## Vehicles Involved

<table>
<thead>
<tr>
<th>Vehicle Type</th>
<th>N</th>
<th>%</th>
<th>LTSA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Car</td>
<td>95</td>
<td>71%</td>
<td>34%</td>
</tr>
<tr>
<td>van/night bus</td>
<td>16</td>
<td>30%</td>
<td>2%</td>
</tr>
<tr>
<td>4x4</td>
<td>0</td>
<td>0%</td>
<td>4%</td>
</tr>
<tr>
<td>unknown vehicle</td>
<td>1</td>
<td>1%</td>
<td></td>
</tr>
<tr>
<td>Ethnicity</td>
<td>Count</td>
<td>Percentage</td>
<td>Census data 1996</td>
</tr>
<tr>
<td>-------------------</td>
<td>-------</td>
<td>------------</td>
<td>------------------</td>
</tr>
<tr>
<td>NZ European</td>
<td>16</td>
<td>71%</td>
<td>49%</td>
</tr>
<tr>
<td>NZ Maori</td>
<td>24</td>
<td>56%</td>
<td>13%</td>
</tr>
<tr>
<td>Samoan</td>
<td>13</td>
<td>56%</td>
<td>5%</td>
</tr>
<tr>
<td>Cook Islander</td>
<td>10</td>
<td>43%</td>
<td>33%</td>
</tr>
<tr>
<td>Tongan</td>
<td>8</td>
<td>17%</td>
<td>16%</td>
</tr>
<tr>
<td>Maori</td>
<td>2</td>
<td>3%</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>8</td>
<td>16%</td>
<td></td>
</tr>
</tbody>
</table>
### Mean Number of Children per Family by Ethnicity

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>NZ European</td>
<td>2.2</td>
</tr>
<tr>
<td>NZ Maori</td>
<td>2.7</td>
</tr>
<tr>
<td>Samoans</td>
<td>3.13</td>
</tr>
<tr>
<td>Cook Islanders</td>
<td>3.09</td>
</tr>
<tr>
<td>Tongans</td>
<td>3.5</td>
</tr>
</tbody>
</table>

**Additional Information**

- Mean in study group: 3.4
- Mean for Auckland: 2.48
Socioeconomic Status
<table>
<thead>
<tr>
<th>Ownership Type</th>
<th>Cases</th>
<th>Auckland</th>
</tr>
</thead>
<tbody>
<tr>
<td>Owned</td>
<td>10%</td>
<td>50%</td>
</tr>
<tr>
<td>Rent</td>
<td>90%</td>
<td>50%</td>
</tr>
<tr>
<td>Of Rented Homes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Private Landlord</td>
<td>40%</td>
<td>30%</td>
</tr>
<tr>
<td>Housing NZ</td>
<td>60%</td>
<td>70%</td>
</tr>
<tr>
<td>Type of Trauma</td>
<td>Major Trauma</td>
<td>Minor Trauma</td>
</tr>
<tr>
<td>---------------</td>
<td>-------------</td>
<td>-------------</td>
</tr>
<tr>
<td>Overall</td>
<td>51%</td>
<td>43%</td>
</tr>
<tr>
<td>Head/Neck</td>
<td>17 29%</td>
<td>37 36%</td>
</tr>
<tr>
<td>Thorax</td>
<td>23 39%</td>
<td>17 17%</td>
</tr>
<tr>
<td>Abdomen</td>
<td>0 15%</td>
<td>20 20%</td>
</tr>
<tr>
<td>Limb</td>
<td>12 15%</td>
<td>27 27%</td>
</tr>
</tbody>
</table>
Patient Presentation
Paediatric Driveway Injuries in Auckland
1998 - 2001
A Preventable Tragedy

Sarah White, Felicity Murphy, Philip Morrison
Starship Children’s Hospital
Results

- Presentation of Patients
  29% via GP
  48% use Ambulance

- PICU admissions 22%
- Patient management
  16% Operative
  84% Non-operative
Results of Study

- Long-term complication rate: 11%

- Place of discharge:
  - Home: 92%
  - Rehab: 3%
  - Died: 6%
Conclusions

- Incidence unchanged at 8/100,000/year
- Predictable patterns of injury
- Severe injuries common: 57%
  Head
  Chest
  Lower Limb
Conclusions

- Risk Factors
  - Children 1-4 years
  - Low SES
  - Ethnic group
  - Large families
  - Vars
Recommendations

• Education is critical
• Fencing
  - Cost-benefit analysis
  - Legislation
• NB: Success of Swimming Pools Act
• "Difficult driveways" - better design needed
• Mirrors, reversal alarms & proximity alarms
• Provision adequate play areas in community
Final Conclusion

- Education targeted to those at highest risk
- Physical barriers to driveway access
- Better driveway design will reduce paediatric pedestrian trauma in New Zealand
Acknowledgements

Alex Woodley and Simon Whitlock: Safekids

Paul Hels: Starship

Rangi Darroch: Auckland Hospital Trauma Service
Nicola Dow: Otago Injury Prevention Unit
Barry Gibben: Auckland Medical School
Wayne Gough: Statistics New Zealand
Kheang Chuan: Land Transport Safety Authority
Alan Murr: Water Safety New Zealand
Boy dies after being run over by father
Background

- Child deaths in transport accidents - NZ 3rd highest of OECD
- Pedestrian fatalities
  2X > Britain/USA
  3X > Australia
- 26% of pedestrian injuries in Auckland occur in residential driveways
- Typical scenario is a 2 year old child reversed over in their home driveway by a family member
- Severe injuries, PICU
- 2 patients per month at Starship
- Incidence unchanged over 15 years
Aims

- Incidence
- Injuries
- Demographics
  - at-risk families
  - targeted public campaign
Method

- Retrospective review of all children under 15 years injured on Auckland driveways from January 1996 to October 2001

  Chart review
  Parent Interviews
  Driveway inspection
  Coroner’s files
Results

- 77 cases from 76 accidents
- 5 fatalities
- Incidence
  8 cases/100,000 children/year
- Age: median 23 months
  range 1-12 years