



***nti* NTARC**

# **MAJOR ACCIDENT INVESTIGATION**

**2021 REPORT** Covering major incidents in 2020



**Chris Hogarty**  
Chief Sustainability  
Officer, NTI.

## FOREWORD

2020 was the year the Transport Industry touched the lives of all Australians and had its status as an essential service cemented by the Federal and State governments.

COVID-19 saw a significant increase in freight and logistics demand - from full supermarket shelves to parcel deliveries to our homes. Businesses and households alike shifted to what became the 'new norm' when it came to getting stock of everyday items.

What we saw on the back of that was nothing short of remarkable; an Industry that rose to the challenge, professionally and consistently to keep the country running.

We hypothesized the findings would show us something different this year, and that they did. Even with more trucks on the road and unforeseen logistical challenges for the industry - we've continued to see positive trends.

This the 10th edition of the NTARC Major Accident Report also presents the opportunity step back and take a look at the trends and shifts we've seen since the first report in 2003:

- 55% increase in trucks on road (640,651)
- 51% increase in road freight volumes (224.6b tonne per kilometer)
- A continuous stream of investment by Industry into safety, technology, professional development and leadership

With all this in mind, now isn't the time to be complacent. As the report identifies - our current environment presents even further opportunities for the Industry to improve, not only for ourselves but for the betterment of all Australians.

# CONTENTS

- 2. Foreword
- 4. From the Author
- 5. Key Findings
- 6. Introduction
- 8. COVID-19
- 9. In Depth
- 9. Inappropriate speed
- 11. Driver Error
- 12. Inattention/Distraction
- 13. Inadequate Following Distance
- 14. Fatigue
- 15. Truck Occupant Deaths
- 17. Car and Truck Crashes
- 21. Bibliography



**“78.3%  
OF FATAL  
CRASHES  
INVOLVING A  
TRUCK AND A  
CAR, THE CAR  
WAS THE AT-  
FAULT PARTY.”**



## FROM THE AUTHOR

The past 24 months has been exceptionally challenging for the Australian road transport industry...

2019 was marked by the greatest loss of life of truck occupants in road crashes seen for a decade... (a spike in trend which thankfully did not continue into 2020), while as a result of the global COVID-19 pandemic, 2020 saw transport face significant disruption and long overdue recognition of its essential status.

In light of this, after nearly 20 years of reporting on the shape and scale of the problem, NTARC is evolving to take a more proactive role in influencing outcomes and leading positive change.

After shifting to an annual report in 2020, and reporting on data from the calendar year immediately prior, 2021 sees another change for NTARC, further reflecting the value of our data and demonstrating our commitment to making Australian roads, and the Australian road transport industry, a safer place to work and be.

So what does this mean?

While the NTARC Major Accident Investigation report will continue to be the preeminent data reference for industry and government alike, there will be far more follow-up than in prior years. Our objective is to trigger and support a conversation within industry, identify what is already being done to manage the risks in transport, and determine how we - as an industry - can roll that out on a broader scale.

Australia has the potential to lay claim to the greatest road transport industry in the world. NTARC has a commitment to helping make this happen.



## KEY FINDINGS

- 1** Likely as a result of Covid-19, the overall frequency of large loss (>\$50k) crashes involving heavy vehicles declined in 2020.
- 2** Fatigue crashes continued their long-term decline with the lowest ever proportion of large losses caused by fatigue.
- 3** Inappropriate Speed and Driver Error Crashes continue to be a serious concern with 54.5% of all large loss crashes in 2020 caused by these two factors.
- 4** After a tragic increase in 2019, truck occupant crash deaths dropped to a level slightly below the long term averages with 31 truck occupants (and 1 bus occupant) losing their lives in crashes in 2020.
- 5** Inattention/Distraction crashes continued to increase, 15.4% of large loss crashes were attributed to Inattention/Distraction making it the cause of more large losses than fatigue and mechanical failure combined.
- 6** Inadequate Following Distance caused nearly one in ten (9.3%) of large losses, with 96.2% of these incidents involving nose-to-tail crashes with other vehicles.
- 7** Consistent with previous years, in nearly 8 out of every 10 (78.3%) fatal crashes involving a truck and a car, the car was the at-fault party.

# INTRODUCTION

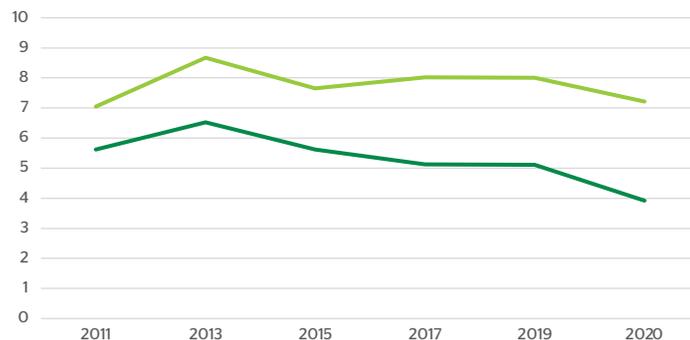
This report marks the 10th edition in this research series; the inaugural report published in 2003, followed by biennial releases until 2019 and then a shift to annual publication in 2020.

In that that timeframe, the Australian road freight task has increased by over 50% and the size of NTI's insured portfolio of trucks has more than tripled in number.

With a fixed threshold for inclusion of \$50,000, the number of incidents in-scope for this report grows consistently year-on-year due to a combination of growth in freight task, growth in NTI's insured portfolio and the effect of inflation increase the cost of claims.

Almost certainly as a result of COVID-19 (discussed below), this trend experienced a brief pause in 2020, with 852 incidents resulting in claims over \$50,000, an increase of only four claims over the 848 recorded in 2019 despite around an 11.4% increase in the number of trucks in NTI's portfolio.

## LARGE LOSS FREQUENCY



- LARGE LOSS FREQUENCY (LARGE LOSS CRASHES PER 1000 POWERED UNITS)
- LARGE LOSS FREQUENCY CORRECTED FOR INFLATION (LARGE LOSS CRASHES PER 1000 POWERED UNITS)

This resulted in a decrease in the frequency of losses per truck and this becomes more prominent once the \$50,000 threshold to be in-scope is corrected for inflation (\$73,527 in 2003 dollars).

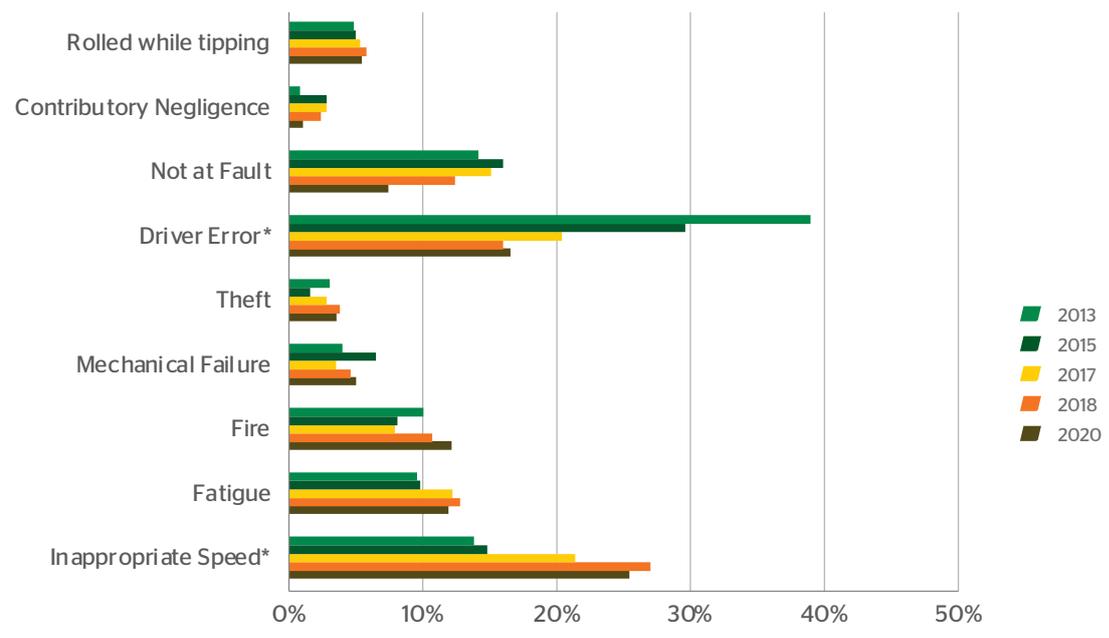


# “AUSTRALIAN ROAD FREIGHT HAS INCREASED BY OVER 50%”

The general distribution of claims by cause did not vary dramatically from recent years, with the most significant changes being a continued increase in Driver Error losses and a small increase in Mechanical Failure losses.

On a positive note, Fatigue losses decreased, continuing a longer term downwards trend which plateaued in 2019.

## INCIDENT CAUSE

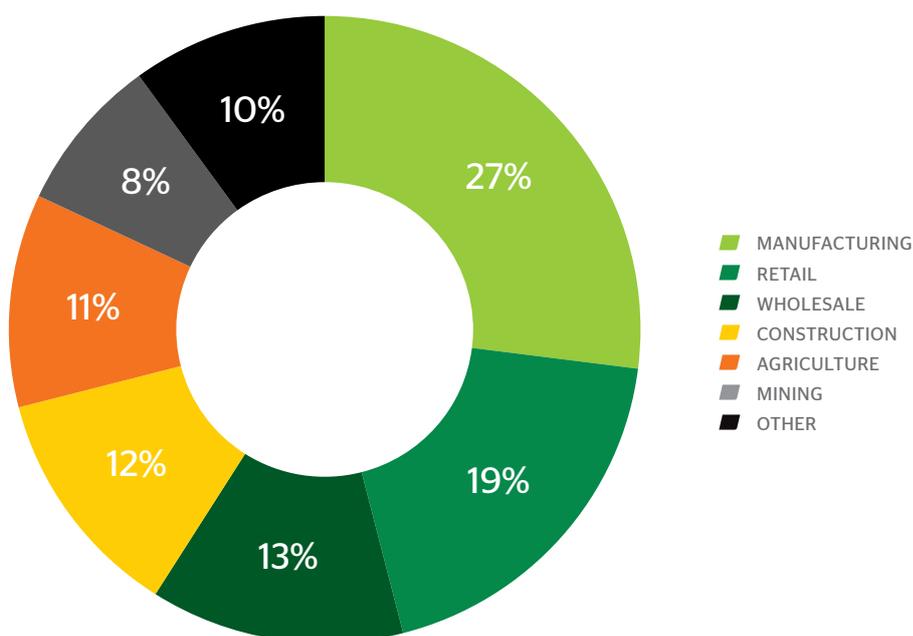


## COVID-19

As a result of COVID-19 2020 was the most disrupted year since at least the Second World War. While spared the worst impacts of the pandemic due to our island geography and proactive health and quarantine responses, the impacts on the Australian economy and society were still significant.

The totality of the impact on the road transport sector remains unclear and will undoubtedly be the subject of ongoing study for years to come, however a few general observations which relate to the NTARC research are possible.

### ROAD FREIGHT BY COMMODITY (NTC 2016)



Beyond the initial uncertainty and disruption through March and April 2020, most commodities which make up the road freight task were not directly disrupted by the pandemic. While freight supporting international tourism or live entertainment would have dramatically reduced, it does not make up a significant portion of the overall freight task.

**“WITH REDUCED CAR TRAFFIC IN THE PANDEMIC, MULTI-VEHICLE CRASH FREQUENCY DECLINED BY OVER 16%”**

Where COVID-19 has had a significant impact on road freight and road safety outcomes is through a significant reduction in light vehicle traffic volumes. Using data from Transport for NSW's for traffic volume on the Pacific Highway, vehicle traffic volumes dropped by 75% in the peak of the first wave in April 2020 and totals for the full year were around 20% lower than expected figures.

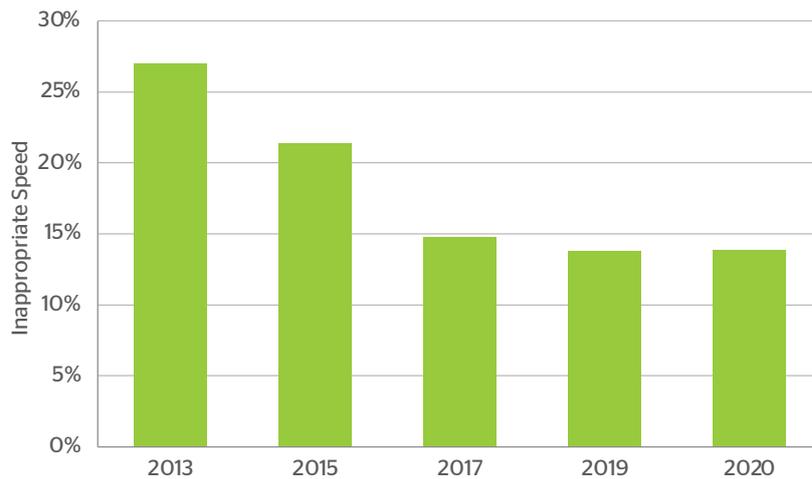
With a reduced volume of light vehicles on the road, the exposure to potential car and truck crashes is also reduced and this was reflected in the NTARC crash data, with around 3 multi-vehicle major crashes per 1000 insured trucks in 2019 dropping to 2.5 in 2020.

# IN DEPTH

## INAPPROPRIATE SPEED

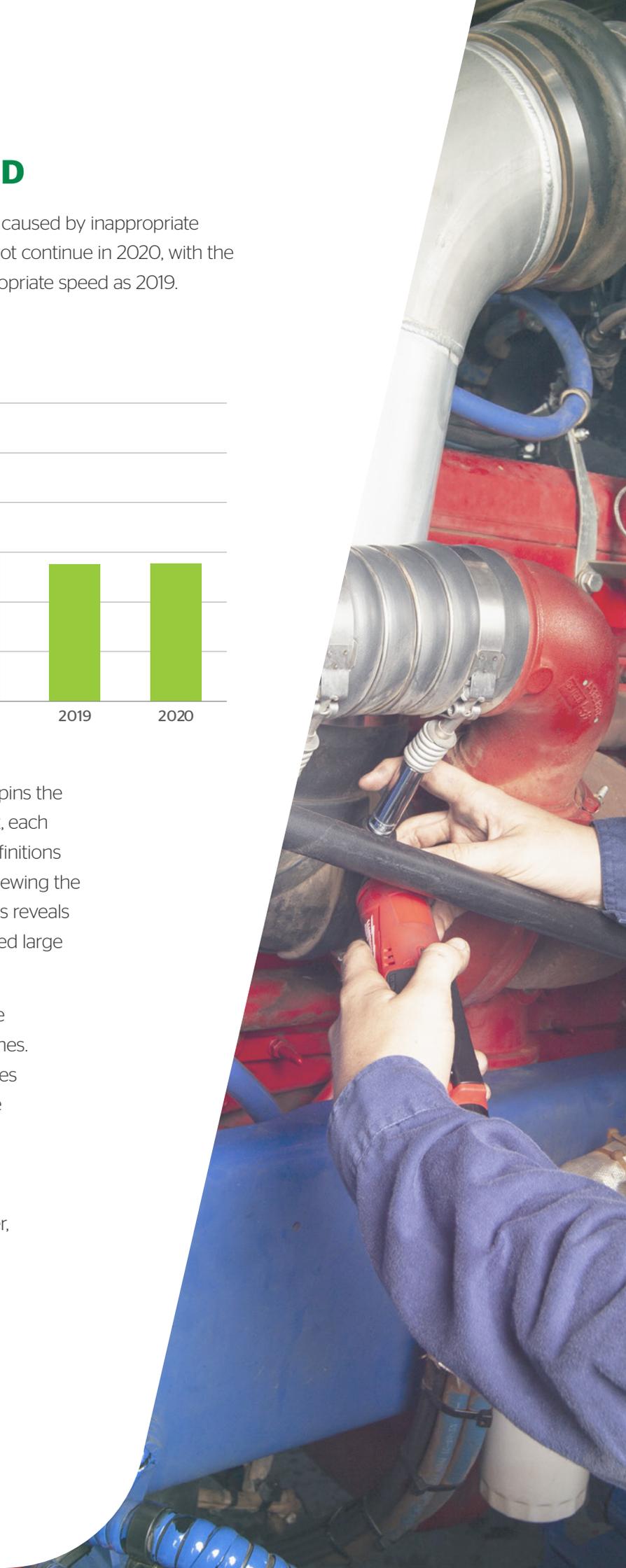
In recent years the proportion of incidents caused by inappropriate speed had been declining. This trend did not continue in 2020, with the same 13.8% of losses attributable to inappropriate speed as 2019.

### INAPPROPRIATE SPEED



As part of the review process which underpins the NTARC major accident investigation report, each claim is categorized using the Victorian Definitions for Coding of Accidents ('DCA codes'). Reviewing the DCA codes for inappropriate speed crashes reveals that the vast majority of Inappropriate Speed large loss crashes fit the same mould.

Over three quarters (77.1%) of Inappropriate Speed crashes are 'Off path on curve' crashes. The overwhelming majority of these crashes manifest as 'untripped rollovers' where due to the combination of centre of gravity height and the speed of the vehicle, it rolls over (without that rollover being initiated by external factors such as striking a barrier, hence 'untripped') while on a curve in the roadway.



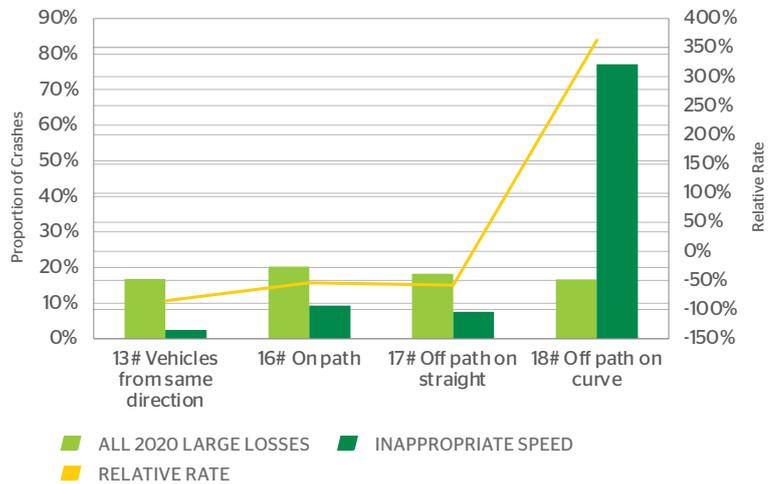
Any crash where the vehicle does not remain upright is critical concern due to the vastly increased risk of serious injury or death to the driver (and any other occupants). Consequently, given the high proportion of rollovers resulting from inappropriate speed, prevention of this type of crash needs to be given the highest priority within the transport industry.

Evaluation of the speed zones in which these incidents occur provides another interesting insight. While it is unlikely to be a surprise that the largest proportion (36.4%) of Inappropriate Speed crashes occur in 100km/h zones, when compared to the distribution of speed zones for all incident causes, it is 80km/h and 90km/h zones which are over-represented, with 22% of Inappropriate Speed crashes occurring in these speed zones compared to 13.1% for all crash types.

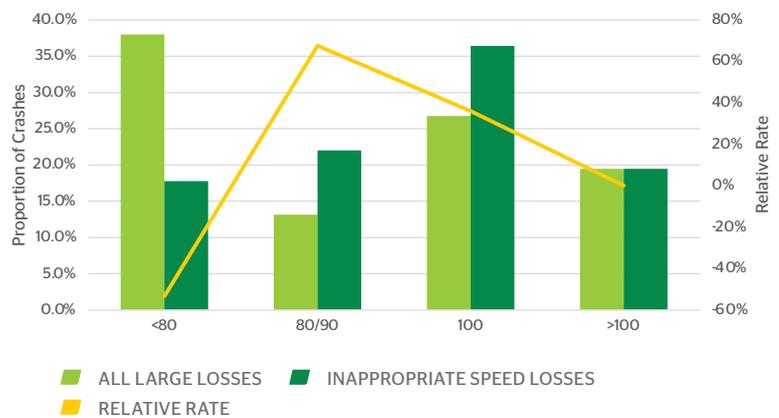
This suggests that B-roads may present an elevated risk of Inappropriate Speed crashes compared to highways. A review of the road type classification for Inappropriate Speed crashes would appear to support this position.

**“REGIONAL B-ROADS POSE A HIGH RISK OF INAPPROPRIATE SPEED CRASHES”**

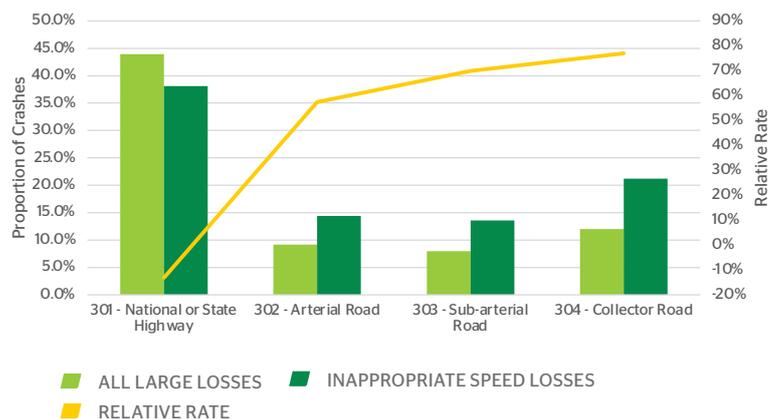
**ALL 2020 LARGE LOSSES, INAPPROPRIATE SPEED AND RELATIVE RATE**



**CRASHES BY CAUSE AND SPEED ZONE**



**CAUSES VS ROAD CLASSIFICATION**



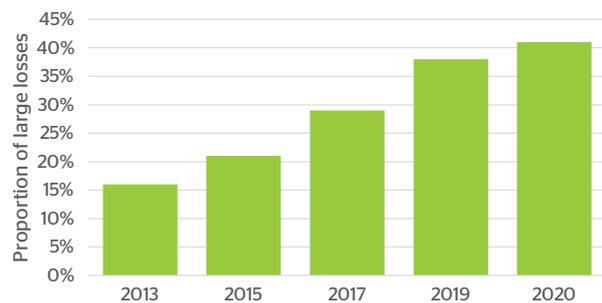


# “DRIVER ERROR CONTINUED TO INCREASE IN 2020.”

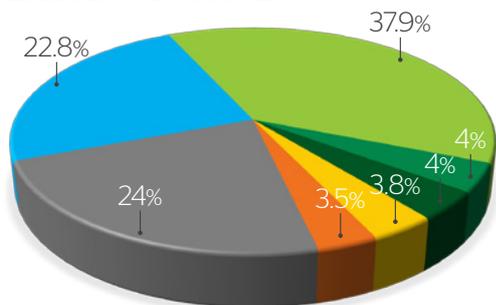
## DRIVER ERROR

Losses as a result of Driver Error continued to increase in 2020 albeit at a reduced rate, increasing to 40.6% from 39% in 2019.

### DRIVER ERROR LOSSES



### DISTRIBUTION OF DRIVER ERROR SUB-CAUSES



- INATTENTION/DISTRACTION
- LOAD/LOAD POSITIONING/LOAD RESTRAINT
- OTHER
- FAIL TO APPLY PARK BRAKE
- FAIL TO GIVE WAY
- INADEQUATE FOLLOWING DISTANCE
- INAPPROPRIATE VEHICLE POSITIONING

Looking at the sub-causes within the Driver Error category, it is evident that three sub-causes are particularly prevalent. Three sub-causes - Inattention/Distraction, Inappropriate Vehicle Positioning and Inadequate Following Distance - contribute more than four in every five (84.7%) Driver Error losses.

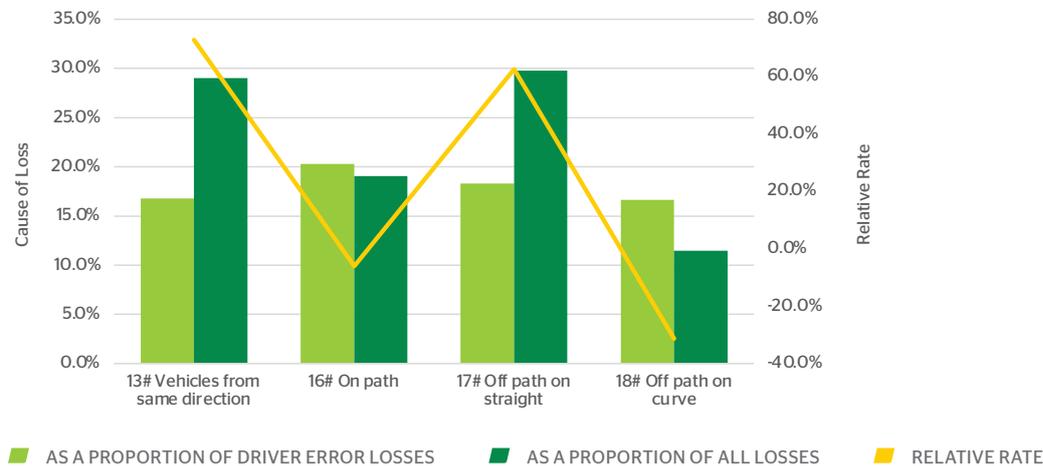
If the sub-causes within Driver Error were broken out rather than being grouped, Inattention/Distraction would be the largest single cause of Large Loss incidents. If NTARC's data were structured in this manner, the top five causes of loss would be:

- Inattention/Distraction (Driver Error) - 15.4%
- Inappropriate Speed - 13.8%
- Not-at-fault - 13.5%
- Inappropriate Vehicle Positioning (Driver Error) - 9.7%
- Inadequate Following Distance (Driver Error) - 9.3%

## INATTENTION/DISTRACTION

Following a dramatic increase between 2017 and 2019, Inattention/Distracted crashes continued to increase in 2020 however at a reduced rate. This sub-cause rose to be 37.9% of all Driver Error crashes, which equates to over one in every seven large losses in 2020.

### INATTENTION/DISTRACTION CRASHES

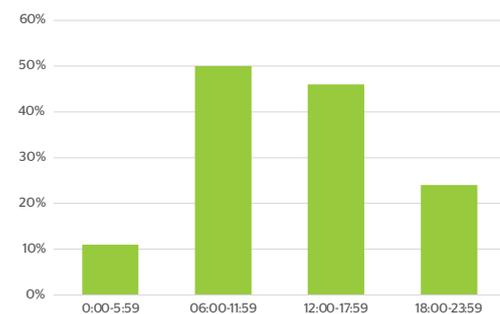


Reviewing the DCA codes for Inattention/Distracted losses, 90% fall into four DCA categories. Codes in the 130 and 160 series indicate that the driver has, as a result of inattention driven into either another vehicle or object (typically road furniture or other infrastructure) which was on the roadway. While codes in the 170 and 180 series have the vehicle leaving the roadway, generally resulting in a single vehicle crash.

### INATTENTION/DISTRACTION VS ALL LOSSES BY DCA CODE



### INATTENTION/DISTRACTION LOSSES BY TIME OF DAY



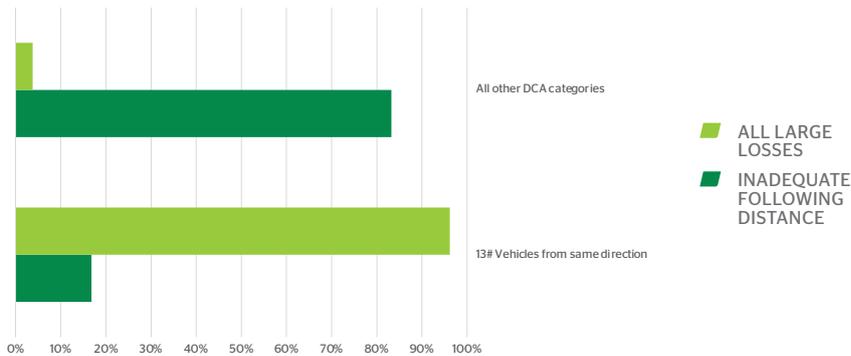
Compared to the DCA coding for all large losses, Inattention/Distracted crashes are significantly more likely to involve running into the rear of another vehicle or running off a straight section of road. Conversely, they are less likely to involve running off the road on a curve, potentially due to the driver being more engaged in the driving task.

Reviewing the timing of Inattention/Distracted losses shows that they largely follow truck traffic volumes, suggesting that time of day is not a significant factor in these incidents.

## INADEQUATE FOLLOWING DISTANCE

Within the Driver Error causes, Inadequate Following Distance was selected to be highlighted in this report due to the almost total lack of variety in the incidents where it is the proximate cause. By contrast, the Inappropriate Vehicle Positioning sub-cause – which can be thought of as trucking’s equivalent to ‘Controlled Flight Into Terrain’ crash manifests in a variety of diverse ways.

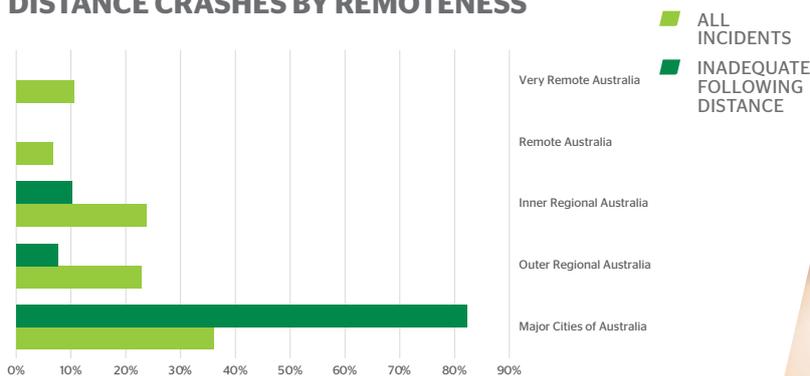
### INADEQUATE FOLLOWING DISTANCE DCA CODE COMPARISON



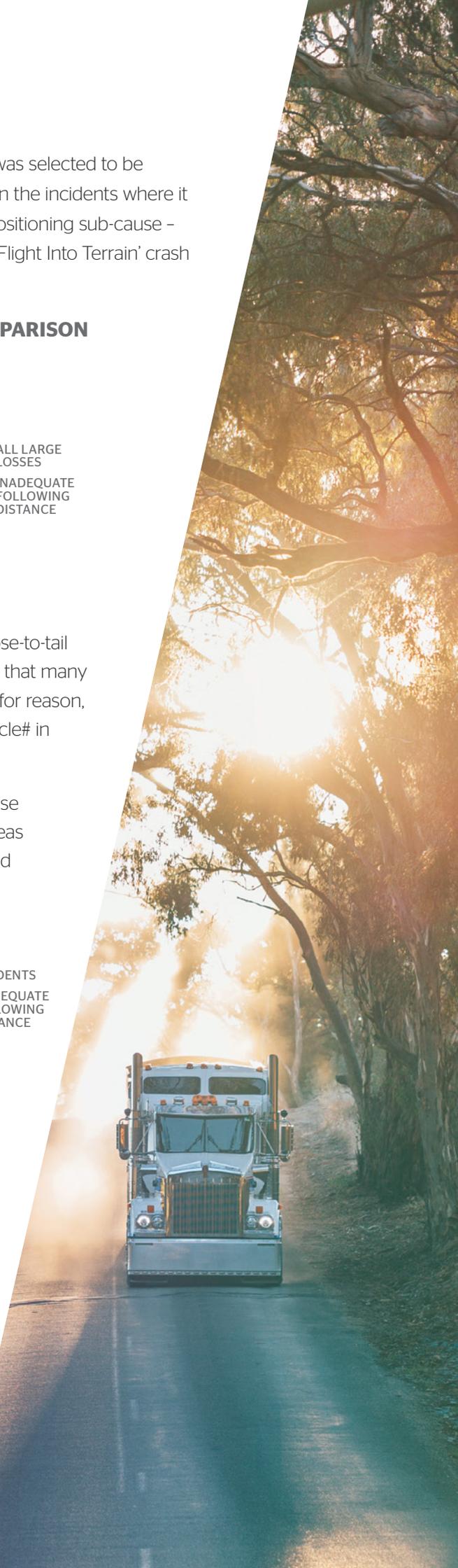
96.2% of inadequate following distance crashes were at-fault nose-to-tail crashes, with a review of the driver’s version-of-events revealing that many follow a similar pattern “I was driving along when traffic slowed for reason, I braked immediately but couldn’t stop in time and hit the #vehicle# in front of me”.

Examining the locations where these losses occur, it is clear these incidents are far more prevalent in urban environments, and areas located between the outer limits of urban & regional centres and rural environments.

### INADEQUATE FOLLOWING DISTANCE CRASHES BY REMOTENESS



It is important to emphasise here that while from an insurance and road rules point of view, that the vehicle at the rear is at-fault, truck drivers have for decades been highlighting issues around other vehicles cutting into their safe stopping distance. Any effort to influence these inadequate following distance crashes needs to be a holistic one, including the behaviours of all road users, not just truck drivers.



# FATIGUE

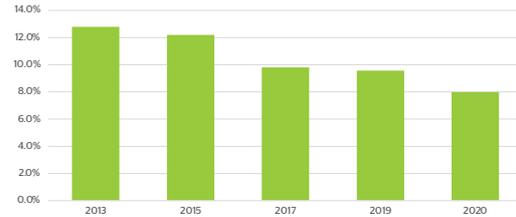
The 2020 data on large loss crashes caused by fatigue tells a positive story, the long term downwards trend in this category of loss which had plateaued slightly in 2017-19 has taken another significant step downwards, dropping to 8% of all large loss crashes in 2020.

Looking at these figures in more detail, following a very poor year in 2020, South Australia saw a reduction in its relative frequency of Fatigue crashes (for a given freight volume). Queensland regained the dubious title as the state with the highest risk of a Fatigue crash for a given freight task, with a risk of being in a Fatigue crash over 50% (52.9%) higher than the national average.

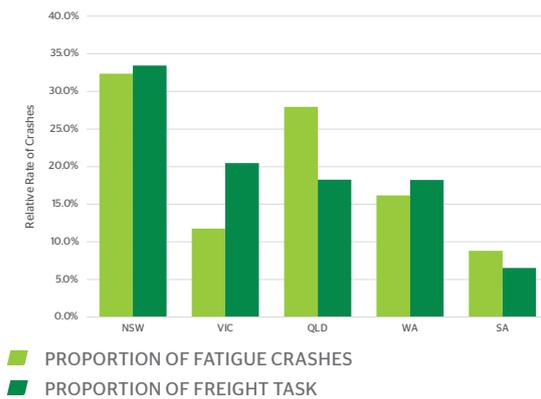
Victoria remains the best performing state in terms of the prevalence of Fatigue crashes.

Regardless of the distribution of Fatigue crashes by state, the overall reduction is unequivocally a positive given the high risk of death and serious injury associated with Fatigue crashes.

## FATIGUE



## FATIGUE CRASHES AND FREIGHT TASK BY STATE



## RELATIVE FATIGUE CRASH RATE BY STATE



**“VICTORIA REMAINS THE BEST PERFORMING STATE IN TERMS OF FATIGUE CRASHES.”**





# TRUCK OCCUPANT DEATHS

As reported in the previous edition of this report series, 2019 was a particularly tragic year for the road transport industry, with a nearly 60% increase in truck occupant deaths in road crashes (all crashes, regardless of insurer) and an even more dramatic increase (over 200%) in deaths of drivers in large losses covered by the NTARC major accident investigation report.

Fortunately 2020 did not continue that trend, with 31 truck occupant deaths (and one bus occupant death) from accidental road crashes recorded in the Australian Road Deaths Database. This is slightly below the average of around 35 deaths over the past decade. The number of truck occupants killed in NTI insured vehicles also fell dramatically to a level lower than the trend prior to 2020.

## HEAVY VEHICLE OCCUPANT DEATHS 2020

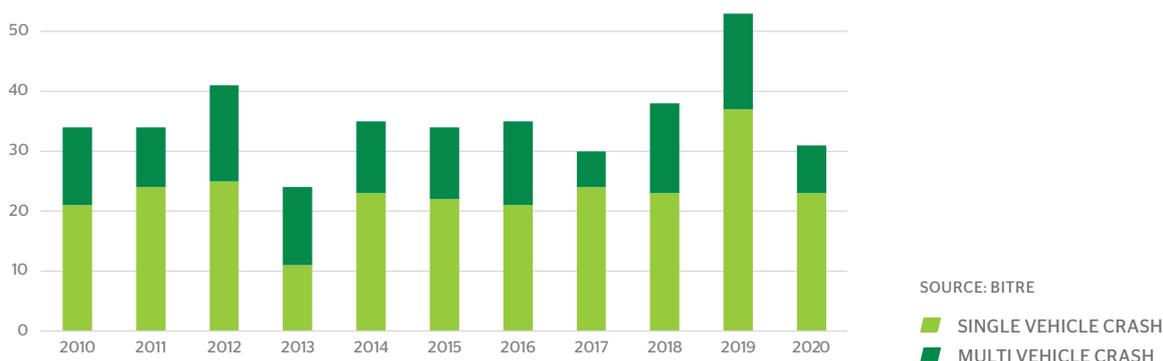
*(all crashes, regardless of insurer)*

	ARTICULATED TRUCK	HEAVY RIGID TRUCK	BUS
DRIVER	21	9	1
PASSENGER	0	1	0

SOURCE: BITRE

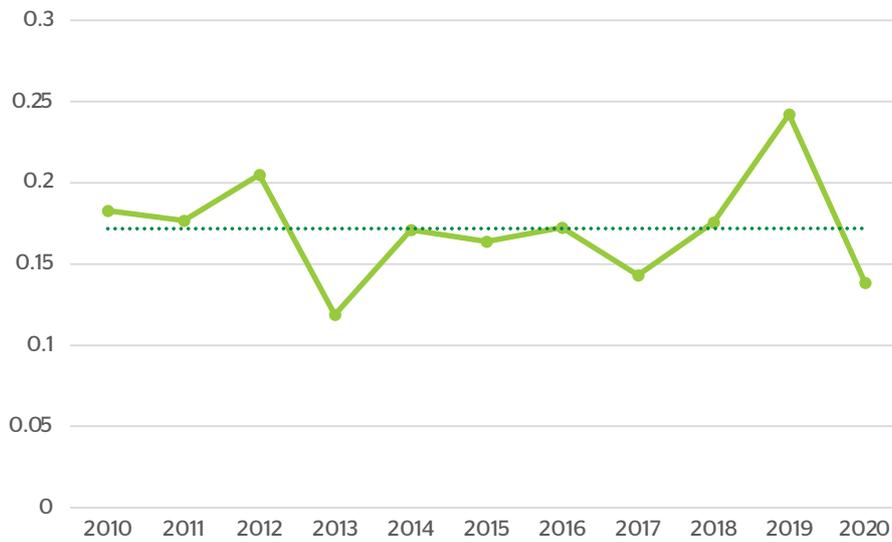
Looking at the crash type for truck occupant crash deaths, it shows that the proportion of truck occupant crash deaths from multi-vehicle crashes saw the largest decline.

## TRUCK OCCUPANT DEATHS BY CRASH TYPE



There is no identifiable trend towards a long-term decrease in truck occupant crash deaths, neither in outright terms, nor even when correcting for the growth in the freight task.

### TRUCK VEHICLE OCCUPANT DEATHS/BTK

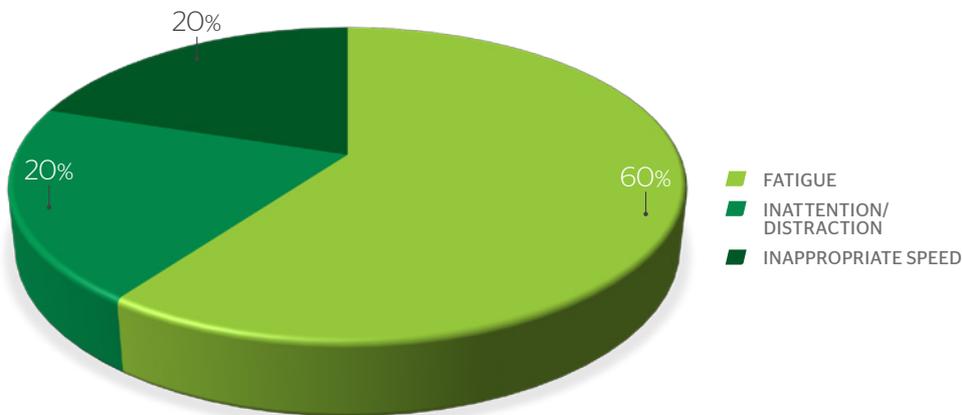


Correcting for the freight task shows that averaged over the last decade, truck occupant crash deaths have remained largely static at around 0.17 truck occupant deaths for every billion tonne.kilometres of freight moved.

Looking at all heavy-truck-involved road crash deaths over the same time period and correcting for freight task growth shows a steady decline of around 0.04 deaths/BTK per year, however it is evident that the benefits of this improvement in the road safety performance of the road freight industry have not been seen by truck occupants.

Focussing now on NTARC specific data, and due to the notable decline in NTI-insured driver deaths in 2020, the aforementioned information should be considered upon reading the next chart.

### DRIVER DEATHS BY INCIDENT CAUSE



As in prior years, fatigue remains the largest cause of NTI insured driver deaths, this is despite the reduction in the overall proportion of losses due to fatigue.

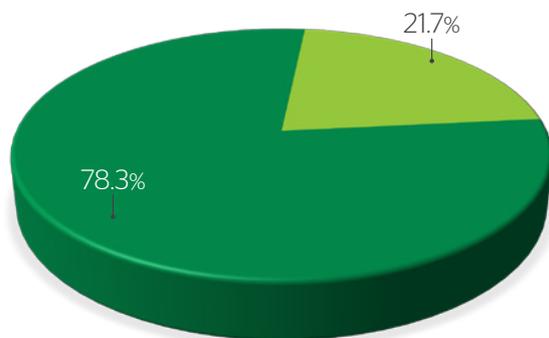


## CAR AND TRUCK CRASHES

Interactions between light and heavy vehicles remain an area of significant concern with no significant shifts in the data. In 2020, where a car and a truck were involved in a fatal crash, the car was the at-fault party 78.3% of the time.

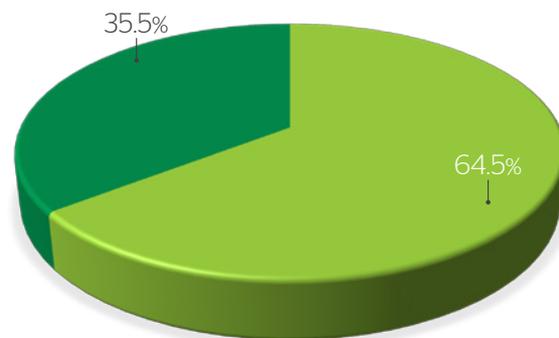
Consistent with prior years, this proportion reverses when examining non-fatal crashes. Where a car and a truck were involved in a non-fatal crash, the car was the at-fault party 35.5% of the time.

**FATAL TRUCK AND CAR CRASHES**



■ AT FAULT ■ NOT AT FAULT

**NON-FATAL TRUCK AND CAR CRASHES**



■ AT FAULT ■ NOT AT FAULT

Once again the contribution of intentional acts (including suicide, etc.) to fatal car and truck crashes was evaluated.

In 2020, 43.5% of fatal car and truck crashes were indicated or strongly indicated to be suicide, this represents an increase when compared to figures of 37.5% and 37.9% for 2017 and 2019 respectively. It is probable that this is an effect of COVID-19, with reduced traffic volumes reducing the number of accidental road deaths, thereby increasing the proportion of all road deaths which result from intentional acts.



## **THE AUTHOR**

### **ADAM GIBSON**

Starting his career in the transport and logistics industry as a heavy vehicle consulting engineer, Adam developed a deep interest in the not just the how of heavy regulation, but also the why.

This led to Adam leading the NHVR's Roadworthiness Program which was one of the responses resulting from a spate of serious truck accidents. He then returned to the commercial world taking a role as an Engineer with Penske Commercial vehicles before joining the team at NTI.

Adam is passionate about achieving road safety outcomes through industry-led initiatives where the interventions to improve safety relate directly to the specific hazard being addressed since 2002.



## **EDITORIAL ADVISOR**

### **KIM HASSALL** **(ASSOCIATE PROFESSOR) PHD MBUS BA** **DIPCS CERT LOG MNGT, FCILT CPL**

Kim is an industry expert specialising in transport and logistics. He has previously held positions as Transport Economist, and Manager of Transport Operations and Strategy for Australia's largest network Transport Operator before becoming a principal consultant and researcher in the field of freight analytics and productivity.

He has published over 100 research papers for major domestic and international clients and journals, and has worked with some of Australia's and Europe's leading transport regulatory agencies.

Kim is the National Chair for CILT-Australia and a Director of the Industrial Logistics Institute. He continues to be a fractional Principal Fellow with the Department of Infrastructure Engineering at the University of Melbourne since 2002.



## THE COMPANY

As Australia's Number 1 Truck Insurer, NTI prides itself on being a part of the transport industry.

It provides award winning service through a deep understanding of its customers and a commitment to putting itself in the customer's shoes when making decisions.

NTI is a foundation sponsor of the Australian Trucking Association and supports a number of important causes such as Women in Transport, HHTS, the Burrumbuttock Hay Runners and research into Motor Neurone Disease.



# BIBLIOGRAPHY

Bureau of Infrastructure and Transport Research Economics. (2021, February 20). Australian Road Deaths Database. Retrieved from [https://www.bitre.gov.au/statistics/safety/fatal\\_road\\_crash\\_database](https://www.bitre.gov.au/statistics/safety/fatal_road_crash_database)

Bureau of Infrastructure, Transport and Regional Economics. (2020). Yearbook 2020: Australian infrastructure statistics. Canberra: Department of Infrastructure, Transport, Cities and Regional Developments.

Department of Infrastructure, Planning and Logistics. (2021, January 25). Unpublished road crash data provided on request. Darwin, Northern Territory.

Department of Transport and Main Roads. (2021, January 14). Unpublished road crash data provided on request. Brisbane, Queensland.

Mainroads Western Australia. (2021, January 12). Unpublished road crash data provided on request. Perth, Western Australia.

National Transport Commission. (2016). Who Moves What Where: Freight and Passenger Transport in Australia. Melbourne: National Transport Commission.

Reserve Bank of Australia. (2021, March 19). Inflation Calculator. Retrieved from <https://www.rba.gov.au/calculator/annualDecimal.html>

Transport for NSW. (2021, February 20). Traffic Volume Viewer. Retrieved from <https://www.rms.nsw.gov.au/about/corporate-publications/statistics/traffic-volumes/aadt-map>

Transport for NSW. (2021, January 14). Unpublished road crash data provided on request. Sydney, New South Wales.

VicRoads. (2021, February 20). Crash statistics. Retrieved from <https://www.vicroads.vic.gov.au/safety-and-road-rules/safety-statistics/crash-statistics>



# MAJOR ACCIDENT INVESTIGATION

## 2021 REPORT Covering major incidents in 2020

Insurance products are provided by National Transport Insurance, a joint venture of the insurers Insurance Australia Limited trading as CGU Insurance ABN 11 000 016 722 AFSL 227681 and AAI Limited Trading as Vero Insurance ABN 48 005 297 807 AFSL 230 859 each holding a 50% share. National Transport Insurance is administered on behalf of the insurers by its manager NTI Limited ABN 84 000 746 109 AFSL 237246. NTI.M013.1.08062021