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

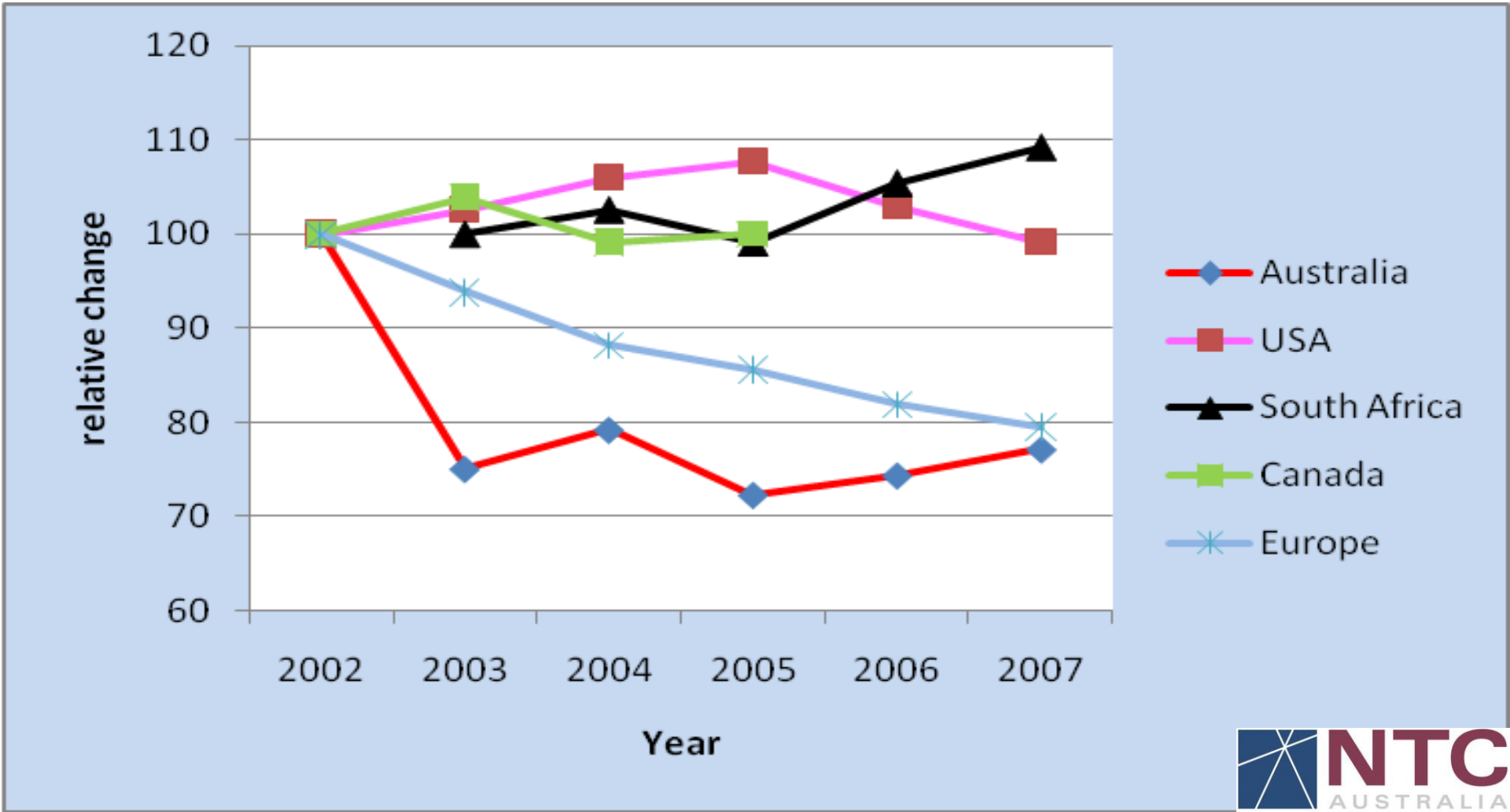
Sources of information

Latvia	Slovenia	Ireland
USA	Russia	Belgium
Ukraine	Portugal	Hungary
Great Britain	Poland	Germany
Switzerland	Norway	France
Sweden	Netherlands	Spain
New Zealand	Czech Republic	Denmark
South Africa	Canada	Japan
Austria	Australia	Israel

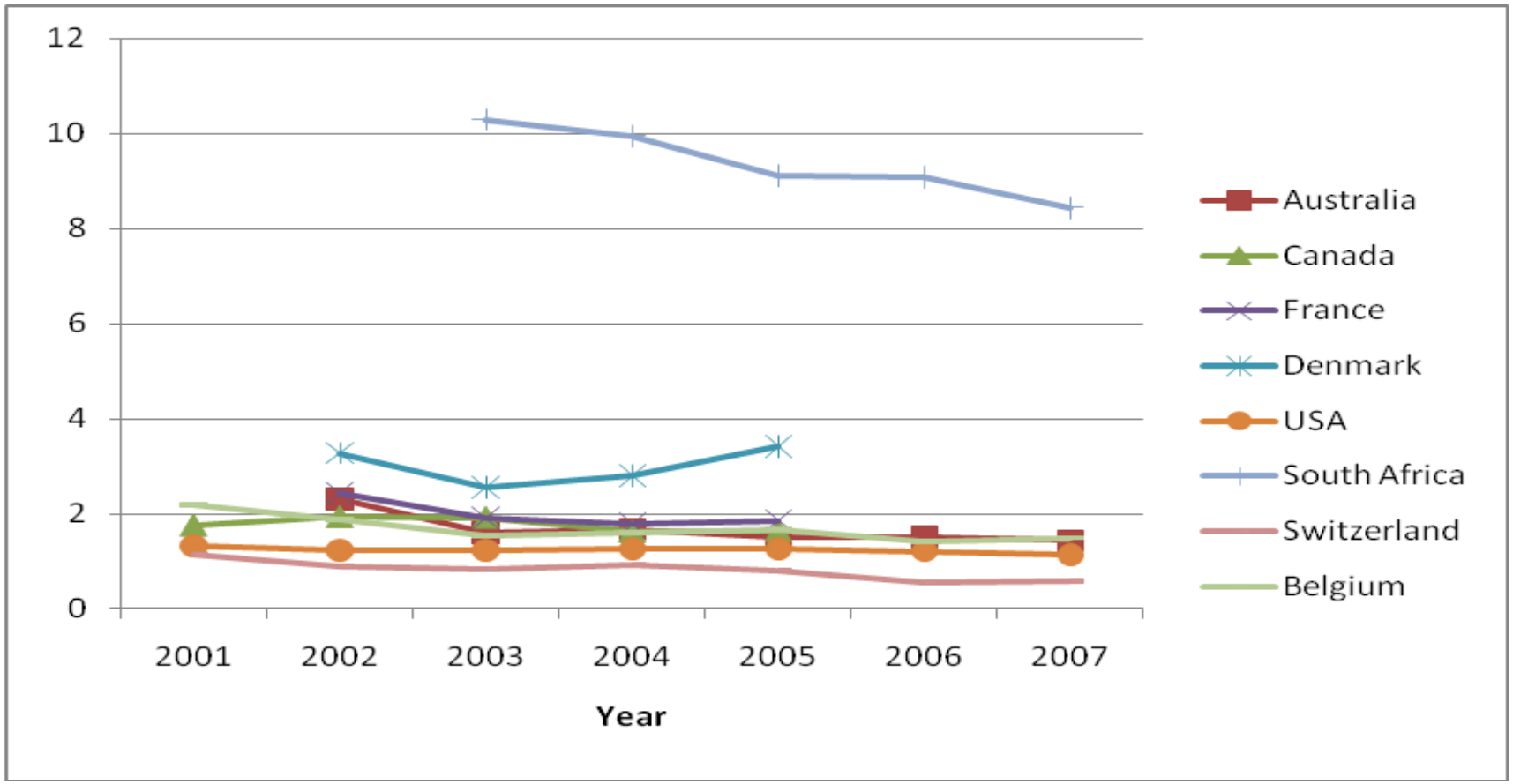
Heavy Truck Safety

- 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



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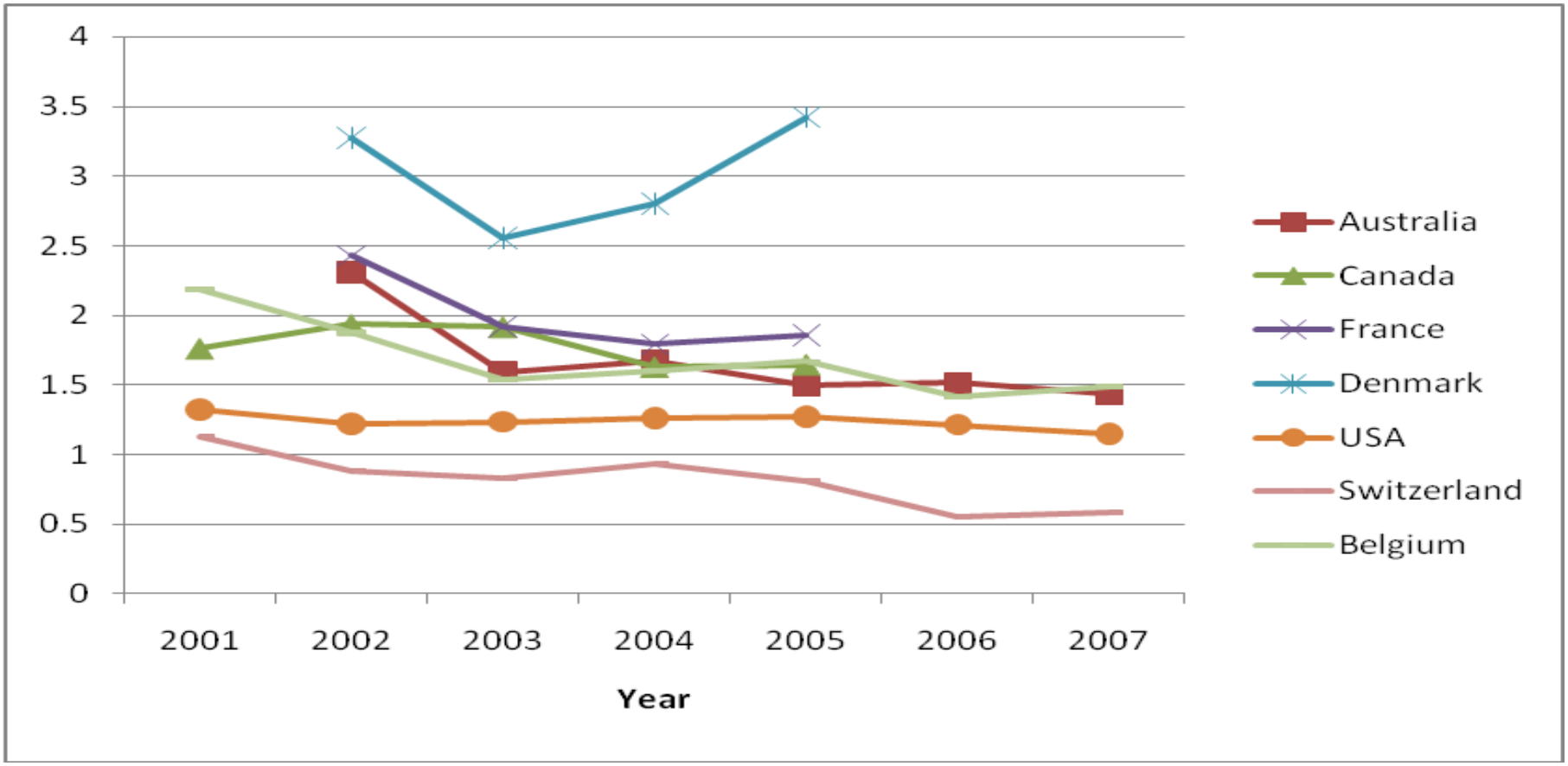
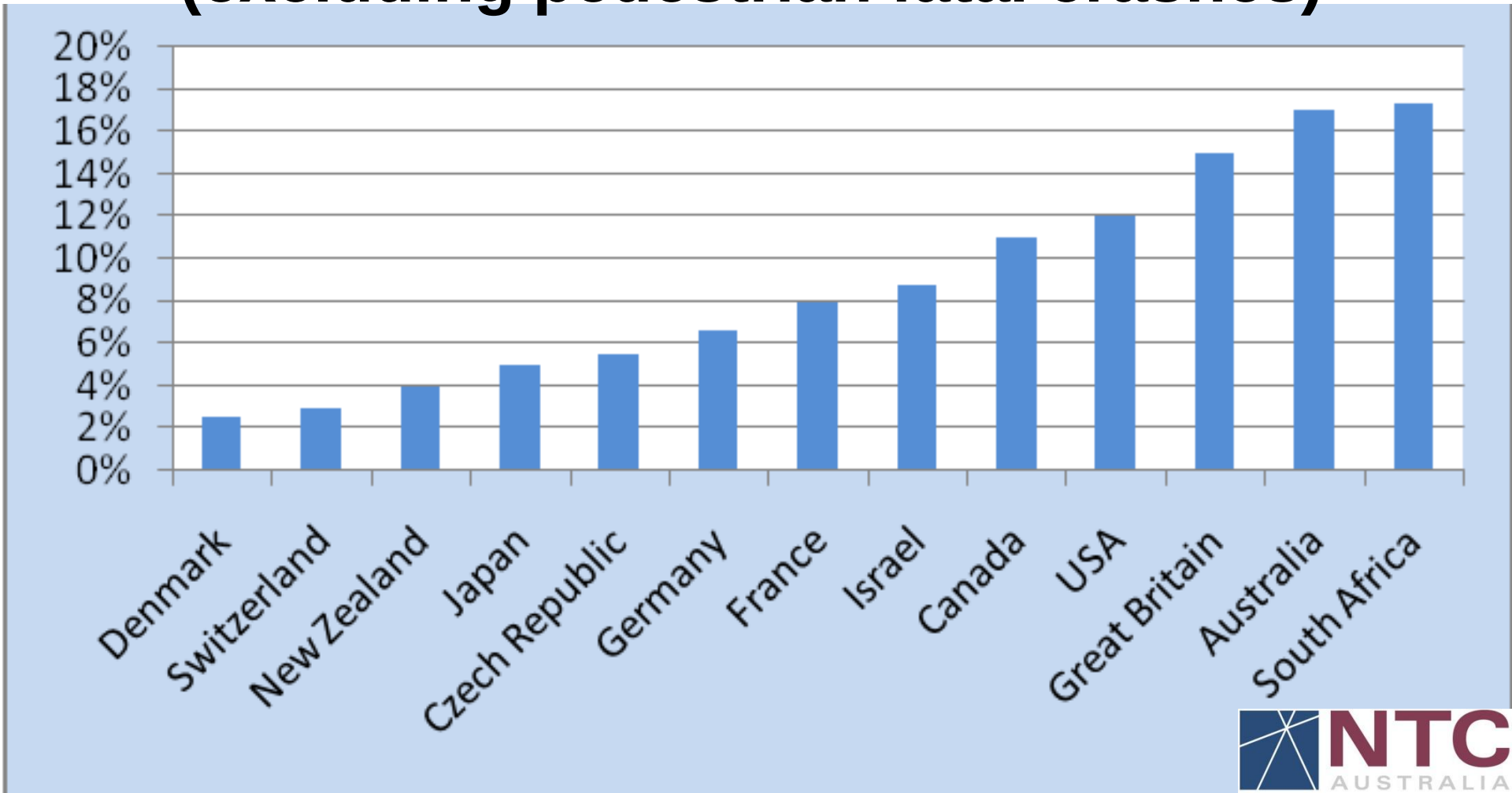


Single vehicle fatal truck crashes (excluding pedestrian fatal crashes)



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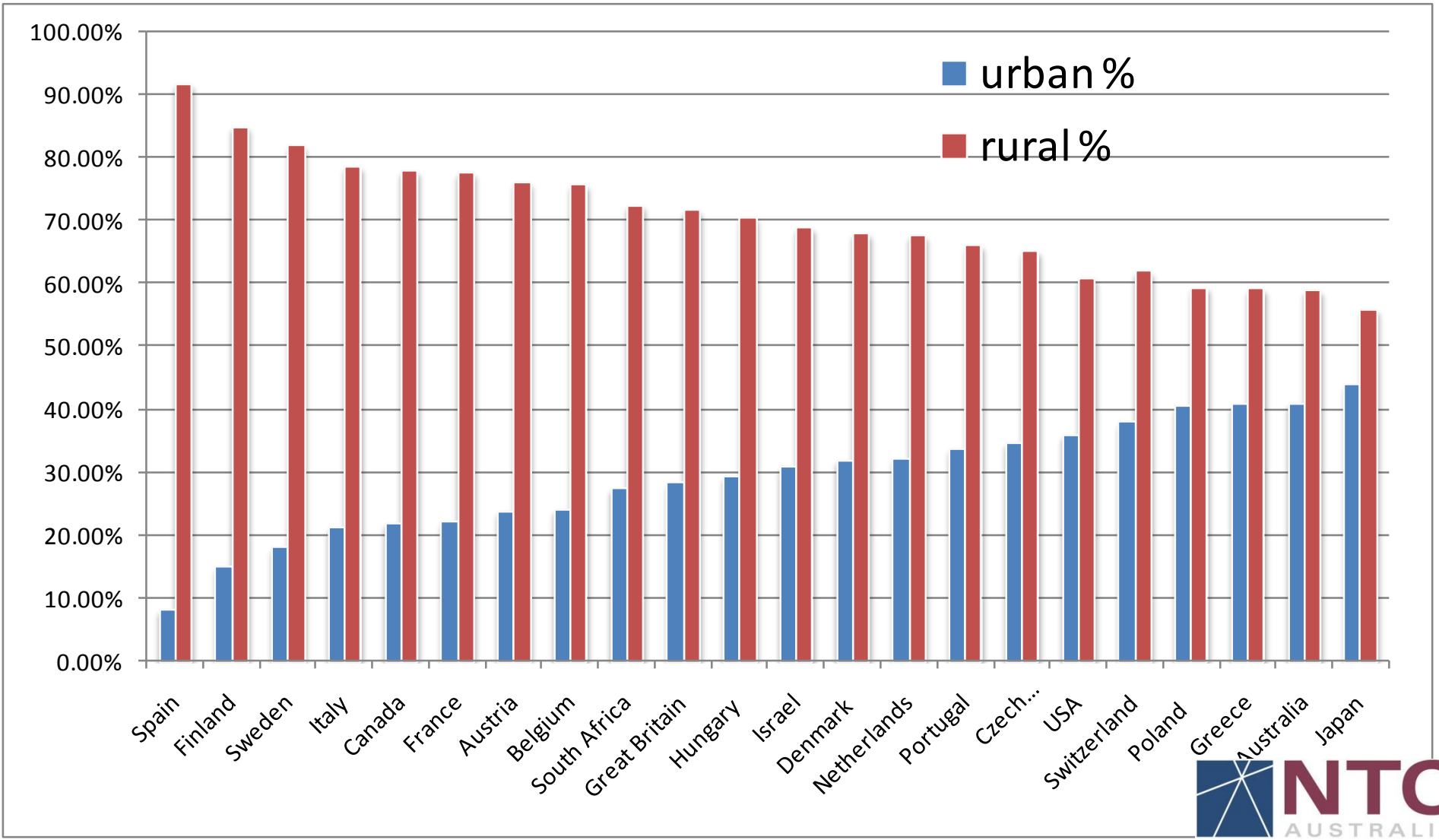
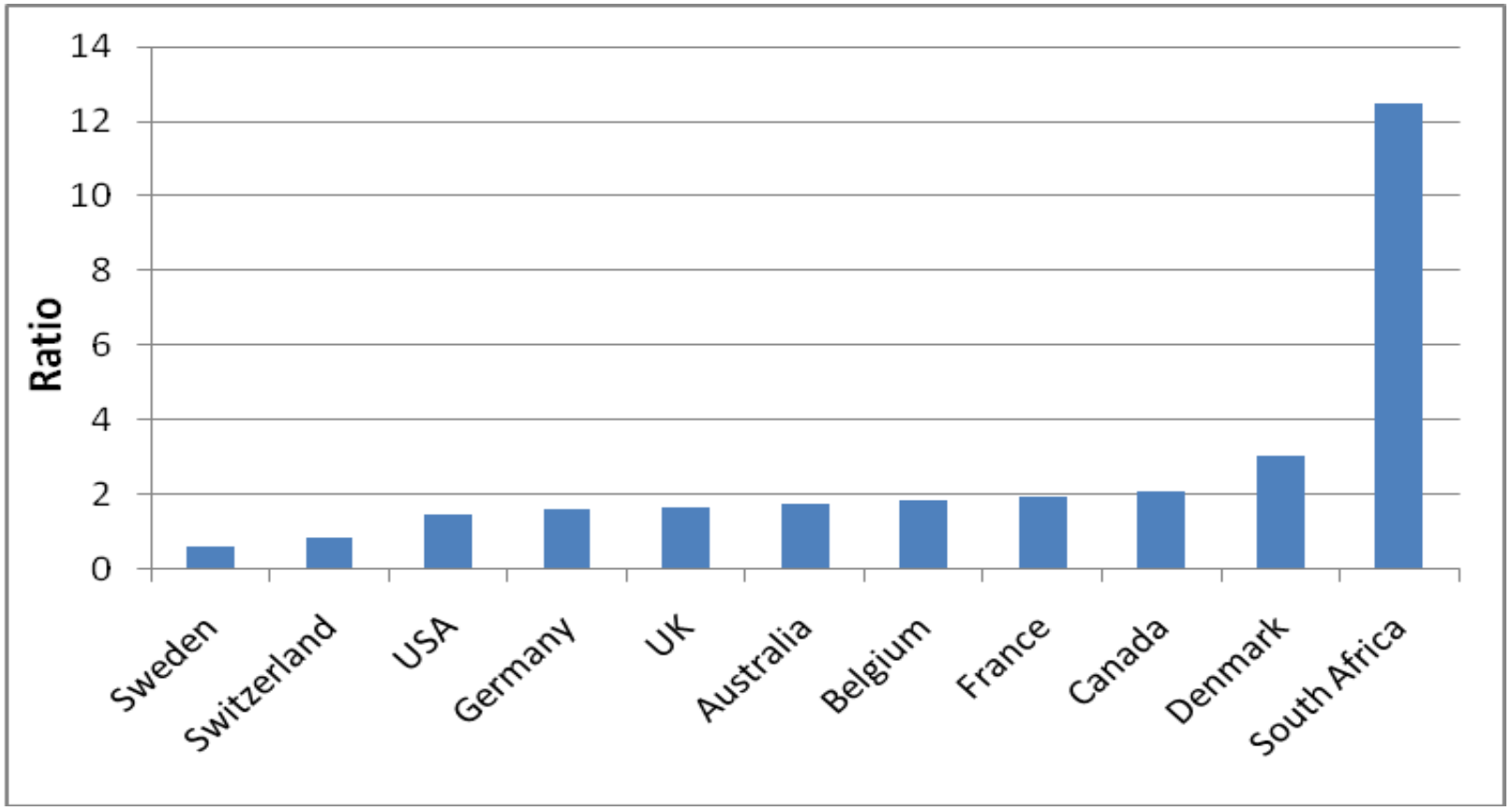
Fatal crashes involving a truck by rural or urban location



Number of persons killed in truck crashes per 100 million km travelled 2005



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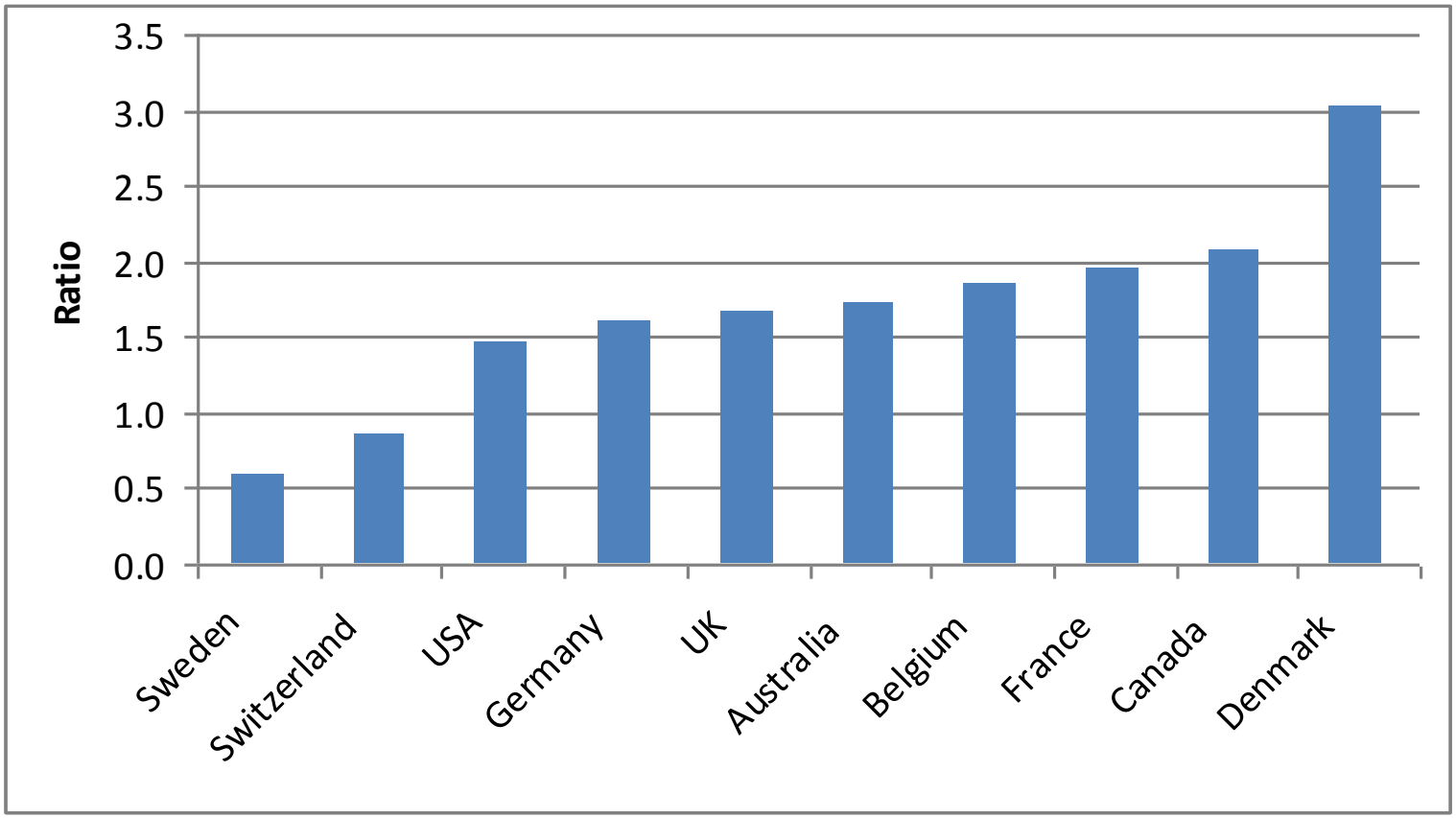
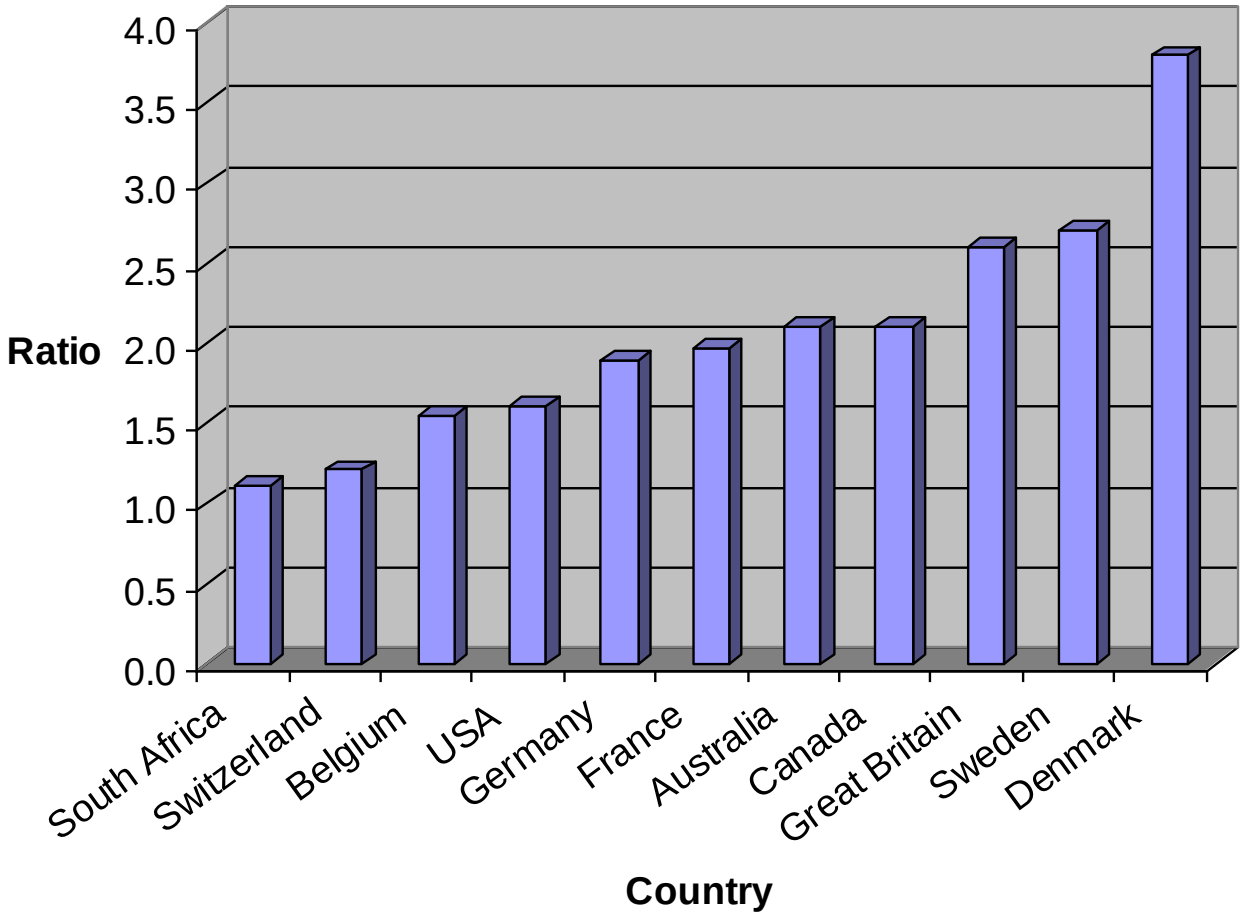


Fatalities in truck crashes (per 100 million vkt) 2005 vs 1998

	Fatalities per 100 million vehicle kilometres travelled	
Year	**1998**	**2005**
Australia	2.5 (1996)	1.7
Canada	2.1	2.1
France	4.4 (1995)	2.0
USA	1.7	1.5
Germany	2.2	1.5 (2006)
Great Britain	2.1	1.7
Sweden	3.1	1.6

Ratio of fatalities per 100 million vkt trucks vs all vehicles 2005



Ratio of fatality rates 2005 vs 1998

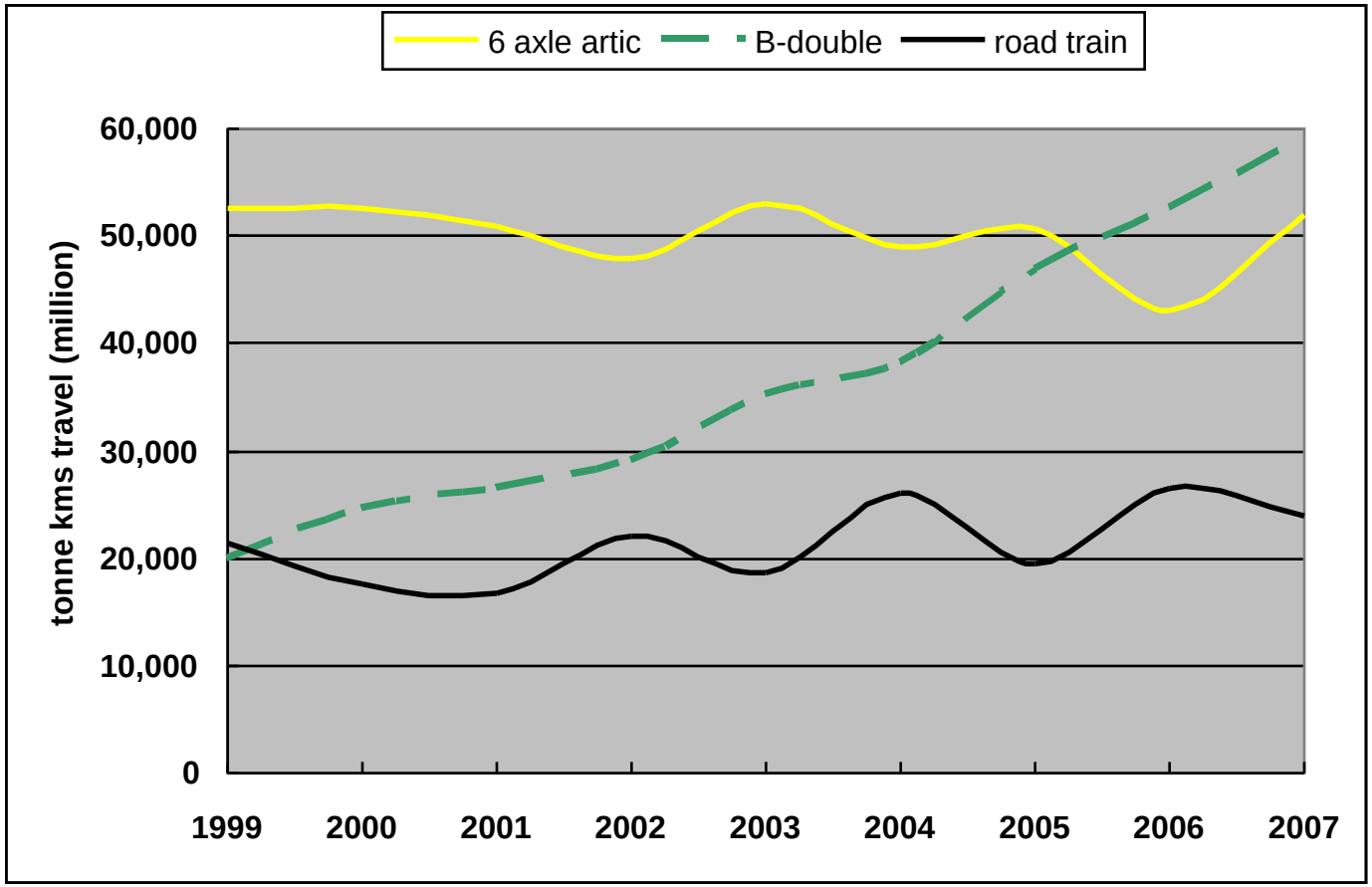
	Ratio of fatality rates for fatal crashes involving trucks: all fatal crashes	
Year	**1998**	**2005**
Australia	2.1 (1996)	2.1
Canada	2.2	2.3
France	1.5 (1995)	2.0
USA	1.7	1.6
Germany	1.8	1.9 (2006)
Great Britain	2.8	2.6
Sweden	3.9	2.7

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)

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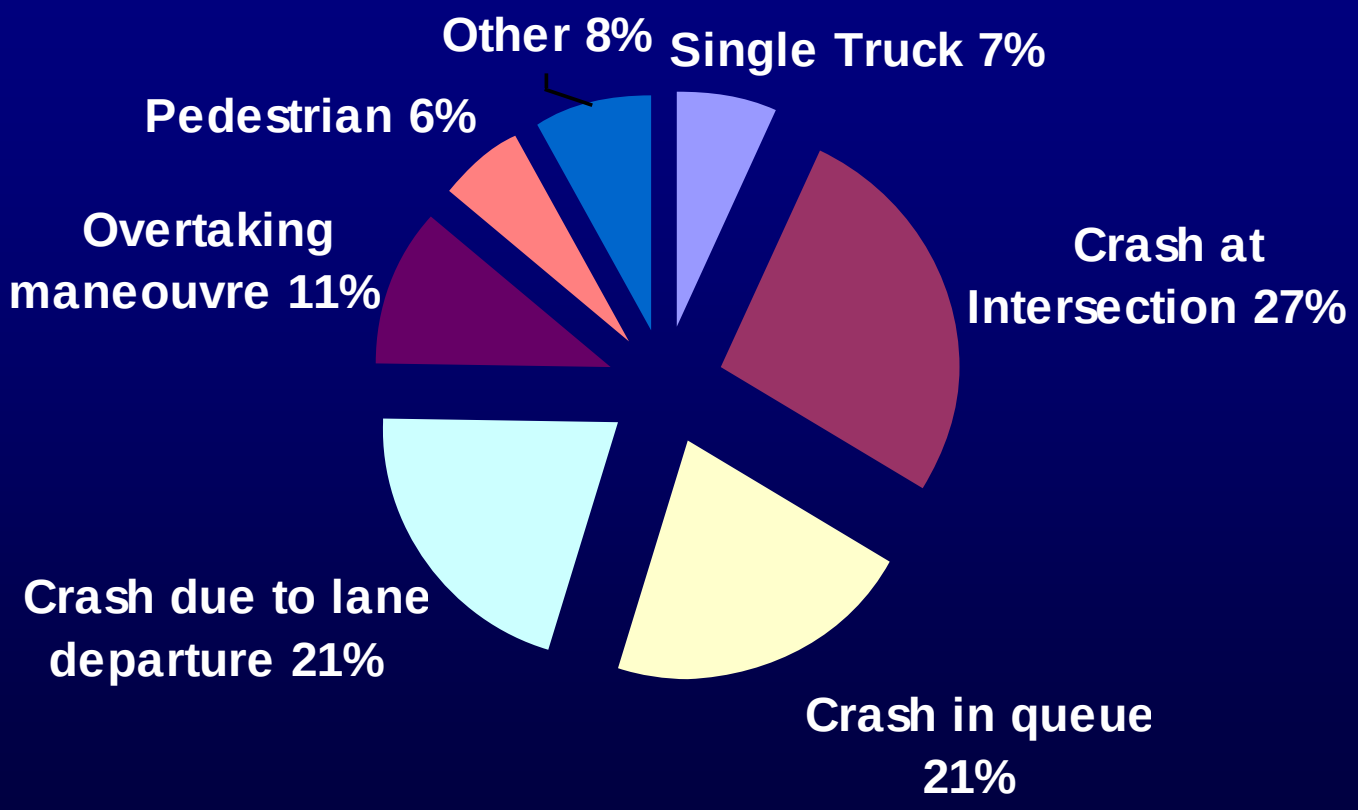
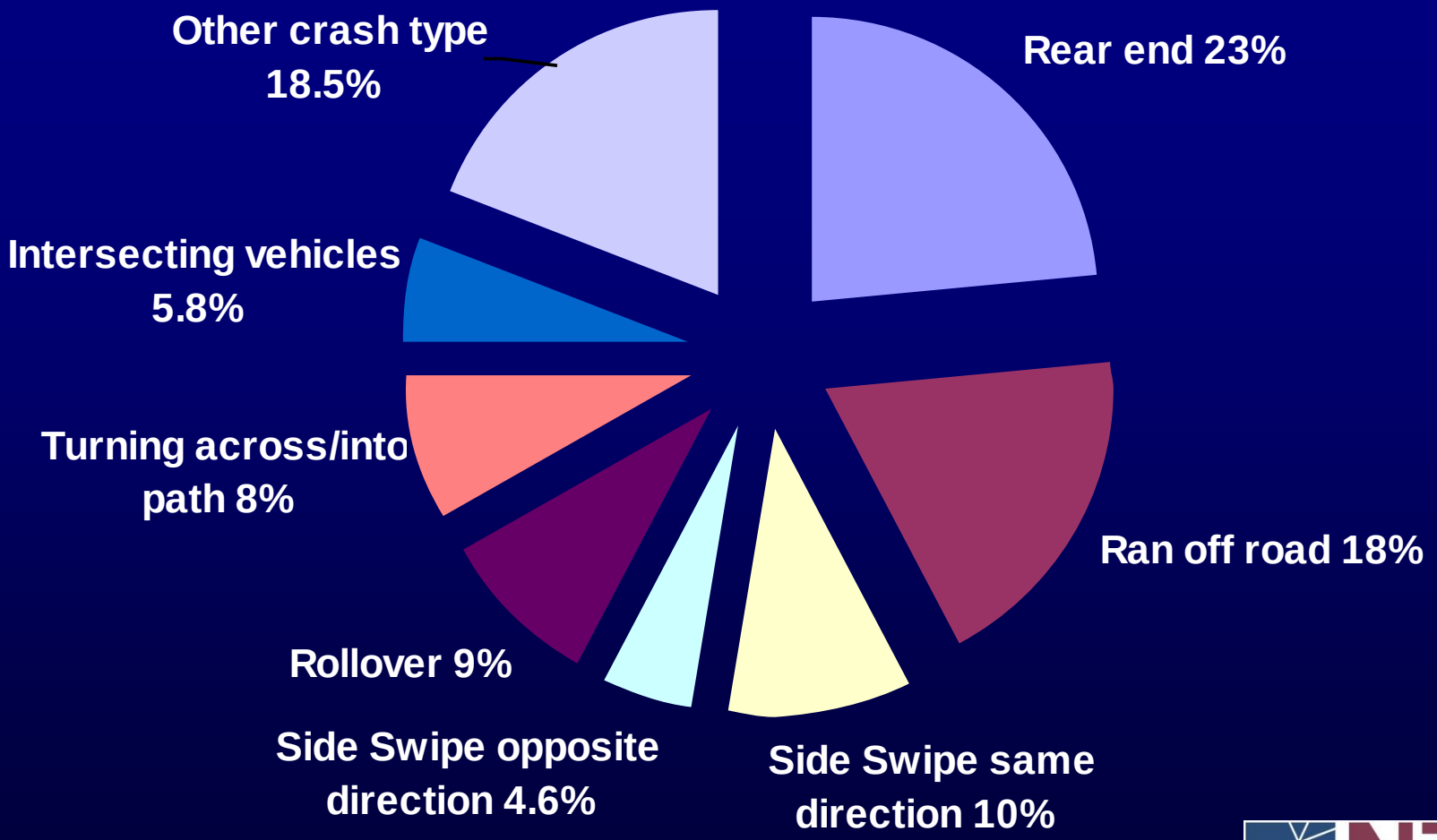
Truck Crash Types (European)



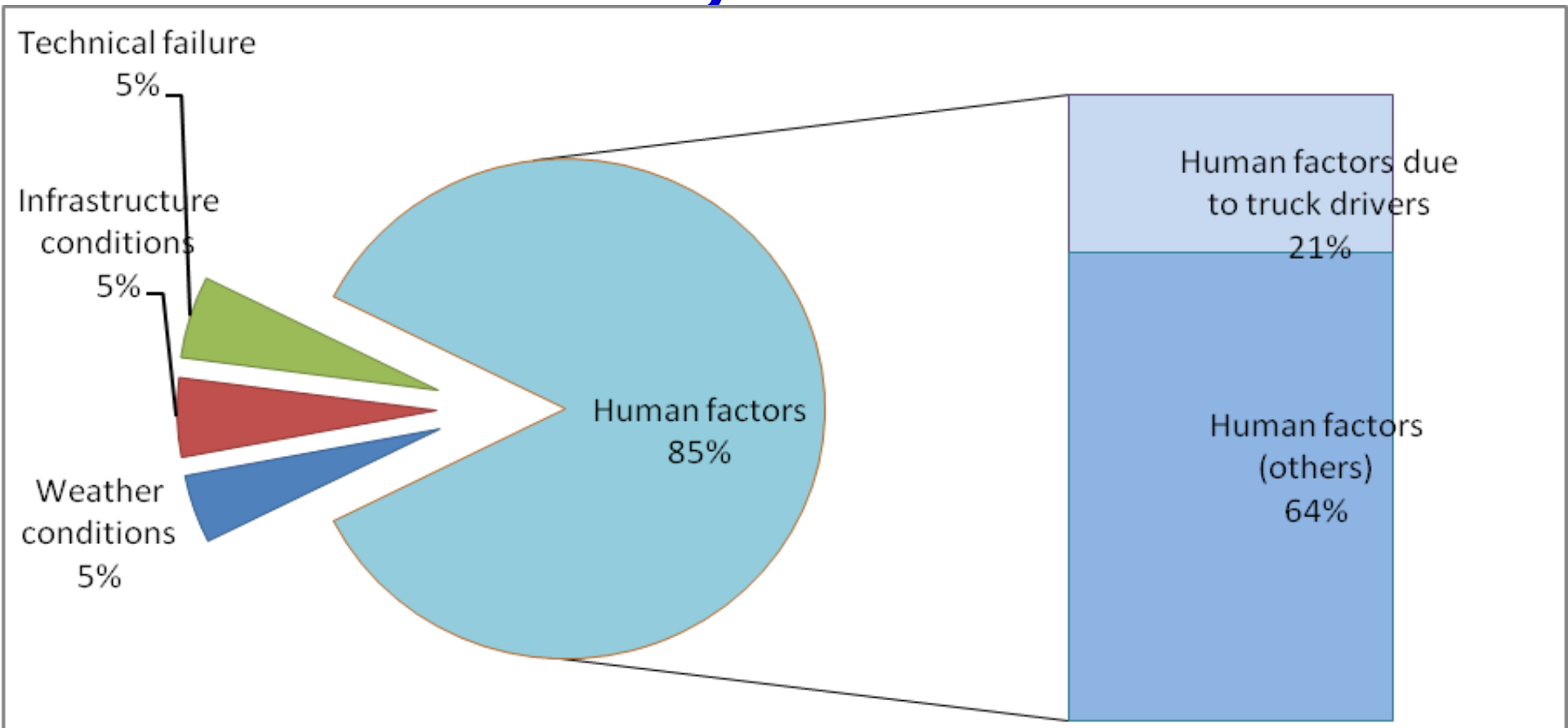
Source: IRU *European Truck Accident Causation Study* (2007)

Truck Crash Types (North American)



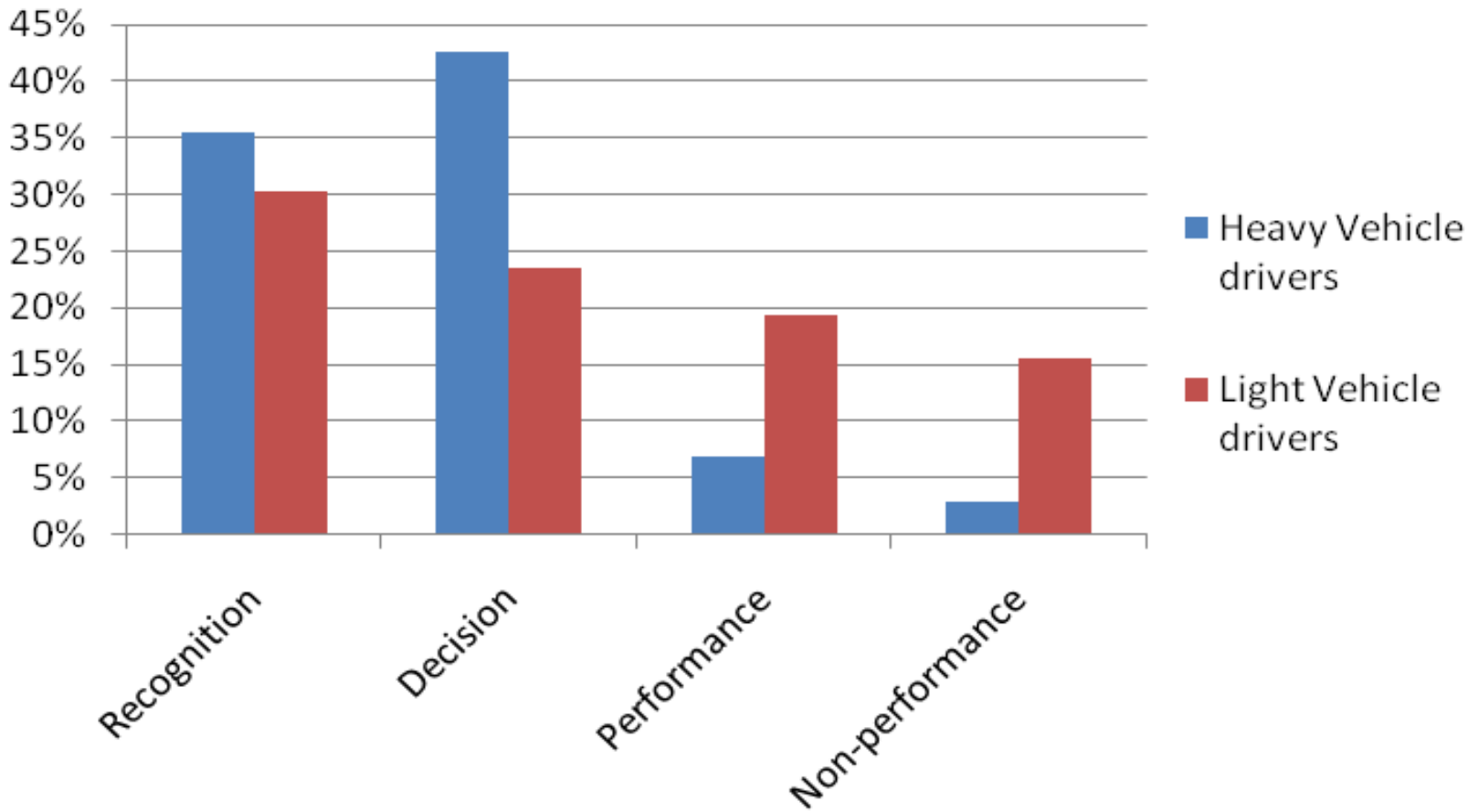
Source: FMCSA *Large Truck Crash Causation Study* (2007)

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.

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