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(UHL, universal helmet law; PHL, partial helmet law)
Appendix Figure 1. Analytic framework.

Motorcycle Helmet Laws

- Type of Law (universal vs. partial)
- Enforcement
- Approved vs. Unapproved Helmet
- Individual Attitudes

Motorcyclists

Awareness of Law

Increased Helmet Use

Potential for Reduced Motorcycle Use

Intermediate Outcome

Reduced Incidence and Severity of Non-fatal Injuries

Reduced Fatal Injuries

Population

Recommendation Outcome
Appendix Figure 2. Impact of implementing UHLs on helmet use.

IQI: Interquartile interval
Appendix Figure 3: Impact of repealing UHLs on helmet use

IQI: Interquartile interval
Appendix Figure 4. Impact of implementing UHLs on non-fatal injuries.
Appendix Figure 5. Impact of repealing UHLs on non-fatal injuries.
### Appendix Table 1. UHLs Compared to PHLs: Impact on Helmet Use and Fatal and Non-fatal Injuries

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Law implementing&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Law repealing&lt;sup&gt;b&lt;/sup&gt;</th>
<th>Law comparison&lt;sup&gt;c&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. of study arms</td>
<td>Median (IQI/Range)&lt;sup&gt;d&lt;/sup&gt;</td>
<td>No. of study arms</td>
</tr>
<tr>
<td>Helmet use, absolute change</td>
<td>8&lt;sup&gt;1-8&lt;/sup&gt;</td>
<td>47 pct pts (41 to 55 pct pts)</td>
<td>19&lt;sup&gt;9-23&lt;/sup&gt;</td>
</tr>
<tr>
<td>Fatalities, relative change (total, head-related, rates)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>6&lt;sup&gt;1,2,4,6,20,27&lt;/sup&gt;</td>
<td>–31% (–34% to –21%)</td>
<td>16&lt;sup&gt;10,11,13,16,18,23,28-30&lt;/sup&gt;</td>
</tr>
<tr>
<td>Head-related</td>
<td>4&lt;sup&gt;1,4,6,27&lt;/sup&gt;</td>
<td>–48% (–56% to –43%)</td>
<td>2&lt;sup&gt;11,18&lt;/sup&gt;</td>
</tr>
<tr>
<td>Fatalities per registered motorcycle</td>
<td>4&lt;sup&gt;1,4,8,20&lt;/sup&gt;</td>
<td>–20% (–26% to –12%)</td>
<td>17&lt;sup&gt;10,11,15-20,22,23,28-32&lt;/sup&gt;</td>
</tr>
<tr>
<td>Fatalities per vehicle mile travelled</td>
<td>—</td>
<td>—</td>
<td>3&lt;sup&gt;9,22,30&lt;/sup&gt;</td>
</tr>
<tr>
<td>Fatalities per crash</td>
<td>1&lt;sup&gt;2&lt;/sup&gt;</td>
<td>–12%</td>
<td>10&lt;sup&gt;10,11,13,14,16,18,21,22,28,29&lt;/sup&gt;</td>
</tr>
<tr>
<td>Fatality rate, head, per registered motorcycle</td>
<td>—</td>
<td>—</td>
<td>2&lt;sup&gt;11,18&lt;/sup&gt;</td>
</tr>
<tr>
<td>Fatality rate, head, per crash</td>
<td>—</td>
<td>—</td>
<td>4&lt;sup&gt;11,18,24&lt;/sup&gt;</td>
</tr>
<tr>
<td>Injuries, relative change (total, head-related, rates)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>5&lt;sup&gt;3,4,7,27,33&lt;/sup&gt;</td>
<td>–27% (–34% to –14%)</td>
<td>10&lt;sup&gt;10,12,16,18,20-23,28&lt;/sup&gt;</td>
</tr>
<tr>
<td>Head-related</td>
<td>4&lt;sup&gt;3,4,27,33&lt;/sup&gt;</td>
<td>–54% (–49% to –59%)</td>
<td>4&lt;sup&gt;11,18,20,34&lt;/sup&gt;</td>
</tr>
<tr>
<td>Injuries per registered motorcycle</td>
<td>2&lt;sup&gt;8,33&lt;/sup&gt;</td>
<td>–20% and –9%</td>
<td>9&lt;sup&gt;10,15,16,18,20,22,23,32&lt;/sup&gt;</td>
</tr>
<tr>
<td>Injuries per vehicle mile travelled</td>
<td>—</td>
<td>—</td>
<td>1&lt;sup&gt;22&lt;/sup&gt;</td>
</tr>
</tbody>
</table>
### Injuries per crash

<table>
<thead>
<tr>
<th></th>
<th>—</th>
<th>—</th>
<th>7(^{10,12,16,18,21,22,34})</th>
<th>1(^{–1}% (–8% to 35%))</th>
<th>—</th>
<th>—</th>
</tr>
</thead>
</table>

### Head-related injuries per registered motorcycle

|                | 1\(^{33}\) | —44\%                | 3\(^{18,20,34}\) | 31\% (29\% to 39\%) | —     | —                    |

### Head-related injuries per crash

|                | —     | —                    | 3\(^{18,24}\) | 37\% (28\% to 154\%) | —     | —                    |

\(^{a}\)UHLs replaced PHLs.
\(^{b}\)PHLs replaced UHLs.
\(^{c}\)UHLs versus PHLs.
\(^{d}\)IQIs calculated with \(\geq 5\) studies; otherwise ranges reported.

Pct pts, percentage points; IQI, interquartile interval; UHL, universal helmet law; PHL, partial helmet law.
APPENDIX REFERENCES

11. Department of Transportation WI. Wisconsin Motorcycle helmet law: A before and after study of helmet law repeal. Wisconsin: Wisconsin Department of Transportation; 1981.


Appendix

Universal Motorcycle Helmet Laws to Reduce Injuries: A Community Guide Systematic Review
Peng et al.


