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Patterns of bicycle crashes in South Australia

TP Hutchinson, CN Kloeden, AD Long

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AUTHORS

TP Hutchinson, CN Kloeden, AD Long

PERFORMING ORGANISATION

Centre for Automotive Safety Research
The University of Adelaide
South Australia 5005
AUSTRALIA

SPONSORED BY

Motor Accident Commission
GPO Box 1045
Adelaide SA 5001
AUSTRALIA

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ABSTRACT

Characteristics of pedal cycle crashes (as reported by the police) in South Australia, and how they have changed over the period 1981-2004, are examined. In 1981, pedal cyclist casualties were mostly children and teenagers. In 2004, pedal cyclist casualties were mostly spread across the age range from 16 to 49. Child pedal cyclist casualties reached a maximum in 1982-1987, and have fallen sharply since. Adult pedal cyclist casualties reached a maximum in 1987-1990, and then fell. The three main Sections of the report tabulate data for pedal cyclist casualties aged 5-15 for the period 2001-2004, data for pedal cyclist casualties aged 16 years and over for 2001-2004, and trends over the period 1981-2004.

KEYWORDS

Cyclist, Accident statistics, Data analysis

Summary

This report examines certain characteristics of pedal cycle crashes in South Australia, and how they have changed over the period 1981-2004. The source of data is the Traffic Accident Reporting System (TARS) database, which is based on police reports.

Perhaps the most notable finding is the change that has occurred between 1981 and 2004. In 1981, pedal cyclist casualties were mostly children and teenagers. In 2004, pedal cyclist casualties were mostly spread across the age range from 16 to 49. Child pedal cyclist casualties reached a maximum in 1982-1987, and have fallen sharply since. Adult pedal cyclist casualties reached a maximum in 1987-1990, and then fell. However, from about the mid-1990s, there seems to have been an increase in pedal cyclist casualties aged 40-59.

There are nearly 150 tables and graphs in this report. They are arranged in Sections covering child casualties, adult casualties, and trends. There is also a Section of discussion. In addition to the changes mentioned in the previous paragraph, the following observations may be highlighted.

Child casualties in recent years

In recent years (2001-2004), among those aged 5-15, fatalities were 1 per cent of the total casualties, those recorded as being admitted to hospital were 19 per cent, those treated at hospital were 58 per cent, and those treated but not at a hospital were 21 per cent. In the same period, among those aged 16 and over, fatalities were 1 per cent of the total casualties, those recorded as being admitted to hospital were 13 per cent, those treated at hospital were 53 per cent, and those treated but not at a hospital were 33 per cent.

Adult casualties in recent years

In recent years, about 84 per cent of pedal cycle casualties have been aged 16 or over. The following remarks apply to this group.

Month, day of week, and hour of day. Casualties are slightly fewer in midsummer and midwinter than at other times of the year. There tend to be fewer casualties per day on weekends than on weekdays. The times of day when casualties are most frequent are those when most people are travelling to or from work: the hours beginning 07, 08, 09, 16, 17, 18.

Place. Postcode groups 5000-5099, 5100-5199, and 5200-5999 account for respectively 80 per cent, 13 per cent, and 7 per cent of casualties. (These postcode groups respectively refer to an area with a boundary that is between 8 and 16 km from the centre of Adelaide, outer Metropolitan Adelaide, and the rest of South Australia.)

Site and circumstances. The majority of casualties occur at junctions. From 1 March 2003, 50 km/h became the default speed limit unless a sign indicating a different limit was posted (commonly, 60 km/h on urban arterial roads). In 2004, i.e., after this change, there were rather fewer adult pedal cyclist casualties on 50 km/h roads than on 60 km/h roads (respectively 112 and 168). Crashes termed "right angle" were the most common.

The pedal cyclist. Male casualties outnumber females about 4 to 1. The 84 per cent who are aged 16 or over is made up of 69 per cent who are roughly evenly spread over the age range 16 to 49, and 15 percent aged 50 or over.

The other vehicle and its driver. As to the motor vehicle involved, cars and car derivatives are the majority; other vehicle types are involved in the case of 23 per cent of total casualties but 35 per cent of serious casualties.

Severity of injury. Concerning the proportion of casualties aged 16 or over who were killed or admitted to hospital, the following findings may be noted. (1) This proportion was 12 per cent, 13 per cent, and 18 per cent in age groups 16-19, 20-59, and 60+. (2) It was 12 per cent when the speed limit was 60 km/h or less, and 33 per cent when the speed limit was 70 km/h or higher. (3) The most frequent types of crashes were those recorded as right angle, side swipe, right turn, and rear end; for these types, the proportions of adult casualties killed or admitted to hospital were respectively 11 per cent, 11 per cent, 16 per cent, and 18 per cent. (4) The proportion was 14 per cent for male drivers of the motor vehicle and 9 per cent for female drivers. It was 17 per cent, 15 per cent, 15 per cent, 14 per cent, 10 per cent, and 11 per cent for motor vehicle driver age groups 16-19, 20-29, 30-39, 40-49, 50-59, and 60-99.

Contents

1 Introduction

The purpose of this report is to examine certain characteristics of pedal cycle crashes in South Australia, and how they have changed over the period 1981-2004. The source of data is the Traffic Accident Reporting System (TARS) database, which originates from police reports.

Any project using police reports of pedal cycle crashes must bear in mind the substantial under-reporting of this type of crash. Thus this report concentrates on those characteristics for which it is improbable that another data source will be more suitable. These characteristics are:

- Location (metropolitan or country, speed limit, intersection or mid-block),
- Conditions that change (hour of day, lighting, weather),
- The other vehicle involved.

It was hoped, when beginning this project, to supplement the TARS dataset with information about pedal cyclists admitted to hospital, using hospital in-patient statistics. It was also hoped to give some background data about pedal cyclist as a mode of travel, and how that has changed over the period 1981-2004. However, it was more time-consuming than anticipated to process the TARS data (in particular, to cross-tabulate some features of the pedal cyclist with some features of the motor vehicle and its driver, see Tables 2.14-2.17 and 3.14-3.17), and thus this project has been limited to the TARS dataset.

The period of time used in most of the tabulations is 2001-2004. (Data for 2005 was not available for this project.) This was chosen as a compromise: extend the period too far back, and it may not reflect today's conditions, yet too short a period would mean that the frequencies of crashes are so small that random year to year variation is all that can be perceived. It was considered desirable to present the same Tables for seriously injured casualties as for all casualties, and for children as well as adults, and this influences the length of the time period chosen for tabulation.

In order to be able to present the characteristics of child and adult pedal cyclist casualties separately, casualties of unknown age were excluded from the tabulations. In 2001-2004, these accounted for some 11.8 per cent of the total (and for casualties who were killed or admitted to hospital, the proportion was 7.1 per cent).

The way this report is organised is as follows.

Section 2 presents data for pedal cyclist casualties aged 5-15, for 2001-2004. There is an introduction describing what has been tabulated and why, and then some brief comments on the several pages of Tables that follow.

Section 3 presents data for pedal cyclist casualties aged 16 years and over, for 2001-2004. Again there is an introduction describing what has been tabulated and why, and then some brief comments on the several pages of Tables that follow.

Section 4 presents data on the trends over the period 1981-2004.

Section 5 is discussion.

The results, both in respect of the situation in recent years and in respect of what has changed over the longer time period, are bound to stimulate questions. It is hoped that there will be the opportunity of answering these in future projects.

2 Child pedal cyclists aged 5-15, 2001-2004

2.1 Description of the Tables

This Section presents Tables of the numbers of pedal cyclist casualties recorded as being aged 5-15. (The number aged 4 and younger is tiny, a total of 2 over the period 2001-2004, and 26 over the period 1981-2004. Those of unknown age were excluded, as it was not known whether they were children or adults.) Most Tables are for the period 2001-2004, a few refer to 1995-2004.

Variables that are tabulated. Some of these have been chosen because they are very commonly found in publications on road crash statistics, and some for quite the opposite reason, that they are fairly unusual and yet it was possible to prepare them without much extra trouble. Some Tables may be difficult to interpret in the absence of data on how much cycling is done, or how long cyclists spend on the road, but even in such a case the severity of injury in particular circumstances may be of interest. The Tables may be considered in six groups.

- Time. Tables 2.1 to 2.3 refer to month, day of week, and hour of day.
- Place. Table 2.4 refers to postcode where the crash occurred. As the frequencies in Table 2.4 are small and thus random variation is very important, the same tabulation is given in Table 2.5, but for 1995-2004. Table 2.6 refers to whether the postcode of residence of the cyclist is the same as the postcode of the crash.
- Site and circumstances of crash. Tables 2.7 to 2.10 refer to the road geometry at the crash (in particular, whether it was at a junction or not), the speed limit, whether the road was wet, and crash type.
- Pedal cyclist. Tables 2.11 to 2.13 refer to the sex, age, and postcode of residence of the pedal cyclist.
- The other vehicle and its driver. Tables 2.14 to 2.17 refer to the sex of the driver of the vehicle that collided with the pedal cyclist, the age of the driver, the type of vehicle, and the year of the vehicle. (For these Tables, the crashes are restricted to those involving a single motor vehicle and a single pedal cycle.)
- Outcome. Table 2.18 shows the severity of injury to the pedal cyclist, and 2.19 the hospital attended. (All hospitals that are named in Table 2.19 are in the Adelaide metropolitan area.)

Subclassification of casualties. In some Tables, the casualties are classified according to their age group, and in other cases according to the postcode (grouped) where the crash happened.

- Ages are grouped as follows: 5-7, 8-12, 13-15. This grouping is the same as in *Road Crashes in South Australia 2002*.
- Postcodes are grouped as follows: 5000-5099, 5100-5199, 5200-5999. These roughly correspond to: an area with a boundary that is between 8 and 16 km from the centre of Adelaide, outer Metropolitan Adelaide, and the rest of South Australia.

Chief interest is likely to lie not in comparing the age groups or comparing the postcode groups, but rather in the classification by time variables, place variables, site variables, and so on, both overall and within the different age and postcode groups.

Key to the Tables. Separate Tables are given for casualties of all severities and for the relatively seriously injured (i.e., fatal or hospital-admitted). The letters suffixed to the Table numbers have the following meanings. (Some of these subdivisions of Tables are superfluous or inapplicable in some cases, and are therefore omitted.)

a. Casualties classified according to age group: all severities.

b. Casualties classified according to age group: fatal and hospital-admitted.

c. Casualties classified according to postcode of accident location (grouped): all severities.

d. Casualties classified according to postcode of accident location (grouped): fatal and hospital-admitted.

Severity. As noted in the Key to Tables above, some Tables refer only to the more seriously injured. It is possible to study the proportion of casualties seriously injured (by which is meant killed or admitted to hospital) by comparing Tables of types a and b, or c and d. For examples of findings, see Section 2.3 below.

2.2 Selected findings

Time of crash (month, day of week, hour of day). There are about the same number of casualties per day on weekends as on weekdays (Table 2.2). The times of day when casualties are most frequent are those when most children are travelling to or from school: the hours beginning 08, 15, 16, 17 (Table 2.3). (As might be expected, the hourly pattern is different at weekends and in school holidays.)

Place (postcode). Most casualties live in the same postcode as that of the crash (Table 2.6). This is less so for those aged 13-15 than for younger children.

Site and circumstances. About the same numbers occurred at junctions and not at junctions (Table 2.7). In respect of speed limit (Table 2.8), it should be noted that until early 2003, the usual speed limit in urban areas (that is, on minor roads as well as major) was 60 km/h. From 1 March 2003, 50 km/h became the default speed limit unless a sign indicating a different limit was posted (commonly, 60 km/h on urban arterial roads). In 2004, i.e., after this change, the numbers of child pedal cyclist casualties on 50 km/h and 60 km/h roads were respectively 29 and 23. Crashes termed "right angle" were the most common (Table 2.10). It should be noted, though, that an appreciable number of crashes are complicated or do not fall easily into one category or another. And the categories of crash were probably created largely with motor vehicles, not bicycles, in mind.

The pedal cyclist. Male casualties outnumber females about 6 to 1 (Table 2.11). It might be added that for child cyclists (and for child pedestrians also), there is often interest in what the child was doing at the time of the crash --- in particular, whether the child was purposefully travelling or was playing. Unfortunately, however, data originating from police reports, in South Australia or elsewhere, usually have little or nothing about this (but see Section 5.5 below for mention of an exception).

The other vehicle and its driver. As already noted, the crashes have been restricted to those in which there was a single motor vehicle and a single pedal cycle. The numbers of casualties are consequently slightly fewer in Tables 2.14 to 2.17 than in other Tables. Cars and car derivatives make up about 82 per cent of the total (Table 2.16). For serious casualties, the number of cases with other vehicle types involved was 19 per cent of the number with cars involved, as compared with 8 per cent for all severities of injury.

Outcome. Fatalities were 1 per cent of the total casualties, those recorded as being admitted to hospital were 19 per cent, those treated at hospital were 58 per cent, and those treated but not at a hospital were 21 per cent (Table 2.18).

2.3 Proportion seriously injured

A few examples will illustrate what can be found by comparing Tables of types a and b, or c and d.

Comparing Tables 2.1a and 2.1b, we find that the proportions of casualties killed or admitted to hospital were 44 per cent, 24 per cent, and 13 per cent in age groups 5-7, 8-12, and 13-15. And comparing Tables 2.1c and 2.1d, we find that the proportions of child casualties killed or admitted to hospital were 18 per cent, 12 per cent, and 36 per cent for crashes in postcode groups 5000-5099, 5100-5199, and 5200-5999.

The proportion of child casualties killed or admitted to hospital was 20 per cent when the speed limit was 60 km/h or less, and was 35 per cent when the speed limit was 70 km/h or higher (Tables 2.8a and 2.8b). The proportion was 27 per cent for male drivers of the motor vehicle and 9 per cent for female drivers (Tables 2.14a and 2.14b). The proportion was 19 per cent when the motor vehicle dated from the 1980's, 22 per cent when it dated from the 1990's, and 20 per cent when it dated from the 2000's (Tables 2.17a and 2.17b).

Table 2.1a
Number of pedal cycle casualties aged 5-15 in South Australia 2001-2004, by month of crash and age group of casualty

Month	Age group (years)			Total
	5-7	8-12	13-15	
January		8	9	17
February	2	15	9	26
March	3	17	16	36
April		11	9	20
May	2	6	9	17
June		8	3	11
July	3	9	10	22
August		12	9	21
September	1	12	6	19
October	2	8	10	20
November	2	7	12	21
December	3	6	10	19
Total	18	119	112	249

Table 2.1b
Number of serious pedal cycle casualties aged 5-15 in South Australia 2001-2004, by month of crash and age group of casualty

Month	Age group (years)			Total
	5-7	8-12	13-15	
January		2		2
February	1	2		3
March	2	5	1	8
April		3	3	6
May	1		1	2
June		1	1	2
July	1	2	1	4
August		3	2	5
September	1	5	1	7
October		1	2	3
November	1	2	1	4
December	1	2	2	5
Total	8	28	15	51

Table 2.1c
Number of pedal cycle casualties aged 5-15 in South Australia 2001-2004, by month of crash and crash postcode group

Month	Postcode group			Total
	5000-5099	5100-5199	5200-5999	
January	8	7	2	17
February	13	9	4	26
March	23	8	5	36
April	7	9	4	20
May	7	5	5	17
June	3	1	7	11
July	11	4	7	22
August	10	3	8	21
September	10	6	3	19
October	13	5	2	20
November	11	6	4	21
December	7	5	7	19
Total	123	68	58	249

Table 2.1d
Number of serious pedal cycle casualties aged 5-15 in South Australia 2001-2004, by month of crash and crash postcode group

Month	Postcode group			Total
	5000-5099	5100-5199	5200-5999	
January	1		1	2
February	1		2	3
March	6		2	8
April	2	2	2	6
May	1		1	2
June			2	2
July	2		2	4
August	1	1	3	5
September	4	1	2	7
October	2	1		3
November	1	1	2	4
December	1	2	2	5
Total	22	8	21	51

Table 2.2a
Number of pedal cycle casualties aged 5-15 in South Australia 2001-2004, by day of week of crash and age group of casualty

Day of week	Age group (years)			Total
	5-7	8-12	13-15	
Monday	1	19	16	36
Tuesday	2	20	21	43
Wednesday	1	23	12	36
Thursday	1	14	17	32
Friday	3	17	15	35
Saturday	3	15	21	39
Sunday	7	11	10	28
Total	18	119	112	249

Table 2.2b
Number of serious pedal cycle casualties aged 5-15 in South Australia 2001-2004, by day of week of crash and age group of casualty

Day of week	Age group (years)			Total
	5-7	8-12	13-15	
Monday	1	4		5
Tuesday	2	5	3	10
Wednesday	1	6	3	10
Thursday	1	3	4	8
Friday	1	2	1	4
Saturday		4	4	8
Sunday	2	4		6
Total	8	28	15	51

Table 2.2c
Number of pedal cycle casualties aged 5-15 in South Australia 2001-2004, by day of week of crash and crash postcode group

Day of week	Postcode group			Total
	5000-5099	5100-5199	5200-5999	
Monday	17	13	6	36
Tuesday	21	11	11	43
Wednesday	19	9	8	36
Thursday	11	7	14	32
Friday	21	10	4	35
Saturday	18	11	10	39
Sunday	16	7	5	28
Total	123	68	58	249

Table 2.2d
Number of serious pedal cycle casualties aged 5-15 in South Australia 2001-2004, by day of week of crash and crash postcode group

Day of week	Postcode group			Total
	5000-5099	5100-5199	5200-5999	
Monday	2	1	2	5
Tuesday	4	1	5	10
Wednesday	4	2	4	10
Thursday	4	2	2	8
Friday	2	1	1	4
Saturday	4		4	8
Sunday	2	1	3	6
Total	22	8	21	51

Table 2.3a
Number of pedal cycle casualties aged 5-15 in South Australia 2001-2004, by hour of day of crash and age group of casualty

Hour of day	Age group (years)			Total
	5-7	8-12	13-15	
6			1	1
7			1	1
8	1	19	18	38
9		1	4	5
10		7	1	8
11	2	6	5	13
12	1	5	4	10
13	4	3	3	10
14	2	4	11	17
15	4	22	19	45
16	2	25	10	37
17	1	16	11	28
18	1	7	10	18
19		2	9	11
20		2	3	5
21			1	1
22				
23			1	1
Total	18	119	112	249

Table 2.3b
Number of serious pedal cycle casualties aged 5-15 in South Australia 2001-2004, by hour of day of crash and age group of casualty

Hour of day	Age group (years)			Total
	5-7	8-12	13-15	
8	1	4	1	6
9		1	1	2
10		1		1
11				
12			2	2
13	2	1	1	4
14	1	2	1	4
15	3	4	2	9
16	1	5	1	7
17		7		7
18		2	5	7
19			1	1
20		1		1
Total	8	28	15	51

Table 2.3c
Number of pedal cycle casualties aged 5-15 in South Australia 2001-2004, by hour of day of crash and crash postcode group

Hour of day	Postcode group			Total
	5000-5099	5100-5199	5200-5999	
6	1			1
7		1		1
8	25	6	7	38
9	2		3	5
10	5	1	2	8
11	4	8	1	13
12	10			10
13	2	4	4	10
14	8	4	5	17
15	20	10	15	45
16	14	10	13	37
17	14	12	2	28
18	8	5	5	18
19	7	3	1	11
20	2	3		5
21	1			1
22				
23		1		1
Total	123	68	58	249

Table 2.3d
Number of serious pedal cycle casualties aged 5-15 in South Australia 2001-2004, by hour of day of crash and crash postcode group

Hour of day	Postcode group			Total
	5000-5099	5100-5199	5200-5999	
8	5		1	6
9			2	2
10			1	1
11				
12	2			2
13		1	3	4
14	2		2	4
15	3	3	3	9
16	3		4	7
17	4	3		7
18	2	1	4	7
19			1	1
20	1			1
Total	22	8	21	51

Table 2.4a
Number of pedal cycle casualties aged 5-15 in South Australia 2001-2004, by postcode group of crash and age group of casualty

Postcode group	Age group (years)			Total
	5-7	8-12	13-15	
5000 (Adelaide city)		2	4	6
5001-5019 (NW)	1	11	8	20
5020-5039 (W)		10	12	22
5040-5059 (S)	2	16	17	35
5060-5079 (E)	2	8	10	20
5080-5099 (NE)		10	10	20
5100-5199	6	28	34	68
5200-5999	7	34	17	58
Total	18	119	112	249

Table 2.4b
Number of serious pedal cycle casualties aged 5-15 in South Australia 2001-2004, by postcode group of crash and age group of casualty

Postcode group	Age group (years)			Total
	5-7	8-12	13-15	
5000 (Adelaide city)		1	1	2
5001-5019 (NW)	1	2		3
5020-5039 (W)		3	1	4
5040-5059 (S)		3	3	6
5060-5079 (E)		1	1	2
5080-5099 (NE)		3	2	5
5100-5199	2	4	2	8
5200-5999	5	11	5	21
Total	8	28	15	51

Table 2.5a
Number of pedal cycle casualties aged 5-15 in South Australia 1995-2004, by postcode group of crash and age group of casualty

Postcode group	Age group (years)			Total
	5-7	8-12	13-15	
5000 (Adelaide city)	1	2	9	12
5001-5019 (NW)	2	35	35	72
5020-5039 (W)	5	35	46	86
5040-5059 (S)	4	41	51	96
5060-5079 (E)	6	41	51	98
5080-5099 (NE)	4	44	41	89
5100-5199	15	117	100	232
5200-5999	20	97	73	190
Total	57	412	406	875

Table 2.5b
Number of serious pedal cycle casualties aged 5-15 in South Australia 1995-2004, by postcode group of crash and age group of casualty

Postcode group	Age group (years)			Total
	5-7	8-12	13-15	
5000 (Adelaide city)		1	4	5
5001-5019 (NW)	1	8	5	14
5020-5039 (W)	1	7	9	17
5040-5059 (S)		8	8	16
5060-5079 (E)	1	6	11	18
5080-5099 (NE)	1	9	9	19
5100-5199	3	20	14	37
5200-5999	10	28	21	59
Total	17	87	81	185

Table 2.6a
Number of pedal cycle casualties aged 5-15 in South Australia 2001-2004, by whether or not the rider lives in the crash postcode and age group of casualty

Locality of rider	Age group (years)			Total
	5-7	8-12	13-15	
Rider lives in different postcode than crash	5	21	43	69
Rider lives in same postcode as crash	13	97	67	177
Unknown		1	2	3
Total	18	119	112	249

Table 2.6b
Number of serious pedal cycle casualties aged 5-15 in South Australia 2001-2004, by whether or not the rider lives in the crash postcode and age group of casualty

Locality of rider	Age group (years)			Total
	5-7	8-12	13-15	
Rider lives in different postcode than crash		8	6	14
Rider lives in same postcode as crash	8	20	9	37
Total	8	28	15	51

Table 2.6c
Number of pedal cycle casualties aged 5-15 in South Australia 2001-2004, by whether or not the rider lives in the crash postcode and crash postcode group

Locality of rider	Postcode group			Total
	5000-5099	5100-5199	5200-5999	
Rider lives in different postcode than crash	50	15	4	69
Rider lives in same postcode as crash	72	52	53	177
Unknown	1	1	1	3
Total	123	68	58	249

Table 2.6d
Number of serious pedal cycle casualties aged 5-15 in South Australia 2001-2004, by whether or not the rider lives in the crash postcode and crash postcode group

Locality of rider	Postcode group			Total
	5000-5099	5100-5199	5200-5999	
Rider lives in different postcode than crash	9	2	3	14
Rider lives in same postcode as crash	13	6	18	37
Total	22	8	21	51

Table 2.7a
Number of pedal cycle casualties aged 5-15 in South Australia 2001-2004, by road geometry and age group of casualty

Road geometry	Age group (years)			Total
	5-7	8-12	13-15	
Junction	7	57	57	121
Not at junction	11	56	49	116
Unknown		6	6	12
Total	18	119	112	249

Table 2.7b
Number of serious pedal cycle casualties aged 5-15 in South Australia 2001-2004, by road geometry and age group of casualty

Road geometry	Age group (years)			Total
	5-7	8-12	13-15	
Junction	3	14	8	25
Not at junction	5	13	7	25
Unknown		1		1
Total	8	28	15	51

Table 2.7c
Number of pedal cycle casualties aged 5-15 in South Australia 2001-2004, by road geometry and crash postcode group

Road geometry	Postcode group			Total
	5000-5099	5100-5199	5200-5999	
Junction	62	30	29	121
Not at junction	57	35	24	116
Unknown	4	3	5	12
Total	123	68	58	249

Table 2.7d
Number of serious pedal cycle casualties aged 5-15 in South Australia 2001-2004, by road geometry and crash postcode group

Road geometry	Postcode group			Total
	5000-5099	5100-5199	5200-5999	
Junction	13	3	9	25
Not at junction	9	5	11	25
Unknown			1	1
Total	22	8	21	51

Table 2.8a
Number of pedal cycle casualties aged 5-15 in South Australia 2001-2004, by speed limit and age group of casualty

Speed limit (km/h)	Age group (years)			Total
	5-7	8-12	13-15	
40		3	3	6
50	3	33	23	59
60	15	67	70	152
70		1	2	3
80		5	5	10
90			1	1
100		1	2	3
Unknown		9	6	15
Total	18	119	112	249

Note: 50 km/h default speed limit introduced in South Australia on 1 March 2003

Table 2.8b
Number of serious pedal cycle casualties aged 5-15 in South Australia 2001-2004, by speed limit and age group of casualty

Speed limit (km/h)	Age group (years)			Total
	5-7	8-12	13-15	
50	1	9	6	16
60	7	15	6	28
70		1		1
80		1	1	2
100		1	2	3
Unknown		1		1
Total	8	28	15	51

Note: 50 km/h default speed limit introduced in South Australia on 1 March 2003

Table 2.8c
Number of pedal cycle casualties aged 5-15 in South Australia 2001-2004, by speed limit and crash postcode group

Speed limit (km/h)	Postcode group			Total
	5000-5099	5100-5199	5200-5999	
40	6			6
50	29	13	17	59
60	79	42	31	152
70	2	1		3
80	1	7	2	10
90		1		1
100			3	3
Unknown	6	4	5	15
Total	123	68	58	249

Note: 50 km/h default speed limit introduced in South Australia on 1 March 2003

Table 2.8d
Number of serious pedal cycle casualties aged 5-15 in South Australia 2001-2004, by speed limit and crash postcode group

Speed limit (km/h)	Postcode group			Total
	5000-5099	5100-5199	5200-5999	
50	8	3	5	16
60	12	4	12	28
70	1			1
80		1	1	2
100			3	3
Unknown	1			1
Total	22	8	21	51

Note: 50 km/h default speed limit introduced in South Australia on 1 March 2003

Table 2.9a
Number of pedal cycle casualties aged 5-15 in South Australia 2001-2004, by road wetness and age group of casualty

Road wetness	Age group (years)			Total
	5-7	8-12	13-15	
Wet		5	6	11
Dry	18	114	106	238
Total	18	119	112	249

Table 2.9b
Number of serious pedal cycle casualties aged 5-15 in South Australia 2001-2004, by road wetness and age group of casualty

Road wetness	Age group (years)			Total
	5-7	8-12	13-15	
Wet		2	1	3
Dry	8	26	14	48
Total	8	28	15	51

Table 2.9c
Number of pedal cycle casualties aged 5-15 in South Australia 2001-2004, by road wetness and crash postcode group

Road wetness	Postcode group			Total
	5000-5099	5100-5199	5200-5999	
Wet	6	2	3	11
Dry	117	66	55	238
Total	123	68	58	249

Table 2.9d
Number of serious pedal cycle casualties aged 5-15 in South Australia 2001-2004, by road wetness and crash postcode group

Road wetness	Postcode group			Total
	5000-5099	5100-5199	5200-5999	
Wet	1		2	3
Dry	21	8	19	48
Total	22	8	21	51

Table 2.10a
Number of pedal cycle casualties aged 5-15 in South Australia 2001-2004, by crash type and age group of casualty

Crash type	Age group (years)			Total
	5-7	8-12	13-15	
Rear end		5	7	12
Hit fixed object		1	3	4
Side swipe	5	12	12	29
Right angle	13	87	74	174
Head on		8	3	11
Roll over		1	1	2
Right turn		2	7	9
Hit parked vehicle		1	3	4
Hit object on road			1	1
Other		2	1	3
Total	18	119	112	249

Table 2.10b
Number of serious pedal cycle casualties aged 5-15 in South Australia 2001-2004, by crash type and age group of casualty

Crash type	Age group (years)			Total
	5-7	8-12	13-15	
Rear end			2	2
Side swipe	2	2	2	6
Right angle	6	19	7	32
Head on		4		4
Roll over		1		1
Right turn			3	3
Hit parked vehicle		1		1
Other		1	1	2
Total	8	28	15	51

Table 2.10c
Number of pedal cycle casualties aged 5-15 in South Australia 2001-2004, by crash type and crash postcode group

Crash type	Postcode group			Total
	5000-5099	5100-5199	5200-5999	
Rear end	6	5	1	12
Hit fixed object	2	2		4
Side swipe	14	8	7	29
Right angle	83	46	45	174
Head on	5	3	3	11
Roll over	1	1		2
Right turn	7	1	1	9
Hit parked vehicle	2	1	1	4
Hit object on road	1			1
Other	2	1		3
Total	123	68	58	249

Table 2.10d
Number of serious pedal cycle casualties in South Australia 2001-2004, by crash type and crash postcode group

Crash type	Postcode group			Total
	5000-5099	5100-5199	5200-5999	
Rear end	1		1	2
Side swipe	3	2	1	6
Right angle	12	3	17	32
Head on	1	1	2	4
Roll over		1		1
Right turn	2	1		3
Hit parked vehicle	1			1
Other	2			2
Total	22	8	21	51

Table 2.11a
Number of pedal cycle casualties aged 5-15 in South Australia 2001-2004, by rider sex and age group of casualty

Rider sex	Age group (years)			Total
	5-7	8-12	13-15	
Male	14	97	103	214
Female	4	22	9	35
Total	18	119	112	249

Table 2.11b
Number of serious pedal cycle casualties aged 5-15 in South Australia 2001-2004, by rider sex and age group of casualty

Rider sex	Age group (years)			Total
	5-7	8-12	13-15	
Male	5	24	12	41
Female	3	4	3	10
Total	8	28	15	51

Table 2.11c
Number of pedal cycle casualties aged 5-15 in South Australia 2001-2004, by rider sex and crash postcode group

Rider sex	Postcode group			Total
	5000-5099	5100-5199	5200-5999	
Male	106	60	48	214
Female	17	8	10	35
Total	123	68	58	249

Table 2.11d
Number of serious pedal cycle casualties aged 5-15 in South Australia 2001-2004, by rider sex and crash postcode group

Rider sex	Postcode group			Total
	5000-5099	5100-5199	5200-5999	
Male	19	8	14	41
Female	3		7	10
Total	22	8	21	51

Table 2.12c
Number of pedal cycle casualties in South Australia 2001-2004, by rider age and crash postcode group

Rider age	Postcode group			Total
	5000-5099	5100-5199	5200-5999	
5		3	5	8
6	2	2	2	6
7	3	1		4
8	5	2	5	12
9	8	5	4	17
10	15	4	10	29
11	9	8	6	23
12	20	9	9	38
13	16	13	6	35
14	24	11	6	41
15	21	10	5	36
Total	123	68	58	249

Table 2.12d
Number of serious pedal cycle casualties aged 5-15 in South Australia 2001-2004, by rider age and crash postcode group

Rider age	Postcode group			Total
	5000-5099	5100-5199	5200-5999	
5		2	4	6
6	1		1	2
7				
8	1			1
9	1			1
10	4		4	8
11	2	3	5	10
12	5	1	2	8
13	2		1	3
14	4	1	3	8
15	2	1	1	4
Total	22	8	21	51

Table 2.13a
Number of pedal cycle casualties aged 5-15 in South Australia 2001-2004, by rider home postcode group and age group of casualty

Rider home postcode group	Age group (years)			Total
	5-7	8-12	13-15	
5000-5099	5	55	61	121
5100-5199	5	30	33	68
5200-5999	8	33	16	57
Other		1	2	3
Total	18	119	112	249

Table 2.13b
Number of serious pedal cycle casualties aged 5-15 in South Australia 2001-2004, by rider home postcode group and age group of casualty

Rider home postcode group	Age group (years)			Total
	5-7	8-12	13-15	
5000-5099	1	13	9	23
5100-5199	2	5	2	9
5200-5999	5	10	4	19
Total	8	28	15	51

Table 2.13c
Number of pedal cycle casualties aged 5-15 in South Australia 2001-2004, by rider home postcode and crash postcode groups

Rider home postcode group	Crash postcode group			Total
	5000-5099	5100-5199	5200-5999	
5000-5099	117	2	2	121
5100-5199	4	64		68
5200-5999	1	1	55	57
Other	1	1	1	3
Total	123	68	58	249

Table 2.13d
Number of serious pedal cycle casualties aged 5-15 in South Australia 2001-2004, by rider home postcode and crash postcode groups

Rider home postcode group	Crash postcode group			Total
	5000-5099	5100-5199	5200-5999	
5000-5099	21		2	23
5100-5199	1	8		9
5200-5999			19	19
Total	22	8	21	51

Table 2.14a
Pedal cycle casualties aged 5-15 in South Australia 2001-2004: Number in single motor vehicle vs single bicycle crashes, by driver sex and rider age group

Sex of motor vehicle driver	Rider age group (years)			Total
	5-7	8-12	13-15	
Male	10	61	53	124
Female	8	48	41	97
Unknown		6	9	15
Total	18	115	103	236

Table 2.14b
Serious pedal cycle casualties aged 5-15 in South Australia 2001-2004: Number in single motor vehicle vs single bicycle crashes, by driver sex and rider age group

Sex of motor vehicle driver	Rider age group (years)			Total
	5-7	8-12	13-15	
Male	5	21	8	34
Female	3	3	3	9
Unknown		2	3	5
Total	8	26	14	48

Table 2.14c
Pedal cycle casualties aged 5-15 in South Australia 2001-2004: Number in single motor vehicle vs single bicycle crashes, by driver sex and crash postcode group

Sex of motor vehicle driver	Crash postcode group			Total
	5000-5099	5100-5199	5200-5999	
Male	54	30	40	124
Female	54	29	14	97
Unknown	9	5	1	15
Total	117	64	55	236

Table 2.14d
Serious pedal cycle casualties aged 5-15 in South Australia 2001-2004: Number in single motor vehicle vs single bicycle crashes, by driver sex and crash postcode group

Sex of motor vehicle driver	Crash postcode group			Total
	5000-5099	5100-5199	5200-5999	
Male	13	4	17	34
Female	3	3	3	9
Unknown	5			5
Total	21	7	20	48

Table 2.15a
Pedal cycle casualties aged 5-15 in South Australia 2001-2004: Number in single motor vehicle vs single bicycle crashes, by driver age and rider age group

Age group of motor vehicle driver	Rider age group (years)			Total
	5-7	8-12	13-15	
16-19	1	7	5	13
20-29	3	28	9	40
30-39	2	23	20	45
40-49	6	14	16	36
50-59	1	10	21	32
60-69	1	8	7	16
70-99		3	2	5
Unknown	4	22	23	49
Total	18	115	103	236

Table 2.15b
Serious pedal cycle casualties aged 5-15 in South Australia 2001-2004: Number in single motor vehicle vs single bicycle crashes, by driver age and rider age group

Age group of motor vehicle driver	Rider age group (years)			Total
	5-7	8-12	13-15	
16-19		3		3
20-29	1	6		7
30-39	1	6	3	10
40-49	3	3	3	9
50-59	1	2	1	4
60-69	1	2	3	6
Unknown	1	4	4	9
Total	8	26	14	48

Table 2.15c
Pedal cycle casualties aged 5-15 in South Australia 2001-2004: Number in single motor vehicle vs single bicycle crashes, by driver age and crash postcode group

Age group of motor vehicle driver	Crash postcode group			Total
	5000-5099	5100-5199	5200-5999	
16-19	5	5	3	13
20-29	22	7	11	40
30-39	18	15	12	45
40-49	16	12	8	36
50-59	20	6	6	32
60-69	6	4	6	16
70-99	3	1	1	5
Unknown	27	14	8	49
Total	117	64	55	236

Table 2.15d
Serious pedal cycle casualties aged 5-15 in South Australia 2001-2004: Number in single motor vehicle vs single bicycle crashes, by driver age and crash postcode group

Age group of motor vehicle driver	Crash postcode group			Total
	5000-5099	5100-5199	5200-5999	
16-19	1	1	1	3
20-29	4		3	7
30-39	3	2	5	10
40-49	2	2	5	9
50-59	1	1	2	4
60-69	1	1	4	6
Unknown	9			9
Total	21	7	20	48

Table 2.16a
Pedal cycle casualties aged 5-15 in South Australia 2001-2004: Number in single motor vehicle vs single bicycle crashes, by type of motor vehicle and rider age group

Type of motor vehicle	Rider age group (years)			Total
	5-7	8-12	13-15	
Car (and derivatives)	13	95	85	193
Other	2	6	8	16
Unknown	3	14	10	27
Total	18	115	103	236

Table 2.16b
Serious pedal cycle casualties aged 5-15 in South Australia 2001-2004: Number in single motor vehicle vs single bicycle crashes, by type of motor vehicle and rider age group

Type of motor vehicle	Rider age group (years)			Total
	5-7	8-12	13-15	
Car (and derivatives)	5	21	11	37
Other	2	3	2	7
Unknown	1	2	1	4
Total	8	26	14	48

Table 2.16c
Pedal cycle casualties aged 5-15 in South Australia 2001-2004: Number in single motor vehicle vs single bicycle crashes, by type of motor vehicle and crash postcode group

Type of motor vehicle	Crash postcode group			Total
	5000-5099	5100-5199	5200-5999	
Car (and derivatives)	99	52	42	193
Other	6	3	7	16
Unknown	12	9	6	27
Total	117	64	55	236

Table 2.16d
Serious pedal cycle casualties aged 5-15 in South Australia 2001-2004: Number in single motor vehicle vs single bicycle crashes, by type of motor vehicle and crash postcode group

Type of motor vehicle	Crash postcode group			Total
	5000-5099	5100-5199	5200-5999	
Car (and derivatives)	16	6	15	37
Other	1	1	5	7
Unknown	4			4
Total	21	7	20	48

Table 2.17a
Pedal cycle casualties aged 5-15 in South Australia 2001-2004: Number in single motor vehicle vs single bicycle crashes, by year of vehicle and rider age group

Year of vehicle	Rider age group (years)			Total
	5-7	8-12	13-15	
1900-1979	1	5		6
1980-1989	4	34	21	59
1990-1999	7	38	44	89
2000		4	5	9
2001	1	2	4	7
2002	1	5	2	8
2003		2	2	4
2004			2	2
Unknown	4	25	23	52
Total	18	115	103	236

Table 2.17b
Serious pedal cycle casualties aged 5-15 in South Australia 2001-2004: Number in single motor vehicle vs single bicycle crashes, by year of vehicle and rider age group

Year of vehicle	Rider age group (years)			Total
	5-7	8-12	13-15	
1900-1979	1	1		2
1980-1989	2	8	1	11
1990-1999	3	8	9	20
2000		1		1
2001	1	1		2
2002				
2003		1		1
2004			2	2
Unknown	1	6	2	9
Total	8	26	14	48

Table 2.17c
Pedal cycle casualties aged 5-15 in South Australia 2001-2004: Number in single motor vehicle vs single bicycle crashes, by year of vehicle and crash postcode group

Year of vehicle	Crash postcode group			Total
	5000-5099	5100-5199	5200-5999	
1900-1979		3	3	6
1980-1989	28	16	15	59
1990-1999	45	23	21	89
2000	4	4	1	9
2001	3	2	2	7
2002	6	2		8
2003	3		1	4
2004	1		1	2
Unknown	27	14	11	52
Total	117	64	55	236

Table 2.17d
Serious pedal cycle casualties aged 5-15 in South Australia 2001-2004: Number in single motor vehicle vs single bicycle crashes, by year of vehicle and crash postcode group

Year of vehicle	Crash postcode group			Total
	5000-5099	5100-5199	5200-5999	
1900-1979			2	2
1980-1989	5	1	5	11
1990-1999	7	4	9	20
2000		1		1
2001		1	1	2
2002				
2003	1			1
2004	1		1	2
Unknown	7		2	9
Total	21	7	20	48

Table 2.18a
Number of pedal cycle casualties aged 5-15 in South Australia 2001-2004, by cyclist injury severity and age group of casualty

Cyclist injury severity	Age group (years)			Total
	5-7	8-12	13-15	
Treated by doctor	1	33	19	53
Treated at hospital	9	58	78	145
Admitted to hospital	7	26	15	48
Fatality	1	2		3
Total	18	119	112	249

Table 2.18c
Number of pedal cycle casualties aged 5-15 in South Australia 2001-2004, by cyclist injury severity and crash postcode group

Cyclist injury severity	Crash postcode group			Total
	5000-5099	5100-5199	5200-5999	
Treated by doctor	30	13	10	53
Treated at hospital	71	47	27	145
Admitted to hospital	21	7	20	48
Fatality	1	1	1	3
Total	123	68	58	249

Table 2.19a
Number of pedal cycle casualties aged 5-15 in South Australia 2001-2004, by treating hospital and age group of casualty

Treating hospital	Age group (years)			Total
	5-7	8-12	13-15	
Flinders Medical Centre	2	21	22	45
Lyell McEwin Hospital	3	8	11	22
Modbury Hospital	1	3	6	10
Women's and Children's Hospital	5	23	21	49
Other	6	25	30	61
NA/Unknown	1	39	22	62
Total	18	119	112	249

Table 2.19b
Number of serious pedal cycle casualties aged 5-15 in South Australia 2001-2004, by treating hospital and age group of casualty

Treating hospital	Age group (years)			Total
	5-7	8-12	13-15	
Flinders Medical Centre		8	6	14
Lyell McEwin Hospital				0
Modbury Hospital				0
Women's and Children's Hospital	4	10	4	18
Other	4	8	5	17
Unknown		2		2
Total	8	28	15	51

Table 2.19c
Number of pedal cycle casualties aged 5-15 in South Australia 2001-2004, by treating hospital and crash postcode group

Treating hospital	Crash postcode group			Total
	5000-5099	5100-5199	5200-5999	
Flinders Medical Centre	28	17		45
Lyell McEwin Hospital		22		22
Modbury Hospital	5	5		10
Women's and Children's Hospital	42	3	4	49
Other	15	7	39	61
NA/Unknown	33	14	15	62
Total	123	68	58	249

Table 2.19d
Number of serious pedal cycle casualties aged 5-15 in South Australia 2001-2004, by treating hospital and crash postcode group

Treating hospital	Crash postcode group			Total
	5000-5099	5100-5199	5200-5999	
Flinders Medical Centre	8	6		14
Lyell McEwin Hospital				0
Modbury Hospital				0
Women's and Children's Hospital	12	2	4	18
Other	1		16	17
Unknown	1		1	2
Total	22	8	21	51

3 Adult pedal cyclists aged 16 and over, 2001-2004

3.1 Description of the Tables

This Section presents Tables of the numbers of pedal cyclist casualties aged 16 and over. (Those of unknown age were excluded, as it was not known whether they were children or adults.) Most Tables are for the period 2001-2004, a few refer to 1995-2004.

The introductory text below is very similar to that in Section 2.

Variables that are tabulated. Some of these have been chosen because they are very commonly found in publications on road crash statistics, and some for quite the opposite reason, that they are fairly unusual and yet it was possible to prepare them without much extra trouble. Some Tables may be difficult to interpret in the absence of data on how much cycling is done, or how long cyclists spend on the road, but even in such a case the severity of injury in particular circumstances may be of interest. The Tables may be considered in six groups.

- Time. Tables 3.1 to 3.3 refer to month, day of week, and hour of day.
- Place. Table 3.4 refers to postcode where the crash occurred. Table 3.5 is the same, but for 1995-2004. Table 3.6 refers to whether the postcode of residence of the cyclist is the same as the postcode of the crash.
- Site and circumstances of crash. Tables 3.7 to 3.10 refer to the road geometry at the crash (in particular, whether it was at a junction or not), the speed limit, whether the road was wet, lighting conditions, and crash type.
- Pedal cyclist. Tables 3.11 to 3.13 refer to the sex, age, and postcode of residence of the pedal cyclist.
- The other vehicle and its driver. Tables 3.14 to 3.17 refer to the sex of the driver of the vehicle that collided with the pedal cyclist, the age of the driver, the type of vehicle, and the year of the vehicle. (For these Tables, the crashes are restricted to those involving a single motor vehicle and a single pedal cycle.)
- Outcome. Tables 3.19 shows the severity of injury to the pedal cyclist, and 3.20 the hospital attended. (All hospitals that are named in Table 3.19 are in the Adelaide metropolitan area.)

Subclassification of casualties. In some Tables, the casualties are classified according to their age group, and in other cases according to the postcode (grouped) where the crash happened.

- Ages are grouped as follows: 16-19, 20-59, 60 or more. This grouping enables the data for age group 20-59 to be seen, i.e., adults without the schoolchildren who make up part of the 16-19 group, and without the frail elderly.
- Postcodes are grouped as follows: 5000-5099, 5100-5199, 5200-5999. These roughly correspond to: an area with a boundary that is between 8 and 16 km from the centre of Adelaide, outer Metropolitan Adelaide, and the rest of South Australia.

Chief interest is likely to lie not in comparing the age groups or comparing the postcode groups, but rather in the classification by time variables, place variables, site variables, and so on, both overall and within the different age and postcode groups.

Key to the Tables. Separate Tables are given for casualties of all severities and for the relatively seriously injured (i.e., fatal or hospital-admitted). As in Section 2, the letters suffixed to the Table numbers have the following meanings. (Again, some of these subdivisions of Tables are superfluous or inapplicable in some cases, and are therefore omitted.)

a. Casualties classified according to age group: all severities.

b. Casualties classified according to age group: fatal and hospital-admitted.

c. Casualties classified according to postcode of accident location (grouped): all severities.

d. Casualties classified according to postcode of accident location (grouped): fatal and hospital-admitted.

Severity. As noted in the Key to Tables above, some Tables refer only to the more seriously injured. It is possible to study the proportion of casualties seriously injured (by which is meant killed or admitted to hospital) by comparing Tables of types a and b, or c and d. For examples of findings, see Section 3.3 below.

3.2 Selected findings

Time of crash (month, day of week, hour of day). Casualties are slightly fewer in midsummer and midwinter than at other times of the year (Table 3.1). There tend to be fewer casualties per day on weekends than on weekdays (Table 3.2). The times of day when casualties are most frequent are those when most people are travelling to or from work: the hours beginning 07, 08, 09, 16, 17, 18 (Table 3.3).

Place (postcode). Postcode groups 5000-5099, 5100-5199, and 5200-5999 account for respectively 80 per cent, 13 per cent, and 7 per cent of casualties (Table 3.4). Most casualties live in a different postcode from that of the crash (Table 3.6).

Site and circumstances. The majority of casualties occur at junctions (Table 3.7). In regard to Table 3.8, as already noted, from 1 March 2003, 50 km/h became the default speed limit unless a sign indicating a different limit was posted (commonly, 60 km/h on urban arterial roads). In 2004, i.e., after this change, the numbers of adult pedal cyclist casualties on 50 km/h and 60 km/h roads were respectively 112 and 168. Crashes termed "right angle" were the most common (Table 3.10). It should be noted, though, that an appreciable number of crashes are complicated or do not fall easily into one category or another. And the categories of crash were probably created largely with motor vehicles, not bicycles, in mind.

The pedal cyclist. Male casualties outnumber females about 4 to 1 (Table 3.11). Concerning ages of casualties in years, rather than age groups, the details of Table 3.12 are unlikely to be of much importance, but the Table does make it possible to group years of age differently if desired. Also, there may be interest in the degree to which ages are given in round numbers (20, 30, 40, etc.). This digit preference, as it is sometimes called, is evidently quite minor in this dataset.

The other vehicle and its driver. As already noted, the crashes have been restricted to those in which there was a single motor vehicle and a single pedal cycle. The numbers of casualties are consequently slightly fewer in Tables 3.14 to 3.17 than in other Tables. Cars and car derivatives make up about 77 per cent of the total (Table 3.16). For serious casualties, the number of cases with other vehicle types involved was 34 per cent of the number with cars involved, as compared with 14 per cent for all severities of injury.

Outcome. Fatalities were 1 per cent of the total casualties, those recorded as being admitted to hospital were 13 per cent, those treated at hospital were 53 per cent, and those treated but not at a hospital were 33 per cent.

3.3 Proportion seriously injured

A few examples will illustrate what can be found by comparing Tables of types a and b, or c and d.

Comparing Tables 3.1a and 3.1b, we find that the proportions of casualties killed or admitted to hospital were 12 per cent, 13 per cent, and 18 per cent in age groups 16-19, 20-59, and 60+. And comparing Tables 3.1c and 3.1d, we find that the proportions of adult casualties killed or admitted to hospital were 12 per cent, 14 per cent, and 33 per cent for crashes in postcode groups 5000-5099, 5100-5199, and 5200-5999.

From Tables 3.8a and 3.8b, we find that the proportion of adult casualties killed or admitted to hospital was 12 per cent when the speed limit was 60 km/h or less, and was 33 per cent when the speed limit was 70 km/h or higher. Table 3.10a shows that the most frequent types of crashes were those recorded as right angle, side swipe, right turn, and rear end. Comparing Tables 3.10a and 3.10b, we find the proportions of adult casualties killed or admitted to hospital were respectively 11 per cent, 11 per cent, 16 per cent, and 18 per cent.

From Tables 3.14a and 3.14b, we find that the proportions of adult casualties killed or admitted to hospital were respectively 14 per cent for male drivers of the motor vehicle and 9 per cent for female drivers. These proportions were 17 per cent, 15 per cent, 15 per cent, 14 per cent, 10 per cent, and 11 per cent for motor vehicle driver age groups 16-19, 20-29, 30-39, 40-49, 50-59, and 60-99 (Tables 3.15a and 3.15b). From Tables 3.17a and 3.17b, we find that the proportion of adult casualties killed or admitted to hospital was 13 per cent when the motor vehicle dated from the 1980's, 13 per cent when it dated from the 1990's, and 13 per cent when it dated from the 2000's.

Table 3.1a
Number of pedal cycle casualties aged 16 and over in South Australia 2001-2004, by month of crash and age group of casualty

Month	Age group (years)			Total
	16-19	20-59	60+	
January	12	88	8	108
February	8	112	6	126
March	17	146	9	172
April	7	106	9	122
May	16	110	8	134
June	5	69	6	80
July	9	79	9	97
August	13	89	6	108
September	10	86	7	103
October	7	92	1	100
November	14	89	9	112
December	14	71	7	92
Total	132	1137	85	1354

Table 3.1b
Number of serious pedal cycle casualties aged 16 and over in South Australia 2001-2004, by month of crash and age group of casualty

Month	Age group (years)			Total
	16-19	20-59	60+	
January	3	12	1	16
February	2	16	1	19
March	3	15	2	20
April		14		14
May	1	13	2	16
June	1	13	1	15
July	1	12	1	14
August	1	11	1	13
September		8	2	10
October	1	14	1	16
November	2	12	2	16
December	1	13	1	15
Total	16	153	15	184

Table 3.1c
Number of pedal cycle casualties aged 16 and over in South Australia 2001-2004, by month of crash and crash postcode group

Month	Postcode group			Total
	5000-5099	5100-5199	5200-5999	
January	88	13	7	108
February	100	14	12	126
March	140	21	11	172
April	98	15	9	122
May	103	25	6	134
June	64	11	5	80
July	80	12	5	97
August	87	12	9	108
September	88	6	9	103
October	78	14	8	100
November	90	14	8	112
December	72	15	5	92
Total	1088	172	94	1354

Table 3.1d
Number of serious pedal cycle casualties aged 16 and over in South Australia 2001-2004, by month of crash and crash postcode group

Month	Postcode group			Total
	5000-5099	5100-5199	5200-5999	
January	12	1	3	16
February	13	1	5	19
March	14	3	3	20
April	11	2	1	14
May	12	1	3	16
June	12	1	2	15
July	11	2	1	14
August	8	1	4	13
September	8	1	1	10
October	8	5	3	16
November	10	2	4	16
December	10	4	1	15
Total	129	24	31	184

Table 3.2a
Number of pedal cycle casualties aged 16 and over in South Australia 2001-2004, by day of week of crash and age group of casualty

Day of week	Age group (years)			Total
	16-19	20-59	60+	
Monday	21	152	13	186
Tuesday	20	174	11	205
Wednesday	25	208	11	244
Thursday	30	213	13	256
Friday	16	188	11	215
Saturday	9	102	17	128
Sunday	11	100	9	120
Total	132	1137	85	1354

Table 3.2b
Number of serious pedal cycle casualties aged 16 and over in South Australia 2001-2004, by day of week of crash and age group of casualty

Day of week	Age group (years)			Total
	16-19	20-59	60+	
Monday	2	26	1	29
Tuesday	3	17		20
Wednesday	4	31	2	37
Thursday	2	22	3	27
Friday	3	20	4	27
Saturday	2	17	4	23
Sunday		20	1	21
Total	16	153	15	184

Table 3.2c
Number of pedal cycle casualties aged 16 and over in South Australia 2001-2004, by day of week of crash and crash postcode group

Day of week	Postcode group			Total
	5000-5099	5100-5199	5200-5999	
Monday	154	20	12	186
Tuesday	162	33	10	205
Wednesday	195	33	16	244
Thursday	207	35	14	256
Friday	179	19	17	215
Saturday	106	12	10	128
Sunday	85	20	15	120
Total	1088	172	94	1354

Table 3.2d
Number of serious pedal cycle casualties aged 16 and over in South Australia 2001-2004, by day of week of crash and crash postcode group

Day of week	Postcode group			Total
	5000-5099	5100-5199	5200-5999	
Monday	23	3	3	29
Tuesday	14	3	3	20
Wednesday	28	5	4	37
Thursday	16	7	4	27
Friday	18	1	8	27
Saturday	16	2	5	23
Sunday	14	3	4	21
Total	129	24	31	184

Table 3.3a
Number of pedal cycle casualties aged 16 and over in South Australia 2001-2004, by hour of day of crash and age group of casualty

Hour of day	Age group (years)			Total
	16-19	20-59	60+	
0		6	1	7
1	1	3		4
2		3		3
3		3		3
4				
5		9		9
6	1	47	3	51
7	4	85	4	93
8	13	155	8	176
9	6	84	14	104
10	6	61	7	74
11	7	56	5	68
12	9	37	7	53
13	8	44	4	56
14	6	51	8	65
15	12	63	5	80
16	17	108	12	137
17	12	118	3	133
18	12	91	2	105
19	4	45	1	50
20	5	26		31
21	4	14		18
22	3	11	1	15
23	2	17		19
Total	132	1137	85	1354

Table 3.3b
Number of serious pedal cycle casualties aged 16 and over in South Australia 2001-2004, by hour of day of crash and age group of casualty

Hour of day	Age group (years)			Total
	16-19	20-59	60+	
0		1	1	2
1		2		2
2		1		1
3		1		1
4				
5		2		2
6	1	2	1	4
7		11	1	12
8	1	16	2	19
9	2	20	2	24
10	1	8	3	12
11	1	4		5
12	1	4	1	6
13		3		3
14	1	8	2	11
15	1	8		9
16	2	12	1	15
17	1	20	1	22
18		10		10
19	1	6		7
20	2	3		5
21		5		5
22		1		1
23	1	5		6
Total	16	153	15	184

Table 3.3c
Number of pedal cycle casualties aged 16 and over in South Australia 2001-2004, by hour of day of crash and crash postcode group

Hour of day	Postcode group			Total
	5000-5099	5100-5199	5200-5999	
0	7			7
1	4			4
2	3			3
3	2		1	3
4				
5	4	5		9
6	34	16	1	51
7	78	8	7	93
8	156	15	5	176
9	82	10	12	104
10	55	10	9	74
11	55	9	4	68
12	40	10	3	53
13	47	5	4	56
14	46	12	7	65
15	67	7	6	80
16	112	16	9	137
17	111	14	8	133
18	86	14	5	105
19	40	6	4	50
20	22	4	5	31
21	12	5	1	18
22	12	3		15
23	13	3	3	19
Total	1088	172	94	1354

Table 3.3d
Number of serious pedal cycle casualties aged 16 and over in South Australia 2001-2004, by hour of day of crash and crash postcode group

Hour of day	Postcode group			Total
	5000-5099	5100-5199	5200-5999	
0	2			2
1	2			2
2	1			1
3			1	1
4				
5		2		2
6	1	2	1	4
7	8	1	3	12
8	17	1	1	19
9	15	3	6	24
10	6	3	3	12
11	5			5
12	4		2	6
13	3			3
14	7	2	2	11
15	7	1	1	9
16	11	2	2	15
17	18	2	2	22
18	8	1	1	10
19	6		1	7
20	2		3	5
21	2	3		5
22	1			1
23	3	1	2	6
Total	129	24	31	184

Table 3.4a
Number of pedal cycle casualties aged 16 and over in South Australia 2001-2004, by postcode group of crash and age group of casualty

Postcode group	Age group (years)			Total
	16-19	20-59	60+	
5000 (Adelaide city)	6	173		179
5001-5019 (NW)	14	137	15	166
5020-5039 (W)	18	193	22	233
5040-5059 (S)	20	131	7	158
5060-5079 (E)	19	202	7	228
5080-5099 (NE)	12	102	10	124
5100-5199	23	139	10	172
5200-5999	20	60	14	94
Total	132	1137	85	1354

Table 3.4b
Number of serious pedal cycle casualties aged 16 and over in South Australia 2001-2004, by postcode group of crash and age group of casualty

Postcode group	Age group (years)			Total
	16-19	20-59	60+	
5000 (Adelaide city)		20		20
5001-5019 (NW)	1	16	3	20
5020-5039 (W)	3	27	3	33
5040-5059 (S)	2	15	1	18
5060-5079 (E)	2	19	1	22
5080-5099 (NE)		14	2	16
5100-5199	1	23		24
5200-5999	7	19	5	31
Total	16	153	15	184

Table 3.5a
Number of pedal cycle casualties aged 16 and over in South Australia 1995-2004, by postcode group of crash and age group of casualty

Postcode group	Age group (years)			Total
	16-19	20-59	60+	
5000 (Adelaide city)	34	384	5	423
5001-5019 (NW)	41	303	37	381
5020-5039 (W)	53	436	53	542
5040-5059 (S)	62	318	23	403
5060-5079 (E)	87	491	23	601
5080-5099 (NE)	36	244	20	300
5100-5199	64	308	19	391
5200-5999	51	144	34	229
Total	428	2628	214	3270

Table 3.5b
Number of serious pedal cycle casualties aged 16 and over in South Australia 1995-2004, by postcode group of crash and age group of casualty

Postcode group	Age group (years)			Total
	16-19	20-59	60+	
5000 (Adelaide city)		42	1	43
5001-5019 (NW)	8	50	8	66
5020-5039 (W)	6	63	13	82
5040-5059 (S)	8	50	2	60
5060-5079 (E)	9	47	5	61
5080-5099 (NE)	4	35	7	46
5100-5199	6	49	1	56
5200-5999	20	42	14	76
Total	61	378	51	490

Table 3.6a
Number of pedal cycle casualties aged 16 and over in South Australia 2001-2004, by whether or not the rider lives in the crash postcode and age group of casualty

Locality of rider	Age group (years)			Total
	16-19	20-59	60+	
Rider lives in different postcode than crash	77	855	52	984
Rider lives in same postcode as crash	53	267	32	352
Unknown	2	15	1	18
Total	132	1137	85	1354

Table 3.6b
Number of serious pedal cycle casualties aged 16 and over in South Australia 2001-2004, by whether or not the rider lives in the crash postcode and age group of casualty

Locality of rider	Age group (years)			Total
	16-19	20-59	60+	
Rider lives in different postcode than crash	8	113	8	129
Rider lives in same postcode as crash	8	35	7	50
Total	16	148	15	179

Table 3.6c
Number of pedal cycle casualties aged 16 and over in South Australia 2001-2004, by whether or not the rider lives in the crash postcode and crash postcode group

Locality of rider	Postcode group			Total
	5000-5099	5100-5199	5200-5999	
Rider lives in different postcode than crash	858	99	27	984
Rider lives in same postcode as crash	218	70	64	352
Unknown	12	3	3	18
Total	1088	172	94	1354

Table 3.6d
Number of serious pedal cycle casualties aged 16 and over in South Australia 2001-2004, by whether or not the rider lives in the crash postcode and crash postcode group

Locality of rider	Postcode group			Total
	5000-5099	5100-5199	5200-5999	
Rider lives in different postcode than crash	103	15	11	129
Rider lives in same postcode as crash	22	8	20	50
Unknown	4	1		5
Total	129	24	31	184

Table 3.7a
Number of pedal cycle casualties aged 16 and over in South Australia 2001-2004, by road geometry and age group of casualty

Road geometry	Age group (years)			Total
	16-19	20-59	60+	
Junction	69	688	51	808
Not at junction	60	431	30	521
Unknown	3	18	4	25
Total	132	1137	85	1354

Table 3.7b
Number of serious pedal cycle casualties aged 16 and over in South Australia 2001-2004, by road geometry and age group of casualty

Road geometry	Age group (years)			Total
	16-19	20-59	60+	
Junction	10	74	8	92
Not at junction	6	75	7	88
Unknown		4		4
Total	16	153	15	184

Table 3.7c
Number of pedal cycle casualties aged 16 and over in South Australia 2001-2004, by road geometry and crash postcode group

Road geometry	Postcode group			Total
	5000-5099	5100-5199	5200-5999	
Junction	667	93	48	808
Not at junction	401	74	46	521
Unknown	20	5		25
Total	1088	172	94	1354

Table 3.7d
Number of serious pedal cycle casualties aged 16 and over in South Australia 2001-2004, by road geometry and crash postcode group

Road geometry	Postcode group			Total
	5000-5099	5100-5199	5200-5999	
Junction	69	10	13	92
Not at junction	56	14	18	88
Unknown	4			4
Total	129	24	31	184

Table 3.8a
Number of pedal cycle casualties aged 16 and over in South Australia 2001-2004, by speed limit and age group of casualty

Speed limit (km/h)	Age group (years)			Total
	16-19	20-59	60+	
40		19	1	20
50	17	166	10	193
60	100	860	62	1022
70		13	1	14
80	4	33	4	41
90		5	1	6
100	4	15	3	22
110	1	5		6
Unknown	6	21	3	30
Total	132	1137	85	1354

Note: 50 km/h default speed limit introduced in South Australia on 1 March 2003

Table 3.8b
Number of serious pedal cycle casualties aged 16 and over in South Australia 2001-2004, by speed limit and age group of casualty

Speed limit (km/h)	Age group (years)			Total
	16-19	20-59	60+	
40		2		2
50	1	24	2	27
60	12	99	11	122
70		4	1	5
80	2	9		11
90		1		1
100		7	1	8
110	1	3		4
Unknown		4		4
Total	16	153	15	184

Note: 50 km/h default speed limit introduced in South Australia on 1 March 2003

Table 3.8c
Number of pedal cycle casualties aged 16 and over in South Australia 2001-2004, by speed limit and crash postcode group

Speed limit (km/h)	Postcode group			Total
	5000-5099	5100-5199	5200-5999	
40	19		1	20
50	149	22	22	193
60	870	105	47	1022
70	12	2		14
80	13	21	7	41
90		6		6
100	1	10	11	22
110			6	6
Unknown	24	6		30
Total	1088	172	94	1354

Note: 50 km/h default speed limit introduced in South Australia on 1 March 2003

Table 3.8d
Number of serious pedal cycle casualties aged 16 and over in South Australia 2001-2004, by speed limit and crash postcode group

Speed limit (km/h)	Postcode group			Total
	5000-5099	5100-5199	5200-5999	
40	1		1	2
50	19	3	5	27
60	97	12	13	122
70	5			5
80	3	4	4	11
90		1		1
100		4	4	8
110			4	4
Unknown	4			4
Total	129	24	31	184

Note: 50 km/h default speed limit introduced in South Australia on 1 March 2003

Table 3.9a
Number of pedal cycle casualties aged 16 and over in South Australia 2001-2004, by road wetness and age group of casualty

Road wetness	Age group (years)			Total
	16-19	20-59	60+	
Wet	4	84	4	92
Dry	128	1053	81	1262
Total	132	1137	85	1354

Table 3.9b
Number of serious pedal cycle casualties aged 16 and over in South Australia 2001-2004, by road wetness and age group of casualty

Road wetness	Age group (years)			Total
	16-19	20-59	60+	
Wet	2	18		20
Dry	14	135	15	164
Total	16	153	15	184

Table 3.9c
Number of pedal cycle casualties aged 16 and over in South Australia 2001-2004, by road wetness and crash postcode group

Road wetness	Postcode group			Total
	5000-5099	5100-5199	5200-5999	
Wet	71	16	5	92
Dry	1017	156	89	1262
Total	1088	172	94	1354

Table 3.9d
Number of serious pedal cycle casualties aged 16 and over in South Australia 2001-2004, by road wetness and crash postcode group

Road wetness	Postcode group			Total
	5000-5099	5100-5199	5200-5999	
Wet	18	1	1	20
Dry	111	23	30	164
Total	129	24	31	184

Table 3.10a
Number of pedal cycle casualties aged 16 and over in South Australia 2001-2004, by crash type and age group of casualty

Crash type	Age group (years)			Total
	16-19	20-59	60+	
Rear end	11	96	9	116
Hit fixed object	5	36	2	43
Side swipe	25	222	21	268
Right angle	54	416	31	501
Head on	3	21	1	25
Hit pedestrian	1	4		5
Roll over	8	51	4	63
Right turn	8	142	8	158
Hit parked vehicle	10	55	2	67
Hit animal		6	2	8
Hit object on road	1	7		8
Left road out of control	2	8		10
Other	4	73	5	82
Total	132	1137	85	1354

Table 3.10b
Number of serious pedal cycle casualties aged 16 and over in South Australia 2001-2004, by crash type and age group of casualty

Crash type	Age group (years)			Total
	16-19	20-59	60+	
Rear end		18	3	21
Hit fixed object	1	8		9
Side swipe	3	24	3	30
Right angle	7	46	3	56
Head on		3		3
Hit pedestrian				0
Roll over	1	15		16
Right turn	1	22	2	25
Hit parked vehicle		10	2	12
Hit animal		1	1	2
Hit object on road		1		1
Left road out of control	2			2
Other	1	5	1	7
Total	16	153	15	184

Table 3.10c
Number of pedal cycle casualties aged 16 and over in South Australia 2001-2004, by crash type and crash postcode group

Crash type	Postcode group			Total
	5000-5099	5100-5199	5200-5999	
Rear end	82	23	11	116
Hit fixed object	33	8	2	43
Side swipe	217	30	21	268
Right angle	394	74	33	501
Head on	16	8	1	25
Hit pedestrian	5			5
Roll over	46	9	8	63
Right turn	150	5	3	158
Hit parked vehicle	54	5	8	67
Hit animal	5	2	1	8
Hit object on road	7	1		8
Left road out of control	7	1	2	10
Other	72	6	4	82
Total	1088	172	94	1354

Table 3.10d
Number of serious pedal cycle casualties aged 16 and over in South Australia 2001-2004, by crash type and crash postcode group

Crash type	Postcode group			Total
	5000-5099	5100-5199	5200-5999	
Rear end	8	9	4	21
Hit fixed object	7	1	1	9
Side swipe	21	3	6	30
Right angle	41	7	8	56
Head on	1	1	1	3
Hit pedestrian				0
Roll over	10	1	5	16
Right turn	23	1	1	25
Hit parked vehicle	10		2	12
Hit animal		1	1	2
Hit object on road	1			1
Left road out of control			2	2
Other	7			7
Total	129	24	31	184

Table 3.11a
Number of pedal cycle casualties aged 16 and over in South Australia 2001-2004, by rider sex and age group of casualty

Rider sex	Age group (years)			Total
	16-19	20-59	60+	
Male	114	899	68	1081
Female	18	238	17	273
Total	132	1137	85	1354

Table 3.11b
Number of serious pedal cycle casualties aged 16 and over in South Australia 2001-2004, by rider sex and age group of casualty

Rider sex	Age group (years)			Total
	16-19	20-59	60+	
Male	14	118	10	142
Female	2	35	5	42
Total	16	153	15	184

Table 3.11c
Number of pedal cycle casualties aged 16 and over in South Australia 2001-2004, by rider sex and crash postcode group

Rider sex	Postcode group			Total
	5000-5099	5100-5199	5200-5999	
Male	858	146	77	1081
Female	230	26	17	273
Total	1088	172	94	1354

Table 3.11d
Number of serious pedal cycle casualties aged 16 and over in South Australia 2001-2004, by rider sex and crash postcode group

Rider sex	Postcode group			Total
	5000-5099	5100-5199	5200-5999	
Male	98	20	24	142
Female	31	4	7	42
Total	129	24	31	184

Table 3.12c
Number of pedal cycle casualties aged 16 and over in South Australia 2001-2004, by rider age and crash postcode group

Rider age	Postcode group			Total
	5000-5099	5100-5199	5200-5999	
16	19	7	8	34
17	20	4	6	30
18	25	5	2	32
19	25	7	4	36
20	32	5	1	38
21	34	4		38
22	25	1	1	27
23	29	6	1	36
24	34	6	1	41
25	31	1	2	34
26	32	4	1	37
27	27	6	4	37
28	27	6		33
29	40	4	1	45
30	45	3	1	49
31	32	4	3	39
32	16	3		19
33	34	6	1	41
34	37	4	2	43
35	35	2	3	40
36	18	3	1	22
37	26	2		28
38	18	6	2	26
39	12	6	3	21
40	21	2	1	24
41	29		3	32
42	35	5		40
43	26	5	3	34
44	14	2	1	17
45	25	6	3	34
46	22	3	3	28
47	21	6	1	28
48	19	4	2	25
49	19	2	2	23
50	21	1	1	23
51	11	8		19
52	14		2	16
53	15		1	16
54	11	2	2	15
55	13	4	1	18
56	6	3	2	11
57	10	1		11
58	12	1	2	15
59	10	2	2	14
60	2	2		4
61	3			3
62	5			5
63	4	2	1	7
64	5	1	2	8
65	4	1	1	6
66	3			3
67	6	1	1	8
68	3			3
69	4			4
70	2	1		3
71	1		1	2
72	3	1	2	6
73	1		2	3
74	2			2
75	2			2
76	2			2
77	2			2
78		1		1
80	1		2	3
81	1			1
82			1	1
83	2			2
84	1		1	2
86	1			1
90	1			1
Total	1088	172	94	1354

Table 3.12d
Number of serious pedal cycle casualties aged 16 and over in South Australia 2001-2004, by rider age and crash postcode group

Rider age	Postcode group			Total
	5000-5099	5100-5199	5200-5999	
16	4		3	7
17	1	1	2	4
18	1		1	2
19	2		1	3
20		2		2
21	5			5
22	5			5
23	3	2		5
24		1		1
25	5			5
26	2			2
27	6	1	3	10
28	5	1		6
29	4		1	5
30	5			5
31	5		1	6
32		1		1
33	5			5
34	4		1	5
35	5			5
36	2	1		3
37	2			2
38	1	2		3
39		1		1
40	3	1	1	5
41	4		1	5
42	2			2
43	6	1	1	8
44	2	1		3
45	1			1
46	3	1	2	6
47	4	1		5
48	2		2	4
49	2		2	4
50	3			3
51	1	1		2
52	1			1
54	4	1		5
55	3	2		5
56	2	2	2	6
58	1		1	2
59	3		1	4
62	1			1
63	1			1
64	1		1	2
65	1		1	2
66	1			1
67			1	1
68	2			2
72	1			1
75	1			1
80	1		1	2
82			1	1
Total	129	24	31	184

Table 3.13a
Number of pedal cycle casualties aged 16 and over in South Australia 2001-2004, by rider home postcode group and age group of casualty

Rider home postcode group	Age group (years)			Total
	16-19	20-59	60+	
5000-5099	86	883	59	1028
5100-5199	25	175	11	211
5200-5999	19	61	13	93
Other	2	18	2	22
Total	132	1137	85	1354

Table 3.13b
Number of serious pedal cycle casualties aged 16 and over in South Australia 2001-2004, by rider home postcode group and age group of casualty

Rider home postcode group	Age group (years)			Total
	16-19	20-59	60+	
5000-5099	8	105	10	123
5100-5199	1	27		28
5200-5999	7	16	5	28
Unknown		5		5
Total	16	153	15	184

Table 3.13c
Number of pedal cycle casualties aged 16 and over in South Australia 2001-2004, by rider home postcode and crash postcode groups

Rider home postcode group	Crash postcode group			Total
	5000-5099	5100-5199	5200-5999	
5000-5099	995	29	4	1028
5100-5199	69	138	4	211
5200-5999	10	1	82	93
Other	14	4	4	22
Total	1088	172	94	1354

Table 3.13d
Number of serious pedal cycle casualties aged 16 and over in South Australia 2001-2004, by rider home postcode and crash postcode groups

Rider home postcode group	Crash postcode group			Total
	5000-5099	5100-5199	5200-5999	
5000-5099	117	4	2	123
5100-5199	7	19	2	28
5200-5999	1		27	28
Unknown	4	1		5
Total	129	24	31	184

Table 3.14a
Pedal cycle casualties aged 16 and over in South Australia 2001-2004: Number in single motor vehicle vs single bicycle crashes, by driver sex and rider age group

Sex of motor vehicle driver	Rider age group (years)			Total
	16-19	20-59	60+	
Male	56	534	41	631
Female	34	328	25	387
Unknown	8	58	6	72
Total	98	920	72	1090

Table 3.14b
Serious pedal cycle casualties aged 16 and over in South Australia 2001-2004: Number in single motor vehicle vs single bicycle crashes, by driver sex and rider age group

Sex of motor vehicle driver	Rider age group (years)			Total
	16-19	20-59	60+	
Male	7	73	8	88
Female	3	30	2	35
Unknown		8	2	10
Total	10	111	12	133

Table 3.14c
Pedal cycle casualties aged 16 and over in South Australia 2001-2004: Number in single motor vehicle vs single bicycle crashes, by driver sex and crash postcode group

Sex of motor vehicle driver	Crash postcode group			Total
	5000-5099	5100-5199	5200-5999	
Male	518	76	37	631
Female	319	42	26	387
Unknown	58	11	3	72
Total	895	129	66	1090

Table 3.14d
Serious pedal cycle casualties aged 16 and over in South Australia 2001-2004: Number in single motor vehicle vs single bicycle crashes, by driver sex and crash postcode group

Sex of motor vehicle driver	Crash postcode group			Total
	5000-5099	5100-5199	5200-5999	
Male	63	11	14	88
Female	28	2	5	35
Unknown	6	3	1	10
Total	97	16	20	133

Table 3.15a
Pedal cycle casualties aged 16 and over in South Australia 2001-2004: Number in single motor vehicle vs single bicycle crashes, by driver age and rider age group

Age group of motor vehicle driver	Rider age group (years)			Total
	16-19	20-59	60+	
16-19	5	56	3	64
20-29	12	146	10	168
30-39	17	138	13	168
40-49	15	176	12	203
50-59	19	108	10	137
60-69	3	29	5	37
70-99	2	37	5	44
Unknown	25	230	14	269
Total	98	920	72	1090

Table 3.15b
Serious pedal cycle casualties aged 16 and over in South Australia 2001-2004: Number in single motor vehicle vs single bicycle crashes, by driver age and rider age group

Age group of motor vehicle driver	Rider age group (years)			Total
	16-19	20-59	60+	
16-19		10	1	11
20-29	2	22	2	26
30-39	3	20	3	26
40-49	2	25	2	29
50-59	3	11		14
60-69		4	1	5
70-99		4		4
Unknown		15	3	18
Total	10	111	12	133

Table 3.15c
Pedal cycle casualties aged 16 and over in South Australia 2001-2004: Number in single motor vehicle vs single bicycle crashes, by driver age and crash postcode group

Age group of motor vehicle driver	Crash postcode group			Total
	5000-5099	5100-5199	5200-5999	
16-19	48	13	3	64
20-29	147	12	9	168
30-39	132	22	14	168
40-49	167	18	18	203
50-59	114	18	5	137
60-69	28	5	4	37
70-99	37	2	5	44
Unknown	222	39	8	269
Total	895	129	66	1090

Table 3.15d
Serious pedal cycle casualties aged 16 and over in South Australia 2001-2004: Number in single motor vehicle vs single bicycle crashes, by driver age and crash postcode group

Age group of motor vehicle driver	Crash postcode group			Total
	5000-5099	5100-5199	5200-5999	
16-19	10		1	11
20-29	22	2	2	26
30-39	18	2	6	26
40-49	18	3	8	29
50-59	11	3		14
60-69	2	2	1	5
70-99	3	1		4
Unknown	13	3	2	18
Total	97	16	20	133

Table 3.16a
Pedal cycle casualties aged 16 and over in South Australia 2001-2004: Number in single motor vehicle vs single bicycle crashes, by type of motor vehicle and rider age group

Type of motor vehicle	Rider age group (years)			Total
	16-19	20-59	60+	
Car (and derivatives)	81	704	54	839
Other	4	105	7	116
Unknown	13	111	11	135
Total	98	920	72	1090

Table 3.16b
Serious pedal cycle casualties aged 16 and over in South Australia 2001-2004: Number in single motor vehicle vs single bicycle crashes, by type of motor vehicle and rider age group

Type of motor vehicle	Rider age group (years)			Total
	16-19	20-59	60+	
Car (and derivatives)	6	75	7	88
Other	3	25	2	30
Unknown	1	11	3	15
Total	10	111	12	133

Table 3.16c
Pedal cycle casualties aged 16 and over in South Australia 2001-2004: Number in single motor vehicle vs single bicycle crashes, by type of motor vehicle and crash postcode group

Type of motor vehicle	Crash postcode group			Total
	5000-5099	5100-5199	5200-5999	
Car (and derivatives)	684	103	52	839
Other	97	13	6	116
Unknown	114	13	8	135
Total	895	129	66	1090

Table 3.16d
Serious pedal cycle casualties aged 16 and over in South Australia 2001-2004: Number in single motor vehicle vs single bicycle crashes, by type of motor vehicle and crash postcode group

Type of motor vehicle	Crash postcode group			Total
	5000-5099	5100-5199	5200-5999	
Car (and derivatives)	68	7	13	88
Other	19	6	5	30
Unknown	10	3	2	15
Total	97	16	20	133

Table 3.17a
Pedal cycle casualties aged 16 and over in South Australia 2001-2004: Number in single motor vehicle vs single bicycle crashes, by year of motor vehicle and rider age group

Year of vehicle	Rider age group (years)			Total
	16-19	20-59	60+	
1900-1979	3	42	4	49
1980-1989	29	226	22	277
1990-1999	28	348	24	400
2000	1	44	1	46
2001	9	31	4	44
2002	2	23	3	28
2003	1	11	2	14
2004		3		3
Unknown	25	192	12	229
Total	98	920	72	1090

Table 3.17b
Serious pedal cycle casualties aged 16 and over in South Australia 2001-2004: Number in single motor vehicle vs single bicycle crashes, by year of motor vehicle and rider age group

Year of vehicle	Rider age group (years)			Total
	16-19	20-59	60+	
1900-1979		6		6
1980-1989	3	28	6	37
1990-1999	4	45	2	51
2000		8		8
2001	2	1		3
2002		4	1	5
2003		1		1
2004				0
Unknown	1	18	3	22
Total	10	111	12	133

Table 3.17c
Pedal cycle casualties aged 16 and over in South Australia 2001-2004: Number in single motor vehicle vs single bicycle crashes, by year of motor vehicle and crash postcode group

Year of vehicle	Crash postcode group			Total
	5000-5099	5100-5199	5200-5999	
1900-1979	38	5	6	49
1980-1989	232	33	12	277
1990-1999	325	45	30	400
2000	40	3	3	46
2001	35	7	2	44
2002	21	4	3	28
2003	11	3		14
2004	2	1		3
Unknown	191	28	10	229
Total	895	129	66	1090

Table 3.17d
Serious pedal cycle casualties aged 16 and over in South Australia 2001-2004: Number in single motor vehicle vs single bicycle crashes, by year of motor vehicle and crash postcode group

Year of vehicle	Crash postcode group			Total
	5000-5099	5100-5199	5200-5999	
1900-1979	4		2	6
1980-1989	28	4	5	37
1990-1999	37	6	8	51
2000	6		2	8
2001	2	1		3
2002	4	1		5
2003		1		1
2004				0
Unknown	16	3	3	22
Total	97	16	20	133

Table 3.18a
Number of pedal cycle casualties aged 16 and over in South Australia 2001-2004, by cyclist injury severity and age group of casualty

Cyclist injury severity	Age group (years)			Total
	16-19	20-59	60+	
Treated by doctor	29	395	22	446
Treated at hospital	87	589	48	724
Admitted to hospital	15	142	13	170
Fatality	1	11	2	14
Total	132	1137	85	1354

Table 3.18c
Number of pedal cycle casualties aged 16 and over in South Australia 2001-2004, by cyclist injury severity and crash postcode group

Cyclist injury severity	Crash postcode group			Total
	5000-5099	5100-5199	5200-5999	
Treated by doctor	389	42	15	446
Treated at hospital	570	106	48	724
Admitted to hospital	122	21	27	170
Fatality	7	3	4	14
Total	1088	172	94	1354

Table 3.19a
Number of pedal cycle casualties aged 16 and over in South Australia 2001-2004, by treating hospital and age group of casualty

Treating hospital	Age group (years)			Total
	16-19	20-59	60+	
Flinders Medical Centre	22	125	12	159
Lyell McEwin Hospital	11	45	2	58
Modbury Hospital	4	28	2	34
Noarlunga Hospital	4	14	3	21
Queen Elizabeth Hospital	12	84	16	112
Royal Adelaide Hospital	24	305	12	341
Wakefield Hospital	1	26	1	28
Other	22	73	11	106
NA/Unknown	32	437	26	495
Total	132	1137	85	1354

Table 3.19b
Number of serious pedal cycle casualties aged 16 and over in South Australia 2001-2004, by treating hospital and age group of casualty

Treating hospital	Age group (years)			Total
	16-19	20-59	60+	
Flinders Medical Centre	2	26		28
Lyell McEwin Hospital	1	6		7
Modbury Hospital		3		3
Noarlunga Hospital		2		2
Queen Elizabeth Hospital		15	5	20
Royal Adelaide Hospital	6	72	3	81
Wakefield Hospital		4		4
Other	6	12	6	24
Unknown	1	13	1	15
Total	16	153	15	184

Table 3.19c
Number of pedal cycle casualties aged 16 and over in South Australia 2001-2004, by treating hospital and crash postcode group

Treating hospital	Crash postcode group			Total
	5000-5099	5100-5199	5200-5999	
Flinders Medical Centre	123	34	2	159
Lyell McEwin Hospital	4	53	1	58
Modbury Hospital	31	3		34
Noarlunga Hospital	2	19		21
Queen Elizabeth Hospital	112			112
Royal Adelaide Hospital	323	13	5	341
Wakefield Hospital	28			28
Other	39	3	64	106
NA/Unknown	426	47	22	495
Total	1088	172	94	1354

Table 3.19d
Number of serious pedal cycle casualties aged 16 and over in South Australia 2001-2004, by treating hospital and crash postcode group

Treating hospital	Crash postcode group			Total
	5000-5099	5100-5199	5200-5999	
Flinders Medical Centre	20	7	1	28
Lyell McEwin Hospital	1	6		7
Modbury Hospital	2	1		3
Noarlunga Hospital		2		2
Queen Elizabeth Hospital	20			20
Royal Adelaide Hospital	72	4	5	81
Wakefield Hospital	4			4
Other	2	1	21	24
Unknown	8	3	4	15
Total	129	24	31	184

4 Trends

This Section presents data on the numbers of pedal cyclist casualties over the period 1981 to 2004. (Those of unknown age were excluded, as it was not known whether they were children or adults.)

4.1 Age distributions in different years

Tables 4.1 contrast the age distribution --- that is, the percentages in the different age groups --- in different periods.

a. All severities of casualty.
b. Fatal and hospital-admitted casualties only.

In Table 4.1a, it can be seen that those aged 0-15, as a proportion of total pedal cyclist casualties, have fallen from 45 per cent in 1981-1984 to 16 per cent in 2001-2004. Those aged 30-59 increased from 17 per cent to 48 per cent.

4.2 Trends: Child pedal cyclists

Tables 4.2 refer to casualties aged 5-15.

a. By age group, all severities. These data are also plotted in Figure 4.1.
b. By age group, fatal and hospital-admitted casualties only. For the percentage who were killed or admitted to hospital, see Figure 4.2.
c. The numbers killed, in four-year periods.

Child pedal cyclist casualties reached a maximum in about the period 1982-1987, and have fallen sharply since. In 2004, pedal cyclist casualties aged 5-15 had fallen to 26 per cent of what they were in 1981. In 2004, seriously injured pedal cyclist casualties aged 5-15 had fallen to 16 per cent of what they were in 1981.

Figure 4.2 shows that those seriously injured, as a proportion of total pedal cyclist casualties aged 5-15, have fallen from 34 per cent in 1981 to 22 per cent in 2004; however, most of the reduction occurred at the beginning of the period, over the years 1981 to 1985. Table 4.2c shows that those killed, as a proportion of total pedal cyclist casualties aged 5-15, have fallen from 2.1 per cent in 1981-1984 to 1.2 per cent in 2001-2004; again, however, most of the reduction occurred at the beginning of the period, from the period 1981-1984 to the period 1985-1988.

4.3 Trends: Adult pedal cyclists

Tables 4.3 refer to casualties aged 16 and over.

a. By age group, all severities. These data are also plotted in Figure 4.3.
b. By age group, fatal and hospital-admitted casualties only. For the percentage who were killed or admitted to hospital, see Figure 4.4.
c. The numbers killed, in four-year periods.

Adult pedal cyclist casualties reached a maximum in about the period 1987-1990, and then fell. However, from about the mid-1990s, there seems to have been an increase in pedal cyclist casualties aged 40-59. In 2004, pedal cyclist casualties aged 16 and over had increased to 105 per cent of what they were in 1981. In 2004, seriously injured pedal cyclist casualties aged 16 and over had fallen to 48 per cent of what they were in 1981.

Figure 4.4 shows that those seriously injured, as a proportion of total pedal cyclist casualties aged 16 and over, have fallen from 31 per cent in 1981 to 14 per cent in 2004; however,

there has been little change since 1993. Table 4.3c shows that those killed, as a proportion of total pedal cyclist casualties aged 16 and over, have fallen from 1.4 per cent in 1981-1984 to 1.0 per cent in 2001-2004.

4.4 Cyclists' helmets (1991) and a speed limit change (2003)

The wearing of helmets by pedal cyclists was promoted from 1985, and became compulsory on 1st July 1991. This probably both deterred some people from cycling and prevented some injuries among those who continued to cycle (Marshall and White, 1994). A complicating factor was that hospitals' admission policy for concussion may have changed at about the same time.

From 1 March 2003, the speed limit on most urban roads changed from 60 km/h to 50 km/h; it remained 60 km/h or higher on urban arterials. The question might be asked whether this resulted in a reduction in pedal cyclist casualties.

As to child pedal cyclist casualties, these are too few for a detectable effect to be expected, and, indeed, the numbers in 2003-2004 were not lower than in 2001-2002 (Table 4.2a and Figure 4.1).

As to adult pedal cyclist casualties, the answer is that the data are suggestive of a reduction. There is no decline in the years up to 2002, but then the numbers in 2003 and 2004 are slightly lower (Table 4.3a and Figure 4.3). It so happens that the number of casualties differs quite substantially between months (Table 3.1), and indeed March is the month with the highest number, and thus it is not helpful to look at month-by-month figures for a few months before and a few months after the change.

Kloeden, Woolley, and McLean (2004) discussed the effect on road casualties (not specifically pedal cyclists) of the speed limit reduction.

Table 4.1a
Pedal cycle casualties in South Australia 1981-2004,
by grouped year and age group of rider (row percentages)

Year	Age group (years)							Total
	0-15	16-19	20-29	30-39	40-49	50-59	60-99	
1981-1984	44.8%	13.7%	19.7%	9.2%	4.2%	3.5%	4.9%	2440
1985-1988	36.7%	17.2%	22.2%	10.7%	4.3%	3.9%	5.1%	2985
1989-1992	29.1%	18.9%	26.4%	13.2%	5.3%	3.4%	3.7%	2553
1993-1996	26.8%	13.2%	26.7%	16.3%	8.1%	4.0%	5.0%	1832
1997-2000	23.2%	11.1%	26.7%	16.2%	12.1%	5.9%	4.9%	1706
2001-2004	15.6%	8.2%	22.8%	20.4%	17.8%	9.8%	5.3%	1605
Total	31.0%	14.4%	23.8%	13.6%	7.6%	4.7%	4.8%	13121

Table 4.1b
Pedal cycle casualties (fatal or admitted to hospital) in South Australia 1981-2004,
by grouped year and age group of rider (row percentages)

Year	Age group (years)							Total
	0-15	16-19	20-29	30-39	40-49	50-59	60-99	
1981-1984	51.8%	10.2%	16.7%	7.6%	3.9%	2.8%	7.0%	684
1985-1988	42.7%	14.4%	19.6%	8.0%	4.1%	5.0%	6.3%	639
1989-1992	35.1%	14.5%	21.7%	11.6%	6.4%	4.4%	6.4%	502
1993-1996	31.0%	10.8%	20.2%	15.5%	9.8%	4.7%	8.1%	297
1997-2000	30.7%	10.8%	20.9%	11.5%	10.1%	8.1%	7.8%	296
2001-2004	21.7%	6.8%	19.6%	15.3%	18.3%	11.9%	6.4%	235
Total	39.1%	11.9%	19.4%	10.4%	7.0%	5.2%	6.9%	2653

Table 4.2a
Pedal cycle casualties in South Australia 1981-2004,
by year of crash and age group of rider (5-15 years)

Year	Age group (years)			Total
	5-7	8-12	13-15	
1981	33	113	104	250
1982	31	138	131	300
1983	25	121	128	274
1984	24	102	138	264
1985	24	134	159	317
1986	25	101	139	265
1987	18	97	156	271
1988	21	78	132	231
1989	15	73	140	228
1990	15	86	122	223
1991	7	54	88	149
1992	15	64	62	141
1993	7	50	64	121
1994	8	58	67	133
1995	5	58	62	125
1996	8	45	55	108
1997	7	61	37	105
1998	6	49	46	101
1999	7	38	61	106
2000	6	42	33	81
2001	4	31	27	62
2002	9	20	26	55
2003	2	39	27	68
2004	3	29	32	64
Total	325	1681	2036	4042

Figure 4.1
The data in Table 4.2a shown graphically

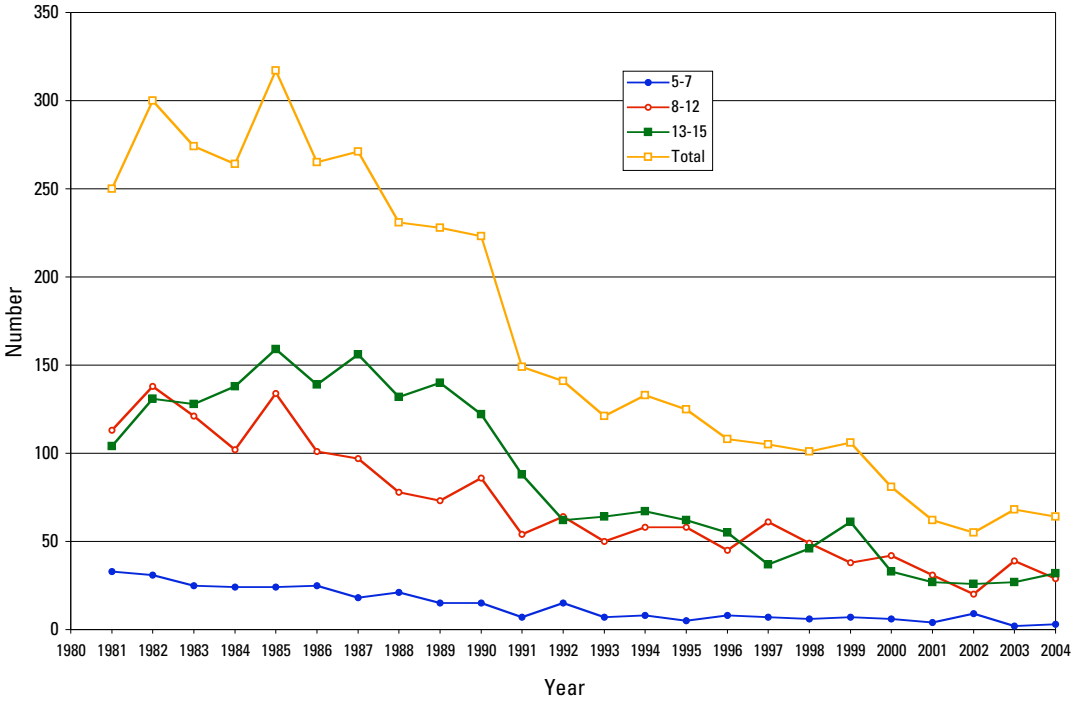

Table 4.2b
Serious pedal cycle casualties in South Australia 1981-2004, by year of crash and age group of rider (5-15 years)

Year	Age group (years)			Total
	5-7	8-12	13-15	
1981	12	43	30	85
1982	12	53	38	103
1983	10	46	27	83
1984	12	37	31	80
1985	7	38	29	74
1986	13	26	26	65
1987	9	25	39	73
1988	7	20	32	59
1989	3	21	35	59
1990	3	25	27	55
1991	2	14	15	31
1992	7	11	13	31
1993	1	10	9	20
1994	1	10	16	27
1995	2	10	15	27
1996	2	6	8	16
1997	1	14	11	26
1998		12	13	25
1999	3	7	13	23
2000	1	10	6	17
2001	2	7	3	12
2002	5	5	2	12
2003	1	7	5	13
2004		9	5	14
Total	116	466	448	1030

Figure 4.2
Bicycle casualty crashes in South Australia, 1981-2004: percentage in which the rider (5-15 years old) was killed or admitted to hospital

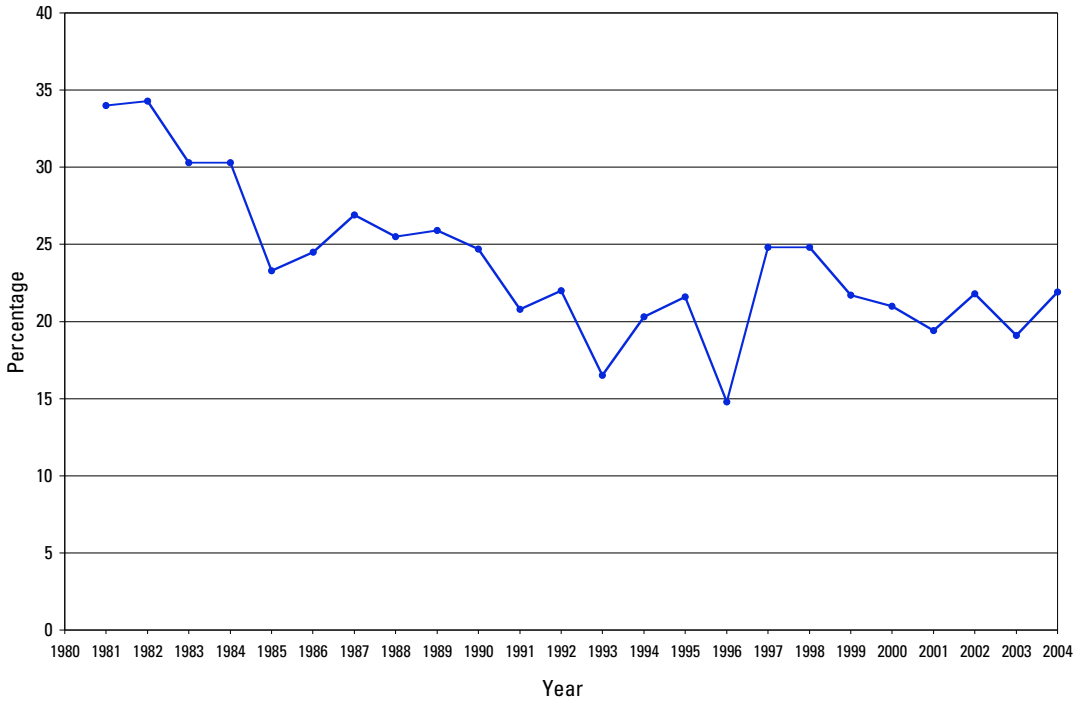

Table 4.2c
Pedal cycle casualties in South Australia 1981-2004,
by grouped year of crash and severity of injury to the rider (5-15 years)

Year	Rider injury severity		Total
	Injury	Fatality	
1981-1984	1065	23	1088
1985-1988	1072	12	1084
1989-1992	737	4	741
1993-1996	483	4	487
1997-2000	389	4	393
2001-2004	246	3	249
Total	3992	50	4042

Table 4.3a
Pedal cycle casualties in South Australia 1981-2004,
by year of crash and age group of rider (16 years and over)

Year	Age group (years)						Total
	16-19	20-29	30-39	40-49	50-59	60+	
1981	82	95	35	25	26	34	297
1982	77	119	47	21	20	22	306
1983	90	137	63	23	15	26	354
1984	86	130	79	33	25	37	390
1985	91	139	72	23	34	39	398
1986	119	149	79	33	21	32	433
1987	163	166	78	37	38	44	526
1988	140	209	91	34	22	37	533
1989	141	197	87	38	29	28	520
1990	146	218	97	35	19	30	545
1991	121	150	83	35	19	17	425
1992	75	108	69	27	21	20	320
1993	74	154	75	44	27	20	394
1994	61	127	87	34	8	25	342
1995	52	102	73	36	19	18	300
1996	54	106	63	34	20	28	305
1997	59	112	77	43	20	24	335
1998	44	109	69	43	24	28	317
1999	45	119	58	50	23	17	312
2000	42	115	73	70	33	14	347
2001	35	96	84	74	45	20	354
2002	45	108	77	70	34	22	356
2003	23	84	90	70	39	25	331
2004	29	78	77	71	40	18	313
Total	1894	3127	1783	1003	621	625	9053

Figure 4.3
The data in Table 4.3a shown graphically

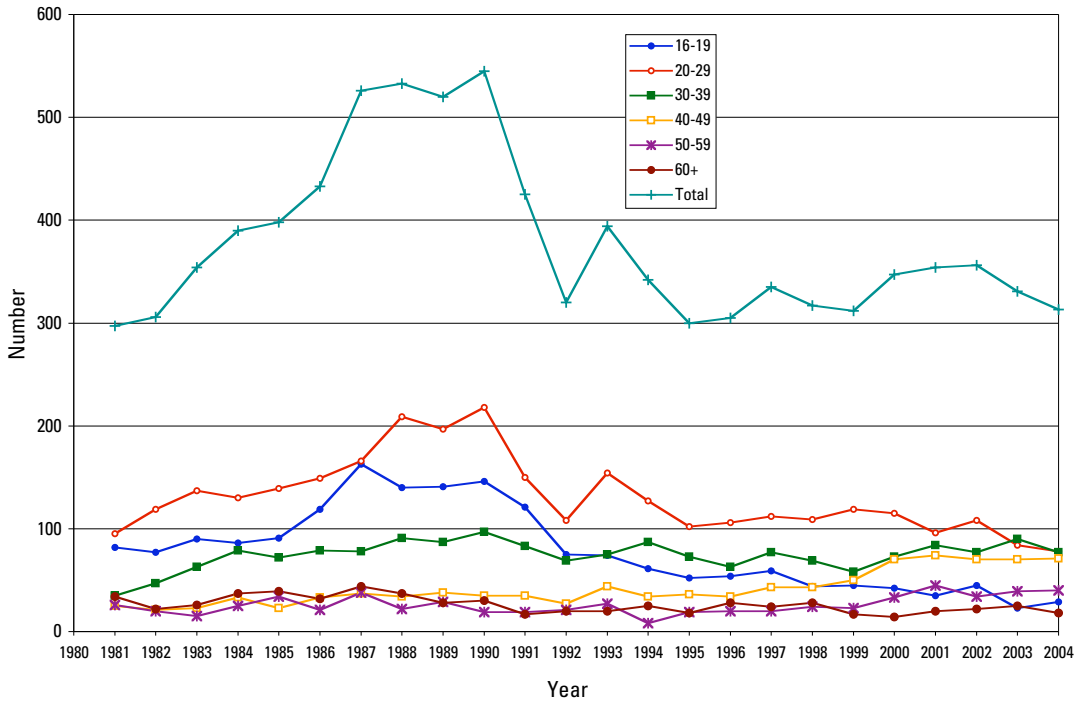

Table 4.3b
Serious pedal cycle casualties in South Australia 1981-2004,
by year of crash and age group of rider (16 years and over)

Year	Age group (years)						Total
	16-19	20-29	30-39	40-49	50-59	60+	
1981	23	25	10	9	9	17	93
1982	17	25	12	4	2	7	67
1983	16	36	15	6	3	13	89
1984	14	28	15	8	5	11	81
1985	19	34	10	5	9	9	86
1986	24	19	16	8	8	7	82
1987	24	29	15	8	11	15	102
1988	25	43	10	5	4	9	96
1989	18	31	18	10	8	10	95
1990	28	39	14	11	2	13	107
1991	19	22	15	6	7	5	74
1992	8	17	11	5	5	4	50
1993	10	14	13	6	5	8	56
1994	9	18	10	7	1	3	48
1995	5	17	14	7	5	6	54
1996	8	11	9	9	3	7	47
1997	12	18	9	4	6	4	53
1998	7	18	9	8	6	9	57
1999	5	14	4	10	5	7	45
2000	8	12	12	8	7	3	50
2001	7	6	11	11	8	4	47
2002	5	13	7	7	6	4	42
2003	2	16	7	16	7	2	50
2004	2	11	11	9	7	5	45
Total	315	516	277	187	139	182	1616

Figure 4.4
Bicycle casualty crashes in South Australia, 1981-2004: percentage in which the rider (16 years and over) was killed or admitted to hospital

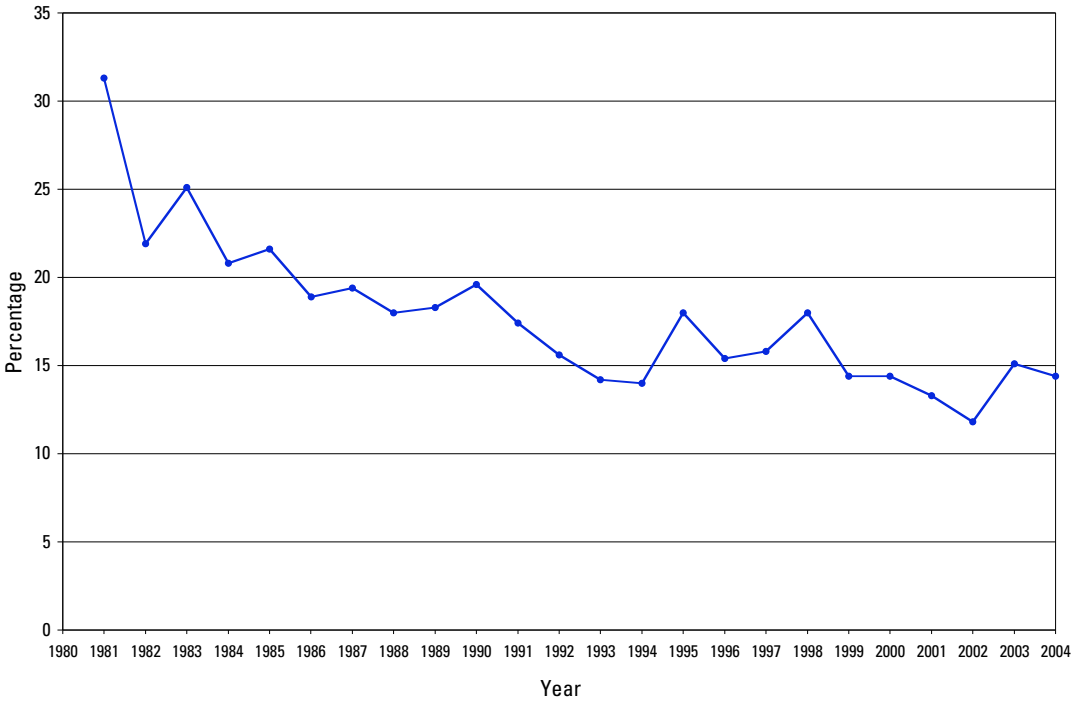

Table 4.3c
Pedal cycle casualties in South Australia 1981-2004
by grouped year of crash and severity of injury to the rider (16 years and over)

Year	Rider injury severity		Total
	Injury	Fatality	
1981-1984	1328	19	1347
1985-1988	1872	18	1890
1989-1992	1783	27	1810
1993-1996	1320	21	1341
1997-2000	1303	8	1311
2001-2004	1340	14	1354
Total	8946	107	9053

5 Discussion

5.1 The broader context of pedal cycling and pedal cyclist safety

Pedal cyclists are a small minority of traffic on the road. Pedal cyclists constitute only a small fraction of road casualties (about 5 per cent, for South Australia, 2001-2004). Isn't it likely that will continue to be the case in South Australia for the foreseeable future? Isn't it unlikely that much can be done specifically for cyclist safety? Taken to the extreme, we might say that the safest thing for cyclists would be to become car drivers.

That is not our view. Rather, it seems to us that there are good reasons for governments to give a degree of encouragement to cycling: there may be health benefits to the cyclist, and environmental benefits to society. (See, for example, ECMT, 2004.) And to those who say that cycling is only for the young and fit, and only appropriate for short journeys, we would respond that it is possible to fit a low-powered motor to a bicycle; such motorised cycles share some of the benefits of pedal cycles. The government of South Australia has recently published Safety in numbers. A cycling strategy for South Australia 2006-2010 (DTEI, 2006). This elaborates upon the benefits mentioned. The opening sentence puts safety centre stage: "Market research shows that many people choose not to cycle because they perceive cycling to be unsafe --- so the challenge lies in improving not only safety for the existing cyclists but the perception of safety for those not currently cycling".

It would be superfluous for us to review pedal cycle safety, as that has been done by Meuleners et al. (2003), or the design of cycling facilities, as that has been done by an Austroads Guide (Austroads, 1999). But we would like to discuss an option for encouraging cycling that receives little attention in Safety in numbers, namely, the use by cyclists of footpaths alongside roads. (At present, in South Australia, cyclists are not normally permitted to ride on footpaths.) We mention this option for the simple reason that across much of suburban Adelaide at peak travel times, arterial roads are busy and the footpaths beside them are empty. There is some discussion of design considerations for cycle paths alongside roads at Section 6.5.2 of Austroads (1999). The Austroads Guide is not altogether positive about paths for cyclists: "Although they can be designed for high speeds, many paths are not used by inter-suburb distance commuter cyclists. This is mainly due to cyclists' inability to travel constantly at the relatively high speed attainable on the road system.... Thus paths should not be regarded as a substitute for adequately designing roads for travel by bicycle" (Austroads, 1999, Section 6.2).

In judging the use of suburban footpaths worthy of further consideration, we immediately concede that it will not be liked by the keen cyclist who commutes 15 km in half an hour. Indeed, it is not intended to cater to the keen cyclist, but to appeal to people who are not currently cyclists. With that in mind, what are the main objections, and is it likely they can be overcome? We think there are three main areas of difficulty: the condition of the footpath, especially the surface; conflict with pedestrians; and safety at driveways and intersections.

> The issue of the design and condition of the footpath is one that plainly can be tackled by expenditure to bring the path up to the cyclist's needs. And the expenditure would benefit other users of the footpath --- those with pushchairs, those with shopping trolleys, users of wheelchairs, and ordinary pedestrians. Before adapting footpaths to cyclists' needs, the question of a design speed would need to be considered: a path suitable for 10 km/h might not be suitable for 20 km/h.
>
> The issue of conflict with pedestrians is one that plainly can be tackled by some slight modifications to the norms and courtesies of routine behaviour. For example, the public should collectively agree that when approaching a pedestrian from behind, the sound of a cyclist's bell means a polite "Excuse me", not a rude "Get out of my way", and that the pedestrian should acknowledge hearing it with a wave.

The issue of safety at driveways and intersecting minor roads is more difficult. Decisions about right-of-way would be needed, and these would need to be communicated to all road users.

Cyclists' use of suburban footpaths is not something we are positively advocating. But we do think it worth further consideration: some of the difficulties appeared to be capable of being resolved, and others are not so serious as to deter further study. We repeat that we see this as possibly appropriate for trips of, say, 2 km at speeds of, say, around 12 km/h --- not for trips of 15 km at 30 km/h. It is not a substitute for making appropriate provision for the latter. This aim means that any modifications to footpaths would be fewer and cheaper, and any danger to (and opposition from) pedestrians would be less.

It might turn out that the necessary expenditure would be too great, or some classes of pedestrian would be too disadvantaged, or the driveway problem is insurmountable, or no good solution can be found for the minor road junction issue. Koorey (2005) discusses both the advantages and problems of cycling on paths. In particular, he makes the point that any safety advantage of footpaths may be much less than might be perceived: many pedal cycle crashes occur at junctions and are described as "right angle" (see Tables 2.7, 2.10, 3.7, and 3.10 of the present report), and it is questionable whether riding on footpaths would prevent many of these.

It may be appropriate at this point to say a few words about cycling, public transport, and the private car. Firstly, many commuters would not be included within the limited ambition of permitting slow cycling on footpaths. But if the further step of providing bicycle parking at bus stops were taken, the option of cycling plus bus would be open to them. It is easy to argue that homes are well-served by public transport if distance to the nearest bus stop is the criterion. But it seems likely that many people do not live close to a public transport route that takes them close to their workplace without interchange. It is likely that many more people live within easy cycling distance of public transport that takes them close to their workplace, though we do not know exact figures. Secondly, those who are conscious of the problems arising from the private car have a hard time making their case out in suburbia: cross suburban bus routes do exist, but it is unlikely that public transport will ever effectively cater for the many trip origins and destinations that are widely dispersed. But out in the low-density suburbs, there may be enough public land that off-road cycle paths are in places practicable and inexpensive.

Let us suppose that efforts to promote active transport --- walking and cycling --- are successful. Will there be an increase in pedestrian and cyclist casualties? We fear that indeed there may be. Thus there needs to be appropriate provision of pedestrian and cyclist facilities to avoid or minimise this. However, the justification for promoting walking and cycling is usually that there are real benefits: "Cycling has a positive role to play, to improve the environment, improve health and wellbeing through increased physical activity, reduce inequality, increase wealth and help create safer and more livable neighbourhoods" (DTEI, 2006, p. 3). That being so, there needs to be measurement of these benefits, so that they can be compared with any disadvantages that accompany increased walking and cycling. The goal articulated in Safety in numbers is a doubling of cycling trips by 2015. That is a big change. There may be a corresponding big increase in cyclist casualties. The first action must be to take measures to prevent it, and the second must be to have an estimate of how many people, on the other side of the balance, are healthier and living longer because of cycling. Top of the list of preventative measures is probably reduction of the speed limit to 50 km/h on the roads where it is currently 60 km/h: see Kloeden, McLean, and Lindsay (2004), though that study refers to road casualties as a whole rather than specifically cyclist casualties. Table 3.1 of ECMT (2004) lists targets in other countries; the U.S.A. wishes to double the percentage of trips made by foot and pedal cycle, while reducing by 10 per cent the number of crashes involving pedestrians or cyclists.

5.2 Recapitulation

It is worth quickly running through a few points made earlier.

In Sections 2 and 3, there is no particular intent to compare the age groups or the postcode groups. For one thing, the frequencies of crashes are in many cases too small for that to be very meaningful. And for another, there is often no reason to think that one age group might be like another, or one postcode group might be like another. The reason for showing different age groups or postcode groups separately is simply that the tabulations --- of time variables, place variables, site variables, and so on --- may be of interest for the different age groups or postcode groups.

Datasets based on police reports of crashes are always incomplete: they tend to underrepresent crashes in which injury is minor, and those in which property damage is minor. Pedal cycle crashes are probably underrepresented to a greater degree than others.

Police reports do not have information about nature of injury. In principle, this is available in hospital records (especially for in-patients), but no attempt has been made in the present report to utilise hospital data.

No data has been given on the conditions in which cycling is done, thereby providing some measure of the exposure of cyclists to risk.

Most of the Tables refer to the period 2001-2004. In some cases, this has meant that the frequencies of crashes are so small that random variation is proportionately very important.

The Tables describe what the situation is, or how it has evolved over the last two decades: analysis that asks *why* is left to a future project.

Some of these issues are taken a little further in Sections 5.3-5.5 below.

5.3 Exposure to risk

As with a great deal of research based on routinely-collected data, the issue of how the crash numbers compare with exposure to risk has an ambiguous status.

On the one hand, exposure may be the most important part of the answer to *why*. (Question: why are 8-9 am and 3-4 pm the peak times for child cyclist crashes? Answer: because that's when child cyclists are on the roads, and when traffic is heavy.)

On the other hand, *why* may be a less important issue than that of what to do and when and where to concentrate resources.

What we mean is that a given fact may be uninteresting (in the sense that the explanation is obvious) and yet useful (because it helps us decide what to do). Consider, for example, the proximity of child cyclist crashes to schools. We have not investigated this, as distance from school is not recorded in our dataset. But the locations of accidents could be plotted on a map, and it might be found that child cyclist crashes tend to be concentrated close to schools. Then a follow-up survey of child cycling might find that cycling also tends to be concentrated close to schools, and thus the concentration of crashes would be considered unsurprising. Yet it is still a potentially useful finding: it would suggest where to concentrate protective traffic engineering measures and warnings to motorists.

5.4 Limitations of police crash data

For a discussion of errors, omissions, and limitations with police data (on road crashes generally, not specifically pedal cyclists), see Hutchinson (1987, especially Chapter 4). The main problem areas identified there were as follows: items requiring the exercise of subjective judgment, as distinct from the recording of facts; the frequent omission of uninjured people (it can be as important to know why someone escaped injury as to know why someone else was injured); limited information about severity of injury, and usually none about nature of injury; no information about crash speed; absence of information about vehicle design; geographical location; compatibility with data on exposure; differential underreporting of different types of crash; vehicle movements are difficult to describe; and some specific issues (notably, whether alcohol impairment contributed to the crash, and whether a seat belt was worn).

5.5 Notes on other data sources

For information routinely obtained at death certification, from hospitals, and from insurance companies, as well as that from the police, see Hutchinson (1987). The data in that book is rather outdated by now, but to give some feel for what information is available from various sources, it may be worth listing what may be found about pedal cyclists there.

Percentage of road fatalities who are pedal cyclists, in 22 countries: Table 1.4.

Journey purpose, comparison of age groups, Norway: Table 7.24.

Nature of injury causing death, four jurisdictions: Table 9.2 (see Table 9.4 for disaggregation by age group, one jurisdiction).

Nature of injury (those admitted to hospital), in five areas: Table 10.2 (see Table 10.3 for the nature of injury other than the first diagnosis, and Table 10.4 for a more detailed description of head injury, in one area of England).

Nature of injury, police data from Queensland, Denmark, Hong Kong, and Japan: Tables 12.1, 12.4, 12.5, 12.6.

Comparison of the nature of injury to pedal cyclists admitted to hospital, with and without a motor vehicle being involved, Western Australia and the Australian Capital Territory: Table 10.6.

Some tables are also given that originated from research projects that monitored emergency room patients over an extended period of time, rather than strictly used routine data. For medical management after emergency room treatment, Odense University Hospital, see Table 10.8. For nature of injury in people treated at emergency rooms, see Tables 10.9, 10.10, 10.12 to 10.15 (several of these Tables refer to children only).

Comparison of numbers of deaths, from certification and police sources, six jurisdictions: Table 11.8.

Proportion of casualties seen in emergency rooms that were in police records: Section 11.4.

Part of body injured, linked datasets constructed from hospital and police sources: Tables 13.2 and 13.4.

Types of insurance payment made and average amounts, Victoria: Table 14.5.

Part of body injured, insurance claims, Japan: Table 14.15.

More recently, Meuleners et al. (2003) give data from both the police and hospital admissions in Western Australia. The variables tabulated from the police data are generally similar to those in the present report. The variables tabulated from hospital admissions were severity of injury, nature of injury, length of hospital stay, and some limited information about the crash (whether or not a motor vehicle was involved, whether it was on-road or off-road). The number of pedal cyclists recorded as being hospitalised in the police data was only 21 per cent of the number recorded in the hospital admissions data; of course, many of those admitted to hospital had not collided with a motor vehicle, and so would not be expected to come to the attention of the police. According to the police data, the number of pedal cyclist crashes in 2000 was 60 per cent of the figure for 1987. However, in the hospital admissions data, the pedal cyclist number for 2000 was 145 per cent of the figure for 1987, due to a substantial increase in off-road crashes. Also in Meuleners et al. (2003) is a useful review of pedal cycle safety research. This concentrates on factors associated with crashes (cyclist characteristics, crash circumstances, time variables), the underreporting in police records, injuries sustained, exposure surveys, and strategies for improving safety. A shorter report by the same team has been published as Gavin et al. (2005).

For police and hospital data in New South Wales, see Voukelatos et al. (2003), and for some aspects of child pedal cyclist casualties in New South Wales, see Styles and Cairney, 2004. For police and hospital data on child pedal cyclist casualties in South Australia, see Burns (1999); some data on out-patients is included there.

Systems of routine statistics provide a lot of data, each case being relatively superficially recorded. Other methods of research have different strengths. (a) In-depth at-scene research is complementary, investigating relatively few cases in much greater detail. For example, McLean et al. (1979) reported on 22 pedal cycle crashes in the Adelaide metropolitan area. (b) Especially in the case of fatalities, retrospective review of police and coroner's files may provide insights unavailable in routine statistics, yet be less resource-intensive than at-scene investigation. For example, Longo (1997) reported on 106 fatal pedal cycle crashes that occurred in South Australia between 1981 and 1993.

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References

Austroads (1999). Guide to Traffic Engineering Practice. Part 14 — Bicycles. Sydney: Austroads.

Burns NR (1999). The involvement of child cyclists in traffic accidents in South Australia. In: Children Cycling in Traffic: Statistical, Developmental and Legal Perspectives (Bailey TJ, Natora AH, Editors), pp. 5-26. Report 1/99, Safety Strategy, Transport SA, Walkerville, South Australia.

DTEI (2006). Safety in numbers. A cycling strategy for South Australia 2006-2010. Adelaide: Department for Transport, Energy and Infrastructure. http://www.transport.sa.gov.au/pdfs/personal_transport/bike_direct/cycling_strategy.pdf

ECMT (2004). National policies to promote cycling. Report by the European Conference of Ministers of Transport (drafted by M Miyake and M Crass). Paris: OECD.

Gavin AL, Meuleners LB, Cercarelli LR, Hendrie D (2005). An overview of bicycle crashes and injuries in Western Australia. Journal of the Australasian College of Road Safety 16(1): 25-28.

Hutchinson TP (1987). Road Accident Statistics. Adelaide: Rumsby Scientific Publishing.

Kloeden CN, McLean AJ, Lindsay V (2004). Cost-effective road safety measures for reducing serious casualty crashes in South Australia. In: Proceedings of the 2004 Road Safety Research, Policing and Education Conference, Volume 1. Perth, Western Australia: Office of Road Safety.

Kloeden CN, Woolley JE, McLean AJ (2004). Evaluation of the South Australian default 50 km/h speed limit. Report CASR005, Centre for Automotive Safety Research, University of Adelaide.

Koorey G (2005). The "on-again/off-again" debate about cycle facilities. Presented at the New Zealand Cycling Conference. http://www.bikenz.org.nz/Resource.aspx?ID=462. Also at http://www.can.org.nz/spokes_chch/moratorium/gkoorey-cycleconf2005.pdf

Longo MC (1997). Factors contributing to 106 fatal bicycle crashes in South Australia 1981 to 1993. Unpublished report prepared in the Road Accident Research Unit (now the Centre for Automotive Safety Research), University of Adelaide, for the Office of Road Safety, South Australian Department of Transport, Walkerville, S.A.

Marshall J, White M (1994). Evaluation of the compulsory helmet wearing legislation for bicyclists in South Australia. Report 8/94, Office of Road Safety, South Australian Department of Transport.

McLean AJ, Brewer ND, Sandow BL (1979). Adelaide in-depth accident study 1975-1979. Part 3: Pedal cycle accidents. Road Accident Research Unit (now the Centre for Automotive Safety Research), University of Adelaide.

Meuleners LB, Gavin AL, Cercarelli LR, Hendrie D (2003). Bicycle crashes and injuries in Western Australia, 1987-2000. Report RR131, Injury Research Centre, University of Western Australia.

Styles T, Cairney P (2004). The extent and nature of child pedestrian and pedal-cyclist casualties out of school travel times. Report RC3237, ARRB Transport Research, prepared for the Motor Accidents Authority, New South Wales. http://www.maa.nsw.gov.au/default.aspx?MenuID=189

Voukelatos A, Rissel C, Campbell F (2003). Pedal cycle injuries in N.S.W.: A comparison of data sources. Road and Transport Research 12(4): 26-33.