Driver perceptions of the benefits of reducing their driving speed on safety, emissions, and stress and road rage

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Effects of travel speed

- Safety
- Emissions
- Stress & Road Rage

Speed
Speed and Safety

• Speed affects both the likelihood of crash and the level of severity.

• 1 km/h reduction in speed correspond to 3% decrease in crash rate.

• Larger speed variance among surrounding traffic relates to higher crash rate.
Speed and Emissions

• Fuel consumption and emissions increase sharply when
  – Accelerating or braking suddenly
  – Driving aggressively

• An aggressive driver consumes up to 40% more fuel and produces up to 8 times more CO than a normal driver.

• Drivers have general perception that lower speeds are associated with reduced emissions.
Speed and Driving Stress, Road Rage

• Drivers are often in a hurry when driving (due to time pressure).
• Hurry in driving is generally associated with speeding, aggressive driving, and feeling more stress.
• Frustrating on-road events (traffic congestion, delays) can trigger aggressive behaviours.
• Aggressive driving produces more road rage than impeding traffic does.
Drivers’ perceptions of the benefits of high speed

• Amount of time saved
  – underestimated when increasing from low speed
  – overestimated when increasing from high speed

• Amount of time lost
  – underestimated when decreasing from low speed
  – overestimated when decreasing from high speed

Little is known about drivers’ perceptions of the benefits of reducing speed on improving safety, reducing emissions, and reducing stress and road rage.
Driver perception survey

• RACQ conducted a survey titled “Driving Costs, Attitudes and Behaviours study”.
• Email invitation sent to 194,662 RACQ members who were encouraged to forward it to family and friends.
• **Inclusion criteria:** at least 18 years old, main driver of a privately owned car, agree to participate in a eco-driving training program.
• 3585 complete and valid responses were received.
• Average age of respondents: 46.3 years (S.D.=15.7).
• 80% had more than 11 years of driving experience.
• Age distribution well matched QLD licensed driver population.
Driver perception survey

- Respondents were asked to rate for
  - I believe I can improve road safety if I reduce my driving speed
  - I believe I can reduce my car’s emissions if I reduce my driving speed
  - I believe I can reduce stress and road rage if I reduce my driving speed

- Ordered Probit Models (OPM) were calibrated for the three items.
- Explanatory variables: Characteristics of Drivers, Vehicles, and Travel behaviour.
Results

<table>
<thead>
<tr>
<th></th>
<th>Safety</th>
<th>Emission</th>
<th>Stress &amp; Road rage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean score</td>
<td>4.4</td>
<td>4.3</td>
<td>4.0</td>
</tr>
<tr>
<td>Skewness</td>
<td>-0.81</td>
<td>-0.67</td>
<td>-0.40</td>
</tr>
<tr>
<td>Cronbach’s alpha</td>
<td></td>
<td></td>
<td>0.77</td>
</tr>
<tr>
<td></td>
<td>Safety</td>
<td>Emission</td>
<td>Stress &amp; Road rage</td>
</tr>
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<td>--------------------------------------</td>
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</tr>
<tr>
<td>Age: 18-20 (Ref: 50-59 years)</td>
<td>-0.46</td>
<td>-0.36</td>
<td>-0.46</td>
</tr>
<tr>
<td>Age: 21-24</td>
<td>-0.47</td>
<td>-0.37</td>
<td>-0.53</td>
</tr>
<tr>
<td>Age: 25-29</td>
<td>-0.33</td>
<td>-0.27</td>
<td>-0.38</td>
</tr>
<tr>
<td>Age: 30-39</td>
<td>-0.13</td>
<td>-0.15</td>
<td>-0.17</td>
</tr>
<tr>
<td>Female driver</td>
<td>0.17</td>
<td></td>
<td>0.09</td>
</tr>
<tr>
<td>Automatic car</td>
<td>0.09</td>
<td>0.08</td>
<td>0.09</td>
</tr>
<tr>
<td>Engine size: &lt;=1.9 L (Ref: 2-2.9)</td>
<td>0.12</td>
<td></td>
<td>0.12</td>
</tr>
<tr>
<td>Fuel type: Premium unleaded (Ref: Regular Unleaded)</td>
<td>-0.19</td>
<td>-0.12</td>
<td>-0.15</td>
</tr>
<tr>
<td>Dist driven/week: &lt;=100km (Ref: 201-400km)</td>
<td></td>
<td></td>
<td>0.19</td>
</tr>
<tr>
<td>Cycle (Days/month)</td>
<td>0.01</td>
<td>0.01</td>
<td>0.01</td>
</tr>
<tr>
<td>Drive with passenger (Days/month)</td>
<td>0.007</td>
<td></td>
<td>0.004</td>
</tr>
</tbody>
</table>
Summary

• Drivers perceived improved safety as the largest effect of reducing speeds.
• Younger males perceived the effects less positively than older and female drivers.
• Drivers of automatic cars and Bicycle commuters agreed more to the benefits than others.
• Education and licensing programs targeted to young male drivers could help them to better understand the benefits of speed reduction.
Questions?

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