

The Health Index



Bike Helmet Use in Children

Issue 6, September 2003

Key Points:

- Overall, 64% of households indicate that their children wear bike helmets all of the time.
- Rates of use remained steady over the past three years.
- The vast majority (83%) of younger children wear helmets however teens appear to shun helmets; one third of 13-17 year olds do not wear bicycle helmets at all.
- Helmet use is significantly lower in Middlesex County (48%) than in the City of London (69%).
- Future efforts should continue to support helmet use among Middlesex County residents, lower-income groups and the younger age groups and encourage these children as they age to wear helmets into their teens.

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Background

Over the past decade, both health promotion campaigns and legislation have highlighted the benefits of bicycle helmet use in the reduction of bicycle related head and brain injuries.

A thorough review of the literature by the Cochrane Collaboration Project reported that helmets reduce the risk of head injury by up to 88% for all ages of bicyclists¹. Public Health in Ontario aims to reduce the rate of injuries caused by cycling crashes that lead to hospitalization or death by 20% by the year 2010².

Provincial legislation enacted October 1, 1995, made Ontario the first province where every cyclist under the age of eighteen was required to wear an approved bicycle helmet when riding a bike on roadways. Now six provinces have legislation, four which cover all ages and two (including Ontario) which covers only children and youth. At the time when the legislation was implemented there were many communities participating in promoting the use of bicycle helmets. During the 1990's, there was a London Bicycle Helmet Coalition which promoted helmets and advocated for the helmet legislation. According to the 1990 Ontario Health Survey, 92% of bicycle riders aged 16 and older in London and Middlesex County indicated that they never or rarely used helmets. Currently the Middlesex-London Health Unit continues to work with local school boards, police, community partners and other injury prevention organizations to:

- promote the use of bicycle helmets through the use of community displays and distribution of print materials, and
- support community initiatives that make it easy for children and families to use bicycle helmets.

In June 2002, a national campaign “Safe Kids Week- Kids on Wheels Campaign” focused attention on bicycle safety including the use of helmets. That same year a local group provided 150 free helmets to elementary school-aged children. In 2003, “Helmets on Kids Community Partnership” made 700 bicycle helmets available free to elementary school-aged children. In addition the Partnership increased efforts to educate the public on the importance of proper helmet use.

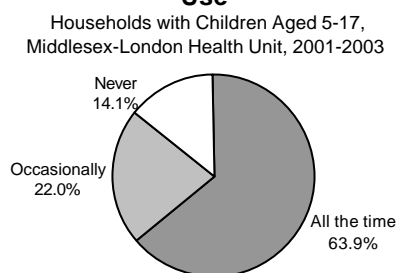
To monitor the local impact of health promotion and legislation activities on the use of bicycle helmets by children and to provide a baseline for future local goal setting, a series of questions were designed for the Rapid Risk Factor Surveillance System (RRFSS). The RRFSS is an ongoing population health survey supported by the Middlesex-London Health Unit. The System collects approximately 100 telephone responses for each participating health unit area in monthly increments (waves). Bicycle helmet use has been monitored in London and Middlesex County since January 2001. This system is currently used for population health behaviour surveillance by 23 of the 37 health units in Ontario. Seven of the nine health units in the Southwest Health Planning Region currently participate in RRFSS.

Overall Use

Nearly 90% of households with children aged 5-17 years old in London and Middlesex County have children that ride bicycles. Those that indicated that their child did not ride a bicycle (10.1%) and an additional 0.4% who identified that they did not know about their child’s helmet use were excluded from further helmet use questions.

Overall, 63.9% ($\pm 3.5\%$) of households with children aged 5-17 that ride bikes, indicated that they wear their bike helmets all of the time. An additional 22.0% ($\pm 3.0\%$) wore their helmets occasionally and 14.1% (± 2.5) reported that their child never wore a helmet (Figure 1).

Figure 1: Bike Helmet Use by Type of Use



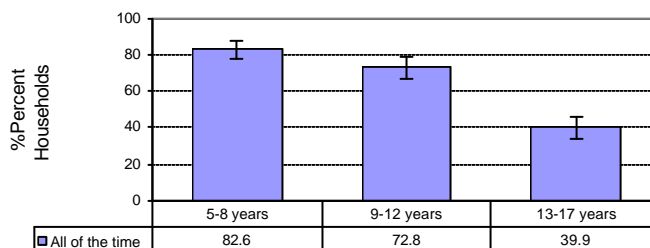
Source: RRFSS, 2001- June 2002, Waves 1-30

Use by Age Group

Bicycle helmet use differed significantly by age group. The vast majority of younger children wore helmets however teens appeared to shun helmets. Helmet use was highest for 5-8 year olds (82.6% $\pm 4.8\%$), followed by 9-12 year olds (72.8% $\pm 5.8\%$) and lowest for 13-17 year olds (39.9%, $\pm 5.9\%$) (Figure 2). The proportion of occasional users among both 9-12 year olds and 13-17 year olds was similar and significantly higher than among those aged 5-8 years old (See Table 1). A third of households with 13-17 year olds (32.8% $\pm 5.6\%$) reported that these children did not wear bicycle helmets at all.

Figure 2: Bike Helmet Use by Age Groups

Households with Children Aged 5-17, Middlesex-London, 2001-2003



Source: RRFSS, Jan. 2001 - June 2003, Waves 1-30.

Bicycle helmet use was less common at older ages and among males than among children and youth. According to the Canadian Community Health Survey 2000/01, 26.7% ($\pm 5.0\%$) of bicycle riders in London and Middlesex County, aged 12 and older (including adults) reported that they always wore helmets. The female rate was higher at 33.3% ($\pm 8.2\%$) as compared to 21.8% ($\pm 6.9\%$) for males. These rates were similar to the overall provincial rate of 21.9% ($\pm 1.1\%$) and 24.7% ($\pm 1.8\%$) and 19.9% ($\pm 1.3\%$) for females, and males respectively. The 12-19 year old rate in London and Middlesex County was 23.0% ($\pm 9.8\%$) and in Ontario was 24.8% ($\pm 2.2\%$).

Trends in Use by Year

Although helmet use appears to have remained steady or possibly even increased, there was no detectable change in bicycle helmet use over the past three years. When overall use was compared over time from 2001, through 2002 and the first six months of 2003, no significant differences were observed. (See Table 2)

However, current levels of bicycle helmet use differ from historical levels recorded prior to the enactment of legislation. Whereas over a quarter of all cyclists now report always using a helmet, according to the Ontario Health Survey 1990, 92% of bicycle riders aged 16 and older in London and Middlesex County indicated that they never or rarely used helmets.

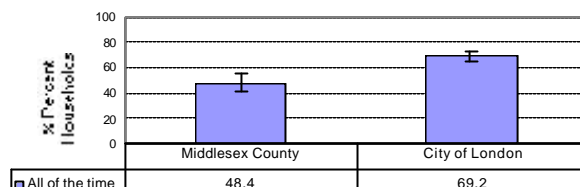
Regional and Socio-Economic Differences

Bicycle helmet use was higher in urban areas than in more rural areas. Usage rates were higher in the City of London where households with children aged 5-17 years old reported that their child always used a bicycle helmet (69.2% $\pm 3.9\%$) as compared

to those in Middlesex County (48.4% $\pm 7.2\%$) (Figure 3).

Figure 3: Bike Helmet Use by Residence

Households with Children Aged 5-17, Middlesex-London, 2001-2003



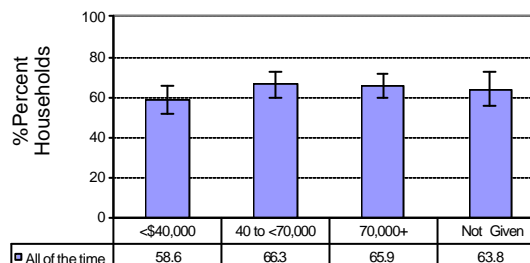
Source: RRFSS, Jan. 2001-June 2003, Waves 1-30.

Bike helmet use also differed by the level of education of the respondent. Those respondents with post secondary education reported that 69.2% ($\pm 4.4\%$) of their children wore helmets as compared to 57.3% ($\pm 6.3\%$) of those with high school education and 56.7% ($\pm 12.5\%$) of those respondents with less than high school education.

Past reports have indicated that helmet use was associated with higher household incomes. A lower rate was observed (although not significant) in the lowest household income group (< \$40,000), compared with the middle income group, the highest income group, and even those households who did not provide an income (Figure 4).

Figure 4: Bike Helmet Use by Household Income Group

Households with Children Aged 5-17, Middlesex-London, 2001-2003



Source: RRFSS, Jan. 2001- June 2002, Waves 1-30.

The potential explanation for there being smaller differences between income groups may be that that current environmental supports aimed at providing inexpensive or free helmets to those elementary school children who might not otherwise purchase helmets, has assisted in reducing previously observed significant gaps in use.

Implications

Despite the known benefits of bicycle helmets in reducing the risk of serious head and brain injuries, many children in the City of London and Middlesex County still do not wear helmets. Of particular concern is the lower proportion of children and youth who wear helmets in the County as compared to the City of London. Program initiatives should enhance efforts to increase use in the County. Although the differences between household income groups are not as great as identified in other reports, continued efforts should be made to ensure that lower income children and youth have access to helmets.

Finally, the lower rate of use in teens aged 13-17 must be noted. Since the enactment of provincial legislation in 1995 mandating the use of helmets in children and teens while cycling, significant increases in helmet use have been observed particularly in the younger age groups. Over 80% of children currently aged 5-8 years in London and Middlesex County were reported to be wearing bicycle helmets. Since these children have become accustomed to wearing helmets while bicycling, it is likely that with positive reinforcement they will continue wearing helmets as they age and grow into adolescence. Those children who learned to ride after the passing of the legislation eight years ago are now likely represented within the 9-12 year old age group. As with the younger age group – the majority of this age group wears helmets. If those children are encouraged and continue to wear helmets then the proportion of teens

wearing helmets should also increase as a matter of course within the next five years. If no negative messages impact on those children now wearing helmets in London and Middlesex County – one might expect that the proportion of 13-17 year olds wearing helmets will increase naturally to over 60% by 2008.

To make this possible, future public health activities might focus on continuing to improve the proportion of young children wearing helmets when they learn to ride a bicycle and providing environmental and cultural supports for children as they age to continue wearing helmets.

Future Goals

If current levels of bike helmet use are maintained and augmented slightly over the next five years in London and Middlesex County, the following might be reasonable objectives for bike helmet use.

By 2008:

- At least 85% of 5-8 years olds in London and Middlesex County that ride bicycles will wear bike helmets.
- At least 75% of 9-12 years olds in London and Middlesex County that ride bicycles will wear bike helmets.
- At least 60% of 13-17 years olds in London and Middlesex County that ride bicycles will wear bike helmets.
- Overall, at least 35% of the population aged 12 and over that rides a bicycle will wear a bike helmets.

Methods and Definitions

Two sources of data were used:

- the Canadian Community Health Survey (CCHS 2000/01) public use file and
- the Rapid Risk Factor Surveillance System (RRFSS January 2001 to June 2003).

The CCHS 2000/01 was used to assess overall bicycle helmet use, by sex, for the household population aged 12 and over. These results were derived from the Statistics Canada CANSIM website, Table 105-0047 using the recommended methods for confidence intervals and release.

All data for children aged 5-17 are from the RRFSS and are collected for the Middlesex-London Health Unit (MLHU) by the Institute of Social Research, York University. Data were collected in a series of “waves” of monthly telephone surveys. Households were selected randomly from all households with telephones in London and Middlesex County and respondents aged 18 and older were systematically selected from within each household for the adult that had the next birthday. Once an individual was identified as the person with the next birthday, every effort was made to complete the interview with the appropriate respondent. Although on average five calls were made to a single household in order to complete the interview with the designated respondent, up to 12 attempts was standard practice.

Data related to bike helmet use was collected from January 15, 2001 to July 10, 2003. The unweighted or household sample consists of 2254 respondents from London and Middlesex County surveyed during that time period (Waves 1-30). The sample used in this analysis includes 818 households in London and Middlesex County in which the respondent identified at least one of the residents was a child

between the ages of 5 and 17 years old. Respondents were not asked to identify whether the child was a boy or a girl and thus no analysis by gender is possible. In addition because of the proxy responses by adults for children in the household, over estimation of helmet use is possible.

All thirty waves included questions related to bicycle-helmet safety for which 732 respondents provided valid responses. The sample for Middlesex County residents was 186 and for the City of London 546. Those that did not respond to any individual question were excluded provided the non-response category represented less than 5% of the total respondents. Income was the one question with a high non-response rate. In total 127 respondents (17.3%) did not provide a household income. This group was treated as a separate category.

All percentages were provided with 95% confidence intervals. Difference in proportions were considered significant at $p < 0.05$. Where possible, bar charts included error bars illustrating 95% confidence intervals. As outlined in the “RRFSS Manual of Operations” no household weights were applied for these child proxy questions.

Respondents who identified that they had a child in their household were asked to identify the child between the ages of 5 to 17 that had the most recent birthday. The bicycle helmet use question was then asked in relationship to that specific “index” child. Respondents were asked, “During the past 12 months, how often has [THIS] child 5 to 17 years of age worn a bicycle helmet when riding a bicycle: all of the time, most of the time, about half the time, less than half the time, never or almost never?”. Respondents were also given the opportunity to reply that the child does not ride a bicycle – these respondents were excluded from the calculations and comprised approximately 10% of those

households with children between the ages of 5-17 years old. The five response categories were collapsed into three categories. Respondents that indicated their child rode their bicycle “most of the time”, “about half of the time”, or “less than half of the time” were grouped into one category, “occasionally”. The other two categories, “all of the time” and “never or almost never” remained the same.

Income represents the response in dollars provided for household income before taxes (all income, including wages, pensions, savings transfer payments etc. for the respondent and other members of their household) for the annual year prior to the survey.

Region was divided into two areas, the City of London and the County of Middlesex (excluding the City). The City of London residents include all those respondents who identified that they live in London. All other respondents that identified they live in Middlesex County are included in the Middlesex County group.

The full questionnaire is available at www.cehip.org/rrfss.

Table 1: Bike Helmet Use by Age Group						
Households with Children 5-17, Middlesex-London, 2001-2003						
	All of the time		Occasionally		Never	
Age Group	%	+95% C.I.	%	+95% C.I.	%	+95% C.I.
5-8 years	82.6	4.8	14.8	4.5	*	
9-12 years	72.8	5.8	23.2	5.5	*	
13-17 years	39.9	5.9	27.2	5.3	32.8	5.6
Total	63.9	3.5	22	3	14.1	2.5

* not able to release as CV >33.3

Table 2 : Use of Bike Helmets all of the time by Age Group by Year									
Households with Children 5-17, Middlesex-London, 2001-2003									
		2001		2002		2003*		Total (All Years)	
		%	CI	%	CI	%	CI	%	CI
Age Group	5 - 8 years	82.5	7.3	83.1	8.1	82.0	10.6	82.6	4.8
	9 -12 years	72.7	9.3	70.1	9.6	77.4	11.3	72.8	5.8
	13-17 years	38.8	8.9	44.5	9.3	31.0	14	39.9	5.9
Total (All Ages)	5 -17 years	63.2	5.4	63.9	5.6	65.5	7.7	63.9	3.5

* includes first 6 months of data (Waves 25-30)

References

1. Thompson DC, Rivara FP, Thompson R, Helmets for preventing head and facial injuries in bicyclists (Cochrane Review). In: The Cochrane Library, Issue 3, 2003. Oxford: Update Software.
2. Ontario Ministry of Health (1997). Mandatory health programs and services guidelines. Toronto: Author.

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The authors are grateful to Mary Lou Albanese and Charlene Beynon for reviewing the document, Yvonne Tymi for retrieving background documents and Nancy Forbes for her work on the layout.

The contents of “The Health Index” may be reproduced with acknowledgement of the Middlesex-London Health Unit.