

**BICYCLE
NETWORK®**

BICYCLE NETWORK CRASH REPORT 2012-2016

Prepared July 2017



1. Executive Summary

With more than 50,000 members, Bicycle Network is Australia's largest bike riding organisation. Through our advocacy, membership, behaviour change programs, events and activities, we strive to combat physical inactivity by making it easier for everyone to ride a bike every day.

As part of our membership, bike riders receive crash insurance and access to legal support through *Rider's Rights*. Our members are also encouraged to self-report any crashes they're involved in – regardless of severity. While some of these reports lead to insurance claims, or involve hospitalisations, many don't and therefore sit outside existing data sets.

This report collates 2480 member crash reports from 2012 - 2016 and provides some important and rarely reported insights into the nature of bicycle crashes.

The eight key findings are:

1. The majority of crashes happen when the weather is fine (81.4%) and the road is flat (70.7%)
2. Crashes are most common during peak hour but the number of crashes in the morning peak are almost double the afternoon peak
3. Crashes reduce as the year progresses and winter approaches then peak back up in Spring with October the month with the most crashes
4. Intersections remain the highest risk area with 42.8% of crashes
5. Only 20.9% of crashes occur in environments where there are no vehicles highlighting the importance of separation
6. Crashes happen at low speed with 13.8% where the rider is going less than 11km/h and almost half of crashes (46.1%) where the rider is travelling less than 21km/h
7. The chances of having a crash are extremely small: less than 1% for a year and a 0.001% for a crash that requires hospitalisation on any day
8. Nearly half of crashes are reported to the police (47.6%) and when a report occurs 24.4% describe the experience as negative.

Our crash statistics don't establish fault. But numerous studies have confirmed that the majority of crashes involving vehicles are the drivers fault. The presence of vehicles in the environments where crashes occur explains why the crashes happen in seemingly non-risky situations and supports the call for separated bike lanes and traffic calming.

It's also important to note that Bicycle Network's crash data has some limitations. To provide further insight and impetus for action it's clear that the government needs to commit to more thorough collection of data and greater analysis.



2. Five years of member crash data collection

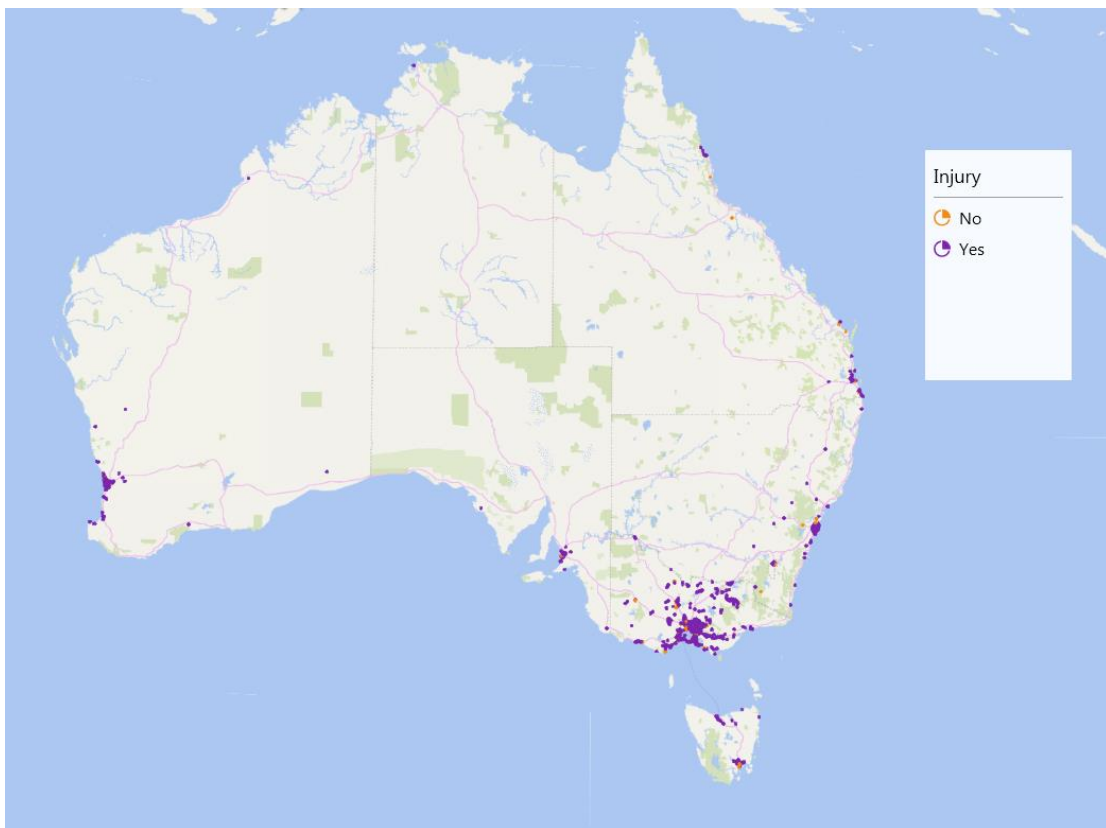
When a member is involved in any kind of crash or collision, they are encouraged to contact Bicycle Network's Rider Services Team. Information and details about the crash are recorded by a team member over the phone. During this process, members are provided with support, advice and if required, they can access our insurance and legal support.

While we encourage reporting regardless of injury sustained, we suspect that there are a significant number of crashes which aren't reported to us.

Bicycle Network has more than 50,000 members across Australia with offices in Melbourne, Sydney, Hobart and Darwin. As we have grown out of Victoria the majority of our members are in Victoria and this is reflected in our crash data.

The following map shows where the reported crashes occurred across Australia.

Figure 2 – Location of crashes reported



A clear strength of our crash data is that it's not limited to serious injuries (those requiring hospitalisation) or fatality. In fact, of the 2,480 crashes reported between 2012 and 2016, 47.9% involved a serious injury. Therefore, this data provides insight beyond other sources of data such as hospital records or coroners' reports.



3. Crashes happen on flat roads in fine weather

Intuitively, most people think that the most dangerous and risky type of bike riding is downhill in the wet, on gravel or an uneven road surface. However, Bicycle Network's member crash stats show that the majority of bicycle crashes happen when the weather is fine (81.4%) and the road is flat (70.7%).

Figure 3.1 shows that the clear majority of crashes happen when it is fine and only 11% of crashes happen when it is wet or raining.

Figure 3.1 – Bike crashes by reported weather conditions

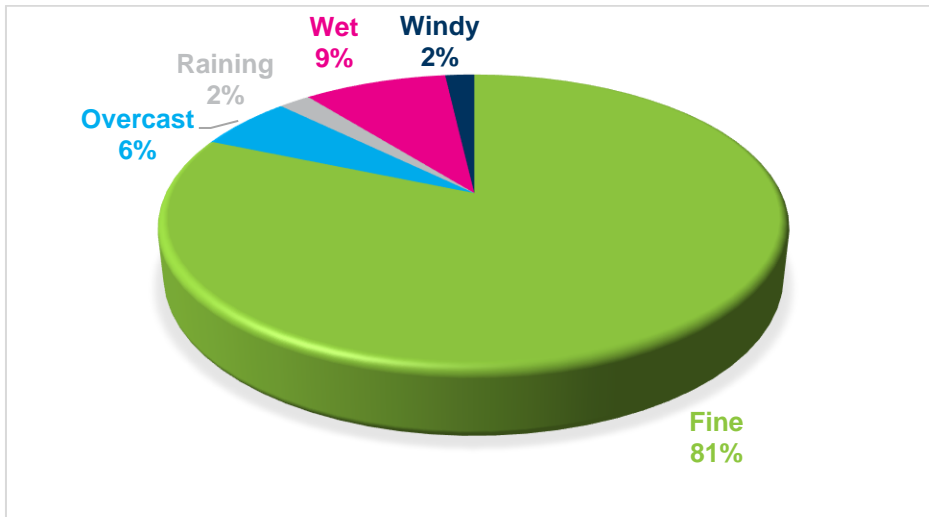
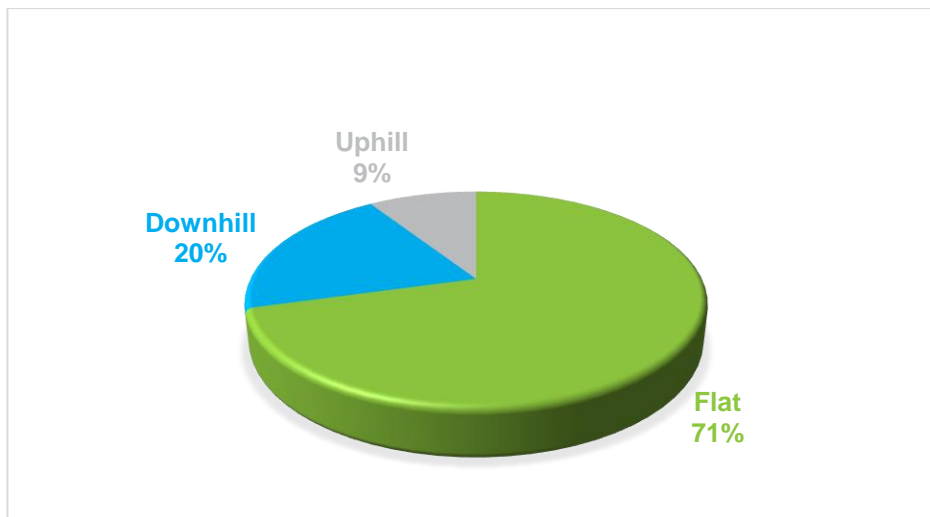


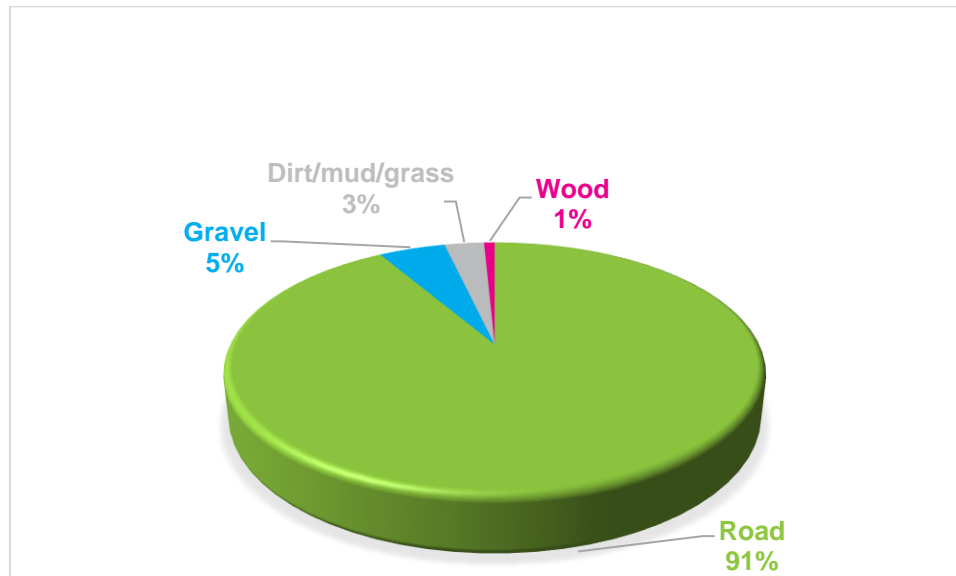
Figure 3.2 shows that the clear majority of bicycle crashes occur when the person is riding a bike on a flat surface and only 20.1% of crashes happen when the rider is going downhill.

Figure 3.2 – Bike crashes by reported surface gradient



The figures are even more telling when it comes to surface type (Figure 3.3) with 91.6% of crashes happening on a road surface and only 4.9% on gravel. These statistics emphasise the need for on-road separation and bike infrastructure by clearly revealing that people who ride bikes are at a lower risk when separated from traffic.

Figure 3.3 – Bike crashes by surface type



Our member statistics show that crashes involving a bicycle most commonly occur on the road, in dry or fine weather. However, these results are not completely surprising when you consider that when it comes to bike crashes or collisions with vehicles, motorists are predominately at fault^{1,2}. Evidence suggests that vehicles collide with bike riders in all conditions, even when conditions are seemingly perfect.

4. In the morning, in October poses the biggest risk

4.1 The morning commute is prime crash time

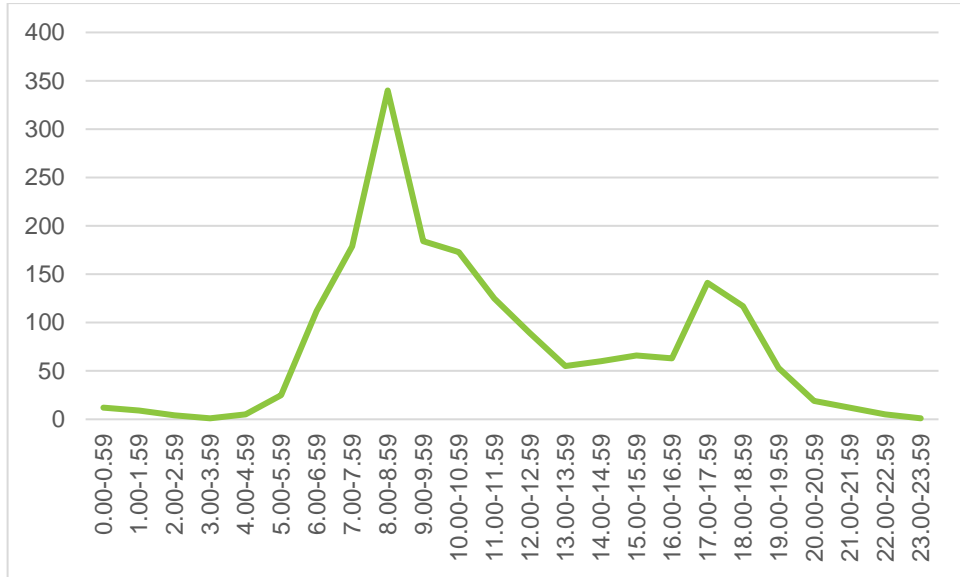
It's no surprise that the highest number of crashes occur during the peak commuting times where both bike riding and vehicle traffic volumes are at their highest. However, it is surprising that the number of crashes in the morning peak (7am to 10am) are over double the afternoon peak of (4pm to 7pm) (Figure 4.1).

¹ Johnson, M. et al. (2010) 'Naturalistic Cycling Study: Identifying risk factors for on-road commuter cyclists' - Monash University Accident Research Centre, Melbourne: <http://bit.ly/2s5BFiR>

² Linday VL. (2013) 'Injured cyclist profile: an in-depth study of a sample of cyclists injured in road crashes in South Australia' – University of Adelaide Centre for Automotive Safety Research, Adelaide: <http://bit.ly/2rNshNC>



Figure 4.1 – Bike crashes by time of day



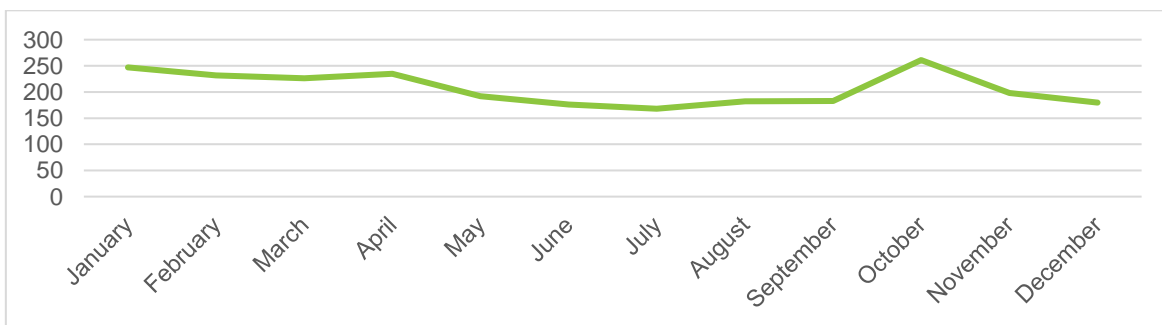
The cause of the difference between morning peak and afternoon peak is unclear from the data collected. While assumptions can be made regarding concentration of traffic and impatience of drivers in the morning, it's clear that this area requires more research and investigation to reduce risks for people who commute by bike in the morning.

4.2 October is the biggest month for crashes

As the year progresses and winter approaches, crashes reduce but peak back up in Spring. This is not entirely unexpected as the weather improves and rider numbers increase. The worst month for bicycle crashes is October, peaking at 261.

January is the second worst month for the year with 247 crashes reported. This result is surprising given that commuter numbers are generally lower with many people on holidays. Unfortunately, the data doesn't reveal if the crashes were a result of an increase in riders post-Christmas.

Figure 4.2 – Bike crashes by month

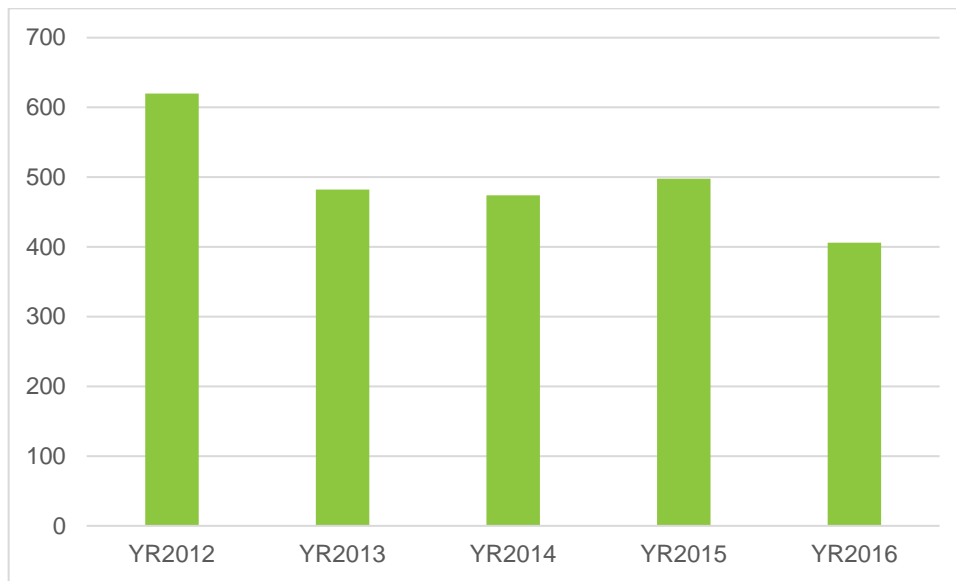




4.3 Crash numbers have reduced slightly

The number of crashes each year has remained relatively constant with some minor downward trend. The highest number of crashes was in 2012 and the lowest was in 2016.

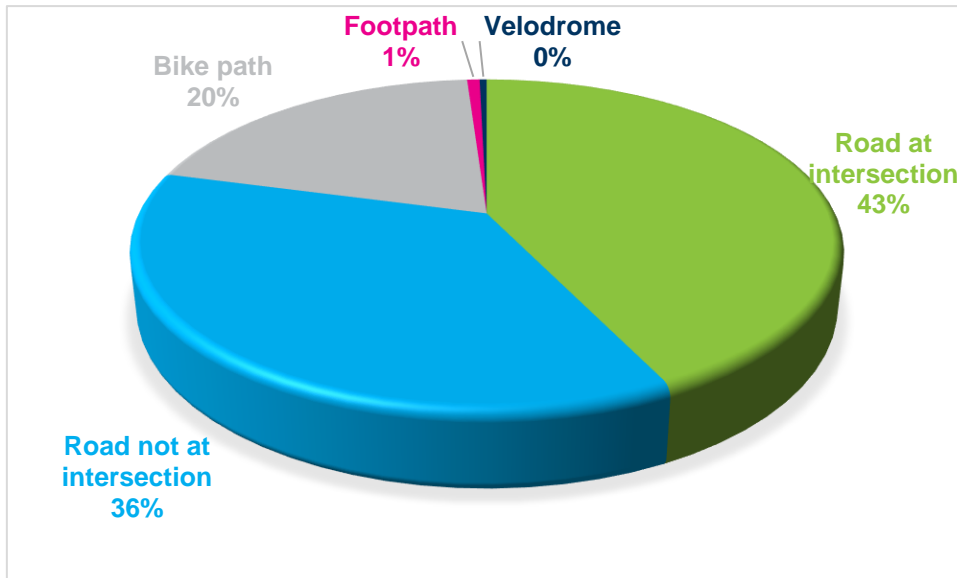
Figure 4.3 – Bike crashes by year



5. 42.8% of crashes are at intersections

It is well known that intersections pose a high risk for people who ride bikes. Therefore, it is no surprise that 42.8% of crashes reported occurred at intersections. 36.4% of crashes were on the road not at an intersection, with only 20.9% of crashes occurring in an environment where there are no vehicles. This data adds further weight to existing research which shows that the incidence of bike crashes are most prevalent in environments where motor vehicles and bikes interact. It also further highlights why separated bike infrastructure is important for the welfare of bike riders and all other road users.

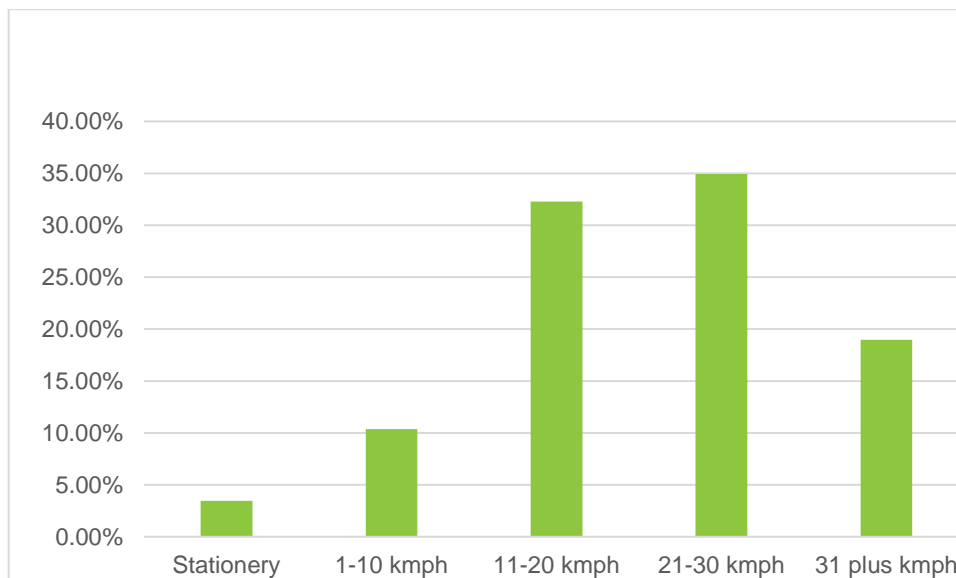
Figure 5.1 – Bike crashes by location



6. 13.8% of crashes happen at low speed

A regular assumption is that crashes happen when a rider is travelling at speed. In fact, 13.8% of crashes reported happened where the rider was going less than 11km/h and almost half of crashes (46.1%) occurred where the rider was travelling less than 21km/h.

Figure 6.1 – Bike crashes by speed of the rider



Furthermore, the severity of the injury does not increase as much as you would expect when compared with the speed of the rider. Of the riders who suffered an injury that required



hospitalisation, 11.1% were moving at less than 11kmph and 39.7% were moving at less than 21km/h. Of course, when it comes to the severity of the injury the speed of a vehicle (which is not recorded in our crash statistics) is likely to make a significant difference.

7. Less than 1% of riders crash each year

Sensationalised media reporting have led many to believe that riding a bike is a dangerous activity, where the risk of injury is high. However, our member crash data shows that it is not the case.

Over 5 years, Bicycle Network members reported 2480 crashes or an average of 496 crashes per year. Of those crashes, 1162 required a trip to hospital — an average of 232 per year.

It's important to put these figures into a wider context. Currently, Bicycle Network has more than 50,000 members. Therefore, per our data, a bike rider has a:

- 0.99% chance of having a crash in a year
- 0.003% of having a crash on any day
- 0.46% chance of having a crash that requires a visit to hospital in a year
- 0.001% chance of having a crash that requires hospitalisation on any day.

8. 1 in 4 have a negative police experience

Almost half of crashes (47.6%) were reported to the police. When a police report was made, 24.4% describe the experience as negative. With over 150 riders having a negative experience with the police each year, there's more work to be done to make sure that when the police are involved the bike rider feels supported.

9. Conclusion: We need better data and analysis, particularly around fault and cause of bike crashes

Currently, 15 million Australians don't meet the minimum guidelines for physical activity. As a result, millions of Australians will suffer a major preventable disease such as heart disease, type-2 diabetes, breast cancer or colon cancer. With over 10 million Australians interested in taking up bike riding but concerned about the risk of crashing, data and analysis of bike riding will assist us to solve our biggest preventative health issue.

While this report provides some invaluable conclusions that can be used to help reduce the number of crashes, the crash data has limitations and shouldn't be viewed in isolation. While data sources exist in various other areas such as police reports, coroner's reports, hospital records, TAC and insurance claims, gaps still exist. To uncover further insights and provide a greater impetus for action, the government must commit to a more thorough collection of data, research and greater analysis.



One of the gaps in Bicycle Network's crash data is around fault and cause. This would be an invaluable insight that is sorely lacking. If we are to invest in reducing the risk for people who ride bikes, a national data source needs to be created to provide greater clarity around who is at fault when a bike crash occurs and what the cause was.