

# Major Accident Investigation



## Analysis of serious Australian truck accidents recorded in 2005

**NATIONAL CENTRE FOR TRUCK ACCIDENT RESEARCH  
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**Heavy Vehicle Losses > A\$50,000**

**Author: Owen P. Driscoll  
Manager – Industry Affairs & Customer Relations  
National Transport Insurance  
Head Office, Springwood Qld.  
Australia  
[nctar@nti.com.au](mailto:nctar@nti.com.au)**



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## Introduction

National Transport Insurance (NTI) is Australia's largest truck insurance specialist. NTI provides insurance, risk management, claims & assessing management services to the road transport industry.

NTI insures more than 98,000 items of plant & equipment having an insured asset value of A\$6.7B. Since 2002 NTI has settled 24,500 reported losses with claims payments exceeding A\$336.7M.

This research into major losses in 2005 follows an inaugural paper completed on major losses recorded 1998 / 2002 and a subsequent study in 2003.

During the 2005 year 404 major incidents (being equipment and property loss greater than \$50,000) were reported at a cost of A\$47.4M. There was a 34.6% increase in the number of major incidents than those researched in the 2003 period.

Insofar as portfolio growth, from 2003, NTI insured 81,589 items which increased to 91,674 by end 2005. Representing a growth of 12.3% in numbers and thus an increase of 21.3% in real terms, of major crashes. Accident frequency rates (all claims reported) remained constant at 6.6% while the average cost of claim increased by 3.9% to A\$15,252.

Losses in relation to freight cargo, worker's compensation / personal injury are not included.

This research does focus on heavy vehicle accidents in the Hire & Reward freight sector with vehicles having a payload exceeding 5 tonnes.



# Investigating & Reviewing Evidence

For the purpose of this research, investigators gather and evaluate a wide variety of evidence. Such information is extracted by the following means:

- 24 hour accident assist national support centre (89% of all incidents reported via this medium)
- Claim forms & accident reports
- Police reports
- Independent investigators
- Interviews with repair managers, claims personnel, drivers, owners, risk managers & witnesses
- On scene crash recovery operators

Additionally, proxy/surrogate measures are factored into accident investigations with consideration of single vehicle accidents (SVA), time of day, time at task, freight task etc.



## Definitions

The new research studies the following criteria in each and every incident:

Criteria	Issues under review
Accident Date	Review worst performing months and compare with past studies
Day of Week	Review worst performing days and compare with past studies
Accident Time	Review driver rosters and freight schedules
Accident Place	Identification of road network
Accident State/Territory	State agencies – road & infrastructure funding
Freight on Board	Loading & load restraint
Solo/2 Up Driving	Associated risk factors - Team selection
Vehicle Configuration	Comparison Rigid/Semi/Multi Combination
Inbound/Outbound Journey	Fitness for Duty, Driver management
Single Vehicle Accident	Fatigue, speed management, fitness for duty
Distance from Departure Point	Fatigue, speed management, fitness for duty
Drivers Age	Age bracket, freight task comparison

# Summary of Findings 2005

- Fatigue and inappropriate speed for the prevailing conditions were found to be responsible for more than 1 in 2 serious truck crashes (57.1%).
- With 18% of losses, Tuesday the worst day.
- March & April found to be the worst months for major incidents.
- The worst time of day 1100–1200 hours.
- Semi Trailers disproportionately overrepresented with 60% on major incident albeit they are only responsible for 46% of the freight task. (Loaded tonne/kilms.) (NTC Freight task analysis 2006).
- In 75.2% of serious truck crashes, no other vehicle is involved.
- In 79.4% of serious truck crashes, the vehicle was within 500 kilms of point of departure.
- In 75.1% of serious truck crashes, the vehicle was involved in an outbound journey from home base.
- In 24.8% of serious crashes where other vehicles were involved, the truck driver was totally responsible in 61.6% of the incidents.

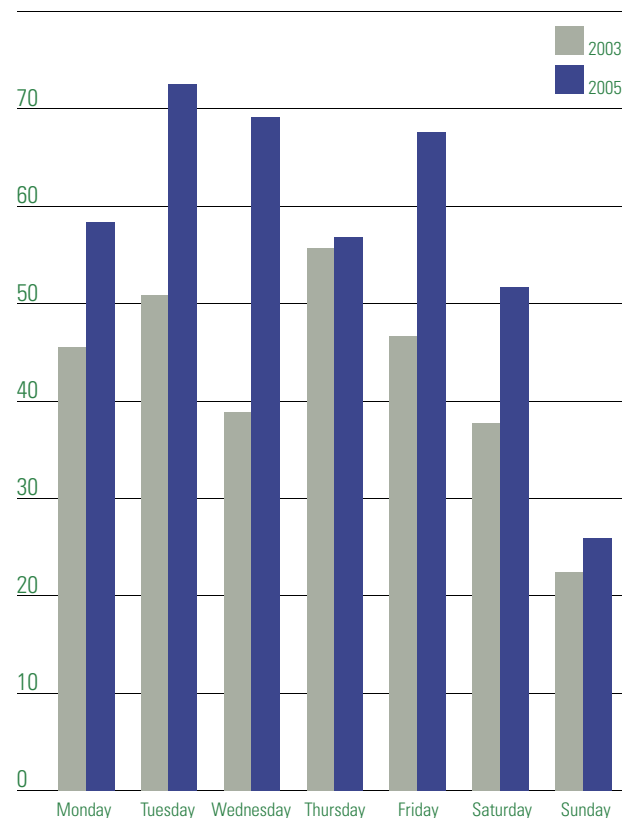
## Comparison of Findings (Common) 2003 / 2005

- In real terms a 21.3% increase in the number of serious heavy vehicle crashes (damage > \$50,000) when comparing the 2005 study to the 2003 study.
- As found in 2003, NSW is the worst State with 35.9% of serious crashes. Pacific Highway NSW again recording most incidents with fewer incidents recorded on the Hume. Results on the Bruce Highway appear to be deteriorating.
- Fatigue and inappropriate speed for the prevailing conditions were again the major cause.
- The first quarter is the worst time for major truck crashes.
- 3 out of 4 serious crashes are single vehicle incidents.
- 3 out of 4 serious crashes are on outbound trips.
- 3 out of 4 serious crashes are within 500 kms from point of departure.
- Pacific Highway – Brisbane / Newcastle most reported major crashes in both studies.

# Accident DAY

Information processed and analysed in the 2005 study found that the worst day was Tuesday with 18% of major incidents occurring on this day. Tuesday was marginally worst than Wednesday and Friday in this research.

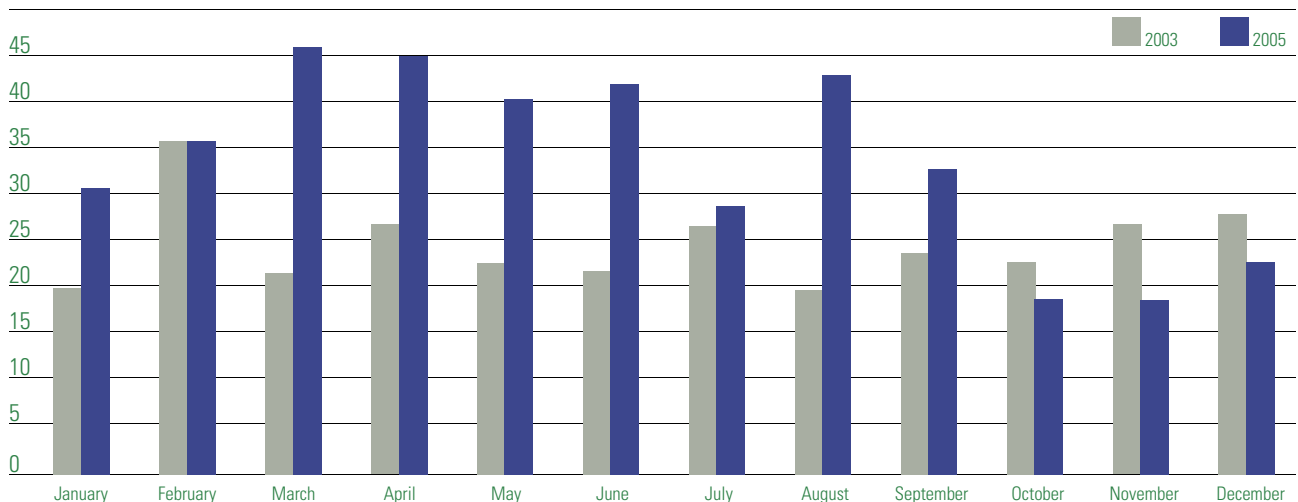
The 2003 study found that Thursday was the worst day with 18.6% of serious incidents reported. The study found no relevance to the day of loss given the 24/7 nature of the task and the lack of uniformity on where an individuals week would commence or end. Obviously the conventional weekend accounted for fewer incidents.



# Accident MONTH

Information processed and analysed in the 2005 study found that the worst month was March with 11.3% of major incidents occurring in this period. April was next worst with 11.1%. Quietest months for major incidents were October & November.

The 2003 study found that February was the worst month with 12% of serious incidents reported. This would suggest that the first quarter is of most concern once the Australian fleet returns to full operational duties following a January break.

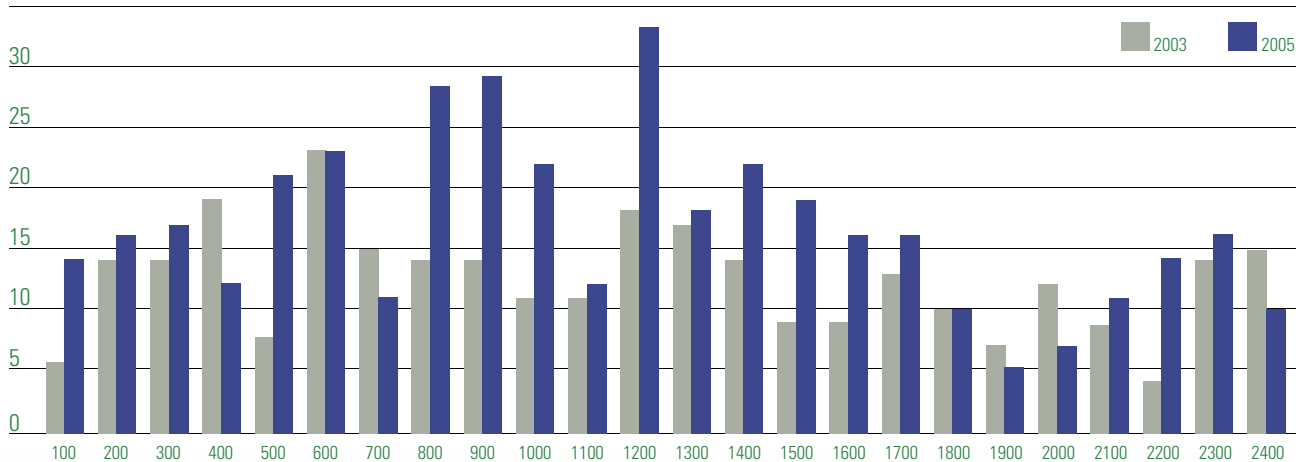




# Accident TIME

Information processed and analysed in the 2005 study found that the worst time of day was between 1100 – 1200 hours. This differed from the earlier study which found the most dangerous period to be between 500 – 600 hours.

In the 2003 study 20.3% of major incidents occurred between Midnight and 600 hours with 25.4% in this time zone for the 2005 period. The finding in the 2005 study indicating the worst period from 1100 – 1300 confirms that the vehicle population, on road, is greatest at this time.



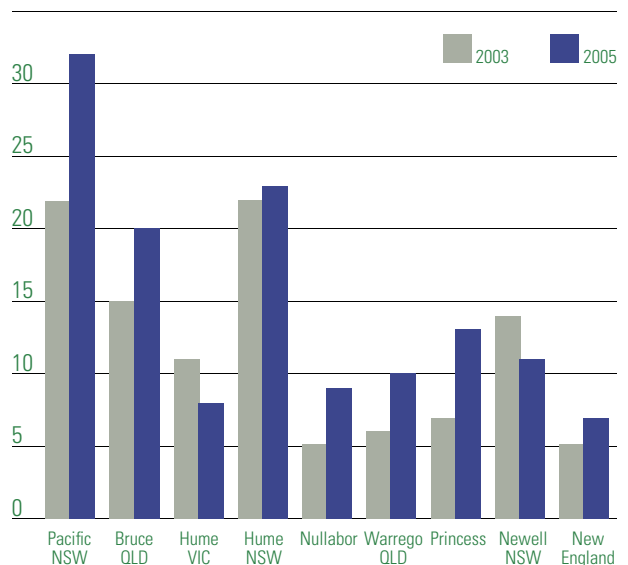
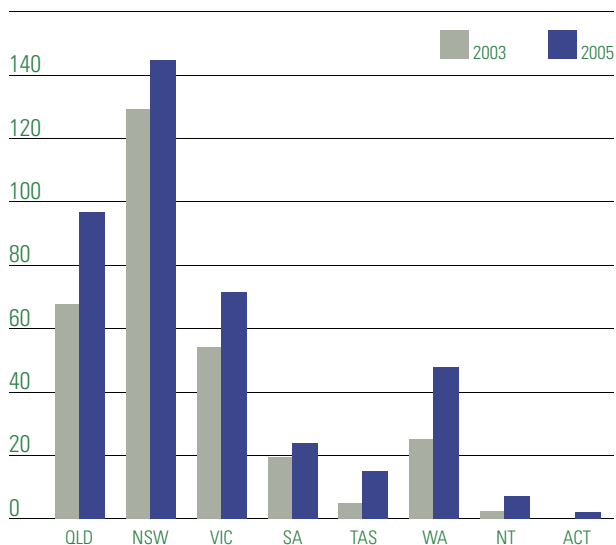
# Accident LOCATION

Research into major incidents in the 2005 study found that 35.9% occurred in NSW (43.4% 2003), 23.8% in QLD. (22.7% in 2003), 17.6% in VIC. (17.7% 2003) and 11.6% in WA (8.1% 2003). Major recorded incidents in Tasmania, ACT and NT were minimal.

Given that 29.2% of road freight movements move in or through NSW, the major incident result is not

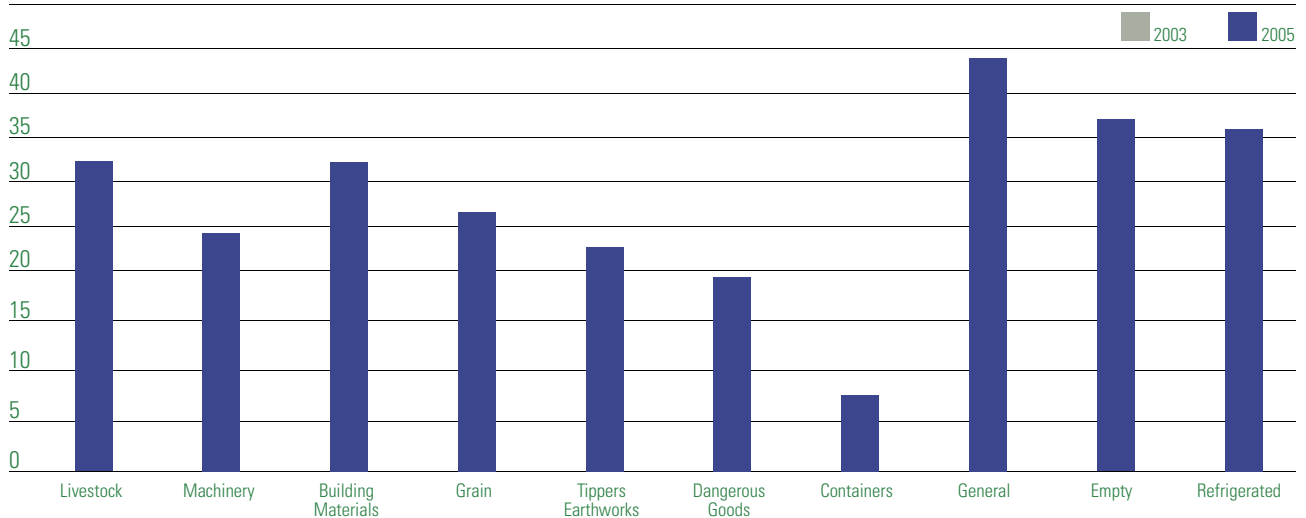
surprising. (ABS 9220.0 Freight Movements March 2001).

The Pacific Highway (NSW) registered more major incidents than any other section of the road network with 5.6% of crashes in the 2005 as against 7.3% in 2003. Improved results were recorded on the Hume Highway in both NSW & VIC. Results deteriorated with incidents recorded on the Bruce Highway QLD.



# Accident FREIGHT ON BOARD

Research into major incidents in the 2005 study found that freight onboard at time of major incidents was predominately GENERAL at 10.8%, followed by refrigerated, livestock and building products. In 9.1% of losses the vehicles were empty.

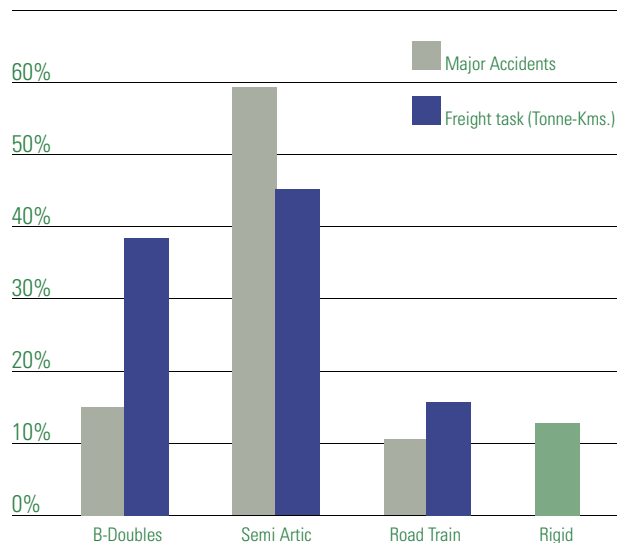


# Accident VEHICLE CONFIGURATION

Vehicle configuration was introduced into NTI's research into major incidents in the 2005 period. Such criterion has evolved with the growing utilisation of multi-combination equipment and indicators that there will be longer and heavier combinations as the freight task escalates and driver shortages continue to influence the Australian logistics chain.

Insofar as the freight task is concerned in consideration of (Articulated) tonne-kilms travelled Semi-trailers carry 46% of all freight with B-Doubles 39% with the residual moved by Roadtrains. (NTC Freight Analysis 2006). Semi trailers are disproportionately over represented where they register 60% of major incidents whilst managing 46% of the freight task. As would be expected B-Doubles return better results with 15.6% of serious

accidents. This of course can be attributed to the fact that B-Doubles are newer, better maintained, with experienced and highly trained drivers using the best of the road network.



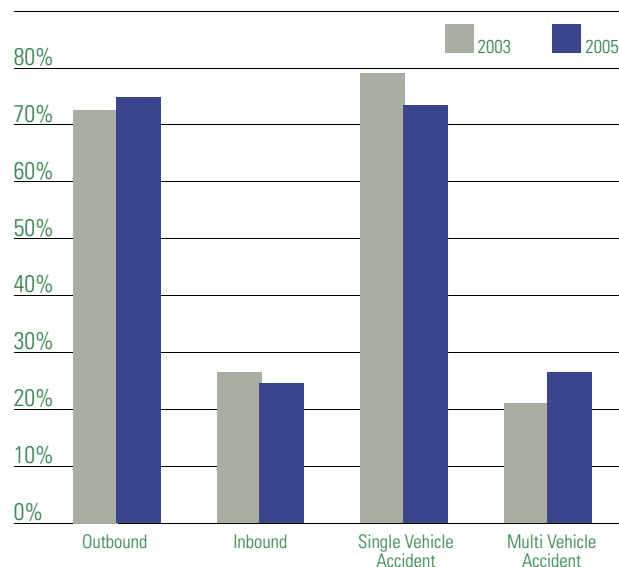
# Accident INBOUND / OUTBOUND JOURNEY – Single Vehicle Accidents

Research into the aspect of whether a journey is inbound or outbound ultimately establishes, from a fatigue management criterion, the general health and well being of the driver during the course of his/her work program. Confirming the 2003 study, it has again been found that the greater majority of severe incidents occur on outbound trips and ironically not on the return journey where the expectation would be that the driver has 'grown' fatigue on the journey.

2005, 75.1% of major crashes occurred on outbound journeys. 2003, research found 73.1%.

Yet another indicator that fatigue has influenced a major crash incident is that of research findings into single vehicle accidents. In 75.2% (NTI Accident Management 2006) of cases no other vehicle was found to be involved. Further, the study has identified that in 2.7% of major incidents a two up

driver team was in place. Given that it is estimated that 4% of transport operations involve such work teams, the result is consistent.

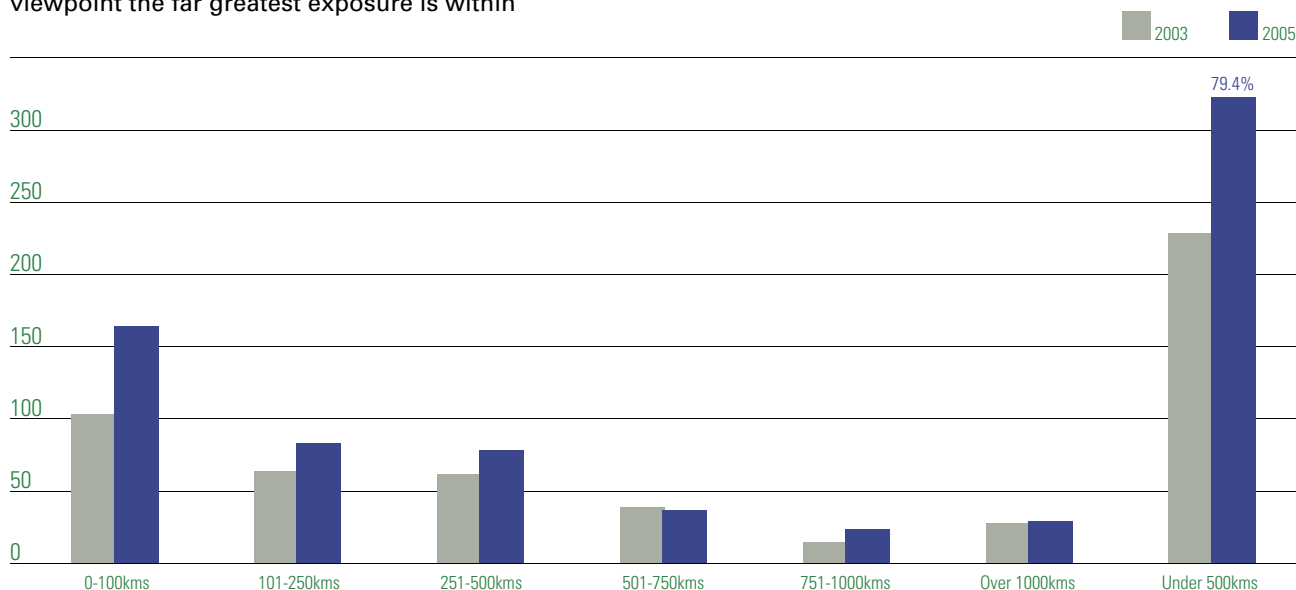


# Accident Distance from Point of Departure

In the 2003 study it was established that 74.8% of major crash incidents occurred within 500 klms. of the point of departure. The 2005 research confirmed the earlier finding when investigations established that 79.4% were within 500 klms.

Such information also confirms that from a fatigue viewpoint the far greatest exposure is within

the initial 5 – 6 hours of a journey and thus the importance of strictly monitoring 'Fitness for Duty'. This result also brings to question the relevance of regulated driving hours and not a comprehensive focus on driver fatigue management programs.



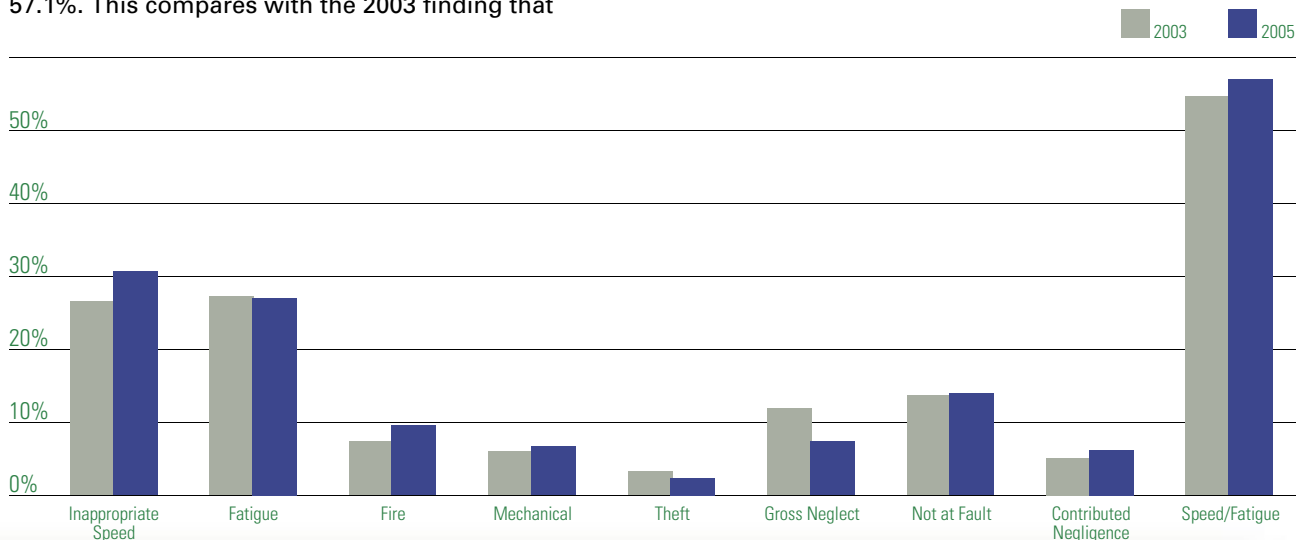


# Accident Cause: Investigation FINDING

This chapter of the study evaluates 'Accident Cause' irrespective of that alleged by the driver at the time of the incident. As in 2003, this most recent research has found inappropriate speed for the prevailing conditions and fatigue to be the primary factor when establishing cause. In 2005, the research identifies speed 29.8% and fatigue 27.3% as the predominant finding with composite results of 57.1%. This compares with the 2003 finding that

52.6% of serious heavy vehicle crashes emanating from these two criterions.

Vehicle theft continued to be insignificant whilst there has been a marginal increase in fire losses. In 24.8% of serious crashes, other vehicles were involved, with the heavy vehicle totally responsible in 61.6% of incidents.



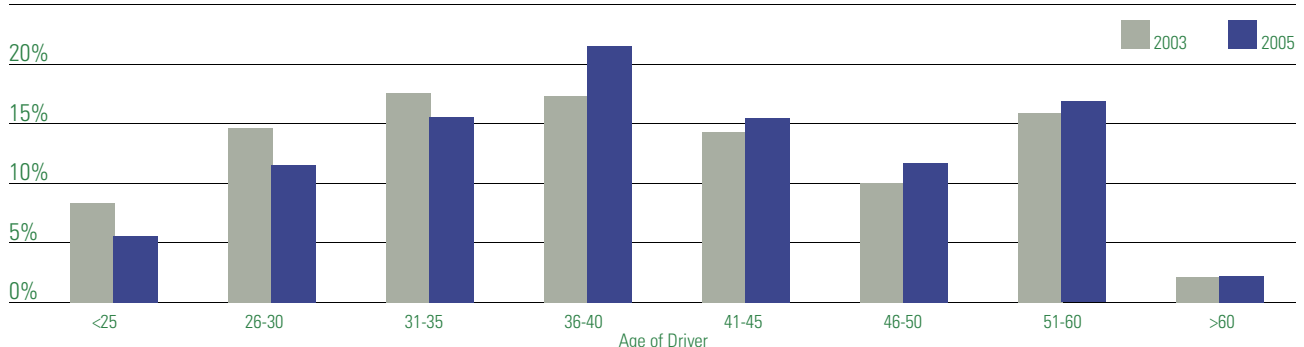
# Accident Rate: Age of Driver

Research into major incidents in the 2005 study found that drivers under the age of 35 were involved in fewer accidents proportionally than that found in the investigation conducted on the 2003 crash database.

Drivers over the age of 35 were involved in higher proportions when comparing the studies but this could obviously be attributed to the fact that the average age of all heavy vehicle drivers has

escalated to 52 years.

Although it could be argued that many insurers desist from the practice of accepting drivers under the age of 25 years, NTI for some time has guardedly supported the acceptance of younger drivers which would suggest that those accepted under 'managed & monitored' apprenticeships are returning improved results. Less than 20% of serious incidents involve drivers under the age of 30 years.



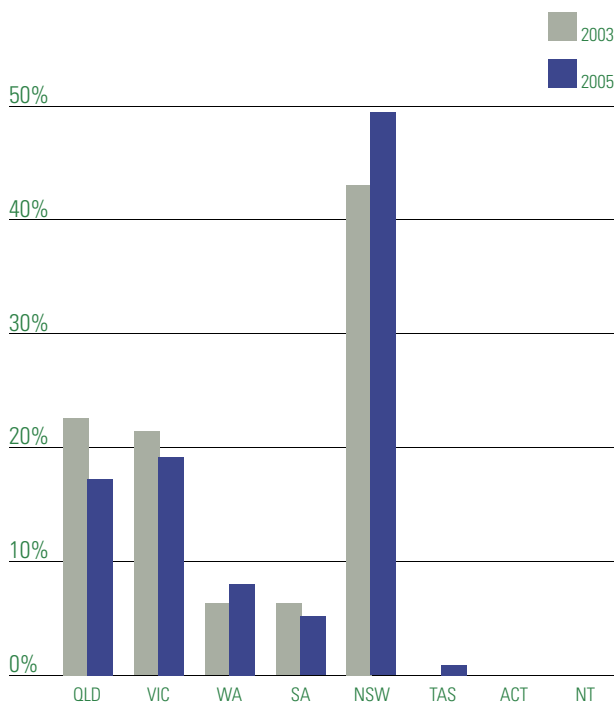
# Accident: Focus on FATIGUE

In 27.3% of major incidents in the 2005 study, FATIGUE was found to be the dominant cause in comparison the 2003 research where the result was 26.4%. 73.8% occurred on outbound journeys with 69.6% in the prior study. Worst days in 2005 were Tuesdays and Fridays (Thursday in 2003) with Sunday being the lightest day in each study.

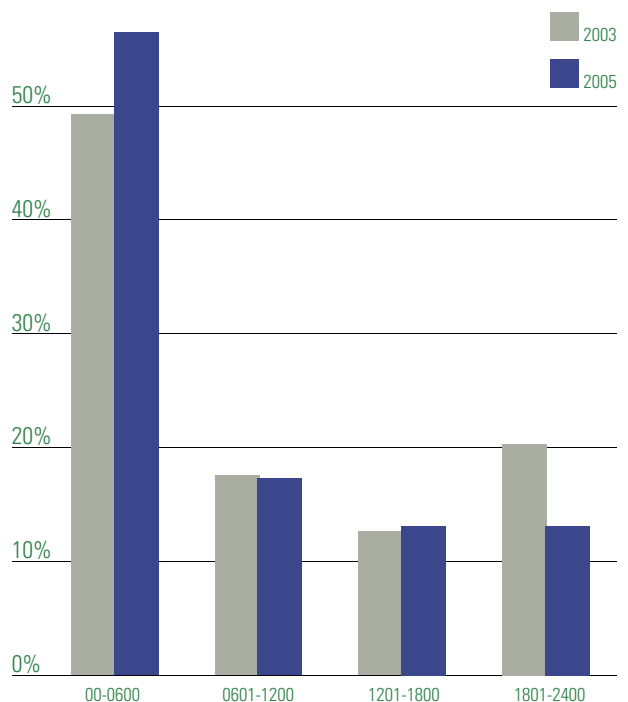
Between 45 & 50% of all fatigue related incidents across both studies occur in the State of NSW.

In the 2005 research 63.6% of fatigue losses occurred within 500 klms. from point of departure with 56.9% in the 2003 study. The average age of drivers involved varied marginally from 36.75 years (2003) to 40.56 years (2005), simply confirming that the driver pool is aging.

Accident Location by State  
Major Fatigue Related Crashes



Accident Time of Day  
Major Fatigue Related Crashes



# Accident: Focus on Inappropriate Speed

In 27.3% of major incidents in the 2005 study, INAPPROPRIATE SPEED for the prevailing conditions was found to be the dominant cause in comparison the 2003 research where the result was 26.1%.

79.6% occurred on outbound journeys with 70.8% in the prior study.

NSW again led the result with 30.5% (29.2% freight movement) of incidents followed by Queensland

with 26.8% & 27.9% of the freight task. TASMANIA was overrepresented with 9.2%. (Tasmania accounts for 2.6% of the road freight task - ABS 9220.0 Freight movements, March 2001.)

In 65.7% of incidents in the 2005 research, vehicles rolled over at corners or round-a-bouts, with jack-knives prominent at 12.3%. Semi trailers had 69.4% of speed related incidents.

# Conclusions

In 2002 National Transport Insurance conducted an inaugural study into serious truck crashes focusing on incidents during the period from 1998 to 2002. A subsequent research study was conducted during 2004 investigating serious incidents for the 2003 period.

This recently finalised study of major truck incidents analyses heavy truck crash data for 2005.

Consistent throughout all research was the finding that inappropriate speed for the prevailing conditions

and driver fatigue the dominant cause in over 50% of serious truck crashes. This involved material damage in excess of A\$50,000 per accident and did not include losses in relation to freight, worker's compensation and personal injury.

In real terms since 2003 serious truck crashes, on the NTI portfolio, have increased by 21.3% although the average cost of claim has only increased 3.9% or marginally to A\$15,252.

# About the Author

OWEN DRISCOLL

Manager, Industry Affairs & Customer Relations  
National Transport Insurance. Australia & New Zealand.

Conducted the inaugural research study into severe truck crashes for the 2003 and published findings.

33 years experience road transport insurance sector and a founding member of NTI. Advisor on safety and risk management programs and facilitator of accident research and training systems. He has held executive positions with NTI in areas of

administration, underwriting operations and risk management.

Mr Driscoll has undertaken undergraduate studies in accident investigation, workplace law and logistics management at Deakin and postgraduate training with the Australian & New Zealand Institute of Insurance & Finance.

He is currently a Director and the Deputy Chairperson of the industry accreditation program, TruckSafe Pty. Ltd.

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