Rural Safety and ITS Session

Prepared by
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Montana State University
Traffic Safety is a Primary Need for Society

Projected change in the ranking of the 15 leading causes of death and disease (DALYs) worldwide, 1990-2020 (WHO, 2002)

<table>
<thead>
<tr>
<th>1998 Disease or Injury</th>
<th>2020 Disease or Injury</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Lower respiratory infections</td>
<td>1. Ischaemic heart disease</td>
</tr>
<tr>
<td>2. HIV/AIDS</td>
<td>2. Unipolar major depression</td>
</tr>
<tr>
<td>3. Perinatal conditions</td>
<td>3. Road traffic injuries</td>
</tr>
<tr>
<td>4. Diarrhoeal diseases</td>
<td>4. Cerebrovascular disease</td>
</tr>
<tr>
<td>5. Unipolar major depression</td>
<td>5. Chronic obstructive pulmonary disease</td>
</tr>
<tr>
<td>6. Ischaemic heart disease</td>
<td>6. Lower respiratory infections</td>
</tr>
<tr>
<td>7. Cerebrovascular disease</td>
<td>7. Tuberculosis</td>
</tr>
<tr>
<td>8. Malaria</td>
<td>8. War</td>
</tr>
<tr>
<td>9. Road traffic injuries</td>
<td>9. Diarrhoeal diseases</td>
</tr>
<tr>
<td>10. Chronic obstructive pulmonary disease</td>
<td></td>
</tr>
</tbody>
</table>

Source: WHO, Evidence, Information and Policy, 2000
How is Rural Transportation Different?

• Different road network
  – Challenging topography
  – Weather events and changing road conditions
  – Few alternate routes

• Different travel patterns
  – Longer trips
  – Different trip purposes
  – Non-recurring congestion plays larger role

Photo: http://www.primalpics.com
How is Rural Transportation Different? (cont.)

• Different institutional challenges
  – Jurisdiction
  – Inter- and intra-agency communications
  – Shared funding
  – Leadership and champions
  – Data sharing between agencies
Needs and Challenges

- **Emergency Services**
  - 30% longer than urban
- **Travel and Tourism**
  - economic viability, high visitation, limited services
- **Traffic Management**
  - limited detection and need for coordination
- **Rural Transit and Mobility**
  - 38% w/o service
- **Crash Prevention and Security**
  - 60% fatalities
- **Operation and Maintenance**
  - local responsibility
- **Surface Transportation and Weather**
  - dynamic conditions and life threatening
Rural Crash Risk

US Fatal Crashes - 2004

Driver State vs. Driver Behavior vs. Other

Animal in Roadway

Risk Multiplier vs. Urban
Rural Crash Risk

US Fatal Crashes - 2004

Driver State > Driver Behavior > Other

Animal in Roadway
Passing
Rural Crash Risk

US Fatal Crashes - 2004

Risk Multiplier vs. Urban

Driver State

Driver Behavior

Other

Animal in Roadway

Passing

Speed
Fatal Crash Rates by Rural Road Class

- As rural road class moves from Interstate to Local, the fatal crash rate increases.
Rural

- Traffic safety is most critical in rural areas
- Risk only likely to INCREASE as population (older demographic) increases
Exurban Development

Exurban development, indicated by the gray areas surrounding black urban centers, across the United States (Sutton et al. 2006; permission to use by Paul Sutton).
## Changing Demographic

Ranking of States by Population, Age 65 and older in 2030

<table>
<thead>
<tr>
<th>State</th>
<th>2005</th>
<th>2030</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wyoming</td>
<td>11.7%</td>
<td>26.5%</td>
<td>3</td>
</tr>
<tr>
<td>Montana</td>
<td>13.4%</td>
<td>25.8%</td>
<td>5</td>
</tr>
<tr>
<td>North Dakota</td>
<td>14.7%</td>
<td>25.1%</td>
<td>6</td>
</tr>
<tr>
<td>South Dakota</td>
<td>14.3%</td>
<td>23.1%</td>
<td>10</td>
</tr>
<tr>
<td>United States</td>
<td>12.4%</td>
<td>19.7%</td>
<td></td>
</tr>
</tbody>
</table>
Transportation Systems

- Transportation system is centered on driver
- Therefore, applications must be derived from driver needs
- Interface with driver is THE critical component