



**BICYCLE
NETWORK**
We've got your back



BIKE CRASH EXPERIENCE STUDY

A BICYCLE NETWORK SPECIAL REPORT

EXECUTIVE SUMMARY

Bike crashes can involve serious consequences for people riding bikes, and the associated risks are likely to increase as more people adopt cycling lifestyles.

Crash data that allows us to mitigate bike crash risks are severely limited. Furthermore, there is very little known about the broader experiences of people involved in a bike crash, such as their emotional and financial burdens, and the barriers to getting back on a bike.

In December 2021, Bicycle Network asked bike riders to share a crash experience that had occurred between 2016-2020. More than 1100 riders took part in the study. We found that:

- Bike crashes affect **all people**, regardless of their riding experience, safety equipment, and bike maintenance
- In 57 per cent of cases involving collision with a vehicle, there were **no bike lane markings** at the site of the crash
- Victims incur, on average, more than **\$3000 in crash-related costs**, and the annual cost of bike crashes in Australia could be as high as **\$36 million**
- Less than half of victims visited a hospital after their crash, and less than half of all crashes with a vehicle are reported to police. This suggests that **only half the number of actual crashes** may be represented in our national records

Based on their experiences, participants believed that improved **driver education** and **protected bike lanes** are critical measures for preventing future bike crashes.

Making the roads safer for people riding bikes requires a concerted effort from all levels of government. Appropriate funding, fit-for-purpose bike infrastructure, improved data collection, and road user training should be critical elements of this approach.



A MESSAGE FROM OUR CEO



Alison McCormack

Chief Executive Officer
Bicycle Network

Bicycle Network is a nationally trusted organisation that supports all people who want to ride.

We collaborate with public and private organisations to advocate, educate and innovate on behalf of all people who ride.

Our vision is a healthy, sustainable society, where everyone can safely ride a bike every day. Our purpose is to promote the health of the community by encouraging more people to ride more often.

We have almost 50,000 members and actively drive behaviour change through our advocacy initiatives, events and programs.

As part of our membership, riders receive crash insurance and access to legal support through our Bike Insure and Riders Rights services. Our members are also encouraged to self-report crashes – regardless of severity. Some reports lead to insurance claims, or involve hospitalisations, but many remain unrecorded.

We genuinely believe that more people riding more often will lead to a healthier population, reduce strain on the health system from illnesses related to a sedentary lifestyle and reduce pressure on roads and public transport infrastructure.

The Australian Road Deaths Database reveals that 42 bike riders die each year in Australia and that the figure has not changed for 20 years.

Through our work we strive to reach the National Road Safety Strategy's (2021-2030) Vision Zero goal of zero deaths by 2050.

The cost to families when a loved one is killed or injured is inestimable. The loss of a breadwinner, a parent or a child has an immeasurable flow-on effect and cost in terms of grief, mental health, post-traumatic stress, and this does not include the impact of loss of the productivity of that individual to the economy.

Any money spent on improved cycling infrastructure and road safety education is a decisive and proactive step towards supporting more people to ride. It is a socially responsible investment, significantly preferable to the cost of funerals, coroners' reports and managing the care needs (mental and physical health) of families and communities affected forever by the death or injury of a bike rider.



WHAT WE KNOW ABOUT CRASHES

It is indisputable that a key barrier preventing the uptake and growth of bike riding across Australia is the perceived risk of a crash.

Bike crashes place unnecessary burdens on victims, instill fear in those who ride, and discourage those who are yet to try. They are unpredictable, sudden and, in many cases, preventable.

People riding bikes are vulnerable and more susceptible to serious injuries from a crash than people in motor vehicles. They have limited protection to withstand an impact, which can lead to severe and chronic health complications¹.

Crashes also have a negative effect on people's mental wellbeing, and reduce their confidence to get back on a bike^{2,3}.

Together, these incidents increase community concerns about the safety of riding bikes, which is a major barrier to participation⁴.

Policy and strategic frameworks are being developed at all levels of government to boost community interest in bikes as a sustainable transport option^{5,6}. It is therefore critical that our existing and future transport network can safely accommodate an increase in riders, and that their risks of crashes are minimised.

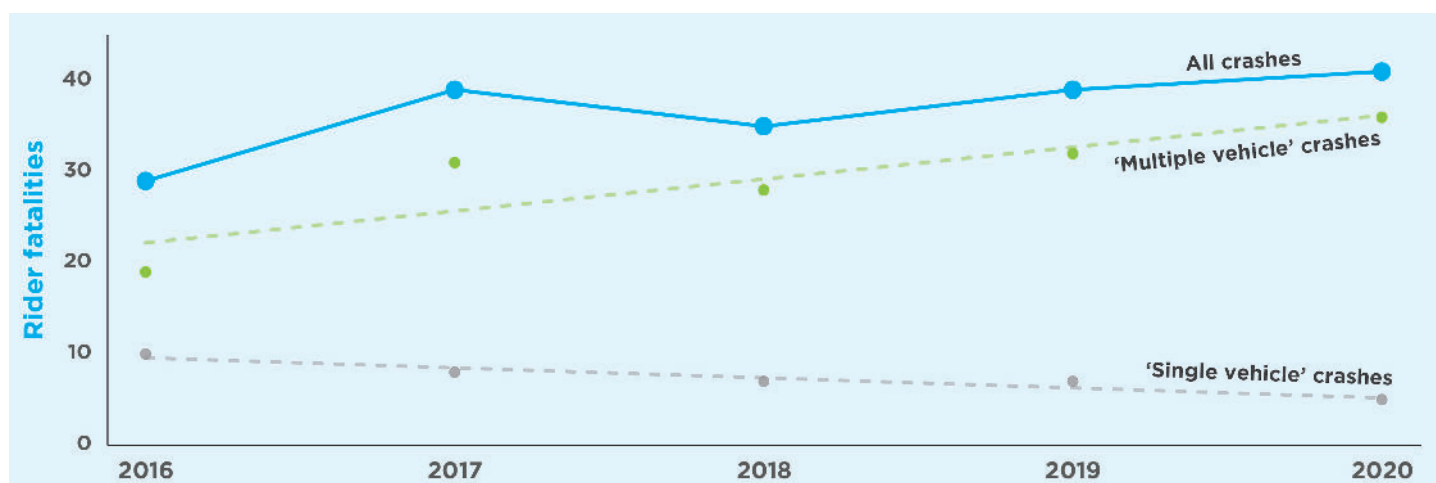
Delivery of a safe, well-connected bike network that can reduce the risk of a crash remains a salient yet stymied political issue. Policy changes that ameliorate crashes are slow moving, and politicians appear hesitant to facilitate change.

The unfortunate consequence is that, during these periods of inaction, bike crashes continue to occur and people's lives are inevitably put at risk.

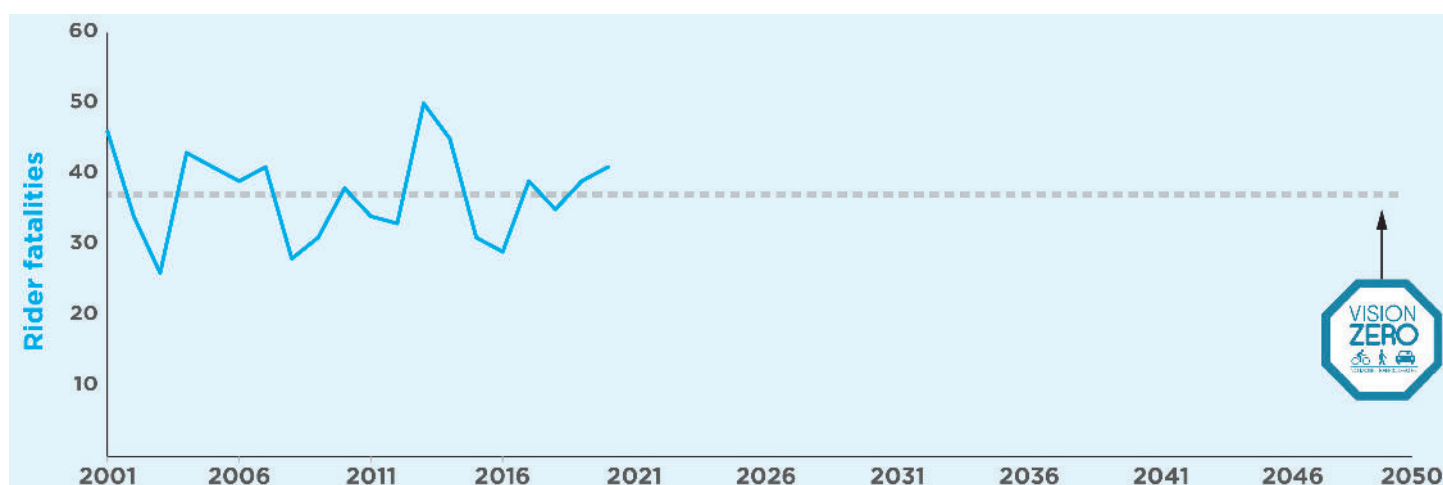
Records from the Australian Road Deaths Database (ARDD)⁷ reveals that 42 bike rider fatalities were recorded across Australia in 2020, a figure that is, unfortunately, no different from the 20 year average⁸.

However, between the years 2016-2020 (the study period that will be used in this report) these data suggest that bike rider fatalities have been gently rising.

This upward trend is due to steady growth in 'multiple vehicle' crashes, or a crash between a bike rider and another motor vehicle. Conversely, crashes in which only a bike rider is involved are in modest decline.



The rise in fatalities suggests, at the very least, that the existing policy, infrastructure and interventions we are employing across Australia are not working to curb fatalities and improve bike riding safety.



As the number of bike riders across Australia continues to grow⁶, there is increasing urgency for appropriate action to be taken.



WHAT WE DON'T KNOW ABOUT CRASHES

The prevalence and injury risks associated with bike crashes are generally well-known and accepted amongst researchers, advocates and the community. However, there are things we don't know about bike crashes.

Most of our knowledge regarding bike crashes is informed by police, hospital and insurance records. However, it is widely accepted that bike riding crashes, particularly those involving injuries of low-severity, are underreported^{2,9}.

This is understandable, as not all riders need to present at a hospital after a crash, and others may not feel the need, or have the capacity, to report their crash to authorities.

However, the reality is that by focusing primarily on hospital and police data, it is likely that many bike crashes will continue to go unnoticed, and exact numbers will remain unknown². Our existing crash records offer only a partial view of people's

susceptibility to crashes when riding a bike, and this subsequently affects policies and strategies for protecting riders.

We also have very little data on people's experiences during and after their bike crash. Crashes must be viewed as more than a statistic.

A paucity of studies specifically address the experiences and perspectives of bike crash victims in Australia¹⁰. In the absence of this data, we have very little understanding of post-crash issues, such as financial impacts, barriers to future riding and long-term health outcomes.

It is important to shine a light on these cases in Australia so that we can influence stronger policy, develop targeted counter-measures, and build a safer environment for people to confidently get out on a bike.

WHAT WE HAVE DONE

In December 2021, Bicycle Network distributed a semi-structured, self-reported survey to members, followers, bicycle user groups, and other community groups across Australia.

The purpose of the survey was to better understand the wider range of bike crash characteristics, and people's experiences during and after a crash.

Recent studies in Ireland^{2,3} have demonstrated the strength of self-reported surveys in providing a window into bike crash characteristics that may be missed by police and hospital records. The studies demonstrated that policy priorities are different with the inclusion of underreported, and lower severity collisions. The self-reported survey used in Bicycle Network's study uses a similar structure to that of the studies described above.

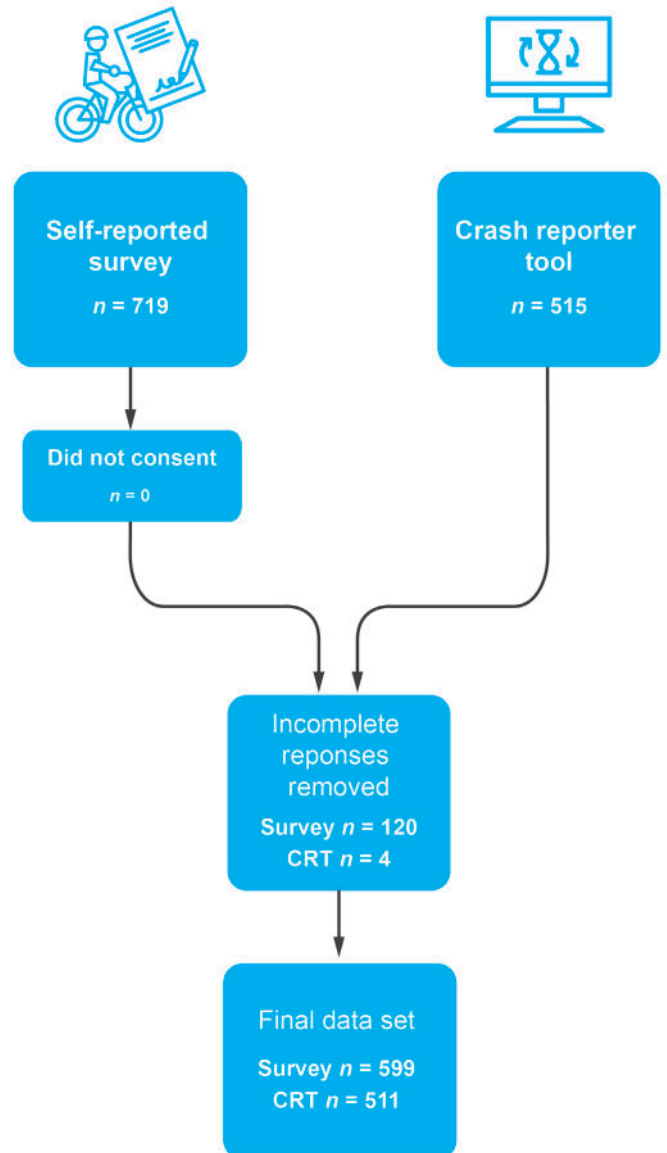
A co-benefit of using self-reported surveys is that there is an opportunity to review and understand the attitudes and experiences of the crash victim in detail.

In addition to the self-reported survey, Bicycle Network included data from its crash reporter tool, which is used to support members in preparing crash-related insurance claims. Insights that are specific to these data are noted within the report.

In Bicycle Network's survey, respondents were asked to describe a crash experience between the years 2016-2020.

No questions in our survey were designated as requiring a response, due to the sensitive nature of bike crashes and the understanding that respondents may have difficulty recollecting specific details of the event. The full survey is available for review in the Appendix of this report.

All data used in this report are non-sensitive and all contributing individuals have been de-identified.



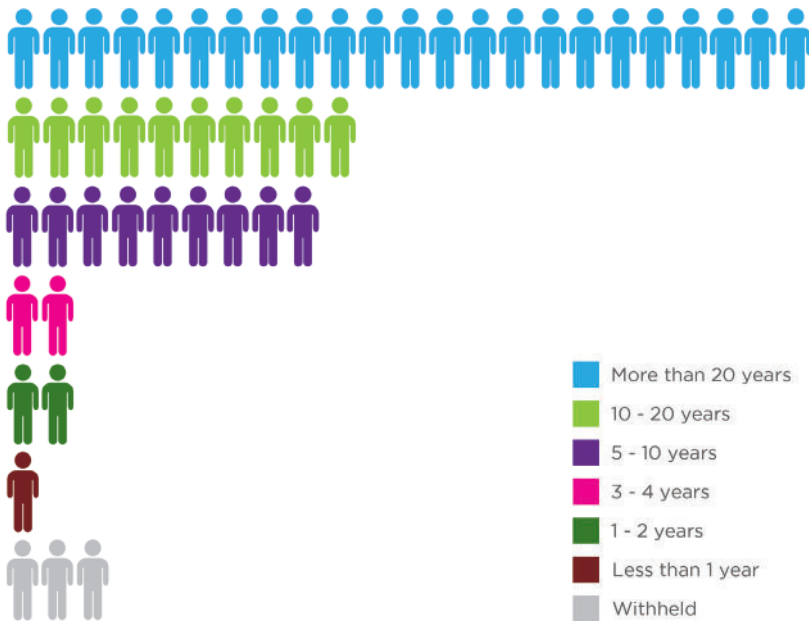
Data limitations

It is important to note that the data in this study was collected from a convenience sample. Participants in this study were people connected to Bicycle Network's various communication channels (e.g. social media, newsletters). It is therefore likely that a number of biases may affect the data, particularly demographic biases. These are acknowledged and discussed throughout the study.

However, this should not cast any doubt on the impact of the findings. Regardless of their demographic profile, all participants in this study are people who use bikes on Australian roads.

ABOUT THE RESPONDENTS

The responses used in this report represent real voices of the bike riding community across Australia. We did not ask respondents to specify their age, gender identity, or location. Instead, we chose to ask respondents about their bike riding habits.

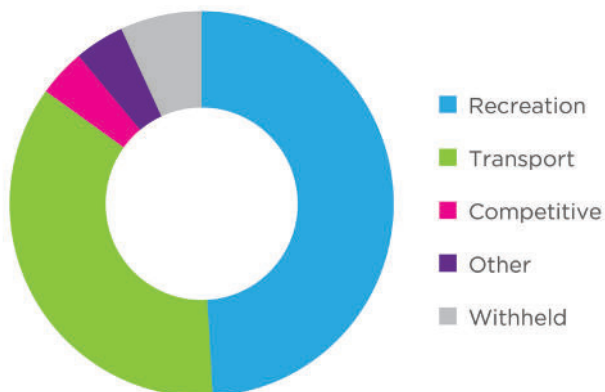


Bike experience

Most of the respondents were experienced riders. Sixty seven per cent of respondents had been riding a bike for at least 10 years.

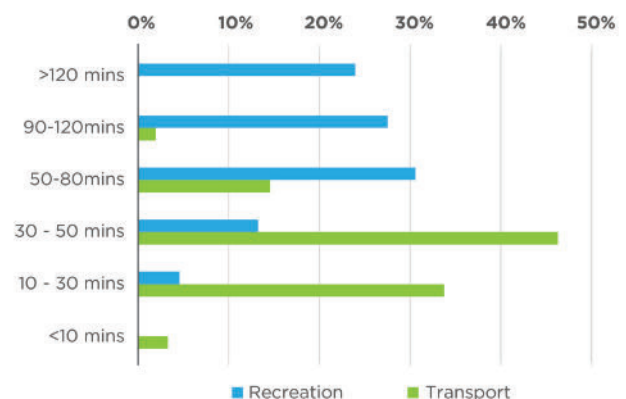
Purpose for riding

The main reason respondents rode a bike was recreation (49 per cent), followed by transport (37 per cent). Respondents also mentioned fitness and racing as common bike activities.



Typical travel time

The amount of time respondents spend on a bike varies according to the trip purpose, between 10-50 minutes for transport trips but typically longer for recreational trips.



Bike safety and maintenance



Most respondents check their tyre pressure and brakes before each trip, check their brake pads monthly, and will get their bike serviced annually.

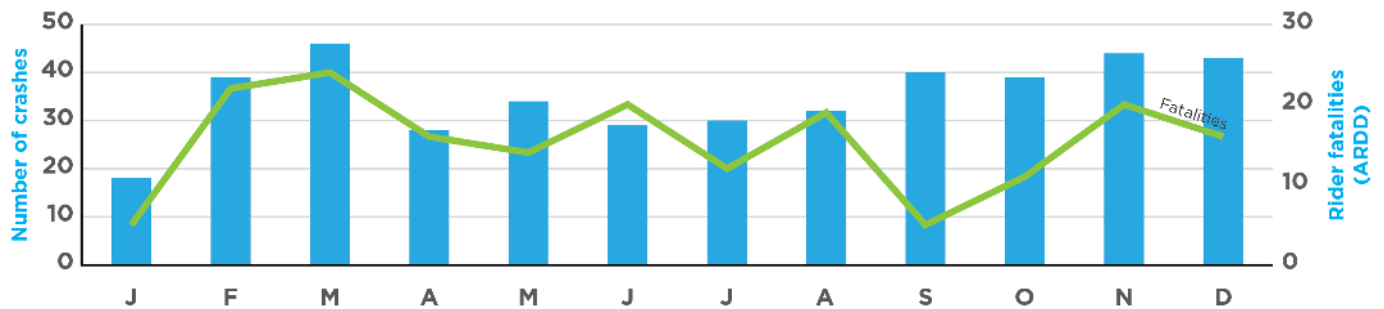


Almost all (98 per cent) wear helmets and over half (55 per cent) regularly wear high-visibility clothing, such as fluorescent vests. They have lights mounted to the front and rear of their bike.

WHEN DO CRASHES OCCUR?

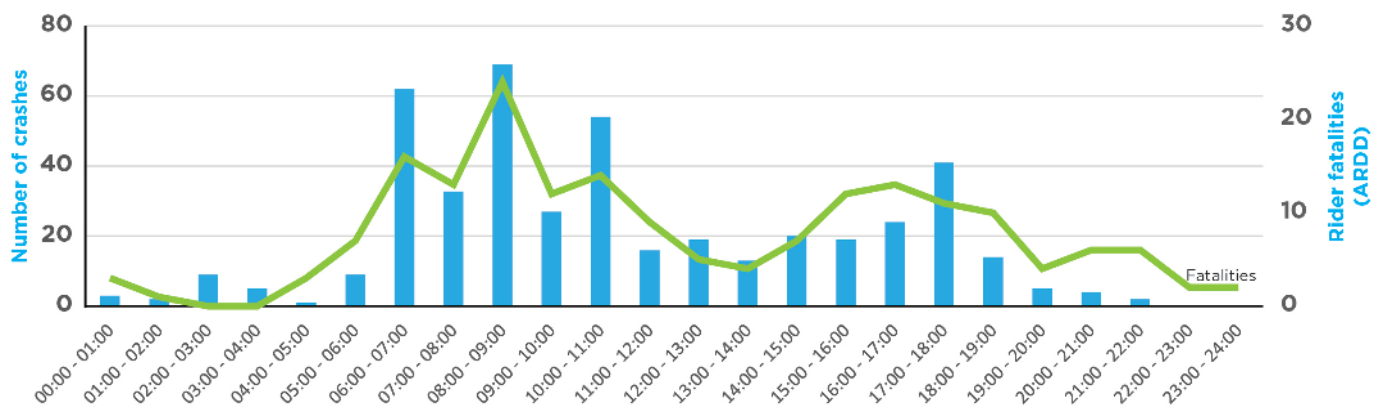
Assessing the timing of bike crashes allows us to identify common periods when they are more likely to occur.

In addition to analysing the data collected in our self-reported surveys, we integrated data from the Australian Road Deaths Database between the period 2016-2020 for comparison. Overall, there is an appreciable coincidence between crashes reported by our representative sample and fatal crashes recorded across the population.



Across the year, there are no significant variations in the data that might suggest heightened risks of crashes during particular months. This observation is reasonably similar to the ARDD data, despite a drop in bike rider fatalities between September and October.

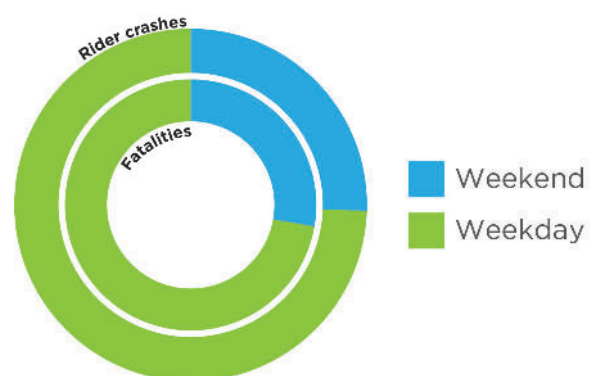
The number of crashes are markedly higher during peak periods (6am-9am; 3pm-6pm), which coincides with ARDD data and previous observations⁶.



Nearly three quarters of crashes occur on weekdays. Again, this coincides with what is observed in rider fatality data^{5,6}.

Key finding: bike crashes are common during periods of high traffic density

The risk of a crash is heightened during morning and evening commuting periods on weekdays, which is likely due to increased vehicle traffic at these times.

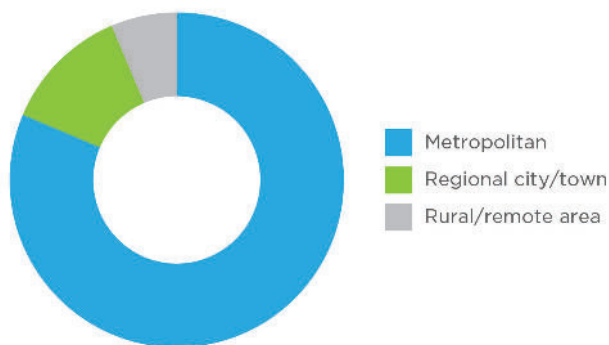


WHERE DO CRASHES OCCUR?

We sought to understand not only the common locations of crashes, but the type of bike infrastructure that was present at the crash site.

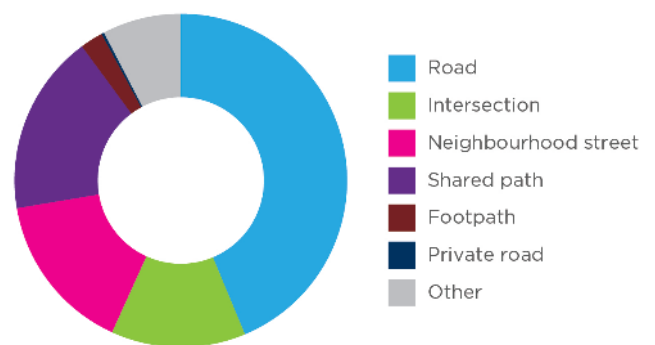
Cities and beyond

Around 80 per cent of crashes occurred in the metropolitan area, and 63 per cent occurred in areas with 50-60km/h speed limits.



The type of road environment

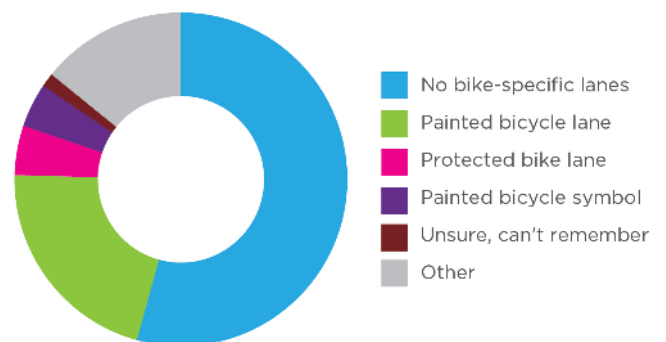
Most crashes (all types) occurred on a road (73 per cent). These crashes can be further divided into mid-blocks (43 per cent), intersections (13 per cent) and neighbourhood streets (15 per cent).



Was bike infrastructure present?

Perhaps unsurprisingly, over 92 per cent of crashes involving a motor vehicle occurred on road. In most cases (57 per cent) there was no bike infrastructure present, while in 28 per cent of cases, the roads featured a painted bike lane.

Only 2 per cent of the crashes involving a motor vehicle occurred on a protected bike lane.



Key finding: most crashes occur on metropolitan roads without bike lanes

Roads without designated bike infrastructure lack appropriate protection for people riding bikes, and present a heightened risk for collisions with vehicles.

WHAT HAPPENS AFTER A CRASH?

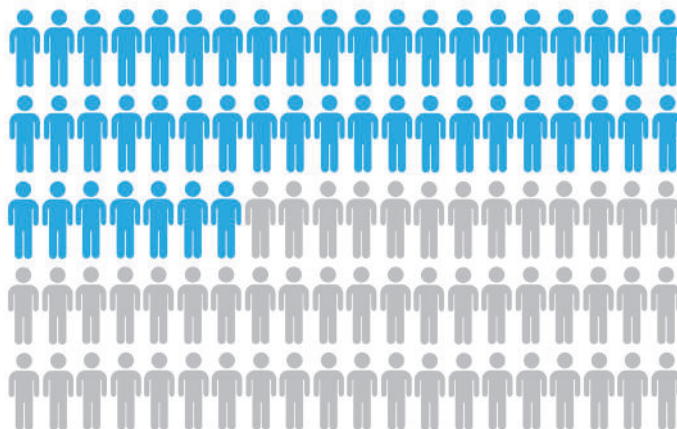
Our findings suggest that existing crash records, collected primarily from police and hospital data, may dramatically misrepresent the actual number of crashes occurring on Australian roads each year.

Crash victims who visited a hospital

Less than half (47 per cent) of the study respondents presented at a hospital following their crash.

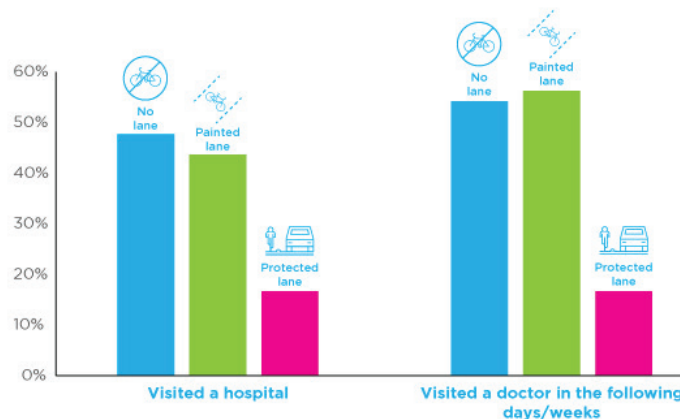
A possible explanation for crash victims not visiting a hospital is that the injuries they sustained were of low severity. Nevertheless, these findings indicate a shortcoming in hospital records as a reliable repository for bike crash data, as they potentially only capture half of the actual crashes experienced by riders.

47%



Better bike facilities, better outcomes

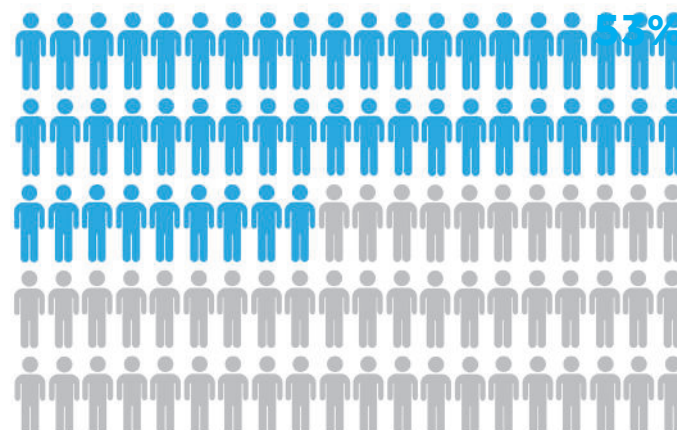
Bike infrastructure plays a big role in what happens during a crash. We found that fewer respondents visited a hospital or doctor if they had a crash in protected lanes, compared to if the crash happened in a painted lane or no bike lane.



Victims who made a police report

Reporting a crash to police is important not only for ensuring appropriate legal steps are taken, and for insurance and other compensatory purposes.

We found that, when a crash involved a vehicle, more than half (53 per cent) of respondents reported the crash to police. The under-reporting of bike crashes to police, which occurs in other countries^{2,9}, means we lack a complete understanding of crash characteristics.

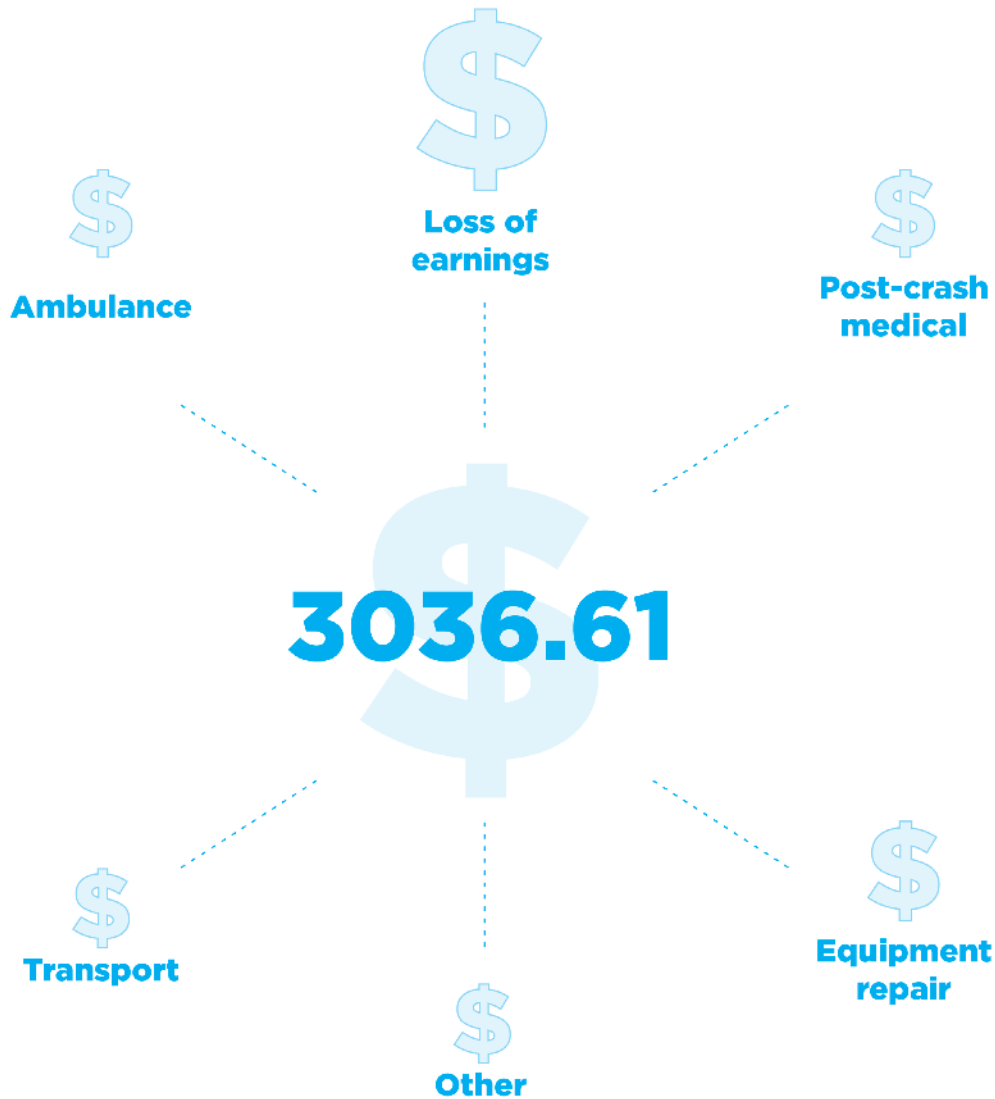


Key finding: bike crashes are under-reported

For every crash victim who visits a hospital or files a police report, another crash victim does not.

WHAT COSTS ARE INCURRED FROM A CRASH?

Our crash reporter tool data provides a window into the average costs incurred by riders involved in a crash.



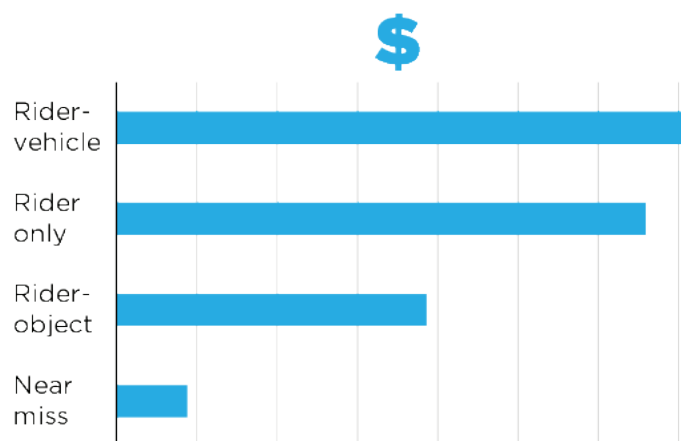
While very little is known about the total financial costs associated with individual bike crashes in Australia¹², international studies suggest that inflation-free costs rise each year¹³. Moreover, if bike riding numbers increase in Australia without a relative change in crash rates, we could see larger and more widespread crash-related costs each year.

Our data found that respondents incurred an average of \$3036 in costs related to their crash. This cost is equivalent to 7 per cent of the average take home pay for Australians.

How much of a financial burden do bike crashes place on Australia? Due to the nature of our survey, it is hard to draw conclusions on the true number of serious crashes per year, and in turn what the annual cost burden would be. However, a crude estimate can be made by taking the number of bike crash victims hospitalised in 2016¹⁴ (12,000) and multiplying by the average crash cost reported here. This provides an estimate of **\$36 million** in bike crash-related costs per year.

The costs from a crash are spread across various domains, such as loss of earnings, medical fees and expenses, ambulance fees, replacing or repairing equipment, and alternative transport options (in cases where future bike use was inhibited).

We found that the highest costs incurred from a crash are loss of earnings (approximately 68 per cent).



A number of respondents told us that crash-related injuries prevented them from returning to work, resulting in long-term absenteeism and, in some cases, loss of employment. The lowest costs included the repair or replacement of clothing.

Medical costs associated with a crash may be incurred well into the future, depending on the magnitude of the physical and mental burdens. Some participants were still paying medical costs several years after their crash.

There are variations in the average costs incurred by the victim with respect to the type of crash. For example, 'rider-vehicle' crashes incurred the highest post-crash costs. However, the crash-related costs are less for 'rider only' and 'rider-object' crashes, where a third party is not involved.

Respondents told us...

“Unable to work for several months. Significant damage to bicycle, clothing and other valuables being carried.”

“\$5000 damage to bike”

“Spent 3 months in hospital lost my employment spent next 12 months doing rehabilitation.”

“Costs of medical and private health continue four years later and will be ongoing.”

“Damage to car cost me \$4000 to repair; at the time I was not insured”

“Approx \$1000 worth of clothing and equipment needed to be replaced”

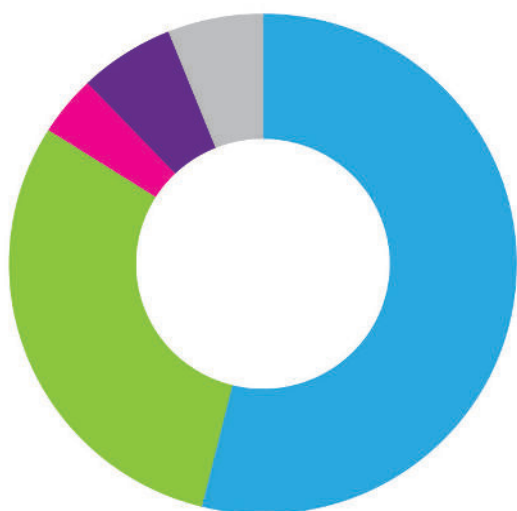
“\$12000 teeth fix... I was uninsured”

Key finding: costs incurred from a crash may be significant

A bike crash is instantaneous but the financial repercussions may stay with the victim well into the future.

WHAT TYPES OF CRASHES OCCUR?

The characteristics of bike crashes are dependent on the type of crash scenario, in particular the parties that were involved.



Almost 85 per cent of crashes recorded in our study involved one of two scenarios: (i) only the rider was involved (rider only crash; 30 per cent); or (ii) the rider collided with a vehicle (rider-vehicle crash; 54 per cent).

The relative percentages of different crash types found in our dataset is reasonably similar to rider fatality data. According to the ARDD⁷, ‘rider only’ deaths comprised 25 per cent of all crashes between the years 2016-2020 (the period used in this study).

We found no relationship between the type of crash and the frequency of bike maintenance (e.g. pumping tyres) or safety preparation (helmet, high visibility clothing). We also found no relationship between the type of crash and the length of the respondents’ riding experience. In other words, respondents were susceptible to all types of crashes regardless of their experience and proficiency in bike safety and maintenance.

Respondents told us...



“Tram lines are a hazard, bikes need to be clearly separated from tram tracks.”

“A rock was dislodged from the escarpment on the side of the road and it was dark and wet.”

“I hit a large pothole, and struck a lamppost at speed.”

“Very thin layer of black mud on road at roundabout. Construction site nearby.”

“A patch of oil on the road that had leaked from a bus. In the morning light it just looked like water.”

“Crash was caused by a stick through the spokes. It is important to constantly check the road ahead”

Respondents told us...



“The driver did not give way to me and entered knocking me off my bike. She did not stop to check if I was okay yet I know she saw me fall. Pedestrians helped me.”

“Interaction with driver was good. He totally apologised. Said he didn’t see me. He entered the roundabout after me and sideswiped me.”

“As the driver left the scene, the onus was on me to prove the accident happened and that I was the victim.”

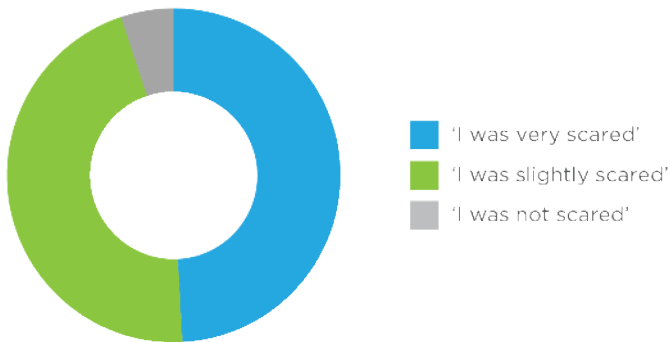
“The motor home tried to drive away but other cars who witnessed stopped it by forcing it off the road... less likely to ride for quite some time!”

“The car ran into me changing lanes without looking and I was going straight on a painted bike lane. The driver yelled and honked at me as if it was my fault”



NEAR MISSES

Despite not often resulting in physical injuries, a near-miss incident can have negative mental health effects on riders. It may also discourage people from riding a bike in future, and increasing concerns that riding a bike is a risky transport mode.



Of the 119 cases in which respondents reported a 'near-miss' incident in our survey, just under half said they were 'very scared', regardless of their level of bike riding experience.

Only 5 per cent of respondents said they were not scared by the incident. In each of these cases, the rider had at least 10 years of bike riding experience.

Respondents told us...

"...all near misses that have occurred to me involved either: almost being 'doored', or a driver turning left without checking..."

"On average I have two near miss experiences each time I go for a ride... nine of ten times these near misses are cars... of the car incidents I feel the majority is the driver being impatient or just taking risks to get around me while riding my bike."

"In the last 5 years I have had 6 near miss incidents that involved vehicles turning right against a red light, a truck driver unable to see past a large mirror and roundabouts."

Key finding: 'near miss' incidents have negative effects on riders

While no injuries are sustained during these events, they expose people to stressful events and may discourage them from riding bikes.

WHAT DO CRASH VICTIMS WANT

We offered survey participants the opportunity to give thoughts on solutions for mitigating crash risks

We analysed our responses and categorised them into themes.

As this was an open-ended question, we received a wide range of comments from participants. However, two common themes emerged across the responses: ‘driver education’ and ‘protected lanes’.

‘Driver education’ was commonly raised by crash victims who had crashed with a vehicle, and comments typically included improving drivers’ recognition of riders on the road. Improving driver education around vulnerable road users is a common policy recommendation raised in Australian research, particularly with respect to driver licensing¹⁶. It is also commonly reported by survey participants as an key enabler for riding¹⁷.

Protected lanes, the second key theme, also aligns with global research, which collectively suggests that bike lanes physically separated from traffic have better safety outcomes than those that are not¹⁸.

The data are also concordant with recent findings in a national poll commissioned by Climate Council¹⁹, which found that most people would like to see more investment in bike lanes that are physically separated from car traffic.

driver education protected lanes

police

dooring

road etiquette

culture change

road maintenance

more bike lanes

road design

bike lane design

driver awareness

passing distance

stronger laws

rider education

rider safety equipment

roundabout

pedestrians

driver attitudes

distracted driving

chapel street

licensing

fear

negligence

driver responsibility

tram tracks

dog

victim blaming

trees

pot holes

mountain bikes

slower speed

truck

e-bikes

footpath

Key finding: crash victims believe infrastructure and education are important

In developing road safety policies, it is important to understand the experiences of crash victims and their views on how systems may be changed.

THE PATH FORWARD

What policymakers can do

Prioritise separated bike infrastructure

Bike facilities that physically protect riders from motor traffic should be the gold standard for active transport projects.

Trial lower speed limits

Reduced speed limits (30km/h) significantly lower the risks of serious and fatal collisions between private vehicles and vulnerable road users.

Invest in traffic calming infrastructure

Where speed limits cannot be changed, infrastructure and furniture that reduces vehicle speeds ('traffic calming') should be prioritised.

Develop behaviour change campaigns that promote cycling safety awareness

Public communication and behaviour change campaigns can educate drivers and promote rider safety.

Unify and strengthen crash data collection

Data on rider crashes should be accurate, reliable, up to date and nationally consistent. It should also include qualitative data that captures rider crash experiences.

What we will do

Make our crash data public

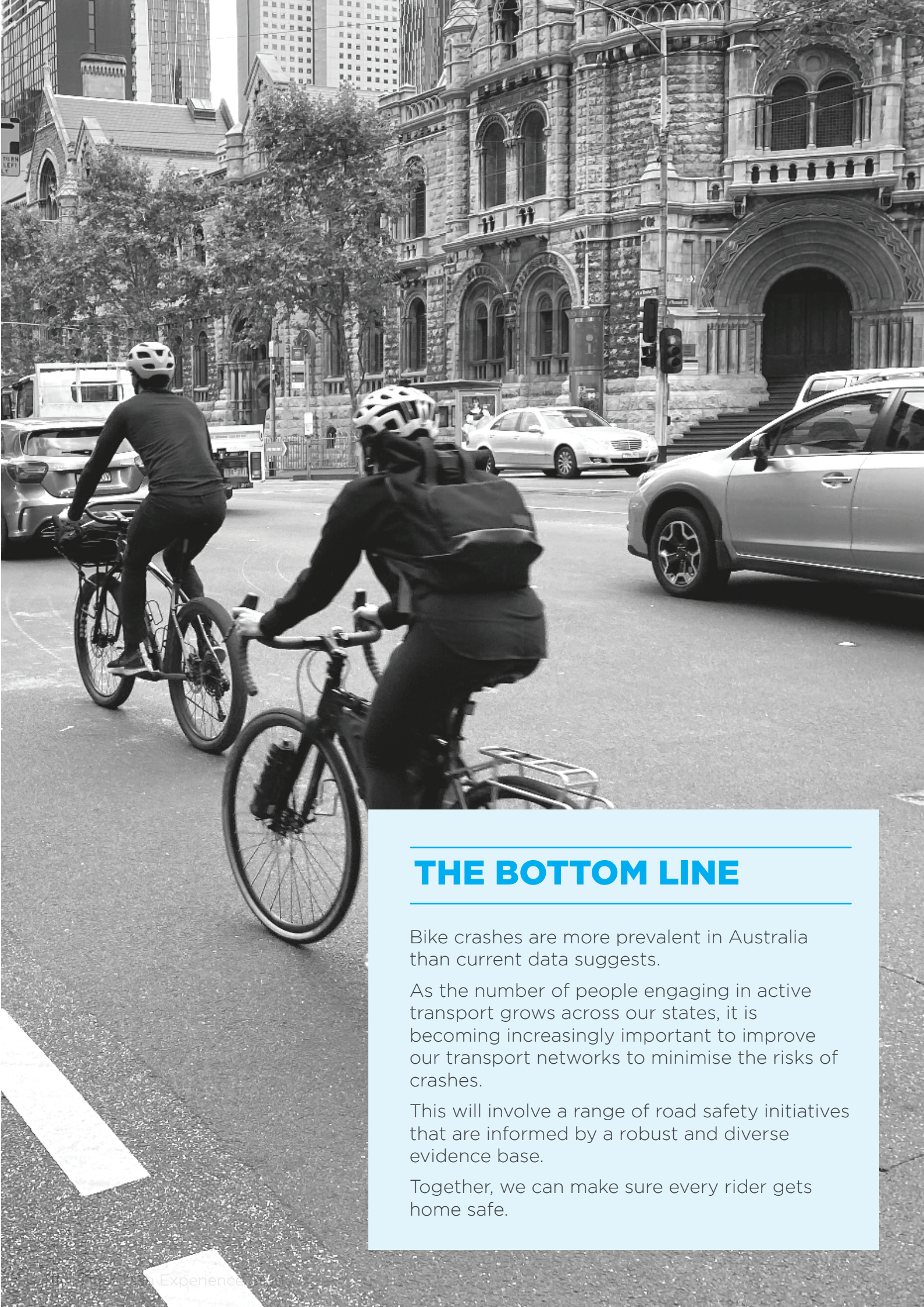
The data used in this report will be available to the public. Furthermore, we will publish the spatial data we collect through our crash reporter tool, which will assist in highlighting areas of concern for safe riding.

Develop reports and campaigns that address rider safety

We will continue to work with other bike advocacy groups to report on bike crash related issues and coordinate campaigns that address rider safety.

Support riders through Bike Insure and Rider Rescue

Bicycle Network runs a number of programs that provide support to people riding bikes when they encounter problems during their ride.



THE BOTTOM LINE

Bike crashes are more prevalent in Australia than current data suggests.

As the number of people engaging in active transport grows across our states, it is becoming increasingly important to improve our transport networks to minimise the risks of crashes.

This will involve a range of road safety initiatives that are informed by a robust and diverse evidence base.

Together, we can make sure every rider gets home safe.

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