The role of universal helmet legislation on bicycle helmet use in adult cyclists.

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Research Team

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Disclosure

The research team does not have any affiliation with a commercial organization that may have a direct or indirect connection to the content of this presentation.
Introduction

- Cycling is a popular recreational activity and mode of transportation, especially for adults, in Canada.
- Helmets are known to effectively protect the face, head and brain from injury.
- Despite their effectiveness, use of helmets by cyclists varies considerably by:
  - Age groups (Children > adolescents < adults);
  - Sex (females > males);
  - Province/country (Champion: Australia);
  - Cycling locations (recreational paths > roads);
  - Experience;
  - Riding companionship.
## Canadian Helmet Legislation

### Table: Bicycle helmet legislation in Canadian provinces and territories

<table>
<thead>
<tr>
<th>Province/territory</th>
<th>Legislation</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Brunswick</td>
<td>All ages</td>
<td>December 1995</td>
</tr>
<tr>
<td>British Columbia</td>
<td>All ages</td>
<td>September 1996</td>
</tr>
<tr>
<td>Nova Scotia</td>
<td>All ages</td>
<td>July 1997</td>
</tr>
<tr>
<td>Prince Edward Island</td>
<td>All ages</td>
<td>July 2003</td>
</tr>
<tr>
<td>Ontario</td>
<td>Under 18 only</td>
<td>October 1995</td>
</tr>
<tr>
<td>Alberta</td>
<td>Under 18 only</td>
<td>May 2002</td>
</tr>
<tr>
<td>Manitoba</td>
<td>Under 18 only</td>
<td>May 2013</td>
</tr>
<tr>
<td>Saskatchewan</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Quebec</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Newfoundland</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Yukon, Northwest, and</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Nunavut Territories</td>
<td>None</td>
<td></td>
</tr>
</tbody>
</table>
Provincial Picture

• In 2000, province-wide Alberta data demonstrated:
  – Low helmet use among adults (52%)/adolescents (30%);
  – Calgary > Edmonton (65% vs 45%);
  – Females > males (64% vs 51%);
  – Urban = Semi-rural (regional).

• Alberta bicycle legislation:
  • May 2002: provincial law requiring all bicyclists less than 18 years of age to wear helmets in Alberta.
  • February 2006: traffic by-law amending the Provincial helmet legislation to include all age groups (effective from July 1st 2006) in the City Council of St. Albert.
There is a debate regarding the effectiveness of helmet legislation (+ children vs universal):
- Cost/comfort;
- Personal independence vs public health good;
- Consequence of cycling participation (e.g., inactivity/obesity);
- Effectiveness: injuries, HI, ED visits, admissions, death.

This study evaluated the changes in bicycle helmet use before and after provincial legislation was introduced in 2002 for ages <18 years of age and municipal legislations (all ages) in St. Albert.
I assume this one needs to be modified. Based on my previous suggestion, the objective could be:
This study evaluated bicycle helmet use in adults before and after provincial (AB-2002) and municipal (St. Albert-2006) legislations were introduced.

Cristina Villa-Roel Gutierrez, 5/21/2015
Methods

Cyclists were observed by trained research staff at randomly selected sites in both Edmonton and St. Albert from June to October in 2000, 2006, 2010, 2013 and 2014.

**Locations:**
Commuter routes, bike paths, residential areas, schools/campuses, and parks.

**Variables:**
- Cyclist age and sex;
- Helmet use & compliance;
- Companions.
Analyses/Results

Analyses:
• Poisson regression with cluster adjustment for site with the robust (sandwich or Huber-White) estimator to correct the SE of the estimates.

Sample:
• Overall, 8,827 E and 992 SA adult cyclists were observed at separate locations.
• Prior to legislation, helmet use proportions in adults were low in both E (48%) and SA (58%).
Results (Adults)

Helmet use pre & post legislation

- 2002 Legislation
- 2006 Legislation

Year

EDMONTON

ST. ALBERT
Age matters

Comparison of ages and helmet use in SA and E.
<table>
<thead>
<tr>
<th></th>
<th>Prevalence Ratios (95% CI) Cluster Adjusted</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Results (Adjusted Prevalence)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Year</strong></td>
<td>Adults (&gt; 18 yrs of age)</td>
</tr>
<tr>
<td></td>
<td>Reference</td>
</tr>
<tr>
<td>2000</td>
<td></td>
</tr>
<tr>
<td>2006</td>
<td>1.03 (0.93, 1.14)</td>
</tr>
<tr>
<td>2010</td>
<td>1.23 (1.08, 1.41)*</td>
</tr>
<tr>
<td>2013</td>
<td>1.30 (1.13, 1.49)*</td>
</tr>
<tr>
<td>2014</td>
<td>1.49 (1.32, 1.69)*</td>
</tr>
<tr>
<td><strong>Female</strong></td>
<td>1.19 (1.14, 1.24)*</td>
</tr>
<tr>
<td><strong>St. Albert</strong></td>
<td>1.42 (1.32, 1.52)*</td>
</tr>
<tr>
<td>With children/friends</td>
<td>1.20 (1.11, 1.31)*</td>
</tr>
<tr>
<td>Cycling path/park</td>
<td>1.24 (1.06, 1.46)*</td>
</tr>
<tr>
<td>Riding with other adults (&gt;18)</td>
<td>1.21 (1.12, 1.29)*</td>
</tr>
<tr>
<td>With other adults &amp; children</td>
<td>1.26 (1.15, 1.38)*</td>
</tr>
</tbody>
</table>
What do the * mean?
Can we add Edmonton? Why only St. Albert?
Not sure the last two apply to adult data, unless they refer to adults riding with other adults?
Cristina Villa-Roel Gutierrez, 5/21/2015
Strengths & Limitations

- Cyclists were directly observed by trained research staff rather than relying on survey questionnaires or telephone contact.
- Consistent methods were used during the pre-post legislation periods.
- Numbers in each year relatively small in SA.
- Limited enforcement of law was undertaken in SA.
- This study did not examine health outcomes such as head injuries, ED visits, and admissions.
Conclusion

- From 2000 to 2014, cycling helmet use among adult cyclists increased in both communities.
- In St. Albert, helmet use increased more dramatically in adults following universal helmet legislation.
- These results suggest that to enhance helmet use, legislation should include all ages.
Acknowledgements

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THANK YOU!

Comments/Challenges?