Car and Articulated Truck Speeds Before and After July 1988

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EXECUTIVE SUMMARY

This report compares the speeds of cars and articulated trucks before and after the change in heavy vehicle speed limit to 100 km/h on 1 July 1988. Comparable data before and after this time were collected at 62 sites in New South Wales, Victoria, Queensland, South Australia, Western Australia and Tasmania.

Faster articulated truck and car speeds were recorded at most (four fifths) of the sites after the speed limit change compared with before the change. The mean speeds of cars and articulated trucks were closer after the change compared with before for most sites. The percentages of sites for which truck speeds increased, for which car speeds increased, and for which car and truck speeds became closer rather than further apart, are each statistically significant. These three results remain true when the analysis is restricted to sites with appreciable data. They occur for both two-lane and four-lane roads, and for roads with car speed limits of both 100 km/h and 110 km/h.

It is estimated that overall, cars have increased in free speed by about 1 km/h and trucks by nearly 2 km/h. The car-truck speed difference is consequently estimated to have decreased by 0.7 km/h from 8 km/h to 7 km/h. This decrease is statistically significant.

The variation in car speeds was higher after 1 July 1988 than before, although this was probably confined to roads with a speed limit of 110 km/h. The variation in truck speeds did not change significantly. The proportion of both cars and articulated trucks travelling faster than 110 km/h was higher after the speed limit change than before.

Variation in car and truck density does not appear to affect car and truck speed changes although the change in the car-truck speed difference is possibly inversely related to the change in the ratio of truck to car numbers.

1. Introduction

In June 1986, the Australian Transport Advisory Council (ATAC) agreed to raise the heavy vehicle speed limit from 80 to 90 km/h from 1 January 1987. The effects of the increase were to be monitored, and the findings reported to ATAC to assist further consideration of the issue.

Speed surveys were undertaken in all States and the ACT in October/November 1986, March/May 1987 and October/November 1987. These data were analysed by R.W. Fitzgerald and Associates (Fitzgerald, 1988) to determine overall speed changes, changes within and differences between vehicle types, and changes in platooning. These analyses also considered the effects of time of day, day of week and road type. Fitzgerald (1988) found, in summary, a statistically significant increase in mean free speeds of articulated vehicles nationally from 90 to 94 km/h; no statistically significant change nationally in car speeds; and a reduction in the car/articulated vehicle speed differential nationally from 10 km/h in October 1986 to 8 km/h in October 1987 (see Appendix A12 for a more detailed summary).

In December 1987, ATAC agreed to a further increase in the heavy vehicle speed limit to 100 km/h from 1 July 1988. The effects of this increase were also to be monitored, and a further set of speed surveys was undertaken in October/November 1988, twelve months after the previous set of surveys. These surveys were performed at the same locations and at similar times of day and days of week as the previous set. In Victoria, speed surveys in 1988 were done using automatic traffic counters and are not directly comparable with those done by radar in 1987. Instead, for this State, surveys were carried out in May/June 1988 and November/December 1988. Surveys in South Australia were also done in June 1988 and November 1988 with automatic traffic counters instead of radar as in 1987.

This report analyses the two sets of speed surveys before and after the heavy vehicle speed limit was raised to 100 km/h in July 1988.

2. Aim of the analyses

The aim of this report is to assess any changes in car and articulated truck speeds before and after the July 1988 speed limit change. These changes have been measured in several ways. First, the mean speeds of different vehicle types at each site have been compared before and after 1 July 1988 (Section 4.1). Second, the difference in the mean speeds of cars and articulated trucks at each site at both times has been examined (Section 4.2). Third, the variation in vehicle speeds and the proportion of vehicles travelling faster than 110 km/h, for cars and articulated vehicles at each site at both times, have been analysed in the same way as the mean speeds (Section 4.3). Chapter 5 is an analysis of vehicle platoons.

Since the interest is in vehicles on roads throughout Australia, the emphasis of the analysis is on consistent patterns observed at the sites surveyed, rather than on changes within any particular site. Therefore, tests of the statistical significance of changes within each site have not been performed.

3. Methods

3.1 Sites surveyed in October/November 1988

Appendix Table A1.1 gives a description of all locations surveyed in October/November 1988 (November/December 1988 for Victoria).

Locations at which traffic was surveyed in both directions are treated as being two sites. As well, if a location was surveyed for two or more distinct time periods, each of these was considered to be a site. (There were already "locations" in NSW and Victoria which were in fact the same location on different days or in different directions.) This results in the following sites for each State:

Table 3.1. Number of sites surveyed in October to December 1988 by State/Territory.

State	Locations	Directions	Time periods	Total sites
New South Wales	12	2	1	24
Victoria	13	1#	1	14#
Queensland	10	1	1	10
South Australia	2	1	1	2
Western Australia	6	2	1	12
Tasmania	2	1,2*	2	6
ACT	2	1	3	6
Total				74

\# Location 9342 was surveyed in both directions.
* Location 3501 was surveyed in both directions, location 3503 was surveyed in only one direction.

Four States and the ACT have locations at which traffic was sampled in both directions and/or for more than one time period. For these jurisdictions, site numbers were created by adding a two digit suffix to the location number. For New South Wales, Western Australia and Victoria (one site only) this suffix indicates the direction of traffic (01 = north, 02 = south, 03 = east and 04 = west). For Tasmania and the ACT it indicates both the time period surveyed (numbered 1, 2 or 3 in order of date sampled as in Table 3.1.1) and the direction of traffic. For example, site 350122 in Tasmania refers to location 3501, date 2 (5/11/88) and direction 2 (south). These site numbers are used throughout the rest of the report. For Queensland and the remaining sites in Victoria the location numbers are used as site numbers. The two South Australia sites are not numbered and are referred to by name.

3.2 Matching of data at both survey times

Because the analysis was to be of the changes observed at each site, the survey data before and after the increase in truck speed limit were matched for type of speed meter, location, day of week, time of day and direction of travel. Table 3.2 gives the type of speed meter used in each jurisdiction in surveys before and after the heavy vehicle speed limit increase. Information on the temporal factors is given in Appendix Table A1.2 for all sites surveyed. Generally sites could be matched for all these factors although start and finish times did not always correspond exactly. However, there were some complications in matching sites for each jurisdiction as follows:

New South Wales: At locations 5002 and 5010 (Hume Highway), the speed limit for cars was increased from 100 km/h to 110 km/h between the 1987 and 1988 surveys.

Victoria: Because automatic classifiers were used, the survey time periods were much longer than the other States, but not all the same length. For this State, unmatched data were discarded. For example, at location 9153, data were collected from 0100 on a Saturday to 0100 on the following Wednesday in October 1987 and from 0200 on a Saturday until 1700 on the following Wednesday in October 1988. To ensure comparability of the data between survey times, data collected before 0200 on Saturday and after 0100 on the following Tuesday were discarded. Site 9157 showed evidence of recent speed enforcement activity for trucks and was not included in the analysis (see Appendix A7).

Queensland: Due to road reconstruction, the location for site 4250 was not exactly the same in 1988 as in 1987, but was a similar location on the same highway. This site was retained in the analysis.

Western Australia: The speed limit for trucks at location 4301 (Eyre Highway) was already 100 km/h before October 1987, so sites 430103 and 430104 were excluded from the analysis.

Tasmania: Locations 3501 and 3503 were each surveyed for one extra time period in 1987, and 3501 was surveyed in both directions in 1988 but in only one direction in 1987. These extra data were discarded. There were no articulated trucks recorded for site 350121 in 1988, so this site was also excluded from the analysis.

Australian Capital Territory: No sites could be included in the analysis because the 1987 survey was done using radar and the 1988 survey using amphometers. It is likely that these two methods give different results for speed, particularly as radar is considered obtrusive because a driver may slow down if he/she detects its presence. Speed tables for the ACT are given in the Appendices. For these, to obtain a better time of day match for location 1601, the 1988 Tuesday site was paired with the 1987 Thursday site and vice versa.

Altogether, 12 sites (1 in Victoria, 2 in Western Australia, 3 in Tasmania and all 6 in the ACT) were omitted from the analysis for reasons explained above. Thus, there were 62 sites with comparable data before and after the change in heavy vehicle speed limit in July 1988.

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Table 3.2. Type of speed meter used at sites surveyed before and after the increase in the heavy vehicle speed limit on 1 July 1988 (see Table A1.2 for actual dates).

State/Territory	After 1 July 1988	Before 1 July 1988
New South Wales		
location 3503	slant radar	slant radar
all other sites	amphometer	amphometer
Victoria	automatic classifier	automatic classifier
Queensland	radar speedgun	radar speedgun
South Australia	automatic classifier	automatic classifier
Western Australia	infrared	infrared
Tasmania	radar speedgun	radar speedgun
ACT	amphometer	radar speedgun

Source: FORS Truck speed surveys, 1987 and 1988.

3.3 Statistical methods

Vehicle speeds were summarised with means, standard deviations and various percentiles. These were calculated using the statistical computer package SPSS/PC+, V3.0 (Norusis, 1988). Although Fitzgerald (1988) found that vehicle speeds are not Normally distributed at each site, this does not mean that these summary statistics are not appropriate. The mean is a sensible measure of location for many non-Normal distributions, and is optimal for most symmetric distributions. The standard deviation is a measure of variation. The proportion of vehicles travelling faster than several particular speeds was another summary measure used in this report.

Because variation between sites is typically larger than that within a site, and because the aim of the analyses is to be able to generalise from the sites surveyed to all roads, the analysis method chosen was a matched analysis of sites at the two survey times. Because there are only two survey times, the matched analysis can be performed as an analysis of the differences in the summary measures between the October/November surveys in 1987 and 1988.

If there was no change between the two times, these differences would be expected to have symmetric distributions with mean zero. In particular, the numbers of positive and negative differences would be expected to be equal. This expectation can be tested using a sign test, which can be summarised with a chi-square test statistic with 1 degree of freedom. Large imbalances between the numbers of positive and negative differences, which lead to large values for the test statistic, suggest that the null hypothesis of no change is untenable and that changes have occurred.

The formula for the chi-square test statistic is $(p-n)^2 / (p+n)$, where p and n are the number of positive and negative differences. Test statistic values greater than 3.84, 6.63 and 10.83 correspond to two-sided statistical tests at the 0.05, 0.01 and 0.001 levels.

Ordinary and logistic regression analyses (Adena and Wilson, 1982; Cox, 1970) were used to investigate differences due to road type (i.e. two-lane or four-lane), speed limit (100 km/h or 110km/h) and variation in the density and proportions of cars and trucks. These analyses were done using GLIM 3.77 (NAG, 1986).

There were problems in calculating the overall changes in car and truck speeds because some sites had extreme values due to small sample sizes or other reasons. The resulting skewed distribution suggested that the median of the site means would be a more robust estimator of overall speed change than the mean of the site means. As a further check the overall mean was also calculated for sites with appreciable data (more than 20 trucks or cars) only. (See Sections 4.1 and 4.2 for further discussion).

Details of data checking are given in Appendix A2 and the method of calculating percentiles for the tables is given in Appendix A3.

3.4 Data for Victoria

The automatic classifiers used in Victoria classified vehicles as either short (wheel-base less than 5.5 metres) or long (wheel-base greater than 5.5 metres). It is estimated that 95% of "long" vehicles are articulated trucks. The speeds of all vehicles travelling over the classifier during the survey period were measured, and free speeds were not available. The classifier logs the speed of each vehicle into preset counting "bins" and the data are in the form of the number of vehicles each hour travelling at speeds within the range of each bin.

The mean was calculated from the mid-bin speeds and the frequency of vehicles in each bin. The mid-bin speeds for the highest and lowest bins have to be arbitrarily set at a speed considered to be reasonable. Therefore, very high and very low speeds will not affect the mean as much as they would for the other States, because they will simply be counted in the highest and lowest speed bins. Because of this the mean and the median (50-percentile) are similar, generally within 1 km/h. Standard deviations are also not comparable with those for the other States. Percentiles were calculated by linear interpolation within each speed bin. If the 15-percentile fell within the lowest speed bin, which includes speeds less than 88 km/h, then it could not be exactly calculated and is recorded in the tables as "<88".

3.5 Data for South Australia

Results for two South Australian sites were provided in summary form giving medians (but not means) and 85-percentiles for the speeds of cars and articulated vehicles (see Appendix Table A4 for the actual results provided). Surveys were carried out in June, August and October 1988. Following advice given, the June and October surveys were matched for the comparison before and after the change in heavy vehicle speed limit. For the purposes of the matching analyses, medians were used instead of means so that the results could be included with those of the other States. Data were collected over 6 or 7 days by automatic classifier. Sample sizes ranged from 6700 to 21000 for cars and were 1000 or more for articulated vehicles.

3.6 Vehicle speeds for October/November 1988 survey

Tables 3.6.1 to 3.6.2 give the results for the free speeds of cars and articulated trucks for all jurisdictions except Victoria and South Australia. These tables include, for each site, the mean, standard deviation, 15-percentile, 85-percentile, and percent of vehicles travelling faster than 80, 90, 100 and 110 kilometres per hour. Table 3.6.3 is a summary of these tables by State and Territory, with comparative figures from the October 1987 survey. These are the same figures as in Table 4.3 of Fitzgerald (1988), (Appendix A2.2 explains minor differences between the two tables). The totals for all jurisdictions in Table 3.6.3 do not include Victoria and South Australia, and so differ from those in Fitzgerald (1988). Not all the figures in this table for before and after the truck speed limit increase are strictly comparable, because they include sites that do not properly match between the two times, as discussed in Section 3.2.

The equivalent tables for the other four vehicle types and for all vehicles together are in Appendix A5 (Tables A5.1 to A5.9).

In Tables 3.6.1 to 3.6.6 and A5.1 to A5.8, to be consistent with Fitzgerald (1988), the mean car and articulated truck speeds for each State/Territory were calculated by averaging all the speeds recorded for the State at each survey time. This is equivalent to the mean of the average site speeds weighted by the number of vehicles at each site. The mean speed for each State in Tables A7.1 to A7.12 is the unweighted mean of the average site speeds, in accordance with the statistical method of a matched analysis of sites (see Section 3.3). Thus for some States there may be slight differences in the overall means between the two sets of tables.

Table 3.6.4 gives the results that were available for South Australia (see Section 3.5) for cars and articulated trucks for surveys in June and October 1988. Tables 3.6.5 and 3.6.6 give the corresponding results for short and long vehicles for the Victorian sites for the May/June and November/December 1988 surveys.

Percentiles were not calculated for sample sizes of 5 or less.

Table 3.6.1 Cars: free speeds by site in October/November 1988.

Site	Speed limit	Sample size	Mean (km/h)	Sdev	15th %ile	85th %ile	% > 80 km/h	% > 90 km/h	% > 100 km/h	% > 110 km/h
New South Wales										
500101	100	34	108	14	96	126	100	91	71	38
500102	100	50	104	13	94	117	98	90	60	32
500201	110	173	108	13	97	118	98	92	75	39
500202	110	162	108	11	97	118	99	94	78	43
500301	110	255	111	12	99	124	99	95	82	56
500302	110	338	106	12	93	119	98	90	65	33
500401	100	91	110	12	99	122	100	97	82	46
500402	100	66	110	11	99	121	100	100	79	44
500501	100	173	106	12	95	115	99	94	63	29
500502	100	119	101	12	90	113	96	83	48	21
500601	100	55	109	14	95	121	100	95	62	42
500602	100	89	105	12	93	118	98	92	64	31
500701	100	19	107	15	91	124	95	89	53	47
500702	100	28	109	16	89	126	100	86	68	50
500801	110	180	112	12	100	124	99	96	85	56
500802	110	117	104	12	91	116	97	86	63	29
500901	110	31	111	12	96	121	100	90	84	58
500902	110	55	103	13	90	116	95	85	56	22
501001	110	134	109	13	97	121	99	95	77	40
501002	110	73	108	13	94	124	99	92	75	40
501101	100	15	121	30	85	143	87	87	87	67
501102	100	15	103	17	88	118	93	73	67	33
501201	100	205	99	8	91	108	97	85	37	8
501202	100	158	97	9	87	105	96	77	35	3
Total		2635	106	13	94	118	98	91	66	35
Queensland										
420501	100	897	91	10	80	101	84	50	16	2
421002	100	175	98	13	85	111	90	74	45	15
421502	100	1030	101	10	91	111	98	86	54	16
422002	100	111	96	11	85	103	91	72	30	5
422501	100	142	98	13	86	110	94	73	44	14
423001	100	372	103	10	93	112	98	89	63	19
423502	100	67	107	13	97	117	99	90	72	33
424001	100	505	89	12	78	101	75	46	16	3
424502	100	136	89	10	79	100	78	44	15	3
425001	100	203	92	10	80	102	85	55	18	4
Total	100	3638	96	12	83	107	89	67	36	10

(continued)

Table 3.6.1 Cars: free speeds by site in October/November 1988 (continued).

Site	Speed limit	Sample size	Mean (km/h)	Sdev	15th %ile	85th %ile	% > 80 km/h	% > 90 km/h	% > 100 km/h	% > 110 km/h
Western Australia										
430003	110	224	107	15	92	121	96	86	67	45
430004	110	144	109	13	95	121	99	94	76	44
430103	110	56	114	15	102	127	98	93	89	59
430104	110	47	110	14	95	122	96	89	77	49
430203	110	83	111	12	96	121	100	93	75	52
430204	110	112	111	12	100	122	99	95	85	55
430301	110	174	107	11	96	118	97	95	78	31
430302	110	217	107	12	96	117	96	92	75	37
430401	110	287	112	13	99	126	99	95	83	49
430402	110	263	109	11	97	119	99	95	78	43
430501	110	92	101	13	87	116	92	77	53	27
430502	110	114	100	13	86	114	94	75	47	19
Total	110	1813	108	13	95	120	97	91	74	42
Tasmania										
350111	110	152	88	11	78	99	77	39	13	3
350112	110	161	93	14	78	107	81	57	27	11
350121	110	112	92	12	81	106	86	54	21	5
350122	110	165	96	15	81	110	87	60	32	15
350313	110	372	94	13	80	107	83	59	28	9
350323	110	226	96	14	81	110	85	60	36	15
Total	110	1188	93	13	80	107	83	56	27	10
ACT										
160112	100	271	102	15	89	115	95	81	48	25
160122	100	98	98	13	84	112	92	72	37	16
160132	100	162	100	16	82	115	89	72	47	26
160212	100	397	100	12	90	111	96	77	42	18
160222	100	421	92	12	79	104	82	47	17	7
160232	100	505	97	8	87	105	98	75	25	3
Total	100	1854	97	12	86	108	93	69	33	13
All States		11128	100	14	86	114	93	76	48	22

Source: FORS Truck speed surveys 1988.

Table 3.6.2 Articulated trucks: free speeds by site in October/November 1988.

Site	Speed limit	Sample size	Mean (km/h)	Sdev	15th %ile	85th %ile	% > 80 km/h	% > 90 km/h	% > 100 km/h	% > 110 km/h
New South Wales										
500101	100	26	109	8	102	118	100	96	92	38
500102	100	22	107	10	96	118	100	91	73	41
500201	100	35	97	8	90	105	100	86	29	3
500202	100	28	98	9	90	109	96	86	43	11
500301	100	8	113	9	100	123	100	100	88	75
500302	100	6	95	7	86	101	100	67	17	0
500401	100	79	103	8	96	109	100	94	70	14
500402	100	119	102	9	93	112	98	92	55	18
500501	100	38	98	7	92	107	97	89	32	3
500502	100	58	94	8	86	102	95	69	21	0
500601	100	19	101	7	91	108	100	89	58	11
500602	100	20	98	8	93	105	95	90	40	0
500701	100	23	104	10	92	115	100	87	52	26
500702	100	24	102	10	88	113	96	83	58	17
500801	100	42	98	9	89	105	95	76	40	2
500802	100	79	102	9	94	112	100	92	57	16
500901	100	124	106	10	96	118	100	95	65	31
500902	100	42	97	8	90	106	98	86	24	5
501001	100	8	98	7	89	108	100	88	25	13
501002	100	15	103	6	95	110	100	100	60	7
501101	100	124	114	9	104	124	100	100	94	69
501102	100	71	106	9	96	113	99	96	70	24
501201	100	33	93	7	86	102	94	70	15	0
501202	100	26	93	6	84	99	96	62	8	0
Total	100	1069	103	10	93	114	99	89	56	22
Queensland										
420501	100	112	91	9	83	100	90	49	14	2
421002	100	45	94	8	87	101	96	80	20	0
421502	100	88	95	7	88	103	95	76	24	0
422002	100	4	94	17			75	75	75	0
422501	100	7	91	9	82	105	100	43	14	0
423001	100	71	97	8	88	106	97	76	34	1
423502	100	49	95	7	88	105	100	65	27	0
424001	100	18	93	10	80	102	83	61	11	11
424502	100	40	88	7	80	96	85	30	3	0
425001	100	57	89	7	82	97	89	47	5	0
Total	100	491	93	9	84	102	93	61	19	1

(continued)

Table 3.6.2 Articulated trucks: free speeds by site in October/November 1988 (continued).

Site	Speed limit	Sample size	Mean (km/h)	Sdev	15th %ile	85th %ile	% > 80 km/h	% > 90 km/h	% > 100 km/h	% > 110 km/h
Western Australia										
430003	100	98	98	13	84	110	90	72	45	14
430004	100	113	101	12	88	114	96	84	53	19
430103	100	65	109	10	99	120	100	94	77	40
430104	100	71	107	11	95	118	99	92	76	41
430203	100	23	104	10	93	112	96	96	61	22
430204	100	19	93	15	76	111	79	58	16	16
430301	100	16	98	5	92	103	100	94	31	0
430302	100	13	96	6	88	104	100	85	23	0
430401	100	82	97	9	89	104	95	82	32	2
430402	100	78	95	8	87	103	96	63	26	4
430501	100	22	94	12	83	108	91	50	36	9
430502	100	15	92	8	84	104	100	47	27	0
Total	100	615	100	12	88	112	95	79	47	17
Tasmania										
350111	100	20	82	9	73	90	55	10	5	0
350112	100	15	92	14	81	102	87	53	20	7
350121		0								
350122	100	1	106	0			100	100	100	0
350313	100	35	89	10	81	97	89	29	9	6
350323	100	10	95	15	83	117	90	50	20	20
Total	100	81	89	12	78	98	80	32	12	6
ACT										
160112	100	42	96	9	88	104	95	74	26	5
160122	100	10	91	11	82	106	100	20	10	10
160132	100	5	99	9			100	80	60	0
160212	100	26	93	13	75	108	77	58	31	8
160222	100	8	83	17	65	108	50	13	13	13
160232	100	20	87	9	72	97	70	20	5	0
Total	100	111	92	12	80	104	84	51	23	5
All States	100	2367	99	12	87	111	95	77	43	15

Source: FORS Truck speed surveys 1988.

Table 3.6.3 Mean free speeds by state and vehicle type from surveys before and after change in speed limit for trucks (Oct/Nov 1987 and 1988).

State	Speed limit	Sample size	Mean (km/h)	Sdev	15th %ile	85th %ile	% > 80 km/h	% > 90 km/h	% > 100 km/h	% > 110 km/h
CARS										
New South Wales										
Before	100/110	2352	104	12	92	116	98	89	61	27
After	100/110	2635	106	13	94	118	98	91	66	35
Queensland										
Before	100	4884	96	12	84	107	90	67	34	9
After	100	3638	96	12	83	107	89	67	36	10
Western Australia										
Before	110	2082	108	12	97	119	98	92	77	39
After	110	1813	108	13	95	120	97	91	74	42
Tasmania										
Before	110	1625	90	12	78	102	79	44	18	5
After	110	1188	93	13	80	107	83	56	27	10
ACT										
Before	100	2369	93	11	82	105	88	58	24	6
After	100	1854	97	12	86	108	93	69	33	13
All States										
Before		13312	98	13	84	111	91	70	42	16
After		11128	100	14	86	114	93	76	48	22
ARTICULATED TRUCKS										
New South Wales										
Before	90	1142	100	10	90	110	98	83	47	14
After	100	1069	103	10	93	114	99	89	56	22
Queensland										
Before	90	482	91	10	80	101	84	53	16	2
After	100	491	93	9	84	102	93	61	19	1
Western Australia										
Before	90	775	99	11	88	110	97	77	40	14
After	100	615	100	12	88	112	95	79	47	17
Tasmania										
Before	90	127	85	10	76	94	69	28	4	0
After	100	81	89	12	78	98	80	32	12	6
ACT										
Before	90	112	80	13	63	93	52	22	5	0
After	100	111	92	12	80	104	84	51	23	5
All States										
Before		2638	96	12	85	108	92	71	35	11
After		2367	99	12	87	111	95	77	43	15

Source: FORS Truck speed surveys 1987 and 1988.

Car and Articulated Truck Speeds Before and After July 1988

Table 3.6.4 Median speeds and 85-percentiles for cars and articulated vehicles for two sites in South Australia in June and October 1988.

Site	Cars			Articulated trucks		
	Speed limit	Median	85%ile	Speed limit	Median	85%ile
June 1988						
Nuriootpa	110	100	114	90	100	112
Callington	110	103	115	90	101	112
October 1988						
Nuriootpa	110	101	115	100	101	112
Callington	110	111	120	100	104	114

Source: FORS Truck speed surveys, 1988.

Table 3.6.5 Victoria: Speeds of "short" vehicles by site from surveys before and after change in speed limit for trucks.

Site	Speed limit	Sample size	Mean (km/h)	Sdev	15th %ile	85th %ile	% > 80 km/h	% > 90 km/h	% > 100 km/h	% > 110 km/h
May/June 1988										
9153	110	89740	103	12	91	114	95	86	63	24
9154	110	92869	103	12	91	115	95	87	67	28
9157	110	82324	104	12	91	117	95	87	65	30
934203	100	2185	98	13	<88	110	89	72	42	15
934204	100	2326	95	13	<88	108	84	63	33	12
9983	110	15023	108	11	98	119	98	95	80	40
9984	110	15130	108	11	98	119	99	95	81	41
9985	110	15301	108	10	98	118	98	95	81	40
9986	110	16922	111	11	101	121	99	97	88	55
9987	110	7966	107	10	97	117	98	94	79	39
9988	110	6068	111	11	101	121	99	97	88	58
9990	110	14817	108	12	97	120	98	93	77	40
9993	110	37983	103	11	92	115	96	87	62	24
9994	110	36518	106	11	95	118	97	91	73	35
Nov/Dec 1988										
9153	110	102375	103	12	91	116	95	86	65	28
9154	110	105810	105	12	93	117	96	89	70	32
9157	110	99668	105	12	92	117	96	89	69	32
934203	100	2526	99	13	<88	111	90	76	44	16
934204	100	2655	95	12	<88	108	85	65	33	10
9983	110	17884	109	11	99	120	99	96	83	46
9984	110	18418	108	12	96	120	97	92	78	42
9985	110	16868	109	11	99	119	98	95	84	45
9986	110	17457	112	11	102	123	99	97	88	61
9987	110	10782	110	12	99	121	98	94	90	49
9988	110	7620	114	11	102	124	99	97	81	66
9990	110	16461	110	13	98	122	98	94	77	49
9993	110	42639	103	12	91	116	94	86	65	28
9994	110	44903	107	12	96	119	97	92	76	40
Totals										
Before		435190	105	12	92	117	96	89	69	31
After		506066	106	12	93	118	96	89	71	35

Source: FORS Truck speed surveys, 1988.

Table 3.6.6 Victoria: Speeds of "long" vehicles by site from surveys before and after change in speed limit for trucks.

Site	Speed limit	Sample size	Mean (km/h)	Sdev	15th %ile	85th %ile	% > 80 km/h	% > 90 km/h	% > 100 km/h	% > 110 km/h
May/June 1988										
9153	90	8483	98	17	<88	112	85	64	36	19
9154	90	8353	93	12	<88	105	83	59	28	8
9157	90	12131	109	20	<88	133	93	83	61	42
934203	90	361	91	11	<88	103	78	51	20	4
934204	90	393	88	11	<88	99	71	36	13	4
9983	90	2341	96	12	<88	107	88	70	34	9
9984	90	2674	100	12	89	102	94	82	49	17
9985	90	4796	97	10	88	106	93	79	38	6
9986	90	4792	102	10	92	112	96	89	58	19
9987	90	5172	105	13	91	118	96	88	63	35
9988	90	2022	100	11	90	110	95	86	50	16
9990	90	2820	95	12	<88	107	85	64	32	9
9993	90	5352	90	11	<88	102	77	47	17	5
9994	90	4946	95	12	<88	106	86	65	29	8
Nov/Dec 1988										
9153	100	9065	94	12	<88	106	85	64	32	8
9154	100	9705	95	12	<88	106	85	64	33	9
9157	100	9104	98	12	<88	109	90	74	44	13
934203	100	514	93	11	<88	104	84	61	23	4
934204	100	620	88	12	<88	99	70	35	14	6
9983	100	2796	98	12	<88	109	91	77	43	13
9984	100	2999	100	12	<88	111	92	80	52	17
9985	100	5593	100	10	90	109	95	86	53	12
9986	100	4439	107	15	93	121	97	90	66	35
9987	100	3886	101	11	90	113	95	86	57	19
9988	100	3359	106	12	95	117	97	91	68	34
9990	100	3301	99	12	<88	111	92	79	48	16
9993	100	6589	92	13	<88	105	80	54	24	8
9994	100	5909	97	13	<88	109	90	73	40	13
Totals										
Before		64636	99	15	<88	114	89	72	42	19
After		67879	98	13	<88	110	89	73	43	14

Source: FORS Truck speed surveys, 1988.

Car and Articulated Truck Speeds Before and After July 1988

4. Vehicle speeds

4.1 Mean speeds of cars and articulated trucks

There were 62 sites throughout Australia that were satisfactorily matched for type of speed meter, location, day of week and time of day (see Section 3.2), for surveys carried out before and after the change in the heavy vehicle speed limit. The differences between surveys in the mean speeds of cars and articulated trucks are summarised in Table 4.1.1. This table gives the total number of positive and negative changes in mean car and truck speeds for all roads, two and four lane roads, and roads with car speed limits of 100 km/h and 110 km/h (see Table A1.1 for road type and speed limit at each site).

Table 4.1.1 Number of sites showing faster or slower mean speeds in 1988 compared with 1987, classified by vehicle type, road type and speed limit.

	Cars			Articulated trucks		
	Faster	Slower	Chi-square test statistic	Faster	Slower	Chi-square test statistic
Total	48	14	19***	48	14	19***
Road Type						
2 Lane	26	9	8.3**	24	11	4.8*
4 Lane	22	5	10.7**	24	3	16***
Speed Limit						
100 km/h	18	8	3.9*	20	6	7.5**
110 km/h	30	6	16***	28	8	11***

Notes: (1) Victorian data are for short and long vehicles in May-June 1988 and November-December 1988, South Australian data are for cars and trucks in June and October 1988.
(2) *** ($p < 0.001$) ** ($0.001 < p < 0.01$) * ($0.01 < p < 0.05$)

Source: FORS Truck speed surveys 1987 and 1988.

A total of 48 sites showed faster mean speeds for cars in 1988 than in 1987 compared with only 14 showing slower mean speeds. This difference is highly statistically significant (chi-square test statistic = 19 for 1 df, $p < 0.001$), and the conclusion is that the mean speed of cars was higher after the speed limit change.

This remains true when sites are grouped by number of lanes or speed limit. For each group of sites (two-lane, four-lane, 100 km/h speed limit and 110 km/h speed limit), there are many more sites with faster mean car speeds after the change in heavy vehicle speed limit. For each group of sites the difference is statistically significant.

The mean speeds for articulated trucks showed a similar pattern, with 48 sites showing faster mean speeds in 1988 than in 1987 compared with only 14 showing the converse. This difference was statistically significant (chi-square test statistic = 19 for 1 df, $p < 0.001$). As for cars, this difference occurred for all four site groupings and was statistically significant in each case.

Categorising the sites further by road type and speed limit simultaneously results in too few sites in each group for individual analysis trends to necessarily be apparent. Therefore, logistic regressions of increase in speed with number of lanes and speed limit were carried out. For cars, there was no evidence that the mean speed was more likely to increase for one or other road types or speed limits (chi-square test statistics, each for 1 df, = 0.5 for road type and 2.1 for speed limit; $p > 0.05$ in each case). There was some evidence that the mean speed of trucks might be more likely to increase on a four lane road than on a two lane road (chi-square statistic = 4.4 for 1 df, $0.01 < p < 0.05$). However, the likelihood of an increase in truck speed was similar for both speed limits (chi-square test statistic = 0.6 for 1 df, $p > 0.05$).

There was also no evidence that the probability of an increase in mean speed of either vehicle type differed with car or truck density or the ratio of cars to trucks. (Chi-square test statistics for change in mean car speed varying with log car density = 1.0, with log truck density = 1.5, with car:truck ratio = 0.1; chi-square test statistics for change in mean truck speed varying with log car density = 1.4, with log truck density = 2.1, with car:truck ratio = 1.3; all test statistics are for 2 df and give $p > 0.05$).

Table 4.1.2 is analogous to Table 4.1.1 but includes only those sites which had more than 20 vehicles of the given type at both survey times. The four NSW sites at which there was a change in car speed limit from 100 km/h to 110 km/h between survey times were also excluded (sites 500201, 500202, 501001 and 501002). The results are similar to those for all sites, except that the difference in sites showing faster and slower mean speeds is no longer statistically significant for trucks on two lane roads. This is probably because there are fewer sites in the analysis. There is no evidence for differences between groups of sites for the likelihood of an increase in car or truck mean speed (chi-square test statistic, for 1 df, = 0.5 for cars by road type, 0.9 for cars by speed limit, 2.3 for trucks by road type and 0.6 for trucks by speed limit; $p > 0.05$ in each case).

The conclusion is that mean speeds of both cars and articulated trucks were higher after the speed limit change than before. This result may be generalised to all roads, in as far as the sites may be representative or that changes at these sites may be typical of what has occurred elsewhere.

Table 4.1.2 Number of sites showing faster or slower mean speeds in 1988 compared with 1987, classified by vehicle type, road type and speed limit. Only sites with more than 20 vehicles of the given type at both survey times, and without a change in car speed limit are included (see Table A6 for a list of these sites).

	Cars			Articulated trucks		
	Faster	Slower	Chi-square test statistic	Faster	Slower	Chi-square test statistic
Total	42	12	17***	34	11	12***
Road Type						
2 Lane	25	8	8.8**	17	8	3.2ns
4 Lane	17	4	8.0**	17	3	9.8**
Speed Limit						
100 km/h	16	6	4.6*	15	6	3.9*
110 km/h	26	6	13***	19	5	8.2**

Notes: (1) Victorian data are for short and long vehicles in May-June 1988 and November-December 1988, South Australian data are for cars and trucks in June and October 1988.
(2) *** ($p < 0.001$) ** ($0.001 < p < 0.01$) * ($0.01 < p < 0.05$) ns ($p > 0.05$)

Source: FORS Truck speed surveys 1987 and 1988.

Size of the change in mean speed

Table 4.1.3 shows the mean speeds of cars and articulated trucks for each site at each survey time. The difference in the mean speed between the two times is also shown. The overall mean change in speed for cars was 1.5 km/h, while that for articulated trucks was 2.6 km/h (see also Figures 4.1.1 and 4.1.2). If sites for which fewer than 20 vehicles of the particular type were observed or for which there has been a change in car speed limit between survey times are excluded (see Appendix Table A6), the difference in the mean speed of cars is slightly lower (1.1 km/h). The estimate of the change in the mean speed of articulated trucks is more greatly reduced to 1.7 km/h.

Table 4.1.3. Mean speeds of cars and articulated trucks in Australia in October 1987 and October 1988 (see also Appendix Tables A4.1.6 and 4.1.12 to 4.1.16).

	Cars			Articulated trucks			Difference		
Site	Oct 87	Oct 88	Change	Oct 87	Oct 88	Change	Oct 87	Oct 88	Change
NSW									
500101	104	108	4.6	102	109	6.9	1	-0	-2.3
500102	102	104	1.1	106	107	1.4	-3	-4	-0.3
500201	107	108	1.3	97	97	0.0	9	11	1.3
500202	102	108	5.9	95	98	3.1	7	9	2.8
500301	107	111	4.0	94	113	18.2	13	-1	-14.2
500302	98	106	8.3	73	94	21.5	25	11	-13.2
500401	104	110	5.8	98	103	5.3	7	7	0.5
500402	106	110	4.2	102	102	0.2	4	8	3.9
500501	103	106	2.4	98	98	0.5	5	7	1.9
500502	104	101	-2.9	97	94	-3.0	7	7	0.1
500601	108	109	1.0	100	101	1.0	8	8	-0.0
500602	103	105	2.0	95	98	2.4	8	8	-0.4
500701	110	107	-3.8	106	104	-1.9	5	3	-2.0
500702	106	109	3.1	103	102	-1.3	3	7	4.4
500801	109	112	3.2	97	98	0.4	12	14	2.8
500802	109	104	-4.8	102	102	0.3	7	2	-5.1
500901	109	111	1.3	101	106	5.5	9	4	-4.2
500902	100	103	2.2	94	97	2.9	7	6	-0.7
501001	104	109	4.8	94	98	3.4	10	11	1.4
501002	102	108	6.1	93	103	10.0	9	5	-3.9
501101	103	121	18.8	109	114	5.6	-6	7	13.1
501102	106	103	-3.3	104	106	1.8	2	-3	-5.1
501201	94	99	4.5	89	93	3.6	5	6	0.9
501202	100	97	-2.7	94	92	-1.4	6	4	-1.3
Vic+									
9153	103	103	0.8	98	94	-3.5	5	9	4.3
9154	103	105	1.3	93	95	1.4	10	10	-0.0
934203	98	99	0.9	91	93	1.9	7	6	-1.1
934204	95	95	-0.0	88	88	0.3	7	7	-0.4
9983	108	109	1.4	96	98	2.8	12	11	-1.3
9984	108	108	-0.6	100	100	-0.5	8	8	-0.1
9985	108	109	1.4	97	100	3.1	11	9	-1.7
9986	111	112	1.3	102	107	4.9	9	6	-3.5
9987	107	110	2.8	105	101	-3.3	2	8	6.1
9988	111	114	2.1	100	106	5.3	11	8	-3.2
9990	108	110	2.1	95	99	4.8	13	11	-2.7
9993	103	103	0.6	90	92	2.4	13	11	-1.9
9994	106	107	1.2	95	97	2.9	11	10	-1.7

+ First survey in Victoria in May-June 1988, not October 1987

(continued)

Table 4.1.3. (continued) Mean speeds of cars and articulated trucks in Australia in October 1987 and October 1988 (see also Appendix Tables 4.1.6 and 4.1.12 to 4.1.16).

Site	Cars			Articulated trucks			Difference		
	Oct 87	Oct 88	Change	Oct 87	Oct 88	Change	Oct 87	Oct 88	Change
Qld									
4205	94	91	-3.6	90	91	1.6	5	-0	-5.2
4210	101	98	-2.4	96	94	-2.0	4	4	-0.4
4215	99	101	2.3	90	95	4.3	8	6	-2.1
4220	92	96	3.9	83	94	10.7	9	2	-6.8
4225	95	98	3.2	90	91	0.2	4	7	3.0
4230	101	103	2.2	94	97	2.9	7	6	-0.7
4235	106	107	0.5	94	95	1.5	12	11	-1.0
4240	95	89	-5.5	87	93	6.4	8	-4	-11.9
4245	87	89	2.2	82	88	5.4	5	2	-3.2
4250	91	92	0.6	93	89	-3.2	-2	2	3.8
SA+									
Nuriootpa	100	101	1.2	100	101	1.5	0	-0	-0.3
Callington	103	111	7.5	101	104	3.7	3	6	3.8
WA									
430003	109	107	-2.2	100	98	-2.9	9	10	0.7
430004	108	109	0.6	99	101	2.7	10	8	-2.1
430203	106	111	4.6	96	104	8.3	10	7	-3.7
430204	109	111	2.0	98	93	-5.7	11	19	7.7
430301	107	107	0.1	93	98	4.7	14	9	-4.6
430302	108	107	-0.9	97	96	-0.9	10	10	-0.0
430401	108	112	3.3	96	97	1.0	12	15	2.3
430402	108	109	1.2	93	95	1.7	15	14	-0.4
430501	106	101	-4.9	95	94	-0.7	11	7	-4.2
430502	110	100	-9.8	92	92	-0.0	17	7	-9.8
Tas									
350111	88	88	0.3	77	82	4.7	11	6	-4.4
350313	91	94	2.3	88	89	0.1	2	5	2.2
350323	96	96	0.1	89	95	6.2	7	0	-6.1
All sites									
Average	103	104	1.5	95	98	2.6	8	7	-1.1
Median			1.3			1.6	8	7	-0.7
# increase			48			48			20
# decrease			14			14			42
Chi-square test statistic			19***			19***			8**

\+ First survey in South Australia in June 1988, not October 1987
For both surveys speeds are medians not means

Note: *** ($p < 0.001$) ** ($0.001 < p < 0.01$)
Source: FORS Truck speed surveys 1987 and 1988.

Car and Articulated Truck Speeds Before and After July 1988

Figure 4.1.1. Change in mean free speeds of cars before and after July 1988.

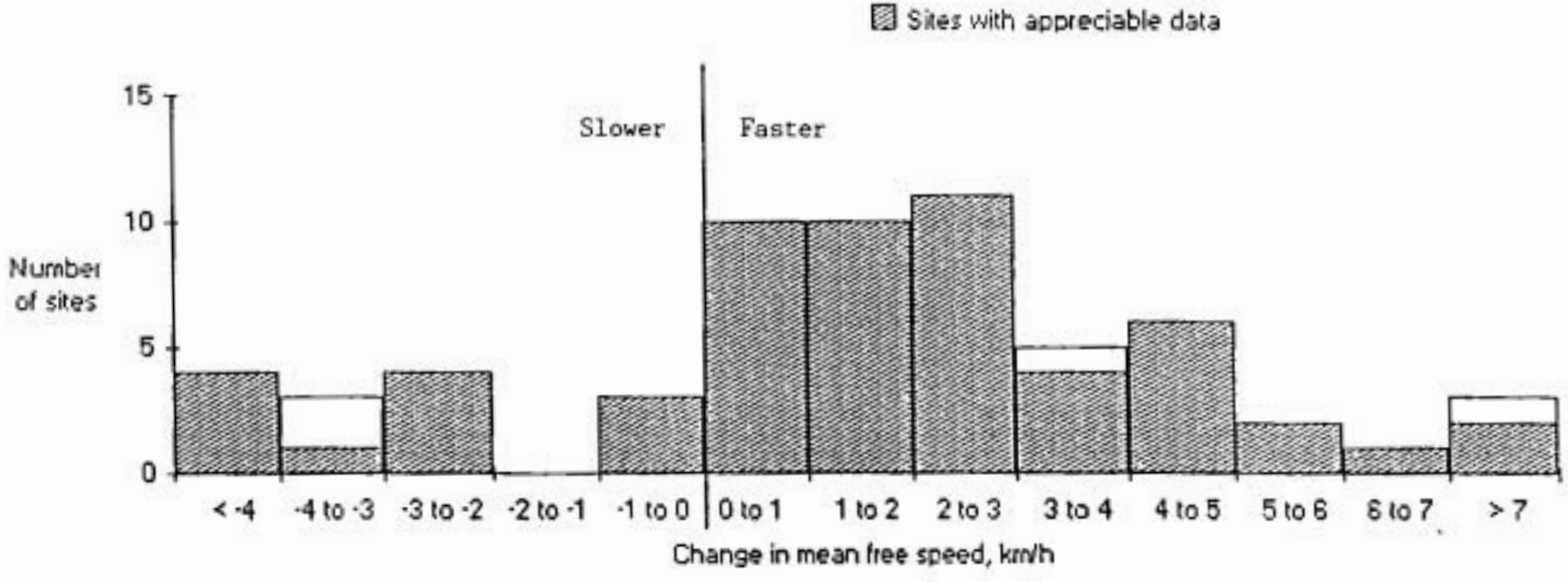


Table 4.1.4 shows the mean changes in speed for each vehicle type classified by speed limit and number of lanes. Although the speed change for cars appears to vary greatly with both factors, a regression model of the speed change with speed limit and number of lanes gives no evidence that this is so (F statistics, for 1 and 59 df, = 2 for lane number, 0 for speed limit and 1.3 for speed limit by lane interaction; $p > 0.05$ in each case).

Table 4.1.4 Mean changes in speed (with standard errors) from October 1987 to October 1988 for cars and articulated trucks, classified by road type and speed limit for cars.

	Cars		Articulated trucks	
	two-lane	four-lane	two-lane	four-lane
Speed limit				
100 km/h	1.5 (0.9)	1.4 (1.7)	1.6 (1.0)	3.4 (2.0)
110 km/h	-0.2 (1.0)	2.5 (0.8)	1.5 (1.2)	4.1 (1.0)

Source: FORS Truck speed surveys, 1987 and 1988.

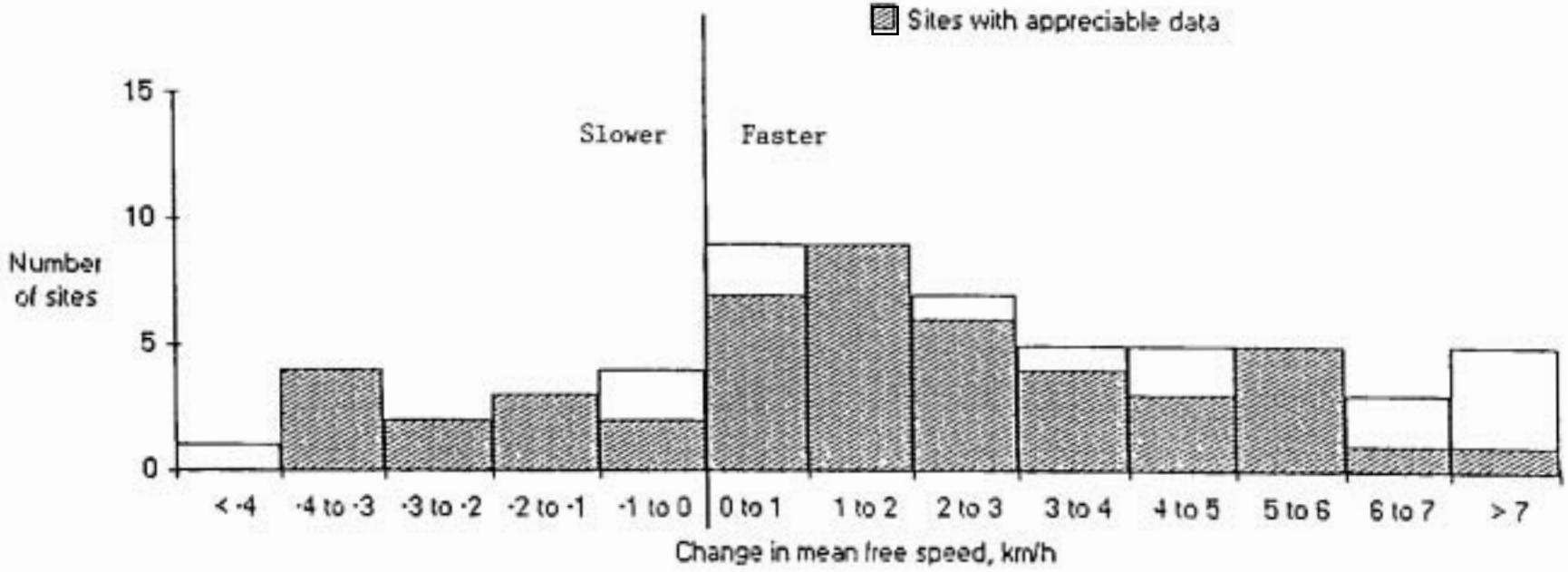
The negative change for 110 km/h two lane sites was mostly a reflection of two large negative changes at sites 430501 and 430502. Without these two sites, which are the same location at the one survey time but in opposite directions, the mean change in speed for this group of sites was 1.1 km/h. For this location, the remarks on the header sheet state "the lower average speed of vehicles could be contributed to by extremely hot weather conditions and long distances of travel". There was also a marked police car travelling north and south of the survey point. Therefore, the surveys of these two sites may not have measured the true change in mean speed of cars.

The 110 km/h four-lane sites include the four NSW sites at which the speed limit for cars increased from 100 km/h between the two survey times. Without these four sites the mean speed change for this group is 1.7 km/h which is similar to the overall mean change. There is no evidence that the size of the mean speed increase for cars varied with car density (chi-square test statistic = 1.1 for 2 df, $p > 0.05$), truck density (chi-square test statistic = 0.7 for 2 df, $p > 0.05$), or ratio of trucks to cars (chi-square test statistic = 1.2 for 2 df, $p > 0.05$).

The size of the change in mean speed for trucks seems to vary with number of lanes. Evidence for this came from a regression of speed change with lane number which was statistically significant (F test statistic, for 1 and 59 df, = 4.3, $0.01 < p < 0.05$). However, there was no evidence for a difference with car speed limit (F test statistic, for 1 and 59 df, = 0.9, $p > 0.05$). The change in speed appeared to be also affected by the number (or density) of trucks at each survey time (F test statistic, for 2 df, = 3.6, $0.01 < p < 0.05$). However, rather than a linear trend with truck density, the crucial difference was between sites with more than 20 trucks (at each survey time) and sites with fewer than 20 trucks at one or both times (F test statistic, for 1 and 59 df, = 12, $p < 0.001$). There was a statistically significant interaction between this factor and number of lanes (F test statistic, for 1 and 58 df, = 15, $p < 0.001$).

Car and Articulated Truck Speeds Before and After July 1988

Figure 4.1.2. Change in mean free speeds of articulated trucks before and after July 1988.



The estimates of truck speed change from this regression model are as follows:

	Number of trucks	
	< 20	> 20
two-lane	2.3	1.3
four-lane	11.9	2.1

The estimate for four-lane sites with fewer than 20 trucks is based on only 5 sites. It is possible that such sites do differ from other sites and the speed of trucks has increased dramatically for them. However, it is likely that the estimates at these sites are imprecise because of the small number of vehicles sampled. The four sites with the highest changes in truck speed of 10 km/h or more are the sites with the lowest sample sizes (on average 12 trucks for the first survey and 9 for the second). If these four sites are omitted, there is no longer a statistically significant difference between two and four lane roads (F test statistic, for 1 and 56 df, = 1.8, $p > 0.05$). For sites with more than 20 trucks there is no evidence that the size of the mean speed increase for trucks varied with truck density (chi-square test statistic = 1.1 for 2 df, $p > 0.05$), car density (chi-square test statistic = 0.5 for 2 df, $p > 0.05$), or ratio of trucks to cars (chi-square test statistic = 0.9 for 2 df, $p > 0.05$).

The number of extreme values and the other problems outlined above suggest that the median would be a more robust estimator of overall speed change than the mean. **The median for change in car speed is +1.3 km/h and for change in truck speed is +1.9 km/h, similar to the means for sites with more than 20 vehicles.** These estimates apply regardless of number of lanes or speed limit.

These estimated changes for articulated trucks are similar to the changes observed from October 1986 to April 1987 and from April 1987 to October 1987 (each 2 km/h; Fitzgerald, 1988). The changes in speeds for cars over those two periods were an increase of 1 km/h and a decrease of 2 km/h (Fitzgerald, 1988). However, the data analytic methods used in this report and by Fitzgerald differ, and so the changes estimated for different periods are not necessarily comparable (see Appendix A12 for a summary of Fitzgerald's findings).

Analyses of changes in individual States and Territories are given in Appendix A7. The power of these analyses depends on the number of sites with appreciable numbers of vehicles whose speed was measured. States with few sites have little or no chance of even large changes being detected as statistically significant. For example, there were only three sites in Tasmania. Even if there were appreciable numbers of vehicles surveyed at these sites, and even with all sites showing the same direction of change, the sign test would not be statistically significant (since the exact probability for the test statistic would be 0.25 for a two-sided test).

Figure 4.2. Change in car - truck speed difference before and after July 1988.

4.2 Difference in mean speeds of cars and articulated trucks

An intended effect of the increase in the speed limit of heavy trucks was to make the mean speeds of cars and heavy vehicles more similar. This means that cars will have less need to overtake heavy vehicles.

Table 4.2.1 and Figure 4.2 summarise the changes in observed mean speed differences between cars and articulated trucks for the whole of Australia. Overall, the mean speed difference was lower in 1988 than in 1987 (chi-square test statistic = 7.8 for 1 df, $0.001 < p < 0.01$). This result was also statistically significant when sites with fewer than 20 vehicles of either type on a given survey occasion were excluded (chi-square test statistic = 5.5 for 1 df, $0.01 < p < 0.05$).

Table 4.2.1. Number of sites showing mean speeds of cars and articulated trucks that were either closer or further apart in 1988 compared with 1987, classified by road type and car speed limit. The data are shown for all sites and for sites with more than 20 vehicles of the each type at both survey times.

	All sites			Sites with appreciable data		
	Closer	Further	Chi-square statistic	Closer	Further	Chi-square statistic
Total	42	20	7.8**	28	13	5.5*
Road type						
2 lane	23	12	3.5ns	14	9	1.1ns
4 lane	19	8	4.5*	14	4	5.6*
Speed limit						
100 km/h	17	9	2.5ns	11	6	1.5ns
110 km/h	25	11	5.4*	17	7	4.2*

Notes: (1) Victorian data are for short and long vehicles in May-June 1988 and November-December 1988, South Australian data are for cars and trucks in June and October 1988.
(2) Sites which had a change in car speed limit between survey times are not included in sites with appreciable data.
(3) ** ($0.001 < p < 0.01$) * ($0.01 < p < 0.05$) ns ($p > 0.05$)

Source: FORS Truck speed surveys 1987 and 1988.

Table 4.2.1 also shows the sites grouped by number of lanes and by car speed limit. For each group there is about a 2 to 1 ratio of sites with closer mean speeds to those with mean speeds further apart, although this difference is only statistically significant for the four lane group and the 110 km/h group. There is no evidence that the ratio differs with speed limit or with number of lanes (chi-square test statistic for differences between road types, for 1 df, = 0.2 for all sites and 0.2 for sites with appreciable data; chi-square test statistic for differences between speed limits, for 1 df, = 0.1 for all sites and 1.3 for sites with appreciable data; $p > 0.05$ in all four cases).

For the same reasons as in the last section, the median appears to be a more robust estimator of the overall change in the car-truck speed difference, although the mean and median for the difference at each survey time are approximately the same. The mean for the change in the car-truck speed difference is -1.1 km/h over all sites but only -0.5 km/h for sites with more than 20 vehicles of each type. The median for the change is the same (-0.7 km/h) for both groups of sites (and happens to be similar to the median truck speed change minus the median car speed change, 1.9 - 1.3).

The car/articulated truck median (and mean) speed difference has changed from 8 km/h to 7 km/h. The median over all sites for the amount that the car-truck speed difference has decreased is 0.7 km/h. The approximate 95% confidence interval for this estimate is from -0.1 km/h to -1.8 km/h. This result is statistically significant as the confidence interval does not include zero.

Using a different measure than in this report, Fitzgerald (1988) estimated that the car/articulated truck speed differential for two-lane roads had decreased from October 1986 to October 1987 by 1.6 km/h from 9.7 km/h to 8.1 km/h. This decrease was statistically significant.

The size of the car-truck speed differential may be inversely related to the change in the percentage of trucks between surveys (F test statistic, for 1 and 39 df, = 4.7, $0.01 < p < 0.05$; for sites with appreciable data). This means for some sites the difference is greater than 2 km/h and for others there may even be a slight increase. There is no evidence from a regression model that the size of the difference itself differs with speed limit or number of lanes (F test statistic for speed limit, for 1 and 36 df = 0, $p > 0.05$; F test statistic for number of lanes, for 1 and 36 df = 0.3, $p > 0.05$). However, it is possible that the difference may be less than average for two-lane 100 km/h sites. The median difference for these sites was -0.4 km/h and the mean for sites with appreciable data was almost zero, although this estimate becomes -0.3 km/h after a regression adjustment for the change in percentage of trucks.

An analysis for each State and Territory separately for the difference between car and articulated truck speeds is given in Appendix A7.

4.3 Other aspects of the speed distributions

Other aspects of the speed distributions of cars and articulated trucks were examined similarly to the analysis of mean vehicle speeds in Section 4.1 and 4.2.

Variation in car speeds and articulated truck speeds

The standard deviation is a measure of the spread of the speed distribution. Table 4.3.1 shows the number of sites for which the standard deviation of the speeds of cars and articulated trucks increased and decreased.

Car and Articulated Truck Speeds Before and After July 1988

Table 4.3.1. Number of sites showing more or less variation in speed in 1988 compared with 1987, classified by vehicle type and road type or car speed limit. The data are shown for all sites and for sites with more than 20 vehicles of the given type at both survey times.

	All sites				Sites with appreciable data			
	Cars		Articulated trucks		Cars		Articulated trucks	
	More	Less	More	Less	More	Less	More	Less
Total	41	19	32	28	35	17	25	20
Chi-square test statistic	8.1**		0.3ns		6.2*		0.6ns	
Road type								
2 lane	22	12	20	14	21	11	15	9
4 lane	19	7	12	14	14	6	10	11
Speed limit								
100 km/h	14	12	11	15	11	11	9	12
110 km/h	27	7	21	13	24	6	16	8

Notes: (1) Victorian data are for short and long vehicles in May-June 1988 and November-December 1988
(2) Standard deviations were not available for the two South Australian sites
(3) Sites which had a change in car speed limit between survey times are not included in sites with appreciable data.
(4) ** ($0.001 < p < 0.01$) * ($0.01 < p < 0.05$) ns ($p > 0.05$)

Source: FORS Truck speed surveys 1987 and 1988.

This table shows that overall the variation in car speeds was higher in 1988 than in 1987 (chi-square test statistic = 8.1 for 1 df, $0.001 < p < 0.01$). This trend is apparent for both two lane and four lane roads (chi-square test for a difference between road types = 0.5 for 1 df, $p > 0.05$). However there was evidence of a difference between speed limits (chi-square test = 4.4 for 1 df, $0.01 < p < 0.05$) which suggests that variation in car speeds is only increasing for roads with a speed limit of 110 km/h but remaining the same for roads with a speed limit of 100 km/h. The results are very similar when sites with fewer than 20 cars are excluded.

There was no evidence for a change in the variation in speeds of articulated trucks (chi-square test statistic = 0.3 for 1 df, $p > 0.05$). From Table 4.3.1 there appear to be possible differences between road types and between speed limits but neither of these was statistically significant (chi-square test statistic for number of lanes = 1.0 for 1 df, and for speed limit = 2.2 for 1 df; $p > 0.05$ in both cases). Excluding sites with fewer than 20 trucks gives similar results.

Analyses by State or Territory and tables showing the standard deviations at each site are given in Appendix A8.

Car and Articulated Truck Speeds Before and After July 1988

Proportion of fast vehicles on the road

The percentage of vehicles travelling faster than 110 km/h was analysed similarly and this analysis is summarised in Table 4.3.2. These data are more variable than for the mean speeds (see Section 4.1). The percentage of fast vehicles would be expected to be higher if the mean speed is higher. Accordingly, the results of Section 4.1 suggest that the percentage of fast vehicles should be higher in 1988 than in 1987. This occurred, and overall the percentages of fast cars and fast articulated trucks was higher in 1988 than in 1987 (chi-square test statistic for cars = 15 for 1 df, $p < 0.001$; chi-square test statistic for articulated trucks = 5.3 for 1 df, $0.01 < p < 0.05$).

Table 4.3.2. Number of sites showing proportionately more or less vehicles travelling at over 110 km/h in 1988 compared with 1987, classified by vehicle type and speed limit or road type. The data are shown for all sites and for sites with more than 20 vehicles of the given type at both survey times.

	All sites				Sites with appreciable data			
	Cars		Articulated trucks		Cars		Articulated trucks	
	More	Less	More	Less	More	Less	More	Less
Total	45	15	32	16	38	14	25	14
Chi-square test statistic	15***		5.3*		11***		3.1ns	
Road type								
2 lane	24	10	14	9	22	10	11	7
4 lane	21	5	18	7	16	4	14	7
Speed limit								
100 km/h	16	10	10	7	13	9	8	7
110 km/h	29	5	22	9	25	5	17	7

Notes: (1) Victorian data are for short and long vehicles in May-June 1988 and November-December 1988
(2) Percentages of vehicles travelling over 110 km/h were not available for the two South Australian sites
(3) Sites which had a change in car speed limit between survey times are not included in sites with appreciable data.
(4) *** ($p < 0.001$) * ($0.01 < p < 0.05$) ns ($p > 0.05$)

Source: FORS Truck speed surveys 1987 and 1988.

There is evidence that the four-lane 100 km/h roads were different from other sites and possibly had a decrease or at least no increase in the percentage of fast cars (chi-square statistic for interaction of lane number and road type = 8.8 for 1 df, $0.001 < p < 0.01$). The other three groups of sites all showed a similar increase.

Car and Articulated Truck Speeds Before and After July 1988

For articulated trucks the results were similar for both road types and both speed limits (chi-square test statistics for differences between these groups, for 1 df, = 0.5 for cars by road type, 2.1 for cars by speed limit, 0.7 for road type and 0.7 for speed limit; $p > 0.05$ in each case).

Analyses by State or Territory and tables showing the proportion of vehicles travelling above 110 km/h for each site are given in Appendix A9.

4.4 Changes in vehicle densities

Vehicle densities were defined as the number of vehicles of each type sampled per hour. Table 4.4 summarises changes in vehicle densities over the periods of the surveys in 1987 and 1988.

Table 4.4 Number of sites showing higher or lower vehicle densities in 1988 compared with 1987, classified by vehicle type and road type or car speed limit.

	Cars		Articulated trucks	
	Higher	Lower	Higher	Lower
Total	40	20	29	31
Chi-square test statistic	6.7*		0.1ns	
Road type				
2 lane	20	14	11	23
4 lane	20	6	18	8
Speed limit				
100 km/h	16	10	12	14
110 km/h	24	10	17	17

Notes: (1) Victorian data are for short and long vehicles in May-June 1988 and November-December 1988
(2) Exact vehicle densities were not available for the two South Australian sites
(3) * ($0.01 < p < 0.05$) ns ($p > 0.05$)

Source: FORS Truck speed surveys 1987 and 1988.

Car densities appear to have been higher in 1988 than in 1987 for all site groups, while truck densities have increased for four-lane roads (chi-square test statistic = 4.2 for 1 df, $0.01 < p < 0.05$) but decreased for two-lane roads (chi-square test statistic = 3.9 for 1 df, $0.01 < p < 0.05$). This has meant that overall the proportion of trucks (ie number of trucks/total number of trucks and cars) has decreased for two-lane roads and remained similar for four-lane roads. This proportion increased for 12 out of 26 four-lane sites (chi-square test statistic = 0.2 for 1 df, $p > 0.05$) but only 9 out of 34 two-lane sites (chi-square test statistic = 7.5 for 1 df, $0.001 < p < 0.01$).

These trends must be interpreted with care as the sample proportion for many sites is unknown and may have varied between surveys. Further, for sites with small sample sizes densities could fluctuate greatly by chance alone. The proportion of trucks varied from 1% to 94% in the first survey, and from 2% to 89% in the second survey. The numbers of cars and trucks sampled at each site and survey time are given in Appendix Tables A7.1 to A7.12.

5. Platoons

Table 5.1 shows an analysis for the percentage of vehicles that are holding up other vehicles on two lane roads. Overall, this percentage has not changed consistently between 1987 and 1988 for cars (chi-square test statistic = 1.3 for 1 df, $p > 0.05$), or for articulated trucks (chi-square test statistic = 2.6 for 1 df, $p > 0.05$). This is also true when sites are grouped by car speed limit. (Table 5.1; only four States had sites for which such platoon data were obtained. For NSW and Queensland all such sites had a car speed limit of 100 km/h but for Western Australia and Tasmania they had a speed limit of 110 km/h.)

Table 5.1. Number of sites showing proportionately more or less platoons in 1988 compared with 1987, classified by lead vehicle type and car speed limit.

	Cars		Articulated trucks		Difference	
	More	Less	More	Less	More	Less
Total	17	11	17	9	15	13
Chi-square test statistic	1.3ns		2.6ns		0.1ns	
Speed limit = 100 km/h						
NSW	6	6	7	5	8	4
Queensland	3	0	2	1	2	1
Total	9	6	9	6	10	5
Chi-square test statistic	0.6ns		0.6ns		1.7ns	
Speed limit = 110 km/h						
WA	5	5	7	1	3	7
Tasmania	3	0	1	2	2	1
Total	8	5	8	3	5	8
Chi-square test statistic	0.7ns		2.3ns		0.7ns	

Notes: (1) No platoon data for Victoria, South Australia and the ACT
(2) ns ($p > 0.05$)

Source: FORS Truck speed surveys 1987 and 1988; 2 lane roads only.

A similar analysis was performed for the mean length of platoons led by cars and by articulated trucks (Table 5.2). However, there were often fewer than 20 platoons led by a given vehicle type observed at a site during the survey period. Overall, there was no statistically significant difference in the lengths of platoons led by cars in 1987 and 1988 (chi-square test statistic = 2.0 for 1 df, $p > 0.05$), nor for platoons led by articulated trucks (chi-square test statistic = 2.0 for 1 df, $p > 0.05$). Further, there was no evidence of any change in platoon length between these two times for roads with either speed limit of 100 km/h or 110 km/h.

Table 5.2. Number of sites showing longer or shorter platoons in 1988 compared with 1987, classified by lead vehicle type and State or Territory.

	Cars		Articulated trucks		Difference	
	Longer	Shorter	Longer	Shorter	Longer	Shorter
Total	13	5	12	6	6	13
Chi-square test statistic	3.6ns		2.0ns		2.6ns	
Speed limit = 100 km/h						
NSW	7	2	6	4	3	6
Queensland	2	1	2	0	1	2
Total	9	3	8	4	4	8
Chi-square test statistic	3.0ns		1.3ns		1.3ns	
Speed limit = 110 km/h						
WA	1	2	3	0	0	4
Tasmania	3	0	1	2	2	1
Total	4	2	4	2	2	5
Chi-square test statistic	0.7ns		0.7ns		1.3ns	

Notes: (1) No platoon data for Victoria, South Australia and the ACT
(2) ns ($p > 0.05$)

Source: FORS Truck speed surveys 1987 and 1988; 2 lane roads only.

Site by site analyses of the percentage of vehicles leading platoons and the mean length of platoons are given in Appendices A10 and A11.

6. Discussion and conclusions

The main finding of this report is that both cars and articulated trucks have increased in mean free speed since the change in the heavy vehicle speed limit from 90 km/h to 100 km/h. Over all sites the estimated median increases in mean free speed are 1.3 km/h for cars and 1.9 km/h for trucks. As a result, the mean speeds of the two vehicle types have become closer by an estimated 0.7 km/h.

This result seems to apply to all roads and there is little evidence that it differs between two-lane and four-lane roads, or between roads with car speed limits of 100 km/h and 110 km/h. However, it is possible that such differences do exist but the study is of too few sites to detect them. Further, some sites have small sample sizes and some sites have other complications, such as the four sites for which the car speed limit changed between surveys. More sites of each type would be required for reliable tests of differences between them.

In particular, the change in the car-truck speed difference for two-lane roads with a speed limit of 100 km/h, may be less than for other roads, although this difference is not statistically significant. On the other hand, four-lane sites with very low truck densities show much larger increases in truck speed than average, but this result is based on limited data.

Overall, the variation in car speeds increased whereas the variation in truck speeds remained constant. The proportion of fast vehicles (travelling faster than 110 km/h) increased for both vehicle types as might be expected from the increases in mean speeds.

For trucks, these results occurred for all roads. These data are consistent with both slow and fast trucks travelling slightly faster in 1988 than in 1987.

The change in the pattern of car speeds differed between roads with speed limits of 100 km/h and 110 km/h. The 110 km/h roads had both an increase in car speed variation and in the proportion of fast cars. This suggests that the increase in mean car speeds on these roads was mainly because fast cars travelled faster.

The 100 km/h two-lane roads had an increase in the proportion of fast cars but not in the amount of variation. Thus, cars on these roads showed a pattern similar to trucks, that is, both slow and fast cars travelled slightly faster. The 100 km/h four-lane roads had no increase in either the proportion of fast cars or in speed variation, but there are too few sites (five) in this category for any definite conclusions.

There is possibly an inverse relationship between the change in the car-truck speed difference and the change in the ratio of truck to car numbers. The change in this ratio differs between two-lane and four-lane roads. However, in general, variation in absolute car and truck densities does not appear to affect car and truck speed changes.

There is no evidence that either the number or length of platoons are increasing or decreasing. The data are scanty and differences in platoon characteristics between States are large and could easily obscure any change.

APPENDICES

A1. Details of sites surveyed

Car and Articulated Truck Speeds Before and After July 1988

Table A1.1. Description of sites surveyed October to December 1988.

Site	Date	Road name	Road type	Speed limit	Direction
New South Wales					
5001	05/11/88	New England Hwy, Tamworth	2 Lane Highway	100	N,S
5002	31/10/88	Hume Highway, Berrima	4 Lane Divided	110*	N,S
5003	29/10/88	Newcastle Fway, Mt White	4 Lane Freeway	110	N,S
5004	21/11/88	Hume Hwy, Gundagai	2 Lane Highway	100	N,S
5005	15/11/88	Hume Hwy, Gundagai	2 Lane Highway	100	N,S
5006	18/11/88	Newell Hwy, Forbes	2 Lane Highway	100	N,S
5007	19/11/88	Newell Hwy, Forbes	2 Lane Highway	100	N,S
5008	22/11/88	Sth Western Fway, Menangle	4 Lane Divided	110	N,S
5009	23/11/88	Sth Western Fway, Menangle	4 Lane Divided	110	N,S
5010	19/11/88	Hume Highway, Berrima	4 Lane Divided	110*	N,S
5011	22/11/88	Hume Hwy, Goulburn	4 Lane Divided	100	N,S
5012	25/10/88	New England Hwy, Singleton	2 Lane Highway	100	N,S
Victoria					
9153	19/11/88	Princes Fwy E of Kororoit Rd	4 Lane Divided	110	E
9154	19/11/88	Princes Fwy E of Kororoit Rd	4 Lane Divided	110	W
9157	26/11/88	Mulgrave Fwy E of Police Rd	4 Lane Divided	110	E
9342	26/11/88	S. Gippsland Hwy, Welshpool	2 Lane Undivided	100	E,W
9983	03/12/88	Princes Hwy E., Robin Hood	4 Lane Divided	110	E
9984	03/12/88	Princes Hwy E., Robin Hood	4 Lane Divided	110	W
9985	03/12/88	Hume Highway, Wallan	4 Lane Divided	110	N
9986	03/12/88	Hume Highway, Wallan	4 Lane Divided	110	S
9987	03/12/88	Hume Highway, Balmattum	4 Lane Divided	110	N
9988	03/12/88	Hume Highway, Balmattum	4 Lane Divided	110	S
9990	19/11/88	Western Highway, Wallan	4 Lane Divided	110	W
9993	19/11/88	Princes Hwy W., Lara	4 Lane Divided	110	N
9994	19/11/88	Princes Hwy W., Lara	4 Lane Divided	110	S
Queensland					
4205	22/10/88	Pacific Highway	Freeway	100	N
4210	08/11/88	Pacific Highway	2 Lane Highway	100	S
4215	09/11/88	Pacific Highway	2 Lane Highway	100	S
4220	22/10/88	Pacific Highway	2 Lane Highway	100	S
4225	24/10/88	Mount Lindesay Highway	2 Lane Highway	100	S
4230	18/10/88	Bruce Highway	2 Lane Highway	100	N
4235	21/10/88	Bruce Highway	4 Lane Divided H	100	S
4240	22/10/88	Bruce Highway	4 Lane Divided H	100	N
4245	18/10/88	Bruce Highway	2 Lane Highway	100	S
4250#	19/10/88	Bruce Highway	2 Lane Highway	100	N

(continued)

* The speed limit for cars for sites 5002 and 5010 has increased from 100 km/h since the 1987 survey.

\# Due to road reconstruction, site 4250 was not in precisely the same location as in 1987 but was a nearby location with similar characteristics.

Source: FORS Truck speed surveys, 1988.

Car and Articulated Truck Speeds Before and After July 1988

Table A1.1. Description of sites surveyed in October/November 1988. (continued)

Site	Date	Road name	Road type	Speed limit	Direction
South Australia					
Nuriootpa	10/88	Sturt Highway	2 Lane Highway	110	
Callington	10/88	South East Highway	2 Lane Highway	110	
Western Australia					
4300	17/10/88	Great Eastern Highway	2 Lane Highway	110	E,W
4301	19/10/88	Eyre Highway	2 Lane Highway	110	E,W
4302	20/10/88	South Coast Highway	2 Lane Highway	110	E,W
4303	22/10/88	Albany Highway	2 Lane Highway	110	N,S
4304	25/10/88	Brand Highway	2 Lane Highway	110	N,S
4305	28/10/88	North West Coastal Hwy	2 Lane Highway	110	N,S
Tasmania					
3501	25/10/88	Midlands Highway	2 Lane Highway	110	N,S
3501	05/11/88	Midlands Highway	2 Lane Highway	110	N,S
3503	20/10/88	Bass Highway	2 Lane Highway	110	E
3503	25/10/88	Bass Highway	2 Lane Highway	110	E
Australian Capital Territory					
1601	01/11/88	Majura Road	2 Lane Single	100	S
1601	03/11/88	Majura Road	2 Lane Single	100	S
1601	05/11/88	Majura Road	2 Lane Single	100	S
1602	08/11/88	Barton Highway	4 Lane Divided	100	S
1602	10/11/88	Barton Highway	4 Lane Divided	100	S
1602	12/11/88	Barton Highway	4 Lane Divided	100	S

Source: FORS Truck speed surveys, 1988.

Table A1.2. Temporal attributes of sites surveyed before and after the increase in the heavy vehicle speed limit on 1 July 1988.

Site	Day	After 1 July 1988 Date	Start	Finish	Before 1 July 1988 Date	Start	Finish
New South Wales							
5001	Sat	05/11/88	0200	0600	17/10/87	0200	0600
5002	Mon	31/10/88	1000	1430	12/10/87	1145	1615
5003	Sat	29/10/88	1000	1400	17/10/87	1130	1715
5004	Mon	21/11/88	1800	2200	12/10/87	1800	2200
5005	Tue	15/11/88	1400	1800	13/10/87	1400	1800
5006	Fri	18/11/88	1830	2230	23/10/87	1830	2230
5007	Sat	19/11/88	0100	0500	24/10/87	0100	0500
5008	Tue	22/11/88	1930	2330	27/10/87	1829	2400
5009	Wed	23/11/88	0000	0430	28/10/87	0000	0430
5010	Sat	19/11/88	1930	2400	31/10/87	1930	2400
5011	Tue	22/11/88	0000	0430	13/10/87	0000	0415
5012	Tue	25/10/88	1000	1400	27/10/87	1030	1450
Victoria*							
9153	Sat to Wed	19/11/88	0200	1700	04/06/88	0100	0100
9154	Sat to Wed	19/11/88	0200	1700	04/06/88	0100	0100
9157	Sat to Thu	26/11/88	0200	0600	21/05/88	0100	0100
9342	Sat to Wed	26/11/88	0200	0100	21/05/88	0200	0100
9983	Sat to Fri	03/12/88	0200	1100	21/05/88	0100	0100
9984	Sat to Fri	03/12/88	0100	1100	21/05/88	0100	0100
9985	Sat to Wed	03/12/88	0200	1700	21/05/88	0100	0100
9986	Sat to Wed	03/12/88	0200	1700	21/05/88	0100	0100
9987	Sat to Wed	03/12/88	0200	1500	21/05/88	0100	0100
9988	Sat to Wed	03/12/88	0200	1500	28/05/88	0100	0800
9990	Sat to Wed	19/11/88	0200	0900	04/06/88	0100	0100
9993	Sat to Wed	19/11/88	0200	1600	04/06/88	0100	0100
9994	Sat to Wed	19/11/88	0200	1600	04/06/88	0100	0100
Queensland							
4205	Sat	22/10/88	0745	1145	17/10/87	0745	1145
4210	Tue	08/11/88	0100	0500	20/10/87	0100	0500
4215	Wed	09/11/88	1200	1600	14/10/87	1200	1600
4220	Sat	22/10/88	0000	0400	24/10/87	0000	0400
4225	Mon	24/10/88	1930	2330	12/10/87	1930	2330
4230	Tue	18/10/88	1800	2200	13/10/87	1800	2200
4235	Fri	21/10/88	0000	0400	16/10/87	0015	0415
4240	Sat	22/10/88	1800	2200	17/10/87	1800	2200
4245	Tue	18/10/88	1115	1515	13/10/87	1115	1515
4250	Wed	19/10/88	1200	1600	14/10/87	1100	1500

(continued)

* The day column for Victoria refers to the November/December surveys. All May/June surveys for Victoria were carried out from Sat to Wed, except that for site 9988 which was from Sat to Tue.

Table A1.2. (continued) Temporal attributes of sites surveyed before and after the increase in the heavy vehicle speed limit on 1 July 1988.

Site	Day	After 1 July 1988 Date	Start	Finish	Before 1 July 1988 Date	Start	Finish
South Australia							
Nuriootpa	6-7 days	10/88			06/88		
Callington	6-7 days	10/88			06/88		
Western Australia							
4300	Mon/Tue	17/10/88	1100	1100	12/10/87	1300	1300
4301	Wed/Thu	19/10/88	1000	1000	14/10/87	1000	1000
4302	Thu/Fri	20/10/88	1600	1600	15/10/87	1600	1600
4303	Sat/Sun	22/10/88	1230	1230	17/10/87	1230	1230
4304	Tue/Wed	25/10/88	1000	1000	20/10/87	1000	1000
4305	Fri/Sat	28/10/88	1100	1100	23/10/87	1100	1100
Tasmania							
3501	Tue	Not surveyed in 1988			13/10/87	1400	1800
3501	Thu	25/10/88	1400	1800	15/10/87	1400	1800
3501	Sat	05/11/88	1800	2200	17/10/87	1800	2200
3503	Tue	25/10/88	1800	2200	20/10/87	1800	2200
3503	Thu	20/10/88	1045	1445	22/10/87	1100	1500
3503	Sat	Not surveyed in 1988			17/10/87	1100	1500
Australian Capital Territory							
1601	Tue	01/11/88	0700	1100	13/10/87	1800	2200
1601	Thu	03/11/88	1700	2000	15/10/87	0700	1100
1601	Sat	05/11/88	1200	1600	24/10/87	1400	1730
1602	Tue	08/11/88	0715	1100	13/10/87	0650	1050
1602	Thu	10/11/88	1700	2000	15/10/87	1750	2150
1602	Sat	12/11/88	1200	1600	17/10/87	1350	1730

Source: FORS Truck speed surveys, 1987 and 1988

A2. Data checking

A2.1 1988 surveys

For each State and Territory the following were checked (where appropriate):

- consistency of dates, time and traffic directions
- vehicle type: out-of-range and missing values
- speed: missing values, those over 140 kph or under 60 kph
- number of following vehicles: missing values, values above 5.

The results of these checks were as follows:

Queensland: Speed and vehicle type had apparently been swapped in one case. A value of 88 for the number of following vehicles was judged to be implausible and recoded to missing.

Western Australia: Vehicle code was missing for two cases and speed for one case.

Tasmania: No errors were found.

Australian Capital Territory: Speed was missing for three cases. Because the data were coded on forms which were not fully ruled, numbers were often badly aligned, and cases could have possibly been confused. The missing speed values were probably due to this. For location 1602 on 10/11/88 there were three blocks of cases where many of the speeds had been recorded without a vehicle type. It was assumed that the vehicle type for all these cases was car (code 30), since the only vehicle types recorded for these blocks were those other than car.

New South Wales: The data for New South Wales were provided on floppy disk and the original coding sheets were not available. No out-of-range values were found, and the highest and lowest values for speed and number of following vehicles were similar to those of the other States.

Victoria: There were no coding sheets for Victoria as the data were collected by automatic classifier. Since speeds were recorded as belonging to one of 12 ranges, actual speeds could not be checked. Numbers of following vehicles were not recorded. Each file had the correct structure, that is records for 12 speed bins (numbered 1 to 12) for both "short" and "long" vehicles for each hour of the recording period.

A2.2 October/November 1987 surveys

Data for October/November 1987 were provided on floppy disk. Checks revealed 1 wrong location (4333), 6 vehicle types out of range, 2 speeds over 200 km/h and 2 speeds under 10 km/h. These cases were all deleted. As well, a total of 91 cases appeared to have miscoded directions; 26 for location 1601 (N instead of S), 64 for location 3503 (S instead of E), and 1 for location 4240 (S instead of N). These were appropriately recoded.

Numbers of cases were checked with those in Table 4.3 of Fitzgerald (1988). For all States and Territories except Western Australia the sample sizes tallied with the numbers in this table (see Table 3.6.3 in this report). This suggests that the above deletion of cases was also made by Fitzgerald. (Note that for all vehicles the sample sizes for NSW and ACT in Fitzgerald's Table 4.3 should read 4206 and 2816, not 4211 and 2817 - see Table 3.2 of the same report). There was one minor discrepancy for NSW which was found to have one less car but one more articulated truck.

For Western Australia, there were 67 fewer cases than recorded in Fitzgerald (1988). These cases were 40 cars, 11 cars towing, 1 motorcycle, 2 buses, 2 light vans, 2 rigid trucks and 9 articulated trucks. The reason for this is unknown. It is possible that these cases were mixed with the data for the earlier October 1986 and April 1987 surveys. It was not considered worthwhile to check this possibility because the data set was so large and the results obtained were the same as those in Fitzgerald (1988) (but see Appendix A3 on the calculation of percentiles).

A3. Calculation of percentiles

Percentiles may be calculated in a number of different ways which can give slightly different results. Except for Victoria, throughout this report percentiles were calculated using one method, commonly termed the "weighted average aimed at $X_{(n+1)p}$" (Frigg, Hoaglin and Iglewicz, 1989). Here,

n = total number of cases in sample
p = .15 or .85, for the 15th or 85th percentiles respectively (or p = .5 for the median)
X_i = the ith speed after all the speeds are sorted in ascending order.

The percentile is calculated as the weighted average of X_i and X_{i+1}, using the formula $(1-f)X_i + fX_{i+1}$, where $(n+1)p$ is decomposed into an integer part i and a fractional part f.

Percentiles calculated by this method for the 1987 survey do not always agree with those in Table 4.3 of Fitzgerald (1988), who may have used a different method of calculation. Thus in Table 3.6.3 of this report the percentiles sometimes differ to those calculated by Fitzgerald, but are comparable with those calculated for the 1988 survey.

Percentiles for Victoria had to be calculated by a different method (linear interpolation) because of the nature of the data for this State (see Section 3.5).

A4. Data provided for South Australia

Table A4 includes all the data provided for South Australia.

Table A4. Median speeds and 85-percentiles for cars and articulated vehicles for three sites in South Australia in June, August and October 1988.

Site	Lanes	Speed in kph					
		June 1988		August 1988		October 1988	
		Median	85%ile	Median	85%ile	Median	85%ile
CARS							
Nuriootpa	2	99.8	114.1	96.9	110.3	101.0	115.2
Virginia	4			102.1	114.7	104.1	118.3
Callington	4	103.1	115.0	109.3	119.1	110.6	120.0
ARTICULATED							
Nuriootpa	2	99.7	111.9	97.8	108.3	101.2	111.6
Virginia	4			95.9	101.5	98.1	108.3
Callington	4	100.5	111.9	101.5	112.6	104.2	113.7

A5. Vehicle speeds for October/November 1988 survey: all vehicle types

Car and Articulated Truck Speeds Before and After July 1988

Table A5.1 Cars: free speeds by site in October/November 1988.

Site	Speed limit	Sample size	Mean (km/h)	Sdev	15th %ile	85th %ile	% > 80 km/h	% > 90 km/h	% > 100 km/h	% > 110 km/h
New South Wales										
500101	100	34	108	14	96	126	100	91	71	38
500102	100	50	104	13	94	117	98	90	60	32
500201	110	173	108	13	97	118	98	92	75	39
500202	110	162	108	11	97	118	99	94	78	43
500301	110	255	111	12	99	124	99	95	82	56
500302	110	338	106	12	93	119	98	90	65	33
500401	100	91	110	12	99	122	100	97	82	46
500402	100	66	110	11	99	121	100	100	79	44
500501	100	173	106	12	95	115	99	94	63	29
500502	100	119	101	12	90	113	96	83	48	21
500601	100	55	109	14	95	121	100	95	62	42
500602	100	89	105	12	93	118	98	92	64	31
500701	100	19	107	15	91	124	95	89	53	47
500702	100	28	109	16	89	126	100	86	68	50
500801	110	180	112	12	100	124	99	96	85	56
500802	110	117	104	12	91	116	97	86	63	29
500901	110	31	111	12	96	121	100	90	84	58
500902	110	55	103	13	90	116	95	85	56	22
501001	110	134	109	13	97	121	99	95	77	40
501002	110	73	108	13	94	124	99	92	75	40
501101	100	15	121	30	85	143	87	87	87	67
501102	100	15	103	17	88	118	93	73	67	33
501201	100	205	99	8	91	108	97	85	37	8
501202	100	158	97	9	87	105	96	77	35	3
Total		2635	106	13	94	118	98	91	66	35
Queensland										
420501	100	897	91	10	80	101	84	50	16	2
421002	100	175	98	13	85	111	90	74	45	15
421502	100	1030	101	10	91	111	98	86	54	16
422002	100	111	96	11	85	103	91	72	30	5
422501	100	142	98	13	86	110	94	73	44	14
423001	100	372	103	10	93	112	98	89	63	19
423502	100	67	107	13	97	117	99	90	72	33
424001	100	505	89	12	78	101	75	46	16	3
424502	100	136	89	10	79	100	78	44	15	3
425001	100	203	92	10	80	102	85	55	18	4
Total	100	3638	96	12	83	107	89	67	36	10

(continued)

Table A5.1 Cars: free speeds by site in October/November 1988 (continued).

Site	Speed limit	Sample size	Mean (km/h)	Sdev	15th %ile	85th %ile	% > 80 km/h	% > 90 km/h	% > 100 km/h	% > 110 km/h
Western Australia										
430003	110	224	107	15	92	121	96	86	67	45
430004	110	144	109	13	95	121	99	94	76	44
430103	110	56	114	15	102	127	98	93	89	59
430104	110	47	110	14	95	122	96	89	77	49
430203	110	83	111	12	96	121	100	93	75	52
430204	110	112	111	12	100	122	99	95	85	55
430301	110	174	107	11	96	118	97	95	78	31
430302	110	217	107	12	96	117	96	92	75	37
430401	110	287	112	13	99	126	99	95	83	49
430402	110	263	109	11	97	119	99	95	78	43
430501	110	92	101	13	87	116	92	77	53	27
430502	110	114	100	13	86	114	94	75	47	19
Total	110	1813	108	13	95	120	97	91	74	42
Tasmania										
350111	110	152	88	11	78	99	77	39	13	3
350112	110	161	93	14	78	107	81	57	27	11
350121	110	112	92	12	81	106	86	54	21	5
350122	110	165	96	15	81	110	87	60	32	15
350313	110	372	94	13	80	107	83	59	28	9
350323	110	226	96	14	81	110	85	60	36	15
Total	110	1188	93	13	80	107	83	56	27	10
ACT										
160112	100	271	102	15	89	115	95	81	48	25
160122	100	98	98	13	84	112	92	72	37	16
160132	100	162	100	16	82	115	89	72	47	26
160212	100	397	100	12	90	111	96	77	42	18
160222	100	421	92	12	79	104	82	47	17	7
160232	100	505	97	8	87	105	98	75	25	3
Total	100	1854	97	12	86	108	93	69	33	13
All States		11128	100	14	86	114	93	76	48	22

Source: FORS Truck speed surveys 1988.

Table A5.2 Cars towing: free speeds by site in October/November 1988.

Site	Speed limit	Sample size	Mean (km/h)	Sdev	15th %ile	85th %ile	% > 80 km/h	% > 90 km/h	% > 100 km/h	% > 110 km/h
New South Wales										
500101	80	0								
500102	80	0								
500201	80	10	96	15	77	112	90	70	50	10
500202	80	10	90	13	76	107	60	50	30	10
500301	80	3	109	25			100	100	33	33
500302	80	7	88	13	67	103	86	57	14	0
500401	80	1	82	0			100	0	0	0
500402	80	2	117	3			100	100	100	100
500501	80	6	98	8	89	110	100	67	33	0
500502	80	3	89	11			67	33	33	0
500601	80	4	96	7			100	75	25	0
500602	80	1	73	0			0	0	0	0
500701	80	1	100	0			100	100	0	0
500702	80	1	82	0			100	0	0	0
500801	80	1	99	0			100	100	0	0
500802	80	0								
500901	80	0								
500902	80	1	81	0			100	0	0	0
501001	80	3	98	14			100	67	33	33
501002	80	0								
501101	80	0								
501102	80	0								
501201	80	1	83	0			100	0	0	0
501202	80	2	62	8			0	0	0	0
Total	80	57	93	15	79	106	82	58	30	11
Queensland										
420501	100	27	81	9	71	91	48	15	4	0
421002	100	4	92	11			75	50	25	0
421502	100	14	90	11	78	106	71	43	14	0
422002	100	3	85	7			67	33	0	0
422501	100	3	89	4			100	67	0	0
423001	100	11	99	6	93	106	100	91	45	0
423502	100	1	101	0			100	100	100	0
424001	100	9	86	13	68	101	67	44	11	0
424502	100	23	83	7	76	89	74	9	0	0
425001	100	18	79	11	69	90	50	11	0	0
Total	100	113	85	11	75	96	66	30	10	0

(continued)

Table A5.2 Cars towing: free speeds by site in October/November 1988 (continued).

Site	Speed limit	Sample size	Mean (km/h)	Sdev	15th %ile	85th %ile	% > 80 km/h	% > 90 km/h	% > 100 km/h	% > 110 km/h
Western Australia										
430003	100	32	87	12	73	98	75	38	9	0
430004	100	27	90	13	76	101	81	48	19	4
430103	100	20	94	9	83	102	90	70	35	0
430104	100	22	96	10	87	106	95	68	32	5
430203	100	23	90	8	80	97	87	43	9	0
430204	100	14	92	15	73	109	86	57	29	7
430301	100	16	95	10	84	107	88	75	25	6
430302	100	20	97	11	87	108	95	80	30	5
430401	100	42	97	11	87	108	100	67	29	10
430402	100	37	87	12	76	100	62	35	14	5
430501	100	9	90	11	75	100	89	56	11	0
430502	100	11	91	9	78	101	82	64	9	0
Total	100	273	92	11	80	103	85	56	21	4
Tasmania										
350111	90	6	82	9	72	91	50	17	0	0
350112	90	5	83	12			60	20	0	0
350121	90	4	88	7			75	50	0	0
350122	90	10	92	9	80	104	90	60	20	0
350313	90	9	84	13	68	101	56	33	11	0
350323	90	5	92	9			100	40	20	0
Total	90	39	87	10	73	96	72	38	10	0
ACT										
160112	100	4	88	16			75	75	0	0
160122	100	3	91	18			67	33	33	33
160132	100	9	93	12	74	106	78	78	22	0
160212	100	13	93	12	82	108	92	54	23	8
160222	100	11	84	7	74	91	73	9	0	0
160232	100	9	82	7	75	90	33	11	0	0
Total	100	49	88	12	77	100	71	41	12	4
All States		531	90	12	78	102	79	48	18	4

Source: FORS Truck speed surveys 1988.

Table A5.3 Motorcycles: free speeds by site in October/November 1988.

Site	Speed limit	Sample size	Mean (km/h)	Sdev	15th %ile	85th %ile	% > 80 km/h	% > 90 km/h	% > 100 km/h	% > 110 km/h
New South Wales										
500101	100	0								
500102	100	0								
500201	110	5	104	10			100	100	60	40
500202	110	3	117	16			100	100	100	67
500301	110	3	113	11			100	100	100	67
500302	110	4	116	4			100	100	100	100
500401	100	2	106	11			100	100	50	50
500402	100	3	114	13			100	100	67	67
500501	100	4	105	8			100	100	50	25
500502	100	0								
500601	100	1	124	0			100	100	100	100
500602	100	3	117	3			100	100	100	100
500701	100	0								
500702	100	0								
500801	110	0								
500802	110	1	148	0			100	100	100	100
500901	110	0								
500902	110	3	115	12			100	100	100	67
501001	110	4	114	7			100	100	100	75
501002	110	0								
501101	100	0								
501102	100	0								
501201	100	2	83	4			50	0	0	0
501202	100	1	89	0			100	0	0	0
Total		39	111	13	98	122	97	92	77	62
Queensland										
420501	100	4	92	6			100	50	0	0
421002	100	3	111	25			100	67	67	67
421502	100	14	104	7	98	113	100	100	64	14
422002	100	3	123	6			100	100	100	100
422501	100	4	99	11			100	75	50	25
423001	100	9	106	16	84	124	89	89	67	44
423502	100	1	124	0			100	100	100	100
424001	100	6	90	18	71	121	67	33	17	17
424502	100	5	94	16			80	60	40	20
425001	100	3	102	20			67	67	67	33
Total	100	52	102	15	87	120	90	77	54	31

(continued)

Table A5.3 Motorcycles: free speeds by site in October/November 1988 (continued).

Site	Speed limit	Sample size	Mean (km/h)	Sdev	15th %ile	85th %ile	% > 80 km/h	% > 90 km/h	% > 100 km/h	% > 110 km/h
Western Australia										
430003	110	8	113	12	94	125	100	88	88	63
430004	110	2	124	11			100	100	100	100
430103	110	1	134	0			100	100	100	100
430104	110	5	112	18			100	80	60	40
430203	110	1	134	0			100	100	100	100
430204	110	0								
430301	110	3	117	6			100	100	100	100
430302	110	1	105	0			100	100	100	0
430401	110	3	127	19			100	100	100	100
430402	110	1	109	0			100	100	100	0
430501	110	2	102	8			100	100	50	0
430502	110	2	106	14			100	100	50	50
Total	110	29	115	14	97	132	100	93	83	62
Tasmania										
350111	110	1	101	0			100	100	100	0
350112	110	0								
350121	110	1	103	0			100	100	100	0
350122	110	0								
350313	110	2	120	23			100	100	100	50
350323	110	2	90	0			100	0	0	0
Total	110	6	104	17	90	134	100	67	67	17
ACT										
160112	100	1	136	0			100	100	100	100
160122	100	2	115	8			100	100	100	50
160132	100	4	107	18			100	75	75	25
160212	100	10	120	14	100	136	100	100	80	80
160222	100	8	95	14	82	118	100	50	25	25
160232	100	3	90	10			67	67	0	0
Total	100	28	108	18	86	129	96	79	57	46
All States		154	108	16	90	124	95	84	66	47

Source: FORS Truck speed surveys 1988.

Table A5.4 Buses: free speeds by site in October/November 1988.

Site	Speed limit	Sample size	Mean (km/h)	Sdev	15th %ile	85th %ile	% > 80 km/h	% > 90 km/h	% > 100 km/h	% > 110 km/h
New South Wales										
500101	100	2	110	4			100	100	100	50
500102	100	2	100	1			100	100	50	0
500201	110	1	100	0			100	100	0	0
500202	110	11	103	5	99	109	100	100	55	9
500301	110	2	113	4			100	100	100	50
500302	110	1	110	0			100	100	100	0
500401	100	1	111	0			100	100	100	100
500402	100	1	103	0			100	100	100	0
500501	100	2	85	14			50	50	0	0
500502	100	3	92	16			67	67	33	0
500601	100	5	113	14			100	100	100	40
500602	100	1	116	0			100	100	100	100
500701	100	3	107	14			100	100	67	33
500702	100	10	108	6	103	117	100	100	100	20
500801	110	5	105	8			100	100	60	20
500802	110	1	101	0			100	100	100	0
500901	110	0								
500902	110	0								
501001	110	10	101	4	96	105	100	100	50	0
501002	110	3	106	8			100	100	67	33
501101	100	6	110	6	103	118	100	100	100	50
501102	100	1	108	0			100	100	100	0
501201	100	2	98	1			100	100	0	0
501202	100	1	94	0			100	100	0	0
Total		74	105	9	98	113	97	97	69	20
Queensland										
420501	100	101	96	10	86	107	95	72	35	3
421002	100	1	102	0			100	100	100	0
421502	100	22	101	7	92	106	100	86	59	5
422002	100	0								
422501	100	0								
423001	100	11	99	8	90	109	100	91	27	9
423502	100	0								
424001	100	13	99	9	87	113	100	85	46	15
424502	100	3	86	3			100	0	0	0
425001	100	5	98	6			100	80	20	0
Total	100	156	97	9	87	107	97	76	38	4

(continued)

Table A5.4 Buses: free speeds by site in October/November 1988 (continued).

Site	Speed limit	Sample size	Mean (km/h)	Sdev	15th %ile	85th %ile	% > 80 km/h	% > 90 km/h	% > 100 km/h	% > 110 km/h
Western Australia										
430003	80	7	102	11	90	119	100	71	71	14
430004	80	7	109	8	96	116	100	100	86	43
430103	80	3	109	6			100	100	100	67
430104	80	4	104	10			100	100	50	25
430203	80	3	108	3			100	100	100	33
430204	80	2	109	13			100	100	50	50
430301	80	5	98	8			100	60	40	0
430302	80	1	104	0			100	100	100	0
430401	80	3	99	3			100	100	33	0
430402	80	7	90	11	74	103	86	43	14	0
430501	80	5	104	11			100	80	60	40
430502	80	4	105	6			100	100	50	25
Total	80	51	102	10	90	114	98	82	59	24
Tasmania										
350111	90	4	81	13			25	25	0	0
350112	90	5	89	8			80	40	0	0
350121	90	0								
350122	90	0								
350313	90	2	96	9			100	50	50	0
350323	90	2	74	21			50	0	0	0
Total	90	13	85	13	73	100	62	31	8	0
ACT										
160112	100	3	94	3			100	100	0	0
160122	100	2	63	3			0	0	0	0
160132	100	0								
160212	100	12	90	13	78	105	67	42	17	8
160222	100	3	79	9			67	0	0	0
160232	100	5	86	5			80	20	0	0
Total	100	25	86	13	70	97	68	36	8	4
All States		319	98	11	87	109	93	77	45	11

Source: FORS Truck speed surveys 1988.

Table A5.5 Light vans and trucks: free speeds by site in October/November 1988.

Site	Speed limit	Sample size	Mean (km/h)	Sdev	15th %ile	85th %ile	% > 80 km/h	% > 90 km/h	% > 100 km/h	% > 90 km/h
New South Wales										
500101	100	0								
500102	100	0								
500201	110	33	99	11	85	110	97	76	48	9
500202	110	16	97	10	85	108	94	69	44	0
500301	110	33	104	10	92	116	100	91	58	24
500302	110	17	102	11	87	113	94	82	59	24
500401	100	5	99	23			80	60	40	40
500402	100	7	112	13	100	134	100	100	86	43
500501	100	29	104	12	87	116	100	79	69	24
500502	100	21	93	14	74	107	81	57	24	10
500601	100	12	104	15	89	124	92	75	67	33
500602	100	3	96	6			100	67	33	0
500701	100	0								
500702	100	0								
500801	110	12	109	13	95	122	100	92	67	50
500802	110	0								
500901	110	0								
500902	110	0								
501001	110	15	97	11	81	110	87	80	40	7
501002	110	6	92	9	85	105	100	33	33	0
501101	100	0								
501102	100	2	100	1			100	100	50	0
501201	100	31	97	10	85	108	100	68	32	10
501202	100	29	91	12	82	101	86	55	14	3
Total		271	99	13	86	112	94	74	46	16
Queensland										
420501	100	18	88	10	78	102	67	44	22	0
421002	100	19	96	14	82	110	89	63	47	11
421502	100	79	97	9	86	107	95	78	32	11
422002	100	2	88	5			100	50	0	0
422501	100	9	89	10	76	101	89	44	11	0
423001	100	0								
423502	100	0								
424001	100	0								
424502	100	8	93	11	79	106	88	63	25	0
425001	100	0								
Total	100	135	95	11	82	106	90	68	30	8

(continued)

Table A5.5 Light vans and trucks: free speeds by site in October/November 1988 (continued).

Site	Speed limit	Sample size	Mean (km/h)	Sdev	15th %ile	85th %ile	% > 80 km/h	% > 90 km/h	% > 100 km/h	% > 110 km/h
Western Australia										
430003	110	7	104	8	93	114	100	100	71	14
430004	110	8	94	10	86	110	100	63	25	13
430103	110	9	98	14	84	116	89	44	33	33
430104	110	6	101	14	86	125	100	83	33	17
430203	110	8	96	10	86	112	100	63	25	13
430204	110	8	94	13	77	111	88	63	25	13
430301	110	7	99	15	77	120	86	71	57	14
430302	110	4	92	11			75	75	25	0
430401	110	6	105	10	88	114	100	83	83	17
430402	110	13	98	13	90	112	92	69	46	15
430501	110	2	109	16			100	100	50	50
430502	110	3	98	7			100	100	33	0
Total	110	81	98	12	86	113	94	72	42	16
Tasmania										
350111	110	4	83	17			75	50	0	0
350112	110	5	98	13			80	80	60	0
350121	110	0								
350122	110	1	82	0			100	0	0	0
350313	110	24	94	11	81	107	88	50	38	0
350323	110	5	98	12			100	60	40	20
Total	110	39	93	12	82	107	87	54	36	3
ACT										
160112	100	0								
160122	100	0								
160132	100	0								
160212	100	3	95	14			67	67	33	0
160222	100	0								
160232	100	6	84	6	75	90	50	0	0	0
Total	100	9	87	10	77	103	56	22	11	0
All States		535	97	12	85	110	92	70	40	13

Source: FORS Truck speed surveys 1988.

Table A5.6 Rigid trucks: free speeds by site in October/November 1988.

Site	Speed limit	Sample size	Mean (km/h)	Sdev	15th %ile	85th %ile	% > 80 km/h	% > 90 km/h	% > 100 km/h	% > 110 km/h
New South Wales										
500101	100	8	95	14	74	111	75	75	25	13
500102	100	6	94	12	81	114	83	67	17	17
500201	100	44	93	10	81	104	86	68	23	2
500202	100	24	91	11	82	103	88	58	29	0
500301	100	6	96	10	86	111	100	50	33	17
500302	100	12	88	10	72	98	75	25	8	0
500401	100	16	97	7	90	104	100	81	25	6
500402	100	14	97	6	90	105	100	86	21	0
500501	100	15	93	13	79	102	87	67	20	7
500502	100	12	92	8	85	101	92	42	17	0
500601	100	8	97	9	84	108	88	88	38	13
500602	100	4	86	12			75	25	25	0
500701	100	1	89	0			100	0	0	0
500702	100	1	102	0			100	100	100	0
500801	100	12	101	8	90	112	100	83	58	17
500802	100	12	93	8	85	100	92	83	8	0
500901	100	17	107	19	88	131	88	88	71	47
500902	100	17	93	10	83	107	94	65	24	6
501001	100	10	87	8	78	95	90	50	0	0
501002	100	9	108	8	97	119	100	100	78	33
501101	100	4	101	9			100	75	75	0
501102	100	3	95	11			100	67	33	0
501201	100	31	90	7	81	99	90	52	6	0
501202	100	27	85	8	76	92	74	15	0	0
Total	100	313	94	11	83	104	89	62	25	7
Queensland										
420501	100	77	84	10	75	95	61	21	4	0
421002	100	18	88	9	77	100	83	44	6	0
421502	100	93	90	8	82	99	86	48	12	1
422002	100	1	86	0			100	0	0	0
422501	100	8	82	8	71	92	50	25	0	0
423001	100	26	94	10	85	105	88	69	19	4
423502	100	11	92	11	78	102	73	55	9	0
424001	100	14	95	16	84	116	93	57	29	21
424502	100	35	83	9	73	94	60	20	0	0
425001	100	45	83	7	74	91	64	18	0	0
Total	100	328	87	10	77	97	73	36	8	2

(continued)

Table A5.6 Rigid trucks: free speeds by site in October/November 1988 (continued).

Site	Speed limit	Sample size	Mean (km/h)	Sdev	15th %ile	85th %ile	% > 80 km/h	% > 90 km/h	% > 100 km/h	% > 110 km/h
Western Australia										
430003	100	21	91	10	82	101	90	62	14	0
430004	100	27	94	16	78	111	81	70	37	15
430103	100	6	106	12	93	121	100	100	50	33
430104	100	5	104	9			100	100	80	20
430203	100	5	106	14			100	100	40	20
430204	100	3	100	2			100	100	33	0
430301	100	8	95	14	81	116	88	50	25	25
430302	100	2	96	7			100	100	50	0
430401	100	32	99	12	89	110	97	81	41	13
430402	100	13	94	17	71	107	85	77	38	8
430501	100	7	99	8	89	112	100	86	29	14
430502	100	10	92	14	78	112	90	50	20	20
Total	100	139	96	13	84	107	91	75	35	13
Tasmania										
350111	100	17	78	13	69	89	47	0	0	0
350112	100	12	83	14	72	93	67	17	8	0
350121	100	2	73	11			50	0	0	0
350122	100	4	76	12			25	25	0	0
350313	100	31	81	9	73	91	48	13	3	0
350323	100	10	83	14	64	100	50	50	10	0
Total	100	76	80	11	71	91	50	16	4	0
ACT										
160112	100	23	89	11	80	104	83	35	17	4
160122	100	8	91	6	83	97	100	50	0	0
160132	100	4	89	5			100	50	0	0
160212	100	48	91	15	75	110	71	46	25	15
160222	100	20	75	13	55	86	25	5	0	0
160232	100	15	88	10	74	99	73	40	7	0
Total	100	118	87	14	75	100	69	36	14	7
All States	100	974	90	12	78	102	79	48	17	5

Source: FORS Truck speed surveys 1988.

Table A5.7 Articulated trucks: free speeds by site in October/November 1988.

Site	Speed limit	Sample size	Mean (km/h)	Sdev	15th %ile	85th %ile	% > 80 km/h	% > 90 km/h	% > 100 km/h	% > 110 km/h
New South Wales										
500101	100	26	109	8	102	118	100	96	92	38
500102	100	22	107	10	96	118	100	91	73	41
500201	100	35	97	8	90	105	100	86	29	3
500202	100	28	98	9	90	109	96	86	43	11
500301	100	8	113	9	100	123	100	100	88	75
500302	100	6	95	7	86	101	100	67	17	0
500401	100	79	103	8	96	109	100	94	70	14
500402	100	119	102	9	93	112	98	92	55	18
500501	100	38	98	7	92	107	97	89	32	3
500502	100	58	94	8	86	102	95	69	21	0
500601	100	19	101	7	91	108	100	89	58	11
500602	100	20	98	8	93	105	95	90	40	0
500701	100	23	104	10	92	115	100	87	52	26
500702	100	24	102	10	88	113	96	83	58	17
500801	100	42	98	9	89	105	95	76	40	2
500802	100	79	102	9	94	112	100	92	57	16
500901	100	124	106	10	96	118	100	95	65	31
500902	100	42	97	8	90	106	98	86	24	5
501001	100	8	98	7	89	108	100	88	25	13
501002	100	15	103	6	95	110	100	100	60	7
501101	100	124	114	9	104	124	100	100	94	69
501102	100	71	106	9	96	113	99	96	70	24
501201	100	33	93	7	86	102	94	70	15	0
501202	100	26	93	6	84	99	96	62	8	0
Total	100	1069	103	10	93	114	99	89	56	22
Queensland										
420501	100	112	91	9	83	100	90	49	14	2
421002	100	45	94	8	87	101	96	80	20	0
421502	100	88	95	7	88	103	95	76	24	0
422002	100	4	94	17			75	75	75	0
422501	100	7	91	9	82	105	100	43	14	0
423001	100	71	97	8	88	106	97	76	34	1
423502	100	49	95	7	88	105	100	65	27	0
424001	100	18	93	10	80	102	83	61	11	11
424502	100	40	88	7	80	96	85	30	3	0
425001	100	57	89	7	82	97	89	47	5	0
Total	100	491	93	9	84	102	93	61	19	1

(continued)

Table A5.7 Articulated trucks: free speeds by site in October/November 1988. (continued).

Site	Speed limit	Sample size	Mean (km/h)	Sdev	15th %ile	85th %ile	% > 80 km/h	% > 90 km/h	% > 100 km/h	% > 110 km/h
Western Australia										
430003	100	98	98	13	84	110	90	72	45	14
430004	100	113	101	12	88	114	96	84	53	19
430103	100	65	109	10	99	120	100	94	77	40
430104	100	71	107	11	95	118	99	92	76	41
430203	100	23	104	10	93	112	96	96	61	22
430204	100	19	93	15	76	111	79	58	16	16
430301	100	16	98	5	92	103	100	94	31	0
430302	100	13	96	6	88	104	100	85	23	0
430401	100	82	97	9	89	104	95	82	32	2
430402	100	78	95	8	87	103	96	63	26	4
430501	100	22	94	12	83	108	91	50	36	9
430502	100	15	92	8	84	104	100	47	27	0
Total	100	615	100	12	88	112	95	79	47	17
Tasmania										
350111	100	20	82	9	73	90	55	10	5	0
350112	100	15	92	14	81	102	87	53	20	7
350121		0								
350122	100	1	106	0			100	100	100	0
350313	100	35	89	10	81	97	89	29	9	6
350323	100	10	95	15	83	117	90	50	20	20
Total	100	81	89	12	78	98	80	32	12	6
ACT										
160112	100	42	96	9	88	104	95	74	26	5
160122	100	10	91	11	82	106	100	20	10	10
160132	100	5	99	9			100	80	60	0
160212	100	26	93	13	75	108	77	58	31	8
160222	100	8	83	17	65	108	50	13	13	13
160232	100	20	87	9	72	97	70	20	5	0
Total	100	111	92	12	80	104	84	51	23	5
All States	100	2367	99	12	87	111	95	77	43	15

Source: FORS Truck speed surveys 1988.

Table A5.8 All vehicles: free speeds by site in October/November 1988.

Site	Speed limit	Sample size	Mean (km/h)	Sdev	15th %ile	85th %ile	% > 80 km/h	% > 90 km/h	% > 100 km/h	% > 110 km/h
New South Wales										
500101		70	107	12	97	119	97	91	74	36
500102		80	104	12	91	116	98	89	60	33
500201		301	103	13	91	115	96	86	58	25
500202		254	104	12	92	115	96	87	65	30
500301		310	110	12	97	123	99	94	78	52
500302		385	105	13	92	117	97	87	62	31
500401		195	106	12	96	116	99	93	71	30
500402		212	105	11	95	116	99	95	62	27
500501		267	103	12	93	113	98	90	55	22
500502		216	98	11	86	109	93	74	36	13
500601		104	106	13	93	118	98	90	61	32
500602		121	103	12	93	116	96	88	59	26
500701		47	105	12	91	120	98	87	51	34
500702		64	106	13	91	120	98	86	69	31
500801		252	109	12	96	120	98	92	75	44
500802		210	103	11	92	113	98	89	58	23
500901		172	107	12	96	118	99	94	69	38
500902		118	99	12	89	110	96	82	41	14
501001		184	106	13	94	119	97	91	66	33
501002		106	106	12	94	118	99	91	71	32
501101		149	115	13	104	124	99	98	93	66
501102		92	105	11	95	115	98	91	68	24
501201		305	97	9	87	105	96	78	30	6
501202		244	94	10	85	104	91	65	25	2
Total		4458	104	13	92	116	97	87	59	28
Queensland										
420501		1236	91	10	80	101	83	49	17	2
421002		265	97	13	84	107	90	72	38	11
421502		1340	100	10	89	110	97	82	48	13
422002		124	96	12	84	104	90	71	31	7
422501		173	96	13	84	109	92	68	38	12
423001		500	101	10	91	111	97	86	56	15
423502		130	101	12	89	112	97	78	50	18
424001		565	90	12	78	102	76	47	17	4
424502		254	88	10	78	98	77	35	10	2
425001		331	90	10	80	100	81	47	13	3
Total		4918	95	12	82	106	88	64	32	8

(continued)

Table A5.8 All vehicles: free speeds by site in October/November 1988 (continued).

Site	Speed limit	Sample size	Mean (km/h)	Sdev	15th %ile	85th %ile	% > 80 km/h	% > 90 km/h	% > 100 km/h	% > 110 km/h
Western Australia										
430003		397	102	15	86	118	92	78	55	31
430004		329	103	14	90	117	95	84	59	29
430103		160	108	14	95	120	98	88	73	42
430104		160	106	13	92	120	98	88	68	36
430203		146	105	14	90	120	97	84	59	36
430204		158	106	15	92	120	95	85	67	43
430301		230	105	12	93	116	96	91	68	27
430302		258	105	12	94	116	96	90	68	31
430401		455	107	14	93	121	98	89	66	34
430402		412	103	14	89	117	94	81	59	30
430501		139	100	13	86	114	93	73	47	22
430502		159	98	12	85	112	94	72	41	16
Total		3003	104	14	90	118	95	84	61	31
Tasmania										
350111		204	86	11	76	96	71	32	11	2
350112		203	92	14	78	106	80	54	25	9
350121		119	92	12	80	105	85	53	21	5
350122		181	95	14	81	109	86	59	30	13
350313		475	92	13	79	107	81	53	26	8
350323		260	95	14	80	110	85	58	33	14
Total		1442	92	13	79	106	81	52	25	9
ACT										
160112		344	101	14	86	112	94	77	42	21
160122		123	96	14	84	111	91	65	33	15
160132		184	100	16	82	115	89	72	46	23
160212		509	99	13	86	111	92	72	39	18
160222		471	91	12	79	104	79	44	16	7
160232		563	96	9	87	104	95	70	23	3
Total		2194	96	13	85	108	90	66	31	12
All States		16015	99	14	86	113	92	73	44	19

Source: FORS Truck speed surveys 1988.

Table A5.9 Mean free speeds by state and vehicle type from surveys before and after change in speed limit for trucks (Oct/Nov 1987 and 1988).

State	Speed limit	Sample size	Mean (km/h)	Sdev	15th %ile	85th %ile	% > 80 km/h	% > 90 km/h	% > 100 km/h	% > 110 km/h
CARS										
New South Wales										
Before	100/110	2352	104	12	92	116	98	89	61	27
After	100/110	2635	106	13	94	118	98	91	66	35
Queensland										
Before	100	4884	96	12	84	107	90	67	34	9
After	100	3638	96	12	83	107	89	67	36	10
Western Australia										
Before	110	2082	108	12	97	119	98	92	77	39
After	110	1813	108	13	95	120	97	91	74	42
Tasmania										
Before	110	1625	90	12	78	102	79	44	18	5
After	110	1188	93	13	80	107	83	56	27	10
ACT										
Before	100	2369	93	11	82	105	88	58	24	6
After	100	1854	97	12	86	108	93	69	33	13
All States										
Before		13312	98	13	84	111	91	70	42	16
After		11128	100	14	86	114	93	76	48	22
CARS TOWING										
New South Wales										
Before	80	67	96	13	81	110	87	61	42	13
After	80	57	93	15	79	106	82	58	30	11
Queensland										
Before	100	153	85	12	73	97	61	28	8	1
After	100	113	85	11	75	96	66	30	10	0
Western Australia										
Before	100	314	94	12	81	107	88	60	33	8
After	100	273	92	11	80	103	85	56	21	4
Tasmania										
Before	90	44	82	11	73	93	55	18	2	2
After	90	39	87	10	73	96	72	38	10	0
ACT										
Before	100	47	85	10	77	96	64	23	9	0
After	100	49	88	12	77	100	71	41	12	4
All States										
Before		625	90	13	80	105	77	46	23	6
After		531	90	12	78	102	79	48	18	4

Car and Articulated Truck Speeds Before and After July 1988

Table A5.9 (continued) Mean free speeds by state and vehicle type from surveys before and after change in speed limit for trucks (Oct/Nov 1987 & 1988).

State	Speed limit	Sample size	Mean (km/h)	Sdev	15th %ile	85th %ile	% > 80 km/h	% > 90 km/h	% > 100 km/h	% > 110 km/h
MOTORCYCLES										
New South Wales										
Before	100/110	30	112	15	97	128	100	97	77	50
After	100/110	39	111	13	98	122	97	92	77	62
Queensland										
Before	100	15	102	16	90	117	96	81	46	19
After	100	52	102	15	87	120	90	77	54	31
Western Australia										
Before	110	40	116	16	100	129	100	95	85	60
After	110	29	115	14	97	132	100	93	83	62
Tasmania										
Before	110	4	91	12	78	103	75	50	25	0
After	110	6	104	17	90	134	100	67	67	17
ACT										
Before	100	29	101	15	86	116	97	69	45	24
After	100	28	108	18	86	129	96	79	57	46
All States										
Before		160	107	17	90	125	98	84	61	36
After		154	108	16	90	124	95	84	66	47
BUSES										
New South Wales										
Before	100	61	100	12	91	110	93	85	49	13
After	100	74	105	9	98	113	97	97	69	20
Queensland										
Before	100	127	94	10	84	104	93	64	28	6
After	100	156	97	9	87	107	97	76	38	4
Western Australia										
Before	80	56	100	9	93	108	96	90	46	11
After	80	51	102	10	90	114	98	82	59	24
Tasmania										
Before	90	21	78	10	66	90	38	10	0	0
After	90	13	85	13	73	100	62	31	8	0
ACT										
Before	100	24	82	10	72	94	46	17	8	0
After	100	25	86	13	70	97	68	36	8	4
All States										
Before		289	94	12	81	106	86	65	26	7
After		319	98	11	87	109	93	77	45	11

Car and Articulated Truck Speeds Before and After July 1988

Table A5.9 (continued) Mean free speeds by state and vehicle type from surveys before and after change in speed limit for trucks (Oct/Nov 1987 and 1988).

State	Speed limit	Sample size	Mean (km/h)	Sdev	15th %ile	85th %ile	% > 80 km/h	% > 90 km/h	% > 100 km/h	% > 110 km/h
LIGHT VANS & TRUCKS										
New South Wales										
Before	100/110	290	97	11	86	108	92	73	37	12
After	100/110	271	99	13	86	112	94	74	46	16
Queensland										
Before	100	226	92	12	80	103	85	52	22	6
After	100	135	95	11	82	106	90	68	30	8
Western Australia										
Before	110	73	93	11	81	104	86	60	25	4
After	110	81	98	12	86	113	94	72	42	16
Tasmania										
Before	110	63	86	14	69	98	63	35	8	6
After	110	39	93	12	82	107	87	54	36	3
ACT										
Before	100	118	91	11	81	101	86	48	19	3
After	100	9	87	10	77	103	56	22	11	0
All States										
Before		770	93	12	81	105	86	59	26	8
After		535	97	12	85	110	92	70	40	13
RIGID TRUCKS										
New South Wales										
Before	90	264	90	12	78	101	82	47	18	3
After	100	313	94	11	83	104	89	62	25	7
Queensland										
Before	90	446	88	11	77	99	76	39	11	1
After	100	328	87	10	77	97	73	36	8	2
Western Australia										
Before	90	191	96	12	85	109	92	68	35	13
After	100	139	96	13	84	107	91	75	35	13
Tasmania										
Before	90	111	80	11	70	91	43	16	5	0
After	100	76	80	11	71	91	50	16	4	0
ACT										
Before	90	117	83	11	70	93	56	25	9	0
After	100	118	87	14	75	100	69	36	14	7
All States										
Before		1129	89	12	76	101	75	42	16	3
After		974	90	12	78	102	79	48	17	5

Car and Articulated Truck Speeds Before and After July 1988

Table A5.9 (continued) Mean free speeds by state and vehicle type from surveys before and after change in speed limit for trucks (Oct/Nov 1987 and 1988).

State	Speed limit	Sample size	Mean (km/h)	Sdev	15th %ile	85th %ile	% > 80 km/h	% > 90 km/h	% > 100 km/h	% > 110 km/h
ARTICULATED TRUCKS										
New South Wales										
Before	90	1142	100	10	90	110	98	83	47	14
After	100	1069	103	10	93	114	99	89	56	22
Queensland										
Before	90	482	91	10	80	101	84	53	16	2
After	100	491	93	9	84	102	93	61	19	1
Western Australia										
Before	90	775	99	11	88	110	97	77	40	14
After	100	615	100	12	88	112	95	79	47	17
Tasmania										
Before	90	127	85	10	76	94	69	28	4	0
After	100	81	89	12	78	98	80	32	12	6
ACT										
Before	90	112	80	13	63	93	52	22	5	0
After	100	111	92	12	80	104	84	51	23	5
All States										
Before		2638	96	12	85	108	92	71	35	11
After		2367	99	12	87	111	95	77	43	15
ALL VEHICLES										
New South Wales										
Before		4206	101	12	90	113	96	83	53	21
After		4458	104	13	92	116	97	87	59	28
Queensland										
Before		6375	94	12	82	106	88	62	30	8
After		4918	95	12	82	106	88	64	32	8
Western Australia										
Before		3531	104	13	90	117	96	84	61	29
After		3003	104	14	90	118	95	84	61	31
Tasmania										
Before		1995	89	12	76	101	75	40	16	5
After		1442	92	13	79	106	81	52	25	9
ACT										
Before		2816	92	12	80	104	84	54	22	6
After		2194	96	13	85	108	90	66	31	12
All States										
Before		18923	97	13	83	110	90	67	38	14
After		16015	99	14	86	113	92	73	44	19

Source: FORS Truck speed surveys 1987 and 1988.

Car and Articulated Truck Speeds Before and After July 1988

A6. Mean speeds of cars and trucks for sites with appreciable data

Car and Articulated Truck Speeds Before and After July 1988

Table A6. Mean speeds of cars and articulated trucks in Australia in October 1987 and October 1988 (see also Tables A7.1 and A7.7 to A7.12). Sites with fewer than 20 vehicles of the given type and sites which had a change in car speed limit between survey times have been excluded (see Table 4.1.3).

Site	Cars			Articulated trucks			Difference		
	Oct 87	Oct 88	Change	Oct 87	Oct 88	Change	Oct 87	Oct 88	Change
NSW									
500101	104	108	4.6	102	109	6.9	1	-0	-2.3
500102	102	104	1.1	106	107	1.4	-3	-4	-0.3
500201									
500202									
500301	107	111	4.0						
500302	98	106	8.3						
500401	104	110	5.8	98	103	5.3	7	7	0.5
500402	106	110	4.2	102	102	0.2	4	8	3.9
500501	103	106	2.4	98	98	0.5	5	7	1.9
500502	104	101	-2.9	97	94	-3.0	7	7	0.1
500601	108	109	1.0						
500602	103	105	2.0						
500701				106	104	-1.9			
500702				103	102	-1.3			
500801	109	112	3.2	97	98	0.4	12	14	2.8
500802	109	104	-4.8	102	102	0.3	7	2	-5.1
500901	109	111	1.3	101	106	5.5	9	4	-4.2
500902	100	103	2.2	94	97	2.9	7	6	-0.7
501001	104	109	4.8						
501002	102	108	6.1						
501101									
501102									
501201	94	99	4.5	89	93	3.6	5	6	0.9
501202	100	97	-2.7	94	92	-1.4	6	4	-1.3
Vic+									
9153	103	103	0.8	98	94	-3.5	5	9	4.3
9154	103	105	1.3	93	95	1.4	10	10	-0.0
934203	98	99	0.9	91	93	1.9	7	6	-1.1
934204	95	95	-0.0	88	88	0.3	7	7	-0.4
9983	108	109	1.4	96	98	2.8	12	11	-1.3
9984	108	108	-0.6	100	100	-0.5	8	8	-0.1
9985	108	109	1.4	97	100	3.1	11	9	-1.7
9986	111	112	1.3	102	107	4.9	9	6	-3.5
9987	107	110	2.8	105	101	-3.3	2	8	6.1
9988	111	114	2.1	100	106	5.3	11	8	-3.2
9990	108	110	2.1	95	99	4.8	13	11	-2.7
9993	103	103	0.6	90	92	2.4	13	11	-1.9
9994	106	107	1.2	95	97	2.9	11	10	-1.7

+ First survey in Victoria in May-June 1988, not October 1987

(continued)

Table A6. (continued) Mean speeds of cars and articulated trucks in Australia in October 1987 and October 1988 (see also Tables A7.1 and A7.7 to A7.12). Sites with fewer than 20 vehicles of the given type and sites which had a change in car speed limit between survey times have been excluded (see Table 4.1.3).

	Cars			Articulated trucks			Difference		
Site	Oct 87	Oct 88	Change	Oct 87	Oct 88	Change	Oct 87	Oct 88	Change
Qld									
4205	94	91	-3.6	90	91	1.6	5	-0	-5.2
4210	101	98	-2.4	96	94	-2.0	4	4	-0.4
4215	99	101	2.3	90	95	4.3	8	6	-2.1
4220	92	96	3.9						
4225	95	98	3.2						
4230	101	103	2.2	94	97	2.9	7	6	-0.7
4235	106	107	0.5	94	95	1.5	12	11	-1.0
4240	95	89	-5.5						
4245	87	89	2.2	82	88	5.4	5	2	-3.2
4250	91	92	0.6	93	89	-3.2	-2	2	3.8
SA+									
Nuriootpa	100	101	1.2	100	101	1.5	0	-0	-0.3
Callington	103	111	7.5	101	104	3.7	3	6	3.8
WA									
430003	109	107	-2.2	100	98	-2.9	9	10	0.7
430004	108	109	0.6	99	101	2.7	10	8	-2.1
430203	106	111	4.6	96	104	8.3	10	7	-3.7
430204	109	111	2.0						
430301	107	107	0.1						
430302	108	107	-0.9						
430401	108	112	3.3	96	97	1.0	12	15	2.3
430402	108	109	1.2	93	95	1.7	15	14	-0.4
430501	106	101	-4.9	95	94	-0.7	11	7	-4.2
430502	110	100	-9.8						
Tas									
350111	88	88	0.3						
350313	91	94	2.3	88	89	0.1	2	5	2.2
350323	96	96	0.1						
Average	103	104	1.1	97	99	1.7	8	7	-0.5
# increase			42			34			13
# decrease			12			11			28
Chi-square test statistic			17***			12***			5.5*

\+ First survey in South Australia in May-June 1988, not October 1987
For both surveys, speeds are medians not means

Note: *** ($p < 0.001$) * ($0.01 < p < 0.05$)
Source: FORS Truck speed surveys, 1987 and 1988.

Car and Articulated Truck Speeds Before and After July 1988

A7. Mean speeds of cars and trucks by State/Territory

Car and Articulated Truck Speeds Before and After July 1988

Victoria

The classifiers used in Victoria classified vehicles as either short (wheel-base less than 5.5 metres) or long (wheel-base greater than 5.5 metres). The speeds of all vehicles travelling over the classifier during the survey period were measured, and free speeds were not available. The survey period was from 0200 on a Saturday until 0059 on the following Wednesday, except for site 9988 for which the period ended at 0759 on the Tuesday. There were 14 sites surveyed at both times.

Site 9157 showed evidence of recent speed enforcement activity for trucks and was not included in the analyses. This evidence was that the mean speed for long vehicles was 109 km/h in May-June 1988, and this was the highest mean speed of any Victorian site. However, in November-December 1988, the corresponding mean speed was only 98 km/h, a large decrease of 11 km/h. This decrease was observed during the day and the night during the week and at weekends. Plots of the mean speeds and the standard deviation of the speed of long vehicles by hour of the survey showed no obvious data collection artefact. Moreover, the mean speeds of short vehicles were similar at both times. It was confirmed that police, who were checking speeds on a nearby overpass for a period including that of the survey, were visible to travellers on the freeway underneath.

Table A7.1. shows that the mean speed of short vehicles was 1.2 km/h faster after June 1988, and that for long vehicles was 1.7 km/h faster. A faster mean speed was observed for short vehicles at 11 sites and a slower mean speed at only two sites. This difference is statistically significant (chi-square test statistic = 6.2 for 1 df, $0.01 < p < 0.05$). However, for long vehicles, a faster mean speed was observed at 10 sites and a slower one for 3 sites, and this difference is not statistically significant (chi-square test statistic for 1 df = 3.8, $p > 0.05$). This does not necessarily mean that long vehicles were not travelling faster on average after the speed limit change, but that there were too few data to demonstrate this in Victoria.

The traffic volume of both short and long vehicles was greater during the later survey period than in the similar length earlier survey period (Table A7.1).

Table A7.1. Mean speeds of short and long vehicles at 14 sites in Victoria in May-June 1988 and November-December 1988. The number of vehicles observed is also shown.

a. Mean vehicle speeds

Site	Short vehicles			Long vehicles			Difference		
	May 88	Nov 88	Change	May 88	Nov 88	Change	May 88	Nov 88	Change
9153	103	103	0.8	98	94	-3.5	5	9	4.3
9154	103	105	1.3	93	95	1.4	10	10	-0.0
9157	(104)	(105)		(109)	(98)				
934203	98	99	0.9	91	93	1.9	7	6	-1.1
934204	95	95	-0.0	88	88	0.3	7	7	-0.4
9983	108	109	1.4	96	98	2.8	12	11	-1.3
9984	108	108	-0.6	100	100	-0.5	8	8	-0.1
9985	108	109	1.4	97	100	3.1	11	9	-1.7
9986	111	112	1.3	102	107	4.9	9	6	-3.5
9987	107	110	2.8	105	101	-3.3	2	8	6.1
9988	111	114	2.1	100	106	5.3	11	8	-3.2
9990	108	110	2.1	95	99	4.8	13	11	-2.7
9993	103	103	0.6	90	92	2.4	13	11	-1.9
9994	106	107	1.2	95	97	2.9	11	10	-1.7
Average	105	106	1.2	96	98	1.7	8	9	-0.6
# increase			11			10			2
# decrease			2			3			11
Chi-square test statistic			6.2*			3.8			6.2*

b. Number of vehicles observed

Site	Short vehicles			Long vehicles		
	May 88	Nov 88	Change	May 88	Nov 88	Change
9153	89740	102375	12635	8483	9065	582
9154	92869	105810	12941	8353	9705	1352
9157	82342	99668	17326	12131	9104	-3027
934203	2185	2526	341	361	514	153
934204	2326	2655	329	393	620	227
9983	15023	17884	2861	2341	2796	455
9984	15130	18418	3288	2674	2999	325
9985	15301	16868	1567	4796	5593	797
9986	16922	17457	535	4792	4439	-353
9987	7966	10782	2816	5172	3886	-1286
9988	6068	7620	1552	2022	3359	1337
9990	14817	16461	1644	2820	3301	481
9993	37983	42639	4656	5352	6589	1237
9994	36518	44903	8385	4946	5909	963
Sum	435190	506066	70876	64636	67879	3243
# increase			14			11
# decrease			0			3
Chi-square test statistic			14***			4.6*

Note: ns ($p > 0.05$) * ($0.01 < p < 0.05$) *** ($p < 0.001$)

Source: FORS Truck speed surveys 1988.

Car and Articulated Truck Speeds Before and After July 1988

Time of day and day of week

Tables A7.2 to A7.5 show a similar analysis, but for the time of the survey classified by time of day (day: 0600-1759; night: 1800-0559) and day of week (weekday: Monday and Tuesday; weekend: Saturday and Sunday). Similar changes in mean speeds were observed, with the greatest changes occuring on weekdays during the daytime. Although most sites showed faster mean speeds in November-December 1988, this was statistically significant only for the weekdays during the daytime (Table A7.6).

Table A7.6. Difference in mean speeds of short and long vehicles between May-June and November-December 1988 at 13 sites in Victoria. The ratio of the number of sites which had a faster mean speed in 1988 to those with a slower mean speed is also shown, together with the test statistic for no change in mean speed between 1987 and 1988.

		Mean difference (km/h)		Faster:slower ratio		Test statistic	
		Short	Long	Short	Long	Short	Long
Daytime	Weekdays	2.1	2.6	11:2	12:1	6.2*	9.3**
	Weekends	0.5	0.3	10:3	9:4	3.8	1.9
Nighttime	Weekdays	0.8	1.5	7:6	9:4	0.1	1.9
	Weekends	1.2	0.4	10:3	8:5	3.8	0.7

All test statistics give $p > 0.05$, except
* $(0.01 < p < 0.05)$ ** $(0.001 < p < 0.01)$

Source: FORS Truck speed surveys 1988.

Table A7.2. Mean speeds of short and long vehicles at 14 sites in Victoria in May-June and November-December 1988 in daytime (0600-1759) during the week (Monday and Tuesday).
The number of vehicles observed is also shown.

a. Mean vehicle speeds

	Short vehicles			Long vehicles		
Site	May 88	Nov 88	Change	May 88	Nov 88	Change
9153	102	103	0.8	92	93	0.5
9154	103	105	1.8	91	93	2.2
9157	(104)	(103)		(105)	(97)	
934203	96	98	2.6	88	91	3.4
934204	95	94	-0.9	87	87	0.3
9983	108	110	1.6	94	98	3.4
9984	109	109	-0.0	98	98	0.7
9985	107	110	3.3	95	99	3.7
9986	110	112	1.2	101	105	3.8
9987	106	108	2.6	103	99	-3.8
9988	110	114	4.1	97	103	5.7
9990	107	111	4.1	92	98	6.7
9993	103	106	3.2	88	92	3.5
9994	105	108	2.6	92	96	3.8
Average	105	107	2.1	94	96	2.6
# increase			11			12
# decrease			2			1
Chi-square test statistic			6.2*			9.3**

b. Number of vehicles observed

	Short vehicles			Long vehicles		
Site	May 88	Nov 88	Change	May 88	Nov 88	Change
9153	27316	37149	9833	4189	4682	493
9154	39809	44650	4841	4541	5069	528
9157	27037	37503	10466	5442	4894	-548
934203	849	950	101	189	226	37
934204	905	1091	186	208	269	61
9983	4647	5634	987	1109	1296	187
9984	4626	5661	1035	1070	1180	110
9985	4177	4867	690	1870	2132	262
9986	4465	4579	114	1670	1339	-331
9987	2239	3193	954	1472	1092	-380
9988	1274	1772	498	433	796	363
9990	4409	5423	1014	1190	1467	277
9993	13217	15743	2526	2682	3033	351
9994	10441	13370	2929	2564	2991	427
Sum	145411	181585	36174	28629	30466	1837
# increase			14			11
# decrease			0			3
Chi-square test statistic			14***			4.6*

Note: ns ($p > 0.05$) ** ($0.001 < p < 0.01$) *** ($p < 0.001$)

Source: FORS Truck speed surveys 1988.

Car and Articulated Truck Speeds Before and After July 1988

Table A7.3. Mean speeds of short and long vehicles at 14 sites in Victoria in May-June and November-December 1988 in daytime (0600-1759) during the weekend (Saturday and Sunday). The number of vehicles observed is also shown.

a. Mean vehicle speeds

	Short vehicles			Long vehicles		
Site	May 88	Nov 88	Change	May 88	Nov 88	Change
9153	104	105	0.5	107	97	-10.1
9154	105	106	0.9	96	96	0.7
9157	(106)	(105)		(112)	(98)	
934203	99	98	-1.3	93	93	-0.9
934204	95	96	0.9	87	90	2.5
9983	108	109	0.9	99	100	1.1
9984	108	108	-0.3	101	101	-0.7
9985	108	109	0.5	97	98	0.7
9986	112	113	0.8	104	111	7.2
9987	108	111	2.8	109	102	-6.7
9988	112	113	1.1	101	106	5.1
9990	109	110	0.4	98	100	2.1
9993	103	102	-0.6	92	93	1.0
9994	107	107	0.2	99	100	1.4
Average	106	107	0.5	99	99	0.3
# increase			10			9
# decrease			3			4
Chi-square test statistic			3.8ns			1.9ns

b. Number of vehicles observed

	Short vehicles			Long vehicles		
Site	May 88	Nov 88	Change	May 88	Nov 88	Change
9153	26019	35487	9468	2522	2413	-109
9154	28195	33899	5704	1921	2345	424
9157	24373	33206	8833	3191	2411	-780
934203	767	1039	272	124	190	66
934204	877	1097	220	139	245	106
9983	5671	7559	1888	619	825	206
9984	5795	8013	2218	725	837	112
9985	7245	8296	1051	1036	1297	261
9986	6016	7192	1176	877	1036	159
9987	3204	4864	1660	1458	924	-534
9988	3127	4182	1055	558	1276	718
9990	5989	7268	1279	643	825	182
9993	13516	16070	2554	1249	1648	399
9994	13457	20116	6659	1160	1533	373
Sum	144251	188288	44037	16222	17805	1583
# increase			14			11
# decrease			0			3
Chi-square test statistic			14***			4.6*

Note: ns ($p > 0.05$) * ($0.01 < p < 0.05$) *** ($p < 0.001$)
Source: FORS Truck speed surveys 1988.

Car and Articulated Truck Speeds Before and After July 1988

Table A7.4. Mean speeds of short and long vehicles at 14 sites in Victoria in May-June and November-December 1988 at nighttime (1800-0559) during the week (Monday and Tuesday).
The number of vehicles observed is also shown.

a. Mean vehicle speeds

	Short vehicles			Long vehicles		
Site	May 88	Nov 88	Change	May 88	Nov 88	Change
9153	101	100	-0.7	94	93	-0.9
9154	104	102	-2.3	94	92	-1.6
9157	(102)	(107)		(110)	(99)	
934203	98	103	4.3	95	98	2.7
934204	97	95	-1.9	89	84	-5.1
9983	108	112	3.6	94	99	4.4
9984	109	108	-1.3	101	101	-0.7
9985	108	111	2.9	98	103	5.0
9986	110	111	1.7	101	103	1.3
9987	106	107	1.5	102	102	0.6
9988	110	113	3.2	100	106	5.3
9990	106	108	2.0	95	99	4.3
9993	105	102	-2.2	90	91	1.1
9994	106	105	-0.7	95	98	2.8
Average	105	106	0.8	96	98	1.5
# increase			7			9
# decrease			6			4
Chi-square test statistic			0.1ns			1.9ns

b. Number of vehicles observed

	Short vehicles			Long vehicles		
Site	May 88	Nov 88	Change	May 88	Nov 88	Change
9153	20299	14589	-5710	1045	1102	57
9154	9327	9341	14	1140	1258	118
9157	16861	15050	-1811	2184	1082	-1102
934203	211	267	56	27	55	28
934204	192	182	-10	20	51	31
9983	1756	1836	80	359	417	58
9984	1463	1495	32	497	562	65
9985	1587	1446	-141	1409	1588	179
9986	1659	1554	-105	1291	1239	-52
9987	710	898	188	1168	1202	34
9988	372	392	20	633	733	100
9990	1597	1431	-166	706	703	-3
9993	3432	3300	-132	854	933	79
9994	5909	4750	-1159	805	842	37
Sum	65375	56531	-8844	12138	11767	-371
# increase			6			11
# decrease			8			3
Chi-square test statistic			0.3ns			4.6*

Note: ns ($p > 0.05$) * ($0.01 < p < 0.05$)
Source: FORS Truck speed surveys 1988.

Car and Articulated Truck Speeds Before and After July 1988

Table A7.5. Mean speeds of short and long vehicles at 14 sites in Victoria in May-June and November-December 1988 at nighttime (1800-0559) during the weekend (Saturday and Sunday). The number of vehicles observed is also shown.

a. Mean vehicle speeds

	Short vehicles			Long vehicles		
Site	May 88	Nov 88	Change	May 88	Nov 88	Change
9153	103	105	1.9	105	98	-6.7
9154	103	106	2.8	98	99	1.1
9157	(105)	(105)		(113)	(99)	
934203	99	98	-0.6	94	93	-0.5
934204	94	95	0.9	92	86	-6.3
9983	108	109	1.0	97	98	1.0
9984	109	107	-1.8	103	100	-3.0
9985	108	108	0.2	98	99	1.0
9986	111	113	2.2	102	111	8.5
9987	107	111	3.5	105	103	-2.0
9988	112	114	2.1	102	108	5.6
9990	108	110	2.4	98	102	4.4
9993	101	100	-1.2	94	95	1.1
9994	105	107	2.0	98	99	0.6
Average	105	106	1.2	99	99	-0.4
# increase			10			8
# decrease			3			5
Chi-square test statistic			3.8ns			0.7ns

b. Number of vehicles observed

	Short vehicles			Long vehicles		
Site	May 88	Nov 88	Change	May 88	Nov 88	Change
9153	16106	15150	-956	727	868	141
9154	15538	17920	2382	751	1033	282
9157	14071	13909	-162	1314	717	-597
934203	358	270	-88	21	43	22
934204	352	285	-67	26	55	29
9983	2949	2855	-94	254	258	4
9984	3246	3249	3	382	420	38
9985	2292	2259	-33	481	576	95
9986	4782	4132	-650	954	825	-129
9987	1813	1827	14	1074	668	-406
9988	1295	1274	-21	398	554	156
9990	2822	2339	-483	281	306	25
9993	7818	7526	-292	567	975	408
9994	6711	6667	-44	417	543	126
Sum	80153	79662	-491	7647	7841	194
# increase			3			11
# decrease			11			3
Chi-square test statistic			4.6*			4.6*

Note: ns ($p > 0.05$) * ($0.01 < p < 0.05$)
Source: FORS Truck speed surveys 1988.

Car and Articulated Truck Speeds Before and After July 1988

New South Wales

Free speeds of cars, articulated trucks and five other types of vehicles were collected at 24 sites in both October 1987 and October 1988. The data for only cars and articulated trucks are analysed in detail in this report.

Table A7.7 shows the mean free speed of cars and articulated trucks for each survey at each of the sites. The number of vehicles whose speed was measured is also shown. The summary statistics are given for all sites and for all sites with more than 20 vehicles of the given type at each survey time. The differences for sites with few data are flagged with a '<' at the right.

The average mean speeds of cars and articulated trucks were 2.8 km/h and 3.6 km/h faster, respectively, in October 1988 than in October 1989. These changes were statistically significant for both vehicle types in the analysis of all sites and in the analysis which excluded sites with few data (Table A7.7). Traffic volumes appeared to be similar in both survey periods.

Table A7.7. Mean speeds of cars and articulated trucks at 24 sites in New South Wales in October 1987 and October 1988. The number of vehicles observed is also shown.

a. Mean vehicle speeds

Site	Cars			Articulated trucks			Difference		
	Oct 87	Oct 88	Change	Oct 87	Oct 88	Change	Oct 87	Oct 88	Change
500101	104	108	4.6	102	109	6.9	1	-0	-2.3
500102	102	104	1.1	106	107	1.4	-3	-4	-0.3
500201+	107	108	1.3	97	97	0.0	9	11	1.3
500202+	102	108	5.9	95	98	3.1	7	9	2.8
500301	107	111	4.0	94	113	18.2<	13	-1	-14.2
500302	98	106	8.3	73	95	21.5<	25	11	-13.2
500401	104	110	5.8	98	103	5.3	7	7	0.5
500402	106	110	4.2	102	102	0.2	4	8	3.9
500501	103	106	2.4	98	98	0.5	5	7	1.9
500502	104	101	-2.9	97	94	-3.0	7	7	0.1
500601	108	109	1.0	100	101	1.0<	8	8	-0.0
500602	103	105	2.0	95	98	2.4<	8	8	-0.4
500701	110	107	-3.8<	106	104	-1.9	5	3	-2.0
500702	106	109	3.1<	103	102	-1.3	3	7	4.4
500801	109	112	3.2	97	98	0.4	12	14	2.8
500802	109	104	-4.8	102	102	0.3	7	2	-5.1
500901	109	111	1.3	101	106	5.5	9	4	-4.2
500902	100	103	2.2	94	97	2.9	7	6	-0.7
501001+	104	109	4.8	94	98	3.4<	10	11	1.4
501002+	102	108	6.1	93	103	10.0<	9	5	-3.9
501101	103	121	18.8<	109	114	5.6	-6	7	13.1
501102	106	103	-3.3<	104	106	1.8	2	-3	-5.1
501201	94	99	4.5	89	93	3.6	5	6	0.9
501202	100	97	-2.7	94	92	-1.4	6	4	-1.3
All sites									
Average	104	107	2.8	98	101	3.6	7	6	-0.8
# increase			19			20			11
# decrease			5			4			13
Chi-square test statistic			8.2**			10.7**			0.2ns
Sites with more than 20 vehicles observed of each type									
Average	104	106	2.6	100	101	1.7	6	6	0.0
# increase			17			14			8
# decrease			3			4			6
Chi-square test statistic			9.8**			5.6*			0.3ns

Notes: (1) < indicates site had fewer than 20 vehicles of the given type on at least one survey occasion
(2) ns ($p > 0.05$) * ($0.01 < p < 0.05$) ** ($0.001 < p < 0.01$)
(3) + speed limit for cars was 100 km/h in October 1987 and 110 km/h in October 1988

Source: FORS Truck speed surveys 1987 and 1988.

(continued)

Table A7.7. (continued) Mean speeds of cars and articulated trucks at 24 sites in New South Wales in October 1987 and October 1988. The number of vehicles observed is also shown.

b. Number of vehicles observed

	Cars			Articulated trucks		
Site	Oct 87	Oct 88	Change	Oct 87	Oct 88	Change
500101	36	34	-2	27	26	-1
500102	31	50	19	26	22	-4
500201+	213	173	-40	25	35	10
500202+	154	162	8	54	28	-26
500301	385	255	-130	17	8	-9
500302	209	338	129	2	6	4
500401	69	91	22	98	79	-19
500402	69	66	-3	125	119	-6
500501	140	173	33	44	38	-6
500502	125	119	-6	71	58	-13
500601	72	55	-17	17	19	2
500602	66	89	23	18	20	2
500701	27	19	-8	34	23	-11
500702	18	28	10	34	24	-10
500801	100	180	80	56	42	-14
500802	142	117	-25	97	79	-18
500901	33	31	-2	86	124	38
500902	33	55	22	51	42	-9
501001	67	134	67	13	8	-5
501002+	137	73	-64	14	15	1
501101+	7	15	8	113	124	11
501102	8	15	7	55	71	16
501201	96	205	109	27	33	6
501202	115	158	43	38	26	-12
Sum	2352	2635	283	1142	1069	-73
# increase			14			9
# decrease			10			15
Chi-square test statistic			0.7ns			1.5ns

Note: (1) ns ($p > 0.05$)
(2) + speed limit for cars was 100 km/h in October 1987 and 110 km/h in October 1988

Source: FORS Truck speed surveys 1987 and 1988.

Queensland

Free speeds of cars, articulated trucks and five other types of vehicles were collected at 10 sites in both October 1987 and October 1988. The data for only cars and articulated trucks are analysed in detail in this report.

Table A7.8 shows the mean free speed of cars and articulated trucks at each survey at each of the sites. The number of vehicles whose speed was measured is also shown. The summary statistics are given for all sites and for all sites with more than 20 vehicles of the given type at each survey time. The differences for the three sites with fewer than 20 articulated trucks are flagged with a '<' at the right.

The average mean free speed of cars was similar at both times, while that for articulated trucks was 2.8 km/h faster in October 1988 (Table A7.8). After removing the sites with few data, the difference in the average mean free speed of articulated trucks was reduced to 1.5 km/h. Traffic volumes appeared to be similar in both survey periods.

Table A7.8. Mean speeds of cars and articulated trucks at 10 sites in Queensland in October 1987 and October 1988. The number of vehicles observed is also shown.

a. Mean vehicle speeds

	Cars			Articulated trucks			Difference		
Site	Oct 87	Oct 88	Change	Oct 87	Oct 88	Change	Oct 87	Oct 88	Change
4205	94	91	-3.6	90	91	1.6	5	-0	-5.2
4210	101	98	-2.4	96	94	-2.0	4	4	-0.4
4215	99	101	2.3	90	95	4.3	8	6	-2.1
4220	92	96	3.9	83	94	10.7	9	2	-6.8
4225	95	98	3.2	90	91	0.2	4	7	3.0
4230	101	103	2.2	94	97	2.9	7	6	-0.7
4235	106	107	0.5	94	95	1.5	12	11	-1.0
4240	95	89	-5.5	87	93	6.4	8	-4	-11.9
4245	87	89	2.2	82	88	5.4	5	2	-3.2
4250	91	92	0.6	93	89	-3.2	-2	2	3.8
<u>All sites</u>									
Average	96	96	0.3	90	93	2.8	6	4	-2.4
# increase			7			8			2
# decrease			3			2			8
Chi-square test statistic			1.6ns			3.6ns			3.6ns
<u>Sites with more than 20 vehicles observed of each type</u>									
Average	96	96	0.3	91	93	1.5	6	5	-1.3
# increase			7			5			1
# decrease			3			2			6
Chi-square test statistic			1.6ns			1.3ns			3.6ns

b. Number of vehicles observed

	Cars			Articulated trucks		
Site	Oct 87	Oct 88	Change	Oct 87	Oct 88	Change
4205	1768	897	-871	56	112	56
4210	118	175	57	43	45	2
4215	1458	1030	-428	136	88	-48
4220	141	111	-30	18	4	-14
4225	124	142	18	17	7	-10
4230	253	372	119	76	71	-5
4235	62	67	5	36	49	13
4240	266	505	239	12	18	6
4245	340	136	-204	42	40	-2
4250	354	203	-151	46	57	11
Sum	4884	3638	-1246	482	491	9
# increase			5			5
# decrease			5			5
Chi-square test statistic			0.0ns			0.0ns

Notes: (1) < indicates site had fewer than 20 vehicles of the given type on at least one survey occasion
(2) ns ($p > 0.05$)

Source: FORS Truck speed surveys 1987 and 1988.

Car and Articulated Truck Speeds Before and After July 1988

South Australia

The medians of free speeds of cars and articulated trucks were provided from surveys carried out at two sites in June and October, 1988. These data are shown in Table A7.9. Sample sizes ranged from 6700 to 21000 for cars and were 1000 or more for articulated vehicles.

Median free speeds of both cars and articulated trucks were faster after the increase in truck speed limit than before. More South Australian sites would be necessary to test the statistical significance of this change for this State alone.

Car and Articulated Truck Speeds Before and After July 1988

Table A7.9. Median speeds of cars and articulated trucks at two sites in South Australia in June 1988 and October 1988.

	Cars			Articulated trucks			Difference		
Site	June	Oct	Change	June	Oct	Change	June	Oct	Change
Nuriootpa	100	101	1.2	100	101	1.5	0	-0	-0.3
Callington	103	111	7.5	101	104	3.7	3	6	3.8
Both sites									
Average	101	106	4.4	100	103	2.6	1	3	1.8
# increase			2			2			1
# decrease			0			0			1
Chi-square test statistic			2.0ns			2.0ns			0.0ns

Notes: ns ($p > 0.05$)

Source: FORS Truck speed surveys 1988.

Western Australia

Free speeds of cars, articulated trucks and five other types of vehicles were collected at 12 sites in both October 1987 and October 1988. The data for only cars and articulated trucks are analysed in detail in this report.

Table A7.10 shows the mean free speed of cars and articulated trucks at each survey at each of the sites. The number of vehicles whose speed was measured is also shown. The summary statistics are given for all sites and for all sites with more than 20 vehicles of the given type at each survey time. The differences for sites with few data are flagged with a '<' at the right. Site 4301 (Eyre Highway) had no speed limit change in July 1988.

There was a net decrease of 0.6 km/h in the mean free speed for cars, although articulated trucks had an average mean free speed 0.8 km/h faster (1.7 km/h faster for sites with more than 20 trucks) in 1988 than in 1987. These differences were not statistically significant, although they are based on estimates from few sites and so are not powerful tests for no change in mean free speeds of cars or trucks. Traffic volumes appeared to be similar in both survey periods.

Table A7.10. Mean speeds of cars and articulated trucks at 12 sites in Western Australia in October 1987 and October 1988. The number of vehicles observed is also shown.

a. Mean vehicle speeds

	Cars			Articulated trucks			Difference		
Site	Oct 87	Oct 88	Change	Oct 87	Oct 88	Change	Oct 87	Oct 88	Change
430003	109	107	-2.2	100	98	-2.9	9	10	0.7
430004	108	109	0.6	99	101	2.7	10	8	-2.1
430103+	109	114	(5.1)	109	109	(0.3)	0	5	(4.8)
430104+	109	110	(1.0)	105	107	(2.5)	4	3	(-1.5)
430203	106	111	4.6	96	104	8.3	10	7	-3.7
430204	109	111	2.0	98	93	-5.7<	11	19	7.7
430301	107	107	0.1	93	98	4.7<	14	9	-4.6
430302	108	107	-0.9	97	96	-0.9<	10	10	-0.0
430401	108	112	3.3	96	97	1.0	12	15	2.3
430402	108	109	1.2	93	95	1.7	15	14	-0.4
430501	106	101	-4.9	95	94	-0.7	11	7	-4.2
430502	110	100	-9.8	92	92	-0.0<	17	7	-9.8
All sites, except 4301 (Eyre Highway)									
Average	108	107	-0.6	98	99	0.8	10	9	-1.4
# increase			6			5			3
# decrease			4			5			7
Chi-square test statistic			0.4ns			0.0ns			1.6ns
Sites with more than 20 vehicles observed of each type (except 4301)									
Average	108	107	-0.6	96	98	1.7	11	10	-1.2
# increase			6			4			2
# decrease			4			2			4
Chi-square test statistic			0.4ns			0.7ns			0.7ns

b. Number of vehicles observed

	Cars			Articulated trucks		
Site	Oct 87	Oct 88	Change	Oct 87	Oct 88	Change
430003	234	224	-10	134	98	-36
430004	171	144	-27	135	113	-22
430103+	78	56	-22	79	65	-14
430104+	87	47	-40	73	71	-2
430203	80	83	3	22	23	1
430204	91	112	21	28	19	-9
430301	256	174	-82	48	16	-32
430302	403	217	-186	49	13	-36
430401	246	287	41	81	82	1
430402	252	263	11	86	78	-8
430501	72	92	20	28	22	-6
430502	112	114	2	12	15	3
Sum	2082	1813	-269	775	615	-160
# increase			6			3
# decrease			6			9
Chi-square test statistic			0.0ns			3.0ns

Notes: (1) < indicates site had fewer than 20 vehicles of the given type on at least one survey occasion
(2) ns ($p > 0.05$)
(3) + truck speed limit was 100 km/h at both times

Source: FORS Truck speed surveys 1987 and 1988.

Car and Articulated Truck Speeds Before and After July 1988

Tasmania

Free speeds of cars, articulated trucks and five other types of vehicles were collected at 3 sites in both October 1987 and October 1988. The data for only cars and articulated trucks are analysed in detail in this report.

Table A7.11 shows the mean free speed of cars and articulated trucks at each survey at each of the sites. The number of vehicles whose speed was measured is also shown. At two sites, fewer than 20 articulated trucks were observed in at least one survey period. The differences for sites with few data are flagged with a '<' at the right.

Mean free speeds of both cars and articulated trucks were faster in 1988 than in 1987 at all three sites. Average differences were 0.9 km/h for cars and 3.7 km/h for trucks, although for the one site with more than 20 trucks it was only 0.1 km/h for trucks. Traffic volumes appeared to be similar in both survey periods.

Table A7.11. Mean speeds of cars and articulated trucks at 3 sites in Tasmania in October 1987 and October 1988. The number of vehicles observed is also shown.

a. Mean vehicle speeds

Site	Cars			Articulated trucks			Difference		
	Oct 87	Oct 88	Change	Oct 87	Oct 88	Change	Oct 87	Oct 88	Change
350111	88	88	0.3	77	82	4.7<	11	6	-4.4
350313	91	94	2.3	88	89	0.1	2	5	2.2
350323	96	96	0.1	89	95	6.2<	7	0	-6.1
All sites									
Average	92	93	0.9	85	89	3.7	7	4	-2.8
# increase			3			3			1
# decrease			0			0			2
Chi-square test statistic			3.0ns			3.0ns			0.3ns
Sites with more than 20 vehicles observed of each type									
Average	92	93	0.9	88	89	0.1	2	5	2.2
# increase			3			1			1
# decrease			0			0			0
Chi-square test statistic			3.0ns						

b. Number of vehicles observed

Site	Cars			Articulated trucks		
	Oct 87	Oct 88	Change	Oct 87	Oct 88	Change
350111	248	152	-96	17	20	3
350313	327	372	45	51	35	-16
350323	213	226	13	16	10	-6
Sum	788	750	-38	84	65	-19
# increase			2			1
# decrease			1			2
Chi-square test statistic			0.3ns			0.3ns

Notes: (1) < indicates site had fewer than 20 vehicles of the given type on at least one survey occasion
(2) ns ($p > 0.05$)

Source: FORS Truck speed surveys 1987 and 1988.

Australian Capital Territory

Free speeds of cars, articulated trucks and five other types of vehicles were collected at 6 sites in both October 1987 and October 1988. The data for only cars and articulated trucks are analysed in detail in this report.

Table A7.12 shows the mean free speed of cars and articulated trucks at each survey at each of the sites. The number of vehicles whose speed was measured is also shown. The summary statistics are given for all sites and for all sites with more than 20 vehicles of the given type at each survey time. The differences for sites with few data are flagged with a '<' at the right.

Both cars and articulated trucks had much faster mean free speeds in 1988 than in 1987. For articulated trucks the average difference was 10.5 km/h. After excluding sites with fewer than 20 articulated trucks observed during a survey period, the average difference was 13.0 km/h. The average difference for cars was 3.4 km/h. These large differences may be mostly due to the change from using radar in 1987 to using automatic classifiers in 1988 so that the ACT could not be included in the overall matching analysis (see Section 3.2). Traffic volumes appeared to be similar in both survey periods.

Table A7.12. Mean speeds of cars and articulated trucks at 6 sites in the Australian Capital Territory in October 1987 and October 1988. The number of vehicles observed is also shown.

a. Mean vehicle speeds

Site	Cars			Articulated trucks			Difference		
	Oct 87	Oct 88	Change	Oct 87	Oct 88	Change	Oct 87	Oct 88	Change
160112	99	102	3.0	89	96	7.0	11	7	-4.0
160122	101	98	-3.4	89	91	1.5<	12	7	-4.9
160132	93	100	7.2	83	99	15.7<	10	1	-8.4
160212	93	100	6.5	74	93	19.0	20	7	-12.5
160222	89	92	2.8	66	83	17.0<	22	8	-14.1
160232	93	97	4.2	84	87	2.6<	8	10	1.6
All sites									
Average	95	98	3.4	81	91	10.5	14	7	-7.1
# increase			5			6			1
# decrease			1			0			5
Chi-square test statistic			2.7ns			6.0*			2.7ns
Sites with more than 20 vehicles observed of each type									
Average	95	98	3.4	81	94	13.0	17	7	-9.6
# increase			5			2			0
# decrease			1			0			2
Chi-square test statistic			2.7ns			2.0ns			2.0ns

b. Number of vehicles observed

Site	Cars			Articulated trucks		
	Oct 87	Oct 88	Change	Oct 87	Oct 88	Change
160112	229	271	43	32	42	10
160122	52	98	46	14	10	-4
160132	196	162	-34	3	5	2
160212	783	397	-386	37	26	-11
160222	346	421	75	17	8	-9
160232	763	505	-258	9	20	11
Sum	2369	1854	-515	112	111	-1
# increase			3			3
# decrease			3			3
Chi-square test statistic			0.0ns			0.0ns

Notes: (1) < indicates site had fewer than 20 vehicles of the given type on at least one survey occasion
(2) ns ($p > 0.05$) * ($0.01 < p < 0.05$)

Source: FORS Truck speed surveys 1987 and 1988.

A8. Standard deviations of car and truck speeds by State/Territory

Car and Articulated Truck Speeds Before and After July 1988

Table A8. Variation in car and articulated truck speeds: standard deviation of speeds of cars and articulated trucks in Australia in October 1987 and October 1988. The difference in standard deviation between cars and articulated trucks is also shown.

Site	Cars			Articulated trucks			Difference		
	Oct 87	Oct 88	Change	Oct 87	Oct 88	Change	Oct 87	Oct 88	Change
NSW									
500101	16	14	-2.0	11	8	-3.5	5	6	1.4
500102	14	13	-1.5	10	10	0.0	5	3	-1.5
500201	12	13	0.5	8	8	-0.7	4	5	1.2
500202	11	11	-0.2	6	9	3.0	4	1	-3.3
500301	11	12	1.8	8	9	1.2	3	3	0.6
500302	9	12	3.5	3	7	4.0	6	6	-0.4
500401	11	12	0.9	7	8	0.6	4	5	0.3
500402	11	11	0.0	8	9	1.0	2	1	-0.9
500501	10	12	2.2	7	7	-0.4	2	5	2.6
500502	11	12	0.9	7	8	1.1	4	4	-0.3
500601	13	14	0.7	9	7	-1.8	5	7	2.5
500602	16	12	-4.5	10	8	-2.2	6	4	-2.2
500701	18	15	-2.5	10	10	-0.0	8	6	-2.5
500702	14	16	1.8	8	10	1.7	5	5	0.1
500801	13	12	-0.9	9	9	-0.1	4	3	-0.8
500802	10	12	1.9	9	9	-0.2	0	3	2.2
500901	13	12	-1.0	9	10	1.2	4	2	-2.2
500902	14	13	-1.5	7	8	1.1	7	4	-2.7
501001	10	13	2.8	8	7	-0.8	2	6	3.6
501002	12	13	1.1	6	6	-0.0	6	7	1.2
501101	6	30	24.1	9	9	-0.2	-4	21	24.3
501102	9	17	8.2	10	9	-1.4	-1	8	9.6
501201	11	8	-2.3	6	7	0.3	4	2	-2.6
501202	10	9	-1.5	6	6	0.7	5	2	-2.2
<u>All sites</u>									
Average	12	13	1.5	8	8	0.3	4	5	1.2
# increase			14			12			12
# decrease			10			12			12
Chi-square test statistic			0.7ns			0.0ns			0.0ns
<u>Sites with more than 20 vehicles observed of each type</u>									
Average	12	12	0.2	8	9	0.5	4	3	-0.8
# increase			11			10			5
# decrease			9			8			9
Chi-square test statistic			0.2ns			0.2ns			1.1ns

(continued)

Table A8. (continued) Variation in car and articulated truck speeds: standard deviation of speeds of cars and articulated trucks in Australia in October 1987 and October 1988. The difference in standard deviation between cars and articulated trucks is also shown.

Site	Cars			Articulated trucks			Difference		
	Oct 87	Oct 88	Change	Oct 87	Oct 88	Change	Oct 87	Oct 88	Change
Vic+									
9153	12	12	0.5	17	12	-5.3	-5	0	5.8
9154	12	12	0.2	12	12	-0.1	-0	-0	0.3
9157									
934203	13	13	-0.3	11	11	-0.4	2	2	0.1
934204	13	12	-0.7	11	12	1.2	2	0	-1.9
9983	11	11	0.3	12	12	0.8	-1	-1	-0.5
9984	11	12	1.8	12	12	0.2	-1	0	1.7
9985	10	11	0.3	10	10	0.2	0	0	0.0
9986	11	11	0.7	10	15	4.4	0	-4	-3.7
9987	10	12	1.5	13	11	-1.6	-3	0	3.1
9988	11	11	0.7	11	12	1.9	0	-1	-1.3
9990	12	13	0.7	12	12	-0.2	-0	0	0.9
9993	11	12	1.1	11	13	1.6	0	-0	-0.5
9994	11	12	0.3	12	13	0.7	-0	-1	-0.4
All sites									
Average	11	12	0.6	12	12	-0.3	-1	-0	0.9
# increase			11			8			7
# decrease			2			5			6
Chi-square test statistic			6.2*			0.7ns			0.1ns
Qld									
4205	11	10	-1.1	9	9	-0.5	2	1	-0.5
4210	12	13	1.0	7	8	0.3	5	6	0.7
4215	10	10	0.0	11	7	-3.4	-0	3	3.4
4220	13	11	-2.4	7	17	10.4	6	-7	-12.8
4225	11	13	2.3	7	9	1.8	4	4	0.5
4230	10	10	0.1	9	8	-1.0	0	2	1.1
4235	18	13	-5.5	9	7	-1.7	9	5	-3.8
4240	14	12	-2.5	12	10	-1.7	2	1	-0.7
4245	10	10	0.2	9	7	-2.7	0	4	2.9
4250	10	10	0.5	8	7	-1.0	2	3	1.5
All sites									
Average	12	11	-0.7	9	9	0.0	3	2	-0.8
# increase			6			3			6
# decrease			4			7			4
Chi-square test statistic			0.4ns			1.6ns			0.4ns
Sites with more than 20 vehicles observed of each type									
Average	12	11	-0.7	9	8	-1.4	3	3	0.7
# increase			6			1			5
# decrease			4			6			2
Chi-square test statistic			0.4ns			3.6ns			1.3ns

\+ First survey in Victoria in May-June 1988, not October 1987

(continued)

Table A8. (continued) Variation in car and articulated truck speeds: standard deviation of speeds of cars and articulated trucks in Australia in October 1987 and October 1988. The difference in standard deviation between cars and articulated trucks is also shown.

Site	Cars			Articulated trucks			Difference		
	Oct 87	Oct 88	Change	Oct 87	Oct 88	Change	Oct 87	Oct 88	Change
WA									
430003	12	15	2.5	13	13	0.8	-0	1	1.7
430004	13	13	0.2	11	12	1.0	2	1	-0.7
430203	11	12	1.4	8	10	2.3	3	2	-0.9
430204	12	12	-0.6	8	15	6.9	5	-3	-7.5
430301	12	11	-0.7	9	5	-3.5	3	6	2.8
430302	11	12	1.1	8	6	-1.8	3	6	2.9
430401	12	13	1.7	10	9	-1.0	2	4	2.7
430402	12	11	-0.8	8	8	0.5	4	3	-1.3
430501	11	13	2.3	8	12	3.6	3	1	-1.3
430502	13	13	0.0	9	8	-0.8	4	4	0.8
All sites									
Average	12	12	0.7	9	10	0.8	3	3	-0.1
# increase			7			6			5
# decrease			3			4			5
Chi-square test statistic			1.6ns			0.4ns			0.0ns
Sites with more than 20 vehicles observed of each type									
Average	12	12	0.7	10	11	1.2	2	2	0.0
# increase			7			5			2
# decrease			3			1			4
Chi-square test statistic			1.6ns			2.7ns			0.7ns
Tas									
350111	9	11	1.3	7	9	2.3	2	1	-1.0
350313	12	13	0.4	6	10	3.7	6	3	-3.3
350323	13	14	0.9	12	15	2.3	1	-0	-1.5
All sites									
Average	12	13	0.8	8	11	2.8	3	1	-2.0
# increase			3			3			0
# decrease			0			0			3
Chi-square test statistic			3.0ns			3.0ns			3.0ns
Sites with more than 20 vehicles observed of each type									
Average	12	13	0.8	6	10	3.7	6	3	-3.3
# increase			3			1			0
# decrease			0			0			1
Chi-square test statistic			3.0ns			1.0ns			1.0ns

(continued)

Table A8. (continued) Variation in car and articulated truck speeds: standard deviation of speeds of cars and articulated trucks in Australia in October 1987 and October 1988. The difference in standard deviation between cars and articulated trucks is also shown.

Site	Cars			Articulated trucks			Difference		
	Oct 87	Oct 88	Change	Oct 87	Oct 88	Change	Oct 87	Oct 88	Change
ACT									
160112	11	15	3.2	10	9	-0.7	2	6	4.0
160122	14	13	-0.5	11	11	-0.2	2	2	-0.3
160132	13	16	3.5	10	9	-0.5	3	7	4.1
160212	10	12	1.6	11	13	2.3	-1	-2	-0.7
160222	10	12	1.6	11	17	6.5	-0	-5	-4.9
160232	12	8	-3.8	10	9	-0.8	2	-1	-3.0
All sites									
Average	12	13	0.9	10	11	1.1	1	1	-0.1
# increase			4			2			2
# decrease			2			4			4
Chi-square test statistic			0.7ns			0.7ns			0.7ns
Sites with more than 20 vehicles observed of each type									
Average	12	13	0.9	10	11	0.8	0	2	1.6
# increase			4			1			1
# decrease			2			1			1
Chi-square test statistic			0.7ns			0.0ns			0.0ns

Note: ns ($p > 0.05$) * ($0.01 < p < 0.05$)

Source: FORS Truck speed surveys 1987 and 1988.

A9. Proportion of vehicles travelling faster than 110 km/h by State/Territory

Car and Articulated Truck Speeds Before and After July 1988

Table A9. High car and articulated truck speeds: percentage of cars and articulated trucks travelling at more than 110 km/h in Australia in October 1987 and October 1988. The difference in the percentage between cars and articulated trucks is also shown.

	Cars			Articulated trucks			Difference		
Site	Oct 87	Oct 88	Change	Oct 87	Oct 88	Change	Oct 87	Oct 88	Change
NSW									
500101	33	38	4.9	33	38	5.1	0	-0	-0.2
500102	32	32	-0.3	35	41	6.3	-2	-9	-6.6
500201	37	39	2.1	4	3	-1.1	33	36	3.3
500202	16	43	27.6	0	11	10.7	16	32	16.9
500301	42	56	14.5	0	75	75.0	42	-19	-60.5
500302	5	33	28.2	0	0		5	33	28.2
500401	26	46	20.1	4	14	9.8	22	32	10.2
500402	32	44	12.1	18	18	0.0	13	25	12.0
500501	20	29	8.9	5	3	-1.9	15	26	10.8
500502	26	21	-5.4	0	0		26	21	-5.4
500601	37	42	4.3	6	11	4.6	32	31	-0.3
500602	23	31	8.7	0	0		23	31	8.7
500701	41	47	6.6	32	26	-6.3	8	21	12.9
500702	44	50	5.6	24	17	-6.9	21	33	12.4
500801	38	56	17.6	9	2	-6.5	29	53	24.1
500802	42	29	-12.5	19	16	-2.1	23	13	-10.4
500901	45	58	12.6	13	31	18.7	33	27	-6.1
500902	21	22	0.6	0	5	4.8	21	17	-4.2
501001	24	40	16.4	0	12	12.5	24	28	3.9
501002	20	40	20.0	0	7	6.7	20	33	13.4
501101	0	67	66.7	43	69	25.2	-43	-2	41.5
501102	37	33	-4.2	24	24	0.3	14	9	-4.5
501201	4	8	3.6	0	0		4	8	3.6
501202	11	3	-8.1	0	0		11	3	-8.1
All sites									
Average	27	38	10.4	11	18	6.5	16	20	4.0
# increase			19			13			14
# decrease			5			6			10
Chi-square test statistic			8.2**			2.6ns			0.7ns
Sites with more than 20 vehicles observed of each type									
Average	27	36	8.8	15	18	3.7	17	20	2.9
# increase			16			9			7
# decrease			4			6			7
Chi-square test statistic			7.2**			0.6ns			0.0ns

(continued)

Table A9. (continued) High car and articulated truck speeds: percentage of cars and articulated trucks travelling at more than 110 km/h in Australia in October 1987 and October 1988. The difference in the percentage between cars and articulated trucks is also shown.

Site	Cars			Articulated trucks			Difference		
	Oct 87	Oct 88	Change	Oct 87	Oct 88	Change	Oct 87	Oct 88	Change
Vic+									
9153	24	28	3.8	19	8	-10.9	5	20	14.7
9154	28	32	4.7	8	9	1.2	19	23	3.5
9157	(30)	(32)		(42)	(13)		(-11)	(20)	
934203	15	16	0.7	4	4	0.3	11	11	0.4
934204	12	10	-1.2	4	6	1.3	7	5	-2.6
9983	40	46	6.0	9	13	4.0	30	32	2.0
9984	41	42	0.9	17	17	0.0	24	25	0.8
9985	40	45	5.9	6	12	5.8	34	34	0.1
9986	55	61	6.1	19	35	15.9	36	26	-9.8
9987	39	49	10.2	35	19	-15.9	4	30	26.0
9988	58	66	8.2	16	34	18.8	43	32	-10.6
9990	41	49	8.3	9	16	6.9	32	33	1.4
9993	24	28	4.0	5	8	2.9	19	20	1.1
9994	35	40	5.0	8	13	5.0	27	27	-0.0
All sites									
Average	35	39	4.8	12	15	2.7	22	24	2.1
# increase			12			11			9
# decrease			1			2			4
Chi-square test statistic			9.3**			6.2*			1.9ns
Qld									
4205	7	2	-4.6	4	2	-1.8	3	0	-2.8
4210	18	15	-2.9	0	0		18	15	-2.9
4215	12	16	4.2	2	0	-2.2	10	16	6.4
4220	7	5	-1.7	0	0		7	5	-1.7
4225	7	14	6.8	0	0		7	14	6.8
4230	14	19	4.7	5	1	-3.9	9	17	8.6
4235	42	33	-9.1	3	0	-2.8	39	33	-6.3
4240	9	3	-5.3	0	11	11.1	9	-8	-16.4
4245	2	3	0.9	0	0		2	3	0.9
4250	3	4	0.6	0	0		3	4	0.6
All sites									
Average	12	11	-0.6	1	1	0.0	11	10	-0.7
# increase			5			1			5
# decrease			5			4			5
Chi-square test statistic			0.0ns			1.8ns			0.0ns
Sites with more than 20 vehicles observed of each type									
Average	12	11	-0.6	2	0	-2.7	12	13	0.6
# increase			5			0			4
# decrease			5			4			3
Chi-square test statistic			0.0ns			4.0*			0.1ns

\+ First survey in Victoria in May-June 1988, not October 1987

(continued)

Table A9. (continued) High car and articulated truck speeds: percentage of cars and articulated trucks travelling at more than 110 km/h in Australia in October 1987 and October 1988. The difference in the percentage between cars and articulated trucks is also shown.

Site	Cars			Articulated trucks			Difference		
	Oct 87	Oct 88	Change	Oct 87	Oct 88	Change	Oct 87	Oct 88	Change
WA									
430003	44	45	0.6	19	14	-5.1	25	31	5.8
430004	41	44	2.8	18	19	1.7	23	24	1.1
430203	27	52	24.3	0	22	21.7	27	30	2.6
430204	44	55	11.4	4	16	12.2	40	40	-0.8
430301	33	31	-1.8	4	0	-4.2	29	31	2.4
430302	37	37	-0.4	6	0	-6.1	31	37	5.8
430401	39	49	10.0	4	2	-1.3	36	47	11.3
430402	38	43	5.3	2	4	1.5	36	39	3.7
430501	37	27	-10.3	4	9	5.5	34	18	-15.8
430502	48	19	-28.9	0	0		48	19	-28.9
Average	39	40	1.3	6	9	2.6	33	32	-1.3
# increase			6			5			7
# decrease			4			4			3
Chi-square test statistic			0.7ns			0.1ns			0.8ns
Sites with more than 20 vehicles observed of each type									
Average	39	40	1.3	8	12	4.0	30	32	1.4
# increase			6			4			5
# decrease			4			2			1
Chi-square test statistic			0.4ns			0.7ns			2.7ns
Tas									
350111	2	3	1.7	0	0		2	3	1.7
350313	7	9	2.4	0	6	5.7	7	4	-3.3
350323	4	15	10.3	0	20	20.0	4	-5	-9.7
All sites									
Average	4	9	4.8	0	9	8.6	4	0	-3.8
# increase			3			2			1
# decrease			0			0			2
Chi-square test statistic			3.0ns			2.0ns			0.3ns
Sites with more than 20 vehicles observed of each type									
Average	4	9	4.8	0	6	5.7	7	4	-3.3
# increase			3			1			0
# decrease			0			0			1
Chi-square test statistic			3.0ns			1.0ns			1.0ns

(continued)

Table A9. (continued) High car and articulated truck speeds: percentage of cars and articulated trucks travelling at more than 110 km/h in Australia in October 1987 and October 1988. The difference in the percentage between cars and articulated trucks is also shown.

Site	Cars			Articulated trucks			Difference		
	Oct 87	Oct 88	Change	Oct 87	Oct 88	Change	Oct 87	Oct 88	Change
ACT									
160112	15	25	9.9	0	5	4.8	15	20	5.1
160122	25	16	-8.7	0	10	10.0	25	6	-18.7
160132	7	26	18.8	0	0	0	7	26	18.8
160212	4	18	14.0	0	8	7.7	4	11	6.4
160222	3	7	3.4	0	12	12.5	3	-6	-9.1
160232	6	3	-2.8	0	0	0	6	3	-2.8
All sites									
Average	10	16	5.8	0	6	5.8	10	10	-0.0
# increase			4			4			3
# decrease			2			0			3
Chi-square test statistic			0.7ns			4.0*			0.0ns
Sites with more than 20 vehicles observed of each type									
Average	10	16	5.8	0	6	6.2	10	15	5.7
# increase			4			2			1
# decrease			2			0			1
Chi-square test statistic			0.7ns			2.0ns			0.0ns

Note: ns ($p > 0.05$) * ($0.01 < p < 0.05$) ** ($0.001 < p < 0.01$)
Source: FORS Truck speed surveys 1987 and 1988.

A10. Percentage of cars and trucks leading platoons: two lane roads

Car and Articulated Truck Speeds Before and After July 1988

Table A10. Percentage of vehicles leading a platoon of vehicles on two lane roads, for cars and articulated trucks in Australia in October 1987 and October 1988. The difference in the percentage between cars and articulated trucks is also shown.

Car speed limit = 100 km/h

Site	Cars			Articulated trucks			Difference		
	Oct 87	Oct 88	Change	Oct 87	Oct 88	Change	Oct 87	Oct 88	Change
NSW									
500101	3	0	-2	19	8	-11	-16	-7	9
500102	3	8	5	15	18	3	-12	-10	2
500401	12	10	-2	15	20	5	-4	-10	-7
500402	10	17	7	31	34	3	-21	-18	3
500501	9	17	8	11	18	7	-2	-2	0
500502	10	13	2	31	7	-24	-21	6	26
500601	14	13	-1	18	37	19	-4	-24	-20
500602	8	10	3	11	10	-1	-4	0	4
500701	7	0	-7	12	26	14	-4	-26	-22
500702	0	4	4	0	21	21	0	-17	-17
501201	35	26	-10	41	21	-20	-5	5	10
501202	25	18	-7	50	23	-27	-25	-5	20
All two lane roads									
Average	11	11	-0	21	20	-1	-10	-9	1
# increase			6			7			8
# decrease			6			5			4
Chi-square test statistic			0.0ns			0.3ns			1.3ns
Qld									
4205									
4220									
4225	8	8	0	12	29	17	-4	-20	-16
4245	54	77	23	71	60	-11	-17	17	34
4250	49	65	16	52	63	11	-3	2	5
All two lane roads									
Average	37	50	13	45	51	6	-8	-0	8
# increase			3			2			2
# decrease			0			1			1
Chi-square test statistic			3.0ns			0.3ns			0.3ns
All roads with a speed limit of 100 km/h: NSW and Qld									
Average	16	19	3	26	26	0	-10	-7	2
# increase			9			9			10
# decrease			3			6			5
Chi-square test statistic			3.0ns			0.6ns			1.7ns

(continued)

Table A10. (continued) Percentage of vehicles leading a platoon of vehicles on two lane roads, for cars and articulated trucks in Australia in October 1987 and October 1988. The difference in the percentage between cars and articulated trucks is also shown.

Car speed limit = 110 km/h

Site	Cars			Articulated trucks			Difference		
	Oct 87	Oct 88	Change	Oct 87	Oct 88	Change	Oct 87	Oct 88	Change
WA									
430003	2	6	4	4	9	5	-2	-3	-1
430004	1	5	4	1	12	11	-0	-8	-7
430203	0	1	1	0	0		0	1	1
430204	1	0	-0	0	5	5	1	-4	-6
430301	5	3	-1	4	0	-4	0	3	3
430302	3	6	4	10	15	5	-7	-9	-2
430401	4	2	-2	2	4	1	1	-2	-3
430402	2	2	0	3	4	0	-2	-2	0
430501	1	1	-0	0	0		1	1	-0
430502	2	0	-2	0	7	7	2	-7	-9
All two lane roads									
Average	2	3	1	3	6	2	-0	-3	-2
# increase			5			7			3
# decrease			5			1			7
Chi-square test statistic			0.0ns			4.5*			1.6ns
Tas									
350111	21	24	3	59	65	6	-38	-41	-3
350313	25	28	17	51	49	-2	-26	-20	6
350323	12	17	6	25	20	-5	-13	-3	11
All two lane roads									
Average	19	23	4	45	45	-0	-26	-21	4
# increase			3			1			2
# decrease			1			2			1
Chi-square test statistic			1.0ns			0.3ns			0.3ns
All roads with a speed limit of 110 km/h: WA and Tas									
Average	6	8	2	13	15	2	-6	-7	-1
# increase			8			8			5
# decrease			5			3			8
Chi-square test statistic			0.7ns			1.9ns			0.7ns

Note: ns ($p > 0.05$) * ($0.01 < p < 0.05$)

Source: FORS Truck speed surveys October 1987 and October 1988 in Victoria.

Car and Articulated Truck Speeds Before and After July 1988

All. Mean lengths of platoons lead by cars and trucks: two lane roads

Car and Articulated Truck Speeds Before and After July 1988

Table A11. Mean length of platoons of vehicles on two lane roads, for platoons led by cars and articulated trucks in Australia in October 1987 and October 1988. The difference in the length between cars and articulated trucks is also shown.

Car speed limit = 100 km/h

	Cars			Articulated trucks			Difference		
Site	Oct 87	Oct 88	Change	Oct 87	Oct 88	Change	Oct 87	Oct 88	Change
NSW									
500101	1.0	1.0	0	1.2	1.5	0.3	-0.2	-0.5	-0.3
500102	1.0	1.2	0.3	1.2	1.5	0.3	-0.3	-0.3	0
500401	1.4	1.1	-0.3	1.4	1.2	-0.2	-0.0	-0.0	-0.0
500402	1.0	1.5	0.5	1.5	1.5	-0.0	-0.5	0.0	0.6
500501	1.1	1.5	0.4	1.4	2.1	0.7	-0.3	-0.7	-0.3
500502	1.5	1.7	0.1	1.6	1.5	-0.1	-0.0	0.2	0.2
500601	1.0	1.1	0.1	1.3	1.0	-0.3	-0.3	0.1	0.5
500602	1.0	1.1	0.1	1.0	1.5	0.5	0.0	-0.4	-0.4
500701									
500702									
501201	1.7	1.6	-0.0	1.9	2.0	0.1	-0.2	-0.4	-0.2
501202	1.4	1.4	0.0	1.7	2.3	0.6	-0.4	-0.9	-0.5
All two lane roads									
Average	1.2	1.3	0.1	1.4	1.6	0.2	-0.2	-0.3	-0.0
# increase			7			6			3
# decrease			2			4			6
Chi-square test statistic			2.8ns			0.4ns			1.0ns
Qld									
4205									
4220									
4225	1.2	1.2	-0.0	1.0	1.0	0	0.2	0.2	-0.0
4245	2.4	3.4	1.0	3.6	3.6	0.0	-1.2	-0.2	1.0
4250	2.5	2.8	0.3	2.2	2.5	0.3	0.3	0.3	-0.0
All two lane roads									
Average	2.0	2.4	0.4	2.2	2.4	0.1	-0.2	0.0	0.3
# increase			2			2			1
# decrease			1			0			2
Chi-square test statistic			0.3ns			2.0ns			0.3ns
All roads with a speed limit of 100 km/h: NSW and Qld									
Average	1.4	1.6	0.2	1.6	1.8	0.2	-0.2	-0.2	0.0
# increase			9			8			4
# decrease			3			4			8
Chi-square test statistic			3.0ns			1.3ns			1.3ns

Notes: (1) Most sites had fewer than 20 platoons in any category
(2) ns ($p > 0.05$) * ($0.01 < p < 0.05$)

(continued)

Table A11. (continued) Mean length of platoons of vehicles on two lane roads, for platoons led by cars and articulated trucks in Australia in October 1987 and October 1988. The difference in the length between cars and articulated trucks is also shown.

Car speed limit = 110 km/h

Site	Cars			Articulated trucks			Difference		
	Oct 87	Oct 88	Change	Oct 87	Oct 88	Change	Oct 87	Oct 88	Change
WA									
430003	1.0	1.1	0.0	1.0	1.8	0.8	0	-0.7	-0.7
430004	1.0	1.0	0	1.0	1.1	0.0	0	-0.0	-0.0
430203									
430204	1.0	1.0	0						
430301	1.2	1.2	0						
430302	1.5	1.0	-0.5	1.2	1.5	0.3	0.3	-0.5	-0.8
430401	1.0	1.0	0	1.0	1.0	0	0	0	0
430402	1.2	1.0	-0.2	1.0	1.0	0	0.2	0	-0.2
430501	1.0	1.0	0						
430502									
All two lane roads									
Average	1.1	1.0	-0.0	1.0	1.2	0.2	0.1	-0.3	-0.3
# increase			1			3			0
# decrease			2			0			4
Chi-square test statistic			0.3ns			3.0ns			4.0*
Tas									
350111	1.5	1.7	0.1	1.8	1.8	-0.0	-0.3	-0.1	0.2
350313	1.7	1.9	0.2	1.8	2.1	0.2	-0.1	-0.1	-0.0
350323	1.2	1.6	0.4	1.7	1.5	-0.3	-0.6	0.0	0.6
All two lane roads									
Average	1.5	1.7	0.2	1.8	1.8	-0.0	-0.3	-0.0	0.3
# increase			3			1			2
# decrease			0			2			1
Chi-square test statistic			3.0ns			0.3ns			0.3ns
All roads with a speed limit of 100 km/h: WA and Tas									
Average	1.2	1.2	0.0	1.3	1.5	0.2	-0.1	-0.2	-0.1
# increase			4			4			2
# decrease			2			2			4
Chi-square test statistic			0.7ns			0.7ns			0.7ns

Notes: (1) Most sites had fewer than 20 platoons in any category
(2) ns ($p > 0.05$) * ($0.01 < p < 0.05$)

Source: FORS Truck speed surveys 1987 and 1988.

A12. Summary of previous report by Fitzgerald (1988)

Car and Articulated Truck Speeds Before and After July 1988

The report by Fitzgerald (1988) analysed three speed surveys undertaken in all States and the ACT in October/November 1986, March/May 1987 and October/November 1987. Between the first and second of these surveys the heavy vehicle speed limit was increased from 80 to 90 km/h in all States and Territories except Queensland which already had a speed limit of 90 km/h.

It is not possible to directly compare the results of the present study with those of Fitzgerald (1988). The distribution of sites among States is not the same for all surveys and methods of speed measurement have changed in some States (see Chapter 3). Some State speed limits for cars have also increased between surveys. Moreover, the data analytic methods used in this report and by Fitzgerald differ.

The main findings of Fitzgerald (1988) taken directly from his conclusions for all roads are as follows:

- Over all study stages there has been an increase in mean free speeds of all vehicles. The means change from 96 to 97 to 97 km/h in stages 1, 2 and 3. This increase in mean speeds is statistically significant.

- Overall, the mean free speed for all articulated vehicles increased across the three study stages from 90 to 92 to 94 km/h. This increase is statistically significant. Among the States, statistically significant increases in mean free speeds for articulated vehicles occurred in New South Wales, Victoria, Queensland and South Australia. Tasmania had a decrease which was not statistically significant, while the results for Western Australia and ACT were equivocal, as they did not show a consistent trend over all three surveys.

- Overall, the mean free speeds for cars over all study stages were stable and there were no statistically significant differences between stages (the overall mean free speeds for each stage were 100, 101 and 99 km/h). The only States which had statistically significant changes in mean free speeds for cars were South Australia, Tasmania and ACT. South Australia experienced an increase and Tasmania and ACT a decrease. Mean free speeds of cars for the other States were stable across the study stages.

- The percentage of all vehicles travelling faster than 90 km/h changed from 66% to 69% to 68%. The percentage travelling faster than 100 km/h changed from 37% to 40% to 39%.

- The percentage of articulated vehicles travelling faster than 100 km/h increased in New South Wales, Victoria, Queensland and South Australia (as for mean free speed) but the trend in this measure was equivocal in the other States. The percentage of cars travelling faster than 100 km/h increased marginally in New South Wales, Victoria, Queensland, Western Australia and South Australia.

Fitzgerald further found that the results for two-lane roads alone were similar to the results for all roads. He did not carry out an analysis which grouped sites by car speed limit.

Using a different measure than in this report, Fitzgerald (1988) estimated that the car/articulated truck speed differential for two-lane roads had decreased between the first and third surveys by 1.6 km/h from 9.7 km/h to 8.1 km/h. This decrease was statistically significant.

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