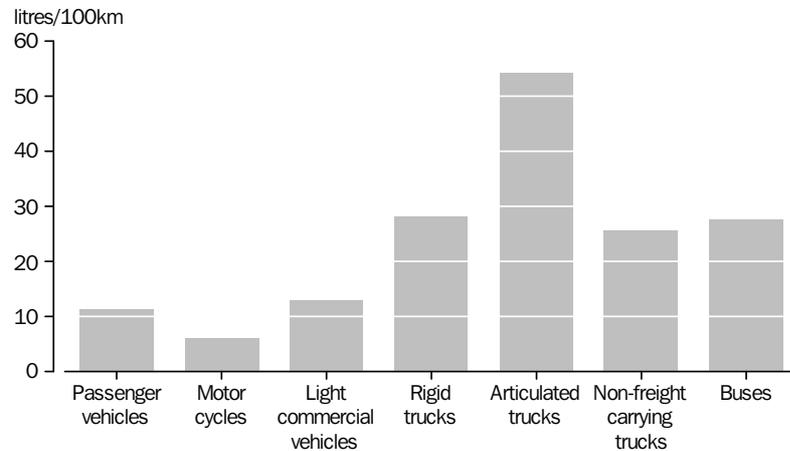


(a) Lead replacement petrol was not available in 1999.

Of the total fuel consumed by motor vehicles in the 12 months ended 31 October 2003, 64.4% of fuel was petrol and 28.9% was diesel fuel.

The average rate of fuel consumption for motor vehicles in the 12 months ended 31 October 2003 was 13.7 litres per 100 kilometres, a decrease of 0.2 litres per 100 kilometres since 1999. Articulated trucks had the highest average fuel consumption with 54.2 litres per 100 kilometres.

AVERAGE FUEL CONSUMPTION, Type of vehicle—Year ended 31 October 2003



Passenger vehicles consumed 15,327 million litres of petrol in the 12 months ended 31 October 2003, of which 92.2% (14,137 million litres) was unleaded petrol.

A total of 5,289 million litres of diesel fuel was consumed by articulated and rigid trucks. This was 66.5% of all diesel fuel used and represents 99.9% and 97.4% respectively of fuel consumption for these vehicle types.

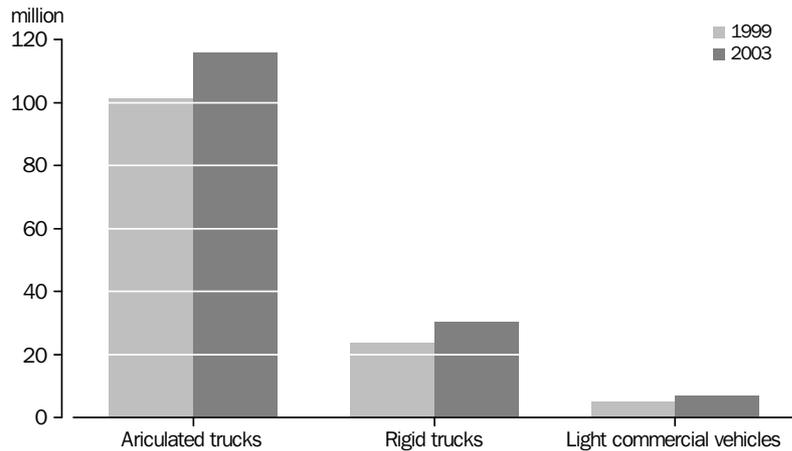
The total fuel consumption by other vehicles in the 12 months ended 31 October 2003 included 4,275 million litres of fuel by light commercial vehicles and 523 million litres of fuel by buses.

SUMMARY OF FINDINGS *continued*

TONNE-KILOMETRES

Freight vehicles in Australia travelled an estimated 152,777 million tonne-kilometres in the 12 months ended 31 October 2003. This is an increase of 22,903 million tonne-kilometres travelled since the 12 months ended 31 July 1999, an average annual increase of 4.1%. An increase in tonne-kilometres was reported in all freight vehicle types.

TOTAL TONNE-KILOMETRES TRAVELLED, Type of vehicle—Years ended 31 July 1999 and 31 October 2003



Articulated trucks accounted for 75.7% of the total freight vehicle tonne-kilometres travelled in the 12 months ended 31 October 2003. Rigid trucks accounted for 19.9% and light commercial vehicles for 4.4%. Articulated trucks each travelled an average of 2.0 million tonne-kilometres. Rigid trucks and light commercial vehicles averaged fewer tonne-kilometres travelled in the 12 months ended 31 October 2003, with 98,900 and 6,500 tonne-kilometres respectively.

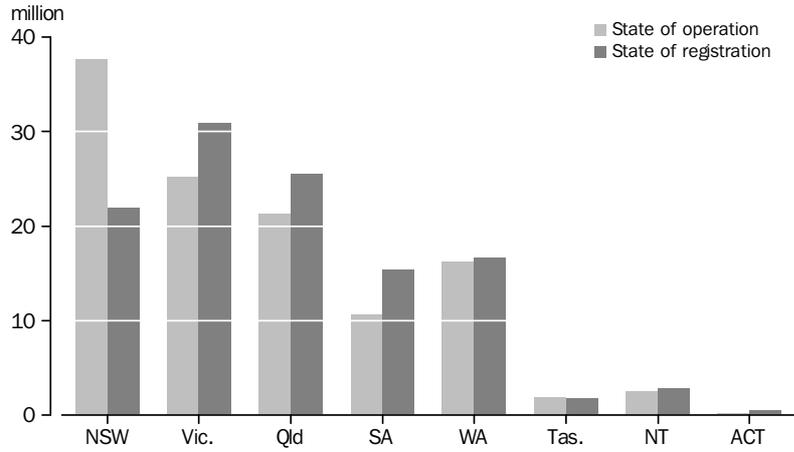
In the 12 months ended 31 October 2003 articulated trucks of a Gross Combination Mass (GCM) of up to and including 40 tonnes travelled a total of 7,963 million tonne-kilometres. Articulated trucks over 40 tonnes GCM travelled a total of 107,693 million tonne-kilometres.

The amount of tonne-kilometres travelled by articulated trucks in the 12 months ended 31 October 2003 varied when comparing the state of operation and the state of registration, with the largest difference occurring in New South Wales.

SUMMARY OF FINDINGS *continued*

TONNE-KILOMETRES
continued

TOTAL TONNE-KILOMETRES TRAVELLED BY ARTICULATED TRUCKS,
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SUMMARY OF MOTOR VEHICLE USE, Type of vehicle

	1999	2000	2001	2002	2003
TOTAL KILOMETRES TRAVELLED (<i>million</i>)					
Passenger vehicles	132 706	141 519	143 925	144 676	151 743
Motor cycles	981	1 135	1 448	1 681	1 376
Light commercial vehicles	25 374	27 829	30 728	31 349	32 671
Rigid trucks	6 486	6 536	6 627	7 080	7 768
Articulated trucks	5 347	5 578	5 321	5 425	5 841
Non-freight carrying trucks	^ 316	^ 220	^ 267	224	203
Buses	1 843	1 776	1 835	1 775	1 893
Total	173 053	184 593	190 152	192 209	201 497

	NUMBER OF VEHICLES ^(a) (<i>no.</i>)				
Passenger vehicles	9 555 244	9 711 320	9 861 807	10 194 637	10 415 165
Motor cycles	331 610	337 793	349 465	367 258	378 475
Light commercial vehicles	1 621 634	1 696 631	1 719 654	1 810 071	1 893 122
Rigid trucks	349 736	346 628	332 102	341 651	346 538
Articulated trucks	62 493	61 117	61 502	61 519	62 982
Non-freight carrying trucks	23 800	18 714	18 980	17 504	17 912
Buses	54 897	55 805	55 078	56 754	60 033
Total	11 999 414	12 228 008	12 398 588	12 849 393	13 174 227

	AVERAGE KILOMETRES TRAVELLED ^(b) ('000)				
Passenger vehicles	13.9	14.6	14.6	14.2	14.6
Motor cycles	3.0	3.4	4.1	4.6	3.6
Light commercial vehicles	15.6	16.4	17.9	17.3	17.3
Rigid trucks	18.5	18.9	20.0	20.7	22.4
Articulated trucks	85.6	91.3	86.5	88.2	92.7
Non-freight carrying trucks	^ 13.3	^ 11.8	14.1	12.8	11.4
Buses	33.6	31.8	33.3	31.3	31.5
Total	14.4	15.1	15.3	15.0	15.3

	TOTAL FUEL CONSUMPTION (<i>million litres</i>)				
Passenger vehicles	15 434	16 838	16 436	16 401	17 282
Motor cycles	^ 59	70	83	100	83
Light commercial vehicles	3 404	3 723	4 186	4 145	4 275
Rigid trucks	1 809	1 795	1 855	2 041	2 185
Articulated trucks	2 761	2 904	2 824	2 922	3 164
Non-freight carrying trucks	^ 75	^ 57	67	58	52
Buses	496	466	498	497	523
Total	24 038	25 853	25 948	26 164	27 564

	AVERAGE RATE OF FUEL CONSUMPTION ^(c) (<i>litres per 100 kilometres</i>)				
Passenger vehicles	11.6	11.9	11.4	11.3	11.4
Motor cycles	^ 6.0	6.1	5.7	6.0	6.0
Light commercial vehicles	13.4	13.4	13.6	13.2	13.1
Rigid trucks	27.9	27.5	28.0	28.8	28.1
Articulated trucks	51.6	52.1	53.1	53.9	54.2
Non-freight carrying trucks	23.7	25.9	25.0	26.0	25.7
Buses	26.9	26.2	27.1	28.0	27.6
Total	13.9	14.0	13.6	13.6	13.7

^ estimate has a relative standard error of 10% to less than 25% and should be used with caution

(a) The average number of vehicles registered for the 12 months. Includes registered vehicles that did not travel during the reference period.

(b) Calculated using average number of registered vehicles. Includes registered vehicles that did not travel during the reference period.

(c) Calculated using the total fuel consumption divided by the total kilometres travelled.

SUMMARY OF FREIGHT VEHICLE USE, Type of vehicle

	1999	2000	2001	2002	2003
TOTAL LADEN BUSINESS KILOMETRES TRAVELLED (million)					
Light commercial vehicles	12 037	13 120	13 889	14 054	15 346
Rigid trucks	4 366	4 537	4 690	4 830	5 425
Articulated trucks	3 946	4 071	3 933	4 012	4 399
Total	20 349	21 728	22 512	22 896	25 171
AVERAGE LADEN BUSINESS KILOMETRES TRAVELLED (a) ('000)					
Light commercial vehicles	12.9	14.7	15.3	14.0	14.9
Rigid trucks	15.0	16.1	16.3	16.2	17.6
Articulated trucks	70.7	72.8	69.6	70.4	75.9
Total	15.9	17.7	18.0	16.8	18.0
TOTAL TONNE-KILOMETRES TRAVELLED (million)					
Light commercial vehicles	5 111	5 695	5 649	5 624	6 710
Rigid trucks	23 740	25 168	24 881	28 337	30 411
Articulated trucks	101 024	103 515	101 892	106 977	115 656
Total	129 874	134 378	132 422	140 938	152 777
AVERAGE TONNE-KILOMETRES TRAVELLED (b) ('000)					
Light commercial vehicles	5.5	6.4	6.2	5.6	6.5
Rigid trucks	81.8	89.1	86.5	95.1	98.9
Articulated trucks	1 810.6	1 852.0	1 804.4	1 876.3	1 996.7
Total	101.4	109.3	105.8	103.5	109.2
TOTAL TONNES CARRIED (million)					
Light commercial vehicles	111	103	103	115	121
Rigid trucks	676	711	683	802	707
Articulated trucks	677	655	697	747	725
Total	1 464	1 469	1 482	1 664	1 553
AVERAGE LOAD CARRIED PER TRIP (c) (kilograms)					
Light commercial vehicles	378	377	326	353	400
Rigid trucks	5 621	5 854	5 632	6 130	5 773
Articulated trucks	22 957	22 615	23 639	23 749	24 685
Total	3 294	3 471	3 180	3 404	3 411

(a) Calculated using the total laden business kilometres travelled divided by the number of vehicles that travelled laden business kilometres.

(b) Calculated using the total tonne-kilometres travelled divided by the number of vehicles that travelled tonne-kilometres.

(c) Calculated using the total load carried divided by the total number of laden trips.

SUMMARY OF MOTOR VEHICLE USE, State/territory of registration

	1999	2000	2001	2002	2003
TOTAL KILOMETRES TRAVELLED (<i>million</i>)					
New South Wales	55 572	51 088	58 553	60 792	62 125
Victoria	45 430	54 500	50 817	51 459	55 107
Queensland	32 895	36 746	38 538	36 690	39 082
South Australia	13 081	13 153	15 085	14 855	14 963
Western Australia	17 702	19 875	18 610	19 160	20 810
Tasmania	3 775	4 376	3 979	4 433	4 639
Northern Territory	1 636	1 627	1 522	1 712	1 573
Australian Capital Territory	2 961	3 228	3 048	3 108	3 199
Australia	173 053	184 593	190 152	192 209	201 497

	NUMBER OF VEHICLES (a) (<i>no.</i>)				
New South Wales	3 733 652	3 663 210	3 745 732	3 859 620	3 954 303
Victoria	3 066 478	3 232 708	3 235 515	3 442 573	3 502 517
Queensland	2 223 955	2 340 267	2 365 530	2 459 307	2 543 696
South Australia	1 030 491	1 021 386	1 051 115	1 051 720	1 075 855
Western Australia	1 339 268	1 340 533	1 365 714	1 392 316	1 445 390
Tasmania	315 248	332 110	329 963	334 259	336 651
Northern Territory	100 466	102 846	101 159	103 155	103 743
Australian Capital Territory	189 856	194 948	203 859	206 444	212 072
Australia	11 999 414	12 228 008	12 398 588	12 849 393	13 174 227

	AVERAGE KILOMETRES TRAVELLED (b) ('000)				
New South Wales	14.9	13.9	15.6	15.8	15.7
Victoria	14.8	16.9	15.7	14.9	15.7
Queensland	14.8	15.7	16.3	14.9	15.4
South Australia	12.7	12.9	14.4	14.1	13.9
Western Australia	13.2	14.8	13.6	13.8	14.4
Tasmania	12.0	13.2	12.1	13.3	13.8
Northern Territory	16.3	15.8	15.0	16.6	15.2
Australian Capital Territory	15.6	16.6	15.0	15.1	15.1
Australia	14.4	15.1	15.3	15.0	15.3

(a) The average number of vehicles registered for the 12 months. Includes registered vehicles that did not travel during the reference period.

(b) Calculated using the total kilometres travelled divided by the average number of registered vehicles. Includes registered vehicles that did not travel during the reference period.

MOTOR VEHICLE USE, State/territory of registration—Type of vehicle

	Passenger vehicles	Motor cycles	Light commercial vehicles	Rigid trucks	Articulated trucks	Non-freight carrying trucks	Buses	Total
TOTAL KILOMETRES TRAVELLED (<i>million</i>)								
New South Wales	47 556	^ 306	9 712	2 617	1 349	^ 47	538	62 125
Victoria	42 664	^ 340	8 049	1 998	1 653	^ 59	345	55 107
Queensland	27 588	^ 473	7 471	1 648	1 386	^ 52	465	39 082
South Australia	11 543	^ 65	2 138	434	634	^ 13	136	14 963
Western Australia	15 435	^ 120	3 565	798	608	*21	262	20 810
Tasmania	3 297	^ 38	981	157	118	^ 8	40	4 639
Northern Territory	938	^ 9	427	57	^ 64	^ 3	74	1 573
Australian Capital Territory	2 723	^ 25	328	59	29	^ 2	34	3 199
Australia	151 743	1 376	32 671	7 768	5 841	203	1 893	201 497

	NUMBER OF VEHICLES (a) (<i>no.</i>)							
New South Wales	3 179 234	99 252	537 810	103 437	14 346	^ 3 618	16 608	3 954 303
Victoria	2 832 324	103 451	444 313	85 229	18 946	5 138	13 115	3 502 517
Queensland	1 911 224	81 912	447 087	72 895	13 344	3 205	14 029	2 543 696
South Australia	870 544	27 942	140 358	25 322	6 338	1 547	3 805	1 075 855
Western Australia	1 118 998	46 855	215 745	44 860	7 712	^ 3 104	8 116	1 445 390
Tasmania	251 784	8 884	63 055	9 020	1 366	921	1 621	336 651
Northern Territory	67 624	3 296	26 443	3 473	698	^ 298	1 911	103 743
Australian Capital Territory	183 433	6 884	18 312	2 302	232	^ 81	828	212 072
Australia	10 415 165	378 475	1 893 122	346 538	62 982	17 912	60 033	13 174 227

	AVERAGE KILOMETRES TRAVELLED (b) (<i>'000</i>)							
New South Wales	15.0	^ 3.1	18.1	25.3	94.0	^ 13.1	32.4	15.7
Victoria	15.1	^ 3.3	18.1	23.4	87.3	^ 11.4	26.3	15.7
Queensland	14.4	^ 5.8	16.7	22.6	103.9	^ 16.1	33.1	15.4
South Australia	13.3	^ 2.3	15.2	17.2	100.0	^ 8.2	35.7	13.9
Western Australia	13.8	^ 2.6	16.5	17.8	78.9	*6.8	32.3	14.4
Tasmania	13.1	^ 4.2	15.6	17.4	86.1	^ 8.2	24.6	13.8
Northern Territory	13.9	^ 2.8	16.2	16.4	^ 92.3	^ 10.1	38.6	15.2
Australian Capital Territory	14.8	^ 3.7	17.9	25.4	124.8	^ 19.7	40.6	15.1
Australia	14.6	3.6	17.3	22.4	92.7	11.4	31.5	15.3

^ estimate has a relative standard error of 10% to less than 25% and should be used with caution

* estimate has a relative standard error of 25% to 50% and should be used with caution

(a) The average number of vehicles registered for the 12 months. Includes registered vehicles that did not travel during the reference period.

(b) Calculated using the total kilometres travelled divided by the average number of registered vehicles. Includes registered vehicles that did not travel during the reference period.

FUEL CONSUMPTION, Type of fuel—Type of vehicle

	Passenger vehicles	Motor cycles	Light commercial vehicles	Rigid trucks	Articulated trucks	Non-freight carrying trucks	Buses	Total
TOTAL FUEL CONSUMPTION (<i>million litres</i>)								
Petrol								
Leaded	**121	*2	**28	*4	**—	**—	**—	*155
Lead replacement	^ 1 069	*7	^ 217	^ 34	**—	*1	*1	^ 1 330
Unleaded	14 137	74	2 032	*5	**—	*4	^ 22	16 273
Total	15 327	83	2 277	^ 43	**—	^ 6	^ 22	17 758
Diesel	^ 771	—	1 395	2 128	3 161	^ 45	452	7 953
LPG/CNG/dual fuel	^ 1 184	—	^ 603	*14	**2	*2	^ 48	^ 1 853
Total	17 282	83	4 275	2 185	3 164	52	523	27 564

	AVERAGE RATE OF FUEL CONSUMPTION (a) (<i>litres per 100 kilometres</i>)							
Petrol								
Leaded	13.3	^ 7.3	*15.0	^ 22.2	**60.0	^ 21.9	**10.4	13.6
Lead replacement	11.8	6.8	14.6	24.1	^ 37.5	^ 31.4	*18.0	12.3
Unleaded	11.0	5.9	12.9	^ 22.0	**45.0	^ 18.2	14.1	11.1
Total	11.0	6.0	13.1	23.7	^ 43.5	^ 20.3	14.2	11.2
Diesel	13.9	—	12.2	28.3	54.2	26.6	27.6	24.7
LPG/CNG/dual fuel	16.3	—	15.8	^ 24.6	**50.0	*24.9	^ 49.3	16.5
Total	11.4	6.0	13.1	28.1	54.2	25.7	27.6	13.7

^ estimate has a relative standard error of 10% to less than 25% and should be used with caution

* estimate has a relative standard error of 25% to 50% and should be used with caution

** estimate has a relative standard error greater than 50% and is considered too unreliable for general use

— nil or rounded to zero (including null cells)

(a) Calculated using the total fuel consumption divided by the total kilometres travelled.

AREA OF OPERATION, Type of vehicle

WITHIN STATE/TERRITORY OF REGISTRATION

	Capital city	Other urban areas	Other areas	Total intrastate	Interstate	Australia
TOTAL KILOMETRES TRAVELLED (<i>million</i>)						
Passenger vehicles	87 951	21 381	35 301	144 633	^ 7 110	151 743
Motor cycles	^ 559	^ 251	^ 521	1 331	*45	1 376
Light commercial vehicles	14 470	5 134	12 143	31 747	^ 924	32 671
Rigid trucks	3 809	972	2 587	7 369	^ 399	7 768
Articulated trucks	1 067	389	2 705	4 162	1 680	5 841
Non-freight carrying trucks	^ 101	^ 33	^ 62	196	*8	203
Buses	887	364	570	1 821	^ 72	1 893
Total	108 844	28 524	53 890	191 258	10 238	201 497

AVERAGE KILOMETRES TRAVELLED (a) ('000)

Passenger vehicles	11.7	7.4	9.9	14.5	^ 6.8	15.1
Motor cycles	^ 3.6	^ 2.7	^ 4.0	4.4	*2.1	4.6
Light commercial vehicles	15.7	10.1	13.8	17.6	^ 6.4	18.0
Rigid trucks	24.4	13.4	15.7	22.8	^ 21.7	23.9
Articulated trucks	30.0	21.5	63.0	72.5	89.1	99.4
Non-freight carrying trucks	14.7	^ 9.3	^ 7.6	11.9	**10.6	12.2
Buses	28.7	22.7	23.1	31.4	^ 19.8	32.4
Total	12.3	7.9	11.2	15.2	8.2	15.9

^ estimate has a relative standard error of 10% to less than 25% and should be used with caution

* estimate has a relative standard error of 25% to 50% and should be used with caution

** estimate has a relative standard error greater than 50% and is considered too unreliable for general use

(a) Average distance travelled for registered vehicles which were used.

AREA OF OPERATION, State/territory of registration

WITHIN STATE/TERRITORY OF REGISTRATION

	Capital city	Other urban areas	Other areas	Total intrastate	Interstate	Australia
TOTAL KILOMETRES TRAVELLED (million)						
New South Wales	33 372	^ 9 638	16 389	59 400	^ 2 725	62 125
Victoria	31 538	^ 5 533	^ 14 186	51 257	^ 3 850	55 107
Queensland	16 375	10 274	10 991	37 640	^ 1 442	39 082
South Australia	9 404	—	4 769	14 173	^ 790	14 963
Western Australia	13 168	^ 1 848	^ 5 347	20 362	*447	20 810
Tasmania	^ 1 674	^ 1 231	1 552	4 457	*182	4 639
Northern Territory	776	—	656	1 432	^ 141	1 573
Australian Capital Territory	2 537	—	—	2 537	661	3 199
Australia	108 844	28 524	53 890	191 258	10 238	201 497

AVERAGE KILOMETRES TRAVELLED (a) ('000)

New South Wales	12.6	7.9	11.4	15.4	^ 6.8	16.0
Victoria	12.6	^ 6.5	10.6	15.4	^ 8.9	16.5
Queensland	11.7	8.9	12.0	15.4	^ 7.7	15.9
South Australia	11.8	—	9.9	14.2	^ 11.5	14.9
Western Australia	12.4	^ 7.4	12.2	15.3	*17.1	15.4
Tasmania	^ 9.8	8.6	10.3	14.2	^ 13.1	14.4
Northern Territory	11.5	—	12.7	14.9	^ 13.8	15.7
Australian Capital Territory	12.8	—	—	12.8	6.2	15.8
Australia	12.3	7.9	11.2	15.2	8.2	15.9

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— nil or rounded to zero (including null cells)

(a) Average distance travelled for registered vehicles which were used.

BUSINESS AND PRIVATE USE OF VEHICLES, Type of vehicle

BUSINESS						
	<i>Laden</i>	<i>Unladen</i>	<i>All business use (a)</i>	<i>To and from work</i>	<i>Personal and other</i>	<i>Total</i>
TOTAL KILOMETRES TRAVELLED (<i>million</i>)						
Passenger vehicles	—	—	33 951	37 846	79 946	151 743
Motor cycles	—	—	^ 156	^ 362	^ 858	1 376
Light commercial vehicles	15 346	5 470	20 817	5 201	6 653	32 671
Rigid trucks	5 425	2 116	7 541	^ 137	^ 89	7 768
Articulated trucks	4 399	1 437	5 836	*5	*1	5 841
Non-freight carrying trucks	—	—	201	**2	*—	203
Buses	—	—	1 805	^ 22	^ 66	1 893
Total	25 171	9 023	70 307	43 575	87 615	201 497
AVERAGE KILOMETRES TRAVELLED (b) ('000)						
Passenger vehicles	—	—	11.1	7.2	8.9	15.1
Motor cycles	—	—	^ 3.1	^ 3.7	^ 3.5	4.6
Light commercial vehicles	14.9	8.8	18.7	8.2	7.0	18.0
Rigid trucks	17.6	9.0	24.4	^ 6.2	^ 3.6	23.9
Articulated trucks	75.9	29.5	99.8	*4.4	*1.8	99.4
Non-freight carrying trucks	—	—	12.3	*7.0	*0.9	12.2
Buses	—	—	33.6	^ 5.9	9.2	32.4
Total	18.0	9.9	15.1	7.2	8.6	15.9

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— nil or rounded to zero (including null cells)

(a) Including the business travel of non-freight carrying vehicles.

(b) Average distance travelled for registered vehicles which were used.

BUSINESS AND PRIVATE USE OF VEHICLES, State/territory of registration

BUSINESS						
	Laden	Unladen	All business use(a)	To and from work	Personal and other	Total
TOTAL KILOMETRES TRAVELLED (million)						
New South Wales	7 105	^ 2 865	21 110	^ 14 213	26 801	62 125
Victoria	7 154	^ 2 067	19 814	^ 11 709	23 583	55 107
Queensland	5 912	1 809	14 438	7 364	17 280	39 082
South Australia	1 668	^ 738	^ 5 368	^ 3 461	6 134	14 963
Western Australia	2 385	^ 1 111	6 553	^ 4 659	9 597	20 810
Tasmania	490	^ 243	^ 1 634	^ 873	2 132	4 639
Northern Territory	^ 234	^ 110	664	349	560	1 573
Australian Capital Territory	222	^ 81	^ 726	946	1 527	3 199
Australia	25 171	9 023	70 307	43 575	87 615	201 497
AVERAGE KILOMETRES TRAVELLED (b) ('000)						
New South Wales	17.9	11.0	15.2	8.0	8.4	16.0
Victoria	20.3	9.8	15.3	7.1	8.7	16.5
Queensland	18.3	9.1	16.0	6.3	9.1	15.9
South Australia	15.6	9.1	14.0	7.4	7.2	14.9
Western Australia	15.0	9.5	13.4	^ 7.1	9.0	15.4
Tasmania	15.3	^ 10.4	^ 16.4	6.6	8.1	14.4
Northern Territory	16.0	^ 10.4	15.4	6.0	7.6	15.7
Australian Capital Territory	16.0	^ 9.1	9.5	7.3	8.7	15.8
Australia	18.0	9.9	15.1	7.2	8.6	15.9

^ estimate has a relative standard error of 10% to less than 25% and should be used with caution

(a) Including the business travel of non-freight carrying vehicles.

(b) Average distance travelled for registered vehicles which were used.

	Passenger vehicles	Motor cycles	Light commercial vehicles	Rigid trucks	Articulated trucks	Non-freight carrying trucks	Buses	Total
TOTAL BUSINESS KILOMETRES TRAVELLED (<i>million</i>)								
New South Wales	^ 10 540	*31	6 130	2 493	1 346	^ 47	523	21 110
Victoria	^ 10 172	*42	^ 5 603	1 965	1 652	^ 57	323	19 814
Queensland	^ 6 192	**32	4 719	1 616	1 386	^ 52	442	14 438
South Australia	^ 2 804	**14	^ 1 352	421	634	^ 13	130	^ 5 368
Western Australia	^ 2 767	*23	^ 2 109	781	608	*21	246	6 553
Tasmania	*845	*9	^ 463	153	118	^ 7	38	^ 1 634
Northern Territory	^ 247	**1	^ 224	55	^ 64	^ 3	^ 70	664
Australian Capital Territory	^ 384	*4	217	57	29	^ 2	33	^ 726
Australia	33 951	^ 156	20 817	7 541	5 836	201	1 805	70 307

	AVERAGE BUSINESS KILOMETRES TRAVELLED (a) ('000)							
New South Wales	^ 11.2	*2.4	20.3	26.8	97.9	^ 13.8	33.4	15.2
Victoria	^ 11.5	*2.5	20.0	26.4	96.9	^ 12.7	29.1	15.3
Queensland	^ 11.6	*3.5	18.2	23.6	108.8	^ 17.2	35.4	16.0
South Australia	^ 10.9	**3.3	15.4	18.7	110.9	^ 8.5	37.4	14.0
Western Australia	^ 9.3	*4.3	16.4	20.4	86.0	*7.7	34.9	13.4
Tasmania	^ 13.8	*8.1	18.0	19.6	92.4	^ 9.2	25.7	^ 16.4
Northern Territory	^ 10.2	**3.2	17.2	18.5	^ 99.5	^ 10.7	41.4	15.4
Australian Capital Territory	^ 6.4	*5.5	16.9	27.3	126.3	^ 20.4	43.4	9.5
Australia	11.1	^ 3.1	18.7	24.4	99.8	12.3	33.6	15.1

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** estimate has a relative standard error greater than 50% and is considered too unreliable for general use

(a) Average distance travelled for registered vehicles which were used.

	<i>Light commercial vehicles</i>	<i>Rigid trucks</i>	<i>Articulated trucks</i>	<i>Total</i>
TOTAL LADEN BUSINESS KILOMETRES TRAVELLED (million)				
New South Wales	^ 4 330	1 790	984	7 105
Victoria	^ 4 433	1 445	1 276	7 154
Queensland	^ 3 682	1 150	1 080	5 912
South Australia	^ 862	294	513	1 668
Western Australia	^ 1 419	558	408	2 385
Tasmania	^ 310	107	73	490
Northern Territory	^ 154	^ 39	^ 42	^ 234
Australian Capital Territory	^ 157	42	23	222
Australia	15 346	5 425	4 399	25 171

	AVERAGE LADEN BUSINESS KILOMETRES TRAVELLED (a) ('000)			
New South Wales	14.9	19.5	72.4	17.9
Victoria	17.0	19.4	75.3	20.3
Queensland	15.2	16.8	85.0	18.3
South Australia	^ 10.9	13.2	91.9	15.6
Western Australia	^ 12.5	14.7	58.7	15.0
Tasmania	^ 13.4	14.0	57.5	15.3
Northern Territory	^ 13.9	13.0	^ 64.2	16.0
Australian Capital Territory	13.5	20.2	101.6	16.0
Australia	14.9	17.6	75.9	18.0

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(a) Calculated using the total laden business kilometres travelled divided by the number of vehicles that travelled laden business kilometres.

	<i>Light commercial vehicles</i>	<i>Rigid trucks</i>	<i>Articulated trucks</i>	<i>Total</i>
.....				
TOTAL TONNE-KILOMETRES TRAVELLED (<i>million</i>)				
New South Wales	^ 2 036	^ 9 016	21 948	33 000
Victoria	^ 1 860	^ 8 826	30 894	41 580
Queensland	^ 1 591	^ 6 831	25 575	33 997
South Australia	^ 361	^ 1 872	^ 15 442	^ 17 675
Western Australia	^ 576	^ 2 807	16 631	20 014
Tasmania	^ 149	^ 746	1 767	2 662
Northern Territory	^ 62	123	^ 2 853	^ 3 038
Australian Capital Territory	^ 75	^ 190	^ 546	811
Australia	6 710	30 411	115 656	152 777

.....				
AVERAGE TONNE-KILOMETRES TRAVELLED (a) ('000)				
New South Wales	^ 7.0	^ 98.2	1 614.7	83.2
Victoria	^ 7.1	^ 118.7	1 823.6	117.9
Queensland	^ 6.6	^ 99.9	2 012.2	105.3
South Australia	^ 4.6	^ 84.0	^ 2 766.0	^ 165.1
Western Australia	^ 5.1	^ 74.0	2 390.1	126.2
Tasmania	^ 6.4	^ 97.1	1 400.0	82.8
Northern Territory	^ 5.6	41.1	^ 4 405.3	^ 207.1
Australian Capital Territory	^ 6.4	^ 91.1	2 381.8	58.2
Australia	6.5	98.9	1 996.7	109.2

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(a) Calculated using the total tonne-kilometres travelled divided by the number of vehicles that travelled tonne-kilometres.

	<i>Light commercial vehicles</i>	<i>Rigid trucks</i>	<i>Articulated trucks</i>	<i>Total</i>
.....				
TOTAL TONNE-KILOMETRES TRAVELLED (<i>million</i>)				
New South Wales	^ 2 084	^ 10 217	37 721	50 022
Victoria	^ 1 788	^ 7 661	25 144	34 592
Queensland	^ 1 596	^ 6 518	21 358	29 471
South Australia	^ 390	^ 2 012	10 682	13 085
Western Australia	^ 574	^ 2 900	16 200	19 674
Tasmania	^ 147	^ 750	1 856	2 753
Northern Territory	^ 64	*170	^ 2 476	^ 2 709
Australian Capital Territory	^ 68	^ 184	^ 219	^ 472
Australia	6 710	30 411	115 656	152 777

.....				
AVERAGE TONNE-KILOMETRES TRAVELLED (a) ('000)				
New South Wales	^ 6.3	^ 101.6	1 509.5	109.9
Victoria	^ 6.7	^ 101.8	1 053.7	94.5
Queensland	^ 6.5	^ 90.8	1 173.3	87.5
South Australia	^ 4.4	^ 78.2	1 084.5	104.5
Western Australia	^ 5.1	^ 75.5	2 173.6	124.0
Tasmania	^ 6.4	^ 93.2	1 339.5	84.4
Northern Territory	^ 4.6	^ 49.2	^ 2 157.7	*147.5
Australian Capital Territory	^ 4.7	^ 50.5	^ 159.4	^ 24.3
Australia	6.5	98.9	1 996.7	109.2

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* estimate has a relative standard error of 25% to 50% and should be used with caution

(a) Calculated using the total tonne-kilometres travelled divided by the number of vehicles that travelled tonne-kilometres.

RIGID TRUCK USE, Axles—GVM/GCM(a)

	8 tonnes and under	Over 8 tonnes to 20 tonnes	Over 20 tonnes	Total
.....				
TOTAL TONNE-KILOMETRES TRAVELLED (million)				
2 axles	2 421	8 153	*421	10 995
3 axles	**1	**810	^ 16 355	^ 17 165
4 or more axles	—	**—	^ 2 250	^ 2 250
Total	2 422	8 964	19 025	30 411

	8 tonnes and under	Over 8 tonnes to 20 tonnes	Over 20 tonnes	Total
.....				
AVERAGE TONNE-KILOMETRES TRAVELLED (b) ('000)				
2 axles	19.6	65.5	^ 153.3	43.9
3 axles	**3.2	**119.0	^ 378.5	^ 342.0
4 or more axles	—	**14.9	^ 333.9	^ 332.4
Total	19.6	68.2	361.1	98.9

-
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 - * estimate has a relative standard error of 25% to 50% and should be used with caution
 - ** estimate has a relative standard error greater than 50% and is considered too unreliable for general use
 - nil or rounded to zero (including null cells)
 - (a) Gross Vehicle Mass/Gross Combination Mass
 - (b) Calculated using the total tonne-kilometres travelled divided by the number of vehicles that travelled tonne-kilometres.

	30 tonnes and under	Over 30 tonnes to 40 tonnes	Over 40 tonnes	Total
TOTAL TONNE-KILOMETRES TRAVELLED (<i>million</i>)				
Single axle trailer	*102	**10	—	*112
Tandem axle trailer	*257	^ 4 337	*155	^ 4 749
Triaxle trailer	**8	^ 3 110	49 995	53 113
B-Double	—	**87	35 190	35 277
Road train	—	—	18 773	18 773
Other	—	**53	^ 3 580	^ 3 633
Total	^ 366	^ 7 597	107 693	115 656

	AVERAGE TONNE-KILOMETRES TRAVELLED (b) ('000)			
Single axle trailer	*85.1	**243.6	—	*90.2
Tandem axle trailer	^ 180.4	^ 545.3	*429.5	^ 487.7
Triaxle trailer	**493.1	^ 776.6	1 682.3	1 574.3
B-Double	—	**4 164.0	4 674.6	4 673.2
Road train	—	—	4 653.1	4 653.1
Other	—	**445.2	^ 2 373.3	^ 2 231.5
Total	^ 138.9	625.8	2 495.8	1 996.7

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— nil or rounded to zero (including null cells)

(a) Gross Combination Mass.

(b) Calculated using the total tonne-kilometres travelled divided by the number of vehicles that travelled tonne-kilometres.

	<i>Light commercial vehicles</i>	<i>Rigid trucks</i>	<i>Articulated trucks</i>	<i>Total</i>
.....				
TOTAL LOAD CARRIED (<i>million tonnes</i>)				
New South Wales	^ 41	193	157	390
Victoria	^ 28	^ 183	189	401
Queensland	^ 26	^ 163	134	323
South Australia	^ 9	^ 62	52	123
Western Australia	^ 12	^ 74	^ 154	240
Tasmania	^ 3	^ 21	20	44
Northern Territory	^ 1	^ 5	*16	^ 23
Australian Capital Territory	^ 1	^ 6	^ 2	^ 10
Australia	121	707	725	1 553

			
	AVERAGE LOAD CARRIED PER TRIP (a) (<i>kilograms</i>)			
New South Wales	446	5 220	21 839	2 876
Victoria	374	5 743	21 479	3 450
Queensland	418	^ 6 004	23 936	3 391
South Australia	^ 339	7 698	24 059	^ 3 438
Western Australia	^ 342	^ 5 623	35 191	^ 4 672
Tasmania	^ 437	^ 7 202	23 891	^ 4 272
Northern Territory	^ 346	^ 3 853	^ 57 298	^ 3 922
Australian Capital Territory	^ 382	^ 5 543	22 160	^ 1 911
Australia	400	5 773	24 685	3 411

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(a) Calculated using the total load carried divided by the total number of laden trips.

FREIGHT VEHICLE USE, Commodity—Total tonnes carried (million)

	<i>Light commercial vehicles</i>	<i>Rigid trucks</i>	<i>Articulated trucks</i>	<i>Total</i>
Food and live animals	^ 10	^ 86	167	263
Beverages and tobacco	**—	*11	^ 13	^ 24
Crude materials, inedible, except fuels	*5	^ 302	220	527
Mineral fuels, lubricants and related materials	*4	^ 21	^ 73	^ 98
Animal and vegetable oils, fats and waxes	**—	*1	^ 2	^ 3
Chemicals and related products, not elsewhere specified	*2	^ 16	^ 22	^ 40
Manufactured goods	^ 17	^ 89	84	190
Machinery, transport equipment	^ 10	^ 39	^ 41	91
Miscellaneous manufactured articles	*3	^ 10	^ 9	^ 22
Tools of trade	58	^ 29	*4	91
Other commodities, not elsewhere specified	^ 8	^ 97	^ 83	188
Unspecified(a)	*4	**6	*8	^ 17
Total	121	707	725	1 553

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* estimate has a relative standard error of 25% to 50% and should be used with caution

** estimate has a relative standard error greater than 50% and is considered too unreliable for general use

— nil or rounded to zero (including null cells)

(a) Represents loads carried where type of commodity could not be obtained.

	Route service	Dedicated school bus service	Charter service	Tour service	Other	Not specified(b)	Total
TOTAL KILOMETRES TRAVELLED (<i>million</i>)							
Buses with fewer than 20 seats	*40	^ 46	^ 118	^ 62	^ 268	*4	537
Buses with 20 or more seats	588	347	173	*114	^ 71	—	1 293
Total	628	392	^ 291	^ 175	339	*4	1 830
AVERAGE KILOMETRES TRAVELLED (c) ('000)							
Buses with fewer than 20 seats	*41.9	^ 20.0	^ 45.9	^ 33.9	19.7	*32.9	27.4
Buses with 20 or more seats	47.8	20.0	16.8	^ 51.4	^ 13.4	—	38.0
Total	47.4	20.0	22.6	^ 43.5	18.0	*32.9	34.1
^	estimate has a relative standard error of 10% to less than 25% and should be used with caution		(a) Excluding distance travelled by buses used exclusively for private purposes.				
*	estimate has a relative standard error of 25% to 50% and should be used with caution		(b) Represents travel by buses where type of service could not be obtained.				
—	nil or rounded to zero (including null cells)		(c) Average distance travelled for registered vehicles which were used.				

	Route service	Dedicated school bus service	Charter service	Other(b)	Not specified(c)	Total
TOTAL KILOMETRES TRAVELLED (<i>million</i>)						
New South Wales	^ 155	^ 159	^ 78	^ 138	—	530
Victoria	^ 128	^ 73	*52	^ 74	—	326
Queensland	^ 129	^ 75	^ 95	^ 146	**2	448
South Australia	^ 78	^ 19	^ 16	^ 19	**1	132
Western Australia	^ 98	*47	^ 26	^ 81	—	252
Tasmania	^ 12	^ 12	*5	^ 10	—	39
Northern Territory	*7	*3	*15	^ 44	**2	^ 71
Australian Capital Territory	^ 21	^ 5	*3	*3	—	33
Australia	628	392	^ 291	514	*4	1 830

	AVERAGE KILOMETRES TRAVELLED(d) ('000)					
New South Wales	38.0	19.3	^ 20.0	^ 26.6	—	33.8
Victoria	^ 38.0	19.9	^ 16.8	^ 17.3	—	29.5
Queensland	60.9	21.4	^ 30.9	^ 23.8	**29.4	35.9
South Australia	62.5	^ 16.1	^ 23.0	^ 18.5	**45.1	38.0
Western Australia	60.1	^ 28.3	^ 20.7	^ 21.3	—	35.8
Tasmania	44.7	14.7	*10.8	^ 18.2	—	26.2
Northern Territory	^ 48.2	^ 15.0	^ 59.2	^ 36.9	*31.0	42.2
Australian Capital Territory	54.8	12.9	*36.4	^ 13.4	—	43.9
Australia	47.4	20.0	22.6	23.0	*32.9	34.1

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— nil or rounded to zero (including null cells)

(a) Excluding distance travelled by buses used exclusively for private purposes.

(b) Includes tour service operations.

(c) Represents travel by buses where type of service could not be obtained.

(d) Average distance travelled for registered vehicles which were used.

EXPLANATORY NOTES

INTRODUCTION

1 This publication presents estimates from the 2003 Survey of Motor Vehicle Use (SMVU). The data were collected in four quarterly sample surveys conducted by the Australian Bureau of Statistics (ABS) over the period 1 November 2002 to 31 October 2003.

SCOPE

2 The scope of the survey is all vehicles that were registered with a motor vehicle authority for road use at some stage during the 12 months ended 31 October 2003. Not included are caravans, trailers, tractors, plant and equipment, vehicles belonging to the defence services and vehicles with diplomatic or consular plates. Where they were registered as such, vintage and veteran cars were also excluded from the survey. Unregistered vehicles are out of scope.

3 The population was identified on 31 March 2002 using information obtained from the state and territory motor vehicle registration authorities. There were 12.8 million vehicles on the population frame at this time.

METHODOLOGY

4 For the 2003 SMVU, a sample of approximately 16,400 vehicles was selected to report on vehicle use over a three-month period within the reference year 1 November 2002 to 31 October 2003. Of these, 26% were passenger vehicles and motor cycles, 55% were freight vehicles, 14% were buses and 5% were non-freight carrying vehicles. The sample size was chosen to give a suitable level of precision for estimates of total distance travelled and tonne-kilometres for each state/territory of registration by type of vehicle category.

5 The survey methodology is described as pre-advice, where owners of vehicles selected in the survey received early advice about their inclusion to encourage record keeping and minimise reliance on recall. These owners were asked to complete two mail questionnaires tailored to their vehicle type. The first, at the beginning of each quarterly survey period, asked for selected vehicle characteristics and the vehicle's odometer reading. Owners were also advised that they would receive a follow up questionnaire at the end of the quarter seeking details about the use of the vehicle over the quarter and a second odometer reading. Examples of the main items requested in the second questionnaire were included with the first questionnaire.

6 When questionnaires were returned to the ABS they were checked for completeness and accuracy and, where possible, follow-up contact was made with owners to resolve reporting problems. Where contact with providers could not be made, missing items on incomplete questionnaires were filled by imputing average data from like vehicles for which data were obtained.

7 Where the selected vehicle owner had not owned the vehicle for the whole quarterly survey period, the details provided for the period of ownership were adjusted to give a three-month equivalent, except where the vehicle was deregistered, in which case only the use up to the date of deregistration was included.

8 In addition, adjustments were made in the estimation process to account for the use of new motor vehicles registered after the survey population was identified, as well as the re-registration of other vehicles during this time. For the 2003 SMVU the population frame was created on 31 March 2002. More information about these adjustments is provided in Technical Note: Data Quality.

9 Estimates from information reported in each quarterly collection period were produced and these were then aggregated into annual estimates relating to the use of vehicles during the period 1 November 2002 to 31 October 2003. The size of the sample is insufficient to produce reliable quarterly results.

EXPLANATORY NOTES *continued*

RELIABILITY OF ESTIMATES

10 When interpreting the results of a survey it is important to take into account factors that may affect the reliability of estimates. Such factors can be classified as either sampling error or non-sampling error. Information on sampling and non-sampling error is provided in Technical Note: Data Quality.

COMPARISON WITH MOTOR VEHICLE CENSUS DATA

11 Survey estimates of the numbers of vehicles, by vehicle type, are not fully comparable with ABS Motor Vehicle Census data (see *Motor Vehicle Census Australia*, (cat. no. 9309.0)). The main differences are:

- survey estimates of the numbers of vehicles relate to the average number of vehicles registered for road use during the period 1 November 2002 to 31 October 2003, not to the number of vehicles registered at a specific date, as is the case for the Motor Vehicle Census
- the characteristics of the type of vehicle identified from the survey information may differ from those recorded by the motor registries.

CONCEPT OF AVERAGES

12 Most tables in this publication include statistics presented as averages. Tables 1, 3 and 4 are summary tables and present average kilometres travelled per vehicle for all registered vehicles including those that travelled zero kilometres. The other tables present more detailed information on actual vehicle use where the denominator used in calculating the average is limited to the estimated number of vehicles that contribute to the particular cell. In some cases a vehicle may contribute to more than one cell in a table (e.g. a bus used for route service and charter purposes) but will only be counted once in the denominator for the total.

13 As the denominators used to calculate each average are different it should be noted that the averages along a table row cannot be used to derive the total column entry for that row.

HISTORICAL COMPARISONS

14 This publication includes estimates of vehicle use for 1999, 2000, 2001, 2002 and 2003. Data from the 1998 to 2002 SMVUs have been post-stratified due to problems which were identified with sample selections for these surveys. For the 2003 survey these problems were rectified and therefore post-stratification was not necessary. The post-stratified results for the 1998 to 2002 SMVUs may be different to those obtained had initial sample selections been correct. For this reason, direct comparisons between 2003 and earlier data should be made with caution. See Technical Note 2: Methodological Review in *Survey of Motor Vehicle Use, Australia, 12 months ended 31 October 2002* (cat. no. 9208.0) for information on the post-stratification process.

15 It should be noted that the survey methodology was designed to produce reliable level estimates of key data items at the state by vehicle type level. The survey was not designed to produce reliable estimates of annual movements. Changes in data over time may be subject to high RSEs and hence the changes may not be statistically significant. While the analysis in this publication does make comparisons over time the limitations as outlined above should be taken into account and care should be taken in drawing inferences from these comparisons.

RELATED PUBLICATIONS AND PRODUCTS

16 Users may also wish to refer to the following publications and products which contain information relating to motor vehicles in Australia:

Motor Vehicle Census, Australia cat. no. 9309.0 — issued annually

Sales of New Motor Vehicles, Australia, (Electronic Publication) cat. no. 9314.0 or 9314.0.55.001 — issued monthly

Directory of Transport Statistics, 1998 cat. no. 1132.0 — released in January 1999
Transport Theme page on ABS Internet site <<http://www.abs.gov.au>>.

EXPLANATORY NOTES *continued*

ABS DATA AVAILABLE ON
REQUEST

17 As well as the statistics included in this publication, the ABS has other relevant data available on request. Inquiries should be made to the National Information and Referral Service on 1300 135 070.

TECHNICAL NOTE DATA QUALITY

DATA QUALITY

1 When interpreting the results of a survey it is important to take into account factors that may affect the reliability of estimates. Such factors can be classified as either sampling error or non-sampling error.

SAMPLING ERROR

2 Estimates in this publication are based on information collected for a sample of registered motor vehicles, rather than a full enumeration, and are therefore subject to sampling error. They may differ from the data that would have been produced if the information had been obtained for all registered motor vehicles. Examples of the sampling error for this publication are included in this technical note.

3 The sampling error associated with any estimate can be calculated from the sample results. One measure of sampling error is given by the standard error, which indicates the extent to which an estimate might have varied by chance because only a sample of vehicles was included. There are about two chances in three that a sample estimate will differ by less than one standard error from the data that would have been obtained if all vehicles had been included, and about 19 chances in 20 that the difference will be less than two standard errors.

4 Another measure of sampling variability is the relative standard error (RSE) which is obtained by expressing the standard error as a percentage of the estimate to which it refers. The RSE is a useful measure in that it provides an immediate indication of the percentage error likely to have occurred due to sampling. In this publication, estimates that have an estimated relative standard error between 10% and 25% are annotated with the symbol '^'. These estimates should be used with caution as they are subject to sampling variability too high for some purposes. Estimates with an RSE between 25% and 50% are annotated with the symbol '*', indicating that the estimate should be used with caution as it is subject to sampling variability too high for most practical purposes. Estimates with an RSE greater than 50% are annotated with the symbol '**' indicating that the sampling variability causes the estimates to be considered too unreliable for general use.

5 The RSEs relating to 2003 estimates contained in Table 4 of this publication are shown in the following table.

TECHNICAL NOTE DATA QUALITY *continued*

RSE OF MOTOR VEHICLE USE(a), State/territory of registration—Type of vehicle

	Passenger vehicles	Motor cycles	Light commercial vehicles	Rigid trucks	Articulated trucks	Non-freight carrying trucks	Buses	Total
	%	%	%	%	%	%	%	%
TOTAL KILOMETRES TRAVELLED								
New South Wales	5	18	6	6	6	19	7	4
Victoria	6	21	8	8	5	17	7	5
Queensland	6	16	6	8	7	15	7	4
South Australia	7	19	7	7	8	23	7	5
Western Australia	6	16	8	8	6	27	8	5
Tasmania	8	16	10	6	6	19	8	6
Northern Territory	6	15	7	9	11	23	10	4
Australian Capital Territory	5	16	6	6	8	17	9	4
Australia	3	9	3	3	3	8	3	2
NUMBER OF VEHICLES								
New South Wales	2	4	4	2	3	15	4	2
Victoria	2	5	4	2	3	10	5	2
Queensland	2	4	3	3	4	10	4	2
South Australia	3	4	5	2	4	7	3	2
Western Australia	2	4	4	2	3	14	5	2
Tasmania	2	3	3	2	3	6	5	1
Northern Territory	3	6	3	5	9	11	4	2
Australian Capital Territory	2	4	3	2	4	11	5	2
Australia	1	2	2	1	1	5	2	1
AVERAGE KILOMETRES TRAVELLED								
New South Wales	5	17	5	6	5	11	6	4
Victoria	6	20	7	7	4	15	6	5
Queensland	5	15	6	8	5	14	6	4
South Australia	6	18	8	7	7	22	7	5
Western Australia	6	16	7	8	5	28	7	4
Tasmania	7	16	9	6	5	19	7	5
Northern Territory	5	15	6	7	14	19	9	4
Australian Capital Territory	4	15	5	5	6	15	8	4
Australia	3	8	3	3	2	7	3	2

(a) These relative standard errors relate to the estimates in Table 4.

SAMPLING ERROR *continued*

6 As an example of the use of an RSE, the 2003 estimate for kilometres travelled by all passenger vehicles registered in Australia is 151,743 million kilometres (Table 4 of the publication). The RSE for this estimate is 3%, as shown above. Therefore, the standard error for the 2003 kilometres travelled by passenger vehicles estimate is 4,552 million kilometres. There are about two chances in three that the figure obtained if all vehicles had been included, would have been in the range 147,191 million kilometres to 156,295 million kilometres. There are about 19 chances in 20 that the figure would have been in the range 142,639 million kilometres to 160,847 million kilometres.

7 It is important to note that estimates at more detailed levels than the above are subject to higher RSEs and therefore are less reliable.

8 RSEs for other key variables are shown in the following tables. The RSEs of further detailed variables can be made available on request.

TECHNICAL NOTE DATA QUALITY *continued*

RSE OF FUEL CONSUMPTION(a), Type of fuel—Type of vehicle

	Passenger vehicles	Motor cycles	Light commercial vehicles	Rigid trucks	Articulated trucks	Non-freight carrying trucks	Buses	Total
	%	%	%	%	%	%	%	%
TOTAL FUEL CONSUMPTION								
Petrol								
Leaded	53	37	63	47	100	68	99	43
Lead replacement	13	29	18	23	66	28	47	11
Unleaded	3	10	6	39	97	26	14	3
Total	3	9	5	20	55	20	14	3
Diesel	18	—	6	4	3	10	4	3
LPG/CNG/dual fuel	19	—	15	29	70	37	19	13
Total	3	9	3	4	3	9	3	2

AVERAGE RATE OF FUEL CONSUMPTION								
Petrol								
Leaded	5	21	32	12	95	13	97	7
Lead replacement	3	7	7	9	13	21	25	3
Unleaded	1	3	1	24	90	16	3	1
Total	1	3	1	7	17	13	3	1
Diesel	4	—	2	2	1	5	2	2
LPG/CNG/dual fuel	10	—	5	17	67	28	13	5
Total	1	3	1	2	1	4	2	1

— nil or rounded to zero (including null cells)

(a) These RSEs relate to the estimates in Table 5.

SAMPLING ERROR *continued*

RSE OF FREIGHT VEHICLES(a), State/territory of operation

	Light commercial vehicles	Rigid trucks	Articulated trucks	Total
	%	%	%	%
TOTAL TONNE-KILOMETRES				
New South Wales	11	12	4	7
Victoria	12	10	4	7
Queensland	11	18	5	8
South Australia	18	13	7	9
Western Australia	16	11	8	10
Tasmania	15	15	7	10
Northern Territory	23	21	15	31
Australian Capital Territory	22	20	24	17
Australia	6	6	3	4

(a) These RSEs relate to the estimates in Table 13.

9 Summary tables in this publication contain estimates from the 1999 to 2003 SMVUs. The SMVU is not designed to minimise the standard errors of the movements between reference periods. Care should be taken in drawing inferences from changes in data over these years. Data from the 1998 to 2002 SMVUs have been post-stratified due to problems which were identified with sample selections for these surveys. For the 2003 survey these problems were rectified and therefore post-stratification was not necessary. The post-stratified results for the 1998 to 2002 SMVUs may be different to those obtained had initial sample selections been correct. For this reason, direct comparisons between

TECHNICAL NOTE DATA QUALITY *continued*

SAMPLING ERROR *continued*

2003 and earlier data should be made with caution. See Technical Note 2: Methodological Review in *Survey of Motor Vehicle Use, Australia, 12 months ended 31 October 2002* (cat. no. 9208.0) for information on the post-stratification process.

10 The standard error for the movement can be calculated using:

$$SE(M_t) = \sqrt{(RSE(Y_{2t}) * Y_{2t}/100)^2 + (RSE(Y_{1t}) * Y_{1t}/100)^2}$$

where

Y_{1t} is an estimate of total of the variable of interest, obtained from the 1st time point

Y_{2t} is an estimate of total of the same variable of interest, obtained from the 2nd time point.

M_t is an estimate of movement of the total of the variable of interest from the 1st time point to the 2nd time point ie $M_t = Y_{2t} - Y_{1t}$

11 For total kilometres travelled by type of vehicle from the 1999 and 2003 SMVUs, the standard errors of the movements and the estimates from which they are derived are shown in the following table.

SE OF THE MOVEMENT OF TOTAL KILOMETRES TRAVELLED

	LEVEL ESTIMATES				MOVEMENT ESTIMATES	
	1999		2003		Movement	SE (Movement)(a)
	mill.	RSE (1999) %	mill.	RSE (2003) %		
Passenger vehicles	132 706	3	151 743	3	19 037	5 649
Motor cycles	981	10	1 376	9	396	151
Light commercial vehicles	25 374	4	32 671	3	7 298	1 415
Rigid trucks	6 486	3	7 768	3	1 282	316
Articulated trucks	5 347	3	5 841	3	495	217
Non-freight carrying trucks	316	18	203	8	-113	60
Buses	1 843	4	1 893	3	50	90
Total	173 053	2	201 497	2	28 444	5 830

(a) Calculated on unrounded data.

12 For example, the standard error for the movement from the 1999 to the 2003 SMVU of the estimates for total kilometres travelled for all passenger vehicles registered in Australia is 5,649 million kilometres. Since the magnitude of the movement between the estimates of 19,037 million kilometres is more than twice the standard error for the movement, the ABS can say with 95 percent (19 chances in 20) confidence that the movement is significantly different from zero. Note that almost all of the movements from the 1999 to the 2003 SMVU are more than two standard errors of the movement and are therefore significantly different from zero.

NON-SAMPLING ERROR

13 Non-sampling error covers the range of errors that are not caused by sampling and can occur in any statistical collection whether it is based on full enumeration or a sample. For example, non-sampling error can occur because of non-response to the statistical collection, errors in reporting by providers, definition or classification difficulties, errors in transcribing and processing data and under-coverage of the frame from which the sample was selected. If these errors are systematic (not random) then the survey results will be distorted in one direction and therefore will be unrepresentative of the target population. Systematic errors are called bias.

14 Non-sampling error is minimised by the use of pre-advice methodology. This involves vehicle owners receiving early advice about their inclusion in the survey and encourages a higher degree of record keeping. In addition, the reporting of odometer readings taken at the start and end of the survey periods (approximately three months apart) provide reliable estimates of total distance travelled without a recall bias.

TECHNICAL NOTE DATA QUALITY *continued*

Response and non-response

15 An important factor that affects non-sampling error is the response rate achieved. Responses were received from 83% of all of the selections for 2003. After removing those vehicles that had been found to be deregistered or out of scope, the live response rate for the 2003 SMVU was 82%.

16 The ABS makes all reasonable efforts to maximise response rates. Where appropriate, mail reminders and telephone follow-up are used to attempt to contact non-responding vehicle owners.

17 A large non-response increases the potential for non-response bias, which occurs if the usage patterns of the non-responding vehicles differ significantly from those of the responding vehicles. For the SMVU, it is assumed that the characteristics of non-responding vehicles including the proportion of deregistered, out of scope and nil use vehicles are the same as for responding vehicles.

RESPONSE AND NON-RESPONSE BY CATEGORY

	<i>Percentage of selections 2003</i>
Response received	
Registered vehicle	77
Unregistered vehicle(a)	6
Non-response	
Untraceable - mailing address unknown	6
Other(b)	11
Total selections	100

- (a) Includes deregistration, out of scope and duplicates.
- (b) Includes responses that were unusable because of unresolved queries or where the vehicle was sold during the reference quarter and the reported data covered less than 14 days; and non-response where no listing could be found to enable contact by telephone, owner contacted by telephone but response still not secured and refusals.

Imputation

18 The need for imputation of unfilled items on the returned questionnaires, as for previous surveys, remained quite high. Imputation is the process whereby a value is generated for missing data items by averaging the responses for similar vehicles which were operating for the reference period. Of the questionnaires returned for 2003 there were 9% of those reporting some vehicle use that needed imputation of one or more items apart from the average rate of fuel consumption. The imputation for average rate of fuel consumption for 2003 was 28%.

Adjustments

19 The SMVU measures the use of all vehicles registered during the reference year. Because selections are taken from vehicles registered some time before the beginning of each collection period, adjustments are made to account for the change in size of the registered motor vehicle fleet since the population frame was created. For the 2003 SMVU the frame was created on 31 March 2002. This involved two categories:

- re-registrations - older vehicles that are returning to the registered vehicle fleet after a period of deregistration, and
- new motor vehicles - vehicles which have not been previously registered.

TECHNICAL NOTE DATA QUALITY *continued*

Adjustments continued

CONTRIBUTION OF ADJUSTMENTS FOR RE-REGISTRATIONS, Australia—SMVU 2003

<i>Type of vehicle</i>	<i>Percentage of total kilometres travelled</i>
	%
Passenger vehicles	2
Motor cycles	6
Light commercial vehicles	2
Rigid trucks	2
Articulated trucks	4
Non-freight carrying trucks	2
Buses	-1
Total	2

CONTRIBUTION OF NEW VEHICLES REGISTERED AFTER 31 MARCH 2002 (a)

<i>Type of vehicle</i>	<i>Percentage of total kilometres travelled</i>
	%
Passenger vehicles	9
Motor cycles	17
Light commercial vehicles	11
Rigid trucks	10
Articulated trucks	14
Non-freight carrying trucks	8
Buses	11
Total	10

(a) Based on data from Sales of New Motor Vehicles, Australia (Cat. no. 9314.0).

20 These activities occur continuously and the adjustments are made to account for the registrations that are estimated to have been added to or removed from the registered vehicle fleet between the population frame date and the reference period. As deaths are estimated, it is possible for the re-registration factor to be negative.

21 Users should contact the ABS if they have any queries on the quality and reliability of estimates for particular purposes.

GLOSSARY

Articulated trucks	Motor vehicles constructed primarily for load carrying, consisting of a prime mover which has no significant load carrying area, but with a turntable device which is linked to a semitrailer.
Average load carried	Average load carried is calculated by dividing the total weight carried by the number of trips made while carrying a load.
B-Doubles	A B-Double combination consists of a prime mover towing two semitrailers. The first trailer includes a turntable which links to the second trailer, rather than using a dolly to link the trailers as in road train configurations.
Buses	Motor vehicles constructed for the carriage of passengers. Included are all motor vehicles with 10 or more seats, including the driver's seat.
Business kilometres	Distance travelled for hire and reward, or charged to a business expense, or for which an allowance was received. All distances travelled for business purposes, irrespective of actual use, and irrespective of vehicle type, are included in total business kilometres. The laden-unladen dissection of distance travelled for business purposes relates only to freight vehicles, i.e. light commercial vehicles, rigid trucks and articulated trucks.
Capital city	<p>These areas are based on capital city Statistical Divisions as defined in the <i>Australian Standard Geographical Classification (ASGC) 2003</i>.</p> <p>Sydney — this includes the area bounded by Gosford and Wyong; Hawkesbury and Blue Mountains; Campbelltown, Wollondilly and the Sutherland Local Government Areas.</p> <p>Melbourne — this includes the area bounded by Werribee, Melton, Sunbury, Craigieburn, Whittlesea, Healesville, Warburton, Berwick, Pakenham and the whole of Mornington Peninsula.</p> <p>Brisbane — this includes the area bounded by Caboolture, the eastern part of the Pine Rivers Shire, Redcliffe City, Redland Shire, Beenleigh, Logan City and the City of Ipswich.</p> <p>Adelaide — this includes the area bounded by the Gulf of St. Vincent, the Gawler River and the Mount Lofty Ranges from Gawler to Bridgewater through Kangarilla and Willunga to Sellicks Beach.</p> <p>Perth — this includes the area bounded by Yanchep and Bullsbrook; Warnbro, Keysbrook and Wooroloo.</p> <p>Hobart — this includes the area bounded by New Norfolk; Sorell and Carlton Creek; Brighton and Snug.</p> <p>Darwin — this includes Darwin and suburbs, Palmerston and other areas north of the Howard Springs turn-off.</p> <p>Canberra — this includes all of the Australian Capital Territory.</p>
Commodity carried	The publication of commodities carried is based on the 10 sectional groupings of the <i>Australian Transport Freight Commodity Classification (ATFCC)</i> , with the addition of Tools of Trade.
Dolly	A device intended to link two semitrailers or a rigid truck and a semitrailer.
Freight vehicles	Consists of light commercial vehicles, rigid trucks and articulated trucks.
Fuel consumption	Fuel consumption is calculated by aggregating the total kilometres travelled multiplied by reported average rate of fuel consumption for each vehicle.
Fuel consumption (average)	The average rate of fuel consumption is calculated by dividing the total fuel consumption by total kilometres travelled for each type of vehicle.
Gross Combination Mass (GCM)	Tare weight (i.e. unladen weight) of the motor vehicle and attached trailers, plus their maximum carrying capacity. In the survey, this was obtained for vehicles operated in combination (e.g. a prime mover/semitrailer combination, or a rigid truck/trailer combination).

GLOSSARY *continued*

Gross Vehicle Mass (GVM)	Tare weight (i.e. unladen weight) of the motor vehicle, plus its maximum carrying capacity. In the survey, this was obtained for buses and rigid trucks not usually towing trailers.
Interstate	This refers to any travel by vehicles outside their state or territory of registration.
Light commercial vehicles	Motor vehicles constructed for the carriage of goods and which are less than or equal to 3.5 tonnes GVM. Included are utilities, panel vans, cab-chassis and goods carrying vans (whether four-wheel drive or not).
Non-freight carrying trucks	Specialist motor vehicles or motor vehicles fitted with special purpose equipment, and having little or no goods carrying capacity, e.g. ambulances, cherry pickers, fire trucks and tow trucks.
Other Urban Areas	<p>These are based on the <i>Australian Standard Geographical Classification (ASGC) 2003</i> as being either Statistical Districts with a population greater than 40,000 or clusters of collection districts and other urban areas with a population greater than 40,000, based on the 2001 Population Census.</p> <p>New South Wales — within the areas of Newcastle, Lake Macquarie, Port Stephens, Wollongong, Kiama, Bathurst-Orange, Maitland, Albury (excluding Wodonga), Hume, Wagga Wagga, Tweed Heads (excluding Gold Coast), Queanbeyan (excluding Canberra ACT), Lismore, Coffs Harbour, Greater Taree, Tamworth, Shellharbour, Cessnock, Nelson Bay, Port Macquarie and Nowra.</p> <p>Victoria — within the areas of Geelong, Ballarat, Bendigo, Wodonga (excluding Albury), Shepparton, La Trobe Valley and Mildura.</p> <p>Queensland — within the areas of The Sunshine Coast, Bundaberg, Hervey Bay, Rockhampton, Mackay, Townsville, Cairns, Gold Coast (excluding Tweed Heads), and Toowoomba.</p> <p>Western Australia — within the areas of Mandurah and Bunbury.</p> <p>Tasmania — within the areas of Launceston, Burnie, Devonport, Penguin, Ulverston, Wynyard and Latrobe.</p> <p>This category is not applicable in South Australia, the Northern Territory and the Australian Capital Territory.</p>
Passenger vehicles	Motor vehicles constructed primarily for the carriage of persons and containing up to nine seats (including the driver's seat). Included are cars, station wagons, four-wheel drive passenger vehicles, passenger vans or mini buses with fewer than 10 seats and campervans.
Prime movers	Motor vehicles constructed primarily for towing semitrailers. Prime movers have no significant load carrying area but are fitted with a turntable for linking to a semitrailer.
Rigid trucks	Motor vehicles exceeding 3.5 tonnes GVM, constructed with a load carrying area. Included are normal rigid trucks with a tow bar, draw bar or other non-articulated coupling on the rear of the vehicle.
Road trains	Motor vehicles comprising a prime mover hauling two or more trailers and employing a dolly or a rigid truck hauling two or more trailers.
Relative standard error (RSE)	The standard error expressed as a percentage of the estimate to which it refers.
Semitrailer	Trailers designed to impose a substantial load on the towing vehicle, usually via a turntable on a prime mover.
Standard error (SE)	Indicates the extent to which an estimate might have varied by chance because only a sample of vehicles was included.

GLOSSARY *continued*

Stratification	Stratification is the process where a population is divided into homogeneous groups called strata that are non-overlapping, and together comprise the whole population. This technique uses auxiliary information to increase the efficiency of a sample design and units are selected independently within each stratum.
Tonne-kilometres	Total tonne-kilometres is the aggregation of the number of tonnes moved multiplied by the distance travelled in kilometres for each individual vehicle carrying freight. Note that it is not the aggregation of the total number of tonnes moved by total kilometres travelled by all vehicles carrying freight.
Tonnes carried	Total tonnes carried is the total weight of goods and freight carried during the survey period. The estimate of total tonnes carried relates to goods and freight uplifted by vehicles and therefore will overstate the actual physical quantity of goods and freight moved during the survey period to the extent that transshipment occurs (i.e. the transfer of goods and freight from one vehicle to another).
Travel to and from work	The travel between place of residence and place of work at the beginning and end of all working days, including travel to and from public transport stations.

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ISSN 1444 5670

RRP \$23.00