Case Study: Cape Town Freeways

[Map showing the freeways in Cape Town with a total length of 155 km]
Land Use Development
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Land Use Development

Number of pedestrians crossing at N7 per hour of day, for a Friday
(a) Direct analyses of biased data

(b) Adjusted for bias: 1960s and 70s

(c) Less biased data or adjusted for bias: 1990s and 2000s
Need for better understanding of pedestrian behaviour on freeways
How does FMS work?

Real-time traffic data CCTV Surveillance

Information Dissemination
(www.i-traffic.co.za)

@CapeTownFreeway

Information is processed
FMS Operations Centre 24/7
Overview of the CT FMS
Overview of the CT FMS

155 km
Use of 240 CCTV Cameras count pedestrian activity
Pedestrian Freeway Research

- SANRAL, Universities of Cape Town & Stellenbosch
  A - Pedestrian Freeway Count
  B - Pedestrian Intercept Surveys
  C - Motorists Survey (E-mails, Short Questionnaire)
A - Pedestrian Freeway Count
Approximately **18 000** pedestrian activities per weekday on 155 km of Cape Town’s Freeways.
A - Pedestrian Freeway Count

Pedestrian Crossing Activity

- N7 DuNoon
- N1 Freeway
- R300 Freeway
- N2 Freeway
- N2 Somerset West
A - Pedestrian Freeway Count

Pedestrian Travelling Along Activity

N7 DuNoon
N1 Freeway
R300 Freeway
N2 Freeway
N2 Somerset West
A - Pedestrian Freeway Count

**NO. OF PEDESTRIANS CROSSING A FREEWAY ON A WEEKDAY PER HOUR OF DAY AND PER FREEWAY SECTION**

**NO. OF PEDESTRIANS WALKING ALONG A FREEWAY ON A WEEKDAY PER HOUR OF DAY AND PER FREEWAY SECTION**
Pedestrian Bridges on Freeways

- Counts were conducted at **16 Pedestrian Bridges** across the freeway under investigation (15,500 pedestrian per weekday use the pedestrian bridges)
A - Pedestrian Freeway Count

Crossings: Pedestrian Bridges

<table>
<thead>
<tr>
<th>Pedestrian Bridge</th>
<th>Location</th>
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<tbody>
<tr>
<td>Bridge 1</td>
<td>Before Roeburg</td>
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<tr>
<td>Bridge 2</td>
<td>After Okaswingi</td>
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<tr>
<td>Bridge 3</td>
<td>After Brighton</td>
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<tr>
<td>Bridge 4</td>
<td>After New Market</td>
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<tr>
<td>Bridge 5</td>
<td>@ Seawie</td>
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<tr>
<td>Bridge 6</td>
<td>After Seawie</td>
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<tr>
<td>Bridge 7</td>
<td>@ Roadside Bloom</td>
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<tr>
<td>Bridge 8</td>
<td>Before Browning</td>
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<tr>
<td>Bridge 9</td>
<td>After Vanguard</td>
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<tr>
<td>Bridge 10</td>
<td>After Borchard's Quarry</td>
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<td>Bridge 11</td>
<td>Before Mew Way</td>
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<td>Bridge 12</td>
<td>Before N2</td>
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<td>Bridge 13</td>
<td>Before Hindle</td>
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<tr>
<td>Bridge 14</td>
<td>After Hindle</td>
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<tr>
<td>Bridge 15</td>
<td>After Stellenbosch Arterial</td>
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<tr>
<td>Bridge 16</td>
<td>After Von Rebekei</td>
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A - Pedestrian Freeway Count

Crossings: Pedestrian Bridges versus At-grade

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Legend:
- Pedestrian Bridge: Blue
- Number of pedestrians crossing a freeway at grade:
  - Blue: 10
  - Orange: 100
- Number of pedestrians crossing a pedestrian bridge:
  - Orange: 100
B - Pedestrian Intercept Survey

• Methodology
  • Short Intercept Surveys
    • Minimize inconvenience
  • Conducted during AM and PM peaks
  • Primary purpose of surveys to primarily understand the choices made by the at-grade (level) crossers.
B - Pedestrian Intercept Survey

Freeway Crossers

How safe do you feel crossing on the freeway at-grade?

Fig. 7. Relative safety experienced by at-grade crossers.
B - Pedestrian Intercept Survey

Bridge Crossers
How safe do you feel crossing on the bridge?

Fig. 6. Relative safety experienced by bridge users.
Risk of being struck by vehicle?
1- very unlikely and 10 - very likely
C – Motorists Survey

• Motorists Surveys (889 respondents)
  • 74% had witnessed a crash or near crash involving pedestrians on the freeways.......high degree of awareness around pedestrian safety (or lack of safety).
  • 96% describe pedestrian activity on the freeway as being dangerous or very dangerous.
  • 77% agreed or strongly agreed that pedestrians crossed the freeways because they were lazy.
    • Significant comments indicate at-grade crossing because of a lack of other options, suggesting some sympathy with this position as well.
C – Motorists Survey

How do motorists react?

- 86% indicated that they drive more carefully on the freeways when they see pedestrians.
- 67% that they drive more carefully when they expect to see pedestrians.
  - These are important because they may help us understand why accidents with pedestrians occur in unexpected places.
- The most common, by far, avoidance technique was reducing speed.
  - This is interesting because it indicates an instinctive understanding of the link between speed and accidents that we often think South Africans are not inclined to have.
Interventions
Engineering / Infrastructure
Interventions
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Interventions
Engineering / Infrastructure
Safer Roads and Mobility
Interventions
Infrastructure Monitoring

- Monitor Pedestrian Infrastructure
- Theft and Vandalism
Interventions
Infrastructure Monitoring

• Monitor Pedestrian Infrastructure
• Pedestrian Bridge Surveillance
• Fencing
Conclusions

Research Results

• Pedestrian operating on **freeways feel unsafe** regardless of whether they are crossing using the bridge, or crossing at-grade.

• For bridge crossers they **feel unsafe for personal security**, but this fear does not outweigh the fear of crossing freeway traffic at-grade.

• For at-grade crossers the issue of **time and distance saving is important**, but **thirdly, fear of using the bridges for personal security**

• For all at-grade crossers there was a great **appreciation for understanding of the risk** involved in crossing the freeway
  - But assume the risk belongs to some other road user...
  - Won’t happen to me attitude
Recommendations

Behaviour Intervention Strategies

• Create more awareness to Pedestrians that:
  • It is unsafe to cross the freeway at-grade any time
  • Inform them that pedestrian bridges (R300) are under 24/7 CCTV surveillance
  • Initiate more community based projects directed at addressing issues that deter the use of pedestrian bridges

• Inform motorists:
  • High pedestrian activity zones on freeway network
  • That the speed limit is not a target
  • Keep left pass right
  • Always be on the lookout for pedestrians