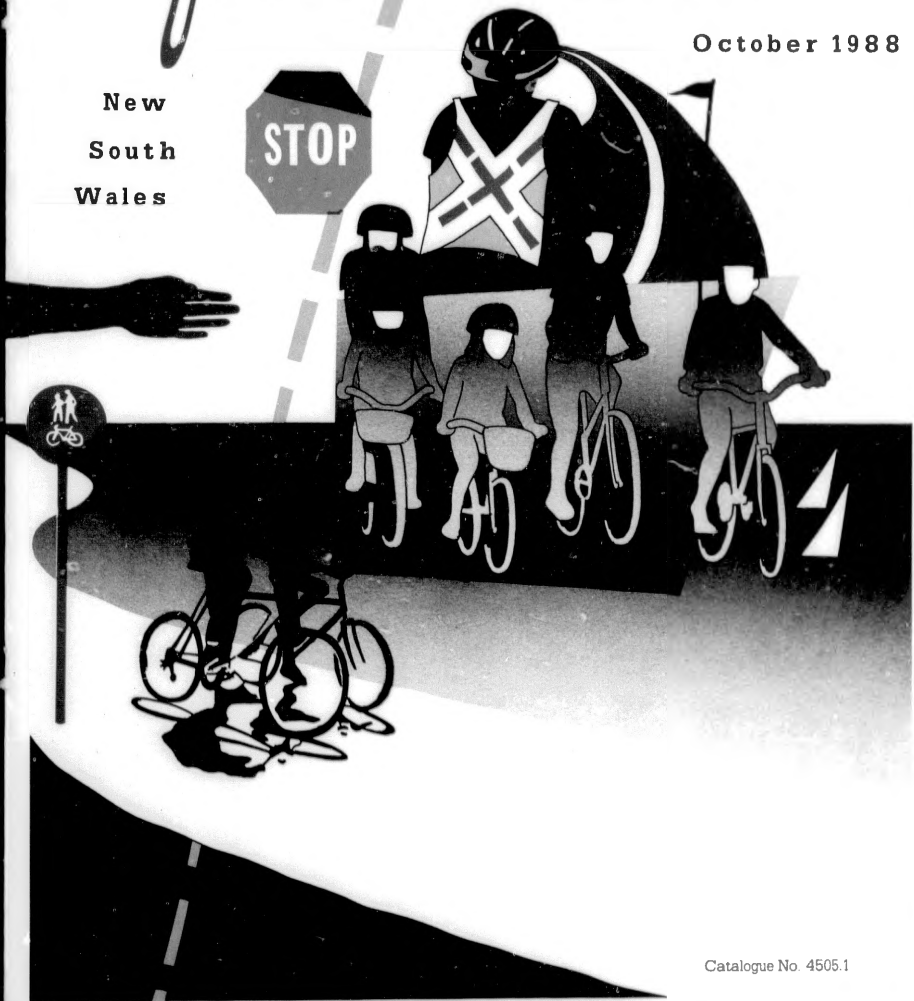




# BICYCLE USAGE AND SAFETY

October 1988

New  
South  
Wales



**BICYCLE USAGE AND SAFETY**  
**NEW SOUTH WALES**  
**OCTOBER 1988**

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**SYDNEY**

## FOREWORD

During the late 19th century there was widespread introduction of the bicycle to Australia. It soon gained acceptance, especially in rural areas, and its popularity soared on account of the favourable Australian climate and its adaptability to the flat Australian terrain. Bicycle riding became a popular sport as well as an accepted form of transport for many workers. However, after World War I the popularity of motor vehicles led to a decline in the usage of bicycles. Nevertheless, the bicycle continues to be used for work, recreation and sport.

Information on bicycle usage, however, is scarce. This survey was conducted at the request of the State Bicycle Committee, with the support of the New South Wales State Government. Members of the Committee include state government departments, local government associations and bicycle associations. Activities of the committee include the education of cyclists and the encouragement of safer, more enjoyable cycling. Special thanks go to the State Bicycle Committee for their contributions to the development of the survey.

This report looks at bicycle usage (including how often people usually ride, where they ride and where they ride to), bicycle accidents, safety equipment ownership and usage and bicycle theft. Information on bicycle usage is needed by the transport and road authorities to determine allocation of transport funding between cyclists and other users. Bicycle usage and safety information will assist in determining measures and their priorities. There is a need for reliable data on cycling accidents such as the types of accident and where they occur, especially for various age groups so that safety and educational programs can be targeted towards those most at risk. The information will also be used for improved planning, implementation and assessment of safety programs, facilities, enforcement programs, and school and community educational programs.

The report was prepared under the direction of Greg Bray, Assistant Director, Statistical Services and User Liaison Branch, with contributions from Michelle Hannaford, Carmel Donnelly and the Survey Development team, Michael Clarke, Kevin Johnston and Patrick Corr. Naomi Whitford and Linda Bei assisted in the production of the tables and text.

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DEPUTY COMMONWEALTH STATISTICIAN  
May 1989

**INQUIRIES** *If you would like to know more about the information in this publication, please contact Michael Clarke on (02) 268 4697; contact ABS Information Services on (02) 268 4611, at level 3, St. Andrew's House, Sydney Square, Sydney; or write to Information Services, Australian Bureau of Statistics, GPO Box 796 Sydney, NSW 2001.*

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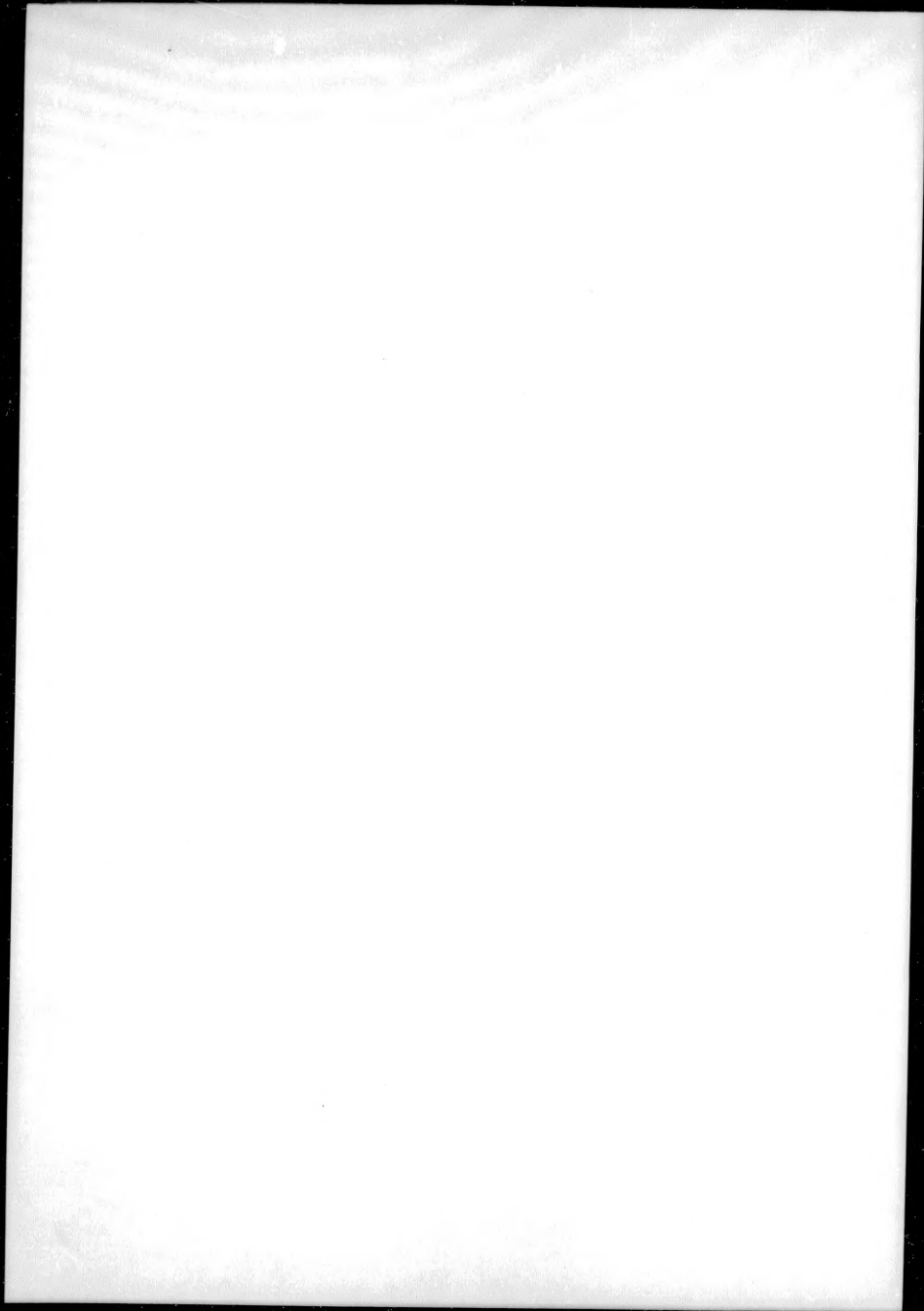


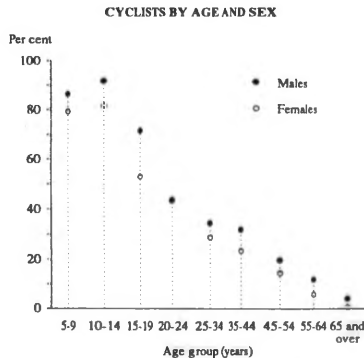
TABLE 1. PERSONS: CYCLING STATUS AND AGE, NEW SOUTH WALES, OCTOBER 1988

Cycling status	Age group (years)									Total
	5-9	10-14	15-19	20-24	25-34	35-44	45-54	55-64	65 and over	
<b>MALES</b>										
Number ('000)										
Cyclist										
Regular	178.8	187.0	137.4	57.5	92.9	70.9	25.4	17.3	*5.6	772.7
Irregular	7.2	10.6	29.5	36.9	66.8	65.7	34.8	14.0	*5.4	270.9
Total	186.0	197.6	166.9	94.4	159.7	136.6	60.2	31.2	11.0	1,043.6
Non-cyclist	28.0	16.6	64.9	120.8	296.1	285.8	237.6	222.3	237.3	1,509.4
<b>Total</b>	<b>214.0</b>	<b>214.1</b>	<b>231.8</b>	<b>215.1</b>	<b>455.8</b>	<b>422.4</b>	<b>297.9</b>	<b>253.5</b>	<b>248.3</b>	<b>2,553.0</b>
Proportion (per cent) (a)										
Cyclist	86.9	92.3	72.0	43.9	35.0	32.3	20.2	12.3	4.4	40.9
<b>FEMALES</b>										
Number ('000)										
Cyclist										
Regular	150.8	145.8	78.4	44.5	67.7	43.0	19.2	7.3	*1.8	558.6
Irregular	11.4	22.4	39.9	49.6	67.5	55.6	22.9	8.2	*1.3	278.7
Total	162.2	168.3	118.3	94.1	135.2	98.5	42.2	15.5	*3.1	837.3
Non-cyclist	41.4	37.0	103.1	119.3	326.4	313.9	241.1	240.9	325.6	1,748.8
<b>Total</b>	<b>203.6</b>	<b>205.3</b>	<b>221.4</b>	<b>213.4</b>	<b>461.6</b>	<b>412.4</b>	<b>283.3</b>	<b>256.4</b>	<b>328.6</b>	<b>2,586.1</b>
Proportion (per cent) (a)										
Cyclist	79.7	82.0	53.4	44.1	29.3	23.9	14.9	6.1	*0.9	32.4
<b>PERSONS</b>										
Number ('000)										
Cyclist										
Regular	329.6	332.8	215.8	102.0	160.6	113.9	44.6	24.6	7.4	1,331.3
Irregular	18.6	33.0	69.4	86.5	134.3	121.3	57.7	22.1	*6.7	549.6
Total	348.2	365.9	285.2	188.5	294.9	235.1	102.4	46.7	14.1	1,880.9
Non-cyclist	69.4	53.6	168.0	240.1	622.5	599.7	478.7	463.2	562.9	3,258.2
<b>Total</b>	<b>417.6</b>	<b>419.4</b>	<b>453.2</b>	<b>428.5</b>	<b>917.4</b>	<b>834.9</b>	<b>581.1</b>	<b>510.0</b>	<b>577.0</b>	<b>5,139.1</b>
Proportion (per cent) (a)										
Cyclist	83.4	87.2	62.9	44.0	32.1	28.2	17.6	9.2	2.4	36.6

(a) Cyclists as a proportion of total persons in the relevant age/sex group.

An estimated 1,880,900 persons in New South Wales rode a bicycle within the 12 months ended October 1988. This represented 37 per cent of the population aged 5 years and over. The number of bicycles in New South Wales households was estimated to be 1,778,100. Cycling was most common amongst the younger age groups, with cyclists between the ages of 5 and 19 accounting for 53 per cent of all cyclists. Most children under 15 rode a bicycle with the rate of bicycle usage highest in the 10-14 age group (87 per cent rode bicycles). Cycling was less common as age increased.

More males than females cycled, 41 per cent compared to 32 per cent respectively. The predominance of male cyclists was consistent across all age groups with the exception of the 20-24 year olds where numbers of male and female cyclists were approximately equal. Amongst the male population there was a marked drop in bicycle usage from 72 per cent in the 15-19 age group to 44 per cent in the 20-24 age group (a drop of 39 per cent). By comparison, the female population showed a significant (35 per cent) drop in the rate of bicycle usage from the 10-14 age group to the 15-19 age group.



**TABLE 2. CYCLISTS: USUAL FREQUENCY OF CYCLING AND AGE, NEW SOUTH WALES, OCTOBER 1988**  
 ('000)

Usual frequency of cycling	Age group (years)								Total	
	5-9	10-14	15-19	20-24	25-34	35-44	45-54	55 and over	Number	Per cent
<b>MALES</b>										
7 days per week	84.1	89.6	45.1	8.9	10.0	*5.1	*2.2	*4.5	249.6	23.9
5 to 6 days per week	14.7	19.5	14.3	*6.0	11.7	7.5	*2.5	*3.9	80.2	7.7
3 to 4 days per week	26.7	28.9	20.5	9.8	11.7	*5.9	*2.1	*1.8	107.4	10.3
2 days per week	25.1	19.3	16.4	10.0	15.1	10.3	*6.0	*4.5	106.7	10.2
1 day per week	15.2	15.6	15.3	7.5	15.4	12.8	*3.7	*2.8	88.4	8.5
At least once a month	13.0	14.0	25.7	15.2	29.0	29.0	9.0	*5.3	140.4	13.5
Less often	7.2	10.6	29.5	36.9	66.8	65.7	34.8	19.4	270.9	26.0
<b>Total</b>	<b>186.0</b>	<b>197.6</b>	<b>166.9</b>	<b>94.4</b>	<b>159.7</b>	<b>136.6</b>	<b>60.2</b>	<b>42.3</b>	<b>1,043.6</b>	<b>100.0</b>
<b>FEMALES</b>										
7 days per week	46.6	30.0	11.0	*2.6	8.5	*2.9	*1.8	*1.1	104.6	12.5
5 to 6 days per week	16.5	12.6	7.8	*2.3	*4.3	*3.6	*1.3	*0.5	48.9	5.8
3 to 4 days per week	26.2	23.2	8.4	*4.4	8.1	*3.9	*2.4	*1.7	78.1	9.3
2 days per week	22.8	28.1	13.2	9.5	8.5	*6.4	*2.4	*0.8	91.6	10.9
1 day per week	18.5	18.6	14.1	*6.0	12.9	7.3	*3.9	*2.2	83.5	10.0
At least once a month	20.3	33.3	23.9	19.7	25.4	18.8	7.5	*2.9	151.9	18.1
Less often	11.4	22.4	39.9	49.6	67.5	55.6	22.9	9.4	278.7	33.3
<b>Total</b>	<b>162.2</b>	<b>168.3</b>	<b>118.3</b>	<b>94.1</b>	<b>135.2</b>	<b>98.5</b>	<b>42.2</b>	<b>18.6</b>	<b>837.3</b>	<b>100.0</b>
<b>PERSONS</b>										
7 days per week	130.7	119.7	56.1	11.5	18.5	8.0	*4.0	*5.6	354.2	18.8
5 to 6 days per week	31.2	32.1	22.1	8.3	16.0	11.1	*3.8	*4.4	129.1	6.9
3 to 4 days per week	52.8	52.1	28.9	14.2	19.7	9.9	*4.4	*3.4	185.5	10.0
2 days per week	47.8	47.4	29.6	19.5	23.6	16.7	8.3	*5.3	198.3	10.5
1 day per week	33.7	34.2	29.4	13.6	28.3	20.1	7.6	*5.0	171.9	9.1
At least once a month	33.3	47.3	49.6	34.9	54.4	48.1	16.5	8.3	292.3	15.5
Less often	18.6	33.0	69.4	86.5	134.3	121.3	57.7	28.8	549.6	29.2
<b>Total</b>	<b>348.2</b>	<b>365.9</b>	<b>285.2</b>	<b>188.5</b>	<b>294.9</b>	<b>235.1</b>	<b>102.4</b>	<b>60.8</b>	<b>1,880.9</b>	<b>100.0</b>

Of the estimated 1,880,900 persons who rode a bicycle, two major groups of cyclists emerged, those who rode less than once a month (549,600) and those who rode every day (354,200). Of those who rode less than once a month, 91 per cent were aged 15 and over, while of those who rode every day, 71 per cent were children aged 5-14.

Approximately 35 per cent of children under 15 years of age who cycled did so 7 days a week. The majority of these (almost 70 per cent) were boys. Overall, male cyclists tended to cycle more regularly than female cyclists.

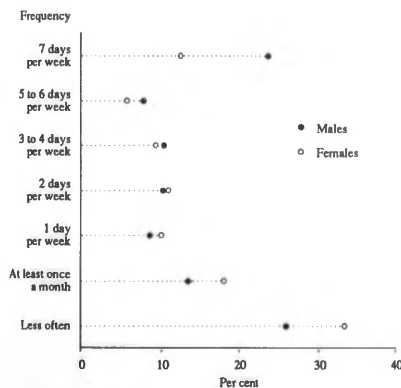
**FREQUENCY OF CYCLING BY SEX**


TABLE 3. REGULAR CYCLISTS (a): USUAL CYCLING LOCATIONS AND AGE,  
NEW SOUTH WALES, OCTOBER 1988  
(\*000)

Usual cycling locations	Age group (years)							Total		
	5-9	10-14	15-19	20-24	25-34	35-44	45-54	55 and over	Number	Per cent
Road	155.8	253.0	197.8	92.3	139.8	94.9	36.7	24.8	995.0	74.7
Footpath	109.9	117.0	48.2	12.5	19.7	14.4	*2.9	*2.2	326.8	24.5
On own property	185.4	89.6	16.0	*3.9	7.6	8.5	*3.2	*1.6	315.7	23.7
Park/reserve	67.9	60.6	19.3	8.1	25.3	17.1	*5.1	*2.8	206.2	15.5
Bicycle path	32.9	37.8	22.5	17.6	34.5	26.6	11.0	*5.7	188.6	14.2
Other location	11.4	7.0	*1.4	*2.5	*1.2	*2.4	*1.0	*1.4	28.5	2.1
<b>Total regular cyclists (b)</b>	<b>329.6</b>	<b>332.8</b>	<b>215.8</b>	<b>102.0</b>	<b>160.6</b>	<b>113.9</b>	<b>44.6</b>	<b>32.0</b>	<b>1,331.3</b>	<b>..</b>

(a) Excludes cyclists who cycled less than once a month. (b) A cyclist could nominate more than one cycling location. Accordingly, the sum of the usual cycling locations exceeds the total number of regular cyclists within each age category.

The road was the most frequently used cycling location, used by 75 per cent of regular cyclists. Younger children, aged 5-9, usually rode on their own property (56 per cent) but this location was closely followed by the road (47 per cent). Road usage increased sharply for older children with 76 per cent of 10-14 year olds riding on the road.

Only 14 per cent of cyclists nominated bicycle paths as a usual cycling location.

The most popular cycling destination was 'just riding around', nominated by 2 in 3 regular cyclists. The next most common destinations were shops (30 per cent), friends/relatives (27 per cent) and venue for recreation (22 per cent).

Only 12 per cent of all regular cyclists rode to school, university or college and 7 per cent to work. Of the 662,400 regular cyclists aged 5-14, only 15 per cent usually cycled to school, while of the regular cyclists aged 20-34, 20 per cent nominated work as their usual cycling destination.

TABLE 4. REGULAR CYCLISTS (a): USUAL CYCLING DESTINATIONS AND AGE,  
NEW SOUTH WALES, OCTOBER 1988  
(\*000)

Usual cycling destinations	Age group (years)							Total		
	5-9	10-14	15-19	20-24	25-34	35-44	45-54	55 and over	Number	Per cent
Just riding around	231.9	250.1	134.4	61.7	101.6	75.7	27.8	17.6	900.8	67.7
Shops	39.2	127.9	92.6	34.4	54.0	24.9	12.7	13.1	398.7	29.9
Friends/relatives	53.9	134.2	96.8	25.8	32.0	10.8	*3.7	*5.6	362.8	27.3
Venue for recreation	53.6	71.0	57.0	23.6	49.4	29.9	9.7	*4.2	298.2	22.4
On own property	137.1	63.1	10.3	*3.2	*5.2	*4.8	*1.3	*1.1	225.9	17.0
School/University/College	27.5	74.9	46.7	*4.1	*4.3	*2.7	*0.3	*0.0	160.5	12.1
Work	*0.5	*3.4	17.0	21.2	31.1	17.1	*4.9	*2.0	97.4	7.3
Other form of transport	*1.7	*5.7	9.2	*5.1	8.7	*3.3	*0.7	*0.3	34.8	2.6
Other destination	*6.9	*5.1	*1.6	*1.2	*3.8	*3.8	*0.7	*1.3	24.4	1.8
<b>Total regular cyclists (b)</b>	<b>329.6</b>	<b>332.8</b>	<b>215.8</b>	<b>102.0</b>	<b>160.6</b>	<b>113.9</b>	<b>44.6</b>	<b>32.0</b>	<b>1,331.3</b>	<b>..</b>

(a) Excludes cyclists who cycled less than once a month. (b) A cyclist could nominate more than one cycling destination. Accordingly, the sum of the usual cycling destinations exceeds the total number of regular cyclists within each age category.

**TABLE 5. BICYCLE THEFT (a),  
SELECTED CHARACTERISTICS,  
NEW SOUTH WALES, OCTOBER 1988  
(<sup>'000</sup>)**

Households with bicycles	(No.)	886.5
Households reporting bicycle theft		
Location of most recent theft-		
Home	(No.)	30.8
Shops	(No.)	4.9
School	(No.)	*2.5
Other (b)	(No.)	12.2
Total households reporting bicycle theft	(No.)	50.4
	(Per cent)	5.7
Number of bicycles stolen	(No.)	60.3

(a) In the last 12 months. (b) Includes railway station, university/college, etc.

Of the 886,500 households with bicycles, nearly 6 per cent had a bicycle stolen on at least one occasion in the 12 months to October 1988. Most bicycles were stolen from the home.

The number of bicycles stolen in the 12 months to October 1988 was 60,300.

**TABLE 6. CYCLISTS : NUMBER OF BICYCLE ACCIDENTS, ACCIDENT CHARACTERISTICS AND AGE,  
NEW SOUTH WALES, OCTOBER 1988  
(<sup>'000</sup>)**

Accident characteristics	Age group (years)				Total	
	5 - 9	10 - 14	15 - 19	20 and over	Number	Per cent
Number of bicycle accidents in the last 12 months:-						
1	19.5	19.3	13.6	18.2	70.7	3.8
2	8.5	9.0	*5.3	*3.3	26.1	1.4
3 or more	16.9	*5.4	*2.0	*3.8	28.0	1.5
Total accidents (a)	47.0	33.7	21.2	25.3	127.2	6.8
No accidents	301.2	332.2	264.0	856.4	1753.8	93.2
<b>Total cyclists</b>	<b>348.2</b>	<b>365.9</b>	<b>285.2</b>	<b>881.7</b>	<b>1,880.9</b>	<b>100.0</b>
Treatment required for most recent accident						
Hospital admittance	*1.7	*1.4	*1.5	*1.8	*6.4	*5.0
Treatment by doctor	*2.3	*4.5	*3.3	*3.1	13.2	10.4
Treatment by nurse in a surgery, clinic or casualty clinic	*1.0	*0.6	*0.3	*0.9	*2.8	*2.2
Other treatment	23.8	15.0	*6.1	*5.9	50.8	40.0
Total requiring treatment	28.8	21.6	11.2	11.6	73.2	42.5
No treatment required	18.2	12.1	10.0	13.7	54.0	57.5
<b>Total</b>	<b>47.0</b>	<b>33.7</b>	<b>21.2</b>	<b>25.3</b>	<b>127.2</b>	<b>100.0</b>
Another vehicle involved in most recent accident	*5.7	*5.7	*6.1	9.8	(b)27.4	21.5
No other vehicle involved	41.3	27.7	15.1	15.2	99.3	78.1
<b>Total (a)</b>	<b>47.0</b>	<b>33.7</b>	<b>21.2</b>	<b>25.3</b>	<b>127.2</b>	<b>100.0</b>
Most recent accident reported to police	*0.5	*0.2	*0.8	*2.4	*4.0	*3.1
Accident not reported to police	46.5	33.4	20.4	22.9	123.2	96.9
<b>Total</b>	<b>47.0</b>	<b>33.7</b>	<b>21.2</b>	<b>25.3</b>	<b>127.2</b>	<b>100.0</b>

(a) Includes a small number of 'don't know'. (b) Includes 13,100 instances where the other vehicle involved in most recent accident was a bicycle.

Over 127,000 cyclists reported having one or more accidents in the 12 months to October 1988, although the majority of accidents were of a non-serious nature. For their most recent accident, almost 60 per cent of cyclists required no treatment. However professional medical care was required in 18 per cent of most recent accidents, involving 22,400 cyclists.

Very few accidents were reported to the police, although 27,400 cyclists' most recent accident involved another vehicle (including another bicycle).

Of all cyclists who had a bicycle accident in the last 12 months, 63 per cent were aged 5-14. In the 5-9 age group, 54 per cent of cyclists who had an accident had more than one accident in the last 12 months.

TABLE 7. REGULAR CYCLISTS (a) : SAFETY EQUIPMENT FITTED TO BICYCLE USUALLY RIDDEN, NEW SOUTH WALES, OCTOBER 1988 ('000)

Type of safety equipment	Age group (years)				Total	
	5 - 9	10 - 14	15 - 19	20 and over	Number	Per cent
Brakes	321.8	328.0	212.4	450.1	1,312.3	98.6
Red rear reflector	262.2	294.5	198.6	409.3	1,164.6	87.5
Pedal reflectors	248.6	277.4	181.4	333.2	1,040.6	78.2
Wheel reflectors	215.8	249.8	159.4	295.5	920.5	69.1
Bell or other warning device	215.4	215.1	130.2	295.4	856.4	64.3
White front reflector	158.7	181.7	135.6	268.0	744.0	55.9
Front light	15.2	34.1	44.2	109.9	203.3	15.3
Rear light	14.7	31.8	37.0	96.5	180.0	13.5
Safety flag	11.4	8.1	*3.1	*6.2	28.8	2.2
Other safety devices	13.1	10.1	*3.3	8.7	35.2	2.6
<b>Total regular cyclists (b)</b>	<b>329.6</b>	<b>332.8</b>	<b>215.8</b>	<b>453.1</b>	<b>1,331.3</b>	<b>..</b>

(a) Excludes cyclists who cycled less than once a month. (b) A cyclist could nominate more than one piece of safety equipment.

Brakes were the most common item of safety equipment, found on over 98 per cent of all bicycles. Reflectors were a common feature on most bicycles but safety flags were fitted to less than 3 per cent of bicycles.

Similar patterns of safety equipment were found for all age groups, except that older cyclists were more likely to have front and rear lights fitted. A front light was fitted to 15 per cent of bicycles usually ridden. Only 7 per cent of regular cyclists aged 5-14 had a front light fitted to their bicycle whereas 20 per cent for regular cyclists aged 20 and over had one fitted.

TABLE 8. REGULAR CYCLISTS WHO OWN OR HAVE USE OF HARD SHELL HELMETS(a) : AVAILABILITY AND USAGE OF HARD SHELL HELMETS, NEW SOUTH WALES, OCTOBER 1988

Usage of hard shell helmet	Availability of hard shell helmets				Total ('000)
	Owns		Does not own		
	Number ('000)	Per cent	Has use of helmet ('000)	Per cent	
Usually wears a hard shell helmet	185.7	55.7	9.8	12.5	195.5
Sometimes wears a hard shell helmet	90.7	27.2	26.9	34.2	117.7
Never wears a hard shell helmet	56.5	17.0	41.5	52.7	98.0
<b>Total regular cyclists (b)</b>	<b>333.5</b>	<b>100.0</b>	<b>78.7</b>	<b>100.0</b>	<b>412.2</b>

(a) Excludes cyclists who cycled less than once a month. (b) Includes a small number of 'don't know'.

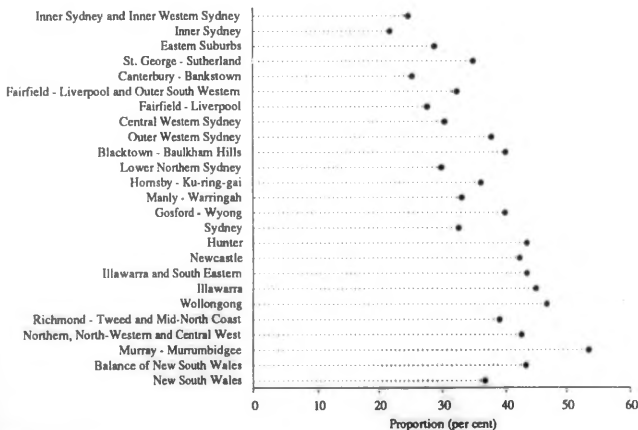
The majority of regular cyclists, 917,800, (69 per cent) did not own or have use of a hard shell helmet. Only 25 per cent of regular cyclists owned a hard shell helmet and an additional 6 per cent had a hard shell helmet available to wear.

Less than 15 per cent of regular cyclists usually wore a hard shell helmet. Of hard shell helmet owners, 56 per cent usually wore them while 17 per cent never wore them.

**TABLE 9. CYCLISTS: SELECTED CHARACTERISTICS,  
REGIONS OF NEW SOUTH WALES, OCTOBER 1988**

Statistical region	Cyclists				Frequency of usual cycling		
	Persons				Weekly ( <sup>'000</sup> )	Monthly (b) ( <sup>'000</sup> )	Less often ( <sup>'000</sup> )
	Male ( <sup>'000</sup> )	Female ( <sup>'000</sup> )	Number ( <sup>'000</sup> )	Per cent (a)			
Inner Sydney and Inner Western Sydney (SRs)	45.3	38.5	83.7	24.9	34.8	13.8	35.2
Inner Sydney (SR)	23.8	21.1	44.8	21.9	18.2	*5.2	21.4
Eastern Suburbs (SR)	34.9	23.5	58.4	28.9	29.0	8.3	21.1
St. George - Sutherland (SR)	68.6	54.0	122.6	34.8	59.1	20.0	43.5
Canterbury - Bankstown (SR)	42.1	28.5	70.6	25.5	41.3	12.0	17.4
Fairfield - Liverpool and Outer South Western (SRs)	71.1	55.3	126.4	32.3	72.4	18.2	35.8
Fairfield - Liverpool (SR)	40.9	28.1	69.1	27.8	40.0	10.0	19.2
Central Western Sydney (SR)	49.1	31.1	80.2	30.4	40.3	14.1	25.8
Outer Western Sydney (SR)	45.3	39.6	84.9	37.7	44.8	12.4	27.7
Blacktown - Baulkham Hills (SR)	67.9	50.8	118.7	40.0	66.1	16.5	36.1
Lower Northern Sydney (SR)	40.1	31.4	71.5	29.9	24.6	12.9	34.0
Hornsby - Ku-ring-gai (SR)	46.4	37.0	83.3	36.0	38.2	16.2	29.0
Manly - Warringah (SR)	32.4	28.0	60.4	33.0	30.8	11.1	18.5
Gosford - Wyong (SR)	45.7	35.0	80.7	39.9	52.2	9.4	19.1
<i>Sydney (MSR)</i>	<i>588.8</i>	<i>452.7</i>	<i>1,041.5</i>	<i>32.5</i>	<i>533.4</i>	<i>164.8</i>	<i>343.3</i>
Hunter (SR)	116.9	92.2	209.1	43.5	127.1	27.7	54.3
Newcastle (SRS)	96.9	73.2	170.1	42.3	102.0	24.2	43.9
Illawarra and South Eastern (SRs)	108.9	88.5	197.4	43.5	103.0	37.3	57.1
Illawarra (SR)	79.3	61.5	140.8	45.0	72.6	26.3	42.0
Wollongong (SRS)	58.3	42.5	100.8	46.8	56.0	17.4	27.4
Richmond - Tweed and Mid-North Coast (SRs)	74.0	65.5	139.5	39.0	92.1	20.6	26.8
Northern, North-Western and Central West (SRs)	92.5	79.8	172.2	42.6	107.9	25.5	38.8
Murray - Murrumbidgee (SR)	61.4	54.7	116.1	53.5	71.5	15.8	28.8
<i>Balance of New South Wales (MSR) (c)</i>	<i>454.8</i>	<i>384.6</i>	<i>839.4</i>	<i>43.3</i>	<i>505.6</i>	<i>127.5</i>	<i>206.4</i>
<b>New South Wales</b>	<b>1,043.6</b>	<b>837.3</b>	<b>1,880.9</b>	<b>36.6</b>	<b>1,039.0</b>	<b>292.3</b>	<b>549.6</b>

(a) As a proportion of total persons aged 5 and over in that Statistical region. (b) Excludes weekly. (c) Includes Far West Statistical Division.

**PROPORTION OF PERSONS WHO CYCLE BY REGION**


Cycling activity showed considerable variation between Sydney and the Balance of N.S.W. In Sydney 33 per cent of persons rode a bicycle, compared with 43 per cent for the Balance of N.S.W. The Murray - Murrumbidgee region had the highest proportion of cyclists in N.S.W. (54 per cent), while the region with the lowest proportion of cyclists was Inner Sydney (22 per cent). The highest proportion of cyclists in Sydney were found in Gosford - Wyong (40 per cent) and Blacktown - Baulkham Hills (40 per cent).

Cyclists in the Richmond - Tweed and Mid-North Coast region cycled most frequently, with 66 per cent of cyclists riding at least once a week and a further 15 per cent riding at least once a month. The areas where cycling was least frequent were Inner Sydney and Lower Northern Sydney. In both areas 48 per cent of cyclists rode less often than once a month. In general, cyclists in Sydney rode less frequently than those in the Balance of N.S.W.

TABLE 10. HOUSEHOLDS: BICYCLE OWNERSHIP, REGIONS OF NEW SOUTH WALES, OCTOBER 1988

Statistical region	Bicycle ownership					
	None		One		Two or more	
	Number ('000)	Per cent (a)	Number ('000)	Per cent (a)	Number ('000)	Per cent (a)
Inner Sydney and Inner Western Sydney (SRs)	110.5	75.3	21.3	14.5	14.9	10.2
Inner Sydney (SR)	75.8	81.1	11.2	12.0	6.5	7.0
Eastern Suburbs (SR)	60.5	68.3	16.5	18.6	11.5	13.0
St. George - Sutherland (SR)	80.7	58.8	24.5	17.8	32.1	23.4
Canterbury - Bankstown (SR)	57.2	59.0	20.3	21.0	19.4	20.0
Fairfield - Liverpool and Outer South Western (SRs)	71.0	54.3	24.1	18.4	35.5	27.2
Fairfield - Liverpool (SR)	47.8	59.2	15.5	19.2	17.5	21.7
Central Western Sydney (SR)	55.8	59.4	18.9	20.1	19.3	20.5
Outer Western Sydney (SR)	43.2	50.3	16.9	19.7	25.9	30.1
Blacktown - Baulkham Hills (SR)	40.1	42.2	21.0	22.1	33.8	35.6
Lower Northern Sydney (SR)	77.3	71.0	16.0	14.7	15.5	14.2
Hornsby - Ku-ring-gai (SR)	35.8	47.5	14.8	19.7	24.7	32.8
Manly - Warringah (SR)	42.8	57.9	12.8	17.3	18.3	24.7
Gosford - Wyong (SR)	40.9	51.9	13.2	16.8	24.6	31.2
<i>Sydney (MSR)</i>	<i>715.9</i>	<i>59.1</i>	<i>220.3</i>	<i>18.2</i>	<i>275.7</i>	<i>22.7</i>
Hunter (SR)	91.9	49.4	35.4	19.0	58.9	31.6
Newcastle (SRs)	79.4	50.8	29.1	18.6	47.9	30.6
Illawarra and South Eastern (SRs)	85.7	48.0	32.2	18.1	60.5	33.9
Illawarra (SR)	54.3	44.4	24.9	20.4	43.0	35.2
Wollongong (SRs)	35.5	42.3	18.4	21.9	30.1	35.9
Richmond - Tweed and Mid-North Coast (SRs)	76.1	53.6	26.4	18.6	39.6	27.9
Northern, North-Western and Central West (SRs)	76.6	48.0	30.7	19.2	52.2	32.7
Murray - Murrumbidgee (SR)	31.9	38.0	19.2	22.9	32.8	39.1
<i>Balance of New South Wales (MSR) (b)</i>	<i>371.2</i>	<i>48.7</i>	<i>144.7</i>	<i>19.0</i>	<i>245.8</i>	<i>32.2</i>
<b>New South Wales</b>	<b>1,087.1</b>	<b>55.1</b>	<b>365.0</b>	<b>18.5</b>	<b>521.5</b>	<b>26.4</b>

(a) As a proportion of total households in that Statistical region. (b) Includes Far West Statistical Division.

There were marked locational variations in bicycle ownership. Within Sydney, the highest proportions of households with bicycles were found in the outer Northern and Western regions of Sydney (ie. Blacktown - Baulkham Hills (58 per cent), Gosford - Wyong (48 per cent), Outer Western Sydney (50 per cent) and Hornsby - Kur-ring-gai (52 per cent)). The Sydney region with the lowest proportion of bicycle households was Inner Sydney (19 per cent).

The overall proportion of bicycle ownership for Sydney was 41 per cent. This was lower than that for the Balance of N.S.W. (51 per cent). The Murray - Murrumbidgee and Wollongong regions had particularly high rates of bicycle ownership; 62 per cent and 58 per cent respectively.

TABLE 11. PERSONS (a): FACTORS THAT WOULD ENCOURAGE CYCLING,  
NEW SOUTH WALES, OCTOBER 1988

Factors that would encourage cycling	Cyclists		Non-cyclists		Persons	
	Number ('000)	Per cent (b)	Number ('000)	Per cent (b)	Number ('000)	Per cent (b)
Time	499.3	36.1	283.2	28.2	782.5	32.7
Bikepaths/cycleways	464.7	33.6	256.2	25.5	721.0	30.2
To improve health/get fitter	289.0	20.9	371.3	36.9	660.3	27.6
If bicycle available	205.3	14.8	298.0	29.6	503.2	21.0
Bikelanes on road	208.1	15.0	109.5	10.9	317.6	13.3
Less traffic	185.9	13.4	116.3	11.6	302.3	12.6
Companionship	179.2	12.9	96.5	9.6	275.7	11.5
Better roads	177.1	12.8	98.2	9.8	275.3	11.5
Parental permission	202.3	14.6	27.6	2.7	229.9	9.6
Flatter area	95.8	6.9	79.8	7.9	175.6	7.3
If older	51.2	3.7	12.8	1.3	64.1	2.7
Weather and daylight saving	24.6	1.8	*5.2	*0.5	29.8	1.2
If younger	*4.4	*0.3	24.0	2.4	28.4	1.2
Health/disability	*5.7	*0.4	13.1	1.3	18.7	0.8
Bicycle storage/parking/security	13.4	1.0	*4.6	*0.5	17.9	0.8
If somewhere safe to ride	7.9	0.6	9.1	0.9	17.0	0.7
If lived closer to school, work, college or university	8.9	0.6	8.1	0.8	17.0	0.7
Other location, more space	*6.8	*0.5	7.4	0.7	14.2	0.6
Availability of special equipment	7.5	0.5	*2.5	*0.3	10.0	0.4
Driver awareness/education	*6.6	*0.5	*3.1	*0.3	9.8	0.4
Licensing/regulation	*6.3	*0.5	*1.2	*0.1	7.5	.3
If lived closer to other destinations	*4.8	*0.3	*1.0	*0.1	*5.7	*0.2
Specialist cyclist facilities	*4.1	*0.3	*1.5	*0.1	*5.6	*0.2
Less pollution	*0.7	*0.1	*2.1	*0.2	*2.8	*0.1
Other factors	51.6	3.7	53.9	5.4	105.5	4.4
<b>Total (c)</b>	<b>1,384.7</b>	<b>..</b>	<b>1,006.0</b>	<b>..</b>	<b>2,390.7</b>	<b>..</b>

(a) Applies only to those persons who would be willing to spend more/some time cycling. (b) Proportion of total persons who would be willing to spend more/some time cycling. (c) A person could nominate more than one factor that would encourage cycling.

Overall, the most common factors that would encourage cycling were time and the provision of bikepaths or cycleways. Time was nominated as a factor by 33 per cent of those persons willing to spend more/some time cycling, while the provision of bikepaths or cycleways was nominated by 30 per cent.

Comparing cyclists with non-cyclists, there were some variations in the factors nominated. For cyclists, time and bikepaths/cycleways were clearly the most common factors identified, being nominated by 36 per cent and 34 per cent of cyclists respectively. While these factors were important for non-cyclists as well, two others were also important. Improving health/getting fitter was identified by 37 per cent of non-cyclists compared with 21 per cent of cyclists; and the availability of a bicycle would have encouraged 30 per cent of non-cyclists to cycle compared with 15 per cent of cyclists.

## APPENDIX A EXPLANATORY NOTES

### Introduction

This publication contains results from a survey of bicycle usage and safety which was conducted throughout New South Wales in October 1988 as a supplement to the Australia-wide Monthly Population Survey. The supplementary survey was conducted at the request of the New South Wales Government and in particular the State Bicycle Committee.

2. Information collected concerned the frequency of use of bicycles, incidence and frequency of cycling accidents and bicycle thefts. Data on safety equipment owned and used was also obtained.

### Supplementary Survey

#### Survey design

3. The supplementary survey was conducted using all the private dwellings and caravan parks included in the Monthly Population Survey for New South Wales. This provided a sample of approximately 7,600 dwellings where a full response was obtained. The survey was conducted during the two weeks commencing Monday, 10 October 1988.

4. Information relating to each household was obtained by personally interviewing 'any responsible adult', i.e. any available adult household member who was in a position to be able to answer these general questions on behalf of the household.

#### Scope

5. The supplementary survey was conducted for all persons aged 5 and over who were usual residents of private dwellings or caravan parks, except

- (a) residents of other non-private dwellings (included in the Monthly Population Survey);
- (b) members of the permanent defence forces;
- (c) certain diplomatic personnel of overseas governments, customarily excluded from censuses and surveys;
- (d) overseas residents in Australia; and
- (e) members of non-Australian defence forces (and their dependants) stationed in Australia.

### Statistical Areas of New South Wales

6. The statistical regional structure used in this publication is based on the Australian Standard Geographical Classification (ASGC), Edition 4. For further information concerning statistical areas, please refer to the publications *Regional Statistics, New South Wales, 1988* (1304.1) and *Australian Standard Geographic Classification* (1216.0).

### Reliability of the Estimates

7. Estimates in this publication are subject to *sampling* and *non-sampling* errors. For information on these sources of error and the reliability of the estimates, refer to Appendix C: Technical Note on Data Reliability.

### Related publications

8. Other ABS publications which may be of interest include:

*Bicycle Usage and Safety, Adelaide Statistical Division, October 1984* (4503.4).

*Bicycle Usage and Safety, Western Australia, November 1982* (9215.5).

*Travel to Work, School and Shops, Victoria, October 1984* (9201.2).

*Travel to Work, School and Shops in Adelaide Statistical Division, October 1981* (9201.4).

### Additional data

9. A list of the complete range of publications available from the ABS can be obtained from any ABS Office. Access to a wide range of ABS statistics is also available through the VIATEL videotex system and on AUSSTATS, ABS' on-line service through CSIRONET. Further information about these services can be obtained from the Sydney ABS Information Services on (02) 268 4611, or from any ABS Office.

10. In some cases the ABS can also make available from this Survey information which is not published. This information may be made available in one or more of the following forms: clerically extracted tabulation, computer printout or floppy disk. In general, a charge is made for providing unpublished information. For further information please phone Michael Clarke on (02) 268 4697 or contact the ABS as shown in the Inquiries Section at the front of this publication.

### Symbols and other usages

.. Not applicable

\* Estimate is subject to sampling variability too high for most practical purposes. See paragraph 6 of Appendix C: Technical Note on Data Reliability.

MSR Major Statistical Region

SRS Statistical Region Sector

11. Figures have been rounded, and discrepancies may occur between sums of the component items and totals shown. Published proportions are calculated prior to rounding of figures and, therefore, some discrepancies may exist between published proportions and those that could be calculated from the rounded figures.

APPENDIX B  
GLOSSARY

1. *Bicycle accident.* Includes accidents which occurred in the last 12 months. Accidents were not categorised and may vary depending on what the respondent views as an accident. Bicycle accident refers to the total number of accidents in that 12 month period.

2. *Bicycle.* Includes any two wheeled bicycle, tandems, tricycles used on roads and children's bicycles with training wheels. Excludes toy bicycles, childrens tricycles and exercise bicycles.

3. *Bicycle in the household.* Includes bicycles owned by members of the household, which were temporarily absent (eg. lent out) and bicycles not owned by members of the household but kept or stored at the dwelling on a long term basis. Excludes visitors' bicycles temporarily kept at the dwelling, bicycles unlikely to be used, bicycles which form part of a bicycle repair, sales or hiring business or bicycles owned by a member of the household but kept or stored at another private dwelling on a long term basis.

4. *Bicycle stolen.* This refers to the number of incidences of stolen bicycles rather than the number of stolen bicycles, ie. if the same bicycle were stolen twice during the last 12 months, two bicycles were recorded as stolen.

5. *Cyclist.* Includes persons aged 5 years and over who rode a bicycle in the last 12 months. There are two categories of cyclist: regular cyclist being a cyclist who rides at least once a month and irregular cyclist being a cyclist who rides less often.

#### 6. *Destination*

*Work.* Includes children aged under 15 years who ride to work (eg. paper round). Persons who cycle for work purposes are included in 'other destination'.

*School.* Includes only primary and secondary school students. Teachers who ride to the school at which they teach are included in 'work'.

*University/college.* Includes colleges of advance education, technical colleges etc. Staff who ride to the campus are included in 'work'.

*Shops.* Includes all types of shops except amusement venues (eg. pinball parlours) which are classed as 'recreation venue'.

*Other form of transport.* Includes bus stop, railway station, etc.

*Venue for recreation.* Includes sporting venues, amusement areas, playgrounds, beaches etc.

*Friends/Relatives.* Riding to or from a friend's or relative's residence only.

*On own property.* Applies to anyone riding solely within their own or friend's/relative's property boundary (whether property is owned, rented or otherwise). Excludes passing through property on the way to other destinations.

*Just riding around.* Includes riding for fitness or enjoyment with no particular destination in mind. Also includes organised bicycle racing and riding at a destination rather than to a destination.

*Other destination.* Includes accompanying children to school, riding to church, workers who ride bicycles for work purposes, etc.

#### 7. *Factors to encourage cycling*

*If bicycle available.* Includes persons who own a bicycle which is unavailable for use and those who indicate that owning a better bicycle would encourage more/some cycling.

*Health/disability.* Includes persons who would cycle if not prevented by poor health or disability.

8. *Hard shell helmet.* Includes helmets made of hard plastic or metal. Excludes motor cycle and horse riding helmets.

9. *Household.* A group of persons occupying the same dwelling, who share common facilities and meals or who consider themselves to be a household.

10. *'The last 12 months'* means from October 1987 to October 1988.

#### 11. *Location*

*Bicycle path.* This includes cycling on bicycle paths located in parks or reserves.

12. *Safety devices.* 'Brakes' include back pedal brakes and hand brakes. Other safety devices include trainer wheels, protective padding on handle bars, reflective tape, etc.

#### 13. *Treatment categories*

*Hospital admittance.* The cyclist is formally admitted to hospital.

*Treatment by a doctor.* Receives some form of formal medical treatment by a doctor.

*Other treatment.* Receives some other form of medical treatment. Includes treatment at home, treatment by first aid attendants, teachers, etc. who are not doctors or nurses.

**APPENDIX C**  
**TECHNICAL NOTE ON DATA RELIABILITY**

**Sources of error**

There are a number of possible sources of error in sample surveys and these can be classified into two types: *sampling error* and *non-sampling error*.

**Non-sampling errors**

2. Non-sampling errors may arise as a result of errors in the reporting, recording or processing of the data and can occur even if there is a complete enumeration of the population. Non-sampling errors can be introduced through: inadequacies in the questionnaire; non-response; inaccurate reporting by respondents; errors in the application of survey procedures; incorrect recording of answers; and, errors in data entry and processing.

3. It is difficult to measure size of the non-sampling errors and the extent of these errors could vary considerably in significance from survey to survey and from question to question. However, every effort is made in the design of the survey and development of survey procedures to minimise the effect of these errors.

**Sampling errors**

4. Sampling error is the error which occurs by chance because the data were only obtained from a sample, not the entire population.

*Standard error of estimates*

5. One measure of the variability of estimates which occurs as a result of surveying only a sample of the population is the *standard error* (SE). There are about two chances in three that a survey estimate is within one standard error of the figure that would have been obtained if all persons had been included, and about nineteen chances in twenty that it is within two standard errors. That

is, there are 19 chances in 20 that the true estimate is in the range-

$$X - 2 \times SE(X) \text{ to } X + 2 \times SE(X)$$

(where X is the estimate)

The standard error of an estimate can be obtained from the table below. Linear interpolation should be used to calculate the standard error of estimates falling between the sizes of estimates listed in the table.

6. In the tables in this publication, only estimates with relative standard errors of 25 per cent or less, and percentages based on such estimates, are considered sufficiently reliable for most purposes. However, estimates and percentages with larger relative standard errors have been included and are preceded by an \* to indicate that they are subject to high standard errors and should be used with caution.

*Relative standard errors*

7. The standard error can also be expressed as a percentage of the estimate and this is known as the *relative standard error* (RSE). The RSE is determined by dividing the standard error of an estimate SE(X) by the estimate X and expressing it as a percentage. That is,

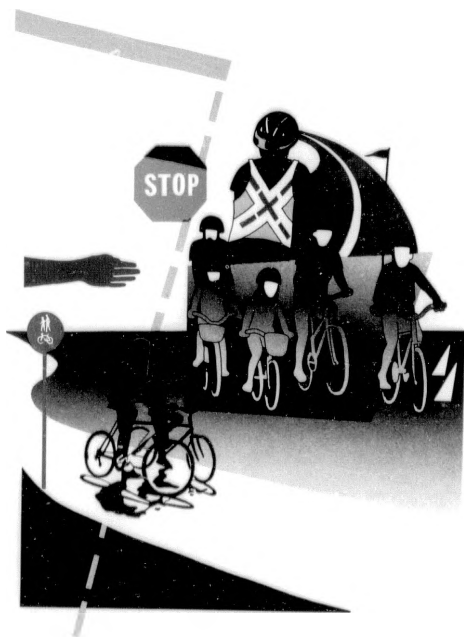
$$RSE(X) = \frac{SE(X) \times 100}{X}$$

(Where X is the estimate)

8. The look up table on this page provides a guide for the calculation of standard errors and relative standard errors for a range of statistics. Generally the RSEs for regions are lower than those for New South Wales.

**STANDARD ERRORS OF ESTIMATES OF PERSONS**  
**NEW SOUTH WALES**

<i>Size of estimate (persons)</i>	<i>Standard error (number)</i>	<i>Relative standard error (per cent)</i>
3,000	1,720	57.3
4,000	1,740	43.5
5,000	1,750	35.0
6,000	1,770	29.5
7,000	1,790	25.5
8,000	1,800	22.5
9,000	1,820	20.2
10,000	1,840	18.4
20,000	2,000	10.0
30,000	2,160	7.2
40,000	2,330	5.8
50,000	2,490	5.0
100,000	3,320	3.3
200,000	4,960	2.5
300,000	6,600	2.2
500,000	9,890	2.0
1,000,000	18,100	1.8
2,000,000	34,540	1.7



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