Preliminary Analysis of Secondary Data Sources on Child Traffic Injuries

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Content

• Background
• Examples from various data sources
• Preliminary results
• Way forward
Background

- South Africa has:
  - High road fatality rates per 100 000 population

<table>
<thead>
<tr>
<th>Region</th>
<th>Fatality Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nigeria</td>
<td>33.7</td>
</tr>
<tr>
<td>South Africa</td>
<td>31.9</td>
</tr>
<tr>
<td>African Average</td>
<td>24.1</td>
</tr>
<tr>
<td>Tanzania</td>
<td>22.7</td>
</tr>
<tr>
<td>Kenya</td>
<td>20.7</td>
</tr>
<tr>
<td>South America</td>
<td>19.3</td>
</tr>
<tr>
<td>Mozambique</td>
<td>18.5</td>
</tr>
<tr>
<td>Asia</td>
<td>18.5</td>
</tr>
<tr>
<td>Australasia</td>
<td>18.5</td>
</tr>
<tr>
<td>Global Average</td>
<td>17.0</td>
</tr>
<tr>
<td>North America</td>
<td>11.0</td>
</tr>
<tr>
<td>Europe</td>
<td>10.3</td>
</tr>
</tbody>
</table>
Background

• South Africa has:
  • High road fatality rates per 100 000 population
  • High child fatalities per 100 000 population
Background

- South Africa has:
  - High road fatality rates per 100,000 population
  - High child fatalities per 100,000 population
  - A lack of disaggregated information (mode)
Background

• South Africa has:
  • High road fatality rates per 100 000 population
  • High child fatalities per 100 000 population
  • Cities with very high fatality rates per 100 000 population
  • A lack of disaggregated information (mode and location identification)
Background

- South Africa has:
  - High road fatality rates per 100,000 population
  - High child fatalities per 100,000 population
  - Cities with very high fatality rates per 100,000 population
  - A lack of disaggregated information (mode and location identification)
  - A lack of appropriate pedestrian infrastructure
Preliminary Results

• iPAS analysis for the WC (2005-2014):
  • Child pedestrian gender

- Female: 38%
- Male: 56%
- Unknown: 6%
Preliminary Results

- iPAS analysis for the WC (2005-2014):
  - Child pedestrian gender
  - Child pedestrian action
Preliminary Results

- iPAS analysis for the WC (2005-2014):
  - Child pedestrian gender
  - Child pedestrian action
  - Child pedestrian location
Preliminary Results

- iPAS analysis for the WC (2005-2014):
  - Child pedestrian gender
  - Child pedestrian action
  - Child pedestrian location
  - Child pedestrian manoeuvre

![Pie chart showing child pedestrian manoeuvre: 75% crossing road, 15% back to traffic, 10% facing traffic.](chart_image.png)
Preliminary Results

- iPAS analysis for the WC (2005-2014):
  - Child pedestrian gender
  - Child pedestrian action
  - Child pedestrian location
  - Child pedestrian manoeuvre
  - Child pedestrian position

![Pie chart showing child pedestrian position]
Preliminary Results

- CT Red Cross children’s hospital analysis (1991-2016):
  - Child Injuries per year
Preliminary Results

- CT Red Cross children’s hospital analysis (1991-2016):
  - Child Injuries per year
  - Male vs Female

![Graph showing male and female injuries over years](image)
Preliminary Results

- CT Red Cross children’s hospital analysis (1991-2016):
  - Child Injuries per year
  - Male vs Female
  - Injuries by age group

![Injuries by Age](image)
Preliminary Results

• CT Red Cross children’s hospital analysis (1991-2016):
  • Child Injuries per year
  • Male vs Female
  • Injuries by age group
  • Injuries by time of the day
Preliminary Results

- CT Red Cross children’s hospital analysis (1991-2016):
  - Child Injuries per year
  - Male vs Female
  - Injuries by age group
  - Injuries by time of the day
  - Injuries by time of the day and group
Preliminary Results

- Scholar Mobility Safety in Durban:
  - Child crashes vs road type

Contribution of road class to crashes involving Children under 14 years in eThekwini (2010 - 2014)
Preliminary Results

- Scholar Mobility Safety in Durban:
  - Child crashes vs road type
  - Child crashes vs location

Location of crashes involving children under 14 year in eThekwini (2010 to 2014)
Preliminary Results

- Scholar Mobility Safety in Durban:
  - Child crashed vs road type
  - Child crashes vs location
  - Need for traffic calming
Preliminary Results

- Scholar Mobility Safety in Durban:
  - Child crashed vs road type
  - Child crashes vs location
  - Need for traffic calming
  - Schools with high crash rates
Preliminary Results

- Scholar Mobility Safety in Durban:
  - Child crashed vs road type
  - Child crashes vs location
  - Need for traffic calming
  - Schools with high crash rates

Severity of road traffic crashes - Summary for top ten schools
n = 576

- 45% No Injury
- 43% Slight Injury
- 11% Serious Injury
- 2% Fatal Injury
Preliminary Results

• Scholar Mobility Safety in Durban:
  • Child crashes vs road type
  • Child crashes vs location
  • Need for traffic calming
  • Schools with high crash rates
  • Crash location analysis

<table>
<thead>
<tr>
<th>Road name</th>
<th>Road class</th>
<th>Length</th>
<th>Speed limit</th>
<th>Number of crashes</th>
<th>Traffic calming</th>
<th>Sidewalks</th>
<th>Pedestrian crossing</th>
<th>Hazard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austerville</td>
<td>Class 4</td>
<td>1900m</td>
<td>60km/h</td>
<td>35</td>
<td>Yes</td>
<td>Yes</td>
<td>Only one close to</td>
<td>Through road, public transport route with</td>
</tr>
<tr>
<td>Drive</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>traffic volume</td>
<td>high traffic volume</td>
</tr>
</tbody>
</table>
Way Forward

• Requested child specific information from the RTMC
• In contact with NETCARE about nation wide database
• In contact with the WC Health Department regarding ambulance services
• Identifying vehicle design databases for SA
• ......
Way Forward

Identify Literature Findings

Analyse South African Child Pedestrian Specific Data

Findings and Recommendations for Pedestrian Child Protection in SA

Area wide traffic calming reduces child pedestrian injury rates (Jones et al., 2004)
Intervention Example Warranted Along Measure to Prevent Delineation:
Delineation is the pavement marking, guideposts, and raised pavement markers used on, and adjacent to, the roadway to define and communicate vehicle travel paths for motorists. Centre and edge delineation treatments help drivers judge their position on the road and provide advice about conditions ahead.

Types of delineation treatments:
- Line Marking - Painted line marking, Rumble strips;
- Retroreflective Pavement Markers (RRPMs) - "Cat eyes";
- Guide posts - 1 metre high reflective posts;
- Chevron Alignment markers (CAMs);
- Warning signs and Advisory speed signs.

Advisory signs tell drivers how to navigate the hazard safely.

- Roads to assist motorists to judge the alignment of the road, see their dedicated lanes and discourage them from overtaking and accidental drifting from high speed or driver fatigue;
- Delineation treatments are particularly helpful where there is poor visibility (for example, due to rain, fog or darkness) and on sharp bends;
- Roadways with a change in alignment e.g. sharp bends, at night and in rainy weather;
- Where road alignment guidance is required to navigate the horizontal and vertical curves;
- Roads with road hazards to inform drivers of the nature of the hazard they are approaching.

Run-off Road

<table>
<thead>
<tr>
<th>Name of Scenario:</th>
<th>Costs (R million)</th>
<th>Lives saved/20 years</th>
<th>Overall BC Ratio/20 years</th>
<th>Break-Even (fatalities only)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Capital/20 year</td>
<td>Operational/year</td>
<td>Conservative</td>
<td>Optimistic</td>
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</tr>
<tr>
<td>Prince Alfred Hamlet</td>
<td>9</td>
<td>0.0868</td>
<td>16.0</td>
<td>79.1</td>
</tr>
<tr>
<td>Khayelitsha</td>
<td>9</td>
<td>0.0868</td>
<td>58.4</td>
<td>288.9</td>
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<tr>
<td>Rumble strips in Grabouw</td>
<td>0.784</td>
<td>0.014</td>
<td>286.8</td>
<td>371.8</td>
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<tr>
<td>Lighting at the intersection in Rawsonville</td>
<td>0.135</td>
<td>0.001</td>
<td>4</td>
<td>16</td>
</tr>
</tbody>
</table>

Enforcement based scenarios

Speed over distance in Leeu Gamka
- 2.1 Conservative 1.0 Optimistic 59.13 80.41 21.0 28.5 15 (17) 14 (16)

Education based scenarios

- Campaigns 0 45.2 1238.4 15.1 19 (21)

All costings are based on base year values. No inflation on costs or benefits have been included.

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Infrastructure based scenarios

Prince Alfred Hamlet | 9                  | 0.0868               | 16.0                      | 79.1                       | 11.3                      | 56.0                      | 60 (67)                   | 2 (29)                     |
| Khayelitsha        | 9                  | 0.0868               | 58.4                      | 288.9                      | 41.3                      | 383.2                     | 44 (49)                   | 28 (29)                    |
| Rumble strips in Grabouw | 0.784             | 0.014                | 286.8                     | 371.8                      | 2113                      | 2738                      | 3 (4)                     | 3 (3)                      |
| Lighting at the intersection in Rawsonville | 0.135             | 0.001                | 4                         | 16                         | 202.9                     | 811.5                     | 26 (31)                   | 13 (16)                    |

Emergence Medical Services based scenarios

Improved ambulance services | 1.8 | 0.495 | 200 | 300 | 67 | 101 | 1 (1) | 1 (1)
| Improved motorcycle services | 0.6 | 0.145 | 200 | 280 | 224 | 314 | 1 (1) | 1 (1)
| Improved helicopter services | 0 | 18.0 | 215 | 7648 | 4.7 | 166 | 1 (1) | 1 (1)