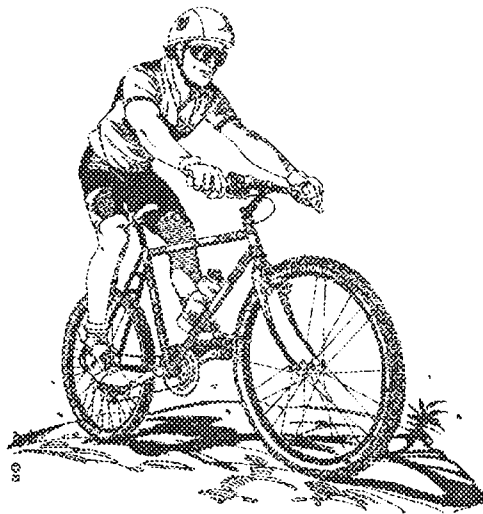




MONASH University

Accident Research Centre

TEENAGERS' ATTITUDES TOWARDS BICYCLE HELMETS



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Abstract:

A survey of Year 9 and Year 10 school students was conducted in September 1993 to determine teenager's attitudes towards bicycle helmets. The survey found that bicycles are the preferred form of wheeled recreation/self-transport amongst teenagers. However, less than one-quarter of all teenagers reported that they always wore a helmet when they rode a bicycle. Major factors leading to teenagers not wanting to wear a bicycle helmet were the helmet's appearance and comfort. Both safety considerations and parental pressures were factors that influence a teenager to wear a helmet. This study has highlighted three major problem areas: low helmet ownership and wearing rates; the low priority that teenagers give to safety issues compared to comfort and peer acceptance; and an ignorance of the need for helmets in all riding situations.

Key Words:
(IRRD except when marked*)

Bicycle, cyclist, crash helmet, teenagers

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EXECUTIVE SUMMARY

Despite the large influence that Bike-Ed and other education programs have had on helmet wearing rates and other safety behaviours in children, and the introduction of mandatory helmet wearing in Victoria, helmet wearing rates in 12-17 year olds are considerably lower than in other age-groups. Furthermore, since the introduction of mandatory helmet wearing, there has been an apparent drop in the numbers of teenagers using bicycles.

Reasons for these trends in teenagers are currently unclear. A survey of teenagers' attitudes was considered as an appropriate step to take to obtain some relevant information on these issues. A survey of 1240 Year 9 and Year 10 students from fourteen schools in the outer south-eastern suburbs of Melbourne was conducted in September 1993.

This survey found that bicycles are still the preferred form of wheeled recreation/self-transport amongst teenagers with over 80% of all responding teenagers having ridden a bicycle during the previous year. Males tended to use bicycles more often and across a wider variety of places than females.

Almost two-thirds of all teenagers reported that they owned a helmet but only one-third wore a helmet the last time they road a bicycle. Less than one quarter of all teenagers always wore a bicycle helmet when they rode a bicycle, despite the fact that helmet wearing is compulsory in this state. This is of some concern when viewed in the light of the high numbers of teenagers who use a bicycle.

The major factors leading to teenagers not wanting to wear a bicycle helmet were the helmet's appearance and comfort. Appearance was more of an issue for females than males. Both safety considerations and parental pressures were factors that influence a teenager to wear a helmet.

Few teenagers had recently participated in a bicycle education program. Despite this, many appear to be familiar with the importance of bicycle helmets as a safety measure. This study has highlighted three major problem areas:

- low helmet ownership and wearing rates
- the low priority teenagers give to safety issues compared to comfort and peer acceptance
- an ignorance of the need for helmets in all riding situations.

The study's major recommendations are the following:

1. Future education schemes (through schools, media etc) should emphasise that helmets should be worn whenever a bicycle is ridden and not just in traffic or other obviously dangerous situations.

2. Helmet manufacturers and government bodies should promote the availability of modern, light, well-ventilated and stylish helmets. Parents should be advised that their children are more likely to be happy about wearing these helmets (which they have helped to choose).
3. The possibility of a fine being imposed on non-helmet wearing bicyclists needs to be emphasised and enforced by the relevant authorities. The perception that fines are low and unlikely to be incurred should be addressed.
4. Parents should continue to encourage their teenagers to wear bicycle helmets. This could be achieved by developing education schemes aimed at adults' awareness of bicycle safety issues, thereby increasing the number of parents that demand helmets be worn by their children and providing role models for teenagers.

1. INTRODUCTION

The promotion of traffic safety through the development of school curriculum units supported by consultancy services was introduced by VicRoads in 1980. The "Bike-Ed" education program about bicycle safety began at that time and has been instrumental in promoting bicycle helmet use in school-aged children. Bike-Ed is targeted at school students aged 9-13 years. More recently, VicRoads has developed the "Cycling-On" program for older school students.

Despite the large influence such education programs have had on helmet wearing rates and other bicycle safety behaviours in children, and the introduction of mandatory helmet wearing in Victoria, helmet wearing rates in 12-17 year olds are considerably lower than in other age-groups - 59% of 12-17 year olds wear helmets when riding their bicycles compared to 77% of younger children and 84% of adults [Finch, Heiman & Neiger, 1993]. Furthermore, since the introduction of mandatory helmet wearing, there has been an apparent drop in the numbers of teenagers using bicycles. Reasons for these trends in teenagers are currently unclear.

In September 1993, a survey of teenagers in Years 9 and 10 from fourteen schools in the outer South-Eastern region of metropolitan Melbourne was conducted in order to assess their attitudes, behaviour and knowledge about wearing bicycle helmets. This information could help to explain the trends in bicycle usage and helmet wearing amongst teenagers.

The survey questionnaire was designed by four 3rd year students in Health Promotion from the Faculty of Medicine at Monash University as part of their required course work. The project was supervised by the Monash University Accident Research Centre (MUARC).

2. OBJECTIVES

The overall aim of this study was to provide information about teenagers' attitudes, knowledge and motivation towards wearing bicycle helmets and bicycle usage with the goal of gaining insights into how to increase their helmet wearing rates and use of bicycles.

Specific objectives were to determine:

- the frequency and patterns of bicycle use by teenagers
- the proportion of teenagers wearing bicycle helmets
- the factors affecting helmet wearing and bicycle use (such as helmet type, motivation, knowledge, environment, etc.)
- teenagers' attitudes towards helmet wearing and bicycle use
- teenagers' reasons for wearing or not wearing a helmet
- teenagers' thoughts about helmet design.

3. LITERATURE REVIEW

On July 1st, 1990, legislation was passed in Victoria making it compulsory for bicyclists to wear an approved helmet. The law's intention was to increase helmet wearing rates in all age groups thereby decreasing the incidence of head injuries to bicyclists. Prior to mandatory bicycle helmet use in Victoria, helmet wearing surveys had indicated low helmet wearing rates in all age groups [Cameron et al, 1992; Finch, Heiman & Neiger, 1993; Finch, Newstead et al, 1993]. In May/June 1990, these rates were estimated to be 65% in children (5-11 year olds), 21% in teenagers (12-17 years) and 36% in adults [Finch, Heiman & Neiger, 1993]. It should be noted that these are voluntary wearing rates and the rate amongst children before the law was introduced was considered to be quite high.

Post-law helmet wearing surveys have shown that helmet wearing rates were 78% in children, 45% in teenagers and 74% in adults by 1991. By 1992, rates were 77% in children, 59% in teenagers and 84% in adults [Finch, Heiman & Neiger, 1993]. Although the legislation increased helmet wearing in all age groups, teenagers remained the group with the lowest helmet wearing rate [Cameron et al, 1992; Finch, Heiman & Neiger, 1993].

The increase in helmet wearing rates has also been shown to correlate with a post-law reduction in severely injured cyclists sustaining head injuries across all age groups [Finch, Newstead et al, 1993; Cameron et al, 1994].

Since the law's introduction, the number of bicyclists and the amount of bicycle exposure time has decreased, particularly in teenagers [Cameron et al, 1992; Finch, Heiman & Neiger, 1993]. Although teenager bicycle use rose between 1991 and 1992, it still remains at below pre-law levels [Finch, Heiman & Neiger, 1993].

With this in mind, the question arises as to why teenagers have the lowest helmet wearing rates and have experienced the greatest reduction in bicyclist numbers of all age groups. Their attitudes to bicycle helmets may hold the answer to this problem.

In communities without bicycle helmet legislation, teenagers view helmets as smart or safe to wear but may not wear them due to them being considered as 'uncool' or viewed as under parental influence [Elliott & Shanahan Research, 1986; Howland et al, 1989; Bergman et al, 1990].

Howland et al [1989] found that mis-perception of peer attitudes is the major barrier towards bicycle helmets in primary school-aged children. Although students thought that they would be inviting derision from their peers if they wore a helmet themselves, they tended to respect other children who wore helmets. Peer pressure has also been identified as one of the major factors leading to low helmet wearing rates amongst teenagers and children in a number of other studies [Elliott & Shanahan Research, 1986; DiGuseppi et al, 1989; DiGuseppi et al, 1990].

Pendergrast et al [1992] found that sibling helmet ownership, parental helmet use and lower parental perceived social barriers to helmet use were independently associated with student's reported helmet use. Other studies have identified parental influence

[Elliott & Shanahan Research, 1986; Road Traffic Authority (RTA), 1988; DiGuseppi et al, 1989], perceived lack of need [DiGuseppi et al, 1990], and appearance and comfort as other important factors [Elliott & Shanahan Research, 1986; RTA, 1988; Howland et al, 1989]. DiGuseppi et al [1989] also found that students who rode on streets were less likely than those who used parks or bicycle parks to wear helmets because of their perceived lack of risk.

4. DEFINITIONS

In this report, the following definitions are used:

<i>Teenager</i>	a person between the ages of 13 and 17 years and in Year 9 or Year 10 at school
<i>Child</i>	a person aged under the age of 13 years
<i>Bicycle helmets</i>	protective head gear designed to be worn whilst bicycling
<i>Attitudes</i>	teenagers' opinions on the use of bicycle helmets, their effectiveness, reasons for their use and disuse and advice on improvement
<i>Behaviours</i>	teenagers' actions toward bicycle helmet use
<i>Knowledge</i>	teenagers' awareness of the need and relevance of bicycle helmets

5. METHODS

A self report questionnaire was developed to collect information about teenagers' attitudes, behaviours and knowledge towards bicycle helmets and bicycle usage. This questionnaire was administered to a group of Year 9 and Year 10 students at school during the last week of Semester Three in 1993.

It was considered that sampling teenagers from students in Years 9 and 10 at a number of schools was the most effective way of obtaining a broad range of teenagers at a specific place and time, given the time and logistic constraints of the study. The limitation of this approach, however, is that it only sampled attending students and therefore would have missed those who were absent, sick or away on vacation at the time of the survey as well as those who may have already finished school.

5.1 SELECTION OF SCHOOLS

General support for the study was obtained from VicRoads, particularly the Traffic Safety Consultant for the south-eastern metropolitan region, because of their experience in promoting bicycle safety to school students. Approval was obtained from the Directorate of School Education for the south-eastern metropolitan Melbourne region to survey schools in this region.

The schools that were invited to participate in the study were identified by the VicRoads Traffic Safety Consultant on the basis that they had purchased the "Cycle

On" resource materials in the previous year and should have had some form of bicycle education program in place. Whilst it is recognised that this selection criterion would not necessarily lead to schools representative of the whole area, it was considered that valuable information could still be obtained from these school students.

A list of twenty state schools from Melbourne's outer south-eastern suburbs was obtained from VicRoads. Of these, twelve agreed to participate, two did not and the remainder did not respond to the initial invitation to participate. Two other schools (one private) were also invited to participate in the study. The study was therefore conducted in thirteen state schools and one private school. All students of selected Year 9 & 10 classes who attended each school during the last week of Semester Three participated in the study.

It is important to note that the responding students may not be representative of all Melbourne teenage bicyclists (due to regional differences such as road design and decreased public transport).

A list of the schools that participated in this study is given in the Acknowledgments.

5.2 THE QUESTIONNAIRE

A questionnaire was developed to collect information from eight broad categories:

- Demographics
- Bicycle use
- Helmet knowledge
- Helmet ownership
- Helmet use
- Attitudes to helmets
- Previous injuries
- Perceived injury vulnerability.

Development of the questionnaire involved consideration of language relevant to the age group and consistent, non-offensive, non-leading, discreet, straightforward, non-repetitive and open-ended questions. Generally closed questions with specified options were used to facilitate analysis. However, open-ended questions were also used to explore attitudes and behaviours.

A copy of the questionnaire is given in the Appendix to this report.

Questionnaires were grouped into class packages and hand delivered and collected from schools during the week starting 12th September, 1993, that is during the last week of Semester Three.

5.3 ANALYSIS

All survey data was entered onto a personal computer with the Microsoft Excel package. Analyses were performed with the SPSS PC+ statistical package.

6. RESULTS

A total of 1268 completed questionnaires were received from the fourteen participating schools. A small number of responders gave their age as outside the 13-17 year range (defined to be teenagers in this study) and so have been excluded from the results of this study. The results therefore correspond to the 1240 teenagers aged 13-17 years who responded to the survey. Not all students responded to every question and so the statistics presented below refer to the students who gave a response to each particular question.

6.1 DEMOGRAPHICS

Of the 1234 students who provided information about their year level at school, 53.1% were in Year 9 and 46.9% in Year 10.

The age distribution of the responding students is shown in Table 1. The majority of students (94.9%) were aged between 14 and 16 years, with a modal age of 15 years. Males and females were equally represented in the sample.

Table 1 Age distribution of the responding students

Age (years)	Males <i>n=616</i>	Females <i>n=612</i>	Total <i>n=1240</i>
13	5.4%	1.3%	3.4%
14	28.4%	35.9%	32.3%
15	44.5%	46.6%	45.1%
16	19.8%	15.0%	17.5%
17	1.9%	1.1%	1.7%

Only 6.2% ($n=77$) of the teenagers reported that they had participated in a bicycle education program during 1993 despite the fact that twelve of the fourteen schools had purchased these education programs within the past year.

6.2 BICYCLE USE

In the past year, 83.7% of all teenagers had ridden a bicycle. This proportion was higher in males (94.6%) than in females (72.9%). During the two week period prior to this survey, however, these proportions were lower with 74.8% of males but only

34.5% of females having ridden a bicycle. Many teenagers had also used another form of wheeled recreation during the two weeks prior to the survey and these are described in Table 2. Table 2 shows that bicycles are still the most popular form of wheeled recreation/self-transport used by teenagers.

Table 2 Forms of wheeled recreation/self-transport used by teenagers in the two weeks prior to the end of September 1993

Form of wheeled recreation	Males	Females	All teenagers
	%	%	%
Bicycle	74.8	34.5	54.5
Off-road motor-bikes	25.0	7.4	16.4
Roller skates	9.6	11.3	10.5
Skateboards	22.9	9.0	15.9
Roller blades/in-line skates	13.1	11.4	12.3

Male teenagers had generally ridden a bicycle more recently than females (Table 3). The proportion of teenagers who reported that they do not ride a bicycle was higher in females (10.9%) than males (2.8%).

Table 3 When teenagers last rode a bicycle

When	Males	Females	Total
	%	%	%
Today	22.1	2.1	12.2
Within the last week	44.3	21.4	32.8
Within the rest of this month	5.2	4.4	4.8
Last month	8.4	13.2	10.8
Don't ride	2.8	10.9	6.9
Other/can't remember	16.9	47.4	32.1

Male teenagers tended to ride their bicycles more frequently than females (Table 4). Seven times as many males ride their bicycles everyday than females. Approximately half of all teenagers do not have a clear pattern as to when they ride their bicycles and use them sometimes or on any day.

Table 4 How often teenagers ride a bicycle

How often	Males %	Females %	Total %
Every day	28.7	4.1	16.5
Only during the week	3.1	0.2	1.7
Only on weekends	4.5	4.4	4.4
Only during school holidays	2.8	9.6	6.1
Sometimes, any day	50.5	47.4	48.9

The teenagers who participated in this survey were also asked where they rode a bicycle. A number of options were given, and more than one response was acceptable. Table 5 describes the range of places where teenagers ride bicycles. This table indicates that the most common places for riding a bicycle are “to go to the shops” or “to go to a friend’s house”. Males are 4 times more likely to ride a bicycle when they are out with their friends than a female. They are also more likely to ride a bicycle to and from school.

Table 5 Places where teenagers ride bicycles

Where	Males %	Females %	Total %
To go to the shops	61.4	33.7	47.3
To go to a friend’s house	60.7	25.2	42.8
On my street where I live	40.1	28.9	34.6
At home	35.2	21.9	28.5
On bicycle paths or tracks	31.0	23.7	27.3
When I’m out with my friends	42.7	10.6	26.7
Going to and from school	28.4	4.6	16.5
Other	12.8	10.3	11.5

The most commonly reported circumstances under which teenagers would not ride a bicycle are listed in Table 6. Other reasons included “when I am with friends”, “when I have to go far” and “when it is difficult terrain”. Environmental conditions such as

rain, wet or cold or darkness appear to be more important deterrents to females than to males.

Only 10% of teenagers said that they would not ride a bicycle because they did not have a helmet.

Table 6 Reasons why teenagers would not ride a bicycle

Why don't use	Males %	Females %	Total %
When it is raining, wet or cold	38.6	48.0	43.1
When it is dark	25.2	46.2	35.6
When I want to do another activity eg. walking	11.7	14.1	12.8
When I do not have a helmet	8.3	12.3	10.2

6.3 HELMET KNOWLEDGE

The students were asked to comment whether a person should always wear a helmet under certain circumstances. The results are shown in Table 7. Females reported that people should wear their helmets in all circumstances more frequently than did the males. However, both groups appear to regard the home as an area of "low risk" and considered the need to wear a helmet there is much less than in other areas.

Table 7 Circumstances under which teenagers believe people should always wear a helmet

Circumstance	Males %	Females %	All %
On a main road	74.8	92.8	83.8
On a quite back street	29.2	45.3	37.0
On a footpath	34.9	57.5	46.1
At home	17.7	28.8	23.2
On a path or track	34.1	55.4	44.6

6.4 HELMET OWNERSHIP

Sixty-five percent of all teenagers reported that they owned a bicycle helmet. Sixty-nine percent of teenagers who had ridden a bicycle in the past year reported that they owned a bicycle helmet, compared with 45% of the non-riders.

Females were more likely than males to own a helmet that consisted of foam and a thick layer of plastic (65.5% versus 49.3%, respectively). Foam-only helmets were more commonly owned by males (24.0%) than females (15.0%). Micro-shell helmets were also more common amongst males (26.7%) than females (19.5%).

More than half of all teenagers reported that they were happy with their helmet. However, this varied with the type of helmet. Forty-nine percent of those with a "foam and a thick layer of plastic" helmet were happy with it, compared with 51.9% of those with a microshell helmet and 74.8% of those with a foam-only helmet.

6.5 HELMET USE

Over one-third of all teenagers stated that they wore a bicycle helmet the last time they rode a bicycle. Table 8 summarises how often teenagers reported that they wore a helmet when riding a bicycle. Of some concern is the result that less than half of all teenagers wear a bicycle helmet for most or all of the times they ride a bicycle. A significant proportion never wear a bicycle helmet.

Table 8 How often teenagers wear a helmet when riding a bicycle

Frequency of wearing a helmet	Males	Females
	%	%
Always	23.7	24.0
Most of the time	19.1	20.6
Some of the time	15.3	19.3
Hardly ever	15.7	17.5
Never	26.2	18.6

There was surprisingly little difference in the proportion of teenagers who always wore a helmet according to helmet type: 28.0% of those with a "foam and a thick layer of plastic" helmet; 26.5% of those with a "foam and a thin layer of plastic" helmet; and 24.7% of those with a foam-only helmet. This suggests that factors other than helmet design are also important in determining whether or not a teenager wears a bicycle helmet.

6.6 ATTITUDES TOWARDS HELMETS

Attitudes towards bicycle helmets were sought in three ways:

what are the reasons for not wearing a helmet?

what reasons would make you wear a helmet?

should bicycle helmets be improved?

Table 9 lists the most commonly given reasons for not wearing a bicycle helmet. Other responses included “I am safe without one”, “it confines my hair”, and “I am only going for a short ride”.

Table 9 Reasons why teenagers do not wear a bicycle helmet

Reasons cited by teenagers	Males	Females	All
	%	%	%
I find it uncomfortable/annoying	30.8	35.9	33.5
It's not fashionable	22.2	23.9	23.0
I forget it/don't have one/can't afford one	14.1	11.9	13.1
I hate them	12.3	9.8	11.0
I only ride at home or on my street	6.2	12.3	9.1
When it is not needed because I am not riding in a dangerous place	5.7	8.7	7.1

Table 10 shows that there is not a clear relationship between not wearing a helmet and the helmet type. There was only a slightly higher proportion of teenagers who hated their “foam and a thick layer of plastic” helmets than any other type.

The major motivators for teenagers to wear helmets are given in Table 11. Other reasons for wearing helmets were given as “when other people make me wear one”, “when I am not riding a short distance” and “when the terrain is difficult”.

Just under one third of all teenagers felt that the currently available bicycle helmets did not need to be improved (Table 12). A significant proportion of teenagers (18.0%) felt that helmets could be improved but did not know how. Of some interest was the response by 4% of the teenagers that teenagers attitudes towards helmets needed to be improved. Other responses include “they should be stronger and withstand more than one impact”, “they should be cheaper” and “they should be more protective”.

Table 10 Reasons why teenagers do not wear a bicycle helmet according to helmet type

Reasons cited by teenagers	Foam and a thick layer of plastic %	Foam and a thin layer of plastic %	Foam-only %
I find it uncomfortable/annoying	35.6	37.0	38.7
It's not fashionable	23.7	21.2	26.5
I hate them	13.1	7.9	9.0

Table 11 Reasons why teenagers would wear a bicycle helmet

Reasons cited by teenagers	Males %	Females %	All %
I want to be safe	44.0	64.1	53.9
My parents make me	26.9	36.4	31.5
Due to the law/police force	7.5	8.2	7.8
I don't want a fine	7.8	6.4	7.1

Table 12 Teenagers' suggestions for improving bicycle helmets

Suggestions	Males %	Females %	All %
No change. I think that they are all right now	37.7	26.1	31.9
They should be made more comfortable and/or lighter	11.9	18.5	15.1
I don't know	11.0	18.0	14.4
Their appearance and colour should be improved	10.1	17.2	13.5
Teenager's attitudes need to be improved	3.9	3.9	3.9

The suggestions for improving bicycle helmets according to the type of helmet owned by teenagers is given in Table 13. Fewer owners of “foam and a thick layer of plastic” helmets thought that they were OK and did not need changing compared to owners of other types of helmets. Furthermore, these owners were more likely to state that helmets needed to be made more comfortable and/or lighter.

Table 13 Teenagers’ suggestions for improving bicycle helmets

Suggestions	Foam and a thick layer of plastic	Foam and a thin layer of plastic	Foam-only
	%	%	%
No change. I think that they are all right now	28.4	39.2	39.4
They should be made more comfortable and/or lighter	20.9	10.6	11.0
Their appearance and colour should be improved	15.7	10.6	14.2
Teenager’s attitudes need to be improved	5.2	4.2	3.2

6.7 PREVIOUS BICYCLING INJURIES

Eighty-one percent of all teenagers reported that they had fallen off their bicycles and hurt themselves. The most commonly injured body part was reported to be the legs/feet (55.7%) and the arms/hands (52.9%). Sixteen percent of all teenagers reported that they had hurt their head when falling off a bicycle. This proportion was larger in males (22.4%) than in females (9.5%).

6.8 INJURY VULNERABILITY

A set of four questions was included in the questionnaire to obtain information about teenager’s perceived injury vulnerability during hypothetical incidents. Table 14 summarises the responses provided by the teenagers to each scenario. These results indicate that teenagers’ perceived risk of a severe injury (eg one resulting in death or brain damage) is greatly reduced if a helmet is worn. Furthermore, the risk of injury from a collision with a car or truck is perceived to be greater than a non-collision fall from a bicycle.

Table 14 Teenagers' beliefs about the worst thing that could happen to a cyclist under different scenarios

Scenario	Worst thing that could happen				
	Nothing	Scrapes, cuts, bruises	Broken bones	Brain damage	Killed
Fall from bicycle and you WERE NOT wearing a helmet	5.1	12.4	8.9	18.1	52.5
Fall from bicycle and you WERE wearing a helmet	5.4	26.5	36.0	6.1	22.9
Knocked over by a car or truck and you WERE wearing a helmet	1.8	2.6	31.0	9.1	52.7
Knocked over by a car or truck and you WERE NOT wearing a helmet	3.7	0.4	3.0	6.4	83.8

7. DISCUSSION

This study has found that approximately 94% of teenagers have not taken part in a bicycle education program in the past year, despite their school having resource materials available to them. It is important to note, however, that many schools restrict formal bicycle education programs to Years 7 and 8 and any programs in Years 9 and 10 would probably be as an elective in Physical Education or Outdoor Education, or be part of an after school hours training program for special events such as the Great Victorian Bike Ride. Nevertheless, non attendance at a recent education program may be a contributing factor to the lack of safety knowledge demonstrated by some respondents.

The 84% of teenagers who have ridden a bicycle in the past year and other usage-related data from Tables 3-5, show that riding a bicycle is still extremely popular. Compared with the usage rates for other modes of wheeled recreation or self-transport, bicycling is still the most popular of the options available to teenagers.

Many teenagers feel that people do not need to wear a helmet in many of the areas where they regularly ride their bicycles. For example, whilst 27% of teenagers ride their bicycles on a path or track, less than half of them feel that a helmet is necessary in this environment.

Sixty-five percent of all teenagers reported that they owned a bicycle helmet. This is consistent with the helmet ownership rate determined during the 1992 survey of bicycle exposure in Melbourne [Finch, Heiman, Neiger, 1993].

Less than a quarter of all teenagers always wear a bicycle helmet, despite the fact that helmet wearing is compulsory by law. This is of some concern when viewed in the light of the 84% usage rates over the past year.

Appearance and comfort were the most important factors in helmet acceptability to teenagers. This data is supported by the suggested improvements to helmets for which improvements to their appearance and comfort were amongst the most commonly given. Safety was also a major consideration when choosing to wear a helmet as was parental influences.

Only 15% of teenagers cited the possibility of receiving a fine or enforcement of the mandatory helmet wearing law by the police as a reason for wearing a bicycle helmet. This suggests that teenagers do not consider the issuing of a fine or police enforcement as either likely or serious.

At 16%, the head was the least frequently injured body region in the 81% of respondents who had fallen from a bicycle. This result could explain why many feel that helmets are not the last word in bicycle safety and that serious injuries can still be sustained even when helmets are worn.

Teenagers generally believe that hitting a vehicle is perceived as more dangerous than just falling off a bicycle. Furthermore, there are dramatic decreases in the expected rates of brain damage and death when helmets are worn compared to situations in which they are not worn. This, along with the teenagers' emphasis on safety as a reason why helmets should be worn, indicate that the helmet wearing message is being received. This serves to emphasise just how powerful poor social acceptance and poor comfort are as deterrents to helmet use, given that teenagers know they should wear helmets, but so many do not.

Despite so few respondents having taken part in a recent education program, most appear familiar with the importance of bicycle helmets as a safety measure. The problem areas are:

- low helmet ownership and wearing rates
- the low priority teenagers place on safety compared to comfort and peer acceptance
- an ignorance of the need for helmets in all riding situations.

8. RECOMMENDATIONS

1. Future education schemes (through schools, media etc) should emphasise that helmets should be worn whenever a bicycle is ridden, not just in traffic or other obviously dangerous situations.
2. Helmet manufacturers and government bodies should promote the availability of modern, light, well-ventilated and stylish helmets. Parents should be advised that their children are more likely to be happy about wearing these helmets (which they have helped to choose).
3. The possibility of a fine being imposed on non-helmet wearing bicyclists needs to be emphasised and enforced by the relevant authorities. The perception that fines are low and unlikely to be incurred should be addressed.
4. Parents should continue to encourage their teenagers to wear bicycle helmets. This could be achieved by developing education schemes aimed at adults' awareness of bicycle safety issues, thereby increasing the number of parents that demand helmets be worn by their children and providing role models for teenagers.

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Appendix

TEENAGERS AND BICYCLES QUESTIONNAIRE

(please answer every question)

1. How old were you on your last birthday?
2. Are you a **MALE** or **FEMALE** (please circle).
3. Are you a **YEAR 9** or **YEAR 10** student? (please circle).
4. Have you taken part in a bicycle education programme this year? (please circle).
YES or NO or DON'T KNOW
5. Have you ridden a bicycle in the last year? (please circle) YES or NO
6. During the past two weeks have you been on...(please circle)
a bicycle? YES or NO an off-road motorbike? YES or NO
roller skates? YES or NO a skateboard? YES or NO
roller blades or in-line skates YES or NO
7. When did you last ride your bicycle? (tick one box)
today last month
within the last week I can't remember
within the rest of this month I don't ride a bicycle
other (explain)
8. How often do you use your bicycle? (tick one box)
everyday only during the week
only on weekends only during school holidays
sometimes, any day I don't use a bicycle
9. Where do you use your bicycle? (tick as many as apply)
at home going to and from school
to go to the shops on my street where I live
to go to a friend's house when I'm out with my friends
on bicycle paths/tracks I don't use a bicycle
other (explain)
10. When would you decide not to ride your bicycle?
(eg. when it's dark/ wet, when I'm with friends, when I don't have a helmet)
.....
.....
.....
11. Do you think that people should always wear a helmet when they ride their bicycle...(please circle)
on a main road? YES or NO on a quiet back street? YES or NO
on a footpath? YES or NO at home? YES or NO
on a path or track? YES or NO
12. Do you have a bicycle helmet? (please circle) YES or NO
(go to question 13 if NO)
13. What sort of bicycle helmet do you have? (tick one box)
foam and a thick layer of plastic or foam and a thin layer of plastic
or foam only (could include a lycra cover)

14. Are you happy with your helmet? (please circle) YES or NO

15. How often do you wear your helmet when riding your bicycle? (tick one box)

- | | | | |
|------------------|--------------------------|------------------|--------------------------|
| always | <input type="checkbox"/> | most of the time | <input type="checkbox"/> |
| some of the time | <input type="checkbox"/> | hardly ever | <input type="checkbox"/> |
| never | <input type="checkbox"/> | | |

16. Last time you rode your bicycle did you wear a helmet? (please circle) YES or NO

17. When you don't wear a helmet, what are the reasons?

(eg. it is not fashionable, it is uncomfortable, I only ride my bicycle at home)

.....

.....

.....

18. List the reasons why you would wear a bicycle helmet?

(eg. my parents make me, I want to be safe, all my friends wear them)

.....

.....

.....

19. Should bicycle helmets which are available now be improved? How?

.....

.....

.....

20. Have you ever fallen off your bicycle? (please circle) YES or NO

21. What part of your body did you hurt? (tick as many as apply)

- | | | | | | |
|-----------|--------------------------|-------|--------------------------|------------------------|--------------------------|
| head | <input type="checkbox"/> | face | <input type="checkbox"/> | arms/hands | <input type="checkbox"/> |
| legs/feet | <input type="checkbox"/> | other | <input type="checkbox"/> | (please specify.....) | |

22. If you fell off your bicycle and you WERE NOT wearing a helmet, what is the worst thing that could happen to you? (circle one number)

- | | | | | |
|---------|---------------|--------|--------|--------|
| 1 | 2 | 3 | 4 | 5 |
| NOTHING | SCRAPES | BROKEN | BRAIN | KILLED |
| | CUTS, BRUISES | BONES | DAMAGE | |

23. If you fell off your bicycle and you WERE wearing a helmet, what is the worst thing that could happen to you? (circle one number)

- | | | | | |
|---------|---------------|--------|--------|--------|
| 1 | 2 | 3 | 4 | 5 |
| NOTHING | SCRAPES | BROKEN | BRAIN | KILLED |
| | CUTS, BRUISES | BONES | DAMAGE | |

24. If you got knocked over by a car or truck and you WERE wearing a helmet, what is the worst thing that could happen to you? (circle one number)

- | | | | | |
|---------|---------------|--------|--------|--------|
| 1 | 2 | 3 | 4 | 5 |
| NOTHING | SCRAPES | BROKEN | BRAIN | KILLED |
| | CUTS, BRUISES | BONES | DAMAGE | |

25. If you got knocked over by a car or truck and you WERE NOT wearing a helmet, what is the worst thing that could happen to you? (circle one number)

- | | | | | |
|---------|---------------|--------|--------|--------|
| 1 | 2 | 3 | 4 | 5 |
| NOTHING | SCRAPES | BROKEN | BRAIN | KILLED |
| | CUTS, BRUISES | BONES | DAMAGE | |

THANK YOU. PLEASE RETURN THIS TO YOUR TEACHER