BTE Publication Summary

Australian Roads Summary Data, 1982

Information Paper

This Paper contains basic information on the Australian road network, and on certain related data such as travel, expenditure, vehicle stock, and freight movement. The Paper is presented as a summary guide for ready reference to the status and trends of a limited range of road system characteristics. It includes data which the Bureau has found to be frequently used for the analysis of road systems, especially from the federal viewpoint. While the data presented here do not provide a complete picture, the aim has been to provide an overview description of the Australian road network, and it is anticipated that users will extract individual items of data according to their particular relevance.









Australian Roads Summary Data, 1982



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FOREWORD

A number of papers published by the Bureau in recent times have included information on trends in particular aspects of the road system and its usage, or of road expenditure. This Paper embraces much of that information, but with some updating, summarisation and modification of the original format. It also includes the analysis of additional road and vehicle characteristics and related information. The data presented has been selected on the basis of judgement in order to provide the type of information that is most frequently sought about the Australian road network.

The Paper was prepared by the staff of the Planning and Technology Branch of the Bureau, and in particular Messrs W. Leslie and S. Wheatstone.

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Bureau of Transport Economics Canberra December 1984

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CHAPTER 1-INTRODUCTION

This Paper contains basic information on the Australian road network, and on certain related data such as travel, expenditure, vehicle stock, and freight movement. The Paper is presented as a summary guide for ready reference to the status and trends of a limited range of road system characteristics. It includes data which the Bureau has found to be frequently used for the analysis of road systems, especially from the federal viewpoint. Accessibility to this range of statistics is somewhat hampered by the numer of separate source documents and by the infrequency of publication of some data¹. While the data presented here do not provide a complete picture, the aim has been to provide an overview description of the Australian road network, and it is anticipated that users will extract individual items of data according to their particular relevance.

The data are presented in a series of tables, each with specific data limitations explained in the footnotes, and including the sources of more detailed information. The text is limited to some brief observations about the data. Where information is not directly quantifiable, the most appropriate available parameters are given as indicators. A general description of the extent and standard of the urban and rural road networks is given in terms of the length of sealed and unsealed roads. Usage is given in terms of vehicular travel for vehicle categories and also more individually in terms of the quantity of each fuel type used by each vehicle category. Number of vehicles and persons are given to indicate the underlying factors affecting road usage. Expenditure details are included to indicate trends in the overall provision and maintenance of road facilities.

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^{1.} However the International Road Federation (see, for example International Road Federation 1983) annually publishes an extensive range of statistics for a number of countries including Australia (without details for individual States). Also Thoresen (1983) reported on a range of road statistics similar to the type of information given in this Paper. Although the manner of presentation may be different, much of the data reported by Thoresen is updated in this Paper.

The data are generally presented with separate totals for each State. For the purposes of this Paper, the term 'State' includes the Australian Capital Territory (ACT) and the Northern Territory (NT). The term 'travel' means the sum of distances travelled by the vehicles on the road, and is expressed in vehicle kilometres of travel (VKT) for a twelve month period. The term interstate is used to describe travel by vehicles outside their State of registration. Travel and freight data from the ABS Survey of Motor Vehicle Usage are separately available by State of registration for the following areas of operation of vehicles: capital city, provincial urban, other areas of the State, and interstate. Where travel data from this source are given separately for urban or for rural areas, interstate travel is excluded since it can not be disaggregated into these components.

Chapter 2 deals with the whole road system on a State-by-State basis. Chapters 3 and 4 are devoted to roads in rural and urban areas, respectively, within each State. Chapter 5 deals with national highways, which form a subset of the road system.

Since the travel and freight data given in Chapters 3 and 4 exclude interstate movement, the sum of the travel and freight data given in Chapters 3 and 4, for rural and urban areas respectively, is lower than the totals given for the equivalent data in Chapter 2.

In Appendix 1 there is a discussion of the more general qualifications applying to the source data, indicating the effects on the data presented.

In many of the tables the figures do not add exactly to the totals due to rounding.

CHAPTER 2-AUSTRALIAN ROADS

TABLE 2.1-SEALED AND UNSEALED ROAD LENGTHS, 1982

The term road includes all roads open to the public for vehicle usage. The lengths quoted are route lengths and no distinction is made between single and dual carriageways. Sealed roads are those having a surface of bitumen, or of concrete. Divided roads are those roads having a median to divide opposing traffic flows. The estimated length of divided road given in Table 2.1 is for arterial¹ roads only.

The assessment of changes in the length of roads is hampered by inconsistencies in the estimates of length over past years. In particular, the estimates of the length of unsealed roads have been inconsistent, as illustrated in BTE (1984a, Tables V.6 to V.8). For this reason, Table 2.1 includes growth rates for sealed roads only. BTE (1984a) also provides further details of various road surface types, and includes a graph of trends in the percentage of sealed road in each State since 1950.

All data in this table are based on length estimates for 30 June in the years concerned.

1. As defined by the National Association of Australian State Road Authorities (NAASRA 1984a and 1984b) for the purposes of the NAASRA Roads Study.

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			Sealed			Unsealed				
State	Len	gth km)	Per cent	Mean growth ^c	Le	ngth (km)	Per ċent	Total (km)		Divided (km) ^b
New South Wales ^C	72	176	36.9	1.5	123	616	63.1	195	792	800
Victoria	63	927	40.7	1.9	93	275	59.3	157	202	878
Queensland	48	996	30.2	3.5	113	417	69.8	162	413	444
South Australia ^d	21	396	20.9	2.4	80	782	79.1	102	178	473
Western Australia	36	258	26.2	2.4	102	254	73.8	138	512	269
Tasmania	8	012	35.9	2.9	14	286	64.1	22	298	26
Northern Territory ^e	5	598	26.2	2.8	15	749	73.8	21	347	27
Australian Capital Territory ^f	1	865	83.5	5.7		369	16.5	2	234	111
Australia	258	228	32.2	2.3	543	748	67.8	801	976	3 028

a.

Percentage average annual compound growth from 1972 to 1982. Included in total length. Divided length is for arterial roads in 1981 which are defined in NAASRA (1984b). In 1972 there were 269 km of non-arterial divided roads (CBR 1974). Includes 2489 km of road in unincorporated areas. ь.

c.

Includes 13 172 km of road in unincorporated areas estimated for 1981. Estimate for 1981. d.

e.

f. Estimate for 1980.

Sources: Australian Bureau of Statistics (1983e). Commonwealth Bureau of Roads (1974). New South Wales Department of Main Roads (1982). State Road Authorities, personal communications. National Association of Australian State Road Authorities (1984a and 1984b).

TABLE 2.2-ROAD LENGTHS IN RURAL AND URBAN AREAS, 1982

Urban areas comprise the capital cities and those provincial cities having populations exceeding 40 000 persons in 1971 as described in Appendix I.

Roads in rural and urban areas are discussed in more detail in Chapters 3 and 4 respectively.

Road lengths are estimated for 30 June 1982.

	Run	al	Urba		
State	Length (km)	Per cent	Length (km)	Per cent	Total (km)
New South Wales	169 777	86.7	26 015	13.3	195 792
Victoria	125 451	79.8	31 751	20.2	157 202
Oueensland	144 018	88.7	18 395	11.3	162 413
South Australia	91 773	89.8	10 405	10.2	102 178
Western Australia	131 223	94.7	7 289	5.3	138 512
Tasmania	16 667	74.7	5 631	25.3	22 298
Northern Territory	20 388	95.5	959	4.5	21 347
Australian Capital					
Territory ^b	467	20.9	1 767	79.1	2 234
Australia	699 764	87.3	102 212	12.7	801 976

TABLE 2.2-ROAD LENGTHS IN RURAL AND URBAN AREAS, 1982.

Urban areas consist of capital cities and provincial urban areas as defined in Appendix I. Estimate for 1980. a.

b.

State Road Authorities, personal communications. Australian Bureau of Statistics (1983e). New South Wales Department of Main Roads (1982). Sources:

TABLE 2.3-VEHICULAR TRAVEL, 1982

The proportion of travel by articulated vehicles registered in the NT was nearly 6 per cent of all travel in that State, by far the highest of any State. The NT also recorded the highest proportion of travel by rigid trucks and by utilities and panel vans.

Appendix I includes a discussion of the source data, and indicates how travel growth rate estimates can be affected by changes in the definitions of the types of vehicle.

Travel data are based on the twelve months prior to 30 September and are the amounts carried out by vehicles registered in the State indicated. Interstate travel, ie travel by these vehicles outside their State of registration, is included.

TABLE 2.3-VEHICULAR TRAVEL, 1982

	Vehicle type ^a																		
	Ca stati	re and on wag	ions	Mot	<u>Motor cycles</u>			Utilities andpanel vans			Rigid trucks			Articulated trucks			Total ^b		
	Mil- lion	N grc	lean wth ^C	Mil-	gr	Mean owth ^C	Mil-	Me grou	ran nth ^C	Mil	gro	Mean owth ^c	Mil-	M grc	lean wth ^c	Mil-	M gro	lean n <u>wth</u> c	
State of registration	VKŢ	1971	1979	lion VKT	1971	1979	lion VKT	1971	1979	lion VKT	1971	1979	lion VKT	1971	1979	liọn VKT	1971	1979	
New South Wales NSW and ACT ^d	32 180 33 783	na 3.5	4.7 4.6	778 814	na 5.3	9.5 9.5	5 599 5 801	na 6.3	4.1 3.9	3 239 3 299	na 3.9	14.0 14.0	1 011 1 031	na 6.2	3.0 2.9	42 920 44 842	na 4.0	5.2 5.1	
Victoria	25 813	3.0	2.4	423	7.8	9.6	3 480	4.8	1.7	1 909	3.0	7.5	757	4.6	5.4	32 431	3.3	2.7	
Queensland	15 690	6.1	8.1	473	11.4	4.9	3 686	9.2	2.1	1 303	3.9	23.7	449	9,1	10.0	21 635	6.6	7.6	
South Australia	8 700	2.8	2.3	185	5.0	-2.6	1 240	5.7	2.4	541	-0.8	4.7	341	6.4	-1.1	11 031	3.0	2.1	
Western Australia	8 861	4.6	2.7	199	9.0	5.2	1 913	5.0	-3.3	1 073	3.8	14.6	275	4,8	10.7	12 336	4.6	2.5	
Tasmania	2 728	3.8	6.4	28	1.6	-1.6	570	7.8	9.6	197	1.1	5.8	85	7.3	1.4	3 614	4.2	6,5	
Nothern Territory	530	5 .6	14.8	26	6.6	22,6	259	11.1	-1.9	93	-1.8	43.6	58	7.1	15.3	974	5.7	11.0	
Australian Capital Territory	1 603	na	3.0	36	na	11.0	202	na	-2.7	59	na	11.9	20	na	-0.3	1 922	na	2.6	
Australia	96 108	3.8	4.2	2 152	7.1	6.8	16 951	6,4	2.1	8 417	3.1	13.0	2 999	6.0	4.8	126 866	4.2	4.4	

a.

ь.

ċ.

Qualifying comments on vehicle definitions are given in Appendix I. Total includes 'other truck types' not listed separately. Travel by 'other truck types' amounted to 237 million VKT in 1982. Percentage average annual compound growth from 1971 or 1979 to 1982. The combined New South Wales and Australian Capital Territory data is given since VKT for 1971 is not available separately for these two States. d.

na not available

Sources: Australian Bureau of Statistics (1981a and 1983a). Commonwealth Bureau of Census and Statistics (1973).

TABLE 2.4-INTRASTATE AND INTERSTATE TRAVEL, 1982

In this table, travel data are based on two separate criteria. Travel shown 'by State of operation' includes all vehicular travel within the State, regardless of where the vehicles are registered. Travel shown 'by State of registration' comprises all travel by vehicles registered in the State, including travel by those vehicles outside the State. All travel data are based on the twelve months ending on 30 September.

The estimated growth rates for travel outside the State of registration differed somewhat from the corresponding growth rates for all travel (Table 2.3), for the period 1971 to 1982. The standard errors of the estimates for interstate travel by State ranged from 8.1 per cent to 21.0 per cent for 1971, and from 5.8 per cent to 17.0 per cent for 1982 (Commonwealth Bureau of Census and Statistics, 1973 and ABS, 1983a).

Except for the ACT the imbalance between the amount of travel outside the State of registration and the amount of travel by vehicles registered in other States was less than 5 per cent of all travel in the State. The imbalance for the ACT of 243 million VKT amounted to 14.5 per cent of the 1679 million VKT within the ACT.

The high daily mean traffic flow and large proportion of interstate travel in 1982 in the ACT can be attributed to the relatively small area (2432 square kilometres) containing the urban centre of Canberra (1982 population approximately 220 000).

		By State	of operation							
	Vehicles r in all	registered States	Vehicles re outside St	gistered ate of	By . Operation in	<u>State of regis</u> Operati	ate of registration			
State	Travel (million VKT)	Mean daily traffic flow ^a (AADT)	operat Travel (million VXT)	<u>ion</u> Per cent ^b	<u>all States</u> Travel (million VKT)	of Travel (million VKT)	registrat Per cent ^c	ion Mean growth ^d		
New South Wales NSW and ACT ^e	43 751 45 430	612 628	2 500 2 766	5.7 6.1	42 920 44 842	1 669 2 178	3.9 4.9	na 10.0		
Victoria	31 944	556	1 158	3.6	32 431	1 645	5.1	2.9		
Queensland	21 761	367	1 104	5.1	21 635	954	4.4	4.9		
South Australia	10 786	289	459	4.3	11 031	705	6.4	3.8		
Western Australia	12 339	244	213	1.7	12 336	210	1.7	2.2		
Tasmania	3 565	438	31	0.9	3 614	81	2.2	4,0		
Northern Territory	1 015	130	122	12.0	974	80	8.2	6.6		
Australian Capital Territory	1 679	2 059	266	15.8	1 922	509	26.5	na		
Australia	126 866	433	5 853	4.6	126 866	5 853	4.6	5.5		

TABLE 2.4-INTRASTATE AND INTERSTATE TRAVEL, 1982

The mean of the daily traffic flows over the road network weighted according to the road length applicable to each rate of traffic flow; calculated by dividing the VKT by 365 and by the length of road (Table 2.1). Travel by vehicles registered in other States expressed as a percentage of all travel within the State. Travel outside State of registration expressed as a percentage of travel in all States. Percentage average annual compound growth from 1971 to 1982. The combined New South Wales and Australian Capital Territory data is given since the VKT for 1971 is not available separately for these two States. a.

ь.

c.

d.

e.

not available na

Sources: Australian Bureau of Statistics (1983a and 1983e). Commonwealth Bureau of Census and Statistics (1973). State Road Authorities, personal communications. New South Wales Department of Main Roads (1982).

TABLE 2.5-INTERSTATE AND ALL TRAVEL BY VEHICLE TYPE, 1982

'Per cent of travel by vehicle type' represents the average composition of traffic over the Australian road network. The mean growth rate of interstate travel for each vehicle type was greater than the corresponding mean growth rate of total travel given in Table 2.3 for the period 1971 to 1982. Travel data are based on the twelve months ending on 30 September.

	··		All areas				
Vehicle type ^a	Tra (mill V	Mean Per cent daily vel by traffic ion vehicle flow ^b KT) type (AADT)	Outside St Travel (million VKT)	eate of reg Per cent ^c	istration Mean growth ^d		
Cars and station wagons	96	108	75.8	328	4 188	4.4	4.6
Motor cycles	2	152	1.7	7	129	6.0	19.2
Utilities and panel vans	16	951	13.4	58	579	3.4	10.5
Rigid trucks	8	417	6.6	29	224	2.7	3.8
Articulated trucks	. 2	999	2.4	10	731	24.4	7.2
Total vehicles ^e	126	866	100.0	433	5 853	4.6	5.5

TABLE 2.5-TOTAL AND INTERSTATE TRAVEL BY VEHICLE TYPE, 1982

a.

Qualifying comments on vehicle definitions are given in Appendix I. The mean of the daily traffic flows over the road network, weighted according to the road length applicable to each rate of traffic flow; calculated by dividing the VKT by 365 and by the total length of b. road (Table 2.1).

с.

d.

Interstate travel expressed as a percentage of all travel for each vehicle type. Percentage average annual compound growth from 1971 to 1982. Total includes 'other truck types' not listed separately. Travel by 'other truck types' amounted to 237 million VKT in 1982. e.

Australian Bureau of Statistics (1983a and 1983e). Commonwealth Bureau of Census and Statistics (1973). State Road Authorities, personal communications. New South Wales Department of Main Roads Sources: (1982).

TABLE 2.6-FREIGHT MOVEMENT, 1982

The freight movement based on the State of registration does not necessarily indicate the level of road freight movement within the State, because of interstate travel. This applies particularly to articulated trucks, for which over 24 per cent of travel was outside the State of registration, as indicated in the previous table. Articulated trucks accounted for approximately two thirds of all freight movement in Australia in 1982. Among the States, the proportion that was interstate freight movement was highest for the ACT in 1982. Of the freight movement task performed by vehicles registered in the ACT, approximately 70 per cent occurred outside the ACT in 1982 (ABS 1983a, p19). The proportion of freight movement performed by articulated trucks varied between States, ranging from 61 per cent in WA to 80 per cent in the NT.

Freight movement data are based on the twelve months ending 30 September.

TABLE 2.6-FREIGHT MOVEMENT, 1982

				Vehicl	e type ⁶						-						
	Uti P	lities anel vo	and ine	Rig	Rigid trucks			ticulat trucks	bed		Total ^b		1	Interstate ^C			
State of	Mil- lion	Me grou	ean oth ^d	Mil- lion	l gra	lean wth ^d	Mil- lion	Jgro	lean wth ^d	Mil- lion	Mean growth ^d		Mil- lion		Mean growth ^d		
regist- ration	tonne km	1971	1979	tonne km	1971	1979	tonne Km	1971	1979	tonne km	1971	1979	tonne km	Per cent ^e	1971		
New South																	
Wales	842	na	11.2	6 115	na	10.2	13 426	na	6.0	20 384	na	7.4	3 206	15.7	na		
NSW and ACT	F 867	7.7	10.7	6 215	4.4	10.2	13 708	8.8	6.0	20 791	7.2	7.4	3 489	16.8	8.2		
Victoria	419	3.5	-1.5	3 663	3.8	1.5	9 698	8.0	8.7	13 781	6.5	6.3	4 224	30.7	10.1		
Queensland	582	16.1	-3.4	2 650	6.3	10.6	5 619	12.8	12.2	8 852	10.5	10.3	1 149	13.0	8.3		
South Australia	127	3.1	-4.9	1 191	-1.1	-3.3	4 987	9.5	1.4	6 305	6.1	0.3	2 547	40.4	9.5		
Western Australia	307	8.0	5.6	2 177	4.3	3.5	3 881	7.8	17.0	6 365	6.4	11.0	479	7.5	26.3		
Tasmania	68	10.0	5.1	495	3.1	3.1	948	10.8	1.9	1 512	7.4	2.4	53	3.5	19.5		
Northern Territory	44	17.8	11.2	307	0.2	22.5	1 405	12.6	23.4	1 757	8.9	22.9	247	14.0	17.1		
Australian Capital																	
Territory	24	na	-2.1	100	na	6.0	282	na	7.1	407	na	6.2	283	69.6	па		
Australia	2 417	8.0	2.8	16 700	3.8	6.0	40 248	9.2	8.1	59 366	7.3	7.2	12 188	20.5	9.7		

4

а. b.

c. d.

Qualifying comments on vehicle definitions are given in Appendix I. Total includes 'other truck types' not listed separately. Freight movement by 'other truck types' amounted to nil in 1979 and 1982, and to less than 1 percent of the Australian freight total in 1971. Freight movement by vehicles outside their State of registration (included elsewhere in this table). Percentage average annual compound growth from 1971 or 1979 to 1982. Freight movement outside State of registration expressed as a percentage of total freight movement for the State e. State.

The combined New South Wales and Australian Capital Territory data is given since the YKT for 1971 is not available separately for these two States. f.

na not available

Sources: Australian Bureau of Statistics (1981a and 1983a). Commonwealth Bureau of Census and Statistics (1973).

TABLE 2.7-MEAN VEHICLE LOAD 1982

Trends in mean vehicle load are affected by trends in vehicle capacity as well as in the proportion of the utilised capacity. The mean load on vehicles registered in the NT was the highest of all the States, for each vehicle type.

It should be noted that 'mean vehicle load' is calculated by dividing tonne-kilometres by VKT and therefore embraces all laden and unladen travel net of the tare weight of the vehicle. Interstate movement is included. Data are based on the twelve months ending 30 September.

TABLE 2.7-MEAN VEHICLE LOAD, 1982

	Uti: pa	lities a nel vans	nd	Rigi	d truck	8	A	rticulat trucks	ed	Total ^b			
~		Me grou	Mean growth ^c		M grou	san vth ^c		Mean growth ^c			Mean growth ^c		
state of registration	Tonnes	1971	1979	Топпев	1971	1979	Tonnes	1971	1979	Tonnes	1971	1979	
New South Wales NSW and ACT ^d	0.15	na 1.3	6.7 6.5	1.89 1.88	na 0.5	-3.3 -3.4	13.27 13.29	na 2.5	2.9 3.0	2.07 2.05	na 1.7	0.5 0.7	
Victoria	0.12	-1.2	-3.1	1.92	0.7	-5.5	12.80	3.3	3.2	2.24	2.3	2.4	
Queensland	0.16	6.3	-5.5	2.03	2.4	-10.6	12.50	3.3	1.9	1.63	2.6	3.5	
South Australia	0.10	-2.5	-7.1	2.20	-0.4	-7.7	14.59	2.9	2.5	2.97	2.4	-2.0	
Western Australia	0.16	2.8	9.2	2.03	0.5	-9.7	14.10	2.8	5.7	1.95	1.7	8.4	
Tasmania	0.12	2.0	-4.1	2.51	2.0	-2.6	11.09	3.3	0.5	1.77	1.7	-4.9	
Northern Territory	0.17	6.0	13.3	3.28	2.0	-14.6	23.99	5.1	7.0	4.27	3.0	15.8	
Australian Capital Territory	0.12	na	0.7	1.67	na	-5.2	14.10	na	7.4	1.44	na	6.2	
Australia	0.14	1.5	0.7	1.98	0.7	-6.2	13.41	3.0	3.1	2.09	1.9	2.0	

a.

Qualifying comments on vehicle deinitions are given in Appendix I. Total includes 'other truck types' not listed separately. Mean load carried by 'other truck types' amounted to nil in 1979 and 1982, and less than 1 per cent of Australian total mean load in 1971. b.

c.

Percentage average annual compound growth from 1971 or 1979 to 1982. The combined New South Wales and Australian Capital Territory data is given since VKT for 1971 is not available separately for these two States. d.

na not available

- Notes: Mean vehicle load is calculated by dividing tonne-km by VKT and therefore embraces all laden and unladen travel net of the tare weight of the vehicle. Interstate travel is included. Data are based on the twelve months ending 30 September.
- Sources: Australian Bureau of Statistics (1981a and 1983a). Commonwealth Bureau of Census and Statistics (1973).

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TABLE 2.8-VEHICLE STOCK, 1982

The stock of registered vehicles excludes buses, Australian government owned vehicles, and certain other vehicles described in Appendix I. The States which had the highest rates of growth in vehicle stock prior to 1982 were Queensland, the NT, and to a lesser extent, Western Australia (WA). These States also tended to have the highest rates of growth in travel (Table 2.3). The growth in registered motor cycles was considerably higher than the mean growth for all vehicle types. Further analysis of trends in vehicle stock and new motor vehicle registrations (particularly for cars) is given in BTE (1984d).

Data are based on vehicles registered at 30 September for the years concerned.

	-	Vehicle type ^a														_				
	_	Ca 	re and on wag	t ione	Mot	Motor cycles			Utilities and panel vans			Rigid trucks			Articulated trucks			Total ^b		
			gro	lean wth ^c		g,	Mean •owth ^c	-	Me grou	ean rth ^C		gra	Mean owth ^c		gro	lean wth ^C		gro	lean wth ^c	
State of registration		Thou- sands	1971	1979	Thou– sands	1971	1979	Thou- sands	1971	1979	Thou- sands	1971	1979	Thou– sands	1971	1979	Thou- sands	1971	1.979	
New South Wales	2	089.4	3.8	3.3	116.2	6.1	8.6	309.2	5.8	1.8	156.6	2.1	8.8	15.8	3.3	0.2	2 691.8	3.9	3.6	
Victoria	1	703.9	3.8	3.3	68.4	8.4	13.2	209.4	4.0	2.0	105.9	2.7	5.7	11.4	1.8	2.6	2 105.0	3.9	3.5	
Queensland	1	004.2	5.8	5.6	87.1	11.3	4.6	247.7	8.4	5.2	65.1	0.5	10.9	8.4	5.6	5.7	1 414.9	6.1	5.6	
South Australia		582.7	3.6	2.4	36.0	7.1	6.4	74.0	4.9	1.7	38.2	-0.3	4.3	4.4	3.8	-1.3	737.8	3.6	2.5	
Western Australia		568.1	5.0	3.3	32.4	9.1	8.9	107.5	6.1	-1.8	57.6	3.3	9.9	4.3	4.3	3.0	771.7	5.2	3.0	
Tasmania		189.4	3.7	2.6	5.0	3.3	2.1	33.5	5.6	4.1	12.1	-0.3	3.8	1.4	5.1	-1.2	242.0	3.7	2.6	
Northern Territory		35.7	6.7	13,9	4.0	6.9	21.2	14.1	9.7	3.5	5.0	-0.1	49.4	0.8	9.1	15.3	60.0	6.5	13.2	
Australian Capital Territory		93.7	5.2	2.1	4.4	5.6	7.1	8.7	6.6	-6.6	2.3	-0.7	3.1	0.2	7.4	-1.8	109.4	5.1	1.3	
Australia	6	267.1	4.2	3.6	353.5	7.9	8.1	1 004.1	5.9	2.2	442.8	1.8	8.1	46.6	3.5	2.0	8 132.6	4.4	3.7	

a. b.

Qualifying comments on vehicle definitions are given in Appendix I. Total includes 'other truck types' not listed separately. Registrations of 'other truck types' amounted to 18 547 vehicles in 1982.

c. Percentage average annual compound growth from 1971 or 1979 to 1982.

Sources: Australian Bureau of Statistics (1981a and 1983a). Commonwealth Bureau of Census and Statistics (1973).

TABLE 2.9-TRAVEL PER VEHICLE, 1982

Travel per vehicle for each type registered in the ACT was the highest among the States. Growth rates in travel per vehicle tended to be generally low or negative (except for certain vehicle types in some States), indicating that growth in total travel on the road network was primarily due to the growth in the vehicle stock.

Travel per vehicle is calculated by dividing the VKT (Table 2.3) by the registered stock (Table 2.8). All data are based on the twelve months ending 30 September. Interstate travel is included.

						Ņ	ehicle	type ^a												
	Cars and station wagons			Mot	Motor cycles			Utilities and panel vans			Rigid trucks		Articulated trucke			Total ^b				
		M grc	lean wth ^c		gı	Mean rowth ^c		M _gro	ean wth ^c		n gra	lean owth ^c			MM	lean wth ^c			M gro	iean nuth ^c
	km	1971	1979	km	1971	1979	k	n 1971	1979	km	1971	1979		km	1971	1979		km	1971	1979
15 15	402 475	na -0.3	1.3 1.3	6 699 6 760	na -0.7	0.8 1.0	18 10 18 24	3 na 3 0.5	2.3 2.3	20 691 20 766	na 1.8	4.8 4.9	64 64	010 383	na 2.8	2.8 2.7	15 16	945 008	na -	1.6 1.6
15	150	-0.8	-0.9	6 186	-0.6	-3.1	16 62	2 0.8	-0.3	18 027	0.4	1.7	66	500	2.8	2.7	15	407	-0.6	-0.8
15	625	0.3	2.4	5 435	0.1	0.3	14 88	L 0.8	-3.0	20 022	3.4	11.6	53	761	3.4	4.1	15	292	0.4	1.9
14	933	-0.7	-0.1	5 147	-2.0	-8.5	16 76	9 0.8	0.7	14 174	-0.5	0.4	78	166	2.5	0.2	14	952	-0.5	-0.4
15	599	-0.4	-0.6	6 148	-0.2	-3.4	17 79	-1.0	-1.6	18 647	0.4	4.2	64	404	0.5	7.5	15	9 86	-0.5	-0.4
14	403	0.1	3.7	5 787	-1.6	-3.6	17 04	2.0	5.2	16 241	1.3	1.9	62	137	2.1	2.6	14	935	0.4	3.8
14	838	-0.1	0.8	6 788	-0.3	1.2	18 33	1.3	-5.3	18 622	-1.7	-3.9	74	745	-1.8	0.1	16	223	-0.7	-2.0
17	100		1.0	0 075		2.6	02.10			05 000			01	204		1 5	17	576		1.0
1/	109	na	1.0	8 3/5	na	3.6	23 19	na na	4.2	25 899	na	8.6	91	324	na	1.5	17	5/6	na	
_	15 15 15 14 15 14 14 14	ra stati km 15 402 15 475 15 150 15 625 14 933 15 599 14 403 14 838 17 109	Care and station wag [mm 1971] 15 402 na 15 475 -0.3 15 150 -0.8 15 625 0.3 14 933 -0.7 15 599 -0.4 14 403 0.1 14 838 -0.1 14 838 -0.1	Care and station wagons Mean growth ^C km 1971 1979 15 402 na 1.3 15 475 -0.3 1.3 15 150 -0.8 -0.9 15 625 0.3 2.4 14 933 -0.7 -0.1 15 599 -0.4 -0.6 14 403 0.1 3.7 14 838 -0.1 0.8 17 109 na 1.0	Care and station wagons Mean growth ⁰ km 1971 1979 km 15 402 na 1.3 6 699 15 475 -0.3 1.3 6 760 15 150 -0.8 -0.9 6 186 15 625 0.3 2.4 5 435 14 933 -0.7 -0.1 5 147 15 599 -0.4 -0.6 6 148 14 403 0.1 3.7 5 787 14 838 -0.1 0.8 6 788 17 109 na 1.0 8 375	Care and station wagons Motor cyc Mean growth ^c gr 1971 1979 1971 15 402 na 1.3 6 699 na 15 475 -0.3 1.3 6 760 -0.7 15 150 -0.8 -0.9 6 186 -0.6 15 625 0.3 2.4 5 435 0.1 14 933 -0.7 -0.1 5 147 -2.0 15 599 -0.4 -0.6 6 148 -0.2 14 403 0.1 3.7 5 787 -1.6 14 838 -0.1 0.8 6 788 -0.3 17 109 na 1.0 8 375 na	v Cars and station wagons Mean dean growth ^c Mean growth ^c Mean growth ^c km 1971 1979 km 1971 1979 15 402 na 1.3 6 699 na 0.8 15 475 -0.3 1.3 6 760 -0.7 1.0 15 150 -0.8 -0.9 6 186 -0.6 -3.1 15 625 0.3 2.4 5 435 0.1 0.3 14 933 -0.7 -0.1 5 147 -2.0 -8.5 15 599 -0.4 -0.6 6 148 -0.2 -3.4 14 403 0.1 3.7 5 787 -1.6 -3.6 14 838 -0.1 0.8 6 788 -0.3 1.2 17 109 na 1.0 8 375 na 3.6	Vehicle 1 Care and station wagons Motor cycles 1 Mean growth ^c Mean growth ^c Mean growth ^c $\frac{1971}{1971}$ 1979 km 1971 1979 km Mean growth ^c growth ^c growth ^c 18 100 15 402 na 1.3 6 699 na 0.8 18 100 15 475 -0.3 1.3 6 760 -0.7 1.0 18 248 15 150 -0.8 -0.9 6 186 -0.6 -3.1 16 622 15 625 0.3 2.4 5 435 0.1 0.3 14 883 14 933 -0.7 -0.1 5 147 -2.0 -8.5 16 769 15 599 -0.4 -0.6 6 148 -0.2 -3.4 17 794 14 403 0.1 3.7 5	Vehicle type ⁴ Care and station wagons Motor cycles panel w Mean growth ^c Mean growth ^c Mean growth ^c Mean growth ^c $\frac{Mean}{growth^c}$ $\frac{Mean}{growth^c}$ Mean growth ^c Mean growth ^c 1971 1979 km 1971 1979 km 15 402 na 1.3 6 699 na 0.8 18 108 na 15 402 na 1.3 6 699 na 0.8 18 108 na 15 475 -0.3 1.3 6 760 -0.7 1.0 18 248 0.5 15 150 -0.8 -0.9 6 186 -0.6 -3.1 16 622 0.8 15 625 0.3 2.4 5 435 0.1 0.3 14 881 0.8 14 933 -0.7 -0.1 5 147 -2.0 -8.5 16<	Vehicle type ⁴ Cars and station wagons Motor cycles Utilities and panel, vans Mean growth ⁰ 1971 1979 km 1971 1979 km 1971 1979 15 402 na 1.3 6 699 na 0.8 18 108 na 2.3 15 475 -0.3 1.3 6 760 -0.7 1.0 18 248 0.5 2.3 15 150 -0.8 -0.9 6 186 -0.6 -3.1 16 622 0.8 -0.3 15 625 0.3 2.4 5 435 0.1 0.3 14 881 0.8 -3.0 14 933 -0.7 -0.1 5 147 -2.0 -8.5 16 769 0.8 0.7 15 599 -0.4 -0.6 6 148 -0.2 -3.4 17 794 -1.0 -1.6 14 403 0.1 3.7 5 787 -1.6 <	Vehicle type ^a Care and station wagons Motor cycles parel vans Fig: Mean growth ⁰ Mean growt	Vehicle type ⁴ Care and station wagons Motor cycles Utilities and panel vans Mean growth ^c Growth ^c Growth ^c Growth ^c	Vehicle type ⁴ Care and station wagons Motor cycles Utilities and panel yans Rigid trucks Mean growth ⁰ Growth ⁰ Growth ⁰ <t< td=""><td>Vehicle type⁴ Care and station wagons Motor cycles Parel vans Rigid trucks Mean growth⁰ Mean growth⁰ Mean growth⁰ Mean growth⁰ Mean growth⁰ Mean growth⁰ km 1971 1979 km 1971 1979 km 1971 1979 15 402 na 1.3 6 699 na 0.8 18 108 na 2.3 20 691 na 4.8 64 15 402 na 1.3 6 760 -0.7 1.0 18 248 0.5 2.3 20 691 na 4.8 64 15 150 -0.8 -0.9 6 186 -0.6 -3.1 16 622 0.8 -0.3 18 027 0.4 1.7 66 15 625 0.3 2.4 5 435 0.1 0.3 14 881 0.8 -3.0 20 022 3.4 11.6 53 14 933 -0.7 -0.1 5 147 -2.0 -8.5 16 769</td><td>Vehicle type⁴ Care and station wagons Motor cycles panel vans Rigid trucks to the rigid trucks to the panel vans Rigid trucks to the panel vans Rigid trucks to the ris to the rigid trucks to the rigid trucks to the</td><td>Vehicle type⁴ Care and station wagone Motor cycles panel vans Figid trucks Articulate station wagone Motor cycles panel vans Figid trucks Itrucks Mean growth⁰ Mean growth² Mean growth²<td>Vehicle type⁴ Care and etation wagone Motor cycles Panel vane Rigid trucks Articulated trucks Mean growth⁰ Growth⁰ Mean growth⁰</td><td>Vehicle type⁴ Care and etation wagone Motor cycles parel vane Rigid trucks Articulated trucks Mean growth^c Mean growth^c Rigid trucks Articulated trucks Mean growth^c Mean growth^c Mean growth^c Mean growth^c Mean growth^c Mean growth^c Im 1971 1979 km 1971 1979 km 1971 1979 15 402 na 1.3 6 699 na 0.8 18 108 na 2.3 20 691 na 4.8 64 010 na 2.8 15 15 475 -0.3 1.3 6 699 na 0.8 18 108 na 2.3 20 691 na 4.8 64 010 na 2.8 15 15 1302 na 1.8 108 na 2.3 20 691 na 4.8 64 010 na 2.8 15 <</td><td>$\begin{array}{c c c c c c c c c c c c c c c c c c c$</td><td>Vehicle type⁴ Care and etation wagone Motor cycles Utilities and panel yane Rigid trucks Articulated trucks Total¹ Mean growth^a Mean g</td></td></t<>	Vehicle type ⁴ Care and station wagons Motor cycles Parel vans Rigid trucks Mean growth ⁰ km 1971 1979 km 1971 1979 km 1971 1979 15 402 na 1.3 6 699 na 0.8 18 108 na 2.3 20 691 na 4.8 64 15 402 na 1.3 6 760 -0.7 1.0 18 248 0.5 2.3 20 691 na 4.8 64 15 150 -0.8 -0.9 6 186 -0.6 -3.1 16 622 0.8 -0.3 18 027 0.4 1.7 66 15 625 0.3 2.4 5 435 0.1 0.3 14 881 0.8 -3.0 20 022 3.4 11.6 53 14 933 -0.7 -0.1 5 147 -2.0 -8.5 16 769	Vehicle type ⁴ Care and station wagons Motor cycles panel vans Rigid trucks to the rigid trucks to the panel vans Rigid trucks to the panel vans Rigid trucks to the ris to the rigid trucks to the rigid trucks to the	Vehicle type ⁴ Care and station wagone Motor cycles panel vans Figid trucks Articulate station wagone Motor cycles panel vans Figid trucks Itrucks Mean growth ⁰ Mean growth ² <td>Vehicle type⁴ Care and etation wagone Motor cycles Panel vane Rigid trucks Articulated trucks Mean growth⁰ Growth⁰ Mean growth⁰</td> <td>Vehicle type⁴ Care and etation wagone Motor cycles parel vane Rigid trucks Articulated trucks Mean growth^c Mean growth^c Rigid trucks Articulated trucks Mean growth^c Mean growth^c Mean growth^c Mean growth^c Mean growth^c Mean growth^c Im 1971 1979 km 1971 1979 km 1971 1979 15 402 na 1.3 6 699 na 0.8 18 108 na 2.3 20 691 na 4.8 64 010 na 2.8 15 15 475 -0.3 1.3 6 699 na 0.8 18 108 na 2.3 20 691 na 4.8 64 010 na 2.8 15 15 1302 na 1.8 108 na 2.3 20 691 na 4.8 64 010 na 2.8 15 <</td> <td>$\begin{array}{c c c c c c c c c c c c c c c c c c c$</td> <td>Vehicle type⁴ Care and etation wagone Motor cycles Utilities and panel yane Rigid trucks Articulated trucks Total¹ Mean growth^a Mean g</td>	Vehicle type ⁴ Care and etation wagone Motor cycles Panel vane Rigid trucks Articulated trucks Mean growth ⁰ Growth ⁰ Mean growth ⁰	Vehicle type ⁴ Care and etation wagone Motor cycles parel vane Rigid trucks Articulated trucks Mean growth ^c Mean growth ^c Rigid trucks Articulated trucks Mean growth ^c Im 1971 1979 km 1971 1979 km 1971 1979 15 402 na 1.3 6 699 na 0.8 18 108 na 2.3 20 691 na 4.8 64 010 na 2.8 15 15 475 -0.3 1.3 6 699 na 0.8 18 108 na 2.3 20 691 na 4.8 64 010 na 2.8 15 15 1302 na 1.8 108 na 2.3 20 691 na 4.8 64 010 na 2.8 15 <	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Vehicle type ⁴ Care and etation wagone Motor cycles Utilities and panel yane Rigid trucks Articulated trucks Total ¹ Mean growth ^a Mean g

a. Qualifying comments on venture definitions are given in Appendix 1.
b. Total includes 'other truck types' not listed separately. Travel per vehicle for 'other truck types' amounted to 12 778 km in 1982.
c. Percentage average annual compound growth from 1971 or 1979 to 1982.
d. The combined New South Wales and Australian Capital Territory data is given since the VKT for 1971 is not available separately for these two States.

na

not available nil or rounded to zero -

Sources: Australian Bureau of Statistics (1981a and 1983a). Commonwealth Bureau of Census and Statistics (1973).

TABLE 2.10-FREIGHT MOVEMENT PER VEHICLE, 1982

Because of the magnitude of the standard errors associated with the estimates of tonne kilometres carried out by utilities and panel vans (see for example ABS 1983a, p18), growth rates given for the period 1971 to 1982 for these vehicles have relatively large standard errors.

'Freight movement per vehicle' is calculated by dividing the freight movement (Table 2.6) by the registered stock (Table 2.8). All data are based on the twelve months ending 30 September, and include interstate travel.

	Utili pane	ties and l vans	Rigi	<u>d truck</u>	8	A1	rticulat trucks	ed	Total ^b			
State of registration	Thou- sand tonne km	Mean growth 1971 ^C	Thou- sand tonne km	Mean <u>growth^c</u> 1971 1979		Thou - sand tonne km	Mean growth ^C 1971 1979		Thou- sand tonns km	Ма <u>gro</u> t 1971	ean <u>wth^c</u> 1979	
New South Wales NSW and ACT ^d	2.7 2.7	na 1.8	39.1 39.1	na 2.3	1.3 1.4	850.0 856.0	na 5.4	5.8 5.8	41.9 41.8	na 2.7	3.8 4.0	
Victoria	2.0	-0.4	34.6	1.1	-3.9	851.4	6,2	6.0	41.4	2.9	3.5	
Queensland	2.4	7.2	40.7	5.8	-0.2	671.9	6.8	6.1	27.4	4.1	4.0	
South Australia	1.7	-1.7	31.2	-0.9	-7.3	1 140.1	5.5	2.7	52.9	3.1	-1.3	
Western Australia	2.9	1.8	37.8	0.9	-5.9	908.3	3.4	13.6	37,2	1.3	9.9	
Tasmania	2.1	4.1	40.8	3.4	-0.7	689.3	5.4	3.1	31.8	3.5	-	
Northern Territory	3.1	7.3	61.0	0.3	-17.9	1 792.7	3.2	7.1	86.4	2.6	10.8	
Australian Capital Territory	2.9	na	43.3	na	2.9	1 288.1	na	9.0	36.0	na	12.4	
Australia	2,4	1.9	37.7	2.0	-1.9	864.2	5.5	6.0	39.3	2.7	3.8	

TABLE 2.10-FREIGHT MOVEMENT PER VEHICLE, 1982

a.

Qualifying comments on vehicle definitions are given in Appendix I. Total includes 'other truck types' not listed separately. Freight movement per vehicle for 'other truck types' amounted to nil in 1979 and 1982 and less than 1 per cent of the Australian total in 1971. Percentage average annual compound growth from 1971 or 1979 to 1982. The combined New South Wales and Australian Capital Territory data is given since the VKT for 1971 is not available separately for these two States. b.

c. d.

na

not available nil or rounded to zero -

Sourcea; Commonwealth Bureau of Census and Statistics (1973). Australian Bureau of Statistics (1981a and 1983a).

TABLE 2.11-ROAD EXPENDITURE BY LEVEL OF GOVERNMENT, 1981-82

Road expenditure includes funds from all sources which were expended on roads and road facilities, and includes administrative costs. Appendix I includes a discussion of the components of the expenditure data.

The growth rates represent the average rate of change of the expenditure level in 1981-82 compared with 1970-71. However there was fluctuation over these years in expenditure levels, particularly in the Commonwealth component. The variations in the level of Commonwealth expenditure and its distribution to States were due primarily to changes in the allocations under successive road grants legislation and to special grants for specific roadworks such as those given to Tasmania following the collapse of the Tasman Bridge in 1975.

		Соттопше	alth		State			Local		Total			
		Mean g	rowth ^a	-	Mean g	prowth ^a	-	Mean g	rowth ^a	_	Mean g	rowtha	
State	\$ million	Current prices	1981–82 prices ^b	\$ million	Current prices	1981-82 prices ^b	\$ million	Current prices	1981–82 prices ^b	\$ million	Current prices	1981–82 prices ^b	
New South	214 2	11 4	17	220 0	10 E	0.1	252.0	10 7		007.2	12.6	0.6	
wates	614.6	11.4	-1./	329.0	13.5	0.1	353.2	12.7	-0.0	09/.2	12.0	-0.0	
Victoria	138.5	11.1	-2.0	203.8	9.6	-3.3	177.4	16.2	2.5	519.7	11.8	-1.3	
Queensland	140.6	10.4	-2.6	174.2	15.5	1.9	114.6	14.7	1.2	429.4	13.3	-	
South Australia	56.4	8.1	-4.6	58.2	11.6	-1.5	56.3	12.6	-0.7	170.9	10.6	-2.5	
Western Australia	84.1	7.7	-5.0	89.5	13.6	0.3	56.5	25.3	10.6	230.1	12.3	-0.9	
Tasmania	46.5	14.8	1.3	35.6	13.1	-0.2	20.5	12.3	-0.9	102.6	13.6	0.3	
Northern Territory ^C	23.0	3.9	-8.3	37.9	na	na	2.7	12.6	-0.6	63.6	13.5	0.2	
Australian Capital Tonnitonud	15 0		7.0							15.0		7.0	
		4.4	-/.9				••	••		15.0	4.4	-7.9	
Australia	718.3	10.0	-3.0	929.0	13.1	-0.2	781.2	14.2	0.8	2 428.5	12.4	-0.9	

TABLE 2.11-ROAD EXPENDITURE BY LEVEL OF GOVERNMENT, 1981-82

a.

Percentage average annual compound growth from 1970-71 to 1981-82. Constant 1981-82 prices calculated using BTE 1982 road construction price index in Bureau of Transport Economics (1982b and 1984c). Self government granted 1978-79. No State or local government in ACT. b.

c. d.

na

••

not available not applicable nil or rounded to zero -

Source: Bureau of Transport Economics (1982a and 1984b).

TABLE 2.12-ROAD EXPENDITURE COMPONENTS, 1981-82

Appendix I includes details of the basis for the division of expenditure between construction and maintenance.

The expenditure rate per kilometre of road is based on total road expenditure, which includes the cost of bridges and other structures. A factor affecting expenditure per kilometre is the standard of road which is required for the level of traffic flow, which explains the high expenditure per kilometre in the ACT. However, the ACT recorded the lowest expenditure per vehicle kilometre of travel among the States and also recorded the highest mean traffic flow (Table 2.4). The expenditure per vehicle kilometre of travel which is shown in brackets, was calculated by excluding all travel outside the State of registration, and is included in this table primarily for comparison with corresponding data in Chapters 3 and 4.

One of the factors which may have contributed to the relatively high road expenditure per vehicle, and per vehicle kilometre of travel, in the NT, is the high proportion of trucks (Table 2.3). Further, trucks in the NT are predominantly heavier than in the other States. For example, 88.8 per cent of the stock of registered articulated trucks in the NT had a tare weight of 11 tonnes and over at 30 September 1982, compared with the Australian average of 69.5 per cent (ABS 1983a).

26

								·	Rate	e of expendi	ture
	Co	netruct	ion	<u>M</u> a	intenar	100		Per km			
		Per			Per		Totala	of maad	nahá	Per al a lum	Per
	s	of	Mean	\$	of	Mean	10101	1\$1	of	travel ^C	vehicle
State	million	total	growth ^b	million	total	growth ^b	million	km)		c/VKT)	(\$/vehicle)
New South											
Wales	588.5	65.6	-1.1	303.4	33.8	0.3	897.2	4 582	2.1	(2.2)	333.3
Victoria	318.2	61.2	-3.4	196.7	37.8	3.7	519.7	3 306	1.6	(1.7)	246.9
Queensland	274.6	63.9	-1.5	153.5	35.7	3.8	429.4	2 644	1.9	(2.1)	303.5
South											
Australia	94.6	55.4	-4.0	74.4	43.5	-0.1	170.9	1 673	1.6	(1.7)	231.6
Western											
Australia	161.6	70.2	-2.3	67.1	29.2	4.2	230.1	1 661	1.9	(1.9)	298.2
Tasmanta	70.7	68.9	0.4	31.8	31.0	0.1	102.6	4 601	2.9	(2.9)	423.9
Northern											
Territory	48.6	76.4	1.8	15.0	23.6	-3.7	63.6	2 979	6.3	(7.1)	1 059.3
Australian Canital				,							
Territory	8.1	54.0	-11.9	6.9	46.0	4.1	15.0	6 714	0.9	(1.1)	137.2
Australia	1 564.9	64.4	-2.0	848.8	35.0	1.7	2 428.5	3 028	1.9	(2.0)	298.6

TABLE 2.12-ROAD EXPENDITURE COMPONENTS, 1981-82

Total includes research and planning which is not listed separately. In 1981-82 this amounted to a total of \$19 a.

b.

Percentage average annual compound growth from 1970-71 to 1981-82 in constant 1981-82 prices. Percentage average annual compound growth from 1970-71 to 1981-82 in constant 1981-82 prices. Based on travel by State of operation, ie all travel within the State. The figures in brackets are based on travel by State of registration but excluding all interstate travel. C.

Sources: Bureau of Transport Economics (1982a and 1984b). Australian Bureau of Statistics (1983a and 1983e). State Road Authorities, personal communications. New South Wales Department of Main Roads (1982).

TABLE 2.13-POPULATION, TRAVEL AND EXPENDITURE, 1982

The Australian growth rate of vehicular travel per capita (2.8 per cent) was higher than the growth rate of population for Australia (1.4 per cent). This may be partly due to the growth rate in the number of drivers. For example, the number of driver's licences in June 1982 in New South Wales (NSW) was 3 202 723 and the annual growth rate between 1971 and 1982 was 3.7 per cent (NSW Commissioner of Motor Transport, undated a and b). This growth was considerably higher than the growth rate of the population of NSW of 1.1 per cent.

The negative growth rates in road expenditure per person in constant prices is a result of the positive growth in population and generally negative growth of expenditure in constant prices.

			Veh	icle travel	per capita	<i>i</i> b					
	Popul	ation ^a	Car. statio	ь and n wagons ^d	All veh	nicles ^d	Road expenditure ^c per capita ^a				
State	Thou– sands	Mean growth ^e	VKT	Mean growth ^e	VKT	Mean growth ^e	\$	Mean growth ^e			
New South Wales	5 307.9	1.1	6 047	na	8 065	na	169	-1.7			
NSW and ACT [†]	5 539.8	1.2	6 082	2.3	8 073	2.8	165	-2.0			
Victoria	3 994.1	0.9	6 445	2.1	8 098	2.3	130	-2.2			
Queensland	2 419.6	2.5	6 436	3.6	8 874	4.0	177	-2.4			
South Australia	1 328.7	0.9	6 536	1.9	8 286	2.1	129	-3.4			
Western Australia	1 336.9	2.2	6 583	2.3	9 164	2.4	172	-3.0			
Tasmania	429.8	0.7	6 343	3.1	8 405	3.5	239	-0.4			
Northern Territory	129.4	3.8	4 067	1.8	7 469	1.9	491	-3.5			
Australian Capital											
Territory	231.9	4.0	6 896	na	8 268	na	65	-11.4			
Australia	15 178.4	1.4	6 308	2.4	8 327	2.8	160	-2.2			

TABLE 2.13-POPULATION, TRAVEL AND EXPENDITURE, 1982

a.

For the twelve months ending 30 June. Based on travel by State of registration and population estimates for the twelve months ending 30 b.

с.

d.

e.

September. Expenditure in constant 1981-82 prices. Qualifying notes on vehicle definitions are given in Appendix I. Percentage average annual compound growth from 1971 to 1982. The combined New South Wales and Australian Capital Territory data is given since the VKT for 1971 is not available separately for these two States. f.

not available na

Sources: Australian Bureau of Statistics (1978, 1983b and 1983c). Bureau of Transport Economics (1982a and 1984b). Commonwealth Bureau of Census and Statistics (1973).
TABLE 2.14-VEHICLE OWNERSHIP, 1982

The vehicle ownership figures are based on the number of registered vehicles reported for the ABS Surveys of Motor Vehicle Usage at 30 September for the years concerned. Certain vehicles are excluded, as discussed in Appendix I. Population estimates are also for 30 September.

The number of registered articulated trucks per thousand persons in the NT was markedly higher than in other States. The number of utilities and panel vans per one thousand persons was also noticeably higher in the NT than in other States except for Queensland which also showed a relatively high ownership of this type of vehicle.

The ACT had a lower growth in ownership level of trucks than in all other States. However, the mean travel per truck was higher for vehicles registered in the ACT than in all other States, as shown in Table 2.9.

TABLE 2.14-VEHICLE OWNERSHIP, 1982

					Vehicle	e type ^a						
	Car 	•в and 1 wagonв	Motor cycles		Utiliti panel	Utilities and panel vans		Trucks	Articu tru	lated icks	Total ^b	
State of registration	Vehicles per 1000 persons	Mean growth ^C										
New South Wales	392.6	2.7	21.8	5.0	58.1	4.7	29.4	1.0	3.0	2.2	505.8	2.9
Victoria	425.5	2.8	17.1	7.4	52.3	3.0	26.5	1.7	2.8	0.8	525.6	2.9
Queensland	411.9	3.2	35.7	8.6	101.6	5.7	26.7	-1.9	3.4	3.0	580.3	3.6
South Australia	437.7	2.6	27.1	6.2	55.6	4.0	28.7	-1.2	3.3	2.9	554.2	2.6
Western Australia	422.0	2.8	24.1	6.8	79.9	3.8	42.8	1.1	3.2	2.0	573.3	2.9
Tasmania	440.4	3.0	11.6	2.5	77.9	4.9	28.2	-0.9	3.2	4.3	562.7	3.0
Northern Territory	274.1	2.8	30.4	3.1	108.4	5.8	38.6	-3.7	6.0	5.2	460.4	2.7
Australian Capital Territory	403.1	1.3	18.7	1.7	37.5	2.7	9.9	-4.4	0.9	3.4	470.4	1.2
Australia	411.4	2.8	23.2	6.5	65.9	4.5	29.1	0.4	3.1	2.1	533.8	3.0

Qualifying comments on vehicle definitions are given in Appendix I. Total includes 'other truck types' not listed separately. Ownership of 'other truck types' amounted to 1.2 vehicles per 1000 persons in 1982. Percentage average annual compound growth from 1971 to 1982. a. b.

c.

Sources: Australian Bureau of Statistics (1981a, 1983a and 1983b). Commonwealth Bureau of Census and Statistics (1973).

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TABLE 2.15-FUEL CONSUMPTION, 1982

The growth rates in the total consumption of fuel over the period 1979 to 1982 were lower than the growth rates of travel (Table 2.3) for each vehicle type except articulated trucks, which had a mean growth in fuel consumption of 5.0 per cent and a mean growth in travel of 4.8 per cent. However there was an increase in the mean load of articulated trucks over this period of 3.1 per cent, as shown in Table 2.7.

Despite the decrease in petrol consumption by commercial-type vehicles over the period 1979 to 1982, there was an increase in total fuel consumption by these vehicles over this period.

Changes in the consumption rates of fuels are shown in BTE (1984a, Figure 5.9) over the period 1971 to 1982.

All data are based on the twelve months period ending on 30 September.

TABLE 2.15-FUEL CONSUMPTION, 1982

				Total	fuel consu								
	<u>F</u>	Petrol	Distillate or diesel		LPG		Total ^b		Fuel consumption rate				
Type of vehicle ^a	(mill- ion litres)	Mean growth ^c	Petrol (1/100 km)	Distillate or diesel (1/100 km)	LPG (1/100 km)	Total (1/100 km)							
Cars and station wagons	11 843	3.5	57	47.0	144	125.0	12 046	3.9	12.5	10.4	17.3	12.5	
Motor cycles	121	6.5	-		-		121	6.3	5.6	-	-	5.6	
Utilities and panel vans	2 151	-1.4	140	50.5	48	124.0	2 339	0.7	13.9	11.8	19.1	13.8	
Rigid trucks	964	-0.3	1 116	18.2	46	19,6	2 129	8.2	23.3	26.9	35.1	25.3	
Articulated trucks	27	-13.5	1 578	5.5	6	47.7	1 610	5.0	51.4	53.7	79.6	53.7	
Total vehicles ^d	15 161	2.4	2 907	11.7	243	74.7	18 317	4.0	13.0	32.8	20.0	14.4	

a.

ь.

с.

Qualifying notes on vehicle definitions are given in Appendix I. Total includes consumption listed as 'not stated' in the source documents which amounted to 6 million litres in 1982. Percentage average annual compound growth from 1979 to 1982. Total includes 'other truck types' not listed separately. Consumption of all fuels by 'other truck types' amounted to 72 million litres in 1982. d.

••

not applicable nil or rounded to zero _

Sources: Commonwealth Bureau of Census and Statistics (1973). Australian Bureau of Statistics (1981a and 1983a).

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CHAPTER 3-RURAL AREAS

Rural areas exclude ten provincial urban areas as well as the capital cities, as described in Appendix I. The proportion of the road length in the rural area of each State is given in Table 2.2. The data in this chapter embraces national roads, except for the expenditure information in Tables 3.4 and 3.5 which exclude expenditure on national roads. The ACT data for travel and freight is based on the entire ACT area and is included with the urban data in Chapter 4.

TABLE 3.1-SEALED AND UNSEALED ROAD LENGTHS IN RURAL AREAS, 1982

Sealed roads include roads with bituminous or concrete surfaces. Growth rates are given for the lengths of sealed roads only, for the reasons given in the discussion on Table 2.1.

Road lengths are estimated for 30 June.

			Sealed			Unse	ealed		
State	Lei	ngth (km)	Per cent	Mean growth ^a	Lei	ngth (km)	Per cent	Te	otal (km)
New South Wales ^b	50	864	30.0	1.0	118	913	70.0	169	777
Victoria	42	700	34.0	0.8	82	751	66.0	125	451
Queensland	35	505	24.7	2.3	108	513	75.3	144	018
South Australia ^C	13	98 8	15.2	2.0	77	785	84.8	91	773
Western Australia	29	451	22.4	2.9	101	772	77.6	131	223
Tasmania	4	915	29.5	0.2	11	752	70.5	16	667
Northern Territory ^d	4	827	23.7	9.5	15	561	76.3	20	388
Australian Capital Territory ^e		284	60.8	8.6		183	39.2		467
Australia	182	534	26.1	1.6	517	230	73.9	699	764

TABLE 3.1-SEALED AND UNSEALED ROAD LENGTHS IN RURAL AREAS, 1982

Percentage average annual compound growth from 1972 to 1982. Includes 2489 km of roads in unincorporated areas as at 30 June 1982. a. b.

Includes an estimated length of 13 172 km for roads in unincorporated areas as at 30 June 1981. Estimate for 1981. Estimate for 1980. с.

d.

e.

Australian Bureau of Statistics (1983e). Commonwealth Bureau of Roads (1973 and 1974). New South Wales Department of Main Roads (1982). State Road Authorities, personal Sources: communications.

TABLE 3.2-TRAVEL AND FREIGHT IN RURAL AREAS, 1982

Comparison of Tables 3.2 and 2.3 shows that rural travel was approximately one third of total travel in Australia in 1982. Among the States, the proportion of travel in rural areas was highest in Tasmania (47 per cent), and lowest in Victoria (28 per cent). Approximately three quarters of all rural travel was carried out in the three eastern seaboard States.

Among the States, the mean traffic flow on Tasmanian rural roads of 279 vehicles per day was the highest, and bore the highest ratio to the mean flow on all roads of 438 vehicles per day (Table 2.4).

The freight movement in rural areas of 27 400 million tonne kilometres comprised less than half of the total freight movement in Australia of 59 366 million tonne kilometres (Table 2.6). However, in WA, Tasmania and the NT the proportions of the freight task carried out in rural areas were 67 per cent, 69 per cent and 76 per cent respectively, of the State totals.

The travel and freight movement data in both Tables 3.2 and 3.3 exclude interstate movement. Interstate travel is excluded because the source publication does not distinguish between interstate travel carried out in rural and urban areas. The exclusion of interstate travel has the effect of reducing the travel and mean flow by less than 4.6 per cent on average (Table 2.4) and of reducing the freight movement by less than 20.5 per cent on average (Table 2.6). The reduction for individual States are of a similar magnitude as shown in Table 2.4 for travel and mean daily traffic flow and Table 2.6 for freight movement.

All data are based on the twelve months ending on 30 September.

					Fr	eight move	ement
State of registration	Vehi (million VKT)	<u>cular tro</u> Per cent ^b	<u>wel</u> Mean growth ^c	Mean daily traffic flow ^a (AADT)	(million tonne km)	Per cent ^d	Mean growth ^c
New South Wales	14 621	34.1	4.4	235	8 965	44.0	7.0
Victoria	8 965	27.6	1.8	195	5 008	36.3	4.9
Queensland	7 966	36.8	5.0	151	4 101	46.3	9.1
South Australia	3 796	34.4	2.4	113	2 717	43.1	4.8
Western Australia	4 603	37.3	4.7	96	4 237	66.6	5.6
Tasmania	1 700	47.0	2.5	279	1 042	68.9	6.9
Northern Territory ^e	457	46.9	4.8	61	1 328	75.6	7.5
Australia	42 108	33.2	3.7	164	27 400	46.1	6.4

TABLE 3.2-TRAVEL AND FREIGHT IN RURAL AREAS, 1982

a. The mean of the daily traffic flows over the road network weighted according to the road length applicable to each rate of traffic flow; calculated by dividing the VKT by 365 and by the length of road (Table 3.1)

Percentage of all travel by vehicles registered within the State including travel outside State of b. registration.

c.

Percentage annual average compound growth from 1971 to 1982. Percentage of all freight movement by vehicles registered within the State including movement outside State of registration. d.

Data for the Northern Territory embraces on the Stuart and Barkly Highways which are given as provincial urban in the source publication. e.

Australian Bureau of Statistics (1983a and 1983e). Commonwealth Bureau of Census and Statistics (1973). State Road Authorities, personal communications. New South Wales Department of Main Roads Sources: (1982).

TABLE 3.3-TRAVEL AND FREIGHT BY VEHICLE TYPE IN RURAL AREAS, 1982

The rural growth rates by vehicle type for travel, freight movement and mean vehicle load of 3.7 per cent, 6.4 per cent and 1.4 per cent respectively, were all lower than the corresponding growth rates for Australia overall of 4.2 per cent, 7.3 per cent, and 1.9 per cent respectively, over the period 1971 to 1982 (Tables 2.3, 2.6 and 2.7).

The estimates of freight movement by utilities and panel vans in rural areas have relatively high standard errors and the corresponding estimates of growth rates are considerably less reliable than those for other vehicle types.

Interstate travel is excluded. The exclusion of interstate travel has the effect of reducing the travel and mean daily traffic flow by less than 4.6 per cent on average, and reducing freight movements by less than 20.5 per cent on average. The reductions for individual vehicle types are of similar magnitudes for travel and mean daily traffic flow for the per cent of the interstate travel given in Table 2.5. For freight movement the magnitudes were 1.1 per cent for utilities and station wagons, 3.5 per cent for rigid trucks and 28.8 per cent for articulated trucks.

All data are based on the twelve months ending 30 September.

	Travel			Mean traffi	Freight movement				Mean vehicle load ^c			
Vehicle type ^a	mili	lion VKT	Per cent ^d	Mean growth ^e	AADT	Per cent total	mill to	lion mne km	Per cent ^f	Mean growth ^e	tonnes	Mean growth ^e
Cars and station wagons	28	233	29.4	3.0	110	67.3		••				
Motor cycles		779	36.2	8.5	3	1.9		••		••	••	••
Utilities and panel vans	7	459	44.0	5.8	29	17.8		991	41.0	8.4	0.13	2.5
Rigid trucks	3	963	47.1	3.7	15	9.5	7	396	44.3	3.3	1.87	-0.4
Articulated trucks	1	415	47.2	4.6	5	3.4	18	181	45.2	7.5	12.85	2.8
Total ^g	41	929	33.0	3.7	164	100.0	26	568	44.8	6.4	2.07	1.4

TABLE 3.3-TRAVEL AND FREIGHT BY VEHICLE TYPE IN RURAL AREAS, 1982

a.

Qualifying comments on vehicle definitions are given in Appendix I. The mean of the daily traffic flows over the road network weighted according to the road length applicable to each rate of traffic flow; calculated by dividing the VKT by 365 and by the total length of b. road (Table 3.1).

- c.
- d.
- e.
- f.
- road (Table 3.1). Mean load is calculated by dividing tonne km by VKT. Percentage of Australian travel for vehicle type. Percentage average annual compound growth from 1971 to 1982. Percentage of Australian freight movements for the vehicle type. Total includes 'other truck types' not listed. 'Other truck types' accounted for 79.3 million kilometres of travel in 1982 but carried no freight. Totals are lower than corresponding totals in Table 3.2 because data sources used for this Table exclude the Stuart and Barkly Highways in the Northern Tarniform. a. Territory.
- not applicable • •

Sources: Australian Bureau of Statistics (1983a and 1983e). Commonwealth Bureau of Census and Statistics (1973). State Road Authorities, personal communications. New South Wales Department of Main Roads (1982).

TABLE 3.4-ROAD EXPENDITURE IN RURAL AREAS BY LEVEL OF GOVERNMENT, 1981-82

The proportion of total expenditure in rural areas contributed by the Commonwealth in 1981-82 was 21.0 per cent, compared with the Commonwealth share of 29.6 per cent of all roads expenditure in Australia (Table 2.11). The expenditure figure for rural roads excludes national roads which are predominantly in rural areas. If the Commonwealth expenditure on national roads were counted as rural, the Commonwealth share in rural areas would be 47.7 per cent. The growth rates do not necessarily indicate trends since there were fluctuations in expenditure levels in each State, and from each source, over this period (BTE, 1984b).

The road expenditure in Table 3.4 excludes expenditure on national roads. The table also excludes expenditure on planning and research, which amounted to \$19 million for Australia overall in 1981-82. Expenditure is discussed further in Appendix I, where various qualifications are made.

	Commonwealth		th		State	· · · · · ·		Local		Total		
		Mean g	rowth ^a		Mean g	rowth ^a		Mean g	rowth ^a	-	Mean g	rowth ^a
State	\$ million	Current prices	1981-82 prices ^b	ș million	Current prices	1981–82 prices ^b	\$ million	Current prices	1981–82 prices ^b	\$ million	Current prices	1981-82 prices ^b
New South Wales	49.3	6.8	-5.5	208.2	12.1	-0.7	162.7	11.9	-0.9	420.2	11.3	-1.4
Victoria	53.3	9.0	-3.5	80.6	10.4	-2.3	68.0	7.6	- 4. 7	201.9	9.0	-3.5
Queensland	63.6	6.2	-6.0	135.2	16.3	2.9	41.6	0.8	-10.8	240.4	9.4	-3.2
South Australia	16.2	14.8	1.6	31.3	11.8	-1.0	22.5	7.3	-5.0	70.0	10.8	-1.9
Western Australia	35.2	6.9	-5.4	51.2	14.4	1.3	23.9	11.7	-1.1	110.3	11.0	-1.7
Tasmania	9.9	3.3	-8.5	30.5	24.3	10.1	8.2	0.4	-11.2	48.6	11.6	-1.2
Northern Territory ^C	6.6	8.6	-3.8	20.4	na	na	0.7	na	na	27.7	33.3	18.0
Australian Capital Territory ^d	0.9	3.9	-8.1							0.9	3.9	-8.1
Australia	235.0	7.4	-4.9	557.4	14.1	1.0	327.6	8.4	-4.1	1 120.0	10.7	-2.0

TABLE 3.4-ROAD EXPENDITURE IN RURAL AREAS BY LEVEL OF GOVERNMENT, 1981-82

a. b.

Percentage average annual compound growth from 1974-75 to 1981-82. Constant 1981-82 prices calculated using BTE 1982 road construction index in BTE (1982b and 1984c). Self government granted 1978-79. No State or local government in the ACT. ACT expenditure data for rural and urban split are based on BTE estimates. c. d.

na

not available not applicable ••

Source: Bureau of Transport Economics (1982a and 1984b).

Chapter ŝ

TABLE 3.5-ROAD EXPENDITURE COMPONENTS IN RURAL AREAS, 1981-82

Road expenditure per kilometre of road of \$1638 was noticeably lower in rural areas than the overall Australian expenditure per kilometre of \$3028. The expenditure per vehicle kilometre of travel in rural areas, of 3.4 cents, was markedly higher than that for Australia of 2.0 cents, reflecting the relatively low usage of rural roads.

This table excludes expenditure on national roads. It also excludes expenditure on planning and research which amounted to \$19 million for Australia in 1981-82. Further qualifications of expenditure data are given in Appendix I, which includes definitions of the classifications of construction and maintenance.

	Construction			M	laintenar	ice	Tot	al	Per km	Per Vehicle km of	
State	\$ million	Per cent ^b	Mean growth ^c	\$ million	Per cent ^b	Mean growth ^c	\$ million	Per cent ^d	of road (\$/km)	km of travel (c/VKT) ^e	
New South Wales	263.7	62.8	-0.2	156.5	37.2	-3.3	420.2	46.8	2 494	3.5	
Victoria	104.4	51.7	-3.7	97.5	48.3	-3.3	201.9	38.8	1 618	2.6	
Queensland	151.4	63.0	-3.8	89.0	37.0	-2.1	240.4	56.0	1 715	4.5	
South Australia	28.0	40.0	-4.2	42.0	60.0	-0.1	70.0	41.0	785	2.5	
Western Australia	70.9	64.3	-3.7	39.4	35.7	2.8	110.3	47.9	872	2.7	
Tasmania	28.1	57.8	-0.2	20.5	42.2	-2.5	48.6	47.4	2 967	3.8	
Northern Territory	19.6	70.8	37.5	8.1	29.2	3.0	27.7	43.6	1 563	9.7	
Australian Capital Territory ^f		-	-	0.9	100.0	-3.5	0.9	6.0	1 842	^g	
Australia	666.1	59.5	-1.9	453.9	40.5	-2.2	1 120.0	46.1	1 638	3.4	

Rate of $expenditure^{a}$

TABLE 3.5-ROAD EXPENDITURE COMPONENTS IN RURAL AREAS, 1981-82

The expenditure excludes national roads and it was necessary to adjust the length and travel data according. However, since data were only available for national highways, the rates are slightly reduced by the inclusion of development roads. Percentage of rural expenditure. Percentage average annual compound growth from 1974-75 to 1981-82 in 1981-82 prices. Percentage of the total expenditure which is given in Table 2.11. Excludes interstate travel as discussed in the explanatory notes under Table 3.2. ACT expenditure data are based on a BTE estimate of the division of the total between rural and urban a.

b.

c.

d.

e. f.

areas.

g٠ ACT data for travel is treated as urban, and is given in Table 4.5.

• •

not applicable nil or rounded to zero. -

Sources: Bureau of Transport Economics (1982a and 1984b). Australian Bureau of Statistics (1983a and 1983e). State Road Authorities, personal communications. New South Wales Department of Main Roads (1982). National Association of Australian State Road Authorities (1984a and 1984b).

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TABLE 3.6-POPULATION, TRAVEL AND EXPENDITURE, IN RURAL AREAS, 1981

Vehicle travel per capita was obtained by dividing the VKT which occurred in rural areas by the population in rural areas. However, travel in rural areas includes travel by vehicles registered by both rural and urban residents. The VKT carried out in rural areas per capita was 10 336, which was considerably higher than the Australian average of 8327 (Table 2.13). Similarly, the road expenditure per capita of \$279 was significantly higher than the Australian average of \$160. The growth rates in expenditure per capita do not necessarily indicate trends because of the fluctuations in expenditure discussed in connection with Table 3.4.

	Pc	opulatio	on ^a	Vehicl per d	e travel ^b capita ^a	Road expenditure ^c per capita ^a		
State	Thou- sands	Per cent ^d	Mean growth ^e	VKT	Mean growth ^e	\$	Mean growth ^e	
New South Wales NSW and ACT ^f	1 309.7 1 310.9	25.5 24.5	1.6 1.6	11 163 na	na na	313 321	-3.0 na	
Victoria	856.1	22.3	1.0	10 473	1.0	258	-2.5	
Queensland	925.9	40.3	2.6	8 603	2.9	268	-4.2	
South Australia	353.1	27.5	0.6	10 750	2.0	187	-6.6	
Western Australia	374.7	29.4	1.4	12 284	3.8	311	-4.0	
Tasmania	186.0	44.4	0.6	9 136	2.1	272	-3.2	
Northern Territory	67.1	54.4	3.8	6 812	1.5	350	-12.6	
Australian Capital Territory	1.2	0.5	na ^g	nat	¹ na	_1	na	
Australia	4 073.9	26.8	1.6	10 336	2.4	279	-3.8	

TABLE 3.6-POPULATION, TRAVEL AND EXPENDITURE, IN RURAL AREAS, 1981

a.

- For the twelve months ending 30 June. Travel data by State of registration and based on the twelve months ending 30 September. Excludes interstate travel as discussed in the explanatory notes under Table 3.2 Total expenditure in constant 1981-82 prices. Pecentage of State population b.
- c.
- d.
- e. f.
- Percentage of State population Percentage average annual compound growth from 1971 to 1981. The combined New South Wales and Australian Capital Territory data is given since the VKT for 1971 is not available separately for these two States. Population growth data not available since there were large urban boundary changes enlarging Canberra Statistical Division between the 1971 and 1981 censuses. If boundary changes are ignored then the mean g٠
- h.
- growth was 0.5 per cent. No VKT data available for rural ACT since ABS (1983a) treats the whole of ACT as urban. ACT expenditure data estimate is based on a BTE (1984b) assessment of the division of the total expenditure between rural and urban areas. 1.

not available na

nil or rounded to zero

Sources: Australian Bureau of Statistics (1978, 1983a and 1983d). Bureau of Transport Economics (1982a and 1984b). Commonwealth Bureau of Census and Statistics (1973).

CHAPTER 4-URBAN AREAS

Urban areas include the capital cities and ten major provincial cities as described in Appendix I. The effect of urban boundary changes on mean growth rates is discussed in Appendix I. The length of roads in urban areas in 1982 was 12.7 per cent of the total length of roads in Australia, although this percentage varied greatly from State to State as shown in Table 2.2. This chapter includes data for national roads, which largely account for the urban components of the national highway network. Approximately two per cent of the total length of national highways is situated in urban areas. However, the expenditure data excludes expenditure on national roads. The ACT data for travel and freight is based on the ACT area, and not the statistical division of Canberra.

TABLE 4.1-SEALED AND UNSEALED ROAD LENGTHS IN URBAN AREAS, 1982

Sealed roads include roads with bituminous or cement concrete surfaces. The majority of the unsealed roads are situated in outer urban areas (Commonwealth Bureau of Roads, 1974). The growth in the length of sealed roads stems from both the sealing of unsealed roads, and from the construction of new sealed roads (particularly in newly developed residential areas).

Road length data are based on estimates for 30 June.

		Sealed		Uns		
State	Lengt (km	h Per) cent	Mean growth ^a	Length (km)	Per cent	Total (km)
New South Wales	21 31	2 81.9	3.0	4 703	18.1	26 015
Victoria	21 22	7 66.9	4.5	10 524	33.1	31 751
Queensland	13 49	1 73.3	7.2	4 904	26.7	18 39 5
South Australia	740	8 71.2	3.2	2 997	28.8	10 405
Western Australia	680	7 93.4	0.7	482	6.6	7 289
Tasmania	3 09	7 55.0	9.6	2 534	45.0	5 631
Northern Territory ^b	77	1 80.4	na	188	19.6	959
Australian Capital Territory ^C	1 58	1 89.5	5.2	186	10.5	1 767
Australia	75 69	4 74.1	4.2	26 518	25.9	102 212

TABLE 4.1-SEALED AND UNSEALED ROAD LENGTHS IN URBAN AREAS, 1982

Percentage average annual compound growth from 1972 to 1982. Estimate for 1981. Estimate for 1980. a.

ь.

c.

na not available

Australian Bureau of Statistics (1983e). Commonwealth Bureau of Roads (1974). State Road Authorities, personal communications. Sources:

52

TABLE 4.2-TRAVEL AND FREIGHT IN URBAN AREAS, 1982

Urban travel comprised approximately two-thirds of Australian travel in 1982.

Among the States, the highest mean urban traffic flow in 1982 of 2827 vehicles per day occurred in WA, which recorded the second lowest rural mean traffic flow of 96 vehicles per day (Table 3.2).

Over 80 per cent of urban freight movement in 1982 occurred in the three eastern seaboard States.

The travel and freight movement data in both Tables 4.2 and 4.3 exclude interstate movement. The exclusion of interstate travel for urban areas has an effect similar to that for rural areas as discussed in the text given with Table 3.2. Travel data are based on the twelve months ending 30 September.

					Freight movement				
State of registration	Vehi (million VKT)	cular tr Per cent ^b	Mean growth ^C	Mean daily traffic flow ^a (AADT)	(million tonne km)	$^{Per}_{cent}{}^d$	Mean growth ^c		
New South Wales NSW and ACT ^e	26 629 28 042	62.0 62.5	na 3.4	2 804 2 719	8 212 8 336	40.3 40.1	na 6.9		
Victoria	21 821	67.3	4.0	1 882	4 548	33.0	5.8		
Queensland	12 690	58.7	7.8	1 890	3 603	40.1	13.2		
South Australia	6 530	59.2	3.3	1 719	1 040	16.5	3.3		
Western Australia	7 523	61.0	4.6	2 827	1 648	25.9	6.1		
Tasmania	1 834	50.1	6.1	892	417	27.6	8.1		
Northern Territory ^f	437	44.9	6.6	1 248	182	10.4	12.8		
Australian Capital Territory	1 413	73.5	na	1 733	123	30.2	na		
Australia	78 879	62.2	4.3	2 114	19 777	33.3	7.2		

TABLE 4.2-TRAVEL AND FREIGHT IN URBAN AREAS, 1982

The mean of the daily traffic flows over the road network weighted according to the road length applicable to each rate of traffic flow; calculated by dividing the VKT by 365 and the length of road (lable 4.1). a.

b.

c.

d.

Percentage of State's travel. Percentage of average annual compound growth from 1971 to 1982. Percentage of State's freight movement. The combined New South Wales and Australian Capital Territory data is given since the VKT for 1971 is not available separately for these two States. e.

Data for the NT excludes the Stuart and Barkly Highways which are classified as provincial urban in the f. source publications.

na not available

Sources: Australian Bureau of Statistics (1983a and 1983e). Commonwealth Bureau of Census and Statistics (1973). State Road Authorities, personal communications.

TABLE 4.3-TRAVEL AND FREIGHT BY VEHICLE TYPE IN URBAN AREAS, 1982

Travel by cars and station wagons comprised 80.6 per cent of all travel in urban areas in 1982 compared with 67.3 per cent in rural areas as shown in Table 3.3.

The daily mean traffic flow of 2119 vehicles per day was nearly thirteen times the daily mean traffic flow of 164 vehicles per day on roads in rural areas (Table 3.3). The mean flow of cars and station wagons of 1 707 vehicles per day was approximately fifteen and a half times the mean flow of cars and station wagons of 110 vehicles per day on roads in rural areas.

The estimates of freight movement by utilities and panel vans in urban areas have relatively high standard errors and the corresponding estimates of growth rates are somewhat less reliable than those for other vehicle types. The mean vehicle load in urban areas (1.4 tonnes) was noticeably lower than that in rural areas (2.1 tonnes) (Table 3.3) due primarily to the lower mean load on articulated trucks, which carried out more than half of the tonne kilometres of freight in both rural and urban areas in 1982.

Interstate travel is excluded which has an effect similar to that discussed in the text for Table 3.3. All travel data are based on the twelve months ending 30 September.

	Travel			Mean da traffic	aily flow ^b	Fre	eight move	ment	Mean vehicle load ^c		
Vehicle type ^a	million VKT	$Per \\ cent^d$	Mean growth ^e	AADT	Per cent	millior tonne kn	n e Per n cent ^f	Mean growth ^e	tonnes	Mean growth ^e	
Cars and station wagons	63 687	66.3	4.1	1 707	80.6			••			
Motor cycles	1 244	57.8	5.7	33	1.6			••			
Utilities and panel vans	8 888	52.4	6.7	238	11.2	1 400	57.9	7.8	0.16	1.0	
Rigid trucks	4 230	50.3	2.6	113	5.4	8 715	52.2	4.4	2.06	1.8	
Articulated trucks	853	28.4	8.0	22	1.1	10 493	26.1	11.8	12.30	3.5	
Total vehicles ^g	79 059	62.3	4.3	2 119	100.0	20 609	34.7	7.2	1.36	1.8	

TABLE 4.3-TRAVEL AND FREIGHT BY VEHICLE TYPE IN URBAN AREAS, 1982

a.

Qualifying comments on vehicle definitions are given in Appendix I. The mean of the daily traffic flows over the road network is weighted according to the road length ь. applicable to each rate of traffic flow; calculated by dividing the VKT by 365 and by the total length of road (Table 4.1).

c.

d.

e.

f.

road (lable 4.1). Mean load is calculated by dividing tonne km by VKT. Percentage of Australian travel by vehicle type. Percentage of average annual compond growth from 1971 to 1982. Percentage of Australian freight movement by vehicle type. Includes 'other truck types' not listed. 'Other truck types' accounted for 155 million VKT and no freight movement in 1982. Totals are higher than the corresponding totals in Table 4.2 because data sources used for this table include the Stuart and Barkly Highways in the Northern Territory. g.

not applicable ••

Sources: Australian Bureau of Statistics (1983a and 1983e). Commonwealth Bureau of Census and Statistics (1973). State Road Authorities, personal communications.

TABLE 4.4-ROAD EXPENDITURE IN URBAN AREAS BY LEVEL OF GOVERNMENT, 1981-82

The proportion of road expenditure in urban areas contributed by the Commonwealth was 19.0 per cent, considerably lower than the Commonwealth proportion of the total Australian road expenditure of 29.6 per cent (Table 2.11). However, the expenditure in urban areas excludes expenditure on national roads as noted above. The table also excludes expenditure on planning and research which amounted to \$19 million for Australia overall in 1981-82.

Appendix I includes further qualifications of expenditure data.

		Commonwealth			State			Local		Total			
		Mean g	rowth ^a		Mean	rowth ^a		Mean g	rowth ^a		Mean g	rowth ^a	
State	\$ million	Current prices	1981-82 prices ^b	\$ million	Current prices	1981–82 prices ^b	\$ million	Current prices	1981-82 prices ^b	\$ million	Current prices	1981–82 prices ^b	
New South Wales	62.7	3.5	-8.3	116.3	14.1	1.0	190.4	14.1	1.0	369.4	11.6	-1.2	
Victoria	32.3	-2.3	-13.5	115.8	10.4	-2.3	109.5	17.9	4.4	257.6	10.2	-2.4	
Queensland	17.0	-3.2	-14.3	29.3	18.4	4.9	73.0	14.6	1.5	119.3	10.8	-2.0	
South Australia	12.9	6.6	-5.6	19.5	7.0	-5.3	33.7	16.3	2.9	66.1	10.8	-1.9	
Western Australia	18.8	-0.1	-11.5	36.3	26.2	11.7	32.7	16.1	2.8	87.8	12.9	-	
Tasmania	22.7	20.7	6.9	5.1	12.3	-0.6	12.3	16.2	2.9	40.1	17.9	4.4	
Northern Territory ^c	3.1	-4.2	-15.2	5.9			2.2	10.4	-2.3	11.2	11.3	-1.5	
Australian Capital Territory ^d	14.2	-6.5	-17.2					••		14.2	-6.5	-17.2	
Australia	183.7	1.2	-10.4	328.2	13.6	0.5	453.6	15.4	2.1	965.5	10.8	-1.9	

TABLE 4.4-ROAD EXPENDITURE IN URBAN AREAS BY LEVEL OF GOVERNMENT, 1981-82

a.

b.

c.

Percentage average annual compound growth from 1974-75 to 1981-82. Constant 1981-82 prices calculated using BTE 1982 road construction index in BTE (1982b and 1984c). Self government granted 1978-79. No State or local government in ACT. Expenditure for the ACT is based on a BTE estimate of the division of the total between rural and urban areas. d.

••

not applicable nil or rounded to zero -

Sources: Bureau of Transport Economics (1982a and 1984b).

TABLE 4.5-ROAD EXPENDITURE COMPONENTS IN URBAN AREAS, 1981-82

The relative expenditure on construction and maintenance should be considered approximate in view of inconsistencies in the definitions as discussed in Appendix I. Mean growth rates in expenditure should be regarded as indicative only, in view of the irregular expenditure levels which occurred in various States (BTE 1984b).

The mean expenditure per kilometre of road in urban areas (\$9472) was markedly higher than the Australian average (\$3028). The expenditure per vehicle kilometre of travel in urban areas of 1.2 cents was considerably lower than the Australian average of 2.0 cents, reflecting the relatively high usage of urban roads.

This table excludes expenditure on national roads. It also excludes expenditure on planning and research which amounted to \$19 million for Australia overall in 1981-82. Appendix I includes further details of expenditure gualifications and definitions.

TABLE 4.5-ROAD EXPENDITURE COMPONENTS IN URBAN AREAS, 1981-82

Rate of $expenditure^{a}$

	Construction			Maintenance			Total		Per km	Per vchicle
State	\$ million	$^{Per}_{cent}$	Mean growth ^C	\$ million	Per cent ^b	Mean growth ^C	t million	Per cent ^d	of road (\$/km)	km of travel ^e (c/VKT)
New South Wales	236.3	64.0	-2.1	133.1	36.0	0.7	369.4	41.2	14 222	1.4
Victoria	164.8	64.0	-6.0	92.8	36.0	8.6	257.6	49.6	8 122	1.2
Queensland	75.2	63.0	-3.7	44.1	37.0	1.7	119.3	27.8	6 505	1.0
South Australia	38.5	58.2	-5.1	27.6	41.8	4.9	66.1	38.7	6 377	1.0
Western Australia	71.0	80.9	-0.2	16.8	19.1	0.7	87.8	38.1	12 149	1.2
Tasmania	30.3	75.6	5.3	9.8	24.4	2.0	40.1	39.1	7 148	2.2
Northern Territory	8.0	71.4	-3.9	3.2	28.6	7.9	11.2	17.6	11 802	2.8
Australian Capital Territory ^f	8.1	57.1	-23.0	6.1	42.9	11.1	14.2	94.6	8 025	1.1 ^g
Australia	632.0	65.5	-3.9	333.5	34.5	3.2	965.5	39.8	9 472	1.2

The expenditure is exclusive of national roads, and the length and travel data are adjusted to exclude national highways. Since developmental roads could not also be excluded, the rates are slightly a. reduced.

Percentage of urban expenditure. b.

c.

d.

Percentage average annual compound growth from 1975 to 1982 in constant 1981-82 prices. Percentage of the total expenditure which is given in Table 2.11. Interstate travel is excluded, which has the effect of increasing these expenditures. ACT expenditure data was based on a BTE estimate of the division of the total expenditure between rural e. f. and urban areas.

Expenditure rate based on the total expenditure and the total travel within the ACT. g.

Sources: Bureau of Transport Economics (1982a and 1984b). State Road Authorities, personal communications. Australian Bureau of Statistics (1983a and 1983e). National Association of Australian State Road Authorities (1984b).

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TABLE 4.6-POPULATION, TRAVEL AND EXPENDITURE, IN URBAN AREAS, 1981

The mean growth rate of the population of Australian urban areas of 1.3 per cent was slightly lower than the Australian mean population growth of rural areas of 1.6 per cent (Table 3.6) and the overall Australian rate of 1.4 per cent (Table 2.13). However the urban growth rate was higher than the rural growth rate in four States (SA, WA, Tasmania and NT).

Vehicle travel per capita was obtained by dividing the VKT occurring in urban areas (Table 4.2) by the population in urban areas. However, travel in urban areas includes travel by vehicles registered by both rural and urban residents. The vehicle travel per capita in urban areas of 7511 vehicle kilometres was somewhat lower than the average of 10 336 vehicle kilometres for rural areas.

The expenditure per capita in urban areas of 93 in 1981-82 was very much lower than the expenditure per capita in rural areas of 279 (Table 3.6).

	Population ^a			Vehicle travel ^b per capita ^a		Road expenditure ^c per capita ^a	
State	Thou- sands	Per cent ^d	Mean growth ^e	VKT	Mean . growth ^e	\$	Mean growth ^e
New South Wales	3 816.5	74.5	0.9	6 977	na 27	102	-3.0
	4 050.9	/5.5	1.1	0 947	2.7	102	-3.3
Victoria	2 976.4	77.7	0.9	7 331	3.5	83	-3.9
Queensland	1 369.2	59.7	2.1	9 269	6.4	84	-3.5
South Australia	931.9	72.5	1.0	7 007	2.6	78	-4.1
Western Australia	898.9	70.6	2.5	8 370	2.5	86	-4.8
Tasmania	232.9	55.6	0.8	7 874	5.9	154	-
Northern Territory	56.2	45.6	4.3	7 775	2.9	354	na
Australian Capital Territory	220.4	99.5	na ^g	6 411	na	98 ^h	-8.4
Australia	10 502.4	72.1	1.3	7 511	3.5	93	-3.4

TABLE 4.6-POPULATION, TRAVEL AND EXPENDITURE, IN URBAN AREAS, 1981

a.

ċ.

d.

e.

f.

Percentage or State population. Percentage average annual compound growth from 1971 to 1981. The combined New South Wales and Australian Capital Territory data is given since the VKT for 1971 is not available separately for these two States. Population growth data not available since there were large urban boundary changes enlarging the Canberra Statistical Division between 1971 and 1981 censuses. If boundary changes are ignored then the mean g.

growth was 4.4 per cent. ACT expenditure data are based on a BTE estimate of the division of the total expenditure between rural h. and urban areas.

not available na

nil or rounded to zero ••

For the twelve months ending 30 June. Travel by State of registration and based on the twelve months ending 30 September. Exclusion of interstate travel as discussed in the explanatory notes under Table 3.2. Constant 1981-82 prices. Percentage of State population. b.

Sources: Australian Bureau of Statistics (1978, 1983a and 1983d). Bureau of Transport Economics (1982a and 1984b). Commonwealth Bureau of Census and Statistics (1973).

CHAPTER 5-NATIONAL HIGHWAYS

National highways are those roads declared under the relevant Commonwealth legislation which provides funds for the construction and maintenance of those roads. National highways are a subset of the roads for which data are given in earlier chapters. The national highways data exclude parts of the highways linking Canberra to the Hume Highway, since no national highways declarations have been made within the ACT.

Tables 5.1 to 5.3 inclusive are comprised of data for national highways only, whereas Table 5.4 contains data for national roads with a subset for national highways. National roads comprise both national highways and developmental roads. By contrast with national highways, developmental roads are generally declared for relatively short periods of time and their declarations revoked after certain construction works are completed.

Although national highways were not declared until 1974, for the purpose of determining changes in conditions over the period 1972 to 1981, data for the same set of roads were extracted from the 1972 inventory obtained for the Australian Roads Survey 1969-74 (Commonwealth Bureau of Roads 1973).

TABLE 5.1-SEALED AND UNSEALED LENGTHS OF NATIONAL HIGHWAYS, 1981

A more detailed summary of lengths of national highways of various surface types and seal widths is given in BTE (1984a, Appendix II). The length of divided national highways of 587 kilometres in 1981 was approximately one-fifth of the length of all divided arterial roads in Australia in 1982 of 3028 kilometres (Table 2.1).

Road lengths are estimated for 30 June in the years involved. No national highways have been declared for the ACT.

							Total		Per	
State	Length (km)	Sealed Per cent	Mean growth ^c	Unsea Length (km)	Per cent ^b	Length (km)	Per cent State ^d	cent" in rural areas	Divided (km)	
New South Wales	1 301	100.0	^e	-	-	1 301	0.66	97	212	
Victoria	686	100.0	e	-	-	686	0.44	95	167	
Queensland	3 536	91.1	0.7	344	8.9	3 880	2.39	99	102	
South Australia	1 704	65.5	4.5	898	34.5	2 602	2.57	98	85	
Western Australia	4 014	84.8	7.7	719	15.2	4 733	3.42	99	8	
Tasmania	310	100.0	^e	-	_	310	1.39	93	7	
Northern Territory	2 681	100.0	1.6	-	_	2 681	12.56	100	6	
Australia	14 232	87.9	2.6	1 961	12.1	16 193	2.02	98	587	

TABLE 5.1-SEALED AND UNSEALED LENGTHS OF NATIONAL HIGHWAYS, 1981

a.

b.

Percentage of the length of national highways situated in rural areas. Percentage of national highway length. Percentage average annual compound growth from 1972 (for the equivalent set of roads) to 1981. Percentage of State length. 100 per cent sealed in 1972. c.

d.

e.

••

not applicable nil or rounded to zero -

Sources: State Road Authorities, personal communications. National Association of Australian State Road Authorities (1984b). Commonwealth Bureau of Roads (1973).

TABLE 5.2-TRAVEL ON NATIONAL HIGHWAYS, 1981

The 10 033 million VKT on national highways in 1981 represented nearly 8 per cent of the 126 866 million VKT on Australian roads in 1982 (Table 2.3). However, the length of national highways of 16 193km in 1981 was just over two per cent of the total length of roads in Australia of 801 976 in 1982. (Table 2.1).

Travel by rigid and articulated trucks comprised a somewhat higher proportion of travel on national highways in Victoria and the NT in 1981 than in the other States.

Definitions of vehicle types on national highways differ slightly from those used in previous chapters, as discussed in Appendix I.

State	Cars and station wagons	Utilities and panel vans	Rigid and articulated trucks	Total	Mean growth ^a	Per cent ^b
New South Wales ^C	2 364	432	425	3 221	4.6	7.5
Victoria	896	152	331	1 379	3.6	4.3
Queensland	2 177	298	395	2 870	5.4	13.3
South Australia	829	218	164	1 211	9.6	11.0
Western Australia	433	139	102	674	3.1	5.5
Tasmania	400	34	32	466	3.2	12.9
Northern Territory	151	14	47	212	na	21.8
Australia	7 250	1 287	1 496	10 033	4.8	7.9

TABLE 5.2-TRAVEL ON NATIONAL HIGHWAYS, 1981

a.

b.

Percentage average annual compound growth from 1972 to 1981. Percentage of State travel. New South Wales vehicle composition based on 1972 national highway vehicle composition. с.

not available na

Bureau of Transport Economics (1984a). Commonwealth Bureau of Roads (1973). State Road Authorities, personal Sources: communications.

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TABLE 5.3-MEAN DAILY TRAFFIC FLOW ON NATIONAL HIGHWAYS, 1981

The mean daily traffic flow is the mean of the traffic flows over the road network weighted according to the road length applicable to each rate of traffic flow. It is calculated by dividing VKT (Table 5.2) by 365 and the road length (Table 5.1).

Rigid and articulated trucks carried out nearly 15 per cent of the travel on national highways in 1981, compared with 9 per cent of the travel on all roads in 1982 (Table 2.5), and less than 13 per cent of the travel on rural roads in 1982 (Table 3.3).

As Table 5.3 shows, the level and composition of traffic flows varied substantially among the States. The variation of traffic flows on national highways within individual States is illustrated in terms of the proportion of length in various traffic volume ranges in BTE (1984a, Figure 2.3). Similar information is given for component sections of the national highway system in each State for 1977 in BTE (1979, pp241-296). BTE (1984a, Figure 2.5) also includes data on the length of road of various seal widths for a number of traffic volume ranges.
	Vehicle tupe ^a								
	Cars and station wagons		Ntilities and panel vans		Rigid and articulated trucks				
State	AADT	Per cent ^b	AADT	Per cent ^b	AADT	Per cent ^b	Total (AADT)		
New South Wales ^C	4 978	73.4	908	13.4	895	13.2	6 783		
Victoria	3 578	65.0	607	11.0	1 321	24.0	5 507		
Queensland	1 537	75.9	210	10.4	278	13.7	2 026		
South Australia	872	68.4	229	18.0	172	11.1	1 275		
Western Australia	250	64.2	80	20.6	59	15.1	390		
Tasmania	3 535	85.8	300	7.3	282	6.8	4 118		
Northern Territory	227	71.4	20	6.3	70	22.0	318		
Australia	1 238	72.2	218	12.7	256	14.9	1 714		

TABLE 5.3-MEAN DAILY TRAFFIC FLOW ON NATIONAL HIGHWAYS, 1981

Definitions of vehicle types differ from those used in previous chapters as discussed in Appendix I. Percentage of total. New South Wales vehicle composition based on 1972 national highway vehicle composition. a.

b.

с.

Bureau of Transport Economics (1984a). Commonwealth Bureau of Roads (1973). State Road Authorities, personal Sources: communications.

TABLE 5.4-ROAD EXPENDITURE ON NATIONAL ROADS, 1981-82

Whilst expenditure on national roads is a component of the Australian road expenditure given in Chapter 2, it is excluded from the rural and urban expenditure data given in Chapters 3 and 4.

In 1981-82 the estimated expenditure on national highways of \$299.8 million represented 12.3 per cent of total road expenditure of \$2 428.5 million. By comparison, the estimated travel on national highways in 1981 comprised 7.9 per cent of total road travel.

Expenditure on construction accounted for 81.3 per cent of expenditure on national roads in 1981-82, somewhat higher than the corresponding proportion for all roads of 64.4 per cent (Table 2.12) and also higher again than the proportion for rural roads of 59.5 per cent (Table 3.5).

The Australian expenditure per VKT on national highways of 3.0 cents was appreciably higher than the Australian average of all roads of 1.9 cents (Table 2.12), but lower than the average of rural roads of 3.4 cents (Table 3.5).

Expenditure on national roads excludes expenditure on planning and research which amounted to \$19 million for Australia overall in 1981-82. Further qualifications of the expenditure data are given in Appendix I.

TABLE 5.4-EXPENDITURE ON NATIONAL ROADS, 1981-82

								Na			
			Nc								
			Expenditure item				Expend		Expendit	<u>iture rate</u>	
	Level of government		Construction		Maintenance		Total	Total		Per km of	Per vehicle km of
State	Commonwealth (\$ million)(\$	State million)	\$ million	Per cent ^b	\$ million	Per cent ^b	\$ million	\$ million	Per cent ^c	road (\$/km)	travel (c/VKT)
New South Wales	102.2	-	88.5	86.6	13.7	13.4	102.2	98.2	10.9	75 445	3.0
Victoria	52.9	2.4	49.0	88.6	6.3	11.4	55.3	38.4	7.4	56 007	2.8
Queensland	60.0	8,5	48.0	70.1	20.5	29.9	68.5	65,6	15.3	16 902	2.3
South Australia	27.3	5.4	27.9	85.3	4.8	14.7	32.7	32.2	18.8	12 364	2.7
Western Australi	a 30.1	0.7	19.8	64.3	11.0	35.7	30.8	28.4	12.3	5 991	4.2
Tasmania	13.8	-	12.4	89.9	1.4	10.1	13.8	13.4	13.1	41 847	2.9
Northern Territo	ory 13.3	11.7	21.3	85.2	3.7	14.8	25.0	21.1	33.2	7 874	10.0
Australia	299.6	28.7	266.9	81.3	61.4	18.7	328.3	297.2	12.2	18 354	3.0

The division of expenditure between national highways and developmental roads is known for all States except New South Wales, where the division of allocated expenditure is used, as distinct from the division of actual expenditure. Percentage of national roads expenditure. Percentage of State expenditure. a.

b.

C۰

nil or rounded to zero -

Bureau of Transport Economics (1982a, 1984a and 1984b). Australian Department of Transport, personal communication. State Road Authorities, personal communications. South Australia, Highways Department (1982). Western Australia, Main Roads Department (1982). Sources:

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APPENDIX I-EXPLANATORY NOTES ON DATA SOURCES AND ACCURACY

This Appendix firstly includes an explanation of the basis of the division of States into urban and rural areas for the purposes of this Paper. Changes in urban boundaries are discussed in terms of their general effects on the estimates of growth rates between 1982 and 1971 or 1979.

Following the discussion of rural and urban areas, each type of information is discussed individually as a guide to its limitations and accuracy, and to provide further details of the qualifications referred to in the text and tables of the chapters.

RURAL AND URBAN AREAS

The definitions adopted by the Australian Bureau of Statistics (ABS) (formerly the Commonwealth Bureau of Census and Statistics up to 1974) for the capital city and provincial urban areas, are followed in this Rural areas are those outside urban area boundaries. Paper. The urban areas comprise:

- all areas within capital city Statistical Divisions (except for Darwin):
- the Proposed Greater Darwin¹;
- the Statistical Districts of Newcastle, Wollongong and Geelong; and
- the provincial urban areas, as defined by ABS^2 , of Ballarat, Bendigo, Townsville, Toowoomba, Gold Coast, Rockhampton and Launceston.

Some variations of the boundaries of these areas affect the growth rates given for certain data items, and these are discussed later in this Appendix.

Comparable to the City of Darwin area plus the balance of the 1945 Area (ABS 1977, 1978b). Contiguous areas with population densities of at least 200 persons per square kilometre at the time of the census. 1.

^{2.}

In addition, areas within the capital city Statistical Divisions and the Newcastle, Wollongong and Geelong Statistical Districts, but outside the urban centres (identified by ABS using the criteria in note (2) referred to earlier), were termed 'outer urban' to distinguish them from the more closely settled inner urban areas. This was done because the characteristics of outer urban roads tended to be rural in nature compared with inner urban roads.

The boundaries of the capital cities and provincial urban areas defined by ABS underwent a number of changes between the 1966 and 1981 censuses. These census boundaries were used as the basis for data analysed in this paper. The effects on the data presented are minor except for the affects of the changes to the Statistical Division of Sydney between the 1971 and 1976 censuses, and to the provincial urban areas.

As a result of these changes the growth rates from 1971 to either 1981 or 1982, given in the tables in Chapter 3, are understated to some extent in Queensland, NSW, Victoria and Tasmania due to a reduction in the rural areas. The growth rates from 1971 given in Chapter 4 are correspondingly overstated to some extent due to an increase in the urban areas of those States. For the ACT the growth rates from 1971 are affected for certain data only, as noted later in this appendix.

ROAD LENGTH

The lengths of sealed and unsealed road in Australia, and in rural and urban areas, were generally obtained or derived from the ABS Standardised Local Government Financial Statistics (SLGFS) for 1982 (ABS, 1983e).

For the NT and the ACT, the estimated lengths for the latest available year were obtained from the relevant SRAs. The growth rates were based on the changes from the lengths of sealed and unsealed roads estimated for 1972 in the Australian Roads Survey 1969-74 (Commonwealth Bureau of Roads 1974). Since the SLGFS data were available for whole LGA areas only, where urban boundaries did not correspond with LGA boundaries, the BTE estimated the proportion of the road length which lay within urban areas of the relevant LGAs. For parts of NSW and SA not administered by LGAs, for which SLGFS data were not available, the information was obtained from the SRAs. The 1972 data were based on the 1971 census boundaries, whereas the recent data were based on the 1981 census boundaries.

For national highways no separate data were available from the SLGFS,

and length estimates were based on data prepared by the SRAs for 1981 in connection with the NAASRA Roads Study. The estimates of the percentage of length in rural areas, and the estimates of lengths of divided national highways for 1981 were extracted from the published results of that study (NAASRA 1984a and 1984b). The estimates of length of sealed road for 1972, on which the mean growth rates based, were obtained from the results of the Australian Roads Survey 1969-1974.

VEHICLE USAGE

The ABS Surveys of Motor Vehicle Usage were used as the principal source of data for travel, freight movement, vehicle stock and fuel consumption. The 1982 Survey was used to report the status of these data, and growth rates were based on changes following the 1971 Survey, and in some instances following the 1979 Survey. The 1971 Survey was based on the urban boundaries used for the 1966 census and the 1979 and 1982 Surveys were based on the urban boundaries for the 1976 census.

In the case of the NT, vehicle usage data for the Stuart and Barkly Highways are included in the provincial urban classification in published data for relevant Surveys of Motor Vehicle Usage. However for the purposes of this paper the vehicle usage for these Highways is included with the rural area data where possible, given the limitations of the published data. In the case of the ACT, the whole area was treated as urban for each of the ABS Surveys of Motor Vehicle Usage. Otherwise the Survey boundaries correspond to the census boundaries, ie the ABS Statistical Divisions, Statistical Districts and urban areas.

Surveys of Motor Vehicle Usage are based on questionnaires filled out by a sample of owners of registered vehicles. In the 1982 Survey for example a total Australian sample of approximately 60 000 was obtained out of a registered vehicle fleet of 8.1 million. A discussion of the errors occurring in Surveys of Motor Vehicle Usage is given in BTE (1984a, Appendix I). In particular, the growth rates for vehicle categories in this paper should be considered in conjunction with the standard errors for the relevant source data.

The Surveys of Motor Vehicle Usage data given in this Paper are based on vehicles registered at 30 September in the relevant year. The Surveys excluded Government buses, caravans, trailers, tractors, plant and equipment, vehicles belonging to the defence services, vehicles with diplomatic or consular plates, and Australian Government owned

vehicles. Although private buses were included in some Surveys, buses have been excluded from consideration in this paper. The effect of the exclusion of buses is a reduction of the Australian vehicle travel estimates of less than 1 per cent since bus travel in 1979 amounted to approximately 856 million vehicle kilometres out of the total VKT of 111 469 million (ABS, 1981a, b and c).

The growth rates from 1971, or 1979, to 1982 are affected by variations in vehicle definitions. The following are examples of changes which occurred:

- trucks with a carrying capacity of less than one ton were included with utilities and panel vans in 1971, but with rigid trucks in 1979 and 1982;
- in 1979 and 1982 the category of 'other truck types' was confined to non-freight carrying trucks such as cranes, whereas in 1971 this category included microbuses, microvans and campervans;
- . in Queensland, commercial vehicles with a gross vehicle mass of four tonnes or less were recorded as utilities and panel vans in 1979 and 1982, but as trucks in 1971; and
- articulated vehicles carrying less than eight tonnes were included with rigid trucks in 1971, but were classified as articulated trucks in 1979 and 1982.

The vehicle usage data given for national highways in Chapter 5, are based on road inventory data collected by the SRAs. The 1981 data were compiled by the SRAs for the NAASRA Roads Study. Growth rates were based on changes from the 1972 estimates of usage (Commonwealth Bureau of Roads, 1974). Both the 1981 and 1972 usage estimates are the sum of the VKT estimates for each road section. The VKT for each section was calculated by multiplying the section length by the AADT for the section.

The estimated vehicle composition for each national highway section was used to determine the VKT for each vehicle type. Further discussion of this method of estimating VKT is given in BTE (1984a, Appendix I). The subdivision of vehicles into the various types for road inventory data for 1972 and 1981, was based on vehicle type definitions which varied slightly from those used in the Surveys of Motor Vehicle Usage, NAASRA (1984b). In particular, the AADT estimates in the national highway inventories for 1972 and 1981 include buses, government vehicles, diplomatic vehicles and defence force vehicles.

ROAD EXPENDITURE

The road expenditure for Australia, for urban and rural areas, and for national roads is separately presented for the three levels of government and also for construction and maintenance. The data is published by ABS for individual LGAs and aggregated for BTE purposes to provide separate totals for those LGAs within, and for those outside, the urban boundaries. Where an LGA lies partly within an urban area, the whole of the expenditure of that LGA is generally included with the relevant urban area. In the case of Toowoomba and Darwin, the urban expenditure represents that of the LGA areas concerned. For the ACT, the division between urban and rural expenditure was estimated by BTE. The 1981 census boundaries were used for the division between rural and urban expenditure data.

To attribute expenditure to levels of government, the expenditure by each government from its own resources was used rather than the roadworks undertaken by each government.

The expenditure given separately for the construction and maintenance of roads and bridges is based on the following criteria, which are extracted from pp32-33 of the SLGFS User Manual (ABS, 1983e). Construction includes:

- . cost of land acquisition and resumption;
- . land clearing and earthworks;
- . laying of pavement base and surface courses;
- . construction or reconstruction and widening of pavements, shoulders and medians;
- construction or reconstruction of drainage systems (kerbs and gutters, minor culverts, longitudinal drains) to increase the capacity to carry run-off from the road pavement and associated verges;
- construction of flood control, flood prevention and earthware protective structures related to roadworks;
- footpaths, vehicular access pavements, landscaping including noise abatement mounds etc, roadside rest areas, parking and information bays; and
- traffic services, including the installation of traffic lights, signs, railway crossings, safety fences, initial line markings and guide posts.

Maintenance includes:

- patching, grading, joint and crack filling and routine road surface operations;
- resheeting of gravel roads and resealing of sealed roads and minor reconstruction work;
- roadside and drainage maintenance and repairs, patrol grading and restoration of road shoulders, tree lopping and grass mowing (roadside clearing operations, slashing, mowing verges, and burning are classified to the purpose category 'Fire Protection');
- snow clearing, maintenance of safety barriers, painting of markings, repairing traffic lights, footpaths, kerbs and gutters; and
- operating or running costs of traffic lights and traffic control facilities.

The procedures for the division of expenditure into the various components are discussed further in Chapters 2 and 3 of BTE (1982a) which includes discussion of the accuracy of the figures.

POPULATION

It should be noted that the population data given for Australia in Chapter 2 is slightly inconsistent with that given for rural and for urban areas in Chapters 3 and 4 respectively, due to different data sources. The 1982 population estimate for Australia of 15.1 million persons in Table 2.13 is based on the Australian demographic information (ABS 1983b), while the 1981 estimate of rural and of urban population given in Tables 3.6 and 4.6, which together amounted to 14.6 million persons, is based on the census results (ABS 1983d). The population growth rates given in Tables 3.6 and 4.6 should be considered in the light of the changes in the boundaries of certain urban areas discussed earlier in this appendix.

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ABBREVIATIONS

ACT	Australian Capital Territory
AADT	Annual Average Daily Traffic
ABS	Australian Bureau of Statistics
AGPS	Australian Government Publishing Service
BTE	Bureau of Transport Economics
Cat. No.	Catalogue Number
CBCS	Commonwealth Bureau of Census and Statistics
CBR	Commonwealth Bureau of Roads
LGA	Local Government Authority
NAASRA	National Association of Australian State Road Authorities
NSW	New South Wales
NT	Northern Territory
SA	South Australia
SLGFS	ABS Standardised Local Government Financial Statistics
SRAs	State Road Authorities, comprising:
	New South Wales, Department of Main Roads Victoria, Country Roads Board, (Name changed to Road Construction Authority on 1st July 1983) Queensland, Main Roads Department South Australia, Highways Department

Western Australia, Main Roads Department Tasmania, Department of Main Roads Northern Territory, Department of Transport and Works Australian Capital Territory, Department of Housing and Construction (formerly Department of Transport and Construction)

VKT Vehicle Kilometres of Travel

WA Western Australia