NTARC

Major Incident Investigation Report 2025

25

In partnership

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Foreword

Senator Anthony Chisholm

Assistant Minister for Resources,
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Deputy Manager of Government Business in the Senate Senator for Queensland

The safety of our roads is a paramount concern for all Australians. Heavy vehicles are the backbone of our economy, transporting essential goods across our vast country. But with that essential role comes the serious responsibility of ensuring safety—for drivers, for freight operators, and for every road user who shares our vast road network.

Recent road tolls make clear why we must remain vigilant. Tragically, fatalities involving cyclists and pedestrians have also risen in recent years, reminding us that improving road safety requires a renewed, coordinated national effort.

The Albanese Government is fully committed to improving road safety and reducing road trauma across the nation's road network in collaboration with all states and territories.

We're pursuing this vision through the National Road Safety Strategy. The Albanese Government has been pulling the levers at our disposal by increasing funding for local roads, road safety and data collection.

Heavy vehicle safety is critical, and this report represents exactly the kind of collaboration that's needed as we strive for Vision Zero.

It brings together the world-leading research expertise of the Monash University Accident Research Centre, the practical influence of the National Road Safety Partnership Program, and the real-world insights of Australia's leading transport and logistics insurer, NTI. By combining academic rigour, industry experience, and government interest, this partnership delivers powerful and actionable insights into the risks and opportunities facing the heavy vehicle sector.

A collaborative, industry-led approach to road safety is critical. Industry has a unique vantage point—its proximity to day-to-day operations, driver behaviour, vehicle performance, and emerging risks positions it to lead real change. By working together, industry and government can pilot new technologies, share safety learnings, and implement practical, scalable solutions that make a tangible difference on the road.

This report reinforces the importance of evidence-based decision-making. Its findings will help shape policy, inform investment, and support ongoing reforms.

I commend all those involved in this important body of work. Together, we can save lives, support industry, and build a transport system that Australians continue to trust.

> "Heavy vehicles are the backbone of our economy

Welcome to NTARC

Building on the work of the past two decades, the 2025 Major Incident Investigation Report marks a significant shift forward. It is presented through a ground-breaking collaborative partnership established by NTI with the National Road Safety Partnership Program (NRSPP) and the Monash University Accident Research Centre (MUARC), known as NTARC. The NTARC partnership is an Australian first, with NTI taking a major industry leadership step in sharing its claims data with a third party. Over time, the diversity and quality of this data, which is de-identified before being shared, will provide a greater understanding of key hazards to contribute to new interventions, enrich research and inform policy.

The NRSPP is delivered in partnership with MUARC and is the home of NTARC. These types of collaborative partnerships make a significant impact in helping us target our efforts to significantly reduce trauma on our roads. Vehicle Safety, Heavy Vehicle Safety and Workplace Road Safety are three priority areas identified in the National Road Safety Strategy 2021-30 to put us on the pathway to Vision Zero: no deaths or serious injuries on our roads by 2050.

nti

NTI is a specialist insurance provider offering a wide range of products and assistance services for the transport and logistics industry, including heavy commercial motor, mobile plant & equipment, and marine insurance. NTI actively engages with its chosen markets and works with all stakeholders to support safe and sustainable industries.

National Road Safety Partnership Program
nrspp

The NRSPP offers a collaborative network that builds and implements effective road safety strategies in the workplace. The program aims to help Australian organisations develop a positive road safety culture and, in turn, become an example for others to enhance road safety nationally.

MONASH University | ACCIDENT RESEARCH CENTRE

MUARC is Australia's largest and most respected accident and injury prevention research organisation. MUARC's goal is simple but profound: to create safe and resilient solutions to local and global challenges.

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Key Findings

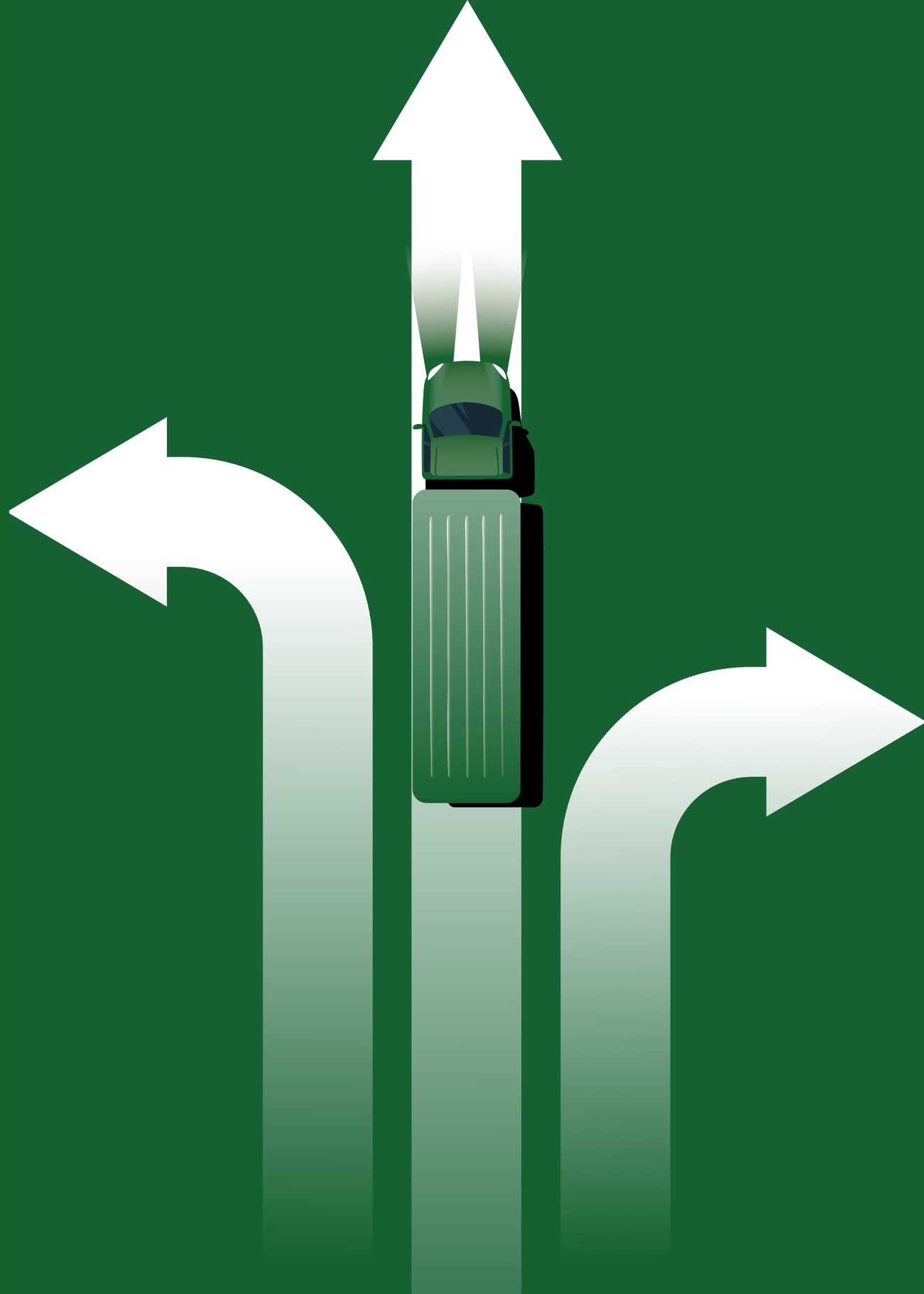
1. Human factor incidents alone accounted for a greater rate than all other cause categories combined in 2024. This reinforces NTARC's continued focus on addressing human factors through targeted hazard management programs and safety initiatives.

2. Together, the top three sub-causes—Inattention/Distraction, Inadequate Following Distance, and Inappropriate Speed—comprised 60.9% of all human factor crashes.

3. Inattention/Distraction remains the single largest contributor to incident rates within the dataset, representing 17.9% of all crashes in 2024.

4. Inadequate Following Distance accounted for 9.2% of all major incidents and remains a growing concern; the rate of increase may be stabilising, offering an opportunity for targeted interventions to curb further growth.

5. Inappropriate Speed-related incidents have remained stable in rate, while their proportion of all major incidents declined to 8.6% in 2024, indicating this crash type has not increased in line with overall incident growth.



Introduction

> Heavy vehicle drivers deserve to be safe in their workplace. However heavy vehicle drivers have one of the most dangerous occupations in Australia.

The total Australian domestic freight task is projected to grow by 26% between 2020 and 2050, increasing from approximately 756 billion to 964 billion tonne-kilometres (tkm) (BITRE, 2022). The majority of this additional freight movement is expected to be carried by road transport.

Road transport is the dominant mode for freight movement within and between urban, regional, and inter-urban areas, and it plays a key role in most import supply chains. Even industries that primarily use rail or coastal shipping, such as mining, rely on road freight to deliver equipment and supplies to remote sites.

The heavy vehicle sector in Australia faces unique challenges in its ever-expanding need to move more and more freight. Road freight activity expanded significantly between 1970 and 2007, driven by road network growth and economic reforms that reduced freight costs and barriers to transport. As a result, road freight volumes increased seven-fold by 2007 and eight-fold by 2020. This growth is closely linked to economic activity, with future projections based on population and income growth. Australia's population is forecast to rise from 25.7 million in 2020 to 34.9 million by 2050 (ABS, 2022). Based on these trends, national road freight is projected to grow by 77% by 2050, increasing from 222 billion tkm in 2020 to an estimated 393 billion tkm in 2050, leading to increased demand for trucks, drivers, and road use (BITRE, 2022).

This continued growth in road freight underscores the importance of a strong focus on road safety. The National Road Safety Strategy 2021–2030 outlines Australia's Vision Zero target—to eliminate road deaths and serious injuries by 2050. However, achieving this goal will become increasingly challenging as more heavy and light vehicles interact on a busier road network. Road safety must be a shared responsibility, and progress toward Vision Zero will depend on reducing freight movements through the use of higher productivity vehicles, optimising freight networks to cut travel times, and removing barriers to adoption of advanced safety technologies (NHVR, 2024).

Heavy vehicle drivers deserve to be safe in their workplace. However heavy vehicle drivers have one of the most dangerous occupations in Australia. In 2023, the Transport, Postal and Warehousing industry accounted for the highest share of worker fatalities in Australia at 26%, with 51 lives lost. This is more than any other industry, including construction (23%; 45 fatalities) and agriculture (14%; 27 fatalities) (Safe Work Australia, 2024). These figures highlight the high risks faced by those who work on Australian roads, under demanding conditions that often involve long hours, fatigue, and unpredictable interactions with other road users.

Unlike traditional workplaces, heavy vehicle drivers face high levels of unpredictability in their workplace including road environments, environmental conditions, and load mass and geometry. The transport sector remains persistently high in risk (Safe Work Australia, 2024), so it is vital to ensure the hazards unique to the heavy vehicle sector are identified and appropriately managed.

It is common to see references to heavy vehicles being over-represented in fatal crashes when compared to light vehicles. On the one hand, this is indisputably true. In 2024 heavy vehicles accounted for just 3% of the total vehicle fleet, they were involved in 15.2% of fatal crashes that year (BITRE, 2024). However, this presentation of data omits the effect of exposure, with the average rigid truck travelling nearly double (190%) the kilometres per year compared to the average passenger car. For articulated vehicles, this increases to over 7 times (705%) to distance travelled annually (ABS, 2020). Secondly, it risks creating the impression that this incident involvement figure reflects some failure or negative action by the heavy vehicles, however consistently over decades of NTARC data, where are truck and a car are involved in a fatal crash, the truck is Not at Fault in around four out of five incidents.

This does not preclude recognising that due to their mass, that when light vehicles crash into trucks, that safety outcomes for light vehicle occupants are worse than when they crash into other light vehicles, consistent with Safe System methodologies. Examples of strategies to address this include Advanced Emergency Braking Systems (AEBS) which seek to reduce crash energy in opposing direction crashes and Front Underrun Protective Structures (FUPS) which are designed to mitigate cars becoming crushed under trucks and to improve compatibility with light vehicle safety systems.

A like for like comparison of light vehicle versus heavy vehicle crash rates does not capture the intricacies of the road transport task. Nor does it provide benefit in addressing the complex hazards faced within the heavy vehicle sector. A multifaceted and human-first approach is required, one that doesn't focus on blame but on understanding and communication.

To address the key hazards identified in the 2024 Major Incident Investigation Report, NTARC has developed a range of evidence-based hazard management programs and educational resources. These initiatives are designed to clearly communicate the identified risks, offer information through multiple delivery methods, and provide practical, manageable strategies for mitigating the hazards.

In 2024, NTARC supported:

- A resource pack on managing steep descents in heavy vehicles
- A series of rollover awareness workshops for the LRTA (WA)
- The ALRTA's 'Braking Habits' project on smart braking
- A toolbox talk (TBT) package on Inadequate following distance crashes.

NTARC is committed to understanding, acknowledging, and proactively addressing key manageable hazards within the heavy vehicle sector to enhance the safety of all road users. This report is not intended to assign blame; rather, it seeks to present evidence-based information in a clear and accessible manner. Specifically, this report aims to:

1. Highlight opportunities and initiate actions to reduce fatalities and serious injuries in the heavy vehicle sector and the broader road user community;
2. Identify opportunities to implement measures to reduce overall risk to heavy vehicle drivers;
3. Inform and influence government, regulators, industry, safety bodies and suppliers to play an active role in improving the safe performance of the heavy vehicle sector; and
4. Share the performance of the heavy vehicle sector with industry and the broader road user community.

Limitations

Despite the important findings outlined in this major incident report, it should be noted that the report:

- Only considers NTI-insured operators, so the sample may be skewed by who chooses to insure with NTI, as well as who NTI chooses to insure;
- Relies on information gathered through the insurance claim process and information publicly available;
- Receives less information for Not at Fault claims because the third party is not required to provide information on the harm they suffered;
- One of the data fields used extensively is a categorisation of incidents into a single cause code, intended to capture the immediate proximate cause—i.e., the dominant factor that directly preceded the incident and without which the incident likely would not have occurred. While useful, this approach oversimplifies the complex, multi-factor nature of incidents and risks narrowing consideration to only immediate causes, overlooking broader and systemic issues;
- The data does not capture information on personal injury resulting from road crashes, which likely results in under-reporting of vulnerable road user (VRU) crashes. Further, crashes involving VRUs often do not result in a heavy motor insurance claim or meet the property damage threshold for inclusion in this dataset;
- Data classification may suffer from subjectivity bias and an incident being classified into a singular cause where there may be some overlap in causes; and
- Some reporting samples may be small, especially when reporting for jurisdictions with limited claims
- Where percentages in figures do not add up to 100%, this is due to rounding of individual amounts.

Heavy Vehicle Incidents in Australia

Heavy vehicle incidents in Australia are examined through a descriptive analysis of national NTI major loss claims data. When compared to the Australian vehicle register (BITRE, 2024), the NTI portfolio represents a significant portion of the registered heavy vehicle fleet—including articulated vehicles, heavy rigid vehicles, and heavy buses—providing a robust and representative sample for understanding incident trends within the industry.

The NTI dataset focuses specifically on incidents classified as major losses—those in which claim costs exceed AUD 50,000. In 2024, there were 1,767 such claims recorded, representing an 8.3% increase compared to 2023. These trends, drawn from a consistent and representative dataset, provide valuable insights into the nature and frequency of significant heavy vehicle incidents. A summary of key statistics derived from the major loss claims data between 2019 and 2024 is presented in Table 1.

Table 1

Aggregate summary statistic	Unit
Average Articulated powered units insured	39,654.8 ± 4,793.1
Average Rigid truck units insured	66,679.0 ± 10,412.4
Average Bus/Coach units insured	4,328.5 ± 229.7
Total number of included claims	7,817
Average included claims per year	1,039
Average driver age	46.1 ± 13.5 years
Most frequent licence class	MC (47.6%)
Average experience in licence class	14.5 ± 12.2
Most frequent driver gender	Male (85.4%)
Average age of vehicle	11.2 ± 7.1 years
Most frequent combination type	Rigid truck (29.2%)
Most frequent road type	National or State highway (42.8%)
Most frequent remoteness area	Major cities (36.3%)
Average total claim cost	139,820 ± 169,231 AUD

Summary analysis of major loss claims data, 2019-2024.

Incident data is collected through insurance claims submitted for incidents involving at least one NTI insured heavy vehicle. The information received organically through the claims process is assembled, this may include:

- Drivers' version(s) of events
- Scene of incident photographs
- Witness statements
- Dash camera footage
- Telematics data
- Details around vehicles and loads, and
- Incident diagrams.

This information may be augmented by public domain information (news reports, social media imagery). The assembled information is then subject to a detailed desktop review where a database is populated with key attributes and descriptors of the event. This information then forms the basis for the analysis undertaken within this report.

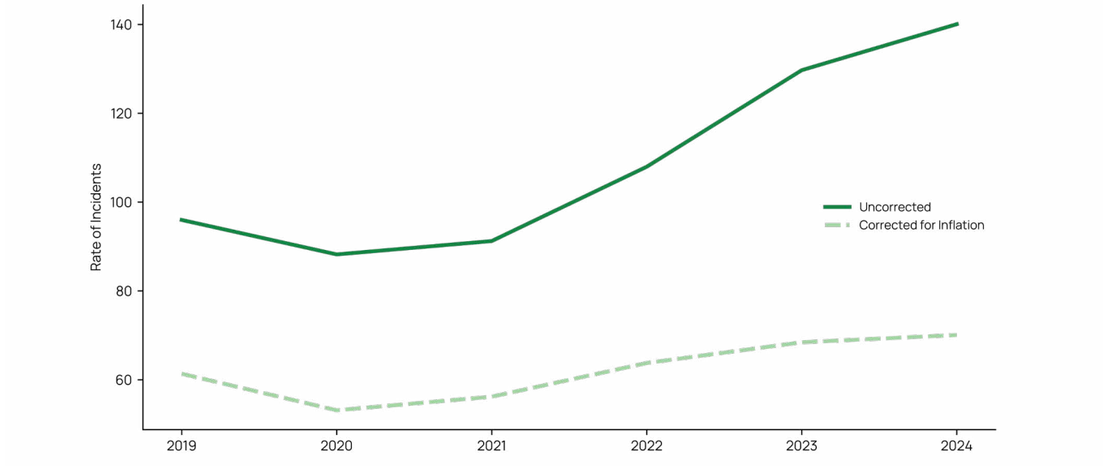
Attributes included within the dataset include the vehicle unit and combination types, freight carried, journey details, driver licence category and experience, road and weather conditions and incident mechanism and immediate proximate cause.

Incident rates are expressed as the number of claims exceeding AUD 50,000 per 10,000 heavy vehicle powered units insured by NTI each year. This normalisation enables meaningful year-on-year comparisons by accounting for changes in the size of the NTI portfolio, whether through growth or contraction. Heavy vehicle powered units refers to prime movers, heavy rigid and heavy bus/coaches.

Spatial analysis is included, presenting the number of crashes during the analysis period that occurred within a Statistical Area Level 3 (SA3) . The SA3 represents a finer level of regionality than the remoteness area indexes presented in the Overview Analysis. SA3 boundaries are determined by the Australian Bureau of Statistics (ABS) and generally represent a population of between 30,000 and 130,000 people. These figures are presented to provide a greater understanding of areas with higher heavy vehicle crash populations in each jurisdiction.

It is important to note that NTARC refers to these events as incidents rather than crashes throughout this report. This terminology reflects the broader scope of the dataset, which includes claims arising from non-crash-related events such as theft, fire, or flood, in addition to traditional crash-related losses.

Figure 1

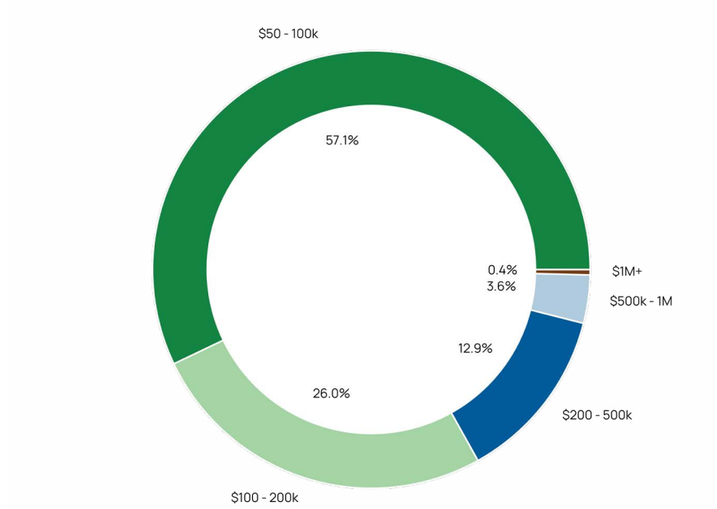


Rate of incidents per 10k powered units by year above the inflation threshold (2003).

Figure 1 presents the time series of major loss incident rates, including both inflation-corrected and uncorrected values. The uncorrected line reflects the raw number of incidents exceeding the AUD 50,000 threshold, which has defined a major loss since its introduction in 2003. However, when this threshold is adjusted for inflation, the growth in incident rates over time is moderated, providing a more accurate reflection of underlying trends.

Without inflation correction, the incident rate peaked in 2024 at 140.1 claims per 10,000 heavy vehicle units. When the AUD 50,000 threshold is corrected for inflation on a year-by-year basis, the highest rate occurred also in 2024 at 70.1. This distinction highlights the importance of considering inflation when interpreting long-term changes in incident frequency.

Figure 2

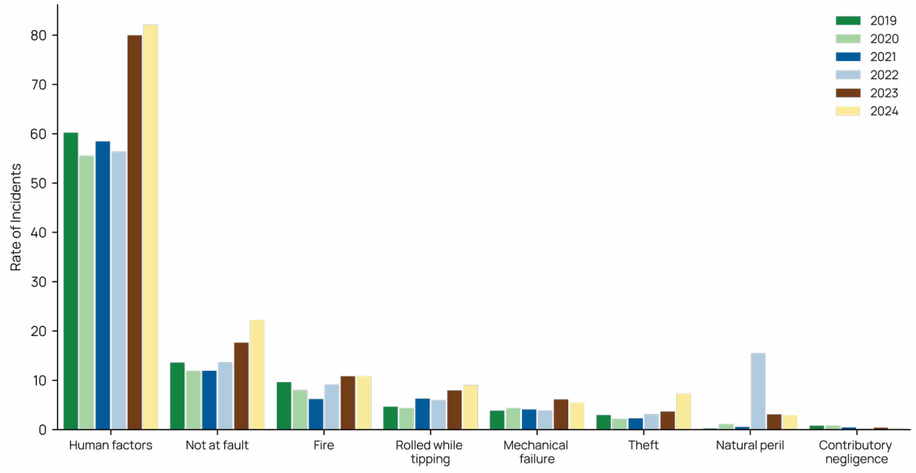


Percentage of incidents resulting in >$50k in claims by loss amount (AUD) in 2024.

Figure 2 illustrates the distribution of incidents by loss amount in 2024, with claims grouped into defined cost bands. The highest proportion of total claims fell within the AUD 50,000–100,000 range, accounting for more than half of all incidents.

As claim costs increased, the proportion of incidents in each successive cost band declined. The smallest share of total claims was observed in the highest cost band—claims exceeding AUD 1,000,000—highlighting the relatively infrequent occurrence of significantly higher-cost incidents.

Figure 3



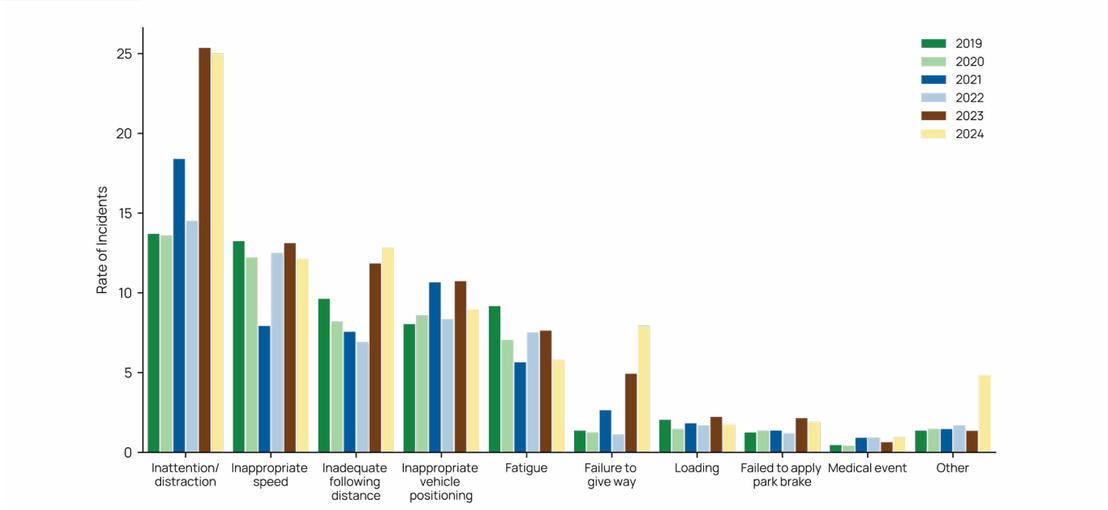
Time series rate of incidents resulting in >$50k damage per 10k heavy vehicle powered units by principal cause classification.

Figure 3 presents the time series of incident rates by principal cause classification. Consistent with previous years, incidents attributed to human factors remain the most prominent contributor to major loss incidents and continue to occur at a significantly higher rate than any other cause category. In 2024, the rate of human factor-related incidents was 69.9 per 10,000 heavy vehicles. This represents a 1.6% decrease from 2023, compared to a 41.9% rise between 2022 and 2023.

Several other cause categories saw notable increases in 2024. Not at Fault incidents rose by 26.1%, while incidents involving vehicles rolling while tipping increased by 13.9%. Particularly concerning is the sharp rise in theft claims, which almost doubled compared to 2023, recording a 98.9% increase.

Despite these trends, human factor incidents alone accounted for a greater rate than all other cause categories combined in 2024. This reinforces NTARC's continued focus on addressing human factors through targeted hazard management programs and safety initiatives.

Figure 4

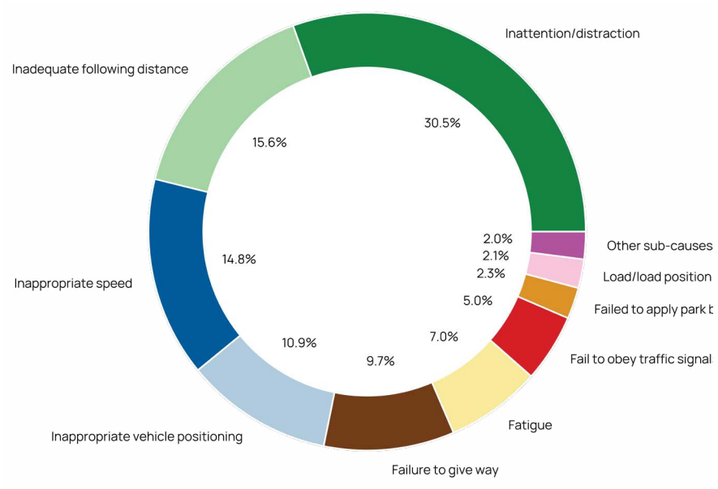


Time series rate of incidents resulting in >$50k damage per 10k heavy vehicle powered units by human factors cause classification.

Figure 4 presents the time series of incident rates by specific human factor cause categories. To ensure meaningful analysis, several low-frequency causes, such as Coupling, Failure to Obey Traffic Signals, and Hit Low Bridge, were consolidated under the category 'Other'. Among the human factor causes, Inattention/ distraction has consistently recorded the highest incident rate. In 2024, this rate saw a slight decline, falling from 25.4 to 25.0 incidents per 10,000 heavy vehicles—a 1.6% decrease compared to 2023. Other categories also experienced reductions over the same period, including Inappropriate speed (-7.6%), Inappropriate Vehicle Positioning (- 16.6%), and Fatigue (- 23.7%).

Conversely, increases were observed in Inadequate following distance (+8.4%) and Failure to Give Way (+61.2%). While some key human factor risks appear to be declining, it remains critical that road safety interventions and initiatives continue to target these hazards, particularly Inattention/distraction, due to their continued prevalence and potential for severe consequences.

Figure 5

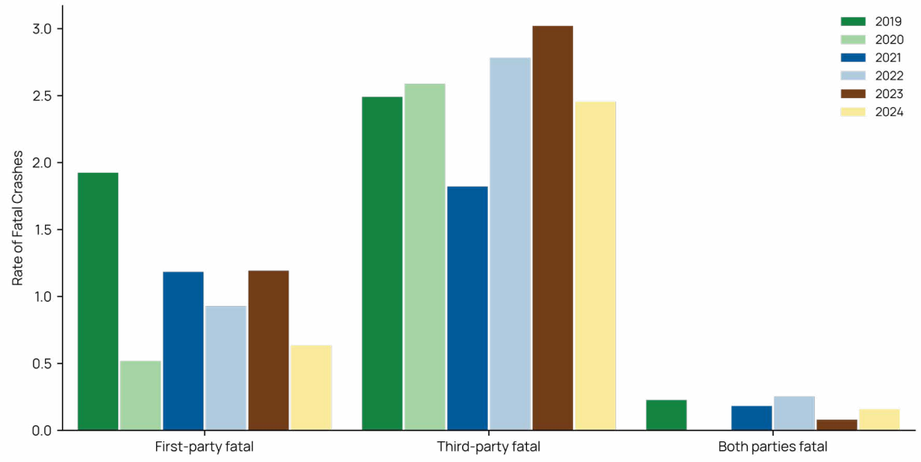


Percentage of human factor incidents resulting in >$50k damage by human factor classification in 2024.

Figure 5 illustrates the distribution of incidents by human factor sub-cause classification in 2024. Inattention/distraction accounted for the largest share, representing almost one-third of all human factor-related incidents. Together, the top three sub-causes—Inattention/distraction, Inadequate following distance, and Inappropriate speed—comprised 60.9% of all human factor crashes. This concentration underscores the need for continued focus on these key behavioural risks within targeted heavy vehicle road safety interventions.

While understanding the distribution and contributing factors of major incidents is critical for effective risk management, it is equally important to examine their most severe consequence—fatalities. Analysing fatal crash trends provides deeper insight into the human and societal impact of heavy vehicle incidents and reinforces the urgency of addressing the most prevalent and high-risk hazards identified in the data.

Figure 6



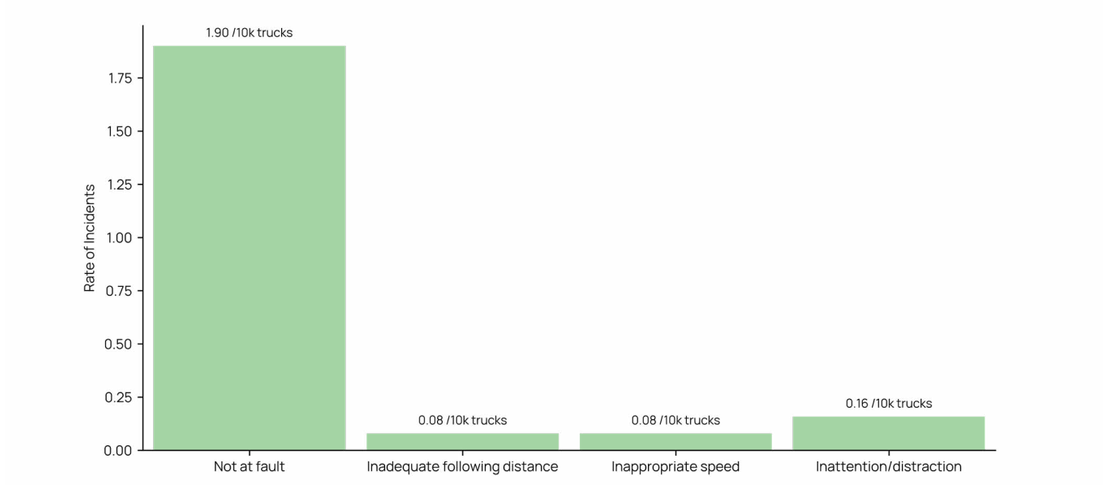
Time series rate of First-party (heavy vehicle occupant) and Third-party (other road users) fatal crashes resulting in >$50k damage per 10k heavy vehicle powered units by year.

Figure 6 presents the time series of incident rates involving fatalities, categorised by the party affected: First-party fatal (the heavy vehicle occupant), Third-party fatal (other road users), and Both parties fatal (where both the heavy vehicle driver and a third party sustained fatal injuries). It is important to note that the Both parties fatal category represents unique incidents and is not a double count of the other categories.

Historically, Third-party fatalities have occurred at a consistently higher rate than either First-party or Both-party fatalities. This trend continued in 2024, although the Third-party fatality rate declined by 16.7% compared to 2023. Encouragingly, the First-party fatality rate also saw a significant reduction, dropping by 47.5% over the same period. In contrast, the rate of crashes resulting in fatalities for both parties more than doubled from the previous year.

These improvements in First- and Third-party fatality rates represent a positive step toward better outcomes for all road users. However, the sharp rise in Both-party fatalities highlights the continued need for vigilance. Developing a deeper understanding of the mechanisms and contributing factors behind fatal crashes will be critical to sustaining the downward trend.

Figure 7



Rate of First-party (heavy vehicle occupant) and Third-party (cars only) fatal crashes resulting in >$50k damage per 10k heavy vehicle powered units in 2024 by cause.

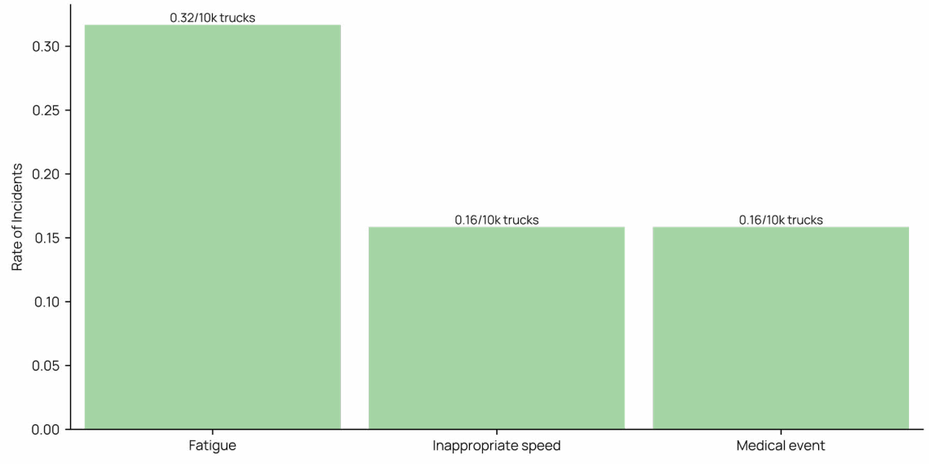
Figure 7 illustrates the cause classification of fatal crash rates involving the insured heavy vehicle and cars in 2024. The leading contributor to fatal crash rates in this category was Not at Fault with a rate of 1.90 per 10,000 heavy vehicles, referring to incidents where the insured heavy vehicle driver was not found to have contributed to the cause of the crash. It is important to note that single-vehicle occupant fatalities, where only the heavy vehicle was involved, are excluded from this classification.

In 2024, the Not at Fault fatality rate was 1.90 per 10,000 heavy vehicles, significantly higher than other contributory causes. Among the remaining identified causes, Inattention/distraction was associated with a rate of 0.16, while Inadequate following distance and Inappropriate speed each recorded a fatality rate of 0.08 per 10,000 vehicles. These same causes have consistently been among the most common contributors to major loss incidents overall, underscoring their continued relevance as priority areas for targeted road safety risk management and intervention.

In addition to cause classifications, an analysis of DCA (Definition for Classifying Accidents) codes, which categorise crashes based on vehicle movement and direction, provides further insight into the nature of fatal crashes involving heavy vehicles. In 2024, the highest fatal crash rate was associated with Vehicles from Opposing Direction (1.43 per 10,000 heavy vehicles) (see Appendices 1.1), indicating that the majority of these incidents were head-on collisions.

Other notable DCA categories included Vehicles from Adjacent Directions (0.24), Vehicles From the Same Direction (0.16), Manoeuvring (0.16), On Path (0.16), and Overtaking (0.08). These patterns highlight the high-risk nature of opposing-direction travel and reinforce the need for continued focus on driver behaviour, and situational awareness for all road users, in preventing severe head-on collisions.

Figure 8



Rate of heavy vehicle occupant fatalities resulting in >$50k damage per 10k heavy vehicle powered units by cause.

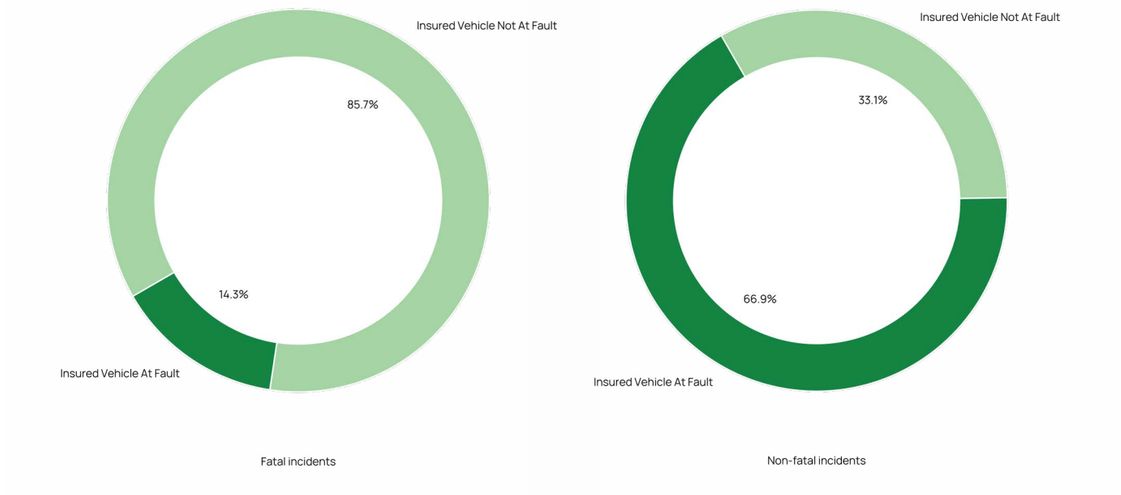
Focusing specifically on heavy vehicle occupant fatalities, Figure 8 highlights the three leading contributing causes in 2024. Fatigue was the most prominent, with a fatality rate of 0.32 per 10,000 heavy vehicles. This was followed by Inappropriate speed and Medical Events, each contributing 0.16 fatalities per 10,000 vehicles.

It is important to clarify that Inappropriate speed does not refer to speeding offences but rather the selection of a speed unsuitable for the conditions, taking into account factors such as road geometry, vehicle load, and mass. These findings underscore the continued importance of addressing driver fatigue and health-related risks, alongside promoting education and technology for appropriate speed selection management.

This trend is further emphasised by the analysis of heavy vehicle occupant fatalities by DCA code. In 2024, the highest fatal crash rate for heavy vehicle occupants was associated with Off Path on Straight sections of road, at 0.24 fatalities per 10,000 heavy vehicles, followed by Off Path on Curve at 0.16 (see Appendix 1.2). These patterns suggest that the majority of these incidents were single-vehicle crashes, likely involving a rollover or collision with roadside infrastructure.

Other notable DCA classifications included Vehicles from Opposing Direction (0.16) and Vehicles from Adjacent Directions (0.08). Given the unlikelihood of a Third-party vehicle occupant sustaining non-fatal injuries while the heavy vehicle occupant is fatally injured—unless the third party is also in a heavy vehicle—it can be inferred that some of these crashes may have involved evasive manoeuvres by the heavy vehicle to avoid a Third-party vehicle, ultimately resulting in the vehicle running off the road.

Figure 9



Percentage of First-party (heavy vehicle occupant) and Third-party (cars only) crashes in 2024 by at fault and Not at Fault, a) Fatal crashes, b) Non-fatal crashes.

Figure 9 presents the assignment of fault in both fatal (Figure 9a) and non-fatal (Figure 9b) crashes involving heavy vehicles and cars in 2024. In fatal crashes, the insured heavy vehicle was deemed Not at Fault in 85.7% of cases. In contrast, for non-fatal crashes, heavy vehicles were found Not at Fault in only 33.1% of incidents. This disparity may reflect the extensive training, experience, and professionalism of heavy vehicle drivers, particularly in high-risk situations.

It is important to emphasise that NTARC does not present this data to assign blame to any particular group of road users. Rather, the intent is to provide data and insights on the mechanisms and causal factors around heavy vehicle incidents. This allows a better understanding of what existing risk controls are and are not functioning effectively and what potential future interventions are likely to be most efficient and effective. This report also serves to highlight the critical need for road safety programs that address the dynamic interactions between heavy vehicles, light vehicles, and vulnerable road users. Improving outcomes on the road is a shared responsibility that requires awareness, accountability, and action from all road users.

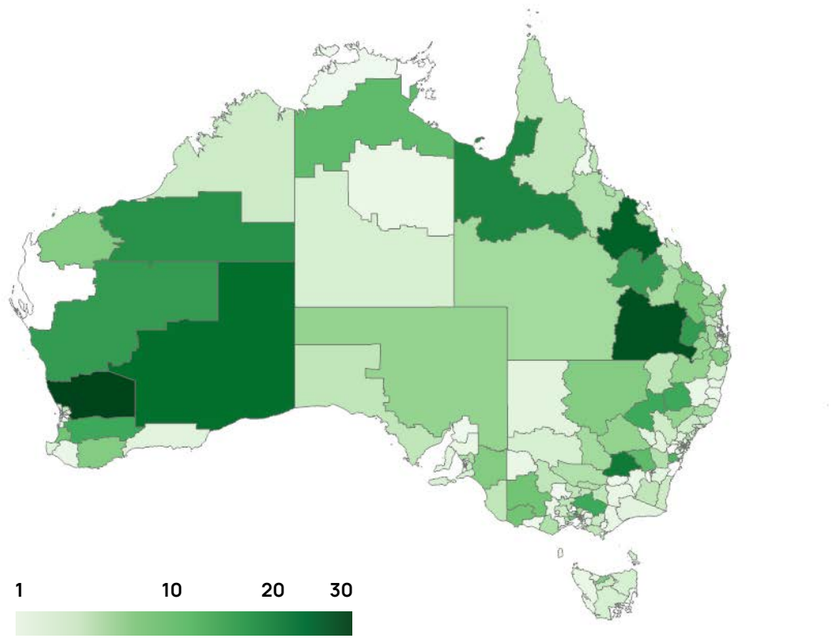
Inattention/ Distraction

Within NTARC, Inattention and Distraction are defined as a grouped pairing of crash causes where the incident is determined to be the result of the driver becoming disengaged from the driving task due to either a specific non-driving related stimulus (Distraction) or a loss of task focus (Inattention).

The definition of inattention and distraction in Australia differs by jurisdiction. However, Austroads is working towards a national definition based on an evidential review as part of the National Driver Distraction Roadmap, which is intended to be available by the end of 2025 (Austroads, 2025). The current NTI definitions closely align with those outlined by the National Heavy Vehicle Regulator (NHVR).According to the NHVR, Inattention refers to a state in which the driver loses mental focus, such as daydreaming or cognitive wandering, leading to reduced awareness of the driving environment. This condition is often associated with fatigue and may be a precursor to fatigue-related incidents, including microsleeps. In contrast, Distraction is defined as the driver's attention being diverted by external stimuli, commonly from devices or objects within the cabin. Examples include mobile phones, console displays, or eating and drinking (NHVR, 2025). In heavy vehicles, the risk of distraction is further compounded by additional in-cabin technologies, such as route-planning systems and electronic work diaries, which demand extra attention from the driver.

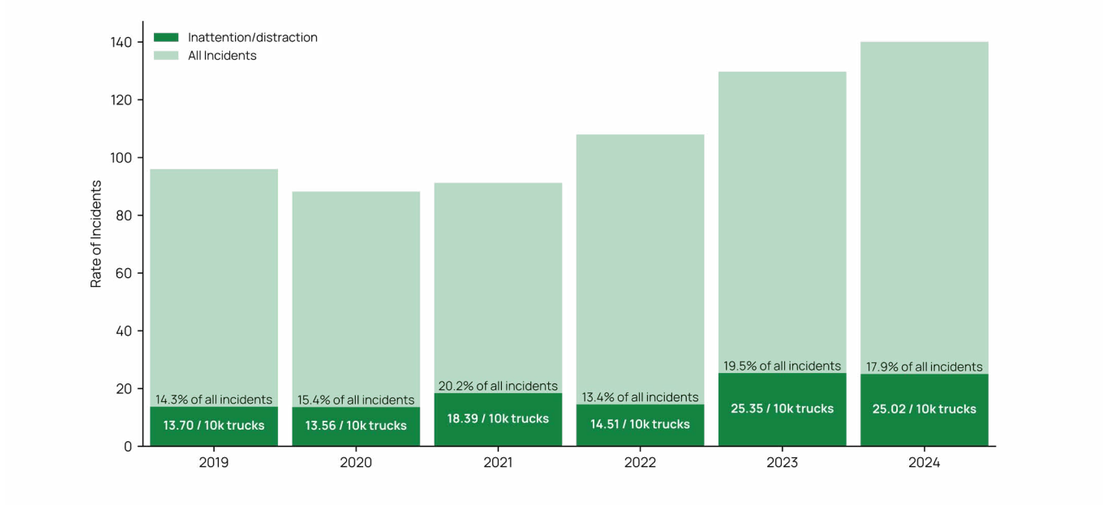
This section explores crashes attributed to Inattention/distraction, which remain the most prevalent cause of major incidents involving heavy vehicles. By analysing trends over time, contributing mechanisms, and environmental influences, this section highlights the complexity and unpredictability of these incidents and their implications for targeted safety interventions.

Figure 10



Distribution of heavy vehicle inattention/distraction incidents by SA3, 2019-2024.

Figure 11

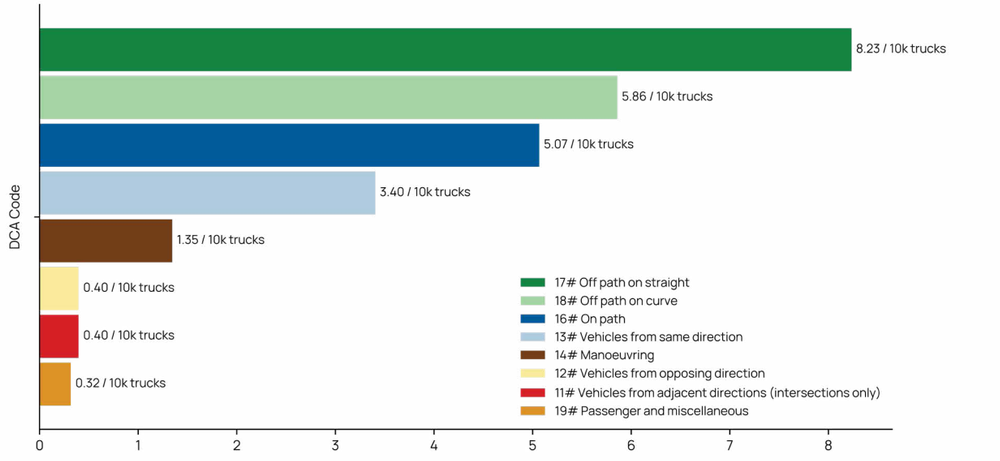


Rate of Inattention/distraction incidents resulting in >50k damage per 10k heavy vehicle powered units by year.

Figure 11 presents a time series of incident rates related to Inattention/distraction by year. The light green shaded area represents the overall incident rate across the dataset, while the dark green area isolates those incidents specifically attributed to Inattention/distraction. These types of crashes remain the single largest contributor to incident rates within the dataset, representing 17.9% of all crashes in 2024.

However, there was a positive development in 2024, with the Inattention/distraction incident rate showing a slight decline—from 25.4 to 25.0 incidents per 10,000 heavy vehicles—representing a 1.6% reduction compared to 2023. This moderation is especially notable given the sharp 75.2% increase observed between 2022 (14.5) and 2023 (25.4). While the overall trend remains a concern, the 2024 result may indicate early signs of progress in addressing this key risk area.

Figure 12



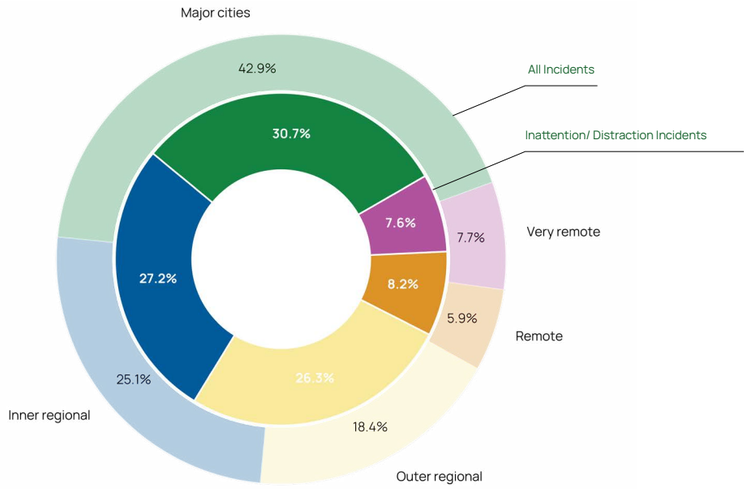
Rate of Inattention/distraction incidents resulting in >$50k damage per 10k heavy vehicle powered units in 2024 by DCA code.

Inattention/distraction-related crashes are predominantly single-vehicle events, with two-thirds (66.7%) involving only the insured heavy vehicle (see Appendix 2.1). This pattern is further supported by the breakdown of Inattention/distraction incidents by DCA code, as shown in Figure 12, which illustrates the incident rate by crash type. The top three DCA codes associated with Inattention/distraction crashes—Off Path on Straight (8.2), Off Path on Curve (5.9), and On Path (5.1) crashes per 10,000 heavy vehicles—are typically indicative of single-vehicle events.

Collectively, these three categories accounted for 77.2% of all Inattention/distraction crashes in 2024.

Other DCA codes represented within this crash type include Vehicles from the Same Direction, Manoeuvring, Vehicles from Opposing Direction, Vehicles from Adjacent Directions, and Passenger and Miscellaneous. The diversity of crash types linked to Inattention and Distraction highlights the unpredictable nature of these incidents, reinforcing the complexity of managing this high-risk behaviour on the road.

Figure 13

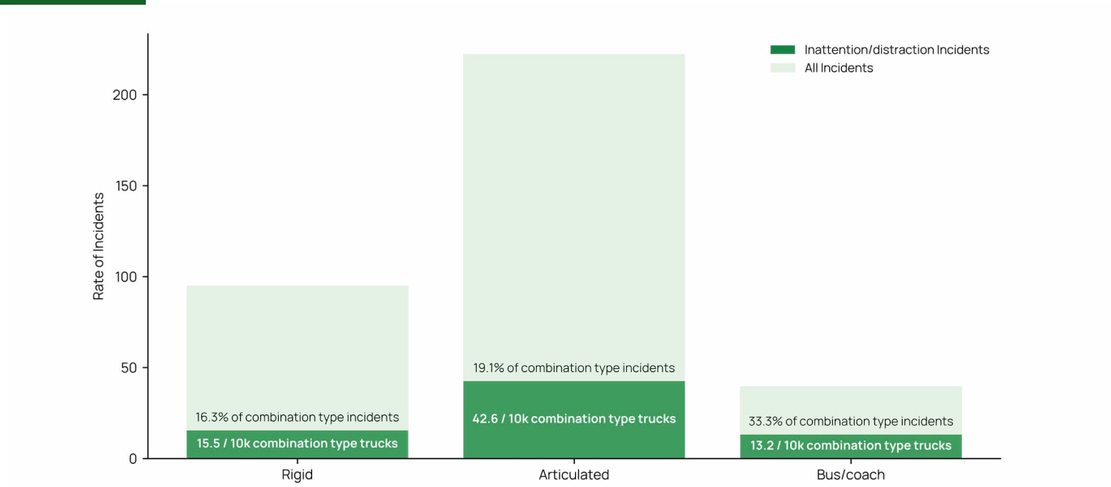


Percentage of Inattention/distraction versus all incidents resulting in >$50k damage in 2024 by remoteness.

Inattention/distraction may be influenced by the level of environmental complexity and stimuli within different areas of operation. Figure 13 illustrates the proportion of Inattention/ distraction incidents relative to all major incidents by remoteness category in 2024.

Across all incident types, the majority occurred in Major Cities (42.9%), with a declining proportion as remoteness increased. However, when isolating Inattention/distraction incidents, there is a notable under-representation in Major Cities (30.7%) compared to the overall figure. In contrast, Outer Regional areas are over-represented, accounting for 26.3% of Inattention/distraction incidents despite comprising only 18.4% of all incidents. The proportions in Inner Regional, Remote, and Very Remote areas are relatively consistent between Inattention/distraction incidents and the overall dataset. These findings suggest that certain regional environments may be more susceptible to Inattention/distraction-related risks, potentially due to longer travel distances, reduced visual stimuli, or driver complacency in less trafficked areas.

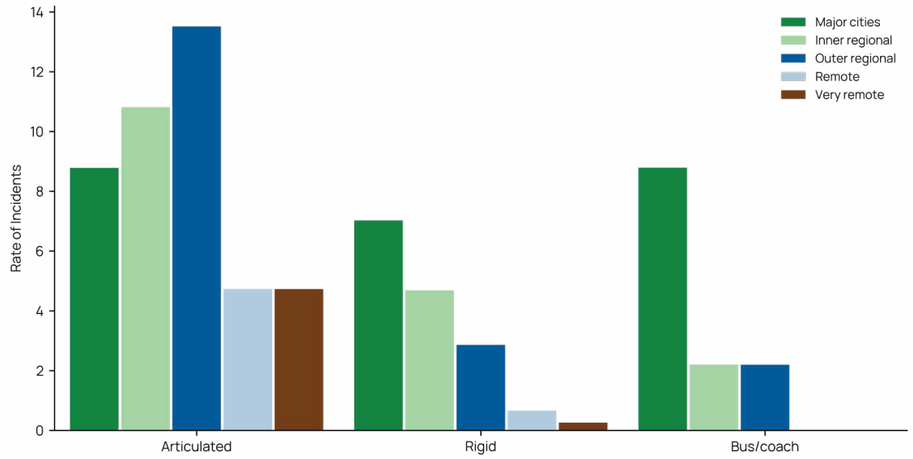
Figure 14



Rate of Inattention/distraction incidents resulting in >$50k damage per 10k combination type vehicles in 2024.

Figure 14 presents the rate of Inattention/distraction crashes compared to all incidents by heavy vehicle combination type in 2024. Articulated combinations recorded the highest rate of Inattention/distraction incidents, with 42.3 crashes per 10,000 heavy vehicles. However, these accounted for 19.1% of all articulated combination incidents, indicating a moderate proportional impact within that group. In contrast, Bus/Coach combinations were notably over-represented, with Inattention/ distraction cited as a contributing factor in one-third of all Bus/Coach crashes. This highlights a particularly elevated risk within that segment.

Figure 15



Rate of Inattention/distraction incidents resulting in >$50k damage per 10k combination type vehicles in 2024 by combination type and remoteness.

It is valuable to examine Inattention/distraction crashes by both vehicle combination type and remoteness to explore the potential influence of environmental stimulation, whether under- or over-stimulation, on driver attention. Figure 15 presents the Inattention/ distraction incident rate by combination type and remoteness category for 2024.

For Articulated combinations, the majority of Inattention/ distraction incidents occurred in Outer Regional areas. This likely reflects the greater exposure these vehicles have to regional routes, where long-distance travel and lower traffic density may contribute to reduced driver engagement.

In contrast, Inattention/distraction incidents involving Rigid and Bus/Coach combinations are more commonly associated with Major Cities. This pattern may be explained by the operational environments of these vehicle types, which typically involve frequent stops, shorter routes, and increased time spent in urban areas—conditions that differ from those faced by articulated vehicles due to road infrastructure limitations.These insights suggest that the relationship between vehicle type, operating environment, and driver cognitive load plays a meaningful role in the occurrence of Inattention/distraction-related crashes.

Inadequate Following Distance

An incident is classified as Inadequate Following Distance when the driver fails to maintain a safe gap from the vehicle ahead. This insufficient spacing limits the driver's ability to react effectively to changing traffic conditions, such as sudden braking or unexpected slowing, often resulting in a crash due to reduced manoeuvring time and space.

Rear-end collisions are particularly over-represented in major Australian cities and on roads with speed limits above 50 km/h (Swain and Larue, 2024). While there is some variation between jurisdictions, most recommend a minimum headway of at least two seconds to the vehicle in front, with a greater distance advised when driving in adverse conditions such as poor visibility or wet roads (Victoria State Government, n.d.; New South Wales Government, n.d.; Queensland Government, 2015; Government of Western Australia, 2024; New Zealand Transport Agency Waka Kotahi, n.d.; MUARC, 2006).

However, determining an appropriate following distance when driving a heavy vehicle involves greater complexity than for a light vehicle. Factors such as vehicle mass, load geometry, overall vehicle configuration, onboard braking and alert systems, road gradient, and environmental conditions all influence stopping distance. These variables highlight the need for context-specific driver awareness and tailored guidance to reduce crash risk related to following distance.

This section examines crashes resulting from Inadequate following distance, exploring their prevalence, crash dynamics, and environmental context. The analysis aims to identify patterns in where and how these incidents occur, as well as the contributing factors that place heavy vehicles at increased risk in congested traffic conditions.

In 2024, Inadequate following distance was the second most common contributing factor after Inattention/distraction, accounting for 9.2% of all major incidents.

Figure 16

Distribution of heavy vehicle Inadequate following distance incidents by SA3, 2019-2024.

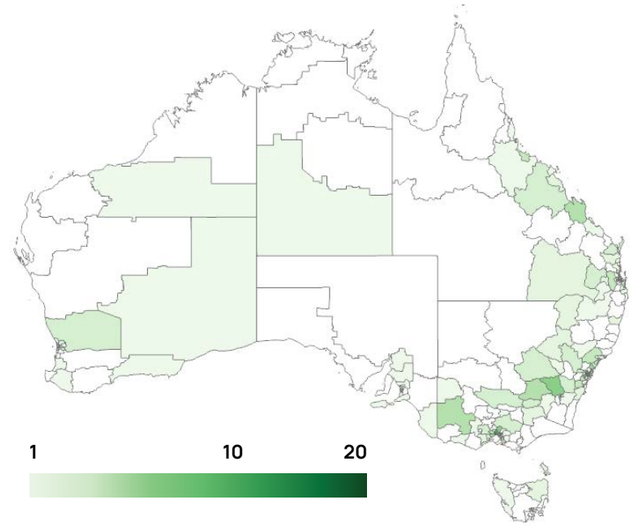
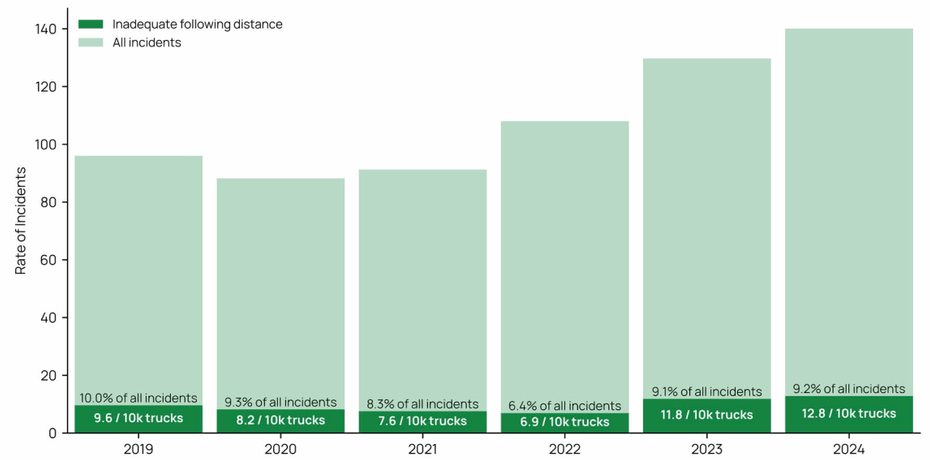


Figure 17



Rate of Inadequate following distance incidents resulting in >$50k damage per 10k heavy vehicle powered units by year.

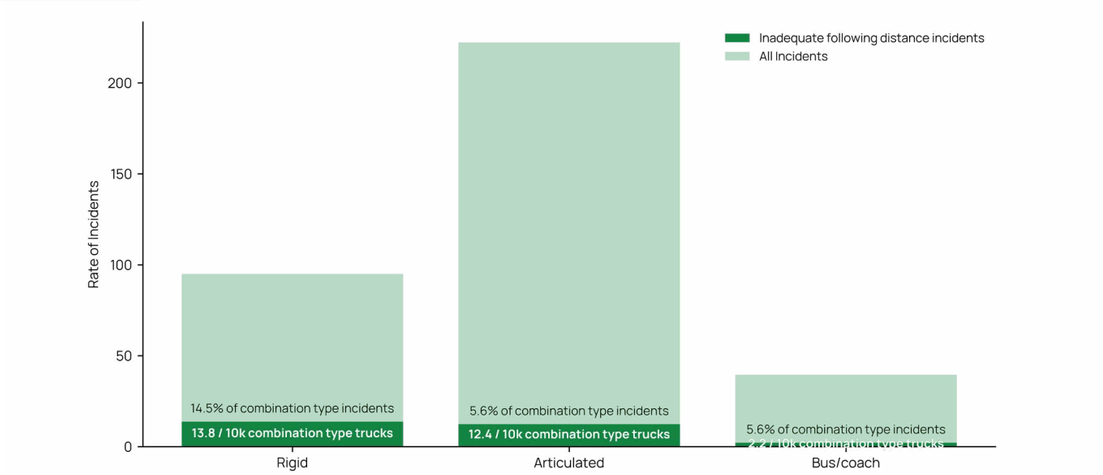
Figure 17 presents a time series of incident rates related to Inadequate following distance from 2019 to 2024. The light green shaded area represents the overall incident rate across the dataset, while the dark green area highlights those incidents specifically attributed to Inadequate following distance.

In 2024, Inadequate following distance was the second most common contributing factor after Inattention/distraction, accounting for 9.2% of all major incidents. Following a period of relative stability between 2019 and 2022, both the rate and proportion of these crashes have risen. A particularly sharp increase was observed in 2023, with incident rates climbing by 71.0% compared to the previous year. Encouragingly, this growth moderated in 2024, with a more modest increase of 8.5% from 2023. This trend suggests that while Inadequate following distance remains a growing concern, the rate of increase may be stabilising, offering an opportunity for targeted interventions to curb further growth.

Inadequate following distance-related crashes are predominantly other vehicle involved events, with 96.9% involving another party other than the insured heavy vehicle (see Appendix 3.1). This pattern is further reinforced by the DCA code breakdown of these incidents (see Appendix 3.2).

Crashes resulting from Inadequate following distance are overwhelmingly associated with a single DCA code, Vehicles from the Same Direction, which results in rear-end crashes. This category recorded a rate of 12.4 crashes per 10,000 heavy vehicles and accounted for 96.3% of all incidents in this classification. The dominance of this crash type reflects the typical scenario where a heavy vehicle is unable to stop in time when the traffic ahead slows or stops abruptly, highlighting the critical importance of maintaining appropriate following distances in dynamic traffic environments and for all road users to allow heavy vehicles the necessary space to stop safely.

Figure 18

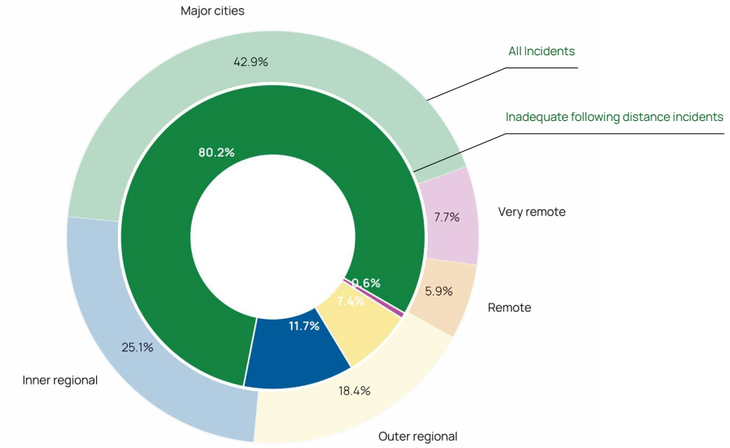


Rate of Inadequate following distance incidents resulting in >$50k damage per 10k combination type vehicles in 2024.

Figure 18 presents the rate of Inadequate following distance incidents compared to all major incidents by combination type in 2024. Rigid combinations recorded both the highest rate and highest proportion of these crashes, with 13.8 incidents per 10,000 heavy vehicles, accounting for 14.5% of all incidents involving this combination type. This proportion is significantly higher than that observed in articulated combinations and Bus/Coach vehicles, where Inadequate following distance was attributed to only 5.6% of all incidents.

These findings suggest that rigid trucks are more likely to be in crashes resulting from insufficient following distances. This may be linked to their more frequent operations in urban and suburban environments, where traffic density is higher, interactions with other vehicles are more frequent, and braking distances are reduced.

Figure 19



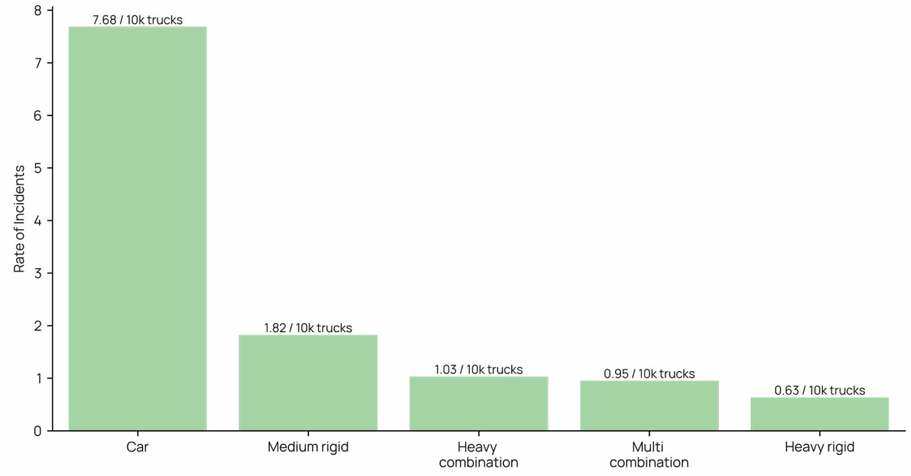
Percentage of Inadequate following distance versus all incidents resulting in >$50k damage in 2024 by remoteness

The likelihood of Inadequate following distance crashes occurring in more congested environments is further explored in Figure 19, which presents the percentage of Inadequate following distance incidents relative to all major incidents by remoteness category in 2024. The data clearly show that these crashes are heavily over-represented in Major Cities, where 80.2% of all Inadequate following distance incidents occurred, despite Major Cities accounting for only 42.9% of all incidents overall.

As remoteness increases, the proportion of Inadequate following distance crashes decreases sharply. In 2024, only 11.7% of such incidents occurred in Inner Regional areas, 7.4% in Outer Regional areas, and just 0.6% in Very Remote areas, with no recorded incidents in Remote areas. These patterns strongly suggest that Inadequate following distance crashes are closely linked to higher traffic volumes, frequent stop-and-go conditions, and reduced space for manoeuvring—characteristics typical of urban environments.

Additionally, urban environments increase the likelihood of close interactions between heavy vehicles and light vehicles, particularly passenger cars, which may stop abruptly, change lanes, or merge without warning. These behaviours can leave heavy vehicle drivers with insufficient time or space to respond safely, increasing the risk of rear-end collisions.

Figure 20



Rate of Inadequate following distance incidents resulting in >$50k damage per 10k heavy vehicle powered units in 2024 by third party vehicle class.

This dynamic is illustrated in Figure 20, which presents the rate of Inadequate following distance incidents by Third-party vehicle class in 2024. Passenger cars were involved in such crashes at a rate of 7.68 per 10,000 heavy vehicles—more than four times higher than any other Third-party vehicle class. The next highest was medium rigid vehicles, with a rate of 1.82, further highlighting the elevated risk associated with interactions between heavy vehicles and smaller, more agile vehicles in congested settings.

Inappropriate speed

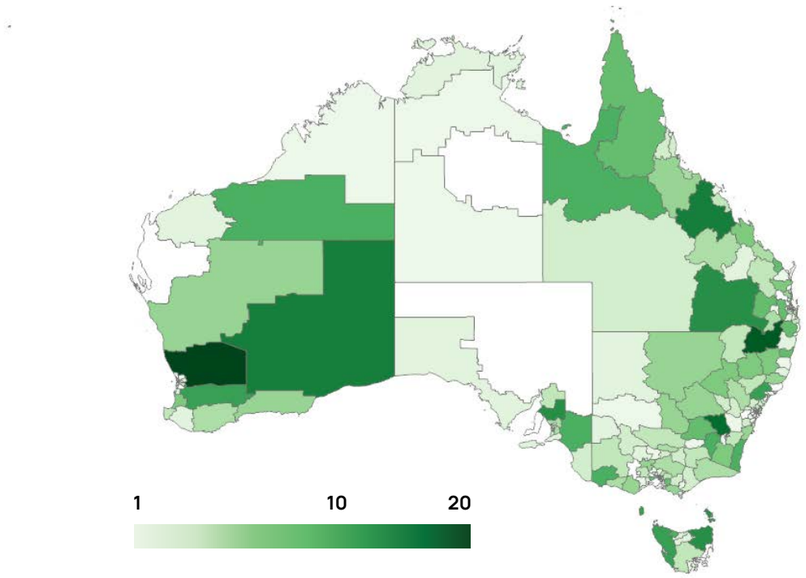
NTI defines Inappropriate speed as incidents where the proximate cause of the crash was that the vehicle's speed was incompatible with its dynamics, the road geometry, and/or prevailing weather and road conditions. Importantly, this classification does not imply that the heavy vehicle was exceeding the posted speed limit.

This issue is a global concern in the heavy vehicle industry and is not unique to Australia. A study of heavy vehicle rollovers in the U.S. found that almost one-half of such incidents were caused by Inappropriate speed selection relative to the road geometry or conditions (McKnight & Bahouth, 2008). Selecting an appropriate speed is a complex task for heavy vehicle drivers. It requires continuous judgment based on a range of factors, including road curvature, surface condition, weather, mechanical state of the vehicle, combination type, load weight, and load configuration (Alrejjal & Ksaibati, 2022). Adding to this complexity is that advisory speed signage is often not designed with heavy vehicles in mind, placing additional responsibility on drivers to interpret safe operating speeds (McKnight & Bahouth, 2008).

These challenges highlight the critical need for targeted road safety strategies, infrastructure design considerations, and driver support initiatives that better account for the unique operational demands of heavy vehicles to help prevent Inappropriate speed-related crashes.

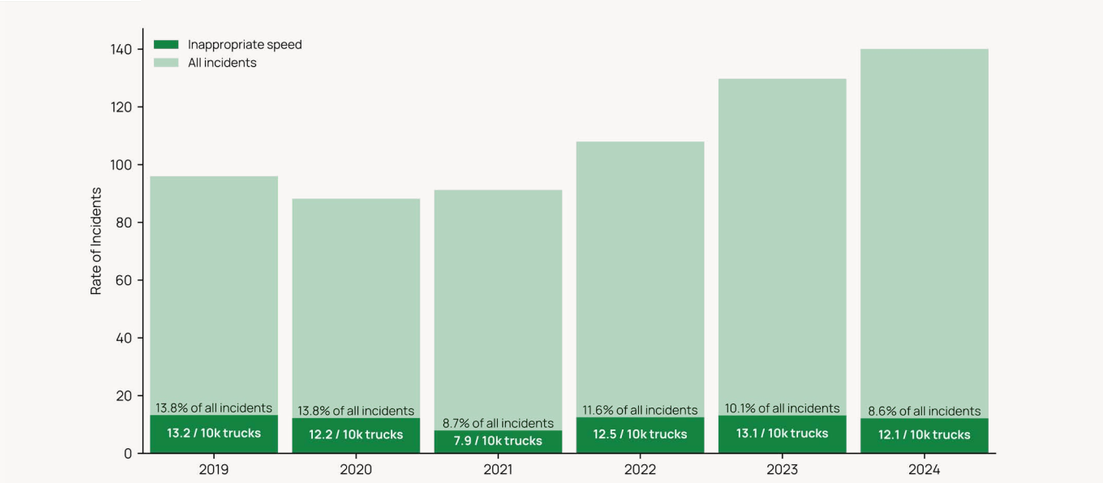
The following section provides a detailed analysis of crashes attributed to Inappropriate speed, examining their frequency, contributing factors, crash dynamics, and distribution across road environments and vehicle types to better understand the conditions under which these high-risk incidents occur.

Figure 21



Distribution of heavy vehicle inappropriate speed incidents by SA3, 2019-2024.

Figure 22



Rate of Inappropriate speed incidents resulting in >$50k damage per 10k heavy vehicle powered units by year.

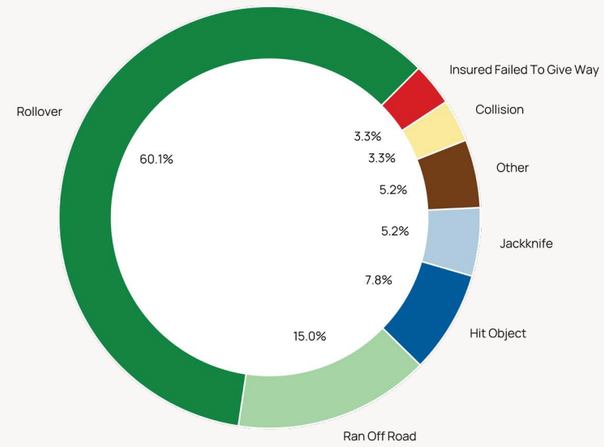
Figure 22 presents a time series of incident rates attributed to Inappropriate speed from 2019 to 2024. The light green shaded area represents the overall incident rate across the dataset, while the dark green area highlights incidents specifically attributed to Inappropriate speed.

The highest rate of Inappropriate speed incidents was recorded in 2019 at 13.2 per 10,000 heavy vehicles, while the lowest occurred in 2021 at 7.9. This dip appears to be an anomaly within the dataset and is likely linked to the impacts of the global COVID-19 pandemic, which significantly altered freight movement patterns and traffic volumes during that period.

Overall, the rate of Inappropriate speed-related incidents has remained relatively stable across most years, ranging between 12.1 and 13.2 per 10,000 heavy vehicles. However, the proportion of these incidents relative to all major incidents has steadily declined, from 13.8% in 2019 to 8.6% in 2024. This trend suggests that while the total number of major incidents has grown, the frequency of Inappropriate speed crashes has not increased at the same rate, indicating some stability in this specific risk category.

Inappropriate speed-related crashes are predominantly single-vehicle incidents, with 86.2% involving only the insured heavy vehicle (see Appendix 4.1). This trend is further supported by the DCA (Definition for Classifying Accidents) code breakdown of these events (see Appendix 4.2). These crashes are overwhelmingly linked to a single DCA code, Off Path on Curve, which is typically associated with loss of control on curved road segments. This category recorded a rate of 10.1 crashes per 10,000 heavy vehicles and accounted for 84.2% of all Inappropriate speed-related incidents.

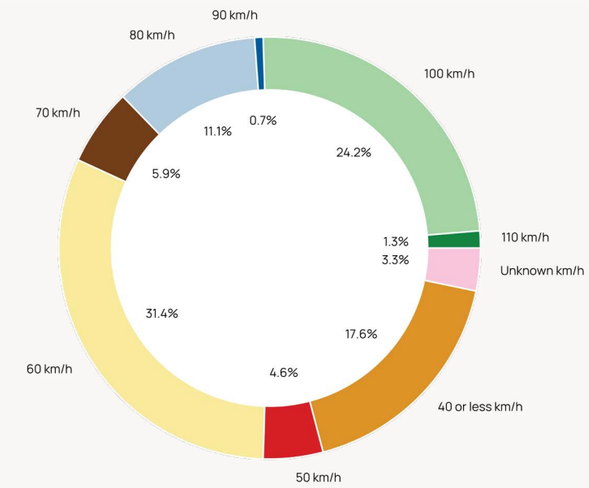
Figure 23



Percentage of Inappropriate speed incidents resulting in >$50k damage in 2024 by incident outcome.

Figure 23 illustrates the incident outcomes for Inappropriate speed crashes in 2024. A significant majority—60.5%—resulted in vehicle rollover, while an additional 14.5% involved the heavy vehicle running off the road. The high occurrence of incidents involving departure from a curved section of road and rollover strongly suggests that many of these crashes are single-vehicle untripped rollovers, where the vehicle tips due to instability rather than collision with another object or vehicle. This reinforces the critical need for appropriate speed selection when navigating curved roadways, particularly under varying load conditions.

Figure 24

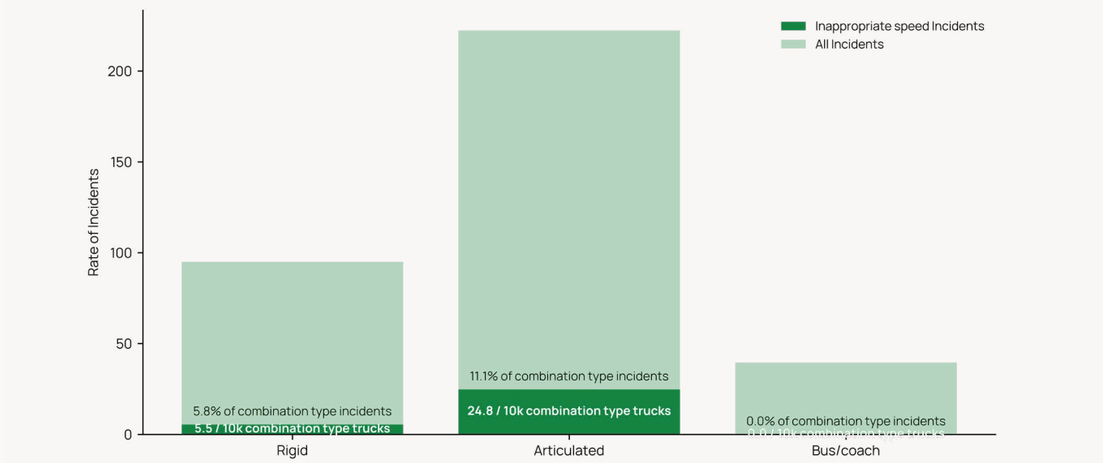


Percentage of Inappropriate speed incidents resulting in >$50k damage in 2024.

Figure 24 illustrates the percentage of Inappropriate speed incidents by posted speed limit in 2024. The majority of these crashes occurred in 60 km/h zones, accounting for 31.6% of all Inappropriate speed incidents. A further 24.3% occurred on roads with a posted speed limit of 100 km/h. Notably, 17.1% of Inappropriate speed crashes took place in zones with a speed limit below 40 km/h, indicating that these incidents are not limited to high-speed environments.

This distribution suggests there may be little direct correlation between posted speed limits and the occurrence of Inappropriate speed crashes. The findings imply that posted and advisory speed limits often fail to account for the variability in heavy vehicle dynamics, such as vehicle mass, load distribution, and combination type. As a result, determining an appropriate speed often relies more on driver experience and situational awareness than on regulatory signage alone.

Figure 25



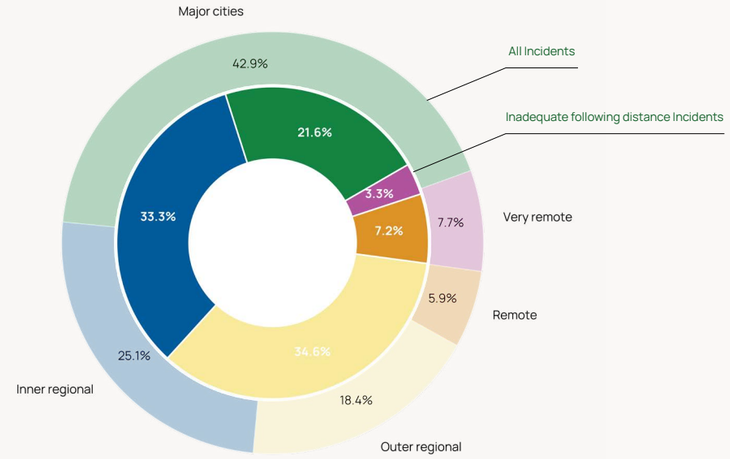
Rate of Inappropriate speed incidents resulting in >$50k damage per 10k combination type vehicles in 2024.

Figure 25 presents the rate of Inappropriate speed incidents compared to all major incidents by combination type in 2024. Articulated combinations recorded a significantly higher rate of Inappropriate speed crashes, with 24.5 incidents per 10,000 heavy vehicles, compared to rigid vehicles at 5.5. Notably, bus/coach combinations recorded no Inappropriate speed-related crashes in 2024.

In addition to their higher rate, Inappropriate speed crashes accounted for a greater proportion of total incidents in articulated vehicles (11.1%) than in rigid vehicles (5.8%), indicating a disproportionate exposure to this crash type.

This heightened risk for articulated combinations may be attributed to their inherent design characteristics. Articulated vehicles are generally less stable due to their high centre of gravity, potential for shifting loads, and the articulation point between the prime mover and trailer. These factors can significantly reduce stability, particularly when negotiating curves or during sudden manoeuvres, making appropriate speed selection critical for crash prevention in these vehicle types.

Figure 26



Percentage of Inappropriate speed versus all incidents resulting in >$50k damage in 2024 by remoteness.

Inappropriate speed may be influenced by factors such as road infrastructure, geometry, and the surrounding environment, each of which can vary significantly across different areas of operation. Figure 26 illustrates the proportion of Inappropriate speed incidents relative to all major incidents by remoteness category in 2024.

Across all incident types, the majority occurred in Major Cities (42.9%), with proportions declining as remoteness increased. However, when isolating Inappropriate speed incidents, there is a clear under-representation in Major Cities, where only 21.6% of such crashes occurred. In contrast, Inner Regional and Outer Regional areas are notably over-represented, accounting for 33.3% and 34.6% respectively of Inappropriate speed incidents, despite representing only 25.1% and 18.4% of all major incidents.

The proportion of Inappropriate speed incidents in Remote and Very Remote areas are largely consistent with their representation in the overall dataset. These findings suggest that Inappropriate speed is more likely to occur in regional settings, where varying road geometry, changing speed environments, and reduced infrastructure quality may challenge appropriate speed selection for heavy vehicle drivers.

Jurisdictions

In 2025, NTARC is introducing an overview analysis of each jurisdiction within Australia. This acknowledges that needs, policies and legislation differ by state and territory, which may be reflected in the types of incidents that occur within each jurisdiction. This information is provided so that the key hazards identified within each jurisdiction can be the focus of road safety research, policy change and education programs within that jurisdiction.

Additionally, jurisdictions have varying regulatory bodies for heavy vehicles. The National Heavy Vehicle Regulator (NHVR) is responsible for the administration of the Heavy Vehicle National Law (HVNL). The HVNL aims to improve efficiency in the heavy vehicle sector by consolidating regulation to a single national source, which in turn reduces compliance complexity and ensures consistency across all states and territories. The HVNL applies in all jurisdictions except the Northern Territory (NT) and Western Australia (WA). However, WA and NT vehicles travelling interstate must comply with the HVNL.

In jurisdictions with smaller populations, limited road networks, or fewer heavy vehicle movements, the annual number of recorded incidents may be too small to report meaningful trends. As a result, fatal injury data in these jurisdictions is presented as a combined rate across the full reporting period from 2019 to 2024 to ensure more robust and interpretable results. Additionally, the jurisdiction analysis rate was still scaled on the entire NTI fleet portfolio.

This allows for rate comparisons to the national analysis and to understand the contribution of each jurisdiction.

The jurisdictional analysis reflects the location where the incident occurred, not the state or territory in which the vehicle was registered or the driver licensed. This is because the environmental context, road infrastructure, and jurisdiction-specific factors where the crash occurred are often more relevant to understanding its contributing causes, especially given that most jurisdictions operate under the same legislative framework.

A summary of key statistics derived from the major loss claims data for each jurisdiction between 2019 and 2024 is presented in Table 2.

Table 2

Aggregate summary statistic	ACT	NSW	NT	QLD	SA	TAS	VIC	WA
Total number of included claims	33	2,555	94	1,822	579	161	1,495	1,030
Average included claims per year	5.5	425.8	15.7	303.7	96.5	26.8	243.2	171.7
Average driver age	47.5	44.6	46.6	47.3	48.4	45.6	44.6	48.9
Most frequent licence class	HC	MC	MC	MC	MC	MC	MC	MC
Average experience in licence class	19.1	13.1	16.5	15.2	15.9	15.0	13.6	17.0
Most frequent driver gender	Male	Male	Male	Male	Male	Male	Male	Male
Average age of vehicle	10.7	11.3	10.6	11.2	10.6	11.4	11.2	11.0
Most frequent combination type	Rigid truck	Rigid truck	A-triple	Rigid truck	Semi-trailer	Semi-trailer	Rigid truck	Semi-trailer
Most frequent road type	Local	National/ state Hwy	National/ state Hwy	National/ state Hwy	National/ state Hwy	National/ state Hwy	National/ state Hwy	National/ state Hwy
Most frequent remoteness area	Major cities	Major cities	Very remote	Major cities	Major cities	Outer regional	Major cities	Very remote
Average total claim cost (AUD)	96,832	139,841	161,594	143,484	144,952	121,732	122,888	135,865

Summary analysis of major loss claims data for jurisdictions, 2019-2024.

Australian Capital Territory

The Australian Capital Territory (ACT) has a population of 454,499 (ABS, 2022) and covers a land area of 2,358sqkm (Geoscience Australia, 2014). Canberra is the smallest jurisdiction in Australia by population and land area. The heavy vehicle fleet in the ACT in 2024 consisted of 1,803 heavy rigid vehicles, 194 articulated vehicles and 622 heavy buses (BITRE, 2024).

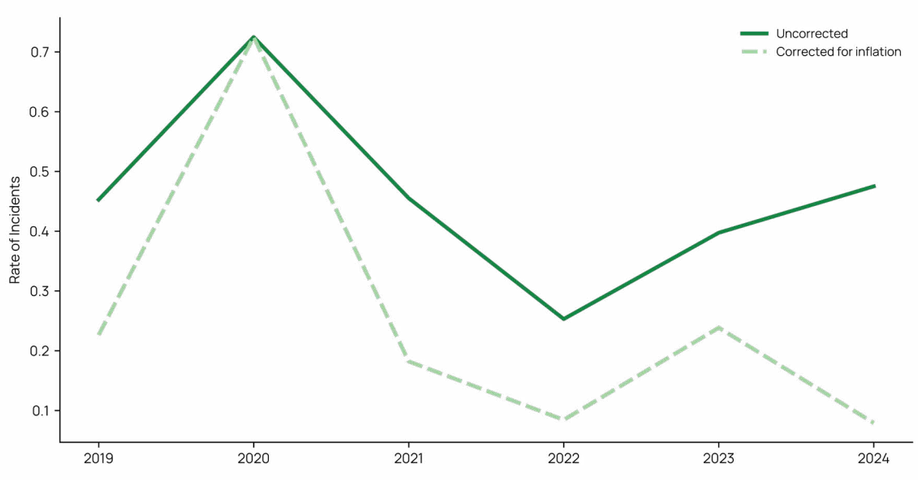
Between 2019 and 2024, the Australian Road Deaths Database (BITRE, 2025) recorded 53 fatal crashes in the ACT, of which only one involved an articulated vehicle. NTI data for the same period reported one fatality involving a heavy rigid truck. Given the ACT's relatively small heavy vehicle fleet and low population density, heavy vehicle crash data is limited. However, examining these incidents remains important to identify key risks and guide targeted safety initiatives within the jurisdiction. The following section presents the NTI data for heavy vehicle involved incidents in the ACT.

Figure 27

Distribution of heavy vehicle incidents by SA3 in the ACT, 2019-2024.

Figure 27 illustrates the distribution of heavy vehicle incidents in the ACT by SA3. There were 33 claims in the ACT between 2019 and 2024, These are distributed evenly across the territory, with little variation in distribution by SA3.

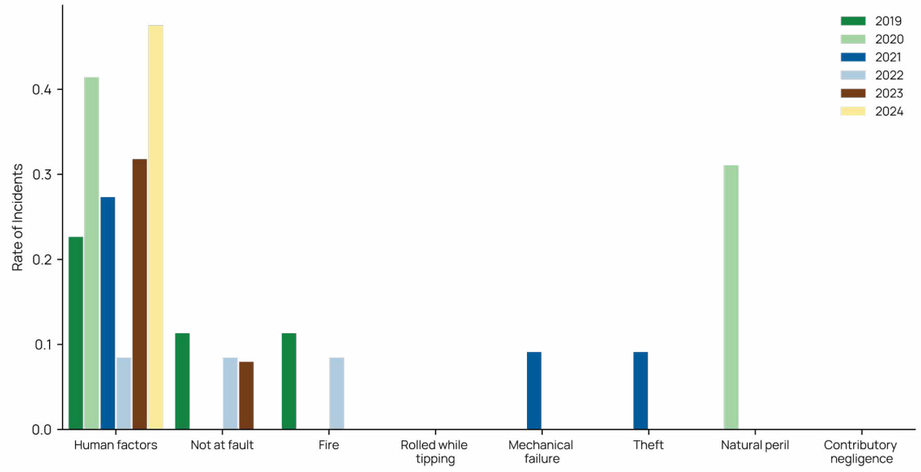
Figure 28



Rate of incidents in ACT per 10k heavy vehicle powered units by year and above the inflation threshold (2003).

Figure 28 illustrates the time series incident rate corrected for inflation for the ACT. Both uncorrected and corrected claims rates peaked in 2020 at 0.72 per 10,000 heavy vehicles. In 2024, the rate of claims uncorrected above the AUD 50,000 threshold was 0.48. In contrast, when the threshold was corrected for 2024 (to AUD 88,000) the rate declined to 0.079. It is important to note that over the six-year period, the ACT only had 33 total claims above AUD 50,000.

Figure 29

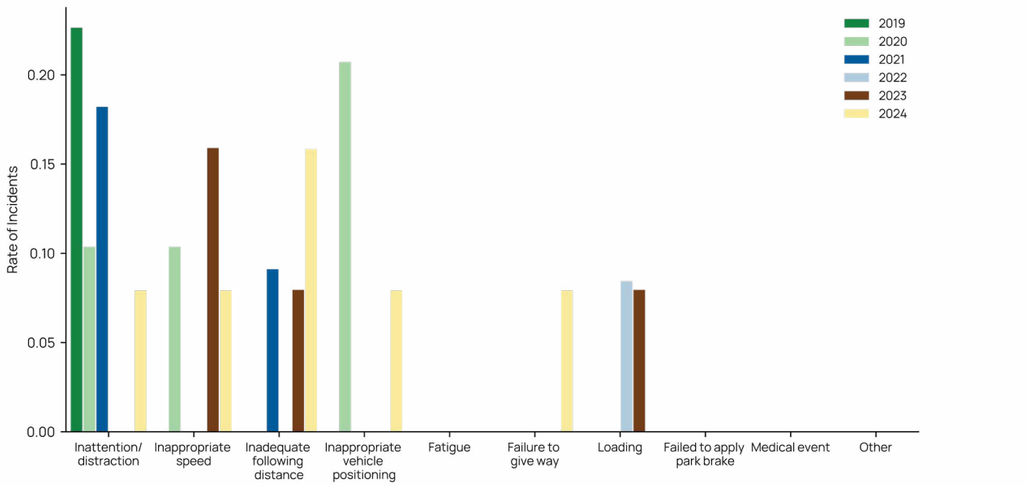


Time series rate of incidents in ACT resulting in >$50k damage per 10k heavy vehicle powered units by principal cause classification.

Figure 29 presents the time series incident rate by principal cause for the ACT. In 2024, human factors were the leading contributor to incidents in the ACT, with a rate of 0.48 incidents per 10,000 heavy vehicles. A notable spike was also observed in 2020, where natural peril-related incidents contributed 0.31 incidents per 10,000 heavy vehicles, likely reflecting the impact of specific environmental events during that period.

However, due to the relatively low number of claims recorded in the ACT each year, consistent time series trends cannot be reliably established, and annual fluctuations should be interpreted with caution.

Figure 30

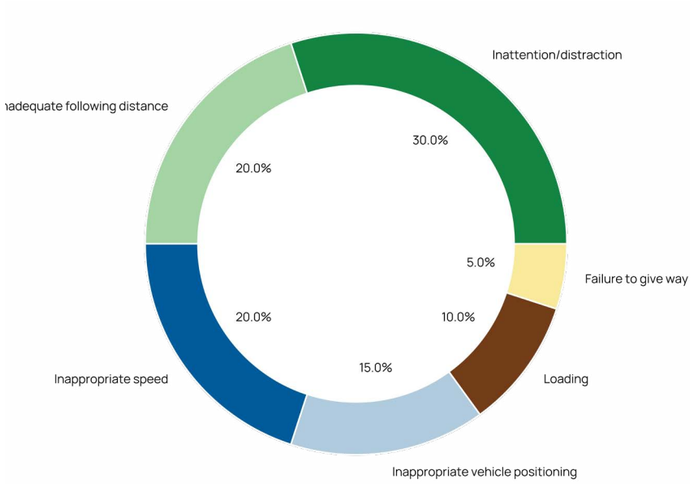


Time series rate of incidents in ACT resulting in >$50k damage per 10k heavy vehicle powered units by human factors cause classification.

The contribution of human factor-related incidents in the ACT can be further broken down into sub-classifications. Figure 30 presents a time series of incident rates by human factor category. Consistent with national trends, Inattention/distraction, Inappropriate speed, and Inadequate following distance accounted for a substantial proportion of incidents. Additional categories recorded in ACT claims data included Inappropriate Vehicle Positioning and Failure to Give Way, and Loading-related issues. In 2024, the highest human factor-related incident rate was attributed to Inadequate following distance, with 0.16 incidents per 10,000 heavy vehicles.

Again, due to the low incidents claims in ACT, it is difficult to make an assessment of time series trends. It would therefore be more appropriate to look at the proportion of claims during the 2019-2024 period.

Figure 31



Percentage of human factor incidents in ACT resulting in >$50k damage by human factor classification, 2019-2024.

Figure 31 illustrates the percentage of incidents attributed to human factors in the ACT between 2019 and 2024. The distribution closely mirrors national patterns, with the top three contributing causes—Inattention/distraction, Inappropriate speed, and Inadequate following distance—represented in similar proportions to the broader dataset.

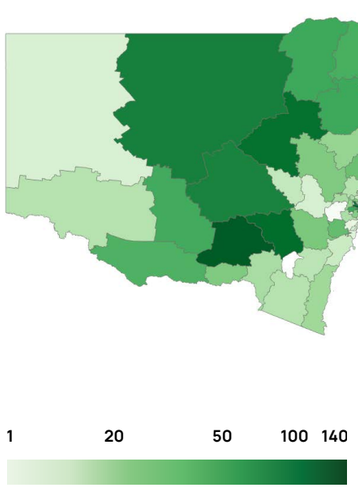
During the 2019-2024 period, there was one Third-party car involved fatality within the data. This fatality was attributed to Inattention/distraction, with a DCA code of Vehicles in Adjacent Directions.

New South Wales

New South Wales (NSW) has a population of 8,072,163 (ABS, 2022) and covers a land area of 801,150sqkm (Geoscience Australia, 2014). NSW is the most populous jurisdiction in Australia and fifth in land area. The heavy vehicle fleet in NSW in 2024 consisted of 110,478 heavy rigid vehicles, 28,049 articulated vehicles and 14,529 heavy buses (BITRE, 2024).

Between 2019 and 2024, the Australian Road Deaths Database (BITRE, 2025) recorded 1,724 fatal crashes in NSW, of which 139 involved a heavy rigid vehicle, 153 involved an articulated vehicle and 39 involved a heavy bus. NTI data for the same period reported 18 fatal crashes involving a heavy rigid vehicle, 52 involving an articulated vehicle and 1 unknown combination type. Examining these incidents is of high importance in identifying key risks and guiding targeted safety initiatives within the jurisdiction. The following section presents the NTI data for heavy vehicle involved incidents in NSW.

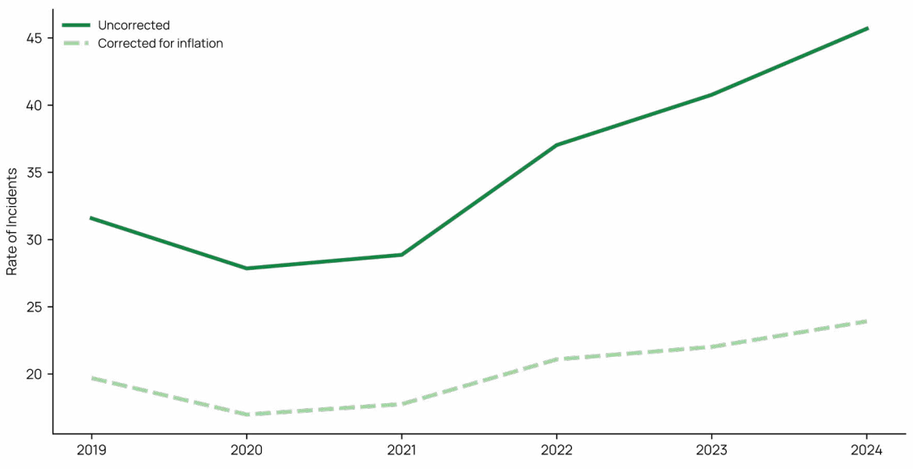
Figure 32



Distribution of heavy vehicle incidents by SA3 in NSW, 2019-2024.

Figure 32 illustrates the distribution of heavy vehicle incidents in NSW by SA3. There were 2,555 claims in NSW between 2019 and 2024. A heavy distribution of incidents was seen through central NSW, the north-east coast and throughout greater Sydney.

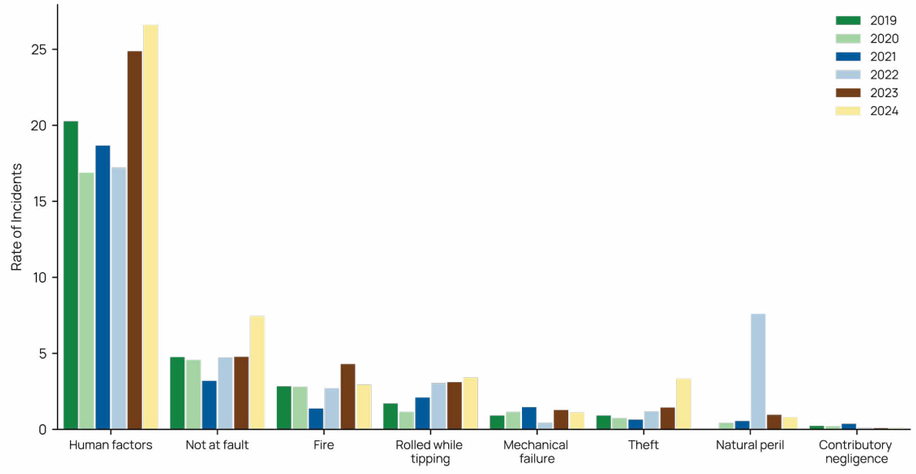
Figure 33



Rate of incidents in NSW per 10k heavy vehicle powered units by year and above the inflation threshold (2003).

Figure 33 illustrates the time series incident rate corrected for inflation for NSW. Both uncorrected and corrected claims rates have been steadily increasing since 2020. In 2024, the rate of claims uncorrected above the AUD 50,000 threshold was 45.7. In contrast, when the threshold was corrected for 2024 (to AUD 88,000) the rate declined to 23.9.

Figure 34

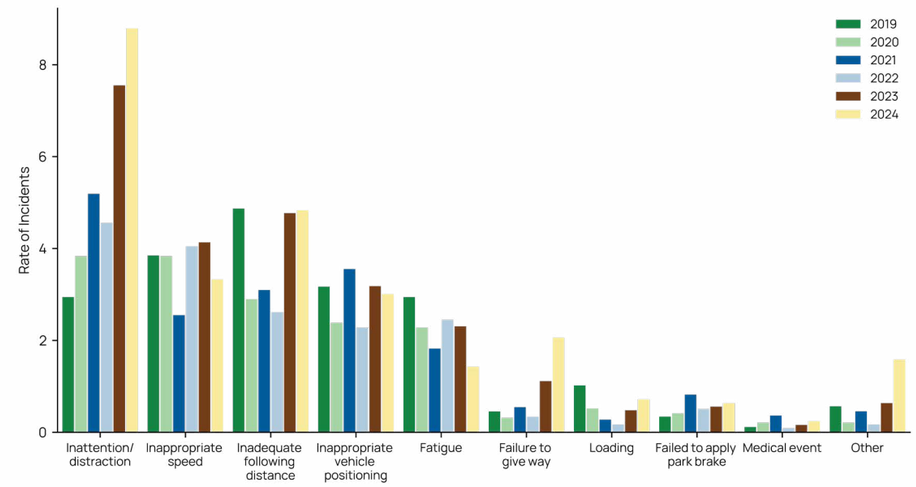


Rate of incidents in NSW resulting in >$50k damage per 10k heavy vehicle powered units by principal cause classification.

Figure 34 presents the time series incident rate by principal cause in NSW. Human factors continue to dominate as the leading cause of incidents, with a significantly higher rate than any other category. This trend is consistent with national patterns. However, in contrast to the national trend, NSW shows a continued upward trajectory. In 2024, human factor-related claims in NSW rose by 6.8% compared to 2023, a more moderate increase than the sharp rise observed between 2022 and 2023.

In addition to human factors, increases were also observed in incidents classified as Not at Fault, Rolled While Tipping, and Theft. Notably, theft incidents more than doubled in 2024, rising from 1.4 to 3.3 incidents per 10,000 heavy vehicles, a substantial increase of 136%.

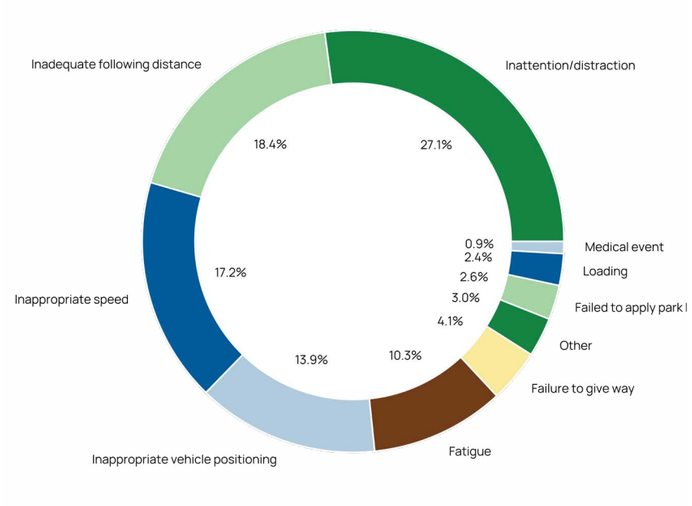
Figure 35



Rate of incidents in NSW resulting in >$50k damage per 10k heavy vehicle powered units by human factor cause classification.

Figure 35 presents the time series incident rate by human factor cause classification in NSW. Consistent with national trends, Inattention/distraction was the leading contributor in 2024, with a rate of 8.8 incidents per 10,000 heavy vehicles, an increase of 17.2% from the previous year. Inadequate following distance and Inappropriate speed were the second and third most common contributing factors respectively, with incident rates of 4.8 and 3.3 per 10,000 heavy vehicles.

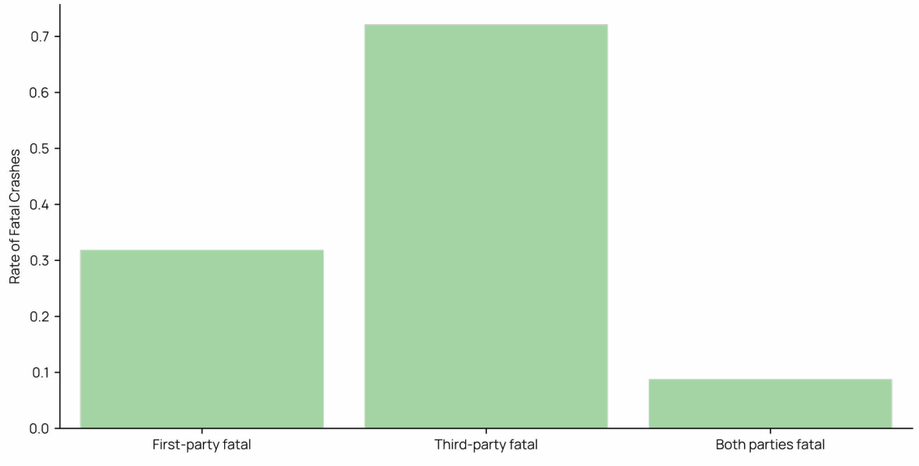
Figure 36



Percentage of human factor incidents in NSW resulting in >$50k damage by human factor classification, 2019-2024.

Figure 36 illustrates the percentage of incidents attributed to human factors in NSW between 2019 and 2024. The distribution closely mirrors national patterns, with the top three contributing causes—Inattention/distraction, Inappropriate speed, and Inadequate following distance—represented in similar proportions to the broader dataset.

Figure 37

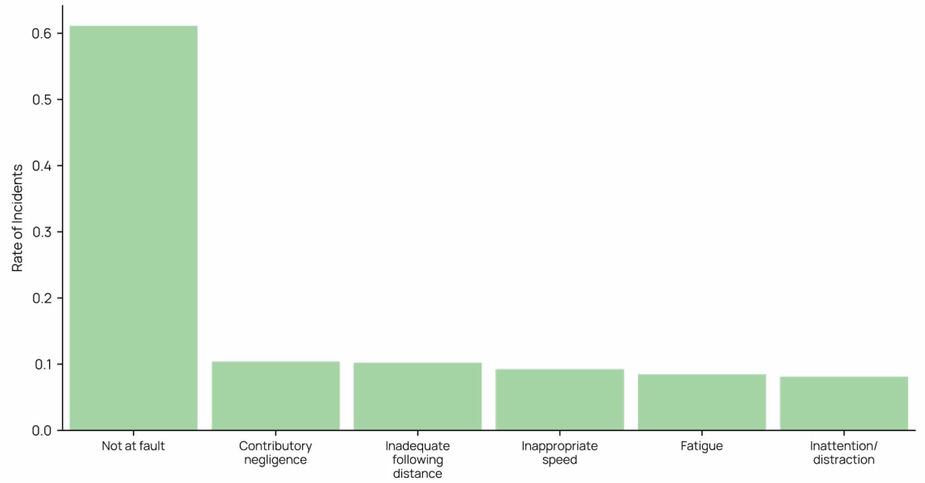


Rate of First-party (heavy vehicle occupant) and Third-party (other road users) fatal crashes in NSW resulting in >$50k damage per 10k heavy vehicle powered units, 2019-2024.

There were 76 fatalities recorded in the dataset for NSW between 2019 and 2024. Figure 37 illustrates the incident rate of fatal injuries by party type: First-party fatal (the heavy vehicle occupant), Third-party fatal (other road users), and Both parties fatal (where both the heavy vehicle driver and a third party sustained fatal injuries). Both party fatalities refer specifically to crashes in which both the heavy vehicle driver and a third party sustained fatal injuries and are not double-counted within the individual categories.

The highest fatality rate was observed among third parties, with 0.72 fatalities per 10,000 heavy vehicles. This was followed by First-party (heavy vehicle driver) fatalities at 0.32 and Both-parties fatalities at 0.088 per 10,000 heavy vehicles.

Figure 38

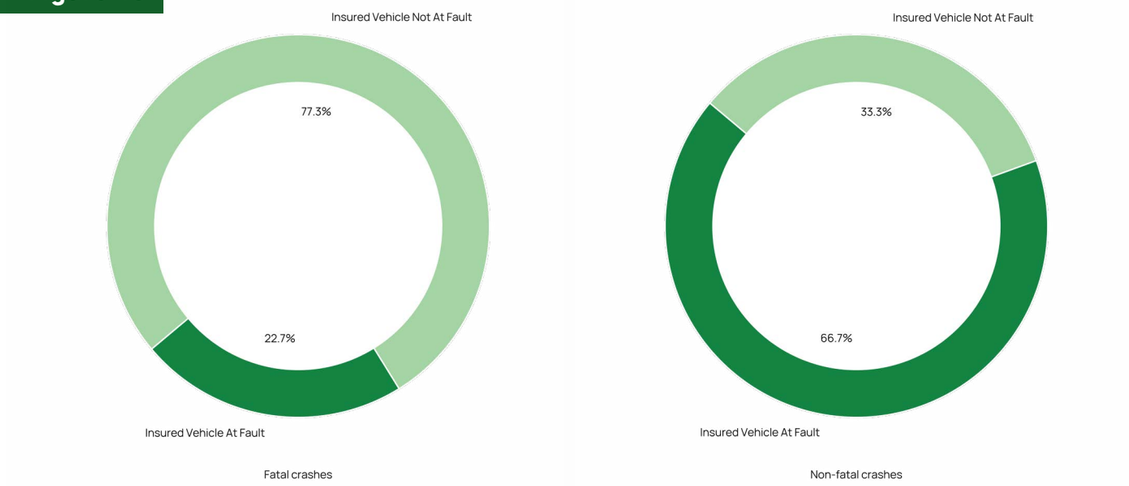


Rate of First-party (heavy vehicle occupant) and Third-party (cars only) fatal crashes in NSW resulting in >$50k damage per 10k heavy vehicle powered units by cause, 2019-2024.

Figure 38 presents the incident rates of heavy vehicle and car fatalities by cause classification in NSW between 2019 and 2024. There were 44 fatalities involving a heavy vehicle and car for this period in NSW. The highest fatality rate was attributed to Not at Fault incidents, where the heavy vehicle was not considered the contributing cause of the crash, with a rate of 0.61 fatalities per 10,000 heavy vehicles. This was followed by Contributory negligence at 0.10, Inadequate following distance at 0.10, and Inappropriate speed at 0.092.

This is further explored by the analysis of heavy vehicle and car fatalities by DCA code in NSW between 2019 and 2024. Seven distinct DCA codes were associated with fatal incidents during this period, recording rates ranging from 0.079 to 0.096 fatalities per 10,000 heavy vehicles. However, the Overtaking DCA code stood out with the highest fatality rate in NSW, at 0.96 per 10,000 heavy vehicles (see Appendix 5.1).

Figure 40

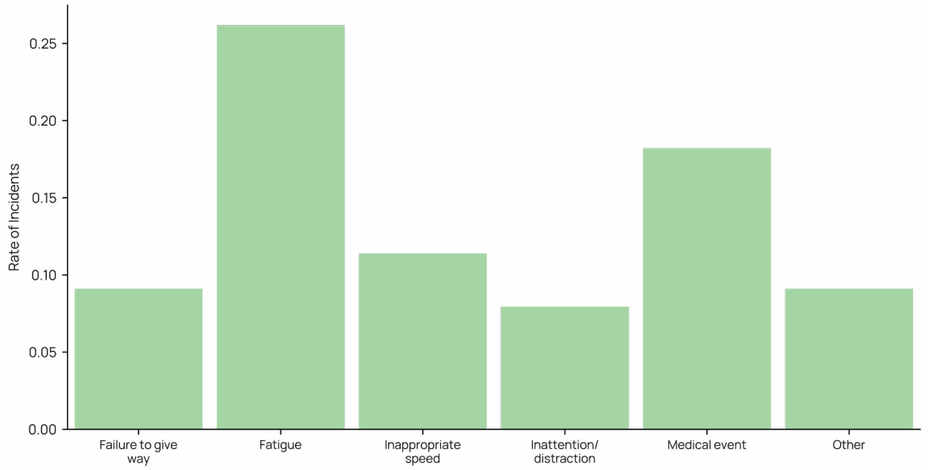


Percentage of First-party (heavy vehicle occupant) and Third-party (cars only) crashes in NSW by at fault and Not at Fault between 2019-2024, a) fatal crashes, b) non-fatal crashes.

Figure 40 presents the assignment of fault in both fatal (Figure 40a) and non-fatal (Figure 40b) crashes involving heavy vehicles and cars in NSW between 2019 and 2024.

In fatal crashes, the insured heavy vehicle was deemed Not at Fault in 77.3% of cases. In contrast, for non-fatal crashes, heavy vehicles were found Not at Fault in only 33.3% of incidents.

Figure 39



Rate of heavy vehicle occupant fatalities in NSW resulting in >$50k damage per 10k heavy vehicle powered units by cause, 2019-2024.

Focusing specifically on heavy vehicle occupant fatalities, Figure 39 highlights the leading contributing causes between 2019 and 2024. There were 21 heavy vehicle occupant fatalities during this analysis period in NSW. Fatigue was the most prominent, with a fatality rate of 0.26 per 10,000 heavy vehicles. This was followed by Medical event-related crashes, contributing 0.18 heavy vehicle occupant fatalities per 10,000 vehicles.

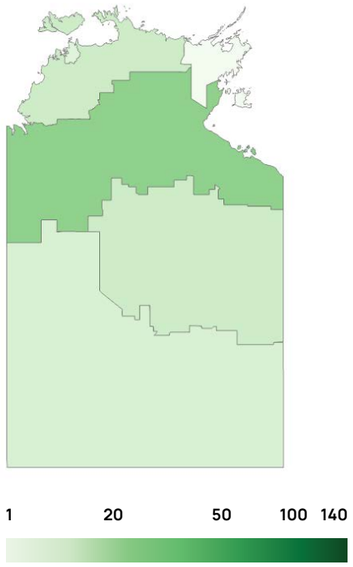
This trend is further emphasised by the analysis of heavy vehicle occupant fatalities by DCA code. Between 2019 and 2024, the highest fatal crash rate for heavy vehicle occupants was Vehicles from Opposing Direction, with a rate of 0.11 fatalities per 10,000 heavy vehicles (see Appendix 5.2). In total, five distinct DCA codes were associated with heavy vehicle occupant fatalities during this period, reflecting the range of crash types that can result in fatal outcomes for drivers.

Northern Territory

The Northern Territory (NT) has a population of 232,605 (ABS, 2022) and covers a land area of 1,347,791sqkm (Geoscience Australia, 2014). The NT is the least populated jurisdiction in Australia and third in land area. The heavy vehicle fleet in the NT in 2024 consisted of 5,080 heavy rigid vehicles, 1,372 articulated vehicles and 900 heavy buses (BITRE, 2024).

Between 2019 and 2024, the Australian Road Deaths Database (BITRE, 2025) recorded 209 fatal crashes in the NT, of which five involved a heavy rigid vehicle, 10 involved an articulated vehicle and five involved a heavy bus. NTI data for the same period reported five fatal crashes involving an articulated vehicle. Given the NT's relatively small representation within the NTI heavy vehicle fleet portfolio, heavy vehicle crash data is limited. However, examining these incidents remains important in identifying key risks and guiding targeted safety initiatives within the jurisdiction. The following section presents the NTI data for heavy vehicle involved incidents in the NT.

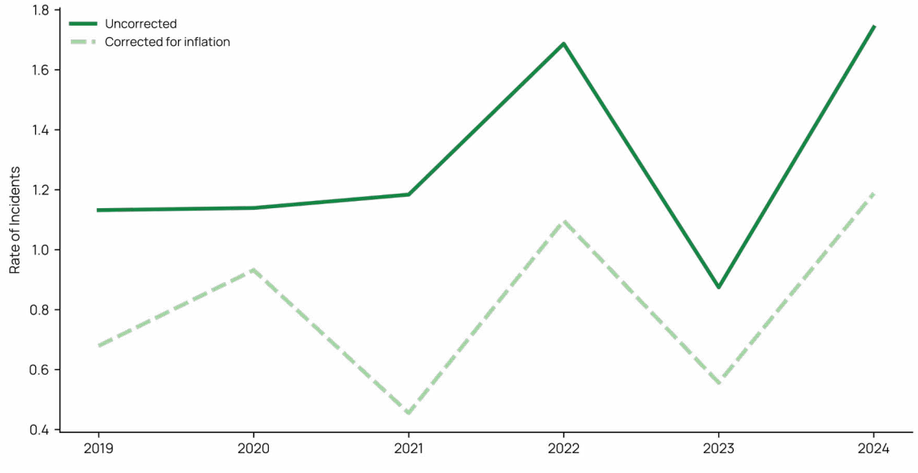
Figure 41



Distribution of heavy vehicle incidents by SA3 in the NT, 2019-2024.

Figure 41 illustrates the distribution of heavy vehicle incidents in the NT by SA3. There were 94 claims in the NT between 2019 and 2024. These are distributed evenly across the territory, with little variation in distribution by SA3.

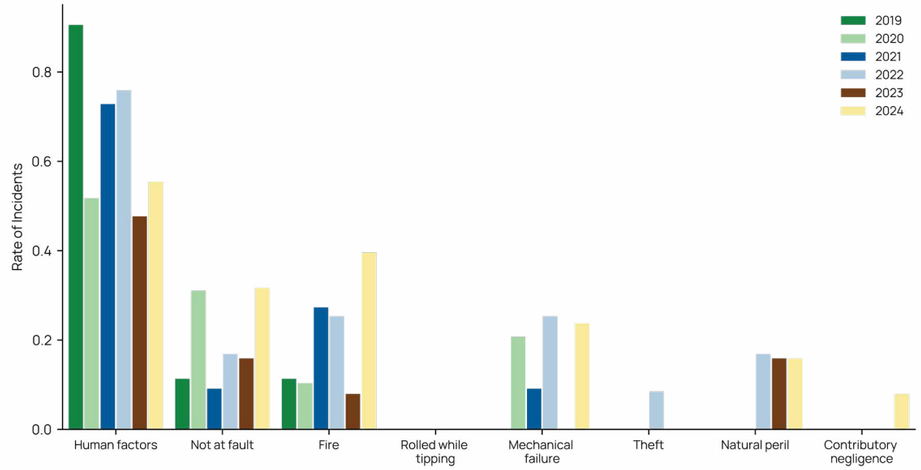
Figure 42



Rate of incidents in NT per 10k heavy vehicle powered units by year and above the inflation threshold (2003).

Figure 42 illustrates the time series of incident rates in the NT, corrected for inflation. Due to the relatively low number of claims recorded in the jurisdiction—94 between 2019 and 2024—both the uncorrected and inflation-adjusted claim rates display considerable variability. In 2024, the uncorrected rate of claims exceeding the original AUD 50,000 threshold was 1.7 per 10,000 heavy vehicles. When adjusted for inflation to a 2024 equivalent threshold (of AUD 88,000), the rate decreased to 1.2.

Figure 43

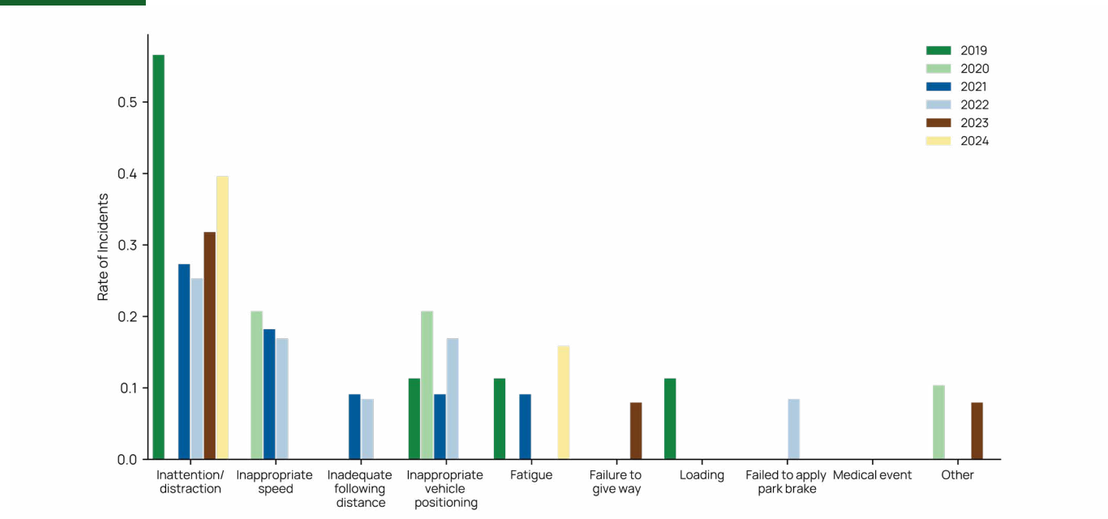


Rate of incidents in NT resulting in >$50k damage per 10k heavy vehicle powered units by principal cause classification.

Figure 43 presents the time series incident rate by principal cause in the NT. Human factors continue to be the dominant cause of incidents, with a significantly higher rate than any other category, mirroring national trends. In 2024, human factor-related claims in the NT increased by 14.6% compared to 2023.

In addition to human factors, incident rates also rose for categories such as Not at Fault and Fire. Notably, Fire-related incidents increased substantially, rising from 0.079 to 0.40 per 10,000 heavy vehicles, a fourfold increase from the previous year. It is also worth noting that Natural Peril incidents have been a consistent feature of the NT dataset since 2022, with rates of approximately 0.16 per 10,000 heavy vehicles.

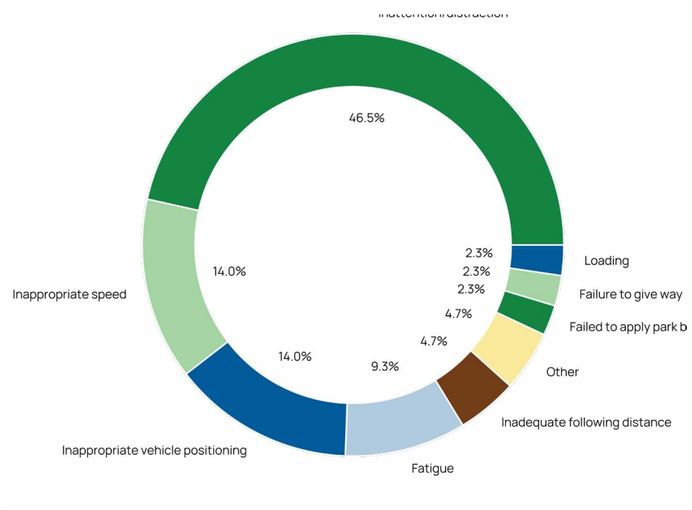
Figure 44



Rate of incidents in NT resulting in >$50k damage per 10k heavy vehicle powered units by human factor cause classification.

Figure 44 presents the time series incident rate by human factor cause classification in the NT. In line with national trends, Inattention/distraction was the leading contributor to incidents in 2024, with a rate of 0.40 incidents per 10,000 heavy vehicles, an increase of 24.5% from the previous year. The only other human factor recorded in 2024 was Fatigue, with an incident rate of 0.16 per 10,000 heavy vehicles.

Figure 45



Percentage of human factors incidents in NT resulting in >$50k damage by human factors classification, 2019-2024.

Figure 45 illustrates the percentage of incidents attributed to human factors in the NT between 2019 and 2024. The distribution closely mirrors national patterns, with the top three contributing causes—Inattention/distraction, Inappropriate speed, and Inadequate following distance—represented in similar proportions to the broader dataset.

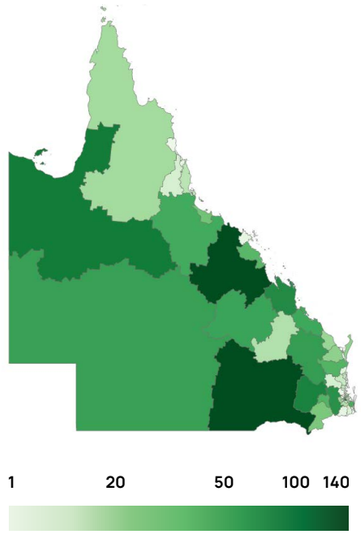
Between 2019 and 2024, there were three Third-party car-involved fatalities recorded in the dataset for the NT. All three incidents were classified as Not at Fault and were assigned the DCA code Vehicles from Opposing Directions.

Queensland

Queensland (QLD) has a population of 5,156,138 (ABS, 2022) and covers a land area of 1,729,742sqkm (Geoscience Australia, 2014). QLD is the third largest jurisdiction in Australia by population and second in land area. The heavy vehicle fleet in QLD in 2024 consisted of 85,324 heavy rigid vehicles, 26,958 articulated vehicles and 9,699 heavy buses (BITRE, 2024).

Between 2019 and 2024, the Australian Road Deaths Database (BITRE, 2025) recorded 1,505 fatal crashes in QLD, of which 94 involved a heavy rigid vehicle, 150 involved an articulated vehicle and 19 involved a heavy bus. NTI data for the same period reported 16 fatal crashes involving a heavy rigid vehicle, 46 involving an articulated vehicle and 1 involving a heavy bus. Examining these incidents is of high importance in identifying key risks and guiding targeted safety initiatives within the jurisdiction. The following section presents the NTI data for heavy vehicle involved incidents in QLD.

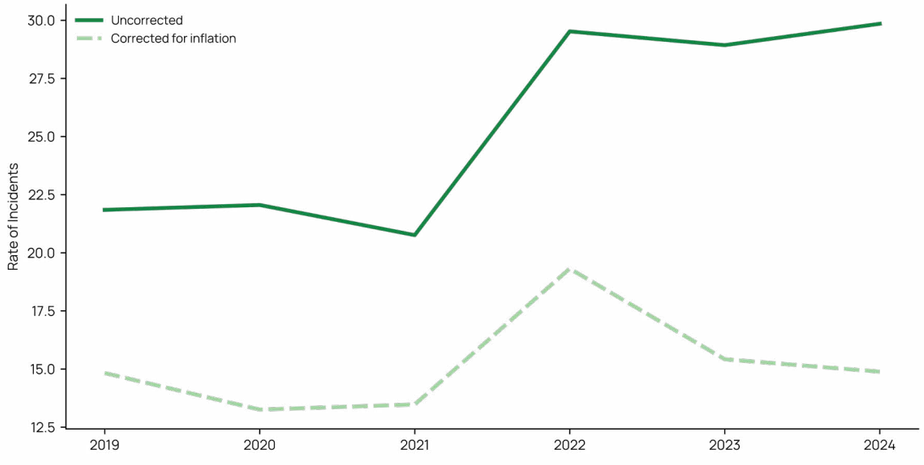
Figure 46



Distribution of heavy vehicle incidents by SA3 in QLD, 2019-2024.

Figure 46 illustrates the distribution of heavy vehicle incidents in QLD by SA3. There were 1,822 claims in QLD between 2019 and 2024, There was a concentration of incidents to the west of Brisbane and in the central coast. Additionally, a higher concentration was also seen in the north-west region of QLD.

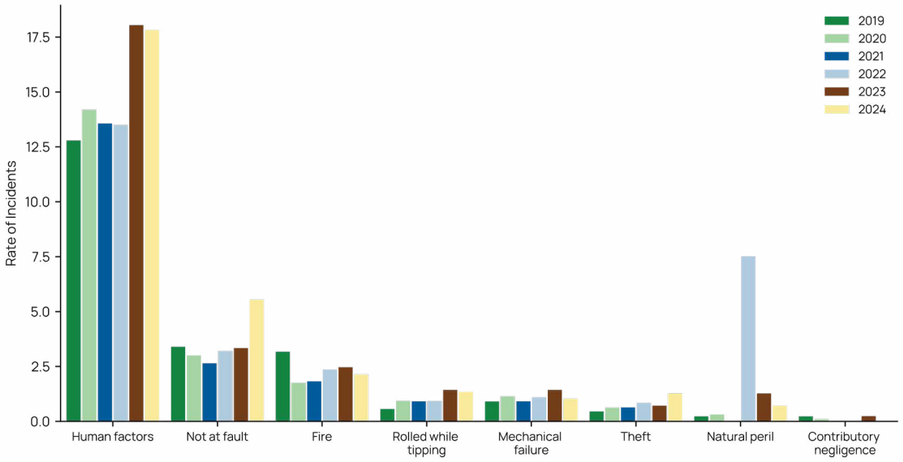
Figure 47



Rate of incidents in QLD per 10k heavy vehicle powered units by year and above the inflation threshold (2003).

Figure 47 illustrates the time series of incident rates in QLD, corrected for inflation. While the uncorrected claim rate, based on the original AUD 50,000 major loss threshold, has been rising since 2021, the inflation-adjusted claim rate has been declining since 2022. This suggests a growing prevalence of claims that exceed the original threshold but fall below the inflation-adjusted threshold. In 2024, the uncorrected major loss claim rate was 29.8 per 10,000 heavy vehicles, whereas applying the inflation-adjusted threshold (of AUD 88,000) reduced the rate to 14.9.

Figure 48

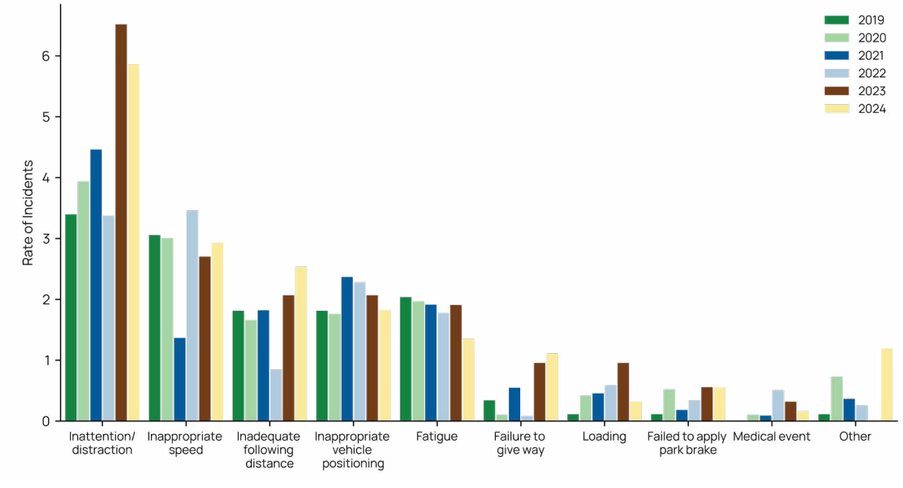


Rate of incidents in QLD resulting in >$50k damage per 10k heavy vehicle powered units by principal cause classification.

Figure 48 presents the time series incident rate by principal cause in QLD. Human factors remain the leading cause of incidents, with rates significantly higher than any other category, mirroring national trends. In 2024, QLD recorded a 1.1% decline in Human factor-related claims compared to 2023, marking a stabilisation following the sharp increase between 2022 and 2023.

In contrast, incident rates for Not at Fault and Theft categories rose notably. Not at Fault incidents increased by 66.7%, while Theft incidents surged by 80.6%, highlighting emerging areas of concern in the state's heavy vehicle safety landscape.

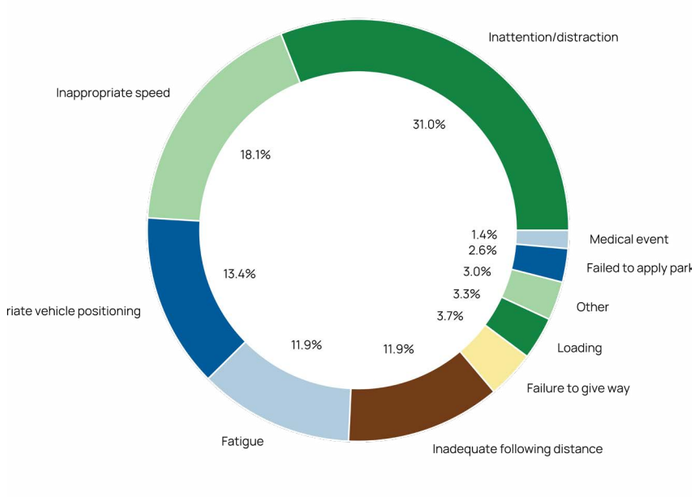
Figure 49



Rate of incidents in QLD resulting in >$50k damage per 10k heavy vehicle powered units by human factor cause classification.

Figure 49 presents the time series incident rate by Human factor cause classification in QLD. Consistent with national trends, Inattention/distraction was the leading contributor in 2024, with a rate of 5.9 incidents per 10,000 heavy vehicles, a 9.2% decrease from the previous year. Inappropriate speed and Inadequate following distance were the second and third most common contributing factors respectively, with incident rates of 2.9 and 2.5 per 10,000 heavy vehicles.

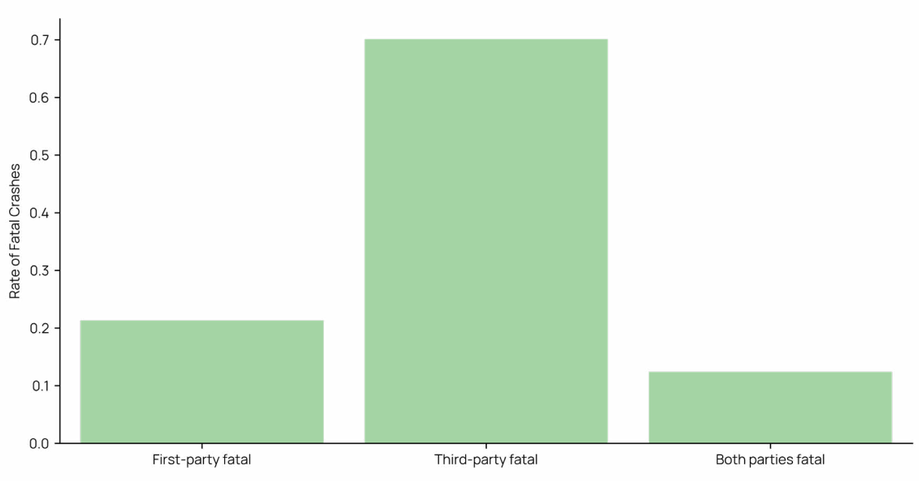
Figure 50



Percentage of human factor incidents in QLD resulting in >$50k damage by human factors classification, 2019-2024.

Figure 50 illustrates the percentage of incidents attributed to human factors in QLD between 2019 and 2024. The distribution closely mirrors national patterns, with the top three contributing causes—Inattention/distraction, Inappropriate speed, and Inadequate following distance—represented in similar proportions to the broader dataset.

Figure 51



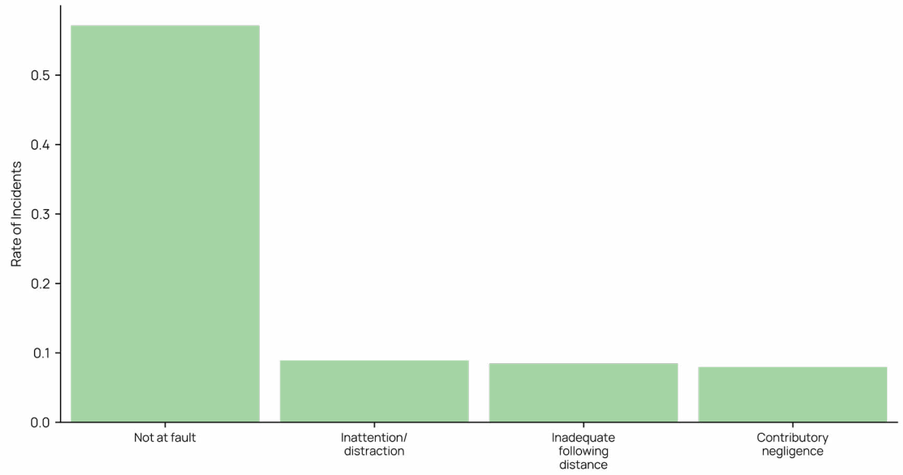
Rate of First-party (heavy vehicle occupant) and Third-party (other road users) fatal crashes in QLD resulting in >$50k damage per 10k heavy vehicle powered units, 2019-2024.

There were 63 fatalities recorded in the dataset for QLD between 2019 and 2024. Figure 51 illustrates the incident rate of fatal injuries by party type: First-party fatal (the heavy vehicle occupant), Third-party fatal (other road users), and Both parties fatal (where both the heavy vehicle driver and a third party sustained fatal injuries).

Both party fatalities refer specifically to crashes in which both the heavy vehicle driver and a third party sustained fatal injuries and are not double-counted within the individual categories.

The highest fatality rate was among third parties, with 0.70 fatalities per 10,000 heavy vehicles. This was followed by First-party (heavy vehicle occupant) fatalities at 0.21, and both-party fatalities at 0.12 per 10,000 heavy vehicles.

Figure 52

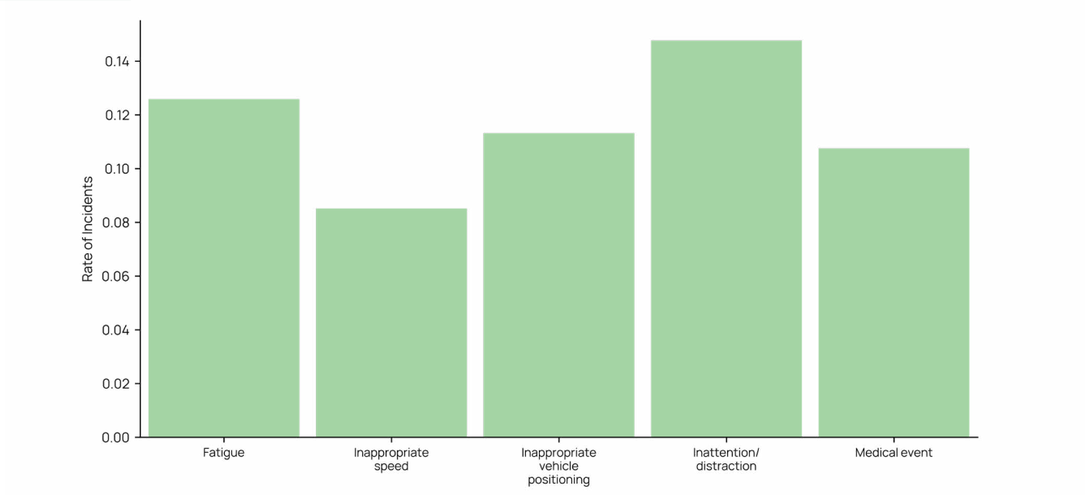


Rate of First-party (heavy vehicle occupant) and Third-party (cars only) fatal crashes in QLD resulting in >$50k damage per 10k heavy vehicle powered units by cause, 2019-2024.

Figure 52 presents the incident rates of heavy vehicle and car fatalities by cause classification in QLD between 2019 and 2024. There were 42 fatalities involving a heavy vehicle and car for this period in QLD. The highest fatality rate was attributed to Not at Fault incidents, where the heavy vehicle was not considered the contributing cause of the crash, with a rate of 0.57 fatalities per 10,000 heavy vehicles. This was followed by Inattention/distraction at 0.089, and Inadequate following distance and Contributory negligence, at 0.084 and 0.079 respectively.

This is further explored by the analysis of heavy vehicle and car fatalities by DCA code in QLD between 2019 and 2024. Four distinct DCA codes were associated with fatal incidents during this period, recording rates ranging from 0.084 to 0.097 fatalities per 10,000 heavy vehicles. Vehicles from Adjacent Directions DCA code contributed the highest fatality rate in QLD, at 0.097 per 10,000 heavy vehicles (see Appendix 5.3).

Figure 53

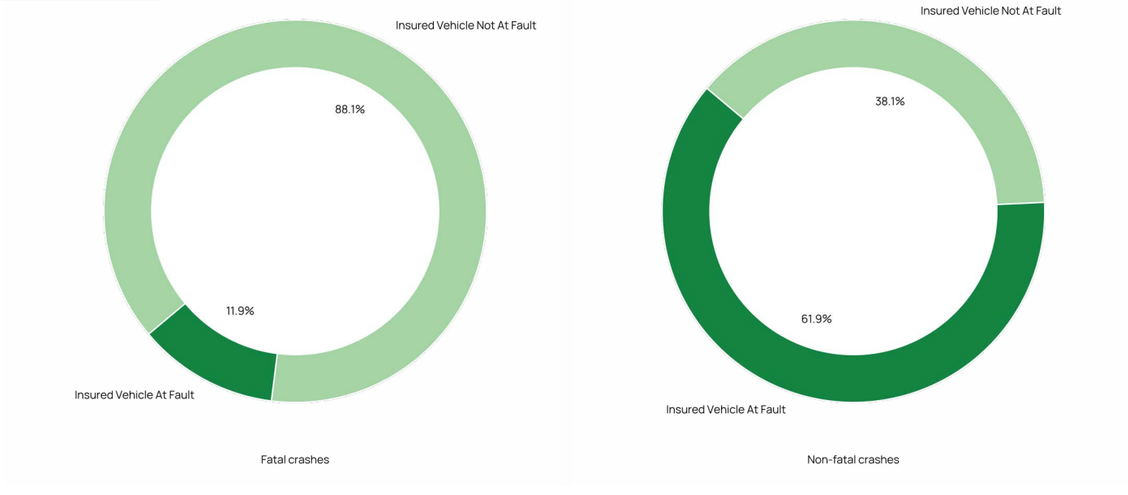


Rate of heavy vehicle occupant fatalities in QLD resulting in >$50k damage per 10k heavy vehicle powered units by cause, 2019-2024.

Focusing specifically on heavy vehicle occupant fatalities, Figure 53 highlights the leading contributing causes between 2019 and 2024. There were 14 heavy vehicle occupant fatalities during this analysis period in QLD. Inattention/distraction was the most prominent, with a fatality rate of 0.15 per 10,000 heavy vehicles. This was closely followed by Fatigue-related crashes, contributing 0.13 heavy vehicle occupant fatalities per 10,000 vehicles.

This trend is further emphasised by the analysis of heavy vehicle occupant fatalities by DCA code. Between 2019 and 2024, three distinct DCA codes were associated with heavy vehicle occupant fatalities in QLD—Off Path on Straight at 0.092, Vehicles from Same Direction at 0.091, and Off Path On Curve at 0.091 per 10,000 heavy vehicles (see Appendix 5.4)—reflecting the range of crash types that can result in fatal outcomes for drivers.

Figure 54



Percentage of First-party (heavy vehicle occupant) and Third-party (cars only) crashes in QLD by at fault and Not at Fault between 2019-2024, a) fatal crashes, b) non-fatal crashes.

Figure 54 presents the assignment of fault in both fatal (Figure 35a) and non-fatal (Figure 35b) crashes involving heavy vehicles and cars in QLD between 2019 and 2024.

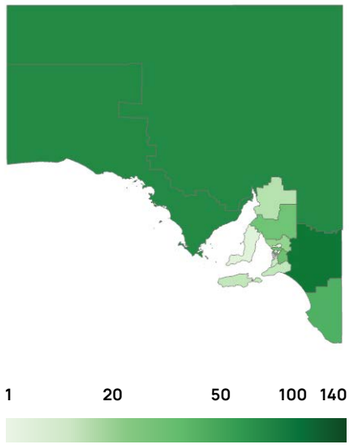
In fatal crashes, the insured heavy vehicle was deemed Not at Fault in 88.1% of cases. In contrast, for non-fatal crashes, heavy vehicles were found Not at Fault in only 38.1% of incidents.

South Australia

South Australia (SA) has a population of 1,781,516 (ABS, 2022) and covers a land area of 984,321sqkm (Geoscience Australia, 2014). SA is the fifth largest jurisdiction in Australia by population and fourth in land area. The heavy vehicle fleet in SA in 2024 consisted of 26,639 heavy rigid vehicles, 10,532 articulated vehicles and 3,222 heavy buses (BITRE, 2024).Between 2019 and 2024, the Australian Road Deaths Database (BITRE, 2025) recorded 548 fatal crashes in SA, with 23 involving a heavy rigid vehicle, 46 an articulated vehicle and 11 a heavy bus. NTI data for the same period reported seven fatal crashes involving a heavy rigid vehicle and 23 involving an articulated vehicle.

Examining these incidents is of high importance to identify key risks and guide targeted safety initiatives within the jurisdiction. The following section presents the NTI data for heavy vehicle involved incidents in SA.

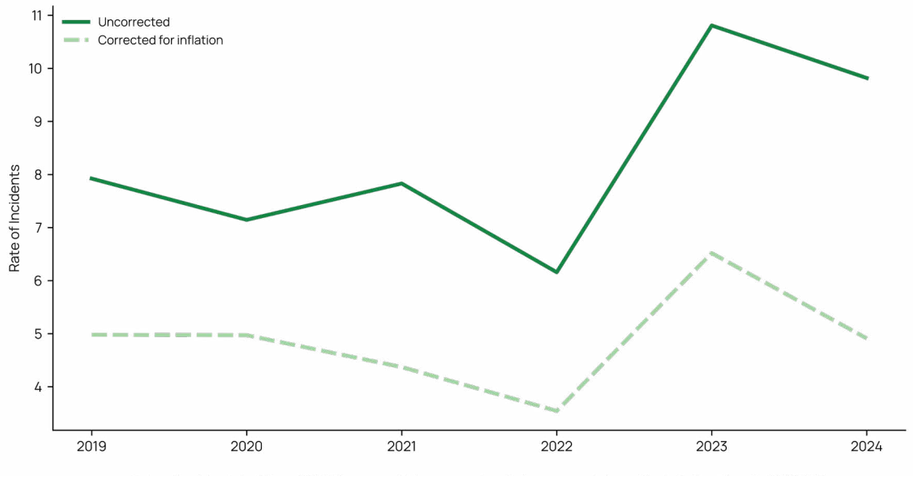
Figure 55



Distribution of heavy vehicle incidents by SA3 in SA, 2019-2024.

Figure 55 illustrates the distribution of heavy vehicle incidents in SA by SA3. There were 579 claims in SA between 2019 and 2024. The highest concentration of incidents was east of Adelaide, with a low concentration around greater Adelaide. The distribution of incidents was fairly uniform across the rest of SA due the small number of SA3 regions outside of south-east SA.

Figure 56

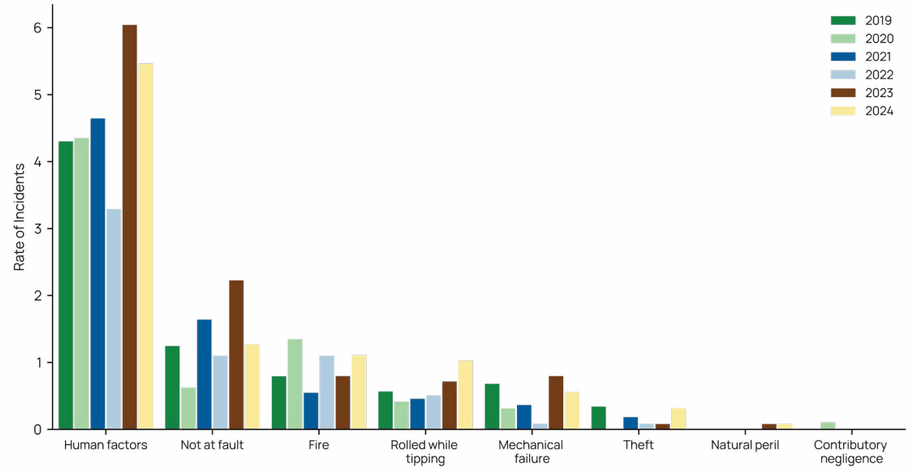


Rate of incidents in SA per 10k heavy vehicle powered units by year and above the inflation threshold (2003).

Figure 56 illustrates the time series of incident rates in SA, corrected for inflation. In 2024, the uncorrected major loss claim rate, based on the original AUD 50,000 threshold, was 9.8 per 10,000 heavy vehicles. When adjusted for inflation to a 2024 equivalent threshold (of AUD 88,000), the rate decreased to 4.9.

While the inflation adjustment reduces the overall rate, the uncorrected and corrected rates exhibit a consistent trend over time. This suggests that incident costs are relatively evenly distributed around the inflation-adjusted threshold.

Figure 57

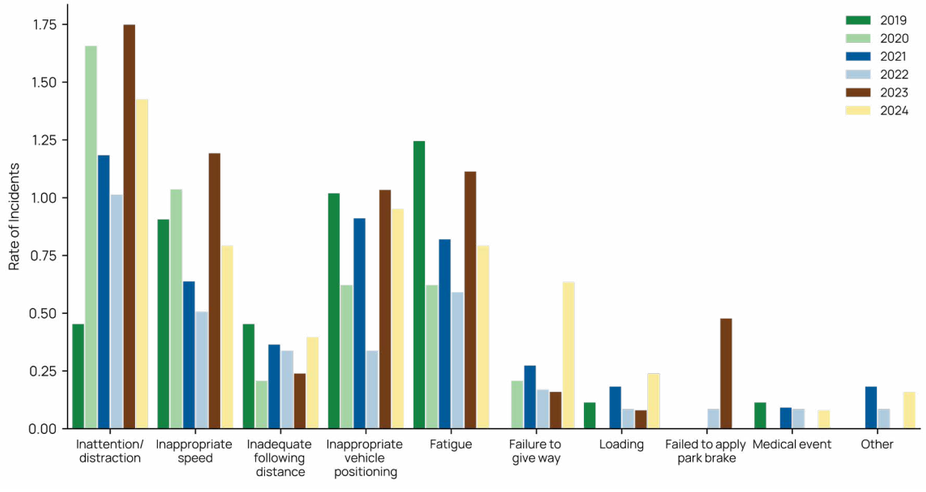


Rate of incidents in SA resulting in >$50k damage per 10k heavy vehicle powered units by principal cause classification.

Figure 57 presents the time series incident rate by principal cause in SA. Human factors continue to be the predominant cause of incidents, maintaining significantly higher rates than any other category and reflecting national trends. In 2024, SA recorded an 8.3% decrease in human factor-related claims compared to 2023, indicating a potential stabilisation following the sharp rise between 2022 and 2023.

Conversely, several other categories experienced notable increases. Fire incidents rose by 37.5%, Rolled While Tipping incidents increased by 42.9%, and Theft incidents more than tripled. These shifts highlight emerging areas of concern within SA's heavy vehicle safety landscape, warranting close monitoring and targeted intervention.

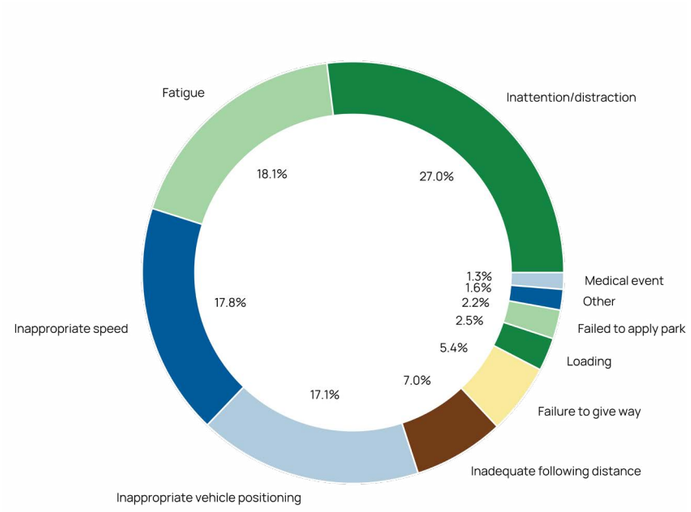
Figure 58



Rate of incidents in SA resulting in >$50k damage per 10k heavy vehicle powered units by human factors cause classification.

Figure 58 presents the time series incident rate by human factor cause classification in SA. Consistent with national trends, Inattention/distraction was the leading contributor in 2024, with a rate of 1.4 incidents per 10,000 heavy vehicles, a decrease of 21.4% from the previous year. Inappropriate vehicle positioning was the second most common contributing factors, with incident rates of 0.95 per 10,000 heavy vehicles. This was followed by Inappropriate speed and Fatigue both with a rate on 0.79.

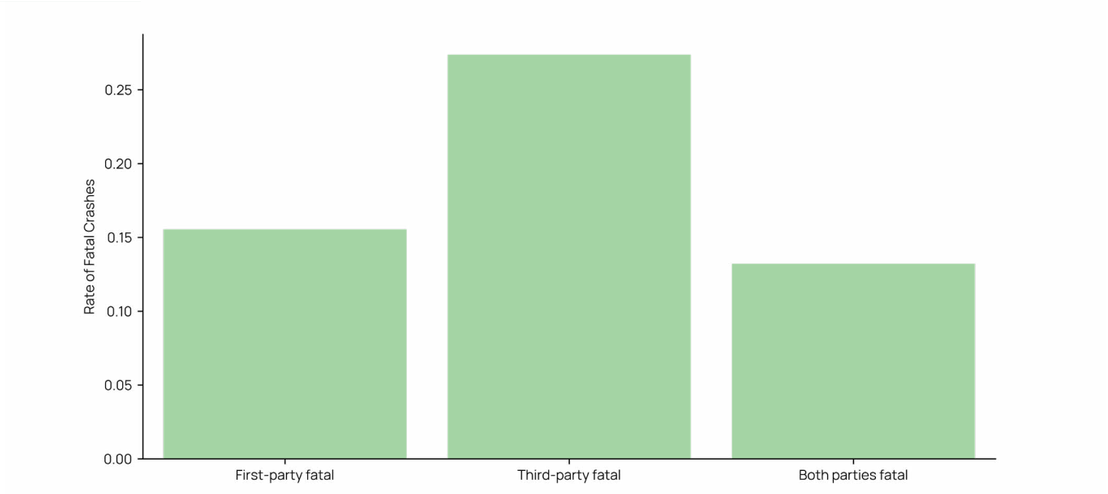
Figure 59



Percentage of human factor incidents in SA resulting in >$50k damage by human factors classification, 2019-2024.

Figure 59 illustrates the percentage of incidents attributed to human factors in SA between 2019 and 2024. Unlike national trends, the distribution in SA shows a different profile of contributing causes. The top three are Inattention/distraction, Inappropriate speed, and Fatigue, with Inadequate following distance, typically a leading cause nationally, playing a less prominent role in the state's incident profile.

Figure 60



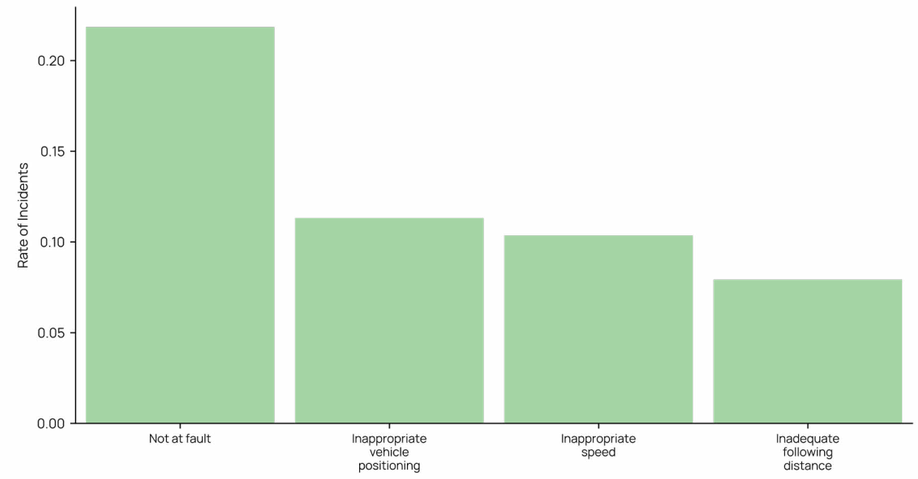
Rate of First-party (heavy vehicle occupant) and Third-party (other road users) fatal crashes in SA resulting in >$50k damage per 10k heavy vehicle powered units, 2019-2024.

There were 30 fatalities recorded in the dataset for SA between 2019 and 2024. Figure 60 illustrates the incident rate of fatal injuries by party type: First-party fatal (the heavy vehicle occupant), Third-party fatal (other road users), and Both parties fatal (where both the heavy vehicle driver and a third party sustained fatal injuries).

Both party fatalities refer specifically to crashes in which both the heavy vehicle driver and a third party sustained fatal injuries and are not double-counted within the individual categories.

The highest fatality rate was observed among Third-parties, with 0.27 fatalities per 10,000 heavy vehicles. This was followed by First-party (heavy vehicle driver) fatalities at 0.16, and Both-party fatalities at 0.13 per 10,000 heavy vehicles.

Figure 61

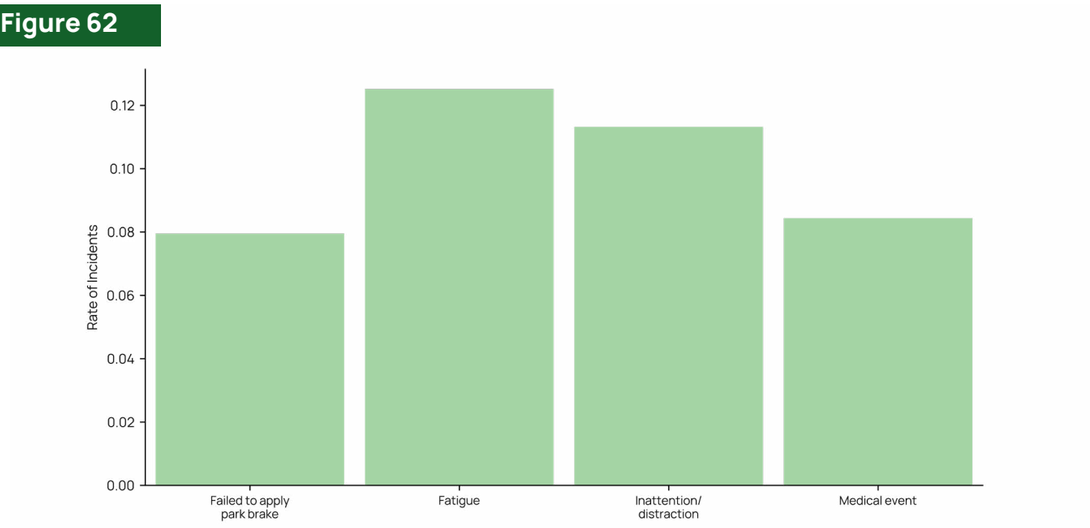


Rate of First-party (heavy vehicle occupant) and Third-party (cars only) fatal crashes in SA resulting in >$50k damage per 10k heavy vehicle powered units by cause, 2019-2024.

Figure 61 presents the incident rates of heavy vehicle and car fatalities by cause classification in SA between 2019 and 2024. There were 15 fatalities involving a heavy vehicle and car for this period in SA. The highest fatality rate was attributed to Not at Fault incidents, where the heavy vehicle was not considered the contributing cause of the crash, with a rate of 0.22 fatalities per 10,000 heavy vehicles. This was followed by Inappropriate Vehicle Positioning at 0.11, Inappropriate speed at 0.10 and Inadequate following distance at 0.079.

This is further explored by the analysis of heavy vehicle and car fatalities by DCA code in SA between 2019 and 2024. Five distinct DCA codes were associated with fatal incidents during this period, recording rates ranging from 0.079 to 0.11 fatalities per 10,000 heavy vehicles. Vehicles from Same Direction DCA code contributed the highest fatality rate in SA, at 0.11 per 10,000 heavy vehicles (see Appendix 5.5).

Figure 62

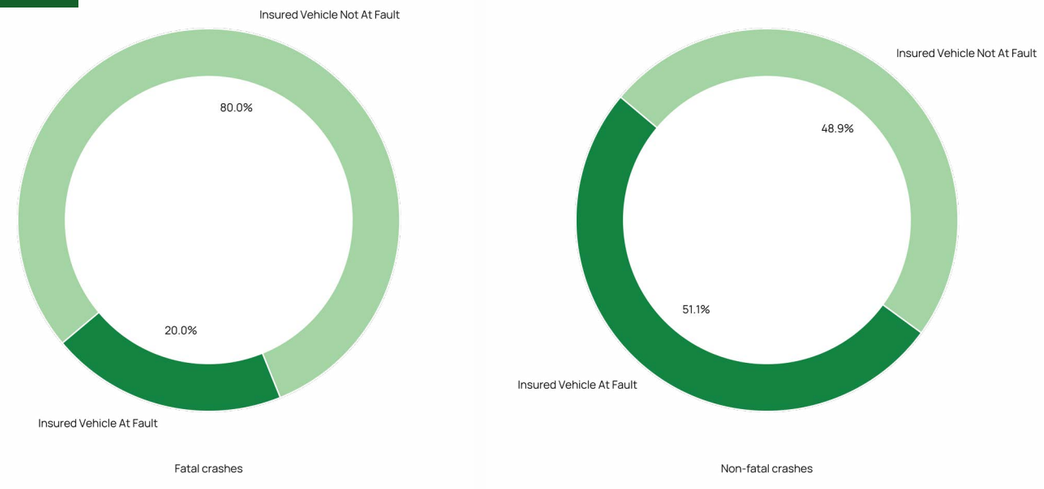


Rate of heavy vehicle occupant fatalities in SA resulting in >$50k damage per 10k heavy vehicle powered units by cause, 2019-2024.

Focusing specifically on heavy vehicle occupant fatalities, Figure 62 highlights the leading contributing causes between 2019 and 2024. There were eight heavy vehicle occupant fatalities during this analysis period in SA. Fatigue was the most prominent, with a fatality rate of 0.13 per 10,000 heavy vehicles. This was closely followed by Inattention/distraction related crashes, contributing 0.11 heavy vehicle occupant fatalities per 10,000 vehicles.

This trend is further emphasised by the analysis of heavy vehicle occupant fatalities by DCA code. Between 2019 and 2024, four distinct DCA codes were associated with heavy vehicle occupant fatalities in SA—Off Path on Curve at 0.10, Vehicles from Same Direction at 0.10, Off Path on Straight at 0.092 and Pedestrian at 0.079 respectively per 10,000 heavy vehicles (see Appendix 5.6)—reflecting the range of crash types that can result in fatal outcomes for drivers.

Figure 63



Percentage of First-party (heavy vehicle occupant) and Third-party (cars only) crashes in SA by at fault and Not at Fault, 2019-2024, a) fatal crashes, b) non-fatal crashes.

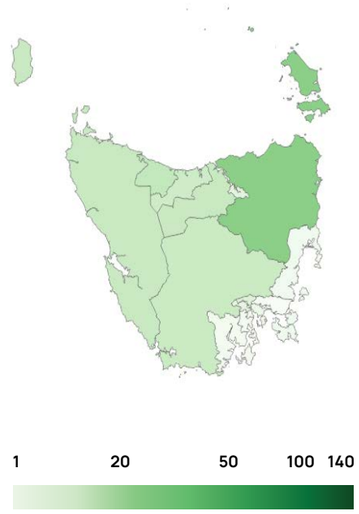
Figure 63 presents the assignment of fault in both fatal (Figure 63a) and non-fatal (Figure 63b) crashes involving heavy vehicles and cars in SA between 2019 and 2024. In fatal crashes, the insured heavy vehicle was deemed Not at Fault in 80.0% of cases. In contrast, for non-fatal crashes, heavy vehicles were found Not at Fault in 48.9% of incidents.

Tasmania

Tasmania (TAS) has a population of 557,571 (ABS, 2022) and covers a land area of 68,401sqkm (Geoscience Australia, 2014). TAS is the sixth most populated jurisdiction in Australia and second smallest in land area. The heavy vehicle fleet in TAS in 2024 consisted of 10,869 heavy rigid vehicles, 2,378 articulated vehicles and 1,663 heavy buses (BITRE, 2024).

Between 2019 and 2024, the Australian Road Deaths Database (BITRE, 2025) recorded 198 fatal crashes in TAS, of which 18 involved a heavy rigid vehicle, 13 involved an articulated vehicle and two involved a heavy Bus. NTI data for the same period reported six fatal crashes involving a heavy rigid vehicle, three involving an articulated vehicle and one involving a heavy bus. Given TAS' relatively small representation within the NTI heavy vehicle fleet portfolio, heavy vehicle crash data is limited. However, examining these incidents remains important to identify key risks and guide targeted safety initiatives within the jurisdiction. The following section presents the NTI data for heavy vehicle involved incidents in TAS.

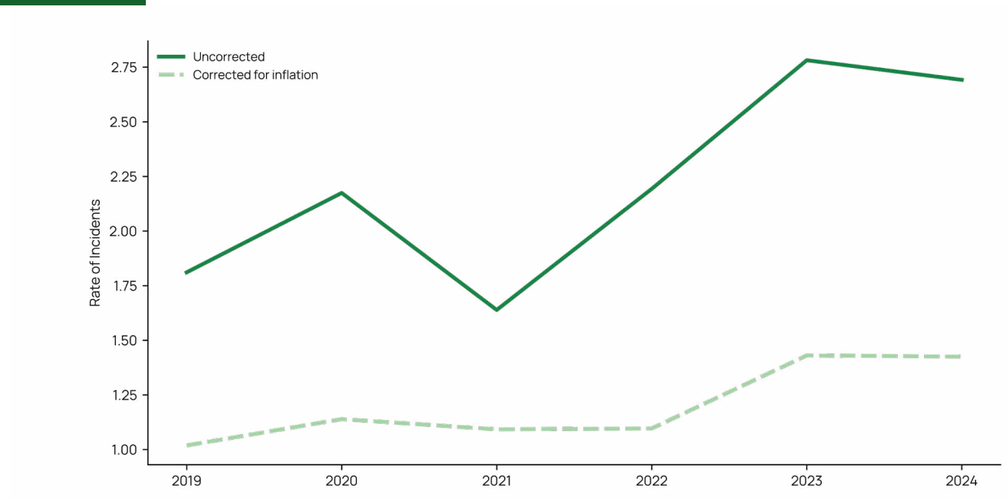
Figure 64



Distribution of heavy vehicle incidents by SA3 in TAS, 2019-2024.

Figure 64 illustrates the distribution of heavy vehicle incidents in TAS by SA3. There were 161 claims in TAS between 2019 and 2024. The area with the greatest concentration of incidents was in the north-east of TAS, with less incidents occurring in and around Hobart. Incidents occurring throughout the rest of TAS are fairly evenly distributed.

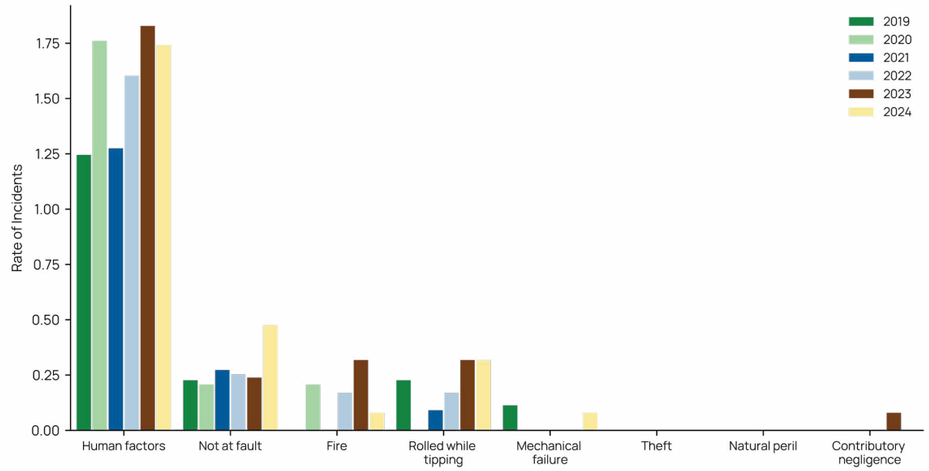
Figure 65



Rate of incidents in TAS per 10k heavy vehicle powered units by year and above the inflation threshold (2003).

Figure 65 illustrates the time series of incident rates in TAS, corrected for inflation. The highest uncorrected rate occurred in 2023, at 2.8 incidents per 10,000 heavy vehicles. In 2024, the uncorrected rate for claims exceeding the original AUD 50,000 threshold was slightly lower at 2.7. However, when adjusted for inflation to reflect a 2024 equivalent threshold (of AUD 88,000), the rate reduced to 1.4 per 10,000 heavy vehicles, marking the highest inflation-adjusted rate observed across the analysis period.

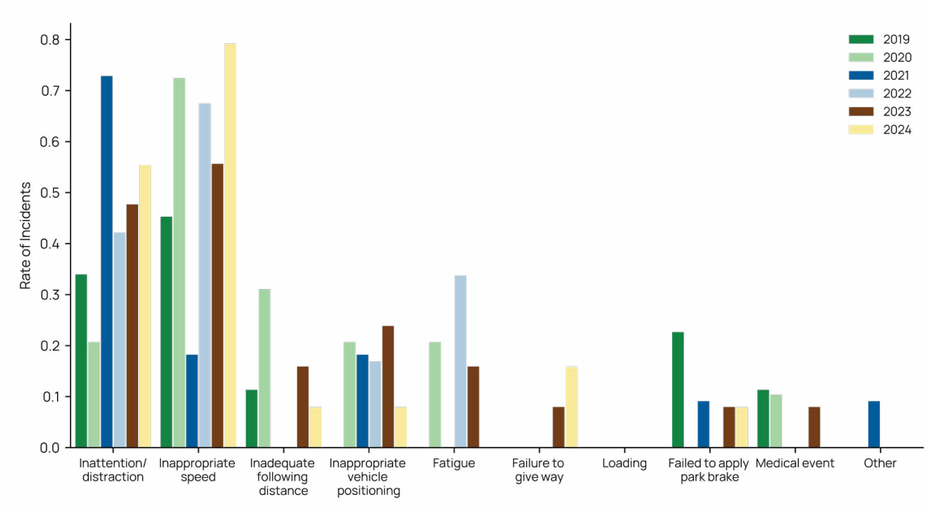
Figure 66



Rate of incidents in TAS resulting in >$50k damage per 10k heavy vehicle powered units by principal cause classification.

Figure 66 presents the time series incident rate by principal cause in TAS. Human factors continue to be the dominant cause of incidents, with a significantly higher rate than any other category, mirroring national trends. In 2024, human factor-related claims in TAS decreased by 5.6% compared to 2023. Notably, Not at Fault related incidents doubled from the previous year, rising from 0.24 to 0.48 per 10,000 heavy vehicles.

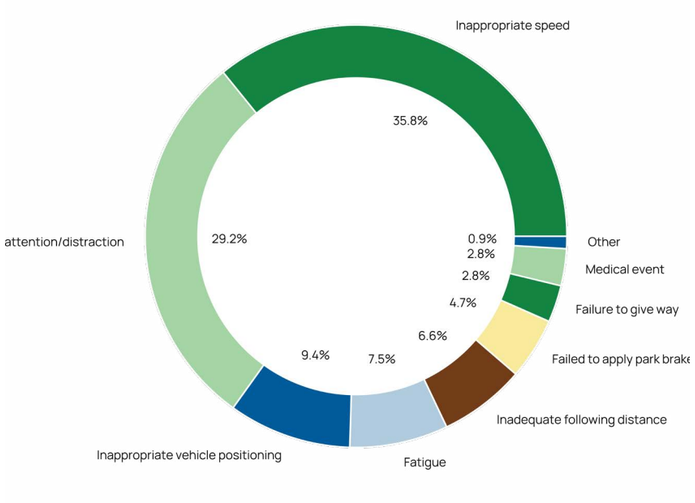
Figure 67



Rate of incidents in TAS resulting in >$50k damage per 10k heavy vehicle powered units by human factors cause classification

Figure 67 presents the time series of incident rates by human factor cause classification in TAS. In contrast to national trends, Inappropriate speed has been the leading contributor to incidents in the state since 2022, reaching a rate of 0.79 per 10,000 heavy vehicles in 2024. Inattention/distraction followed as the second highest contributor in 2024, with a rate of 0.55 incidents per 10,000 heavy vehicles.

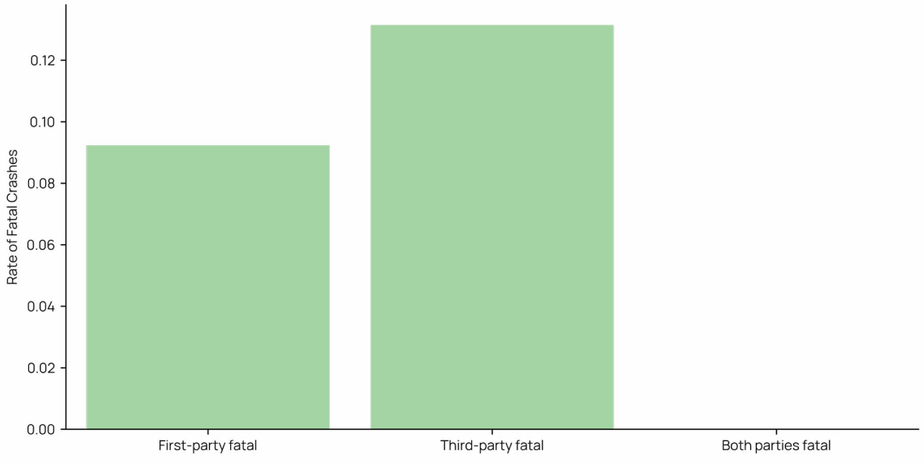
Figure 68



Percentage of human factors incidents in TAS resulting in >$50k damage by human factor classification, 2019-2024.

Figure 68 illustrates the percentage of incidents attributed to human factors in TAS between 2019 and 2024. The distribution notably diverges from national patterns, with Inappropriate speed accounting for 35.8% and Inattention/distraction for 29.2% of human factor-related incidents. Together, these two causes make up two-thirds (65%) of all human factor incidents in the state, highlighting their dominant role in TAS' heavy vehicle crash profile.

Figure 69



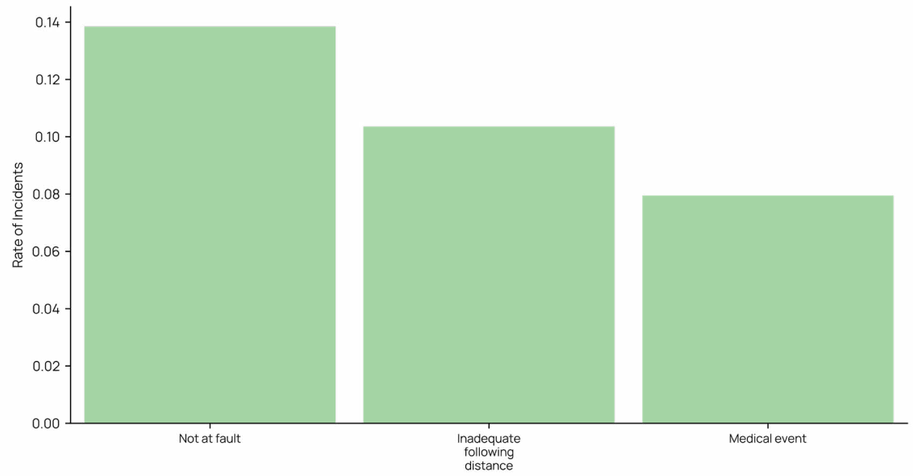
Rate of First-party (heavy vehicle occupant) and Third-party (other road users) fatal crashes in TAS resulting in >$50k damage per 10k heavy vehicle powered units, 2019-2024.

There were ten fatalities recorded in the dataset for TAS between 2019 and 2024. Figure 69 illustrates the incident rate of fatal injuries by party type: First-party fatal (the heavy vehicle occupant), Third-party fatal (other road users), and Both parties fatal (where both the heavy vehicle driver and a third party sustained fatal injuries).

Both party fatalities refer specifically to crashes in which both the heavy vehicle driver and a third party sustained fatal injuries and are not double-counted within the individual categories.

No both party fatalities occurred in TAS for this period. The highest fatality rate was observed among third parties, with 0.13 fatalities per 10,000 heavy vehicles, followed by First-party (heavy vehicle driver) fatalities at 0.092 per 10,000 heavy vehicles.

Figure 70



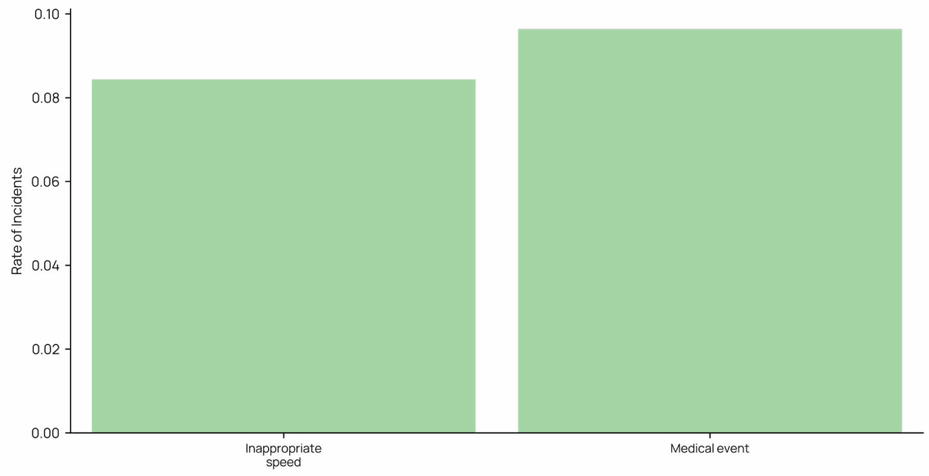
Rate of First-party (heavy vehicle occupant) and Third-party (cars only) fatal crashes in TAS resulting in >$50k damage per 10k heavy vehicle powered units by cause, 2019-2024.

Figure 70 presents the incident rates of heavy vehicle and car fatalities by cause classification in TAS between 2019 and 2024. There were eight fatalities involving a heavy vehicle and car for this period in TAS. The highest fatality rate was attributed to Not at Fault incidents, where the heavy vehicle was not considered the contributing cause of the crash, with a rate of 0.14 fatalities per 10,000 heavy vehicles. This was followed by Inadequate following distance at 0.10, and Medical Event at 0.079.

This is further explored by the analysis of heavy vehicle and car fatalities by DCA code in TAS between 2019 and 2024. Three distinct DCA codes were associated with fatal incidents during this period, recording similar rates ranging from 0.079 to 0.092 fatalities per 10,000 heavy vehicles. Vehicles from Opposing Direction DCA code contributed the highest fatality rate in TAS, at 0.092 per 10,000 heavy vehicles (see Appendix 5.7).

Focusing specifically on heavy vehicle occupant fatalities between 2019 and 2024, there were three heavy vehicle occupant fatalities during this analysis period in TAS. These crashes were attributed to Inappropriate speed and Medical Events, with two DCA codes of Off Path On Straight and Off Path On Curve.

Figure 71



Percentage of First-party (heavy vehicle occupant) and Third-party (cars only) crashes in TAS by at fault and Not at Fault, 2019-2024, a) fatal crashes, b) non-fatal crashes.

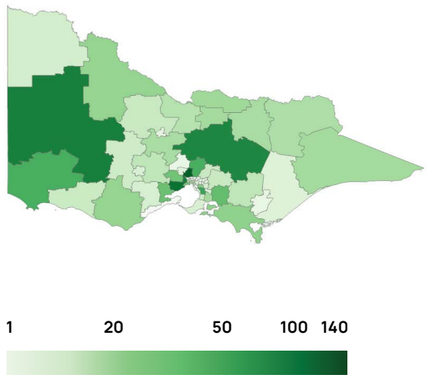
Figure 71 presents the assignment of fault in both fatal (Figure 71a) and non-fatal (Figure 71b) crashes involving heavy vehicles and cars in TAS between 2019 and 2024. In fatal crashes, the insured heavy vehicle was deemed Not at Fault in 75.0% of cases. In contrast, for non-fatal crashes, heavy vehicles were found Not at Fault in 45.5% of incidents.

Victoria

Victoria (VIC) has a population of 6,503,491 (ABS, 2022) and covers a land area of 227,444sqkm (Geoscience Australia, 2014). VIC is the second most populous jurisdiction in Australia and third smallest in land area. The heavy vehicle fleet in VIC in 2024 consisted of 94,582 heavy rigid vehicles, 34,927 articulated vehicles and 10,085 heavy buses (BITRE, 2024).

Between 2019 and 2024, the Australian Road Deaths Database (BITRE, 2025) recorded 1,426 fatal crashes in VIC, with 103 involving a heavy rigid vehicle, 110 an articulated vehicle and four a heavy bus. NTI data for the same period reported 11 fatal crashes involving a heavy rigid vehicle, 28 involving an articulated vehicle and one unknown combination type. Examining these incidents is of high importance to identify key risks and guide targeted safety initiatives within the jurisdiction. The following section presents the NTI data for heavy vehicle involved incidents in VIC.

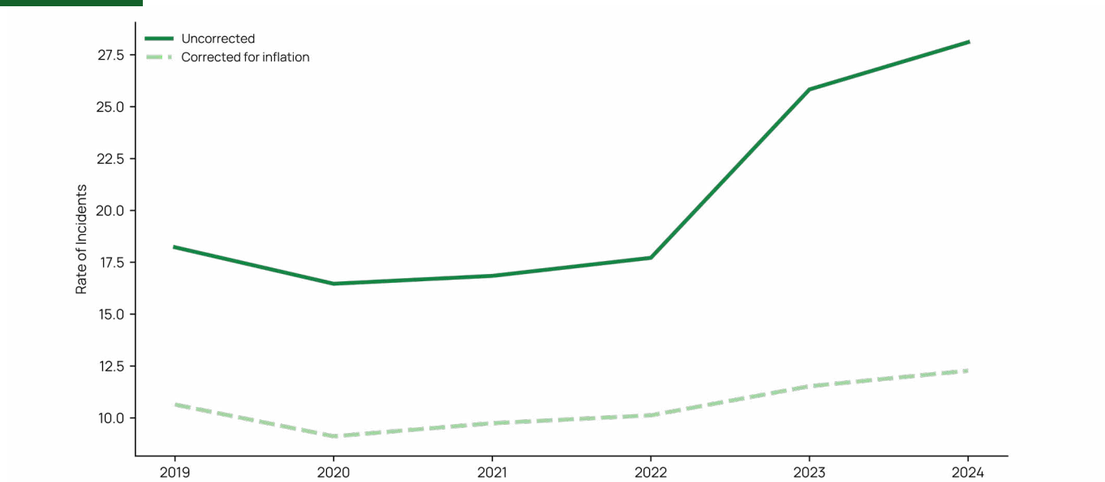
Figure 72



Distribution of heavy vehicle incidents by SA3 in VIC, 2019-2024.

Figure 72 illustrates the distribution of heavy vehicle incidents in VIC by SA3. There were 1,459 claims in VIC between 2019 and 2024, A heavy distribution of incidents was seen in central and west-central Victoria. Additionally, the highest concentration of incidents is north-west of Melbourne.

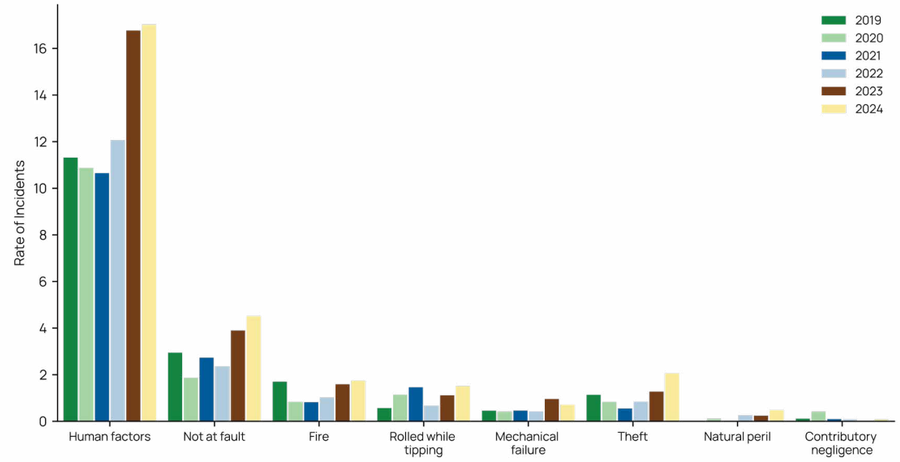
Figure 73



Rate of incidents in VIC per 10k heavy vehicle powered units by year and above the inflation threshold (2003).

Figure 73 illustrates the time series of incident rates in VIC, corrected for inflation. Both the uncorrected and corrected major loss claim rates have shown an upward trend since 2020. In 2024, the uncorrected rate, based on the original AUD 50,000 threshold, was 28.1 per 10,000 heavy vehicles. When adjusted for inflation to a 2024 equivalent threshold (of AUD 88,000), the rate declined to 12.3. The steep rise in uncorrected claims from 2022, which is not mirrored in the inflation-adjusted rate, suggests that a significant proportion of claims in recent years have fallen just below the updated threshold.

Figure 74

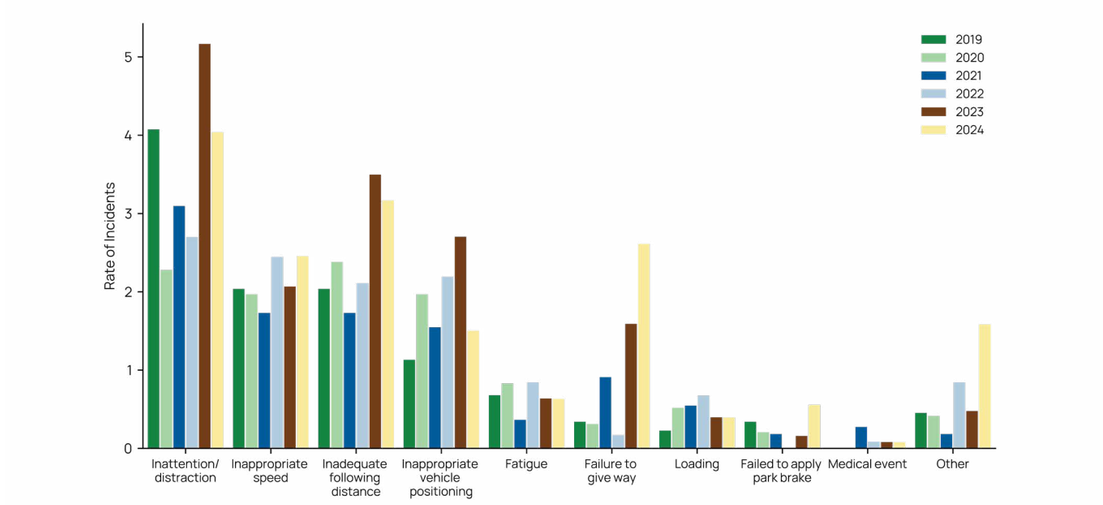


Rate of incidents in VIC resulting in >$50k damage per 10k heavy vehicle powered units by principal cause classification.

Figure 74 presents the time series incident rate by principal cause in VIC. Human factors continue to dominate as the leading cause of incidents, with a significantly higher rate than any other category. This trend is consistent with national patterns. However, in contrast to the national trend, VIC shows a continued upward trajectory. In 2024, human factor-related claims in VIC rose by 1.2% compared to 2023, a more moderate increase than the sharp rise between 2022 and 2023.

In addition to human factors, increases were also observed in incidents classified as Not at Fault, Fire, Rolled While Tipping, and Theft. Notably, Theft incidents increased 61.5% in 2024, rising from 1.3 to 2.1 incidents per 10,000 heavy vehicles.

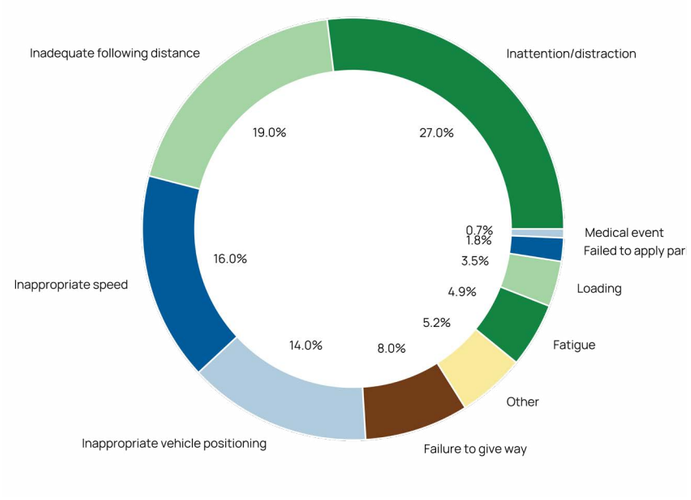
Figure 75



Rate of incidents in VIC resulting in >$50k damage per 10k heavy vehicle powered units by human factor cause classification.

Figure 75 presents the time series incident rate by human factor cause classification in VIC. Consistent with national trends, Inattention/distraction was the leading contributor in 2024, with a rate of 4.0 incidents per 10,000 heavy vehicles, albeit with a substantial decrease of 21.3% from the previous year. Inadequate following distance and Failure to Give Way were the second and third most common contributing factors respectively, with incident rates of 3.2 and 2.6 per 10,000 heavy vehicles.

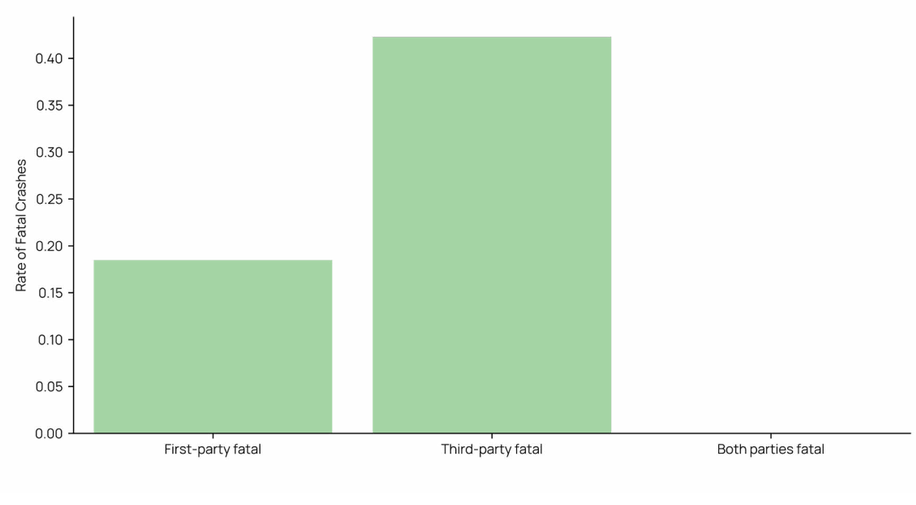
Figure 76



Percentage of human factor incidents in VIC resulting in >$50k damage by human factors classification, 2019-2024.

Figure 76 illustrates the percentage of incidents attributed to human factors in VIC between 2019 and 2024. The distribution closely mirrors national patterns, with the top three contributing causes—Inattention/distraction, Inappropriate speed, and Inadequate following distance—represented in similar proportions to the broader dataset.

Figure 77

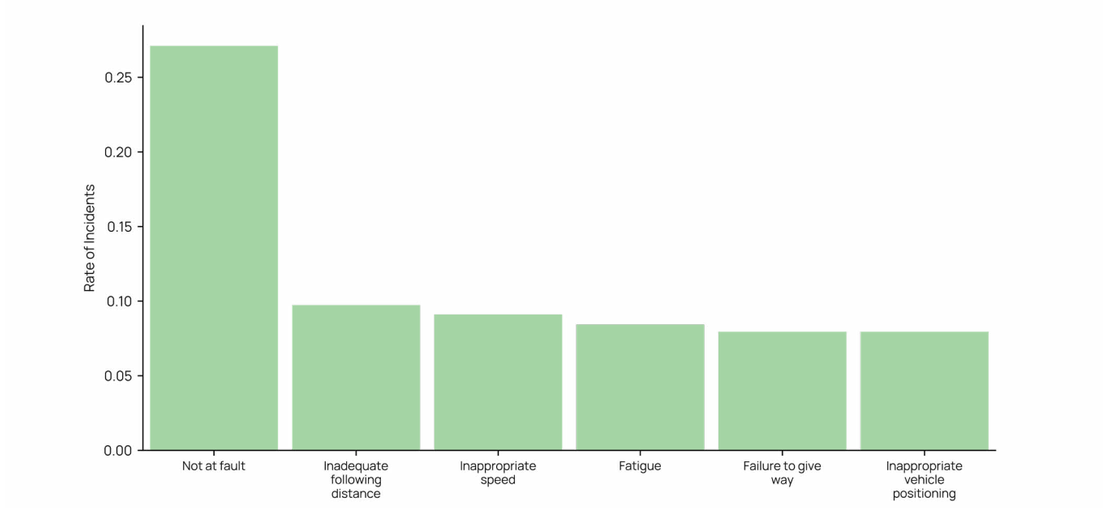


Rate of First-party (heavy vehicle occupant) and Third-party (other road users) fatal crashes in VIC resulting in >$50k damage per 10k heavy vehicle powered units, 2019-2024.

There were 39 fatalities recorded in the dataset for VIC between 2019 and 2024. Figure 77 illustrates the incident rate of fatal injuries by party type: First-party fatal (the heavy vehicle occupant), Third-party fatal (other road users), and Both parties fatal (where both the heavy vehicle driver and a third party sustained fatal injuries). Both party fatalities refer specifically to crashes in which both the heavy vehicle driver and a third party sustained fatal injuries and are not double-counted within the individual categories.

The highest fatality rate was observed among third parties, with 0.42 fatalities per 10,000 heavy vehicles, followed by First-party (heavy vehicle occupant) fatalities at 0.19 per 10,000 heavy vehicles. There were no both party fatalities in VIC during the period of analysis.

Figure 78

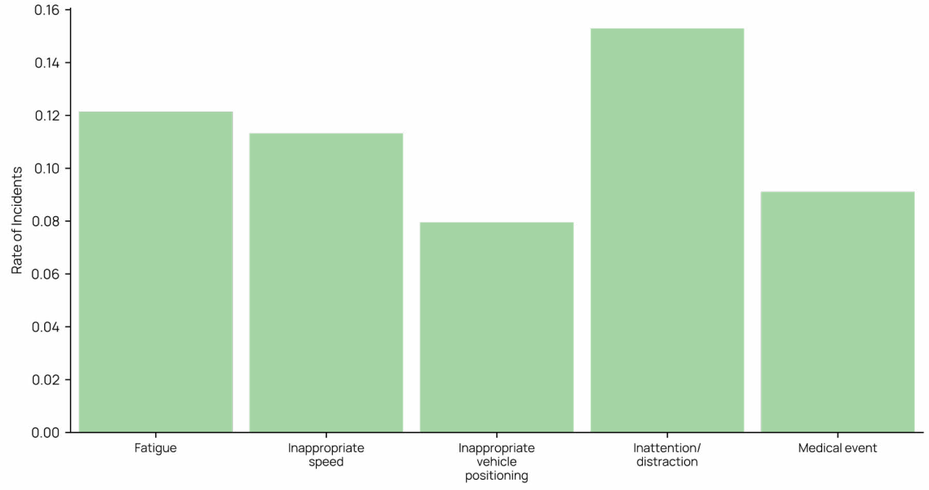


Rate of First-party (heavy vehicle occupant) and Third-party (cars only) fatal crashes in VIC resulting in >$50k damage per 10k heavy vehicle powered units by cause, 2019-2024.

Figure 78 presents the incident rates of fatalities involving heavy vehicles and cars by cause classification in Victoria between 2019 and 2024. Over this period, 25 such fatalities were recorded. The highest fatality rate was associated with Not at Fault incidents, where the heavy vehicle was not deemed to have contributed to the crash, at 0.27 fatalities per 10,000 heavy vehicles. Other contributing causes included Inadequate following distance (0.097), Inappropriate speed (0.091), Fatigue, Failure to Give Way (0.079), and Inappropriate Vehicle Positioning (0.079), each with a rate of less than 0.1 fatalities per 10,000 heavy vehicles.

This is further explored by the analysis of heavy vehicle and car fatalities by DCA code in VIC between 2019 and 2024. Five distinct DCA codes were associated with fatal incidents during this period, most recording similar rates between 0.079 and 0.093 fatalities per 10,000 heavy vehicles. The highest rate for DCA code was attributed to Vehicles From the Same Direction at 0.093 per 10,000 heavy vehicles (see Appendix 5.8).

Figure 79



Rate of heavy vehicle occupant fatalities in VIC resulting in >$50k damage per 10k heavy vehicle powered units by cause, 2019-2024.

Focusing specifically on heavy vehicle occupant fatalities, Figure 79 highlights the leading contributing causes between 2019 and 2024. There were 10 heavy vehicle occupant fatalities during this analysis period in VIC. Inattention/distraction was the most prominent cause, with a fatality rate of 0.15 per 10,000 heavy vehicles. This was closely followed by Fatigue and Inappropriate speed events, respectively contributing 0.12 and 0.11 fatalities per 10,000 vehicles.

This trend is further emphasised by the analysis of heavy vehicle occupant fatalities by DCA code. Between 2019 and 2024, four distinct DCA codes were associated with heavy vehicle occupant fatalities during this period in VIC—Off Path On Curve at 0.096, Vehicles from Opposing Direction at 0.091, Off Path On Straight at 0.090 and Passenger/Miscellaneous at 0.080 per 10,000 heavy vehicles (see Appendix 5.9)—reflecting the range of crash types that can result in fatal outcomes for drivers.

Figure 80

Percentage of First-party (heavy vehicle occupant) and Third-party (cars only) crashes in VIC by at fault and Not at Fault, 2019-2024, a) fatal crashes, b) non-fatal crashes.

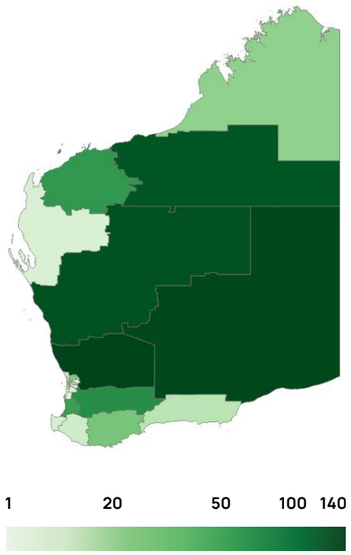
Figure 80 presents the assignment of fault in both fatal (Figure 80a) and non-fatal (Figure 80b) crashes involving heavy vehicles and cars in VIC between 2019 and 2024. In fatal crashes, the insured heavy vehicle was deemed Not at Fault in 76.0% of cases. In contrast, for non-fatal crashes, heavy vehicles were found Not at Fault in only 30.2% of incidents.

Western Australia

Western Australia (WA) has a population of 2,660,026 (ABS, 2022) and covers a land area of 2,527,013sqkm (Geoscience Australia, 2014). WA is the fourth largest jurisdiction in Australia by population and the largest in land area. The heavy vehicle fleet in WA in 2024 consisted of 62,179 heavy rigid vehicles, 19,886 articulated vehicles and 7,040 heavy buses (BITRE, 2024).

Between 2019 and 2024, the Australian Road Deaths Database (BITRE, 2025) recorded 927 fatal crashes in WA, with 76 involving a heavy rigid vehicle, 44 an articulated vehicle and 11 a heavy bus. NTI data for the same period reported four fatal crashes involving a heavy rigid vehicle and 27 involving an articulated vehicle. Examining these incidents is of high importance to identify key risks and guide targeted safety initiatives within the jurisdiction. The following section presents the NTI data for heavy vehicle involved incidents in WA.

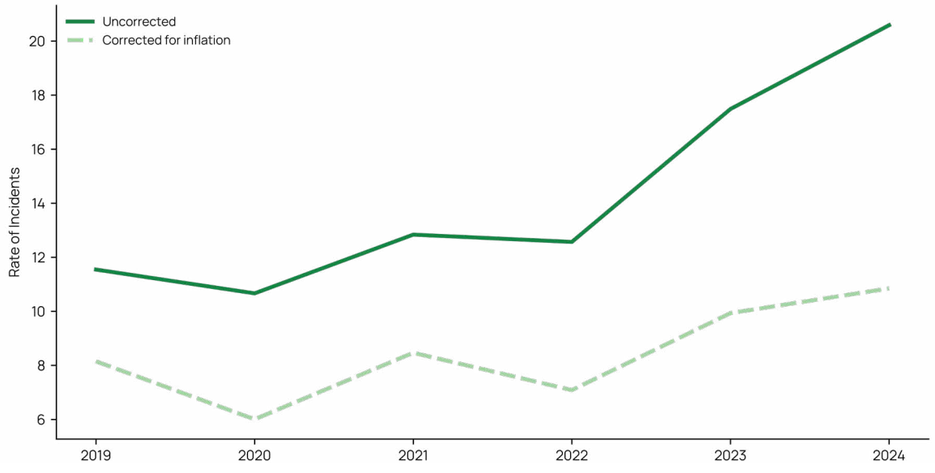
Figure 81



Distribution of heavy vehicle incidents by SA3 in WA, 2019-2024.

Figure 81 illustrates the distribution of heavy vehicle incidents in WA by SA3. There were 1,030 claims in WA between 2019 and 2024. A heavy distribution of incidents was seen throughout central WA from the west border to the eastern coast.

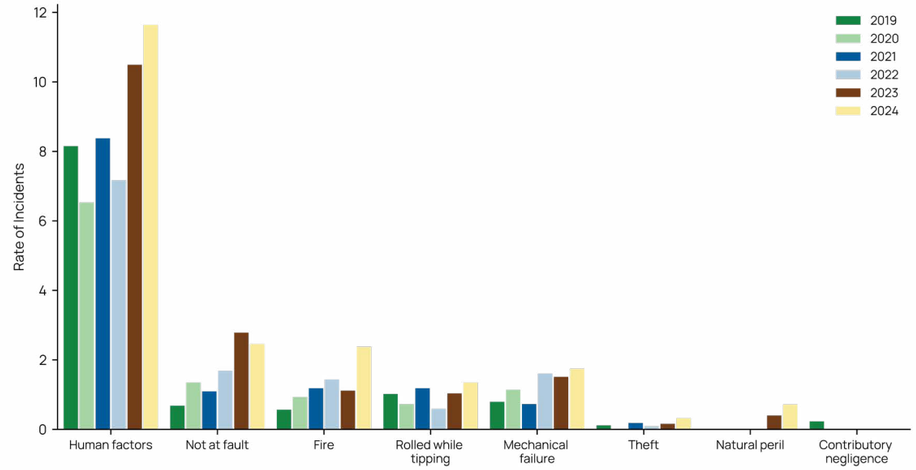
Figure 82



Rate of incidents in WA per 10k heavy vehicle powered units by year and above the inflation threshold (2003).

Figure 82 illustrates the time series of incident rates in WA, corrected for inflation. Both the uncorrected and corrected major loss claim rates have shown an upward trend since 2020. In 2024, the uncorrected rate based on the original AUD 50,000 threshold was 20.6 per 10,000 heavy vehicles. When adjusted for inflation to a 2024 equivalent threshold (of AUD 88,000), the rate declined to 10.9. While the inflation adjustment reduces the overall rate, the uncorrected and corrected rates exhibit a consistent trend over time. This suggests that incident costs are relatively evenly distributed around the inflation-adjusted threshold.

Figure 83

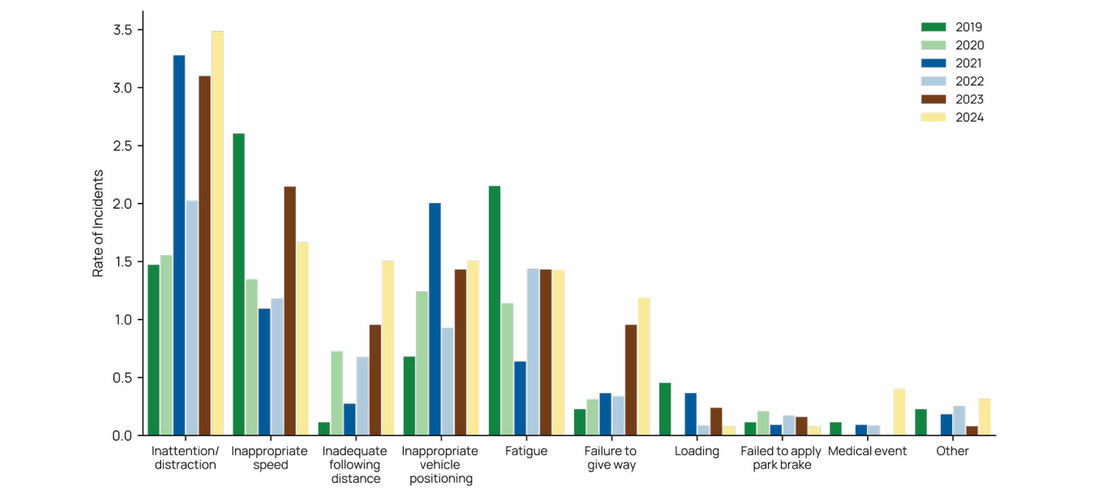


Rate of incidents in WA resulting in >$50k damage per 10k heavy vehicle powered units by principal cause classification.

Figure 83 presents the time series incident rate by principal cause in WA. Human factors continue to dominate as the leading cause of incidents, with a significantly higher rate than any other category. This trend is consistent with national patterns. However, in contrast to the national trend, WA shows a continued upward trajectory. In 2024, human factors-related claims in WA rose by 10.5% compared to 2023, a more moderate increase than the sharp rise between 2022 and 2023.

In addition to human factors, increases were also observed in all other incident classifications except Not at Fault and Contributory Negligence. Notably, Fire incidents substantially increased in 2024, more than doubling from 1.1 the previous year to 2.4 incidents per 10,000 heavy vehicles.

Figure 84



Rate of incidents in WA resulting in >$50k damage per 10k heavy vehicle powered units by human factor cause classification.

Figure 84 presents the time series incident rate by human factor cause classification in WA. In line with national trends, Inattention/ distraction remained the leading contributor in 2024, with a rate of 3.5 incidents per 10,000 heavy vehicles, marking a 12.9% increase from the previous year. Inappropriate speed was the second most common factor, with a rate of 1.7, though this represented a notable 22.7% decrease from 2023. Incident rates also increased for Inadequate following distance and Inappropriate Vehicle Positioning, both around 1.5 per 10,000 heavy vehicles, while Fatigue-related incidents remained stable year-on-year.

Figure 85

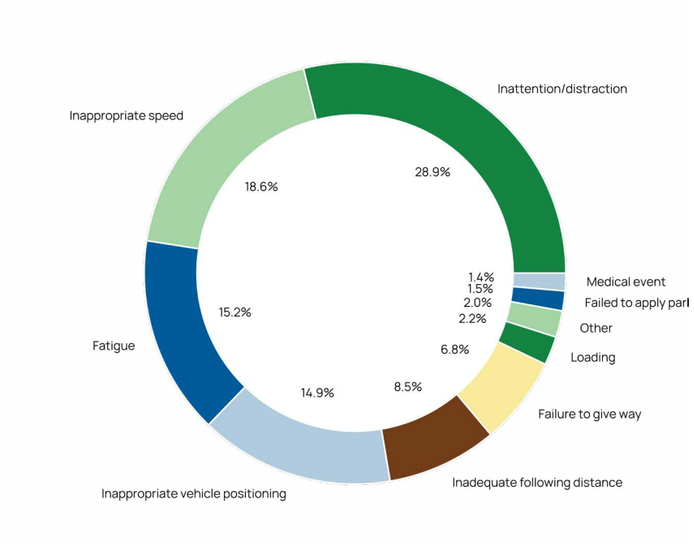
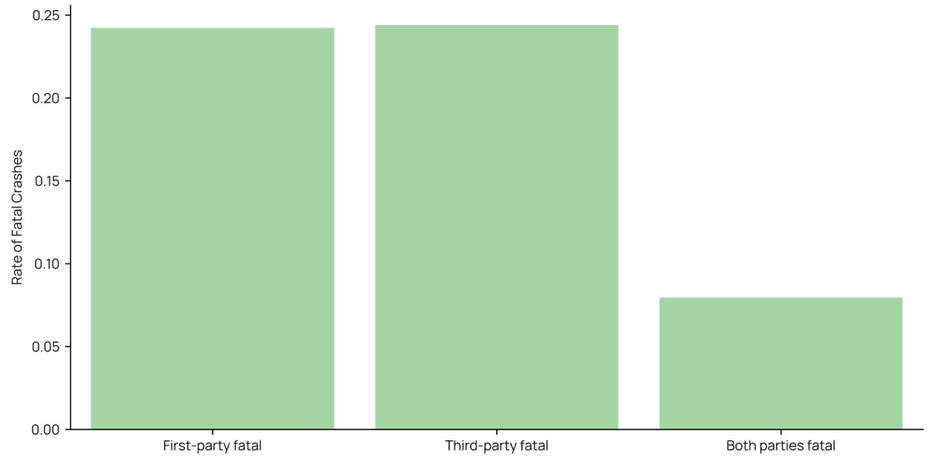


Figure 85: Percentage of human factors incidents in WA resulting in >$50k damage by human factor classification, 2019-2024.

Figure 85 illustrates the breakdown of human factor-related incidents in WA from 2019 to 2024. Overall, WA's distribution closely mirrors national trends, with Inattention/distraction, Inappropriate speed, and Inadequate following distance accounting for more than half (56%) of the total. Notably, Fatigue also features prominently in WA's top three—responsible for 15.2% of human factor crashes—closely followed by Inappropriate Vehicle Positioning, at 14.9%, highlighting region-specific variations in driver-related risks.

Figure 86

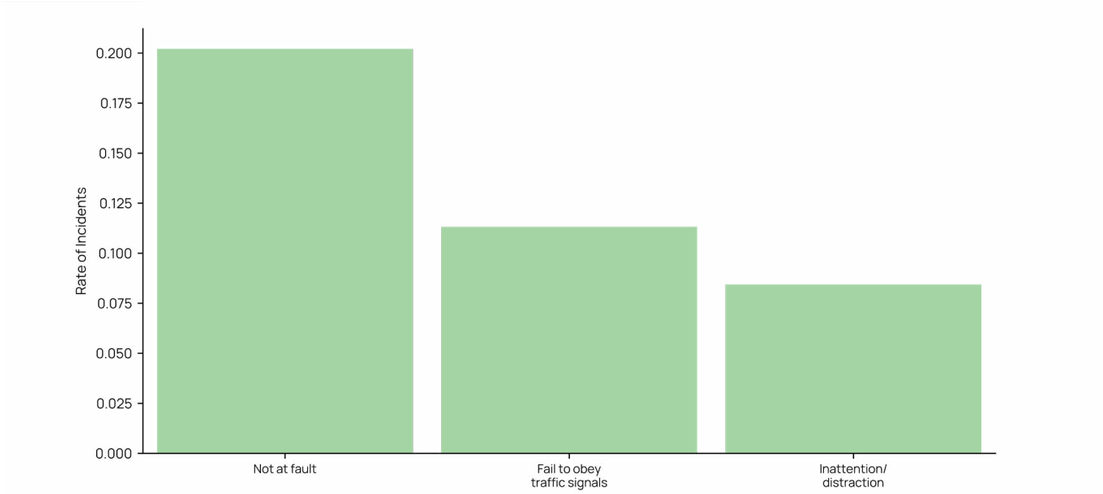


Rate of First-party (heavy vehicle occupant) and Third-party (other road users) fatal crashes in WA resulting in >$50k damage per 10k heavy vehicle powered units, 2019-2024.

There were 31 fatalities recorded in the dataset for WA between 2019 and 2024. Figure 86 illustrates the incident rate of fatal injuries by party type: First-party fatal (the heavy vehicle occupant), Third-party fatal (other road users), and Both parties fatal (where both the heavy vehicle driver and a third party sustained fatal injuries). Both party fatalities refer specifically to crashes in which both the heavy vehicle driver and a third party sustained fatal injuries and are not double-counted within the individual categories.

WA fatality rates were the same among both Third-party and First-party (heavy vehicle drivers) at 0.24 per 10,000 heavy vehicles. This was followed by both party fatalities at 0.079.

Figure 87

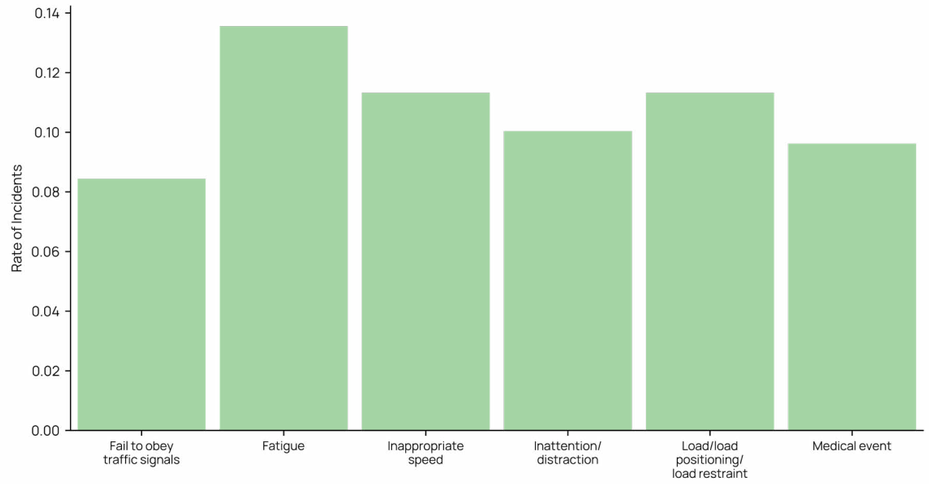


Rate of First-party (heavy vehicle occupant) and Third-party (cars only) fatal crashes in WA resulting in >$50k damage per 10k heavy vehicle powered units by cause, 2019-2024.

Figure 87 presents the incident rates of fatalities involving heavy vehicles and cars by cause classification in WA between 2019 and 2024. Over this period, 14 such fatalities were recorded. The highest fatality rate was associated with Not at Fault incidents—where the heavy vehicle was not deemed to have contributed to the crash—at 0.20 fatalities per 10,000 heavy vehicles. Other contributing causes included Failure to Obey Traffic Signals and Inattention/ distraction, with a rate of 0.11 and 0.084 fatalities per 10,000 heavy vehicles, respectively.

This is further explored by the analysis of heavy vehicle and car fatalities by DCA code in WA between 2019 and 2024. Four distinct DCA codes were associated with fatal incidents during this period, most recording similar rates of less than 0.095 fatalities per 10,000 heavy vehicles. The highest rate for DCA code was attributed to Vehicles from Adjacent Directions at 0.095 per 10,000 heavy vehicles (see Appendix 5.10).

Figure 88

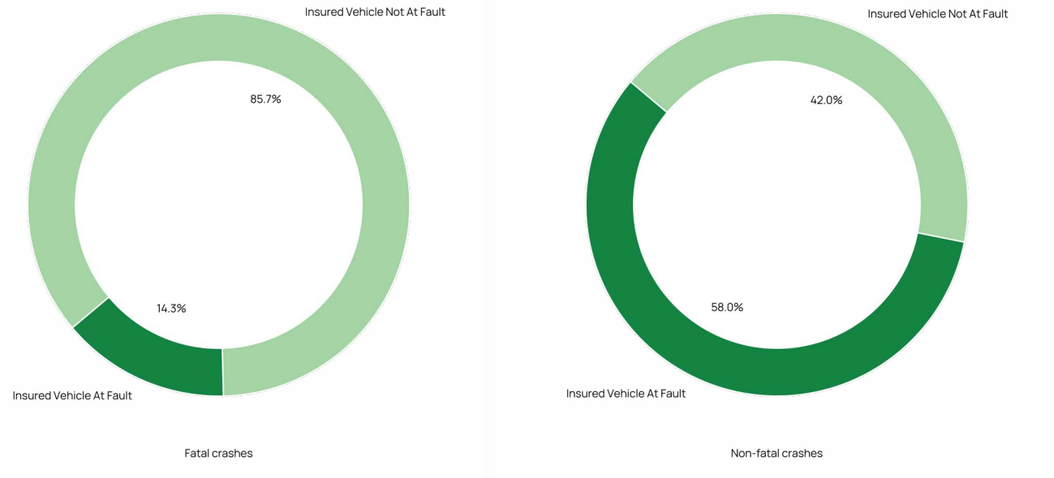


Rate of heavy vehicle occupant fatalities in WA resulting in >$50k damage per 10k heavy vehicle powered units by cause, 2019-2024.

Focusing specifically on heavy vehicle occupant fatalities, Figure 88 highlights the leading contributing causes between 2019 and 2024. There were 13 heavy vehicle occupant fatalities during this analysis period in WA. Fatigue was the most prominent, with a fatality rate of 0.14 per 10,000 heavy vehicles. This was closely followed by Inappropriate speed and Loading-related events, each contributing 0.11 fatalities per 10,000 vehicles.

This trend is further emphasised by the analysis of heavy vehicle occupant fatalities by DCA code. Between 2019 and 2024, five distinct DCA codes were associated with heavy vehicle occupant fatalities during this period in WA. These being: On Path at 0.11, Vehicles from Adjacent Directions at 0.10, Off Path On Straight at 0.089, Off Path On Curve at 0.084, and Vehicles from Opposing Direction at 0.082 per 10,000 heavy vehicles (see Appendix 5.11), reflecting the range of crash types that can result in fatal outcomes for drivers.

Figure 89



Percentage of First-party (heavy vehicle occupant) and Third-party (cars only) crashes in WA by at fault and Not at Fault, 2019-2024, a) fatal crashes, b) non-fatal crashes.

Figure 89 presents the assignment of fault in both fatal (Figure 89a) and non-fatal (Figure 89b) crashes involving heavy vehicles and cars in WA between 2019 and 2024. In fatal crashes, the insured heavy vehicle was deemed Not at Fault in 85.7% of cases. In contrast, for non-fatal crashes, heavy vehicles were found Not at Fault in 42.0% of incidents.

Summary and Road Safety Initiatives

> These findings underscore the importance of addressing key human factor risks, particularly Inattention/distraction, Inadequate following distance, and Inappropriate speed, each of which continues to drive a significant proportion of major incidents.

When compared with the Australian vehicle register (BITRE, 2024), NTI's portfolio represents a significant proportion of the national heavy vehicle fleet. However, when examining fatal crash involvement between 2019 and 2024, NTI's dataset captures a slightly lower proportion than the registration figures. According to the Australian Road Deaths Database (BITRE, 2025), there were 494 fatal crashes involving heavy rigid vehicles, 608 involving articulated vehicles, and 107 involving heavy buses. NTI data included 63 heavy rigid, 182 articulated, and two heavy bus fatal crashes.

This difference may reflect differences in exposure and crash rates, particularly in sectors or regions less likely to be insured through NTI. It could also be influenced by claim thresholds, the major loss reporting threshold, or cases where fatalities do not result in insurance claims, especially for incidents involving vulnerable road users.

Despite this, NTI's dataset provides a robust and representative lens on the most serious loss events in the heavy vehicle sector. In 2024, there were 1,767 major loss claims recorded. Human factor-related incidents remained the leading contributor to these claims, with a rate of 69.9 per 10,000 heavy vehicles. While this represents a 12.6% decline from 2023, it follows a substantial 41.9% increase between 2022 and 2023, confirming that human factors remain a dominant concern.

Third-party fatalities have consistently occurred at a higher rate than first- or both-party fatalities, a pattern that continued in 2024 despite a 16.7% decline in Third-party fatality rates. Encouragingly, the First-party fatality rate dropped by 47.5%, though both-party fatalities more than doubled. In fatal crashes, heavy vehicles were deemed Not at Fault in 85.7% of cases, compared to 33.1% in non-fatal crashes, highlighting the role of professional driving behaviour in mitigating crash severity.

Taken together, these findings underscore the importance of addressing key human factor risks, particularly Inattention/distraction, Inadequate following distance, and Inappropriate speed, each of which continues to drive a significant proportion of major incidents.

Inattention/distraction continues to be the most significant contributors to crash rates, accounting for 17.9% of all major incidents in 2024. While these incidents have generally trended upward over recent years—most notably with a 75.2% increase between 2022 and 2023—there was a slight improvement in 2024, with the rate falling by 1.6% to 25.0 incidents per 10,000 heavy vehicles. These crashes are predominantly single-vehicle events, with two-thirds (66.7%) involving only the insured heavy vehicle. This is reinforced by the most common crash types linked to Inattention/distraction—Off Path on Straight, Off Path on Curve, and On Path—which together accounted for more than three-quarters (77.2%) of such incidents in 2024.

Geographically, Inattention/distraction crashes were under-represented in Major Cities (30.7%) relative to their overall crash share (42.9%) but over-represented in Outer Regional areas (26.3%). Articulated combinations had the highest Inattention/distraction crash rate at 42.3 per 10,000 vehicles, particularly in Outer Regional areas, likely reflecting their greater exposure to long-haul driving conditions. In contrast, bus/coach combinations were disproportionately impacted in urban settings, with one-third of crashes involving Inattention/distraction, highlighting a heightened risk for this vehicle class in more congested environments.

Examples of programs and initiatives targeting heavy vehicle Inattention/distraction crashes include:

- The NRSPP's Heavy Vehicle Toolbox Talks (HVTBT) provide a range of educational packages relating to managing inattention and external distraction including fatigue and distraction .
- The Australian Forest Contractors Association run interactive program providing mental health coping and management, providing drivers in the trucking industry tools to help them drive with low risk (AFCA, 2021).
- Griffith University published a report investigating Guardian driver monitoring technology to understand its effectiveness in reducing driver distraction, inattention, and fatigue episodes (Wishart & Barrett, 2021).

Inadequate following distance was the second most common cause of major incidents in 2024, making up 9.2% of all crashes. After a stable period between 2019 and 2022, incidents rose sharply by 71% in 2023 before slowing to a more moderate 8.5% increase in 2024. These crashes are overwhelmingly multi-vehicle events—96.9% involved another party—and are almost entirely associated with the Vehicles from the Same Direction DCA code, typically reflecting rear-end collisions where heavy vehicles cannot stop in time.

These crashes are heavily concentrated in Major Cities, which accounted for 80% of Inadequate following distance incidents despite representing 43% of overall crashes. As remoteness increases, these incidents drop off significantly, suggesting a strong link to high-traffic, urban environments. Passenger cars were the most frequently involved Third-party vehicle type, with a crash rate over four times higher than any other class, emphasising the risks posed by frequent interactions between heavy vehicles and smaller vehicles in dense traffic conditions.

Examples of programs and initiatives targeting heavy vehicle Inadequate following distance crashes include:

- The NRSPP HVTBTs provide a range of educational packages relating to managing following distances including Safe Following Distances .
- The NRSPP organisational campaign for 2025 highlighted the need to provide heavy vehicles with enough space to create safe following distances .
- The Australian Commonwealth Department of Infrastructure, Transport, Regional Development, Communications, Sport and the Arts in 2024 released a road safety campaign promoting the importance and responsibility of safe driving for all drivers .

Inappropriate speed-related incidents have remained relatively stable over the analysis period, typically ranging from 12.1 to 13.2 per 10,000 heavy vehicles (except for a notable dip in 2021, likely linked to pandemic-related disruptions). However, these crashes have become a smaller share of total incidents, falling from 13.8% in 2019 to 8.6% in 2024, and appear to be rising at a slower rate compared to overall crash volumes. These incidents are predominantly single-vehicle events (86.2%), overwhelmingly linked to the Off Path On Curve DCA code (84.2%) and frequently result in rollovers (60.5%) or road departures (14.5%), highlighting the elevated risk posed by curved road segments when speed selection is not well-matched to road and vehicle conditions.

The data also indicate that Inappropriate speed crashes are not confined to high-speed roads, with nearly one-third occurring in 60 km/h zones and 17.1% in areas below 40 km/h. This suggests that posted speed limits may not align well with heavy vehicle performance and geometry. Articulated combinations face a particularly heightened risk, recording both higher rates (24.5 vs 5.5 for rigids) and a greater proportional impact. Design of these vehicles—high centre of gravity, load shift potential, and articulation—reduces stability, especially on curves. Regionally, Inappropriate speed crashes are over-represented in Inner and Outer Regional areas, where challenging road geometry and inconsistent speed environments may place greater demands on driver judgement.

Examples of programs and initiatives targeting heavy vehicle Inappropriate speed crashes include:

- The Livestock and Bulk Rural Carriers Association (LBRCA) Heavy Vehicle Rollover Awareness Program (HVRAP) is an online training and resource package providing generic and occupation-specific training modules to improve heavy vehicle driver awareness of factors that may increase the risk of rollover crashes (LBRCA, 2024).
- The High Occupancy Vehicles Policy Guide aims to prevent injuries and fatalities related to use of High Occupancy Vehicles, outlines requirements for maintaining High Occupancy Vehicles and managing the safety risks associated with mass passenger road transport (Dobson et al., 2022).
- The ARTSA-i Brake Calculator is a web-based brake calculator to assist operators, engineers and other relevant entities in predicting compliance of heavy vehicles with Australian braking performance requirements (ARTSA-I., 2024).
- The NRSPP HVTBT provide a range of educational packages relating to safe speed selection including Interactions with Other Road Users, Sharing the Road with Pedestrians, Sharing the Road with Cyclists, and Road Conditions .
- The New Heavy Vehicle Driver and Caravanner Road Safety Education and Awareness campaign is a series of videos that provide practical and tailored advice on key road safety issues for inexperienced heavy vehicle drivers and caravaners around steep hill descent procedures (Whiteline Television, 2020).
- There are also several national programs targeting initiatives and innovation in heavy vehicle road safety across many other topics. The NRSPP's HVTBT project has developed a range of TBTs to help organisations deliver engaging safety messages on topics relevant to heavy vehicle drivers' daily

Conclusion

The NTI dataset is a powerful resource for understanding the most serious safety challenges facing Australia's heavy vehicle sector. The consistency of key crash contributors across the data reinforces the urgent need to address human factor risks. In particular, Inattention/distraction, Inadequate following distance, and Inappropriate speed continue to account for a substantial share of serious incidents. These risk areas are influenced by a combination of vehicle geometry, driving conditions, and geographic setting, with articulated vehicles and regional road networks often carrying disproportionate exposure.

The sustained prominence of human factors in major crash events underscores the importance of both systemic and behavioural safety interventions. Encouragingly, a range of industry-led and government-supported programs are already targeting these issues, from tailored education and awareness campaigns to policy and technology innovations. Continued support for initiatives such as the NRSPP's HVTBT, the HVSI's technology-focused grants, and new innovative and immersive programs will be essential to driving change.

Importantly, these efforts should remain focused on the contexts of highest risk, such as regional freight routes, curved road segments, and urban environments with high vehicle interactions, to meaningfully reduce the incidence and severity of crashes as quickly as possible across Australia's heavy vehicle sector.

> The sustained prominence of human factors in major crash events underscores the importance of both systemic and behavioural safety interventions. Encouragingly, a range of industry-led and government-supported programs are already targeting these issues, from tailored education and awareness campaigns to policy and technology innovations.

Resources

Human Factors

- NRSPP Are You Roadworthy?
- NRSPP Heavy Vehicle Toolbox Talk: Anger
- NRSPP Heavy Vehicle Toolbox Talk: Fatigue
- NRSPP Heavy Vehicle Toolbox Talk: Fatigue & Distraction
- NRSPP Heavy Vehicle Toolbox Talk: Fitness for Duty

Interactions with Other Road Users

- NRSPP Toolbox Talk: Blind Spots
- NRSPP Toolbox Talk: Cyclists
- NRSPP Toolbox Talk: Pedestrians
- NRSPP Heavy Vehicle Toolbox Talk: Interactions with Other Road Users
- NRSPP Australia – Tailgating Isn't Natural

Mental Health Support for the Transport Sector

- Healthy Heads – Supporting Mental Health in Trucking and Logistics
- Health in Gear – Supporting Transport and Logistics Workers on the Job and at Home
- Health and Wellbeing Hub – Queensland Trucking Association Ltd
- NRSPP Heavy Vehicle Toolbox Talk: Are You Okay to Drive?

Road Trauma Support

- For Victorians affected by road trauma free support is available through: Amber Community – Road Incident Support and Education
- For West Australians affected by road trauma free support is available through Injury Matters
- National Communications Charter – Life in Mind Australia
- Supporting Trauma Recovery Across the Sector – Healthy Heads in Trucks and Sheds

Professional Driver Wellbeing

- NRSPP Heavy Vehicle Toolbox Talk: Fitness
- NRSPP Heavy Vehicle Toolbox Talk: Healthy Eating

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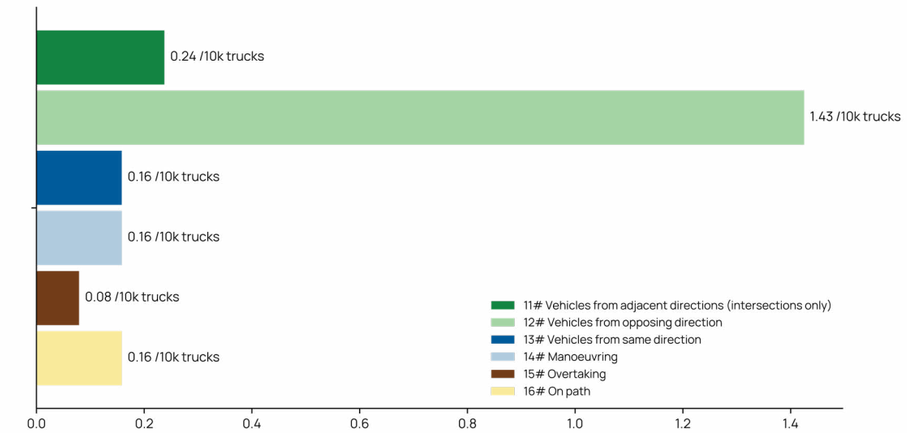
Appendices

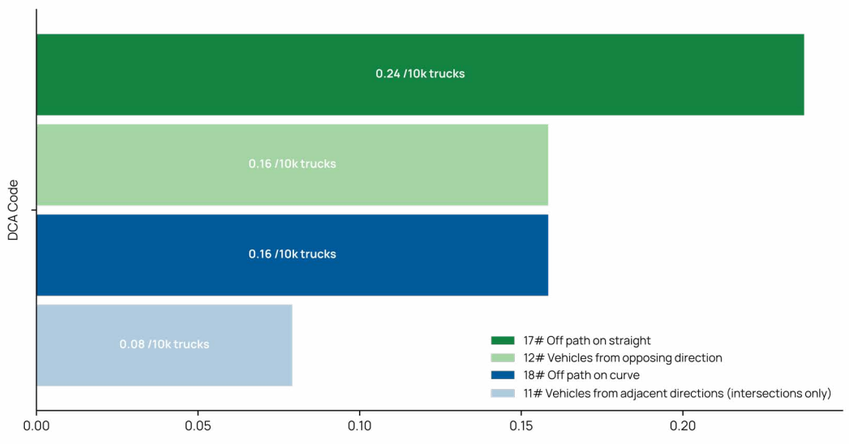
OVERVIEW

Appendices 1.1



Rate of heavy vehicle and Third-party fatal incidents resulting in >$50k damage per 10k heavy vehicle powered units in 2024 by DCA code.

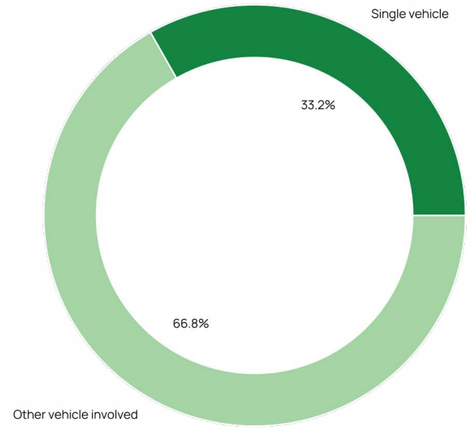
Appendices 1.2



Rate of heavy vehicle occupant fatalities resulting in >$50k damage per 10k heavy vehicle powered units in 2024 by DCA code.

INATTENTION/DISTRACTION

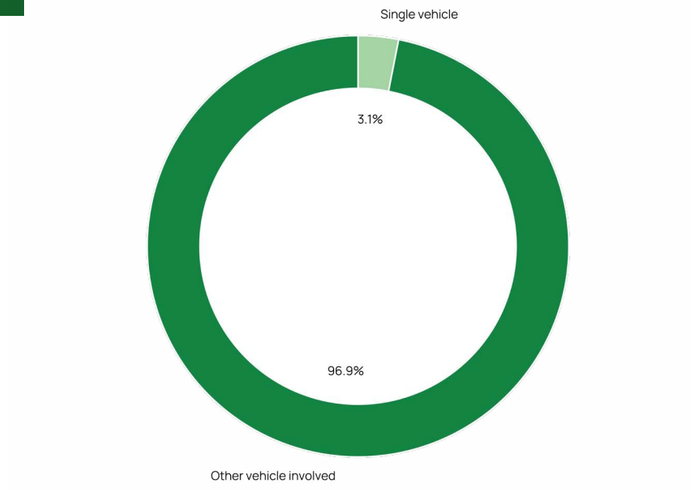
Appendix 2.1



Appendix 2.1: Percentage of Inattention/distraction incidents resulting in >$50k damage in 2024 by vehicles involved.

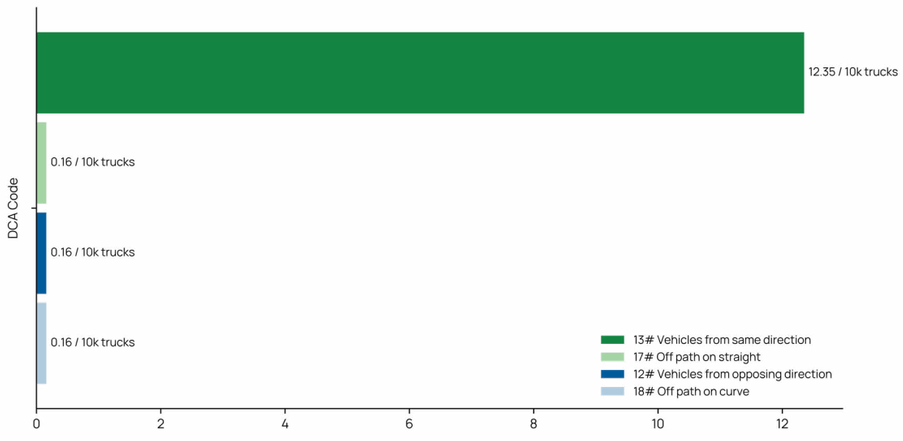
INAPPROPRIATE SPEED

Appendix 3.1



Percentage of Inadequate following distance incidents resulting in >$50k damage in 2024 by vehicles involved.

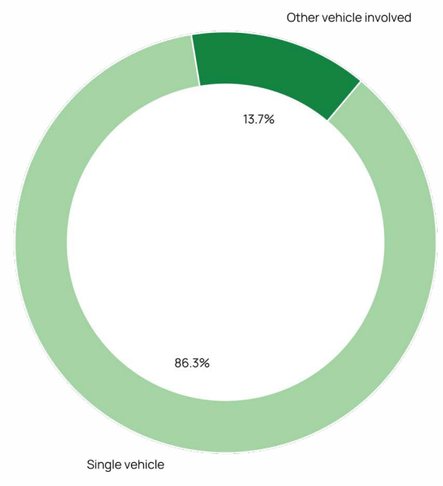
Appendix 3.2



Rate of Inadequate following distance incidents resulting in >$50k damage in 2024 by DCA code.

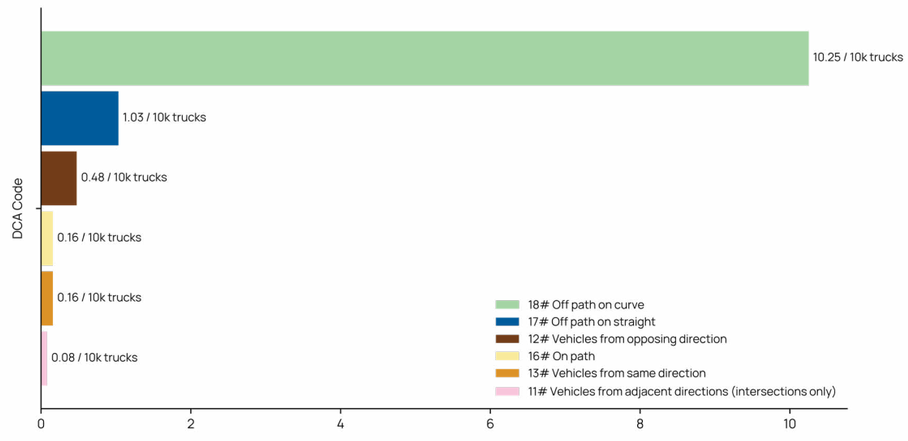
INAPPROPRIATE SPEED

Appendix 4.1



Percentage of Inappropriate speed incidents resulting in >$50k damage in 2024 by vehicles involved.

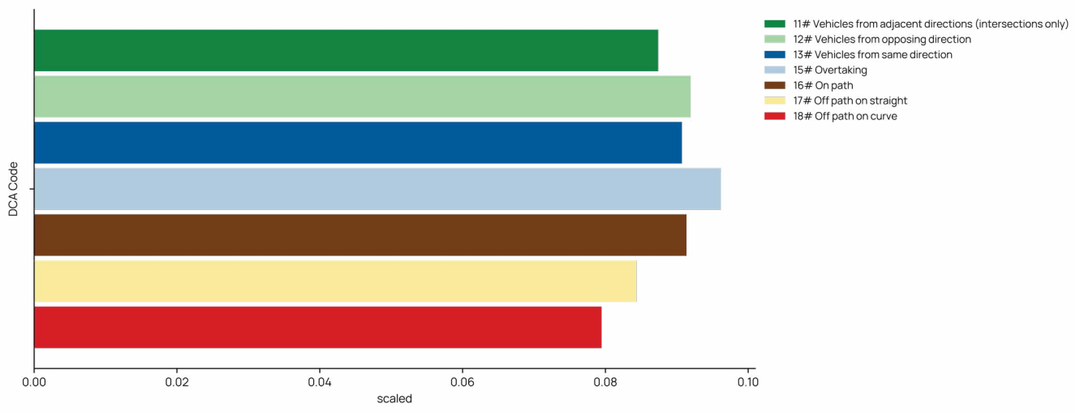
Appendices 4.2



Rate of Inappropriate speed incidents resulting in >$50k damage in 2024 by DCA code.

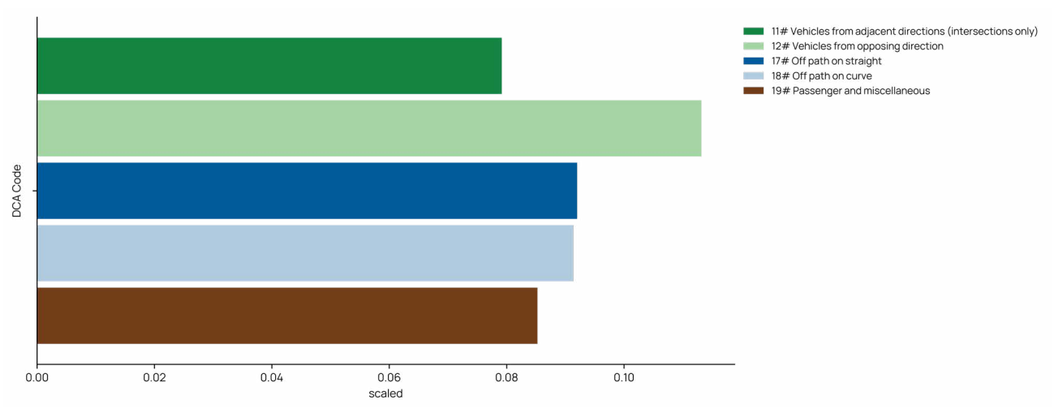
JURISDICTIONS

Appendix 5.1



Rate of First-party (heavy vehicle occupant) and Third-party (cars only) fatal crashes in NSW resulting in >$50k damage per 10k heavy vehicle powered units by DCA code, 2019-2024.

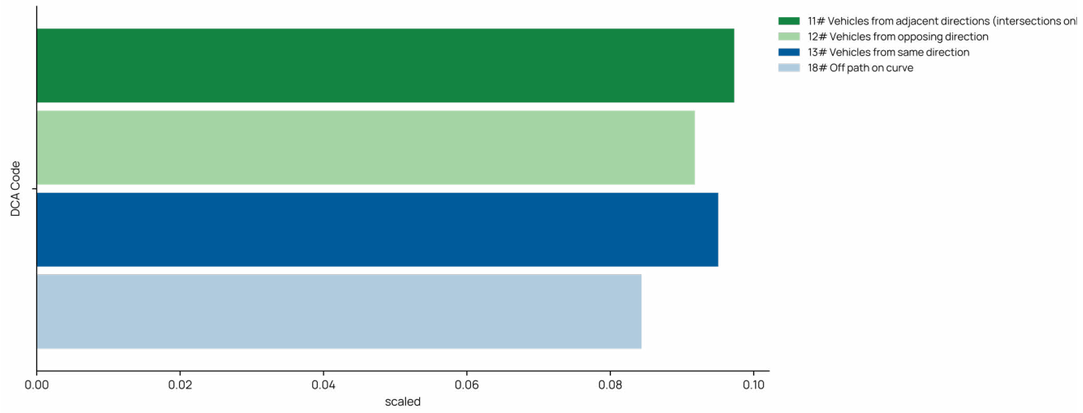
Appendix 5.2



Rate of heavy vehicle occupant fatal crashes in NSW resulting in >$50k damage per 10k heavy vehicle powered units by DCA code, 2019-2024.

JURISDICTIONS

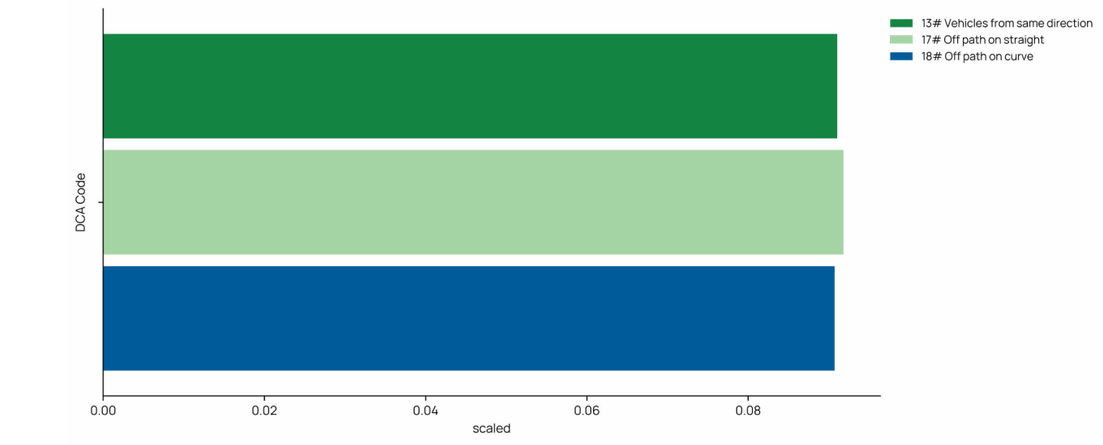
Appendix 5.3



Rate of First-party (heavy vehicle occupant) and Third-party (cars only) fatal crashes in QLD resulting in >$50k damage per 10k heavy vehicle powered units by DCA code, 2019-2024.

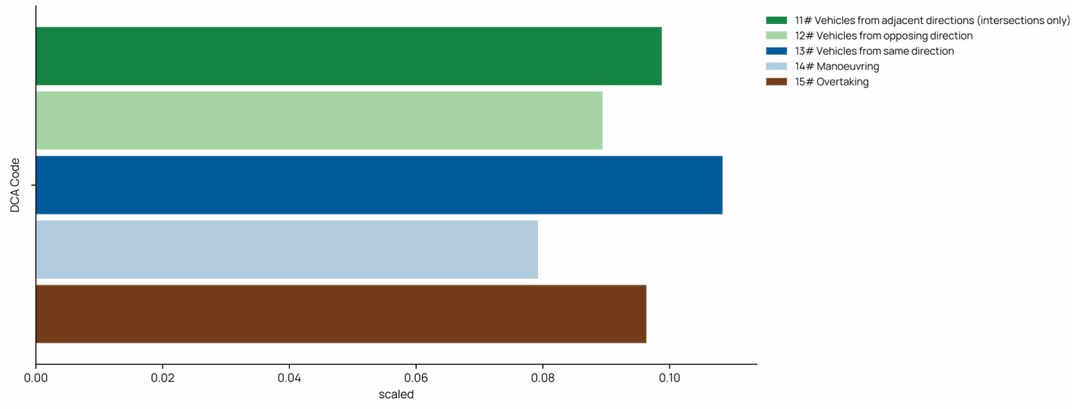
JURISDICTIONS

Appendices 5.4



Rate of heavy vehicle occupant fatal crashes in SA resulting in >$50k damage per 10k heavy vehicle powered units by DCA code, 2019-2024.

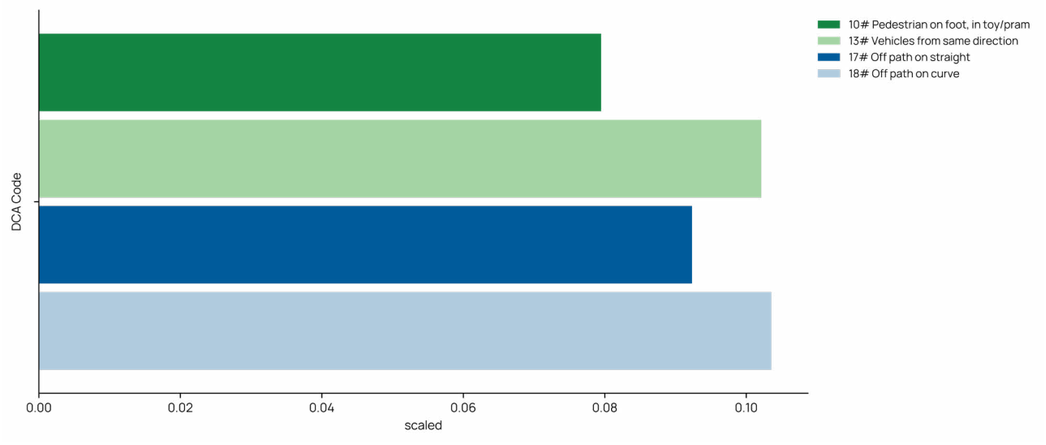
Appendices 5.5



Rate of First-party (heavy vehicle occupant) and Third-party (cars only) fatal crashes in SA resulting in >$50k damage per 10k heavy vehicle powered units by DCA code, 2019-2024.

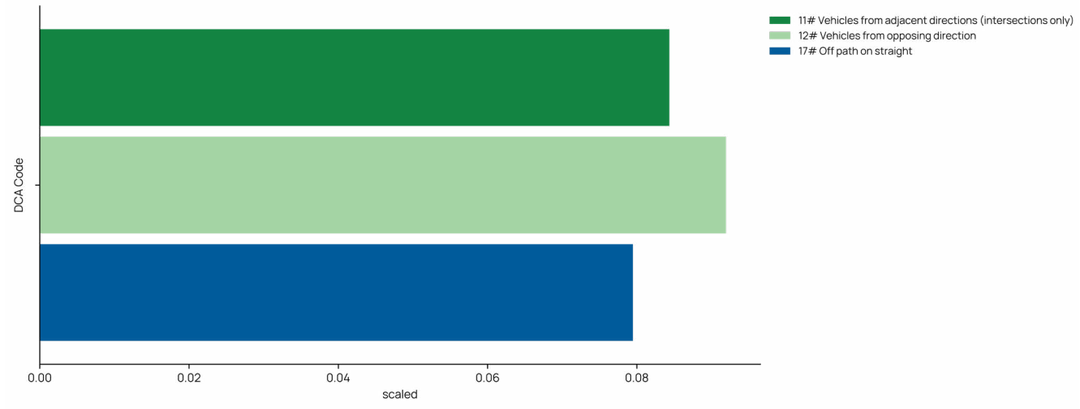
JURISDICTIONS

Appendix 5.6



Rate of heavy vehicle occupant fatal crashes in QLD resulting in >$50k damage per 10k heavy vehicle powered units by DCA code, 2019-2024.

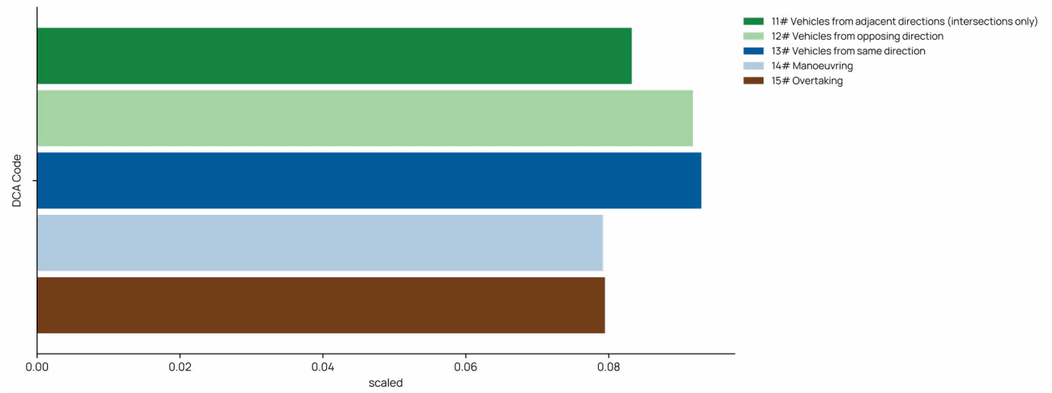
Appendices 5.7



Rate of First-party (heavy vehicle occupant) and Third-party (cars only) fatal crashes in TAS resulting in >$50k damage per 10k heavy vehicle powered units by DCA code, 2019-2024.

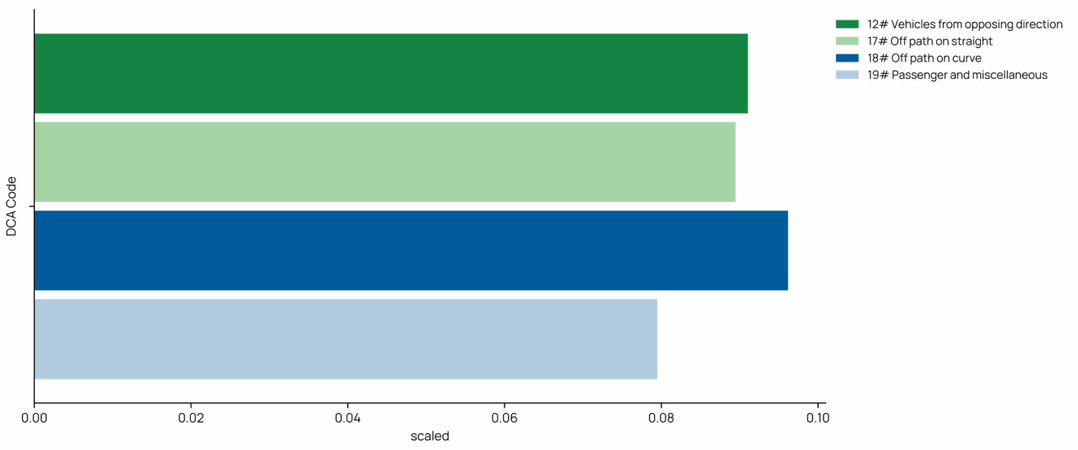
JURISDICTIONS

Appendix 5.8



Rate of First-party (heavy vehicle occupant) and Third-party (cars only) fatal crashes in VIC resulting in >$50k damage per 10k heavy vehicle powered units by DCA code, 2019-2024.

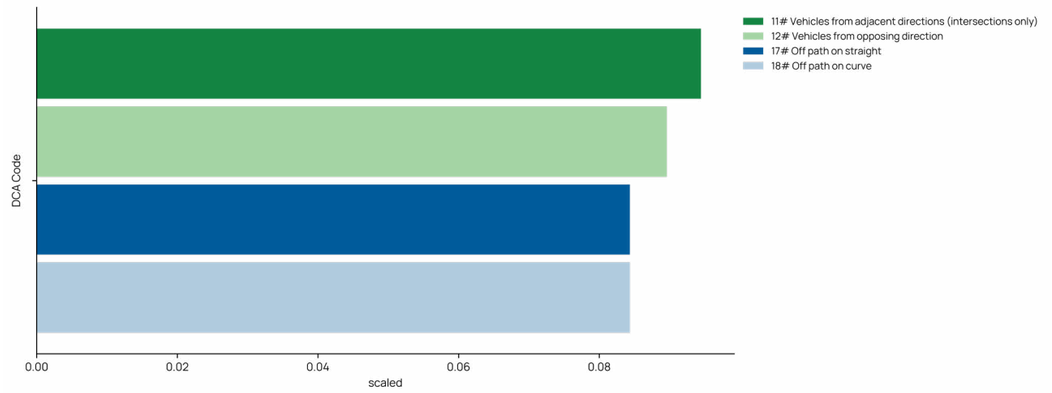
Appendices 5.9



Rate of heavy vehicle occupant fatal crashes in VIC resulting in >$50k damage per 10k heavy vehicle powered units by DCA code, 2019-2024.

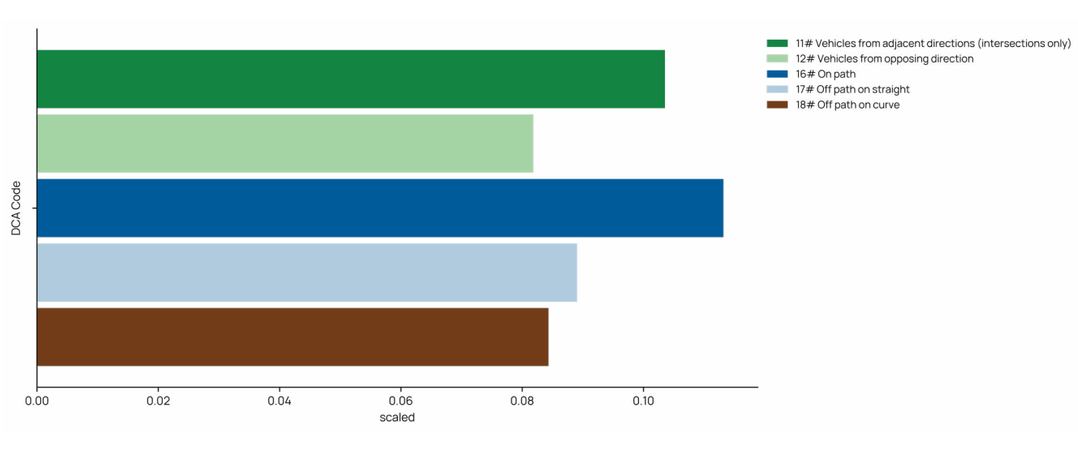
JURISDICTIONS

Appendix 5.10



Rate of First-party (heavy vehicle occupant) and Third-party (cars only) fatal crashes in WA resulting in >$50k damage per 10k heavy vehicle powered units by DCA code, 2019-2024.

Appendix 5.11



Rate of heavy vehicle occupant fatal crashes in WA resulting in >$50k damage per 10k heavy vehicle powered units by DCA code, 2019-2024.