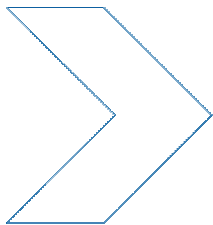


# ➤ Centre for Automotive Safety Research



## Vehicle speeds in South Australia 2008

CN Kloeden, JE Woolley

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## TITLE

Vehicle speeds in South Australia 2008

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## ABSTRACT

A systematic and ongoing method of measuring vehicle speeds was introduced in South Australia in 2007 to assess the effects of speed reduction countermeasures and to monitor the speed behaviour of South Australian motorists over time. Speed data was collected for one week at each of 130 sites in 2007 and 2008. Summary volume and speed statistics and speed distributions are given for each of the road types surveyed in both years (for all vehicles and just free speed vehicles). Changes in speed measurements for each of the road types between 2007 and 2008 were tested for statistical significance. All road types showed reductions in speed measurements from 2007 to 2008 with the exception of 80 km/h Adelaide arterial roads. The average reduction in mean speed across all roads surveyed was 0.76 km/h. Limited historical surveys on a set of roads in built up areas indicated that travelling speeds on those roads fell in 2003 (after the introduction of the default 50 km/h speed limit in March 2003) compared to 2002 and fell again in 2005. However, travelling speeds on those roads increased in 2007 compared to 2005 before falling again in 2008. Analysis of previously collected data for a limited subset of rural roads indicated a similar pattern with speeds generally rising from 2006 to 2007 before falling in 2008.

## KEYWORDS

Vehicle speed, Speed limit, Driver behaviour, Urban road, Rural road, Statistics.

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## Summary

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A systematic and ongoing method of measuring vehicle speeds was introduced in South Australia in 2007 to assess the effects of speed reduction countermeasures and to monitor the speed behaviour of South Australian motorists over time.

Speed data was collected for one week at each of 130 sites in 2007 and 2008. Summary volume and speed statistics and speed distributions are given for each of the road types surveyed in both years (for all vehicles and just free speed vehicles). Changes in speed measurements for each of the road types between 2007 and 2008 were tested for statistical significance.

All road types showed reductions in speed measurements from 2007 to 2008 with the exception of 80 km/h Adelaide arterial roads. The average reduction in mean speed across all roads surveyed was 0.76 km/h.

Limited historical surveys on a set of roads in built up areas indicated that travelling speeds on those roads fell in 2003 (after the introduction of the default 50 km/h speed limit in March 2003) compared to 2002 and fell again in 2005. However, travelling speeds on those roads increased in 2007 compared to 2005 before falling again in 2008.

Analysis of previously collected data for a limited subset of rural roads indicated a similar pattern with speeds generally rising from 2006 to 2007 before falling in 2008.

It is not clear what the reasons for the observed speed changes are although a lower police enforcement tolerance and a large advertising campaign may have played a role in the speed changes on some road types.

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# 1 Introduction

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Speed is an important determinant of crash incidence and outcome and numerous initiatives are being implemented in South Australia with the aim of reducing the speeds of vehicles. A systematic and ongoing method of measuring vehicle speeds in South Australia is required to assess the effects of speed reduction countermeasures and to monitor the speed behaviour of motorists over time.

The Department for Transport, Energy and Infrastructure contracted CASR to identify a selection of sites in South Australia at which speed measurements will be taken at on a yearly basis. The sites selected included sites with historical measurements supplemented by new sites to give a broad range of road types. The first full set of measurements was taken in 2007 and are reported in Kloeden and Woolley (2009).

This Report summarises the data collected at the selected sites in 2008 and compares it with data collected in 2007. Some comparisons are also made with earlier years for sites with older survey data.

## 2 Methodology

### 2.1 Site selection

Table 2.1 lists the origin of the 130 survey sites analysed in this report. The individual site identifiers and survey years are listed in Appendix A.

Table 2.1  
Speed survey sites analysed by road type and survey source

Road type (speed limit)	Auslink site	Harwood site*	Default 50 site	New measured site	Total
Adelaide local (50)			18		18
Adelaide collector (50)			10**		10
Adelaide arterial two way no median (60)			3	3	6
Adelaide arterial two way with median (60)			1	5	6
Adelaide arterial multi-lane no median (60)			2	4	6
Adelaide arterial multi-lane with median (60)			4	5	9
Adelaide arterial (80)				6	6
Rural local (50)		2	12		14
Rural arterial (60)		4			4
Rural hills arterial (80)				4***	4
Rural arterial (100)	4	6			10
Rural arterial (110)	30****	4			34
Outback arterial (110)	1	2			3
<b>Total</b>	<b>35</b>	<b>18</b>	<b>50</b>	<b>27</b>	<b>130</b>

\* named after Colin Harwood who initiated data collection at these sites

\*\* one 2007 site had roundabouts installed in 2008 and so was dropped from analysis

\*\*\* two additional sites were added in 2008 but are not analysed in this report

\*\*\*\* one 2007 site underwent extensive road works in 2008 and so was dropped from analysis

The Auslink sites are DTEI controlled permanent measurement sites that record the speed of all passing vehicles throughout the year with data downloads being performed manually at about 4 weekly intervals. The data for August 2008 was requested for each of the sites and a week of data at each site was selected for analysis. The last week of August was selected except where equipment malfunctions required an earlier week in August to be used. August was chosen as the month that best represents average traffic flows on these roads. One 2007 site underwent major road works in 2008 and had an 80 km/h speed limit in place during August and so had to be excluded from the current analysis.

The Harwood sites represent a selection of sites that DTEI has for some years been conducting speed measurements at for a one week period in August. Note that three of the listed Auslink sites are also Harwood sites and the Auslink data for 2008 was used for analysis. The 2006 and 2007 speed data for all 21 Harwood sites was also obtained for comparison purposes.

The default 50 sites were those used in the evaluation of the introduction of the default 50 km/h speed limit. One of the original 52 sites was dropped as it was found to be a collector road with a 60 km/h speed limit. Another site had roundabouts installed at the intersections with nearby roads during 2008 which changed the speed distributions on that road, so this site was dropped from analysis. These sites were surveyed by a contractor for one day each in 2002, 2003 and 2005 in November or December and this data is used for comparison purposes. These sites were surveyed by a contractor again in 2007 and 2008 for a full week mostly in November or December. Some 2007 and 2008 sites had to be remeasured early in the following year due to equipment malfunctions.

The new measured sites were additional sites surveyed by the same contractor collecting the default 50 data during the same time period in November and December 2007 and 2008. They were selected to bolster the number of sites in the different road types, mainly concentrating on metropolitan arterial roads. The rural hills arterial sites consisted of four sites with 80 km/h speed limits where infrequent DTEI speed measurements were made in the past. An additional two rural hills 80 km/h sites were measured in 2008 but with no previous data there were excluded from analysis in this report.

## 2.2 Data collected

The data was collected in most cases using a standard traffic counter box and tubes that were set up by either a contractor or DTEI personnel. At some sites, in-ground detectors were used for measurements. The following information was recorded for each vehicle that passed during the survey period:

- date
- time (to nearest second)
- direction of travel
- speed (to nearest 0.1 km/h)
- wheelbase (to nearest 0.1 m)
- headway (to nearest 0.1 second)
- gap (to nearest 0.1 second)
- number of axles
- class of vehicle (based on number of axles and wheel bases)

The aim was to capture data at each site for a continuous one week period either in August or November depending on the site.

Due to equipment malfunctions, some of the time periods had to be extended but a full week of data was collected at each of 130 sites in both 2007 and 2008.

Due to limitations of the equipment, multilane arterial roads with medians had their median lanes measured and multilane arterial roads without medians had their kerbside lanes measured.

## 3 Comparing speeds in 2008 with 2007

This Section compares the speeds collected in 2008 with those collected in 2007 on the various road types.

### 3.1 All vehicles

The traffic volume and summary speed statistics for all vehicles passing the measured sites over a one week period in 2007 and 2008 are presented in Tables 3.1 and 3.2 grouped by road type. Changes from 2007 to 2008 are shown in Table 3.3.

Table 3.1  
Traffic volumes and speed statistics by road type in 2007

Road type (speed limit)	Number of sites	Vehicle count	Mean speed (km/h)	Median speed (km/h)	85th percentile speed (km/h)
Adelaide local (50)	18	118,909	45.1	46.3	55.7
Adelaide collector (50)	10	234,509	49.7	50.0	57.3
Adelaide arterial (60)	27	2,766,918	56.5	57.5	62.9
Adelaide arterial (80)	6	657,753	74.8	75.7	82.6
Rural local (50)	14	110,898	51.9	53.6	61.6
Rural arterial (60)	4	72,254	57.6	58.2	64.6
Rural Hills arterial (80)	4	92,616	76.6	76.2	85.4
Rural arterial (100)	10	119,126	92.1	92.7	103.8
Rural arterial (110)	34	342,533	103.3	104.5	114.2
Outback arterial (110)	3	7,174	106.0	107.2	120.3
All Sites	130	4,522,690	63.4	59.5	79.4

Table 3.2  
Traffic volumes and speed statistics by road type in 2008

Road type (speed limit)	Number of sites	Vehicle count	Mean speed (km/h)	Median speed (km/h)	85th percentile speed (km/h)
Adelaide local (50)	18	123,463	44.1	45.5	54.8
Adelaide collector (50)	10	220,392	49.5	49.7	56.8
Adelaide arterial (60)	27	2,730,095	55.7	56.9	62.3
Adelaide arterial (80)	6	677,527	74.3	75.5	82.7
Rural local (50)	14	104,146	50.6	52.7	61.3
Rural arterial (60)	4	68,308	57.3	58.0	64.1
Rural Hills arterial (80)	4	95,977	75.0	74.4	84.4
Rural arterial (100)	10	112,377	90.6	91.0	102.0
Rural arterial (110)	34	330,671	102.8	104.1	113.2
Outback arterial (110)	3	7,130	102.5	104.9	115.9
All Sites	130	4,470,086	62.6	58.9	79.1



Table 3.3  
Changes in traffic volumes and speed statistics from 2007 to 2008 by road type

Road type (speed limit)	Vehicle count (% change)	Mean speed change (km/h)	Median speed change (km/h)	85th percentile speed change (km/h)
Adelaide local (50)	3.8	-1.0	-0.8	-0.9
Adelaide collector (50)	-6.0	-0.2	-0.3	-0.5
Adelaide arterial (60)	-1.3	-0.8	-0.6	-0.6
Adelaide arterial (80)	3.0	-0.5	-0.2	0.1
Rural local (50)	-6.1	-1.2	-0.9	-0.3
Rural arterial (60)	-5.5	-0.3	-0.2	-0.5
Rural Hills arterial (80)	3.6	-1.6	-1.8	-1.0
Rural arterial (100)	-5.7	-1.5	-1.7	-1.8
Rural arterial (110)	-3.5	-0.4	-0.4	-1.0
Outback arterial (110)	-0.6	-3.5	-2.3	-4.4
All Sites	-1.2	-0.7	-0.6	-0.3

All road types showed reductions in mean and median speeds from 2007 to 2008 and all road types except 80 km/h Adelaide arterial roads showed a reduction in 85th percentile speeds.

Figures 3.1-3.4 graphically represent the changes in mean speed on the various road types between 2007 and 2008.

Figure 3.1  
Change in mean speed over time by road type

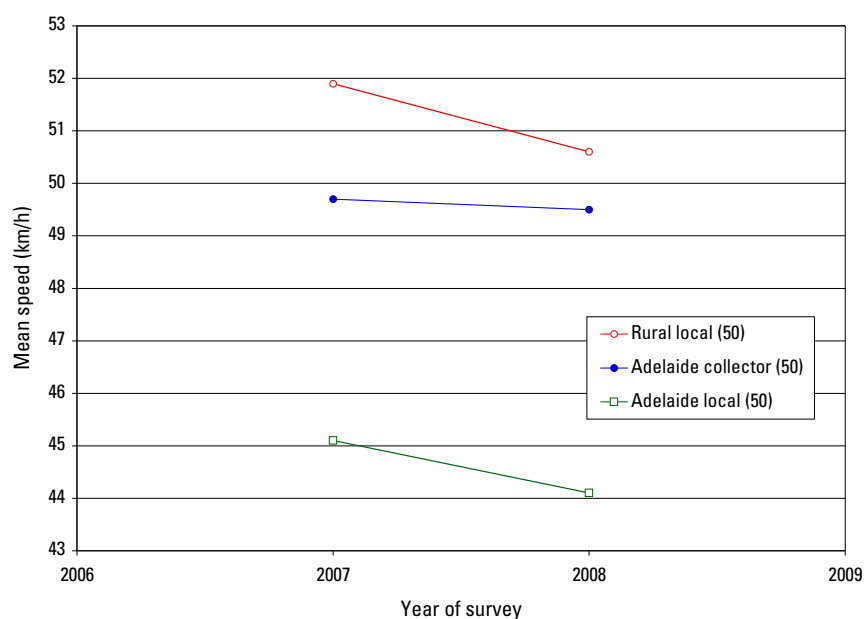


Figure 3.2  
Change in mean speed over time by road type

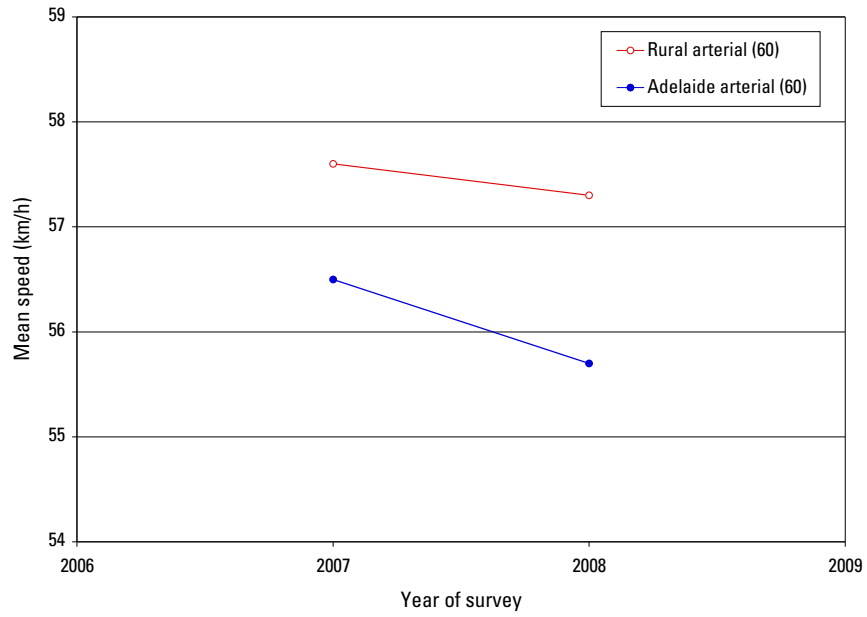


Figure 3.3  
Change in mean speed over time by road type

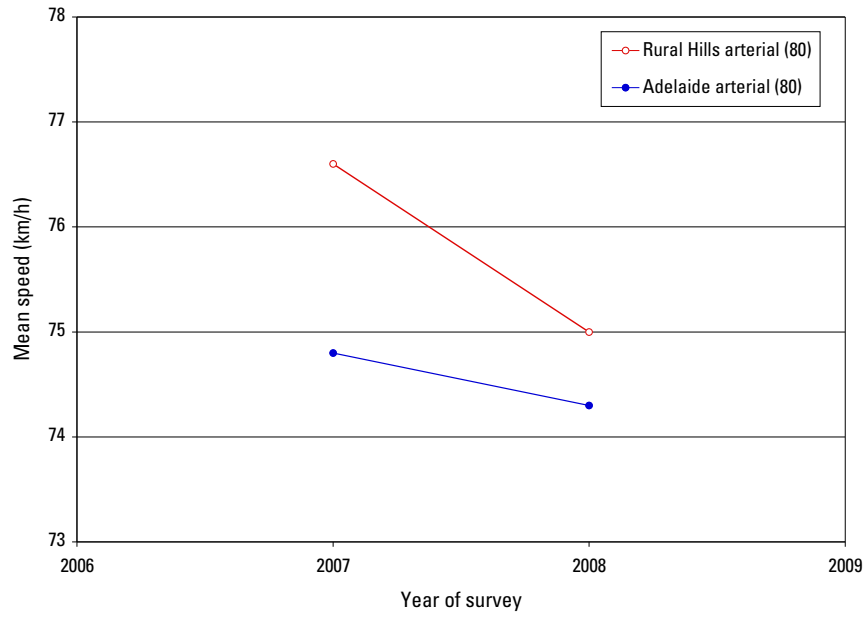
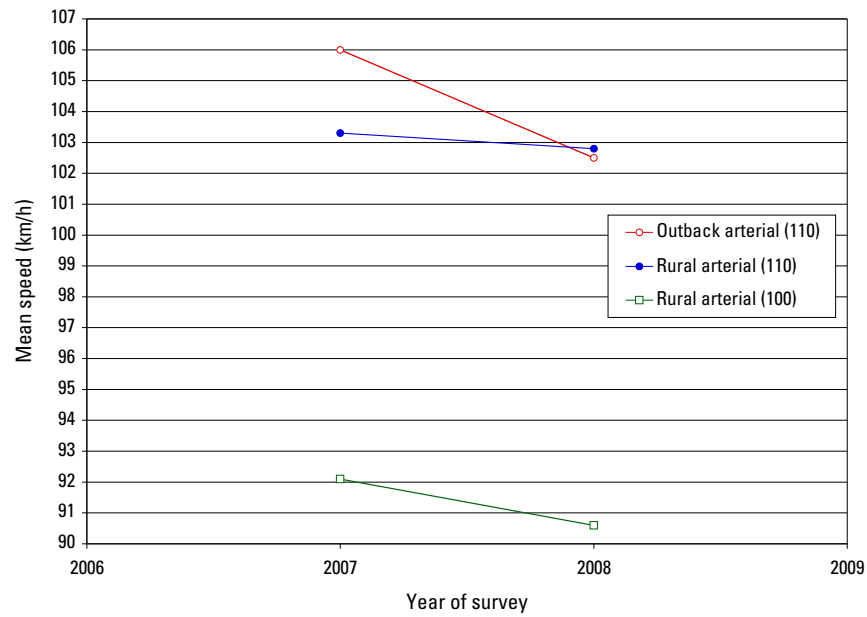


Figure 3.4  
Change in mean speed over time by road type



The percentage of vehicles exceeding various speeds in 2007 and 2008 are presented in Tables 3.4 and 3.5 grouped by road type. Percentage changes in the proportion of vehicles exceeding the stated speeds from 2007 to 2008 are shown in Table 3.6.

Table 3.4  
Percentage of vehicles exceeding stated speed by road type in 2007

Road type (speed limit)	Speed limit	Speed limit + 5 km/h	Speed limit + 10 km/h	Speed limit + 15 km/h	Speed limit + 20 km/h	Speed limit + 25 km/h
Adelaide local (50)	34.49	16.66	6.58	2.44	1.01	0.44
Adelaide collector (50)	49.90	22.71	8.88	3.30	1.27	0.52
Adelaide arterial (60)	31.64	7.76	1.72	0.53	0.21	0.10
Adelaide arterial (80)	26.66	7.89	2.02	0.66	0.28	0.14
Rural local (50)	65.35	43.38	20.75	6.53	1.93	0.68
Rural arterial (60)	37.79	13.63	4.77	1.80	0.68	0.28
Rural Hills arterial (80)	32.21	15.81	7.58	3.79	1.93	1.03
Rural arterial (100)	25.66	12.36	5.64	2.55	1.15	0.56
Rural arterial (110)	29.17	12.59	4.40	1.70	0.77	0.39
Outback arterial (110)	42.50	28.07	15.49	8.43	4.61	2.68
All Sites	32.55	10.44	3.22	1.13	0.46	0.21

Table 3.5  
Percentage of vehicles exceeding stated speed by road type in 2008

Road type (speed limit)	Speed limit	Speed limit + 5 km/h	Speed limit + 10 km/h	Speed limit + 15 km/h	Speed limit + 20 km/h	Speed limit + 25 km/h
Adelaide local (50)	31.23	14.35	5.66	2.18	0.92	0.42
Adelaide collector (50)	47.61	20.60	8.06	2.98	1.23	0.55
Adelaide arterial (60)	27.56	6.12	1.30	0.41	0.17	0.08
Adelaide arterial (80)	26.55	8.08	2.11	0.70	0.30	0.14
Rural local (50)	60.16	40.45	19.71	5.88	1.72	0.57
Rural arterial (60)	35.77	12.14	3.99	1.40	0.58	0.25
Rural Hills arterial (80)	27.11	13.75	6.60	3.20	1.65	0.86
Rural arterial (100)	20.60	9.07	3.98	1.68	0.75	0.33
Rural arterial (110)	26.41	10.14	3.32	1.34	0.63	0.33
Outback arterial (110)	33.80	17.39	7.83	3.86	2.01	1.26
All Sites	29.12	8.80	2.69	0.94	0.39	0.18

Table 3.6  
Percentage change in the proportion of vehicles exceeding stated speed from 2007 to 2008 by road type

Road type (speed limit)	Speed limit	Speed limit + 5 km/h	Speed limit + 10 km/h	Speed limit + 15 km/h	Speed limit + 20 km/h	Speed limit + 25 km/h
Adelaide local (50)	-9.5	-13.9	-13.9	-10.8	-8.6	-5.0
Adelaide collector (50)	-4.6	-9.3	-9.2	-9.7	-3.5	4.8
Adelaide arterial (60)	-12.9	-21.2	-24.3	-21.5	-20.0	-16.3
Adelaide arterial (80)	-0.4	2.5	4.8	5.2	6.2	1.1
Rural local (50)	-7.9	-6.8	-5.0	-9.9	-10.9	-15.6
Rural arterial (60)	-5.3	-10.9	-16.3	-22.4	-15.7	-11.8
Rural Hills arterial (80)	-15.8	-13.0	-12.9	-15.6	-14.5	-16.7
Rural arterial (100)	-19.7	-26.6	-29.5	-34.3	-34.4	-40.7
Rural arterial (110)	-9.5	-19.5	-24.6	-21.1	-18.6	-14.8
Outback arterial (110)	-20.5	-38.1	-49.5	-54.3	-56.5	-52.8
All Sites	-10.5	-15.7	-16.6	-16.8	-15.1	-13.8

All road types except 80 km/h Adelaide arterial roads showed a reductions in the proportion of vehicles exceeding all the stated speeds from 2007 to 2008.

Figures 3.1 - 3.10 present the speed distributions in 2007 and 2008 for the various road types.

Figure 3.5  
Speed distributions for 50 km/h Adelaide local roads

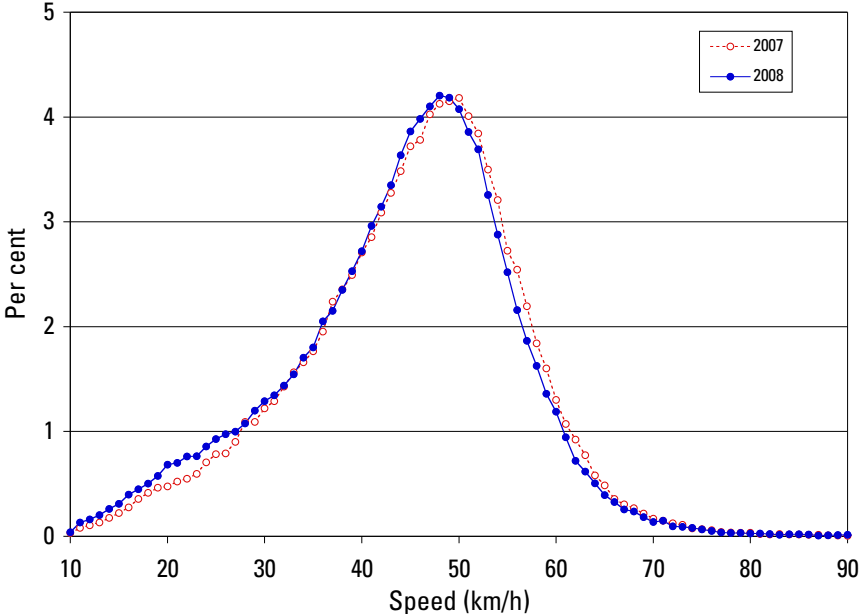


Figure 3.6  
Speed distributions for 50 km/h Adelaide collector roads

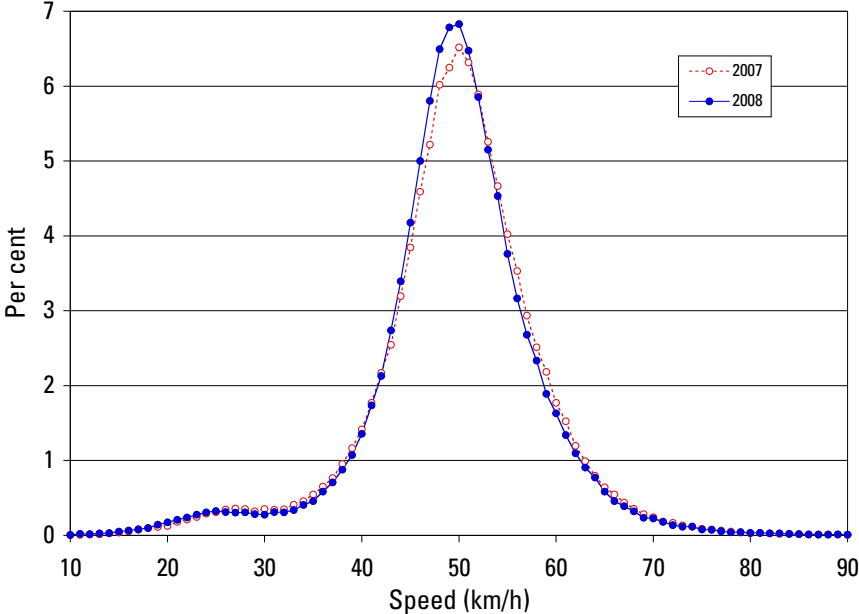


Figure 3.7  
Speed distributions for 60 km/h Adelaide arterial roads

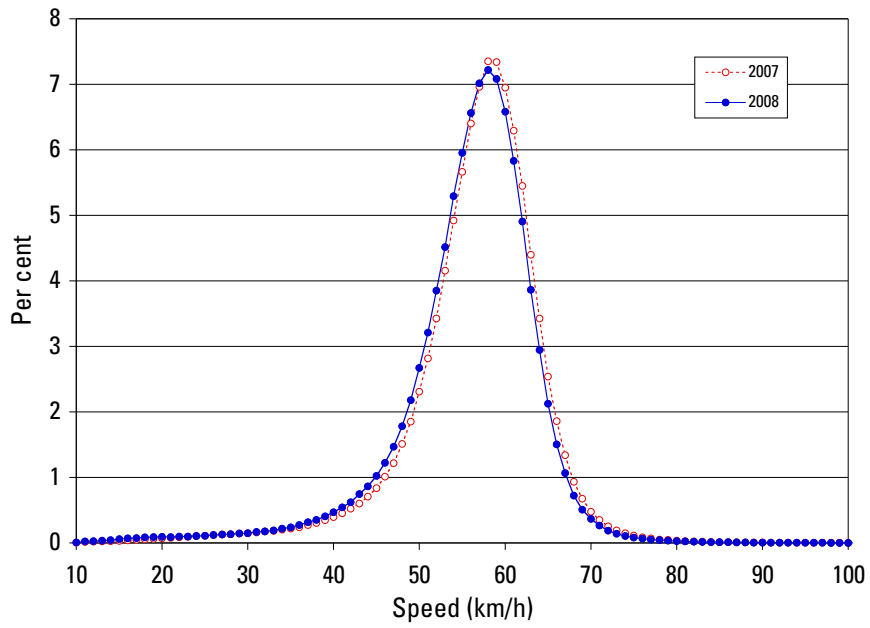


Figure 3.8  
Speed distributions for 80 km/h Adelaide arterial roads

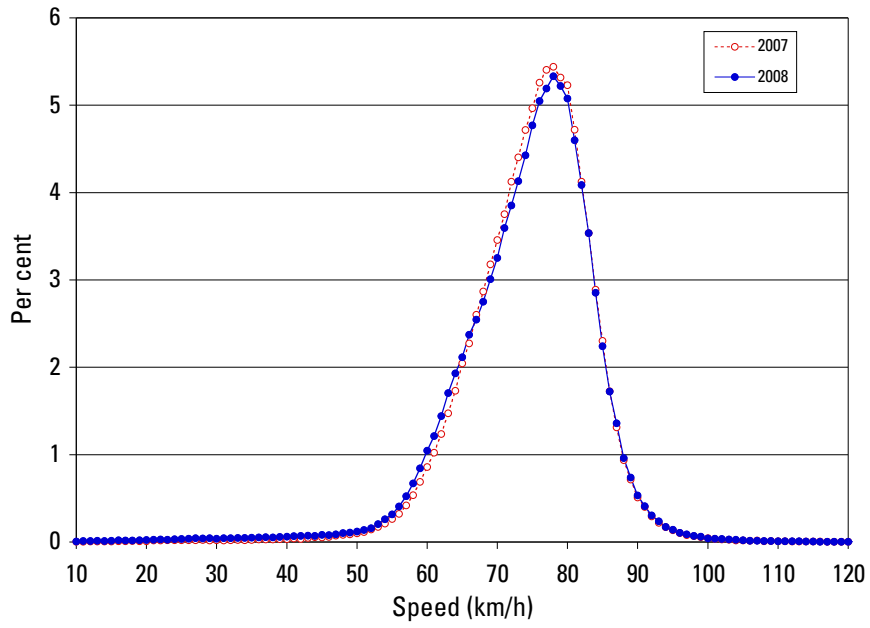


Figure 3.9  
Speed distributions for 50 km/h rural local roads

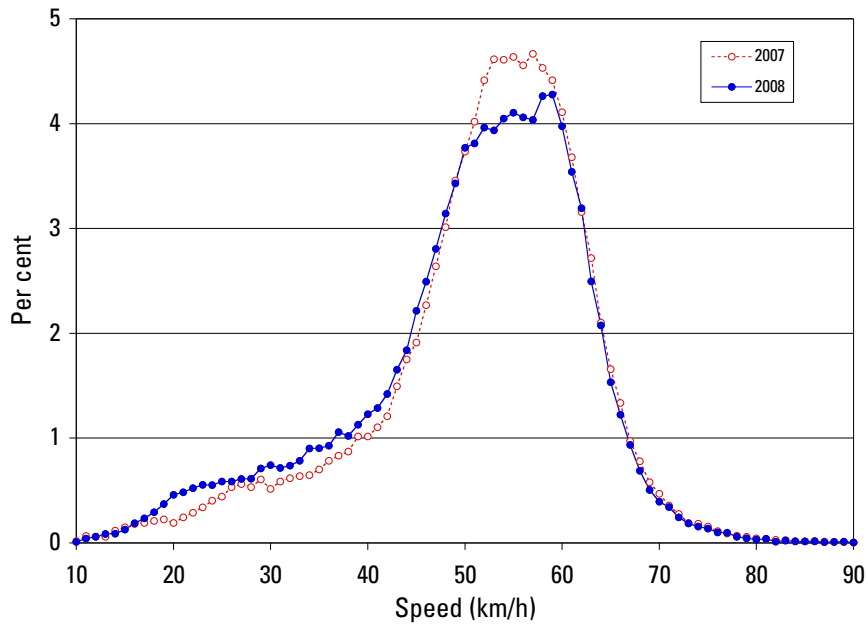


Figure 3.10  
Speed distributions for 60 km/h rural arterial roads

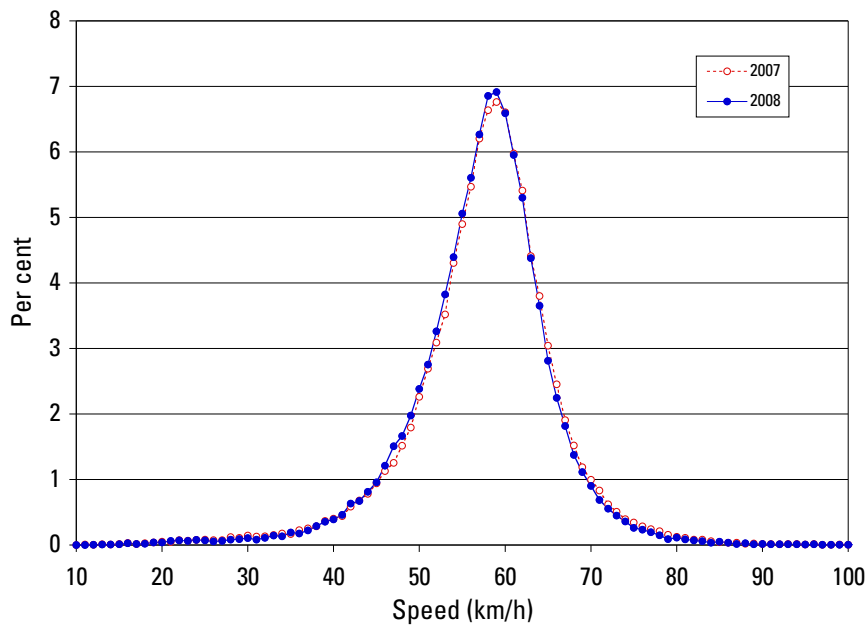


Figure 3.11  
Speed distributions for 80 km/h Adelaide Hills arterial roads

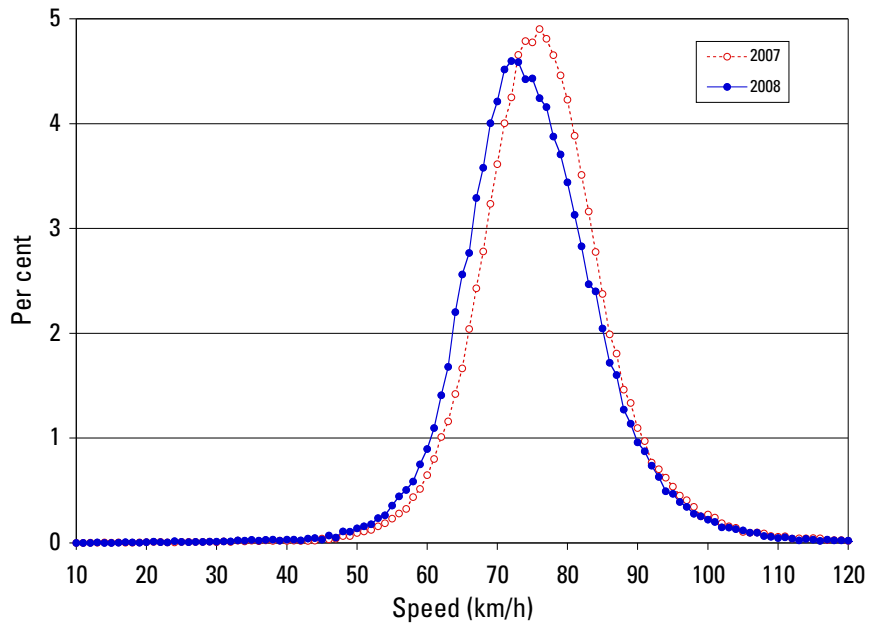


Figure 3.12  
Speed distributions for 100 km/h rural arterial roads

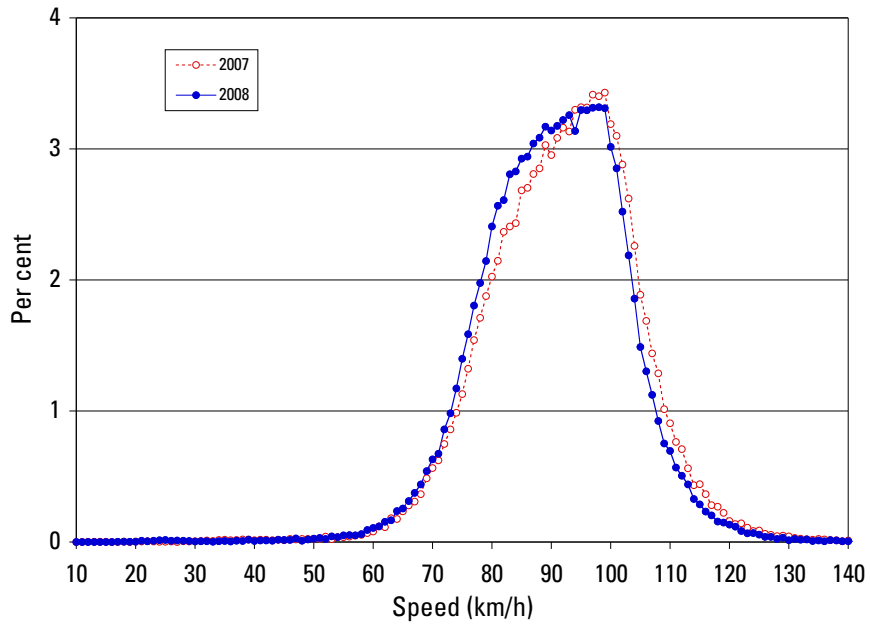




Figure 3.13  
Speed distributions for 110 km/h rural arterial roads

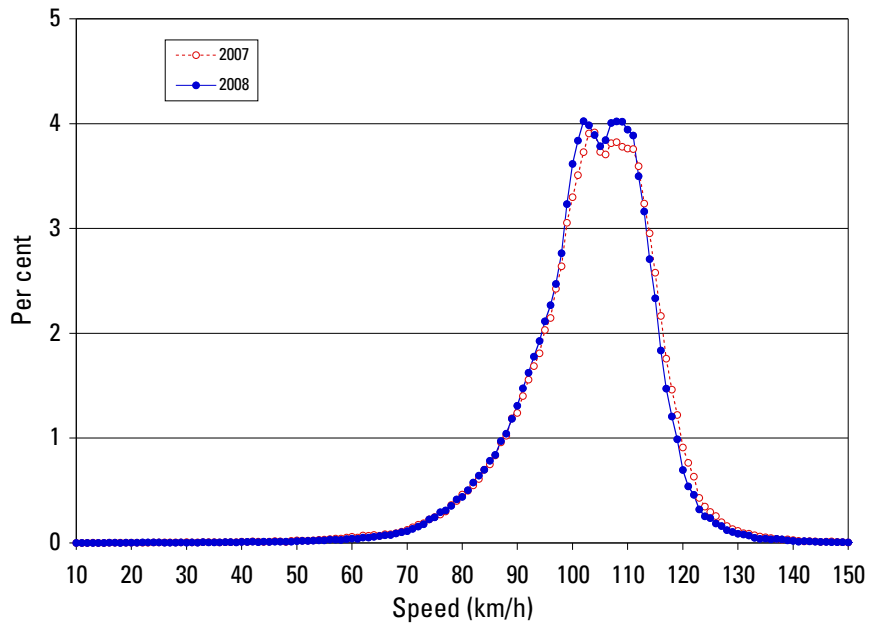
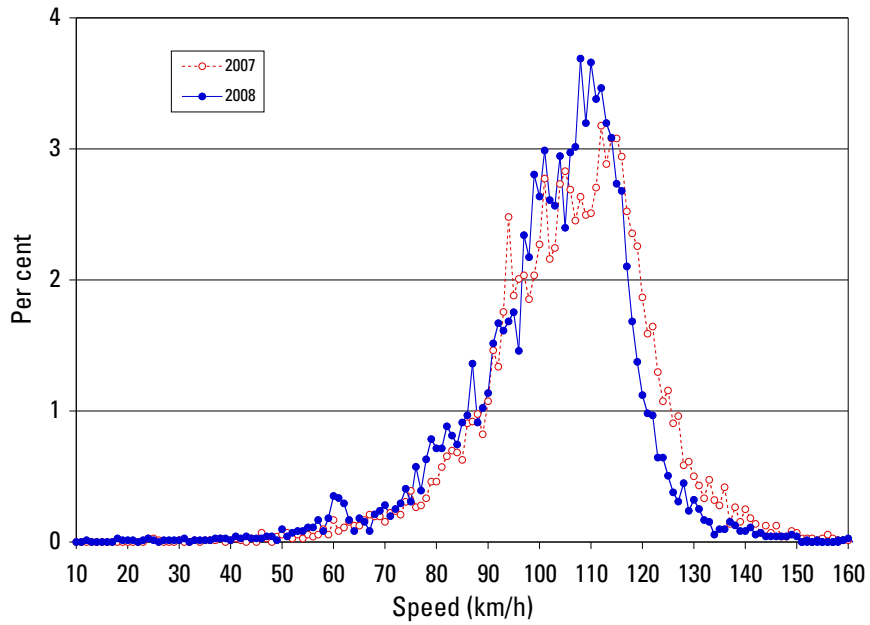


Figure 3.14  
Speed distributions for 110 km/h rural outback roads



It appears that the measured speeds decreased from 2007 to 2008 on almost all of the road types. However, a certain variation in weekly speed measurements is to be expected so it is not clear if the change in speeds can be attributed to an underlying effect or to chance variation in the measurements. In order to test the statistical significance of the change in speed, each site/direction combination was treated as a single measurement with a before and after speed value and the changes in these values over the relevant sites were tested using a matched pair t-test.

As an example, consider the mean speed on Adelaide local roads in 2008 compared to 2007. There were 18 such sites (one of which was a one way street) giving 35 independent collections of speed measurements in each year. Taking the mean speed of each collection in 2007 and 2008 gives 35 pairs of mean speeds and 35 changes in mean speed. If all of the changes were in the same direction, then it would be likely that any overall difference was not the result of chance. If, however, close to half were in one direction and half were in the other direction (by about the same amounts), then the individual changes would likely have been due to chance.

In the particular case under examination, the average change over all 35 pairs was a decrease of 0.76 km/h. The probability of achieving such a result if there were no underlying effect was calculated as being less than 0.05. We can therefore conclude that it is likely that mean speeds on Adelaide local roads went down because of an underlying effect rather than through chance variation and that the average decrease per site was 0.76 km/h.

This method was extended to all road types and traffic volume and speed measures and the average changes are presented in Table 3.7 with the statistically significant results marked.

Table 3.7  
Average changes at sites in 2008 compared to 2007 by road type

Road type (speed limit)	Number of speed collections	Vehicle count	Mean speed	Median speed	85th percentile speed	%exceeding speed limit	%exceeding speed limit by more than 10 km/h
Adelaide local (50)	35	130.11	-0.76*	-0.77*	-0.72*	-2.46*	-0.75
Adelaide collector (50)	20	-705.85*	-0.55	-0.59*	-0.56	-3.65*	-1.51*
Adelaide arterial (60)	54	-681.91*	-0.76*	-0.66*	-0.69*	-3.96*	-0.45*
Adelaide arterial (80)	12	1647.83	0.00	0.09	0.08	0.68	0.10
Rural local (50)	27	-250.07	-1.10*	-0.88*	-0.96*	-3.90*	-1.39*
Rural arterial (60)	8	-493.25*	-0.52	-0.64	-0.99	-3.79	-1.41
Rural Hills arterial (80)	8	420.13	-1.26	-0.95	-1.42	-3.34	-1.13
Rural arterial (100)	20	-337.45*	-1.41*	-1.41*	-1.89*	-4.85*	-3.32*
Rural arterial (110)	68	-174.44*	-0.31	-0.41	-0.78*	-1.87*	-0.93*
Outback arterial (110)	6	-7.33	-3.89*	-3.35*	-3.23	-6.50	-5.25
All of the above roads	258	-203.89*	-0.76*	-0.72*	-0.88*	-3.06*	-1.16*

\*statistically significant ( $p < 0.05$ )

## 3.2 Free speed vehicles

Free speed vehicles were defined as those that had at least a four second headway gap to the vehicle in front of them (ie the time between the front wheels of the two vehicles passing the measurement site was at least four seconds). The drivers of free speed vehicles presumably all make a choice of what speed to travel at unlike the drivers of vehicles in a platoon that are limited to the speed of the front vehicle. By examining just free speed vehicles, freely chosen speeds can be analysed.

Table 3.8 shows the percentage of vehicles on each road type that were travelling at a free speed as defined above in both 2007 and 2008. Not surprisingly the road types with greater traffic flows tended to have a lower proportion of free speed vehicles travelling on them (due to greater traffic congestion). The percentage of free speed vehicles on all road types was similar in 2007 and 2008.

Table 3.8  
Percentage of vehicles travelling at a free speed for each road type in 2007 and 2008

Road type (speed limit)	% free speed 2007	% free speed 2008
Adelaide local (50)	92.7	92.6
Adelaide collector (50)	81.5	82.1
Adelaide arterial (60)	48.5	48.3
Adelaide arterial (80)	40.1	39.0
Rural local (50)	87.5	89.6
Rural arterial (60)	86.3	87.0
Rural Hills arterial (80)	74.6	73.2
Rural arterial (100)	80.2	81.5
Rural arterial (110)	83.6	85.2
Outback arterial (110)	92.6	89.7
All Sites	55.8	55.5

The traffic volume and summary speed statistics for all free speed vehicles passing the measured sites over a one week period in 2007 and 2008 are presented in Tables 3.9 and 3.10 grouped by road type. Changes from 2007 to 2008 are shown in Table 3.11.

**Table 3.9**  
Free speed traffic volumes and speed statistics by road type in 2007

Road type (speed limit)	Number of sites	Vehicle count	Mean speed (km/h)	Median speed (km/h)	85th percentile speed (km/h)
Adelaide local (50)	18	110,237	45.2	46.4	55.8
Adelaide collector (50)	10	191,075	50.0	50.3	57.9
Adelaide arterial (60)	27	1,343,108	57.5	58.4	63.8
Adelaide arterial (80)	6	263,535	76.6	77.2	83.9
Rural local (50)	14	97,027	51.7	53.4	61.7
Rural arterial (60)	4	62,352	57.7	58.4	64.9
Rural Hills arterial (80)	4	69,095	77.7	77.1	86.6
Rural arterial (100)	10	95,500	93.0	93.8	104.6
Rural arterial (110)	34	286,420	103.6	104.9	114.4
Outback arterial (110)	3	6,645	106.1	107.5	120.6
All Sites	130	2,524,994	65.4	60.2	85.9

**Table 3.10**  
Free speed traffic volumes and speed statistics by road type in 2008

Road type (speed limit)	Number of sites	Vehicle count	Mean speed (km/h)	Median speed (km/h)	85th percentile speed (km/h)
Adelaide local (50)	18	114,388	44.2	45.6	55.0
Adelaide collector (50)	10	181,002	49.8	50.0	57.4
Adelaide arterial (60)	27	1,319,573	56.9	57.8	63.2
Adelaide arterial (80)	6	264,048	76.6	77.4	84.1
Rural local (50)	14	93,309	50.4	52.3	61.3
Rural arterial (60)	4	59,440	57.4	58.0	64.3
Rural Hills arterial (80)	4	70,268	76.2	75.6	85.7
Rural arterial (100)	10	91,585	91.5	92.1	102.8
Rural arterial (110)	34	281,785	103.2	104.4	113.4
Outback arterial (110)	3	6,396	102.5	105.2	116.1
All Sites	130	2,481,794	64.9	59.7	85.6

Table 3.11  
Changes in free speed traffic volumes and speed statistics from 2007 to 2008 by road type

Road type (speed limit)	Vehicle count (% change)	Mean speed change (km/h)	Median speed change (km/h)	85th percentile speed change (km/h)
Adelaide local (50)	3.8	-1.0	-0.8	-0.8
Adelaide collector (50)	-5.3	-0.2	-0.3	-0.5
Adelaide arterial (60)	-1.8	-0.6	-0.6	-0.6
Adelaide arterial (80)	0.2	0.0	0.2	0.2
Rural local (50)	-3.8	-1.3	-1.1	-0.4
Rural arterial (60)	-4.7	-0.3	-0.4	-0.6
Rural Hills arterial (80)	1.7	-1.5	-1.5	-0.9
Rural arterial (100)	-4.1	-1.6	-1.7	-1.8
Rural arterial (110)	-1.6	-0.5	-0.5	-1.0
Outback arterial (110)	-3.7	-3.6	-2.3	-4.5
All Sites	-1.7	-0.6	-0.5	-0.3

All road types except 80 km/h Adelaide arterial roads showed reductions in mean and median free speeds from 2007 to 2008.

Figures 3.15-3.18 graphically represent the changes in mean free speed on the various road types between 2007 and 2008.

Figure 3.15  
Change in mean free speed over time by road type

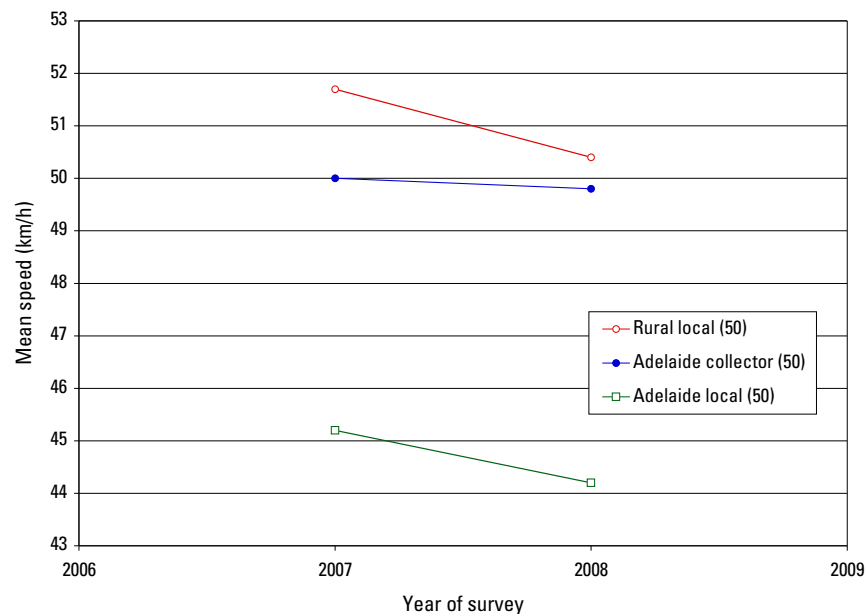


Figure 3.16  
Change in mean free speed over time by road type

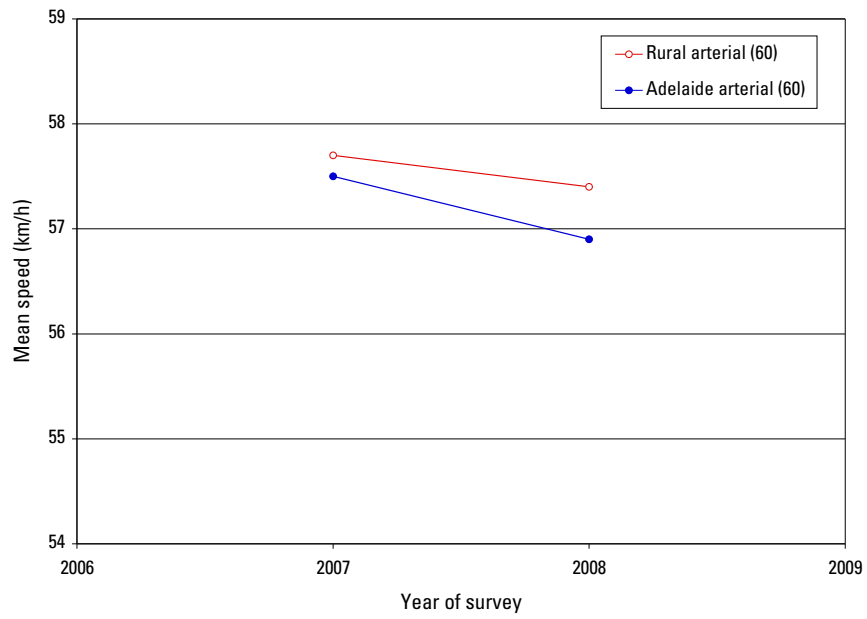


Figure 3.17  
Change in mean free speed over time by road type

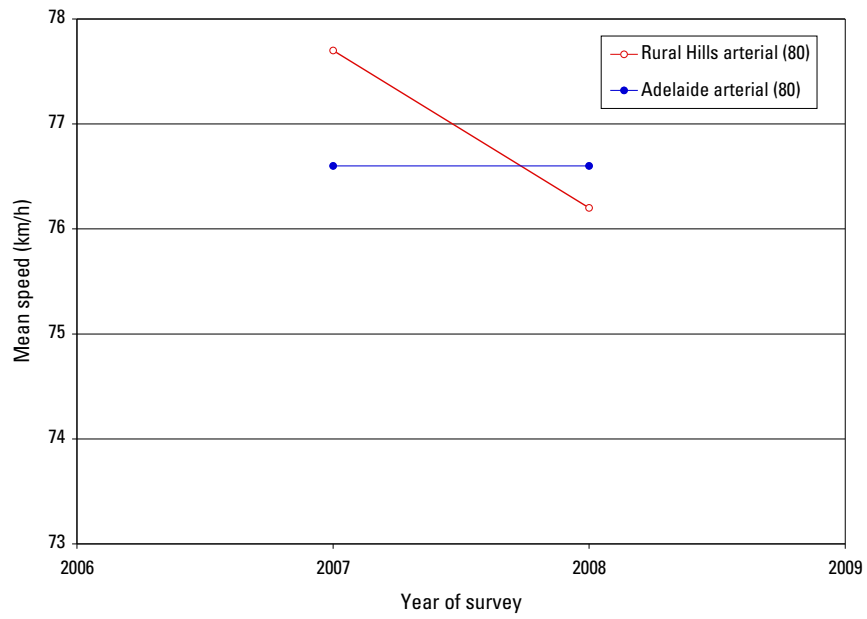
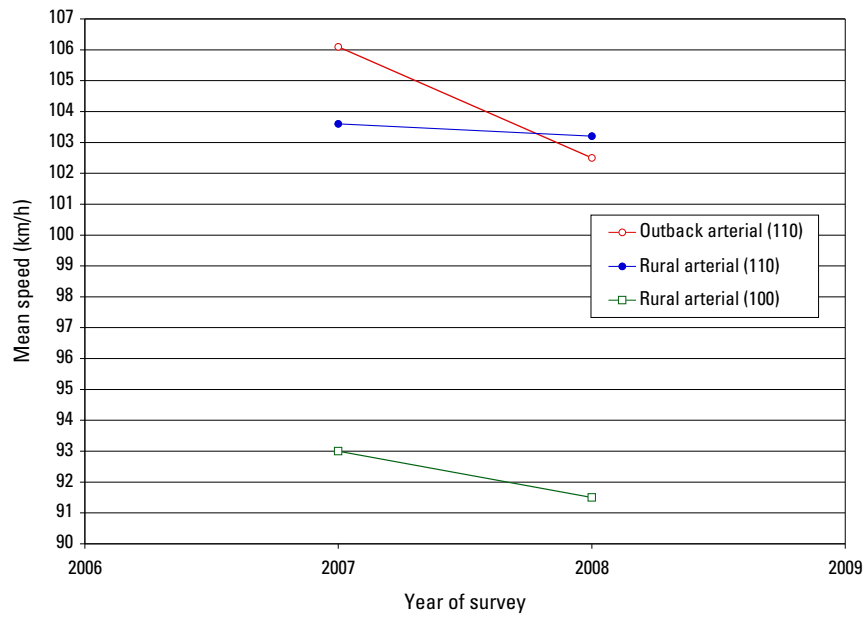


Figure 3.18  
Change in mean free speed over time by road type



The percentage of free speed vehicles exceeding various speeds in 2007 and 2008 are presented in Tables 3.12 and 3.13 grouped by road type. Percentage changes in the proportion of free speed vehicles exceeding the stated speeds from 2007 to 2008 are shown in Table 3.14.

Table 3.12  
Percentage of free speed vehicles exceeding stated speed by road type in 2007

Road type (speed limit)	Speed limit	Speed limit + 5 km/h	Speed limit + 10 km/h	Speed limit + 15 km/h	Speed limit + 20 km/h	Speed limit + 25 km/h
Adelaide local (50)	34.90	17.06	6.83	2.57	1.07	0.47
Adelaide collector (50)	51.75	24.73	10.03	3.81	1.49	0.61
Adelaide arterial (60)	37.33	10.60	2.74	0.91	0.38	0.18
Adelaide arterial (80)	33.31	11.35	3.42	1.27	0.58	0.31
Rural local (50)	64.16	42.51	20.72	6.82	2.09	0.74
Rural arterial (60)	38.80	14.47	5.23	2.03	0.78	0.33
Rural Hills arterial (80)	36.31	18.56	9.18	4.68	2.38	1.28
Rural arterial (100)	28.66	14.10	6.59	3.01	1.37	0.67
Rural arterial (110)	30.22	13.14	4.67	1.84	0.84	0.42
Outback arterial (110)	43.34	28.71	15.83	8.58	4.82	2.83
All Sites	37.82	14.04	4.87	1.80	0.74	0.34

Table 3.13  
Percentage of vehicles exceeding stated speed by road type in 2008

Road type (speed limit)	Speed limit	Speed limit + 5 km/h	Speed limit + 10 km/h	Speed limit + 15 km/h	Speed limit + 20 km/h	Speed limit + 25 km/h
Adelaide local (50)	31.70	14.79	5.91	2.29	0.97	0.44
Adelaide collector (50)	49.62	22.59	9.14	3.46	1.44	0.64
Adelaide arterial (60)	33.47	8.70	2.13	0.73	0.30	0.15
Adelaide arterial (80)	34.20	11.92	3.69	1.37	0.63	0.32
Rural local (50)	59.00	39.28	19.26	5.96	1.82	0.61
Rural arterial (60)	36.40	12.88	4.39	1.57	0.65	0.28
Rural Hills arterial (80)	31.35	16.38	8.06	4.00	2.08	1.09
Rural arterial (100)	23.22	10.43	4.63	1.97	0.89	0.39
Rural arterial (110)	27.29	10.56	3.50	1.44	0.68	0.35
Outback arterial (110)	34.66	18.11	8.18	3.99	2.20	1.38
All Sites	34.53	12.10	4.11	1.51	0.64	0.30

Table 3.14  
Percentage change in the proportion of vehicles exceeding stated speed from 2007 to 2008 by road type

Road type (speed limit)	Speed limit	Speed limit + 5 km/h	Speed limit + 10 km/h	Speed limit + 15 km/h	Speed limit + 20 km/h	Speed limit + 25 km/h
Adelaide local (50)	-9.2	-13.3	-13.4	-10.8	-9.0	-5.3
Adelaide collector (50)	-4.1	-8.7	-8.9	-9.2	-2.9	5.3
Adelaide arterial (60)	-10.4	-17.9	-22.2	-19.9	-19.3	-16.8
Adelaide arterial (80)	2.7	5.0	8.0	7.8	8.1	2.6
Rural local (50)	-8.0	-7.6	-7.0	-12.7	-12.7	-17.0
Rural arterial (60)	-6.2	-11.0	-16.1	-22.6	-16.9	-13.2
Rural Hills arterial (80)	-13.7	-11.7	-12.2	-14.5	-12.3	-14.4
Rural arterial (100)	-19.0	-26.0	-29.7	-34.6	-35.4	-41.3
Rural arterial (110)	-9.7	-19.6	-24.9	-22.1	-19.3	-16.2
Outback arterial (110)	-20.0	-36.9	-48.3	-53.5	-54.2	-51.4
All Sites	-8.7	-13.8	-15.5	-16.1	-14.4	-13.6

All road types except 80 km/h Adelaide arterial roads showed a reductions in the proportion of free speed vehicles exceeding all the stated speeds from 2007 to 2008 (with the exception of Adelaide collector road free speed vehicles exceeding 75 km/h).



Figures 3.19 - 3.28 present the free speed distributions in 2007 and 2008 for the various road types.

Figure 3.19  
Free speed distributions for 50 km/h Adelaide local roads

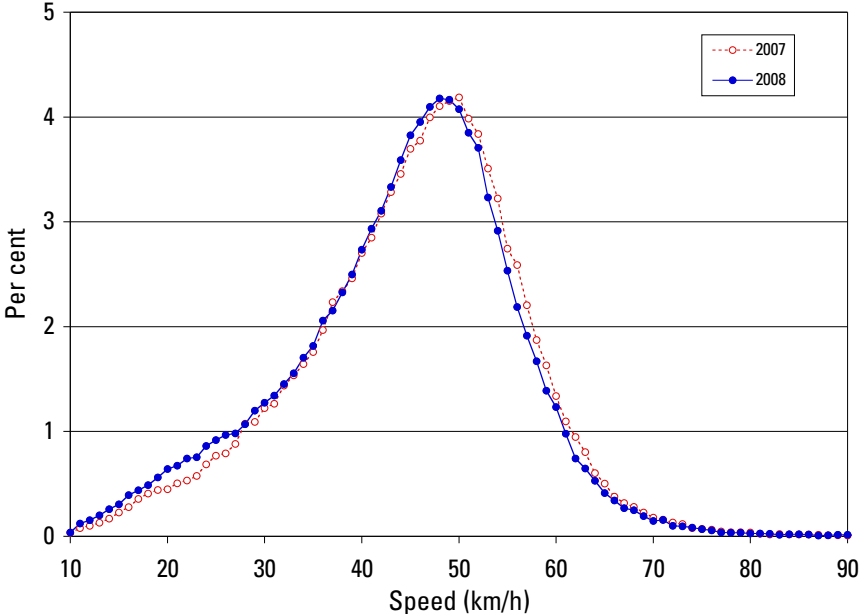


Figure 3.20  
Free speed distributions for 50 km/h Adelaide collector roads

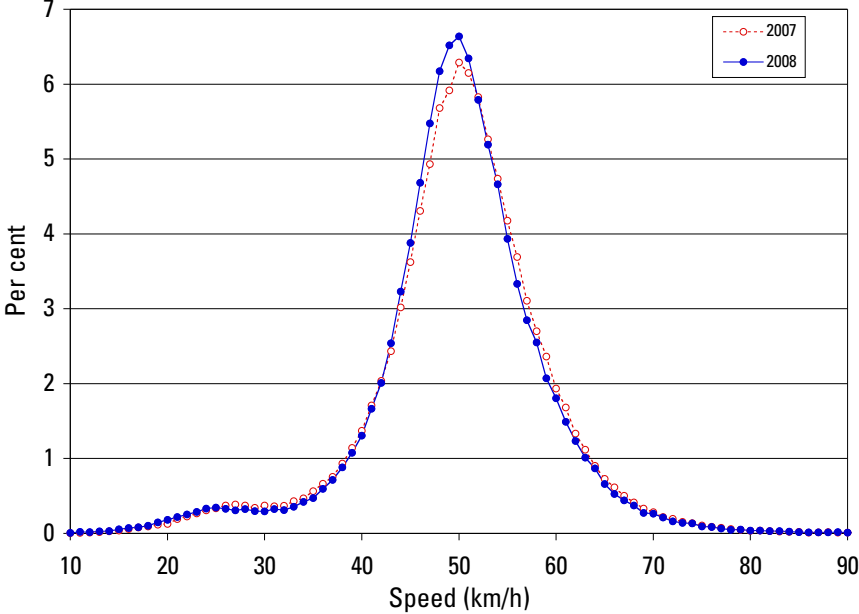


Figure 3.21  
Free speed distributions for 60 km/h Adelaide arterial roads

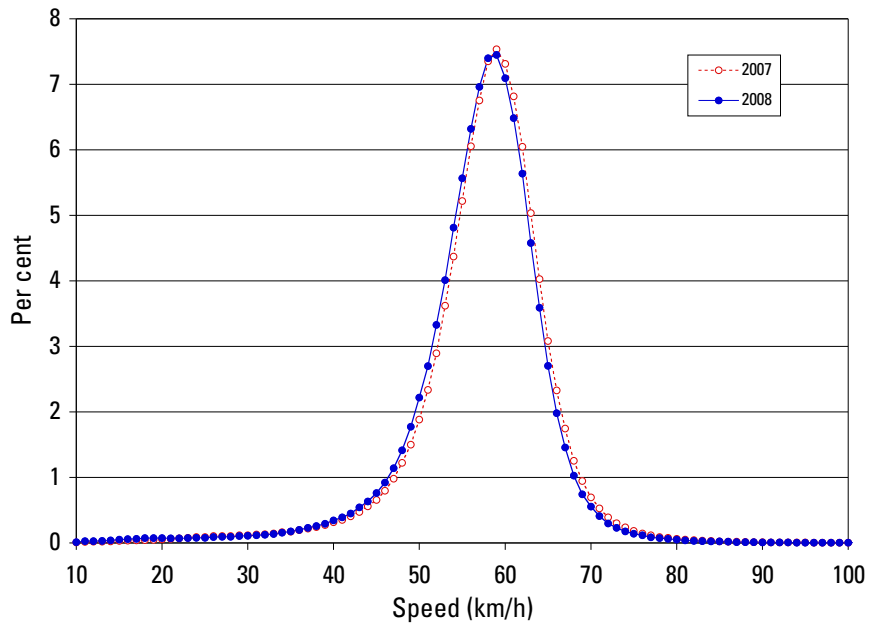


Figure 3.22  
Free speed distributions for 80 km/h Adelaide arterial roads

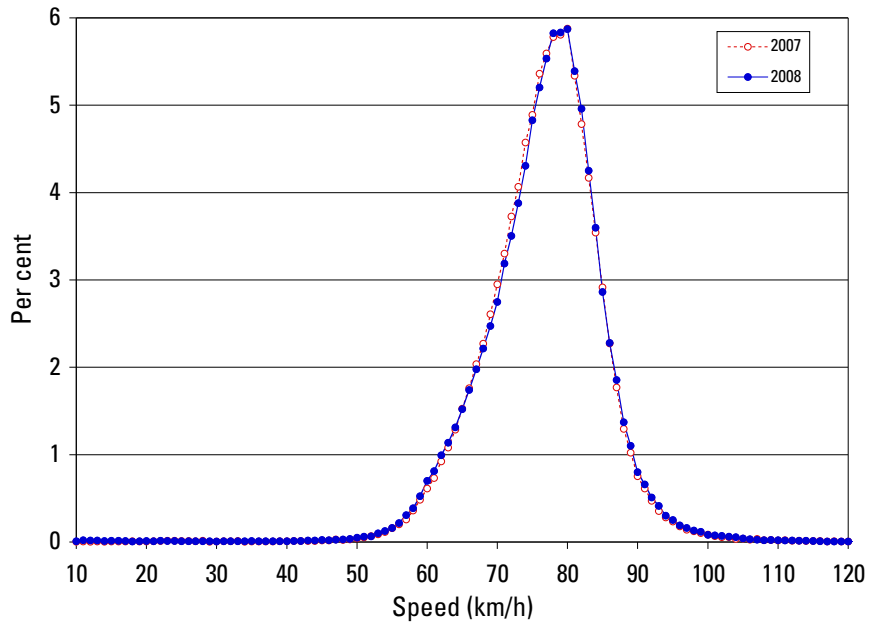


Figure 3.23  
Free speed distributions for 50 km/h rural local roads

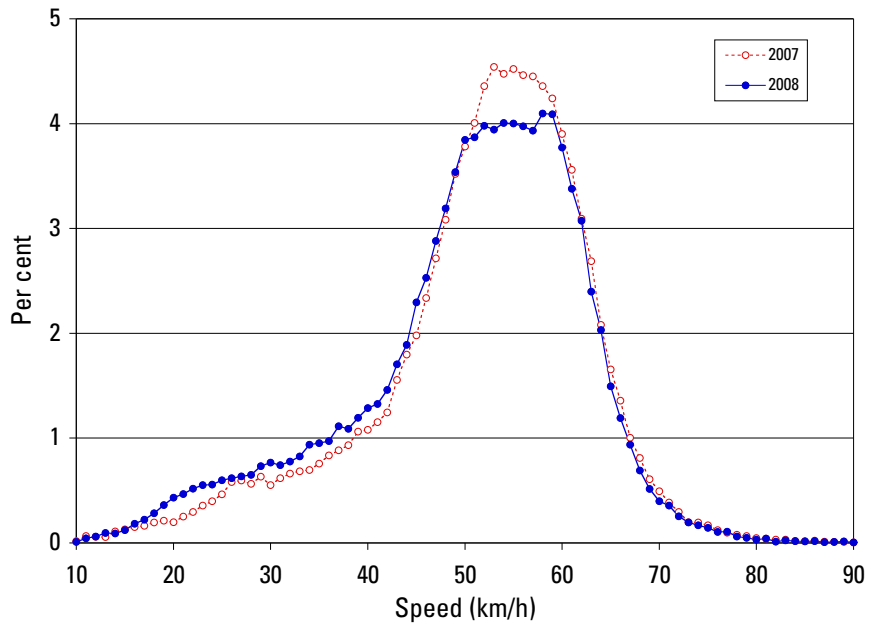


Figure 3.24  
Free speed distributions for 60 km/h rural arterial roads

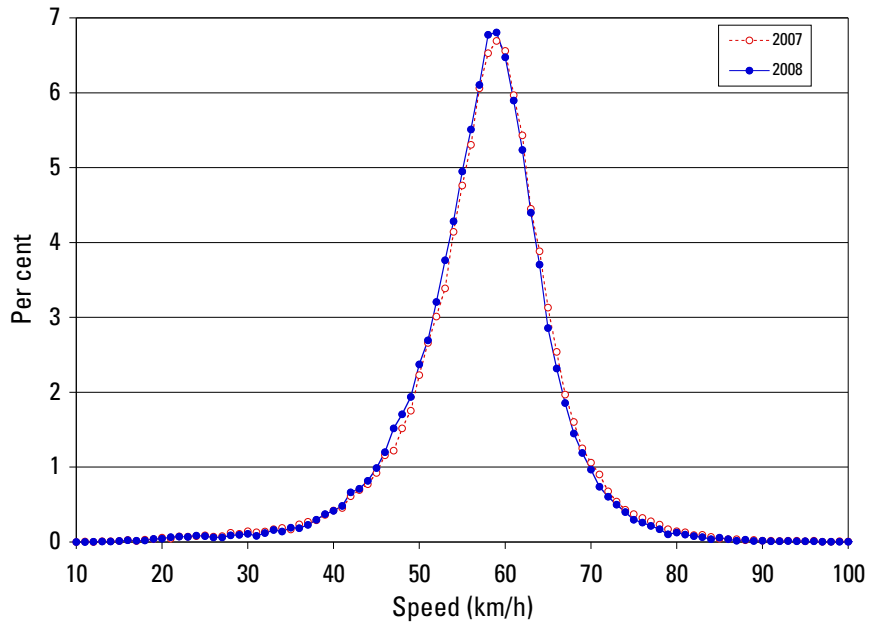


Figure 3.25  
Free speed distributions for 80 km/h Adelaide Hills arterial roads

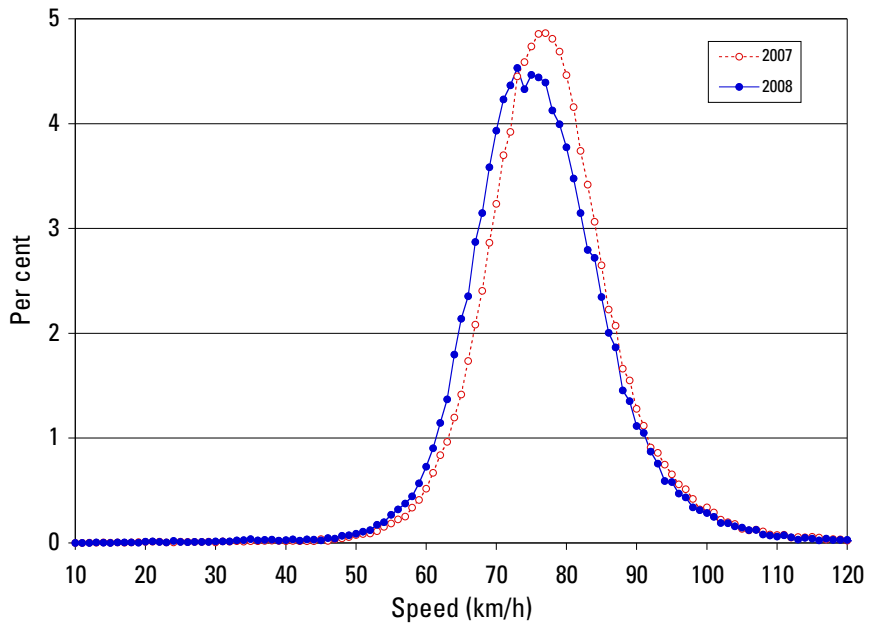


Figure 3.26  
Free speed distributions for 100 km/h rural arterial roads

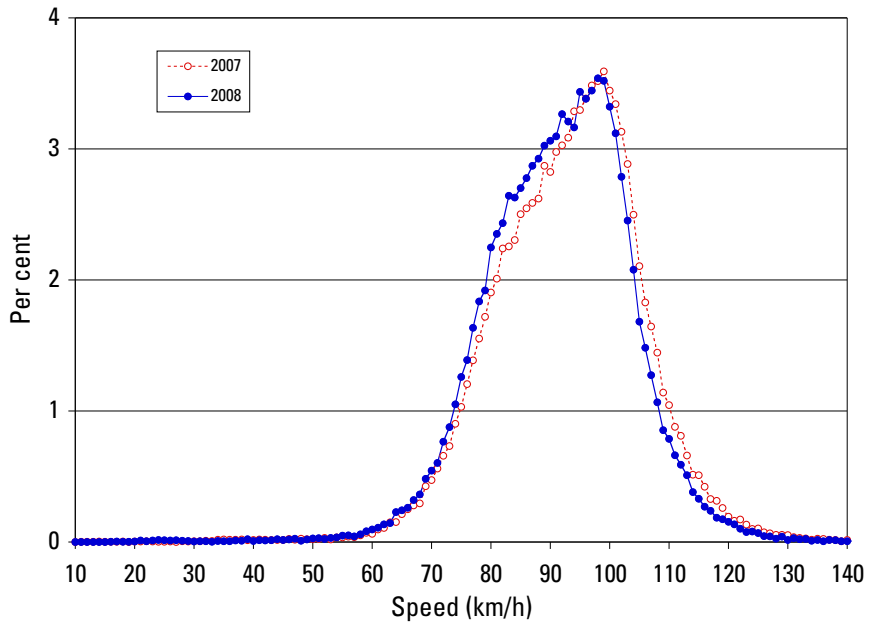


Figure 3.27  
Free speed distributions for 110 km/h rural arterial roads

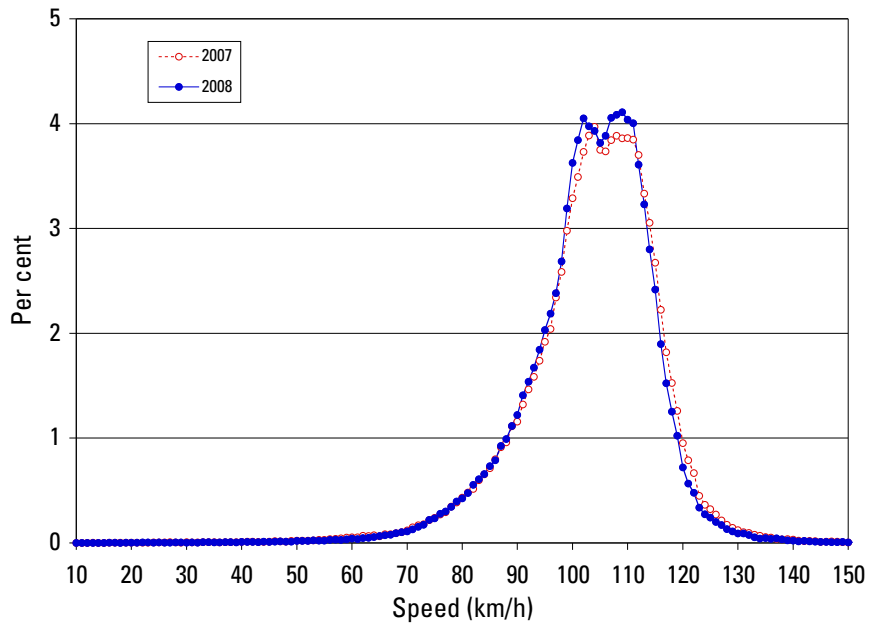
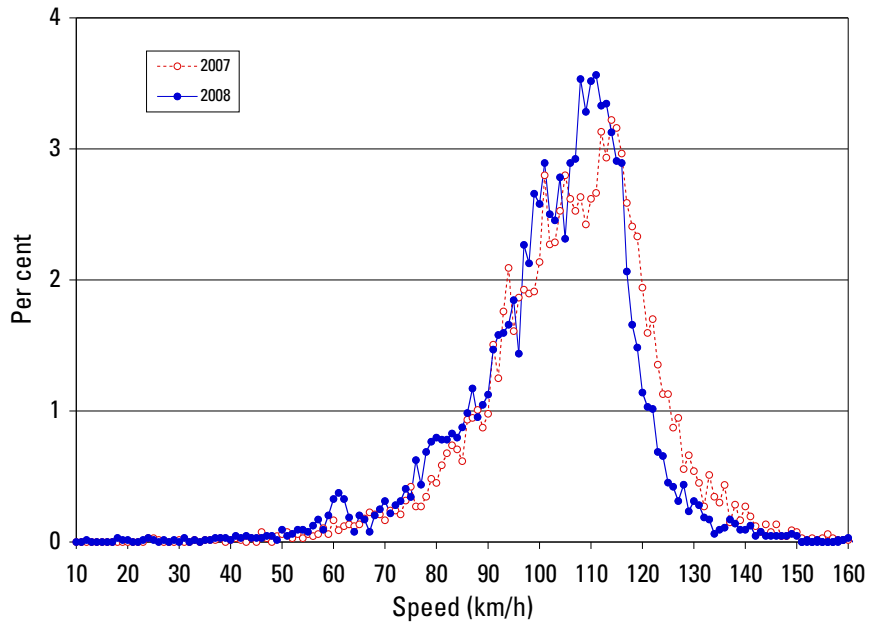


Figure 3.28  
Free speed distributions for 110 km/h rural outback roads



It appears that the measured free speeds decreased from 2007 to 2008 on almost all of the road types. However, a certain variation in weekly speed measurements is to be expected so it is not clear if the change in free speeds can be attributed to an underlying effect or to chance variation in the measurements. In order to test the statistical significance of the change in free speed, each site/direction combination was treated as a single measurement with a before and after speed value and the changes in these values over the relevant sites were tested using a matched pair t-test.

Traffic volume and speed measurement average changes are presented in Table 3.15 with the statistically significant results marked.

**Table 3.15**  
Average changes at sites in 2008 compared to 2007 by road type (free speed vehicles)

Road type (speed limit)	Number of speed collections	Vehicle count	Mean speed	Median speed	85th percentile speed	%exceeding speed limit	%exceeding speed limit by more than 10 km/h
Adelaide local (50)	35	118.60	-0.74*	-0.74*	-0.71*	-2.41*	-0.74
Adelaide collector (50)	20	-503.65*	-0.53	-0.59*	-0.58	-3.62*	-1.56*
Adelaide arterial (60)	54	-435.83*	-0.68*	-0.61*	-0.69*	-4.07*	-0.68*
Adelaide arterial (80)	12	42.75	0.10	0.15	0.23	0.73	0.19
Rural local (50)	27	-137.70	-1.10*	-0.86*	-1.03*	-3.87*	-1.51*
Rural arterial (60)	8	-364.00*	-0.55	-0.70	-1.02	-3.91	-1.42
Rural Hills arterial (80)	8	146.63	-1.24	-0.95	-1.49	-3.59	-1.32
Rural arterial (100)	20	-195.75*	-1.47*	-1.37*	-1.91*	-5.02*	-3.42*
Rural arterial (110)	68	-68.16	-0.35	-0.45	-0.83*	-2.08*	-1.02*
Outback arterial (110)	6	-41.50	-3.87*	-3.30*	-3.18	-6.55	-5.38
All of the above roads	258	-167.44*	-0.75*	-0.71*	-0.90*	-3.15*	-1.26*

\*statistically significant ( $p < 0.05$ )

## 4 Changes in speeds from 2002 to 2008 on roads in built up areas

In 2002, just before the introduction of the default 50 km/h speed limit in built up areas of South Australia, the speeds of vehicles were measured for one day at 52 sites (a week day with a preference for Wednesdays where possible). These measurements were repeated approximately one year later in 2003 and again in 2005 in order to assess the effect of the introduction of the default 50 km/h speed limit on vehicle speeds (Kloeden, Woolley, McLean; 2004, 2006).

Since the current set of 130 surveyed sites includes 50 of these sites it is possible to compare speeds in 2008 with those measured in 2002, 2003, 2005 and 2007. The individual sites are identified in Appendix A.

Since the sites in earlier years were only surveyed for one day of the week, data for that day was taken from each of the 50 relevant sites in 2007 and 2008.

### 4.1 All vehicles

The combined traffic volume and speed statistics by year of survey for each type of road are presented in Tables 4.1 - 4.4. Note that all the 50 km/h roads were zoned at 60 km/h during the 2002 survey. Green numbers indicate a decrease in a speed measurement from the previous survey and red numbers indicate an increase in a speed measurement from the previous survey.

Table 4.1  
Traffic volumes and speed statistics for 50 km/h rural local roads by year of survey (12 sites)

Measurement	Year of survey				
	2002	2003	2005	2007	2008
Traffic count	8,685	9,592	9,730	9,764	9,019
Mean speed	49.93	48.53	46.85	47.79	46.49
Median speed	52.76	50.56	49.10	49.90	49.00
85th percentile speed	63.71	59.62	57.76	58.10	57.30
% exceeding 50 km/h	57.04	52.40	45.87	49.46	44.89
% exceeding 60 km/h	25.85	14.12	9.93	10.51	8.89

Table 4.2  
Traffic volumes and speed statistics for 50 km/h Adelaide local roads by year of survey (18 sites)

Measurement	Year of survey				
	2002	2003	2005	2007	2008
Traffic count	17,663	19,207	18,513	17,667	19,024
Mean speed	47.91	44.78	43.65	45.07	43.73
Median speed	48.97	46.13	45.14	46.50	45.30
85th percentile speed	60.00	55.38	55.02	55.70	54.50
% exceeding 50 km/h	46.22	33.57	31.87	35.01	30.15
% exceeding 60 km/h	14.94	6.52	5.92	6.48	5.40

Table 4.3  
Traffic volumes and speed statistics for 50 km/h Adelaide collector roads by year of survey (10 sites)

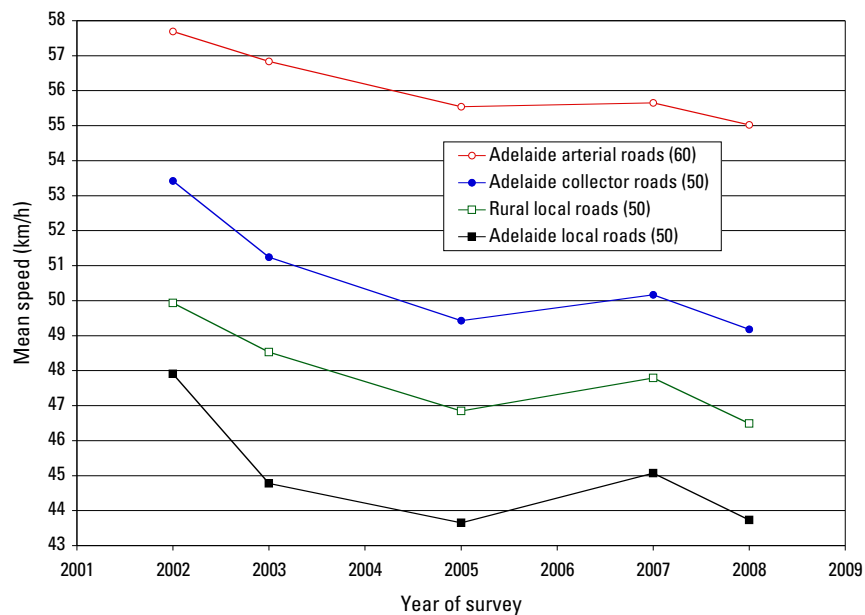
Measurement	Year of survey				
	2002	2003	2005	2007	2008
Traffic count	31249	31645	32242	34111	33834
Mean speed	53.42	51.24	49.43	50.17	49.18
Median speed	54.58	51.18	49.68	50.30	49.50
85th percentile speed	62.40	59.26	56.96	57.40	56.30
% exceeding 50 km/h	69.65	57.21	47.80	51.88	46.17
% exceeding 60 km/h	23.40	13.14	8.31	9.16	7.07

Table 4.4  
Traffic volumes and speed statistics for 60 km/h Adelaide arterial roads by year of survey (10 sites)

Measurement	Year of survey				
	2002	2003	2005	2007	2008
Traffic count	149,135	153,317	153,668	159,821	158,579
Mean speed	57.69	56.84	55.54	55.65	55.02
Median speed	58.86	57.90	56.82	57.20	56.20
85th percentile speed	64.73	63.92	62.46	62.60	61.70
% exceeding 60 km/h	42.34	36.25	28.93	30.16	23.63
% exceeding 70 km/h	4.35	3.45	1.43	1.34	1.00

The change in mean speed over the surveys for each road type is shown graphically in Figure 4.1. Note that all the 50 km/h roads were zoned at 60 km/h during the 2002 survey.

Figure 4.1  
Change in mean speed over time by road type





## 4.2 Free speed vehicles

The combined traffic volume and speed statistics by year of survey for each type of road are presented for free speed vehicles in Tables 4.5 - 4.8. Free speed vehicles were defined as those that had at least a four second headway gap to the vehicle in front of them (ie the time between the front wheels of the two vehicles passing the measurement site was at least four seconds). Note that all the 50 km/h roads were zoned at 60 km/h during the 2002 survey. Green numbers indicate a decrease in a speed measurement from the previous survey and red numbers indicate an increase in a speed measurement from the previous survey.

Table 4.5  
Free speed traffic volumes and speed statistics for 50 km/h rural local roads by year of survey (12 sites)

Measurement	Year of survey				
	2002	2003	2005	2007	2008
Traffic count	8,073	8,533	9,136	8,983	8,425
Mean speed	49.68	48.51	47.00	47.87	46.69
Median speed	52.72	50.47	49.19	49.90	49.10
85th percentile speed	63.73	59.85	57.94	58.30	57.50
% exceeding 50 km/h	56.78	52.02	46.29	49.39	45.40
% exceeding 60 km/h	25.98	14.67	10.27	10.95	9.25

Table 4.6  
Free speed traffic volumes and speed statistics for 50 km/h Adelaide local roads by year of survey (18 sites)

Measurement	Year of survey				
	2002	2003	2005	2007	2008
Traffic count	16,512	17,530	17,440	16,411	17,576
Mean speed	47.91	44.84	43.82	45.22	43.87
Median speed	48.97	46.15	45.21	46.60	45.40
85th percentile speed	60.50	55.54	55.16	55.90	54.80
% exceeding 50 km/h	46.33	33.98	32.20	35.39	30.65
% exceeding 60 km/h	15.06	6.71	6.18	6.74	5.67

Table 4.7  
Free speed traffic volumes and speed statistics for 50 km/h Adelaide collector roads by year of survey (10 sites)

Measurement	Year of survey				
	2002	2003	2005	2007	2008
Traffic count	26,380	25,756	27,387	27,807	27,576
Mean speed	53.52	51.50	49.73	50.39	49.49
Median speed	54.73	51.43	49.96	50.60	49.80
85th percentile speed	62.80	59.80	57.52	58.00	56.90
% exceeding 50 km/h	69.66	58.49	49.72	53.47	48.33
% exceeding 60 km/h	24.79	14.42	9.30	10.27	8.10

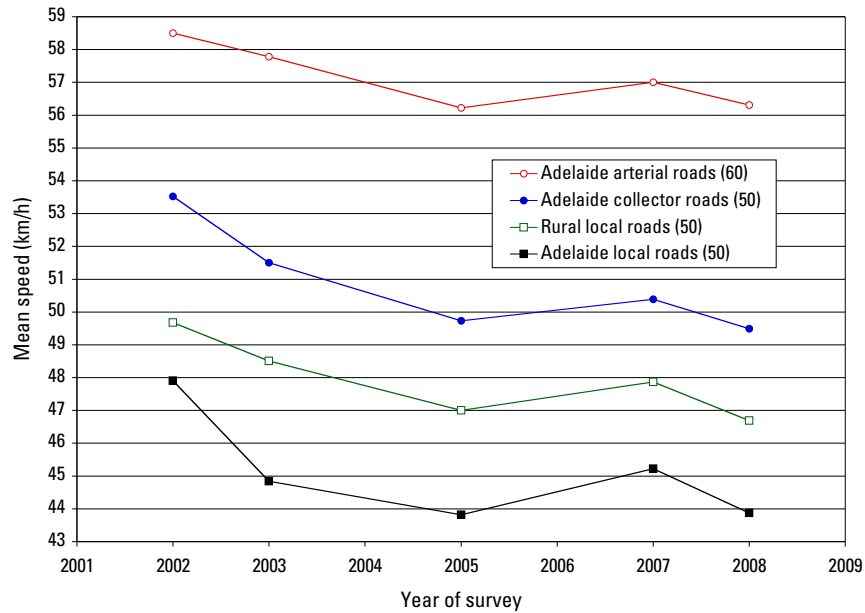
Table 4.8

Free speed traffic volumes and speed statistics for 60 km/h Adelaide arterial roads by year of survey (10 sites)

Measurement	Year of survey				
	2002	2003	2005	2007	2008
Traffic count	73,830	73,684	74,077	68,848	68,264
Mean speed	58.50	57.78	56.22	57.00	56.31
Median speed	59.46	58.60	57.45	58.20	57.20
85th percentile speed	65.61	64.83	63.27	63.60	62.60
% exceeding 60 km/h	46.34	40.81	33.09	36.24	29.56
% exceeding 70 km/h	6.11	4.91	2.39	2.40	1.74

The change in mean free speed over the surveys for each road type is shown graphically in Figure 4.2. Note that all the 50 km/h roads were zoned at 60 km/h during the 2002 survey.

Figure 4.2  
Change in mean free speed over time by road type



## 5 Changes in speeds from 2006 to 2008 on rural roads

The Harwood sites represent a selection of rural sites that DTEI has for some years been conducting speed measurements at for a one week period in August (named after the initiator of the surveys, Colin Harwood). The 2008 speed data for all 21 Harwood sites was compared with 2006 and 2007 speed data. The individual sites are identified in Appendix A.

### 5.1 All vehicles

The combined traffic volume and speed statistics by year of survey for each type of road are presented in Tables 5.1 - 5.5. Green numbers indicate a decrease in a speed measurement from the previous survey and red numbers indicate an increase in a speed measurement from the previous survey.

Table 5.1  
Traffic volumes and speed statistics for rural local roads by year of survey  
(50 km/h speed limit - 2 sites)

Measurement	Year of survey		
	2006	2007	2008
Traffic count	45,636	46,187	43,120
Mean speed	57.27	57.52	56.83
Median speed	59.00	58.00	58.10
85th percentile speed	65.00	63.70	63.70
% exceeding 50 km/h	83.28	87.48	84.07
% exceeding 60 km/h	43.08	35.17	36.07

Table 5.2  
Traffic volumes and speed statistics for rural arterial roads by year of survey  
(60 km/h speed limit - 4 sites)

Measurement	Year of survey		
	2006	2007	2008
Traffic count	69,852	72,254	68,308
Mean speed	57.14	57.60	57.34
Median speed	57.80	58.20	58.00
85th percentile speed	64.60	64.60	64.10
% exceeding 60 km/h	36.72	37.79	35.77
% exceeding 70 km/h	4.45	4.77	3.99

Table 5.3  
Traffic volumes and speed statistics for rural arterial roads by year of survey  
(100 km/h speed limit - 6 sites)

Measurement	Year of survey		
	2006	2007	2008
Traffic count	49,922	52,594	49,792
Mean speed	91.66	91.60	89.93
Median speed	91.90	92.00	90.10
85th percentile speed	104.70	104.80	102.30
% exceeding 100 km/h	26.01	26.47	20.49
% exceeding 110 km/h	7.53	7.50	4.71

Table 5.4  
Traffic volumes and speed statistics for rural arterial roads by year of survey  
(110 km/h speed limit - 6 sites)

Measurement	Year of survey		
	2006	2007	2008
Traffic count	50,571	50,402	49,524
Mean speed	102.01	102.13	102.00
Median speed	102.90	103.00	102.90
85th percentile speed	112.40	112.00	111.60
% exceeding 110 km/h	22.53	21.27	20.37
% exceeding 120 km/h	3.20	2.86	2.54

Table 5.5  
Traffic volumes and speed statistics for outback arterial roads by year of survey  
(110 km/h speed limit - 3 sites)

Measurement	Year of survey		
	2006	2007	2008
Traffic count	6,280	7,174	7,130
Mean speed	105.24	105.97	102.46
Median speed	106.70	107.20	104.90
85th percentile speed	119.50	120.30	115.90
% exceeding 110 km/h	40.86	42.50	33.80
% exceeding 120 km/h	14.25	15.49	7.83

The changes in mean speeds between 2006 and 2008 for each road type are shown graphically in Figures 5.1 and 5.2.

Figure 5.1  
Change in mean speeds over time by rural road type (low speed limit roads)

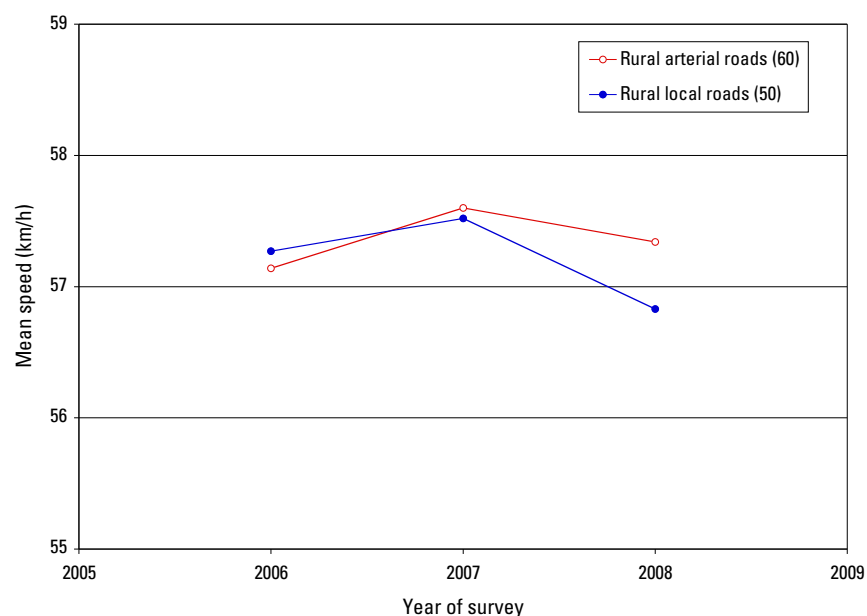
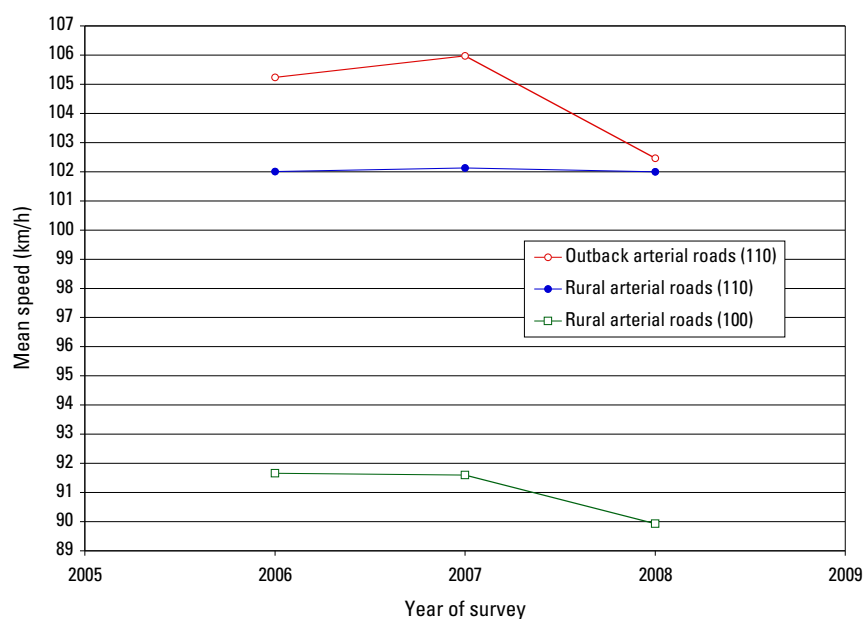


Figure 5.2  
Change in mean speeds over time by rural road type (high speed limit roads)



## 5.2 Free speed vehicles

The combined traffic volume and speed statistics by year of survey for each type of road are presented in Tables 5.1 - 5.5. Green numbers indicate a decrease in a speed measurement from the previous survey and red numbers indicate an increase in a speed measurement from the previous survey.

The combined traffic volume and speed statistics by year of survey for each type of road are presented for free speed vehicles in Tables 5.6 - 5.10. Free speed vehicles were defined as those that had at least a four second headway gap to the vehicle in front of them (ie the time between the front wheels of the two vehicles passing the measurement site was at least four seconds). Green numbers indicate a decrease in a speed measurement from the previous survey and red numbers indicate an increase in a speed measurement from the previous survey.

Table 5.6  
Free speed traffic volumes and speed statistics for rural local roads by year of survey  
(50 km/h speed limit - 2 sites)

Measurement	Year of survey		
	2006	2007	2008
Traffic count	37558	37961	36441
Mean speed	57.33	57.55	56.69
Median speed	59.00	58.00	58.10
85th percentile speed	65.20	63.90	63.80
% exceeding 50 km/h	82.73	86.78	82.91
% exceeding 60 km/h	43.18	35.92	36.12

Table 5.7  
Free speed traffic volumes and speed statistics for rural arterial roads by year of survey  
(60 km/h speed limit - 4 sites)

Measurement	Year of survey		
	2006	2007	2008
Traffic count	60600	62352	59440
Mean speed	57.18	57.74	57.41
Median speed	57.80	58.40	58.00
85th percentile speed	64.80	64.90	64.30
% exceeding 60 km/h	36.95	38.80	36.40
% exceeding 70 km/h	4.80	5.23	4.39

Table 5.8  
Free speed traffic volumes and speed statistics for rural arterial roads by year of survey  
(100 km/h speed limit - 6 sites)

Measurement	Year of survey		
	2006	2007	2008
Traffic count	41978	43595	41974
Mean speed	92.66	92.70	90.89
Median speed	93.00	93.20	91.40
85th percentile speed	105.60	105.80	103.20
% exceeding 100 km/h	28.63	29.20	22.80
% exceeding 110 km/h	8.50	8.60	5.37

Table 5.9  
Free speed traffic volumes and speed statistics for rural arterial roads by year of survey  
(110 km/h speed limit - 6 sites)

Measurement	Year of survey		
	2006	2007	2008
Traffic count	42289	42276	41759
Mean speed	102.64	102.80	102.67
Median speed	103.60	103.60	103.60
85th percentile speed	112.90	112.60	112.00
% exceeding 110 km/h	24.62	23.34	22.41
% exceeding 120 km/h	3.53	3.24	2.86

Table 5.10  
Free speed traffic volumes and speed statistics for outback arterial roads by year of survey  
(110 km/h speed limit - 3 sites)

Measurement	Year of survey		
	2006	2007	2008
Traffic count	6037	6645	6396
Mean speed	105.26	106.11	102.51
Median speed	106.90	107.50	105.20
85th percentile speed	119.60	120.60	116.10
% exceeding 110 km/h	41.11	43.34	34.66
% exceeding 120 km/h	14.44	15.83	8.18

The changes in mean free speeds between 2006 and 2008 for each road type are shown graphically in Figures 5.3 and 5.4.

Figure 5.3  
Change in mean free speeds over time by rural road type (low speed limit roads)

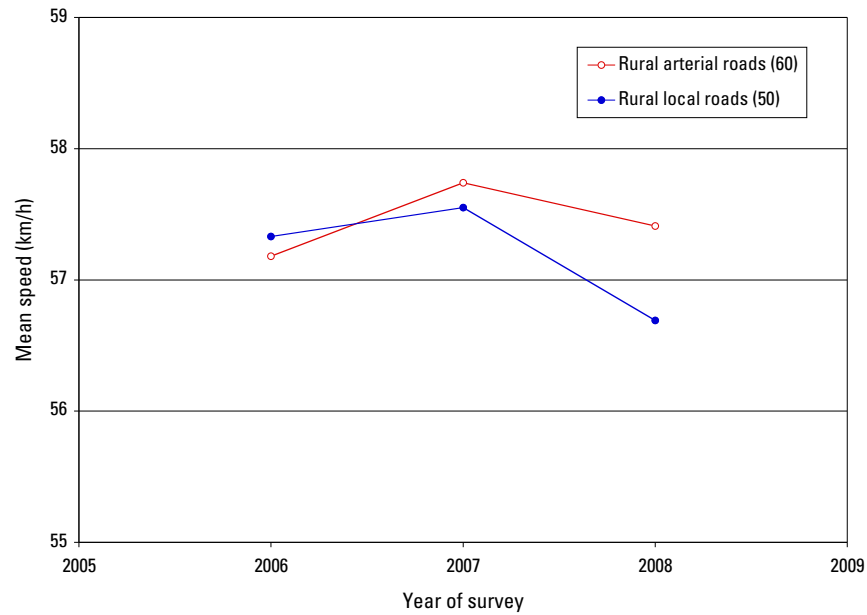
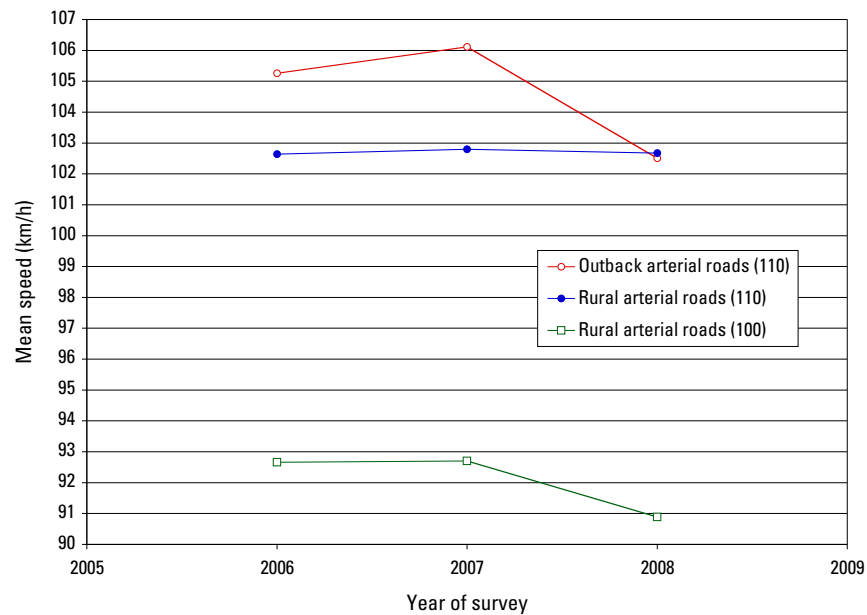


Figure 5.4  
Change in mean free speeds over time by rural road type (high speed limit roads)



## 6 Discussion

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### 6.1 Changes in speed

The average changes from 2007 and 2008 across all 130 sites surveyed were:

- a statistically significant reduction of 0.76 km/h in mean speed
- a statistically significant reduction of 0.72 km/h in the 85th percentile speed
- a statistically significant reduction in the proportion of vehicles exceeding the speed limit

Historically, speeds appear to have generally increased in 2007 and generally decreased in 2008.

However, different results were found among the various road types as detailed below.

#### 50 km/h Adelaide local roads

The average changes from 2007 and 2008 across the 18 sites surveyed were:

- a statistically significant reduction of 0.76 km/h in mean speed
- a statistically significant reduction of 0.77 km/h in the 85th percentile speed
- a statistically significant reduction in the proportion of vehicles exceeding the speed limit

Historically, speeds came down after the introduction of the default 50 limit in 2003, went up in 2007 and came down again in 2008.

#### 50 km/h Adelaide collector roads

The average changes from 2007 and 2008 across the 10 sites surveyed were:

- a reduction of 0.55 km/h in mean speed (not statistically significant)
- a reduction of 0.56 km/h in the 85th percentile speed (not statistically significant)
- a statistically significant reduction in the proportion of vehicles exceeding the speed limit

Historically, speeds came down after the introduction of the default 50 limit in 2003, went up in 2007 and came down again in 2008.

#### 60 km/h Adelaide arterial roads

The average changes from 2007 and 2008 across the 27 sites surveyed were:

- a statistically significant reduction of 0.76 km/h in mean speed
- a statistically significant reduction of 0.69 km/h in the 85th percentile speed
- a statistically significant reduction in the proportion of vehicles exceeding the speed limit

Historically, speeds came down after the introduction of default 50 limit in 2003, remained steady in 2007 and came down again in 2008.



### 80 km/h Adelaide arterial roads

The average changes from 2007 and 2008 across the 6 sites surveyed were:

- no change in mean speed
- an increase of 0.08 km/h in the 85th percentile speed (not statistically significant)
- a small increase in the proportion of vehicles exceeding the speed limit (not statistically significant)

### 50 km/h rural local roads

The average changes from 2007 and 2008 across the 14 sites surveyed were:

- a statistically significant reduction of 1.10 km/h in mean speed
- a statistically significant reduction of 0.96 km/h in the 85th percentile speed
- a statistically significant reduction in the proportion of vehicles exceeding the speed limit

Historically, speeds came down after the introduction of the default 50 limit in 2003, went up in 2007 and came down again in 2008.

### 60 km/h rural arterial roads

The average changes from 2007 and 2008 across the 4 sites surveyed were:

- a reduction of 0.52 km/h in mean speed (not statistically significant)
- a reduction of 0.99 km/h in the 85th percentile speed (not statistically significant)
- a reduction in the proportion of vehicles exceeding the speed limit (not statistically significant)

Historically, speeds went up in 2007 and came down again in 2008.

### 80 km/h hills arterial roads

The average changes from 2007 and 2008 across the 4 sites surveyed were:

- a reduction of 1.26 km/h in mean speed (not statistically significant)
- a reduction of 1.42 km/h in 85th percentile speed (not statistically significant)
- a reduction in the proportion of vehicles exceeding the speed limit (not statistically significant)

### 100 km/h rural arterial roads

The average changes from 2007 and 2008 across the 10 sites surveyed were:

- a statistically significant reduction of 1.41 km/h in mean speed
- a statistically significant reduction of 1.89 km/h in the 85th percentile speed
- a statistically significant reduction in the proportion of vehicles exceeding the speed limit

Historically, speeds varied little between 2006 and 2007 but fell in 2008.

### 110 km/h rural arterial roads

The average changes from 2007 and 2008 across the 34 sites surveyed were:

- a reduction of 0.31 km/h in mean speed (not statistically significant)
- a statistically significant reduction of 0.78 km/h in the 85th percentile speed
- a statistically significant reduction in the proportion of vehicles exceeding the speed limit

Historically, the mean speed varied little between 2006, 2007 and 2008. However, the 85th percentile speed appears to be slowly going down over time.

### 110 km/h outback arterial roads

The average changes from 2007 and 2008 across the 3 sites surveyed were:

- a statistically significant reduction of 3.89 km/h in mean speed
- a reduction of 3.23 km/h in the 85th percentile speed (not statistically significant)
- a reduction in the proportion of vehicles exceeding the speed limit (not statistically significant)

Historically, speeds rose between 2006 and 2007 but fell by a large amount in 2008.

## 6.2 Possible reasons for speed changes

It is not at all clear what the reasons for the observed speed changes are.

We are not aware at this stage of significantly higher levels of enforcement during 2008.

We believe based on speed detection rates that the police may have lowered their enforcement tolerance around October 2007 so that drivers passing through a road safety camera would be booked at a lower speed. This raised the number of offences being given out by a substantial amount and may have affected drivers choice of speed in the 2008 survey as drivers became aware of the change (note that an earlier published version of this report incorrectly stated that such a change may have occurred in October 2008).

The “creeper” advertising (which encouraged drivers not to creep over the speed limit and was widespread) started in October 2008 and may have had some effects on drivers speeds but this could not have affected the high speed rural sites sampled in August 2008.

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The views expressed in this report are those of the authors and do not necessarily represent those of the University of Adelaide or the funding organisations.

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## Appendix A - List of sites surveyed

Tables A.1 - A.13 list the sites surveyed in 2007 and 2008 grouped by the road type. The locations with survey years 2002, 2003 and 2005 were also surveyed for a one day period in those years as part of the evaluation of the introduction of the default 50 km/h urban speed limit. The locations with a survey year of 2006 had a one week period surveyed in that year as part of the Harwood series of surveys.

Table A.1  
Adelaide local roads (50 km/h speed limit)

Road ID	Suburb	Survey years
LM01	Rosewater	2002, 2003, 2005, 2007, 2008
LM02	Beverley	2002, 2003, 2005, 2007, 2008
LM03	Maylands	2002, 2003, 2005, 2007, 2008
LM04	Campbelltown	2002, 2003, 2005, 2007, 2008
LM05	Seacliff Park	2002, 2003, 2005, 2007, 2008
LM06	Kilburn	2002, 2003, 2005, 2007, 2008
LM07	Smithfield Plains	2002, 2003, 2005, 2007, 2008
LM08	Salisbury East	2002, 2003, 2005, 2007, 2008
LM09	Glenelg North	2002, 2003, 2005, 2007, 2008
LM10	Broadview	2002, 2003, 2005, 2007, 2008
LM11	Marleston	2002, 2003, 2005, 2007, 2008
LM12	Paralowie	2002, 2003, 2005, 2007, 2008
LM13	Salisbury East	2002, 2003, 2005, 2007, 2008
LM14	Glenelg South	2002, 2003, 2005, 2007, 2008
LM15	Beverley	2002, 2003, 2005, 2007, 2008
LM16	Adelaide	2002, 2003, 2005, 2007, 2008
LM17	North Adelaide	2002, 2003, 2005, 2007, 2008
LM18	Payneham South	2002, 2003, 2005, 2007, 2008

Table A.2  
Adelaide collector roads (50 km/h speed limit)

Road ID	Suburb	Survey years
CM01	Netherby	2002, 2003, 2005, 2007, 2008
CM02	West Beach	2002, 2003, 2005, 2007, 2008
CM03	Noarlunga Downs	2002, 2003, 2005, 2007, 2008
CM04	Stirling	2002, 2003, 2005, 2007, 2008
CM05*	Largs Bay	2002, 2003, 2005, 2007, (2008)
CM06	Hallett Cove	2002, 2003, 2005, 2007, 2008
CM07	Hackham	2002, 2003, 2005, 2007, 2008
CM08	Kidman Park	2002, 2003, 2005, 2007, 2008
CM09	Norwood	2002, 2003, 2005, 2007, 2008
CM10	St Peters	2002, 2003, 2005, 2007, 2008
CM11	Novar Gardens	2002, 2003, 2005, 2007, 2008

\* roundabouts were installed at nearby intersections in 2008 so this site was dropped from analysis in this report

Table A.3

## Adelaide arterial two way roads with no median (60 km/h speed limit)

Road ID	Suburb	Survey years
AA01	Happy Valley	2002, 2003, 2005, 2007, 2008
AA02	Clapham	2002, 2003, 2005, 2007, 2008
AA03	Kent Town	2002, 2003, 2005, 2007, 2008
AA04	Findon	2007, 2008
AA05	Pennington	2007, 2008
AA06	Flinders Park	2007, 2008

Table A.4

## Adelaide arterial two way roads with a median (60 km/h speed limit)

Road ID	Suburb	Survey years
AB01	Blair Athol	2002, 2003, 2005, 2007, 2008
AB02	Newton	2007, 2008
AB03	St Peters	2007, 2008
AB04	Tranmere	2007, 2008
AB05	Keswick	2007, 2008
AB06	Ethelton	2007, 2008

Table A.5

## Adelaide arterial multi-lane roads with no median (60 km/h speed limit)

Road ID	Suburb	Survey years
AC01	Cumberland Park	2002, 2003, 2005, 2007, 2008
AC02	Burnside	2002, 2003, 2005, 2007, 2008
AC03	Warradale	2007, 2008
AC04	Fullarton	2007, 2008
AC05	Evandale	2007, 2008
AC06	Ridleyton	2007, 2008

Table A.6

## Adelaide arterial multi-lane roads with a median (60 km/h speed limit)

Road ID	Suburb	Survey years
AD01	Fullham Gardens	2002, 2003, 2005, 2007, 2008
AD02	Newton	2002, 2003, 2005, 2007, 2008
AD03	Manningham	2002, 2003, 2005, 2007, 2008
AD04	Brooklyn Park	2002, 2003, 2005, 2007, 2008
AD05	Salisbury Downs	2007, 2008
AD06	Hectorville	2007, 2008
AD07	Clarence Gardens	2007, 2008
AD08	Warradale	2007, 2008
AD09	Para Hills	2007, 2008

Table A.7  
Adelaide arterial roads (80 km/h speed limit)

Road ID	Suburb	Survey years
AM01	Salisbury Park	2007, 2008
AM02	West Beach	2007, 2008
AM03	Morphett Vale	2007, 2008
AM04	Gilles Plains	2007, 2008
AM05	Modbury North	2007, 2008
AM06	O'Halloran Hill	2007, 2008

Table A.8  
Rural local roads (50 km/h speed limit)

Road ID	Suburb	Survey years
LR01	Mount Gambier	2002, 2003, 2005, 2007, 2008
LR02	Mount Gambier	2002, 2003, 2005, 2007, 2008
LR03	Millicent	2002, 2003, 2005, 2007, 2008
LR04	Naracoorte	2002, 2003, 2005, 2007, 2008
LR05	Berri	2002, 2003, 2005, 2007, 2008
LR06	Berri	2002, 2003, 2005, 2007, 2008
LR07	Renmark	2002, 2003, 2005, 2007, 2008
LR08	Baramba	2002, 2003, 2005, 2007, 2008
LR09	Port Augusta	2002, 2003, 2005, 2007, 2008
LR10	Port Augusta	2002, 2003, 2005, 2007, 2008
LR11	Crystal Brook	2002, 2003, 2005, 2007, 2008
LR12	Walleroo	2002, 2003, 2005, 2007, 2008
LR13	Freeling	2006, 2007, 2008
LR14	Nuriootpa	2006, 2007, 2008

Table A.9  
Rural arterial roads (60 km/h speed limit)

Road ID	Suburb	Survey years
CR01	Clare	2006, 2007, 2008
CR02	Port Lincoln	2006, 2007, 2008
CR03	Naracoorte	2006, 2007, 2008
CR04	Waikerie	2006, 2007, 2008

Table A.10  
Rural hills arterial roads (80 km/h speed limit)

Road ID	Survey years
AH01	2007, 2008
AH02	2007, 2008
AH03	2007, 2008
AH04	2007, 2008
AH05*	2008
AH06*	2008

\* new sites in 2008 not analysed in this report

Table A.11  
Rural arterial roads (100 km/h speed limit)

Road ID	Survey years
AR01	2006, 2007, 2008
AR02	2006, 2007, 2008
AR03	2006, 2007, 2008
AR04	2006, 2007, 2008
AR05	2006, 2007, 2008
AR06	2006, 2007, 2008
AR07	2007, 2008
AR08	2007, 2008
AR09	2007, 2008
AR10	2007, 2008

Table A.12  
Rural arterial roads (110 km/h speed limit)

Road ID	Survey years
HR01	2006, 2007, 2008
HR02	2006, 2007, 2008
HR03	2006, 2007, 2008
HR04	2006, 2007, 2008
HR05	2006, 2007, 2008
HR06	2006, 2007, 2008
HR07	2007, 2008
HR08	2007, 2008
HR09	2007, 2008
HR10	2007, 2008
HR11	2007, 2008
HR12	2007, 2008
HR13	2007, 2008
HR14	2007, 2008
HR15	2007, 2008
HR16	2007, 2008
HR17	2007, 2008
HR18	2007, 2008
HR19	2007, 2008
HR20	2007, 2008
HR21	2007, 2008
HR22	2007, 2008
HR23	2007, 2008
HR24	2007, 2008
HR25	2007, 2008
HR26	2007, 2008
HR27*	2007, (2008)
HR28	2007, 2008
HR29	2007, 2008
HR30	2007, 2008
HR31	2007, 2008
HR32	2007, 2008
HR33	2007, 2008
HR34	2007, 2008
HR35	2007, 2008

\* this site underwent extensive road works in 2008 and so was dropped from analysis in this report



Table A.13  
Outback arterial roads (110 km/h speed limit)

Road ID	Survey years
BR01	2006, 2007, 2008
BR02	2006, 2007, 2008
BR03	2006, 2007, 2008