Heavy Truck Safety Performance: An International Comparison

Workshop
OECD-ITF International Study on Truck Safety, Productivity, and Sustainability

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International Heavy Truck Safety Benchmarking

Sources of information

• Questionnaire sent to participating countries
• Data sought from IRTAD, CARE and directly from participating countries
• Data on crash involvement, changes in vehicle numbers and usage, applicable regulations, road environment
Sources of information

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<th>Country</th>
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Heavy Truck Safety

- Fatal crashes involving a truck
  - Poland 9.1%
  - New Zealand 24.9%

- Truck occupants killed
  - Denmark 4.1%
  - South Africa 25.1%

- Comparative crash rates
  - Truck fatalities per registered vehicle 1.9 to 18.9 times higher than for the whole vehicle fleet
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
Single vehicle fatal truck crashes (excluding pedestrian fatal crashes)
Fatal crashes involving a truck by rural or urban location
Number of persons killed in truck crashes per 100 million km travelled 2005
Number of persons killed in truck crashes per 100 million km travelled 2005
## Fatalities in truck crashes (per 100 million vkt) 2005 vs 1998

<table>
<thead>
<tr>
<th>Year</th>
<th>Fatalities per 100 million vehicle kilometres travelled</th>
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<tr>
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<td>1998</td>
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<td>Australia</td>
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<td>Great Britain</td>
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<tr>
<td>Sweden</td>
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Ratio of fatalities per 100 million vkt trucks vs all vehicles 2005

Country

South Africa
Switzerland
Belgium
USA
Germany
France
Australia
Canada
Great Britain
Sweden
Denmark

Ratio

0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
## Ratio of fatality rates 2005 vs 1998

<table>
<thead>
<tr>
<th>Year</th>
<th>Ratio of fatality rates for fatal crashes involving trucks: all fatal crashes</th>
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<tr>
<td>Year</td>
<td>1998</td>
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<tr>
<td>Australia</td>
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<td>Sweden</td>
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Safety impacts of larger trucks

- Sweden – estimate 12 extra fatalities per year if freight task performed by vehicles over 40t was undertaken by a greater number of EU-compliant (30-40t) trucks

- Australia – Replacing articulated trucks with straight trucks forecast to increase truck vs car crashes by 18% over 5 years (Assumes continued improving trends in crash rates)

- Canada – multi-trailer articulated trucks operating under a special permit program had lower crash rate, than the standard tractor semi-trailers operating under normal rules on the same roads
Growth in freight carried by B-doubles
Australia (1999 to 2007)

Source: Bob Pearson: B-doubles - the First Decade in Australia (2009)
Truck Crash Types (European)

- Single Truck: 7%
- Crash at Intersection: 27%
- Crash in queue: 21%
- Crash due to lane departure: 21%
- Overtaking manoeuvre: 11%
- Pedestrian: 6%
- Other: 8%

Source: IRU European Truck Accident Causation Study (2007)
Truck Crash Types (North American)

- Rear end: 23%
- Ran off road: 18%
- Side Swipe same direction: 10%
- Side Swipe opposite direction: 4.6%
- Rollover: 9%
- Turning across/into path: 8%
- Intersecting vehicles: 5.8%
- Other crash type: 18.5%

Source: FMCSA Large Truck Crash Causation Study (2007)
Causative factors of accidents involving heavy vehicles

Source: IRU *European Truck Accident Causation Study* (2007)
Driver Error Types

Source: LTCCS (2006)
Active Safety Systems

- Risk detection and avoidance
  - Roll stability control/Electronic stability control
  - Lane departure/Side Collision warning
  - Forward collision warning/Adaptive cruise control
  - Intelligent speed adaptation
  - Emergency assisted braking

- Vehicle condition warning
  - Brake stroke monitoring
  - Tyre pressure monitoring

- Driver condition warning
  - Fatigue detection
  - Onboard monitoring
Safety

- Need better differentiation of exposure data and crash data by vehicle class.
- Fatal crash rates for trucks are higher than for the whole vehicle fleet, but in most countries are improving at least as fast as the overall rate.
- Country differences suggest improvement potentials in higher risk countries.
- Errors in hazard recognition and decision-making are dominating accident factor for truck drivers as compared with other drivers.
- Technologies to mitigate driver errors and truck-specific accident types are available or becoming available.
www.ntc.gov.au

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