The Other Side of Safety

Investigating, Understanding, Determining and Influencing Driver/User Behavior

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Components of Road Safety

• Driver / User
• Vehicle
• Roadway
Affecting the Roadway and the Driver

• Traffic Engineering
  – Roadway design and operation
  – Influencing the Individual Driver
    o Signs, Signals and Markings
    o At a specific point along the road

• What if? It’s not a localized problem?
• Like...
An epidemic of teen crash fatalities

• 12 over 3 years

• What:
  – A speed hump on every block?
  – 25 MPH speed limits?

• Or...
A Program such as Teens in the Driver Seat

- Based on science
- Risk Factors
- Peer-to-Peer
- Can reach a wider audience
The Center for Transportation Safety

- Established by State Legislation in 2001
- Mission:
  - Reduce traffic deaths and injuries through research, education and technology transfer
  - Serve as the focal point for traffic safety initiatives in the State of Texas.
### Traffic deaths & death rates in Texas

#### COMPARISON OF MOTOR VEHICLE TRAFFIC DEATHS AND DEATH RATES, 2002-2011

<table>
<thead>
<tr>
<th>YEAR</th>
<th>DEATHS</th>
<th>% INCREASE OR DECREASE</th>
<th>DEATHS PER 100 MILLION VEHICLE MILES TRAVELED</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>3823</td>
<td>2.32%</td>
<td>1.73</td>
</tr>
<tr>
<td>2003</td>
<td>3822</td>
<td>-0.03%</td>
<td>1.75</td>
</tr>
<tr>
<td>2004</td>
<td>3700</td>
<td>-3.19%</td>
<td>1.61</td>
</tr>
<tr>
<td>2005</td>
<td>3558</td>
<td>-3.84%</td>
<td>1.52</td>
</tr>
<tr>
<td>2006</td>
<td>3521</td>
<td>-1.04%</td>
<td>1.49</td>
</tr>
<tr>
<td>2007</td>
<td>3462</td>
<td>-1.68%</td>
<td>1.43</td>
</tr>
<tr>
<td>2008</td>
<td>3479</td>
<td>0.49%</td>
<td>1.48</td>
</tr>
<tr>
<td>2009</td>
<td>3118</td>
<td>-10.38%</td>
<td>1.34</td>
</tr>
<tr>
<td>2010</td>
<td>3050</td>
<td>-2.18%</td>
<td>1.30</td>
</tr>
<tr>
<td>2011</td>
<td>3015</td>
<td>-1.15%</td>
<td>1.28</td>
</tr>
</tbody>
</table>
First Step towards understanding — Crash Analysis

• Accumulate, synthesize and analyze crash data
• Identify
  – Causes
  – Locations
  – Countermeasures
TxDOT Safety Bonds

- 2003 Legislature - $6 Billion – 20% to safety
- TTI helped identify 600 Locations
  - Widening narrow rural highways
  - Median Barriers
  - Left Turn Lanes
  - Grade Separations
- TxDOT built the improvements
TxDOT Safety Bonds

- Widening results released
- 1,159 miles of narrow, 2-lane roadways
- Crash reductions
  - 44 lives annually
  - 298 injuries
- Analysis of others continues
Data-Driven Safety Improvements

- Real returns on investments
- Systematic vs. Reactive approach
- Local, Regional, State levels
- Nominal vs. Substantive
  - Design “Standards”
  - Highway Safety Manual
  - CSS
Other Non-Point Issues

• Distracted driving
• Impaired driving
• Latino traffic safety
• Military traffic safety
Distracted driving

- Rapidly growing problem
  - Distraction causes 1 in 4 crashes in Texas
  - 1,259 DWI deaths; 408 distraction deaths

- Persistent public policy issue
Distracted driving studies

- Teen Passenger Simulator Study
- In-Vehicle DVD Players
- Driver Perceptions of Risks of Distraction
- Distraction due to in-vehicle information and warning systems
- Effects of texting
<table>
<thead>
<tr>
<th>Eye glance position</th>
<th>Reaction time light and Hand position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Left side view</td>
<td>Right side view</td>
</tr>
</tbody>
</table>
Experiment
In-Vehicle Texting Study

- Reaction times ~ 2X slower
- Missed response events ↑
- Speed variation ↑
- Lane position variation ↑
- Overall speed ↓
- Forward glances ↓
- Reading vs. writing difference NONE
  - Exception: Response to light
- Next: Study Voice to Text effects
Impaired driving

- Evaluate and improve processes
  - Administrative license revocation
  - No-refusal initiatives
  - Evidence-based countermeasures
- Examine effects of alcohol on driving task
  - Raise public awareness
  - Help change the driving culture
  - Support other safety efforts
The changing face of Texas

Demographic Change in Texas

- Total
- Hispanic
- White
- Black
- Other

Population in Millions

Year:
- 1980
- 1990
- 2000
- 2010
- 2020
- 2030
- 2040
Latino traffic safety

• Fast-growing population segment
• 2010: 9.1 million -- 2030: 15.1 million
• High-risk group
  – Less likely to have driver license
  – Less likely to wear motorcycle helmet
  – More likely to drive impaired
  – Children less likely to be restrained
  – Children 72% more likely to die in crash
Military traffic safety

- After 9-11: more soldiers killed in traffic crashes than in combat
- Under-25 soldiers over-represented: 61% of all vehicle crash deaths
- 24% of all crash deaths on motorcycles
- CTS initiative involves former and current military personnel
• It will take a village to save lives
• We need to work together
• No silos
• More interaction