Overview

1. Background
2. Risk maps
3. Star ratings
4. Research
5. RACQ trial
6. Media and presentations
7. Where to from here?
8. Funding
A safe system:
Safer drivers in safer cars on safer roads
How safe are our roads?

Road Death Rate Against National Road Safety Strategy Target
(Deaths per 100,000 population)

Actual rate as at Nov 09: 7.2
Pro rata target rate as at Nov 09: 5.9
Target

Source: AAA analysis of Australian Transport Safety Bureau and Australia Bureau of Statistics data
iRAP

- Mike Harris: member of Board
- Peter Daly (RACV): member of Global Technical Committee
- $50K offered as seed funding
- Consultation paper on membership
iRAP

- Methodology builds on AusRAP
  - car occupants, motorcyclists, cyclists and pedestrians
  - countermeasures
  - urban areas
Two types of risk maps

- **Collective risk maps** show the total number of casualty crashes over a given length.

- **Individual risk maps** show casualty crash rates per vehicle kilometre travelled. This is the risk rate for individual drivers.
Collective Risk Ratings, Australia, 2000-2004

Average annual casualty crashes per km

<table>
<thead>
<tr>
<th>Risk Rating</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>39%</td>
</tr>
<tr>
<td>Low-medium</td>
<td>26%</td>
</tr>
<tr>
<td>Medium</td>
<td>11%</td>
</tr>
<tr>
<td>Medium-high</td>
<td>11%</td>
</tr>
<tr>
<td>High</td>
<td>12%</td>
</tr>
</tbody>
</table>

[Map of Australia with risk ratings marked on major cities and roads.]
How does AusRAP star-rate roads?

- Star-ratings measure the safety that is built-in to the road
- They enable sections of road that are likely to be risky to be identified before a crash occurs
  - In NZ in 2004, 54% of fatal crashes occurred where there had been no other injury crashes in the previous 4 years
- Measures likelihood and severity
- Method developed with ARRB Consulting
How is the data collected?
Road Protection Score (RPS)

- Star-ratings are based on a RPS
- Crash risk ‘score’ can be assigned to each of the road’s design elements
- Eg: crash risk on road with narrow lanes (<2.8m) 50% higher than wide lanes (3.6m)
- RPS combines these scores to form a star-rating
- AAA Board decision: <4 star unacceptable for national network
What elements are inspected?

- For run-off road and head-on crashes:
  - divided or undivided
  - lane width
  - sealed shoulder width
  - alignment
  - terrain
  - line marking
  - roadsides
  - traffic speeds
  - overtaking provision
Bruce Highway, QLD

- Severe roadside
- Narrow shoulders
- Bad overtaking
- Curves
- Undivided
Great Eastern Hwy, WA  ★ ★ ★ ★ ★

- Straight
- Moderate roadside
- Moderate shoulders
- Good overtaking
- Good lines
- Undivided
Pacific Hwy, NSW   ★ ★ ★ ★ ★

- Divided – innovative use of barriers
- Severe roadside
- Good overtaking
- Good lines
- Wide shoulders
- Wide lanes

- Straight
Table 1  Snapshot of the AusLink National Network

<table>
<thead>
<tr>
<th>State</th>
<th>Length (km)</th>
<th>**</th>
<th>***</th>
<th>****</th>
<th>Divided</th>
<th>Good alignment</th>
<th>Safe roadside</th>
<th>Intersections</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSW</td>
<td>4637</td>
<td>8%</td>
<td>68%</td>
<td>24%</td>
<td>43%</td>
<td>96%</td>
<td>22%</td>
<td>1 every 3km</td>
</tr>
<tr>
<td>VIC</td>
<td>2303</td>
<td>4%</td>
<td>52%</td>
<td>44%</td>
<td>58%</td>
<td>95%</td>
<td>31%</td>
<td>1 every 3km</td>
</tr>
<tr>
<td>QLD</td>
<td>5206</td>
<td>1%</td>
<td>59%</td>
<td>40%</td>
<td>13%</td>
<td>99%</td>
<td>63%</td>
<td>1 every 4km</td>
</tr>
<tr>
<td>SA</td>
<td>2721</td>
<td>2%</td>
<td>63%</td>
<td>35%</td>
<td>14%</td>
<td>99%</td>
<td>51%</td>
<td>1 every 4km</td>
</tr>
<tr>
<td>WA</td>
<td>4874</td>
<td>3%</td>
<td>42%</td>
<td>55%</td>
<td>4%</td>
<td>91%</td>
<td>63%</td>
<td>1 every 7km</td>
</tr>
<tr>
<td>TAS</td>
<td>473</td>
<td>0%</td>
<td>75%</td>
<td>25%</td>
<td>37%</td>
<td>100%</td>
<td>43%</td>
<td>1 every 3km</td>
</tr>
<tr>
<td>NT</td>
<td>2738</td>
<td>0%</td>
<td>37%</td>
<td>63%</td>
<td>3%</td>
<td>100%</td>
<td>63%</td>
<td>1 every 9km</td>
</tr>
<tr>
<td>ACT</td>
<td>17</td>
<td>0%</td>
<td>16%</td>
<td>84%</td>
<td>100%</td>
<td>12%</td>
<td>44%</td>
<td>1 every 2km</td>
</tr>
<tr>
<td>Total</td>
<td>22969</td>
<td>3%</td>
<td>55%</td>
<td>42%</td>
<td>21%</td>
<td>96%</td>
<td>50%</td>
<td>1 every 4 km</td>
</tr>
</tbody>
</table>

Source: AAA research

More detail can be found at [www.ausrap.org](http://www.ausrap.org)
Star Ratings

Features:
- Linked to Google Earth
- Zoom-in and out capabilities
- 4 view options
  - terrain
  - hybrid
  - satellite
  - map
Star Ratings – Query capabilities

Click on any star rated section to display main safety features
Crash costs by star rating
(cents per kilometre travelled)

Star rating

Crash costs halved

Crash costs halved again
Lifting the Network to 4 stars

Research question:

What is the least-cost way of lifting a significant proportion of the national network to 4 stars?
Preliminary Results for NSW

- Total investment: $14 billion (no time period set)
Preliminary results for NSW

- Improvements in Star Ratings as a result of investment (% of network by star rating)
RACQ AusRAP enhancement trial

- A project to undertake a trial of the iRAP methodology on a selection of Federal and State roads:
  - RACQ, Queensland Department of Transport and Main Roads, AAA, iRAP

- Complements Austroads project
# Star Ratings

<table>
<thead>
<tr>
<th>Star Rating</th>
<th>Car Occupants</th>
<th>Motorcyclists</th>
<th>Bicyclists</th>
<th>Pedestrians</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length (km's)</td>
<td>%</td>
<td>Length (km's)</td>
<td>%</td>
</tr>
<tr>
<td>★★★★★</td>
<td>1km</td>
<td>0%</td>
<td>0km</td>
<td>0%</td>
</tr>
<tr>
<td>★★★★★</td>
<td>80km</td>
<td>30%</td>
<td>120km</td>
<td>45%</td>
</tr>
<tr>
<td>★★★★★</td>
<td>48km</td>
<td>18%</td>
<td>61km</td>
<td>23%</td>
</tr>
<tr>
<td>★★★★</td>
<td>116km</td>
<td>43%</td>
<td>84km</td>
<td>31%</td>
</tr>
<tr>
<td>★★</td>
<td>22km</td>
<td>8%</td>
<td>2km</td>
<td>1%</td>
</tr>
<tr>
<td>★</td>
<td>0km</td>
<td>0%</td>
<td>0km</td>
<td>0%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>267km</td>
<td>100%</td>
<td>267km</td>
<td>100%</td>
</tr>
</tbody>
</table>
## RACQ AusRAP enhancement trial

### Top 5 Road Safety Investments

<table>
<thead>
<tr>
<th>Countermeasure Type</th>
<th>Length</th>
<th>KSI's Saved (20 years)</th>
<th>PV of Safety Benefit (20 years)</th>
<th>Estimated Cost (20 years)</th>
<th>Cost per KSI saved</th>
<th>Program BCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duplication with median barrier</td>
<td>18km</td>
<td>232</td>
<td>$189,227,743</td>
<td>$119,663,000</td>
<td>$515,789</td>
<td>1.58</td>
</tr>
<tr>
<td>Additional lane (2 + 1 road)</td>
<td>15km</td>
<td>170</td>
<td>$138,279,000</td>
<td>$110,591,000</td>
<td>$650,535</td>
<td>1.25</td>
</tr>
<tr>
<td>Roadside barriers - Left</td>
<td>80km</td>
<td>101</td>
<td>$82,520,460</td>
<td>$18,045,000</td>
<td>$178,663</td>
<td>4.57</td>
</tr>
<tr>
<td>Roadside barriers - Right</td>
<td>75km</td>
<td>98</td>
<td>$79,587,030</td>
<td>$13,925,000</td>
<td>$142,092</td>
<td>5.72</td>
</tr>
<tr>
<td>Overtaking lane</td>
<td>4km</td>
<td>29</td>
<td>$23,407,248</td>
<td>$14,136,000</td>
<td>$487,448</td>
<td>1.66</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>629</td>
<td><strong>513,021,481</strong></td>
<td><strong>276,360,000</strong></td>
<td><strong>439,364</strong></td>
<td></td>
<td><strong>1.86</strong></td>
</tr>
</tbody>
</table>
star ratings for
Victoria’s country highways

Total kilometres rated = 5,847 kilometres

Note: These star ratings are based on road data collected in 2004, 2005 and 2006.
Media and presentations

- ARRB, ATA, ARF, and ALGA conferences
- Conference Week
- NRMA’s Policy & Advocacy Committee (PAC)
- The Pacific Highway Taskforce
- Institution of Civil Engineers in London
- AusRAP DVD
- Series of radio ads with the theme “roads are more important in road safety than people think”
Where to from here?

- National leadership and coordination
- Extend RACQ trial to other clubs
- Promote AusRAP to NRSS 2011-2020
- Seek funding for projects
Where to from here?

- Update risk maps and star rating results
  - new road construction
  - national network expanded
- Performance tracking
- Extension to urban areas
- Refining the model
  – consider adopting iRAP model?
A safe system: funding

$17 million

Club projects

$2.2 million