Introduction – Background
• Road accidents constitute a major social problem in modern societies, with road traffic injuries being estimated as the eighth leading cause of death globally.
• Particularly in low and middle income countries, road traffic injuries are twice those in high income countries and still increasing.
• UN Decade of Action: To strengthen global and national efforts for crash reduction through evidence-based approaches.

Modelling Approach
• Two-step approach of statistical modeling:
  1. Estimation of composite variables (factor analysis) in order to take into account as many indicators as possible of each layer.
  2. Correlating road safety outcomes with indicators through composite variables by developing a regression model with explicit consideration of the target dimension.

Model specification

Database

Table: Road Safety Performance Indicators and their Source

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area (sq km)</td>
<td></td>
<td>UNECE (2013 or latest available year)</td>
</tr>
<tr>
<td>Attribution of road traffic deaths to alcohol (%)</td>
<td></td>
<td>WHO, 2015</td>
</tr>
<tr>
<td>Number of powered two wheelers in use (2013 or latest available year)</td>
<td></td>
<td>IRF, 2015</td>
</tr>
<tr>
<td>Fatality rate per 100,000 population</td>
<td></td>
<td>WHO, 2015</td>
</tr>
<tr>
<td>Seat-Belt wearing rate - Front (2013 or latest available year)</td>
<td></td>
<td>WHO, 2015</td>
</tr>
<tr>
<td>BAC limits lower than or equal to 0.05g/dl for commercial drivers (2013)</td>
<td></td>
<td>WHO, 2015</td>
</tr>
</tbody>
</table>

Conclusions – Discussion
• The model developed took into account several challenges and particularities of road safety analysis.
• The task of road safety forecasting on the basis of policy scenarios, i.e., combining an exploratory approach on road safety with the time dimension at global level, was a challenge on its own, as there is no similar example in the literature.
• Data and analysis methods have some limitations which should be kept in mind:
  - Fatality data are in some cases estimated numbers, and in all subject to under-reporting.
  - Missing values were addressed by imputation.
• Data availability for several variables was not detailed.
• The optimal use of the model depends on a number of recommendations and options:
  - The model may not fully capture the effects on countries with very particular characteristics.
  - Developing countries are expected to be more sensitive in the testing of interventions than developed ones.
  - The lack of a global road safety database with detailed and comparable data certainly compromises the efforts to develop a global road safety model.
• A new wave of historical data may allow to further validate and adjust the model, as well as to make more accurately informed the underlying trends by estimating future developments on the basis of longer historical trends.
• Further changes in programs and measures implemented in the various countries will allow to infer trends and consistently allowing to improve the model with more and more accurate data.

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