An International Comparison of Truck Safety in OECD/ITF Countries

Drawn from the forthcoming OECD/ITF Joint Transport Research Centre report
“Moving Freight with Better Trucks”

Australasian Road Safety Research, Policing & Education Conference

Dr Jeff Potter
National Transport Commission
September 2010
The summary and stand alone report on benchmarking are available on line at:
http://www.internationaltransportforum.org/infrastructure/heavy/heavy.html
environment
numbers and usage, applicable regulations, road
Data on crash involvement, changes in vehicle
participating countries
Data sought from IRJAD, CARE and directly from
Questionnaire sent to participating countries

Sources of Information

International heavy truck safety benchmarking
Heavy truck safety

- Truck fatalities per registered vehicle 1.9 to 18.9 times higher than for the whole vehicle fleet

- Comparative crash rates
  - South Africa 25.1%
  - Denmark 4.1%

- Truck occupants killed
  - New Zealand 24.9%
  - Poland 9.1%

- Fatal crashes involving a truck

NTC

Australia
Relative trends in fatal crashes in which a truck was involved.
Fatal truck crashes per 100 million vehicle kilometres travelled
Fatal truck crashes per 100 million vehicle kilometres travelled
Pedestrian Fatal Crashes (excluding Single Vehicle Fatal Truck Crashes)
Fatal crashes involving a truck by rural or urban location

[Bar chart showing data for various countries]
100 million km travelled 2005

Number of persons killed in truck crashes per
100 million km travelled 2005
Number of persons killed in truck crashes per
<table>
<thead>
<tr>
<th>Year</th>
<th>Kilometres Traveled</th>
<th>Fatalities per 100 million vehicle</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>1.6</td>
<td>2.1</td>
</tr>
<tr>
<td>2006</td>
<td>4.4 (1995)</td>
<td>4.4</td>
</tr>
<tr>
<td>1996</td>
<td>2.5</td>
<td>2.5</td>
</tr>
<tr>
<td>1998</td>
<td>1.7</td>
<td>1.7</td>
</tr>
<tr>
<td>2005</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>2006</td>
<td>1.7</td>
<td>1.7</td>
</tr>
<tr>
<td>2005</td>
<td>2.0</td>
<td>2.0</td>
</tr>
<tr>
<td>2005</td>
<td>2.1</td>
<td>2.1</td>
</tr>
<tr>
<td>1998</td>
<td>3.1</td>
<td>3.1</td>
</tr>
</tbody>
</table>

2005 vs 1998
Fatalities in truck crashes (per 100 million VTk)
<table>
<thead>
<tr>
<th>Year</th>
<th>Ratio of Fatalities Rates for T4</th>
<th>Year</th>
<th>Ratio of Fatalities Rates for T4</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1</td>
<td>2.1 (1996)</td>
<td>1.8</td>
<td>8.8</td>
</tr>
<tr>
<td>1.9</td>
<td>1.9 (2006)</td>
<td>1.6</td>
<td>1.7</td>
</tr>
<tr>
<td>2.0</td>
<td>1.5 (1995)</td>
<td>2.3</td>
<td>2.2</td>
</tr>
<tr>
<td>2.3</td>
<td></td>
<td>2.6</td>
<td>8.2</td>
</tr>
<tr>
<td>2.6</td>
<td></td>
<td>3.7</td>
<td>6.2</td>
</tr>
</tbody>
</table>

## Ratio of Fatality Rates 2005 vs 1998

- **Sweden**
- **Great Britain**
- **Germany**
- **USA**
- **France**
- Canada
- Australia
- Year

**Note:** Involving triple units: all fatal crashes involving triple units.
Rules on the same roads
standard tractor semitrailers operating under normal
special permit program had lower crash rate than the

Canada - Multi-trailer articulated trucks operating under a

Rates (over 5 years) Assumes continued improving trends in crashes

Australia - Replacing articulated trucks with straight

Greater number of EU-compliant (30-40t) trucks

task performed by vehicles over 40t was undertaken by a

Sweden - Estimate 12 extra fatalities per year in freight

Safety Impacts of larger trucks
Growth in Freight Carried by B-doubles (1999 to 2007)
Truck crash types (European)
Truck crash types (North American)

Source: FMCSA Large Truck Crash Causation Study (2007)
Vehicles

Causative factors of crashes involving heavy

Source: EU European Truck Accident Case Study (2007)
Exercise poor directional control.

Performance: For example, the driver panicked, overcompensated, or closely misjudged the speed of other vehicles, or followed other vehicles too closely.

Decision: For example, the driver was driving too fast for conditions, for some other reason.

Recognition: The driver was inattentive, was distracted by something inside or outside the vehicle, or failed to observe the situation adequately.

Non-Recognition: The driver fell asleep, was disabled by a heart attack or seizure, or was physically impaired for another reason.

Driver error types are coded in four categories:

Source: LTCCS (2006)
Active safety systems

- Onboard monitoring
- Fatigue detection
- Driver condition warning
- Tyre pressure monitoring
- Brake stroke monitoring
- Vehicle condition warning
- Emergency assisted braking
- Intelligent speed adaptation
- Forward collision warning/Adaptive cruise control
- Lane departure/side collision warning
- Roll stability control/Electronic stability control
- Risk detection and avoidance
accident types are available or becoming available.

- Technologies to mitigate driver errors and truck-specific errors in hazard recognition and decision-making are.
- Other drivers.
- Dominant accident factor for truck drivers as compared with risk counties.
- County differences suggest improvement potentials in higher test as the overall rate.
- Vehicle fleet, but in most counties are improving at least as vehicle class.
- Fatal crash rates for trucks are higher than for the whole vehicle class.
- Need better differentiation of exposure data and crash data by Safety