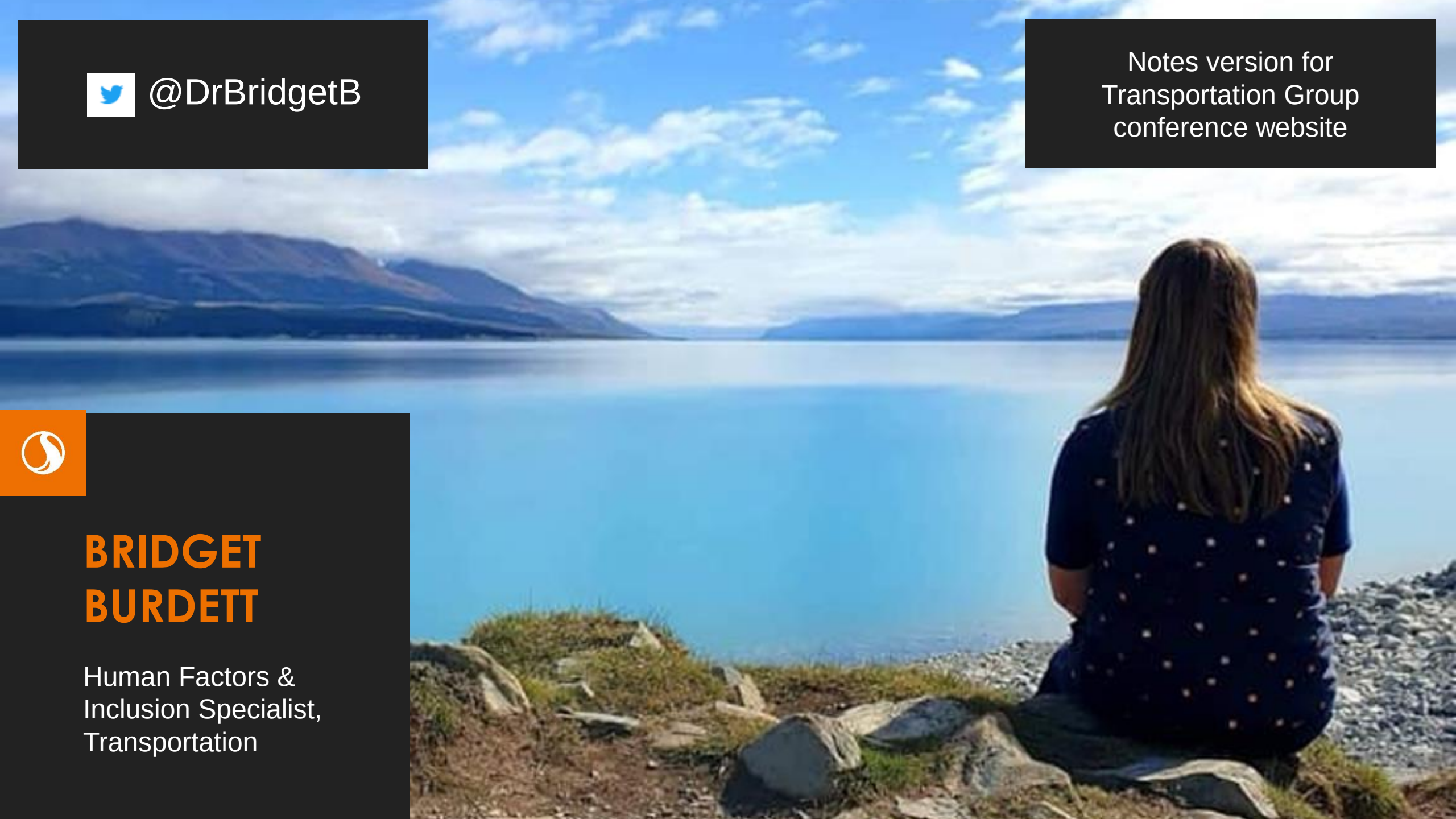

@DrBridgetB

Notes version for Transportation Group conference website

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Outline

Why study crash distance from home?

Why hasn’t anyone done this before?

Results

More about crashes

Conclusions

The point of it all….

I studied crash distance from home as part of my PhD research into mind wandering during everyday driving. I used crash distance from home to test whether driving on familiar roads is more ‘risky’ than on unfamiliar roads.

I have no lid upon
my head
but if I did
you could look
inside and see
what’s on my mind

Dave Matthews Band

My research was inspired by billboards like this: I wanted to know whether there is any way of knowing for sure whether mind wandering *causes* crashes

This slide is here because it’s funny…

Why hasn’t anyone done this before?

It may seem like an established ‘fact’ that drivers are more likely to crash close to home, but before my study, it had not been established.

Several researchers had investigated how far from home people crash…

Steinbach, Edwards and Grundy (2013)

53% of injured car occupants were in crashes within a 5km radius of their home. Traffic injuries were more likely to occur close to home to people from “more deprived and urban areas” (p6).

McGwin and Brown (1999)

Most crashes happened within 25 miles of the driver’s home, but this was most prevalent for young drivers (87.2% of crashes), followed by older (83.2%) and middle-aged (82.0%) drivers.

Chen et al. (2005)

Crashes were associated with “usual driving circumstances rather than unusual circumstances”. (p222)

…but they did not account for the likely fact that most *travel* is also close to home.

McGwin and Brown (1999) : “the ability to account for exposure is missing” (p196)

Steinbach, Edwards and Grundy (2013): “exposure is a likely mechanism” to explain these findings (p7)

About exposure…

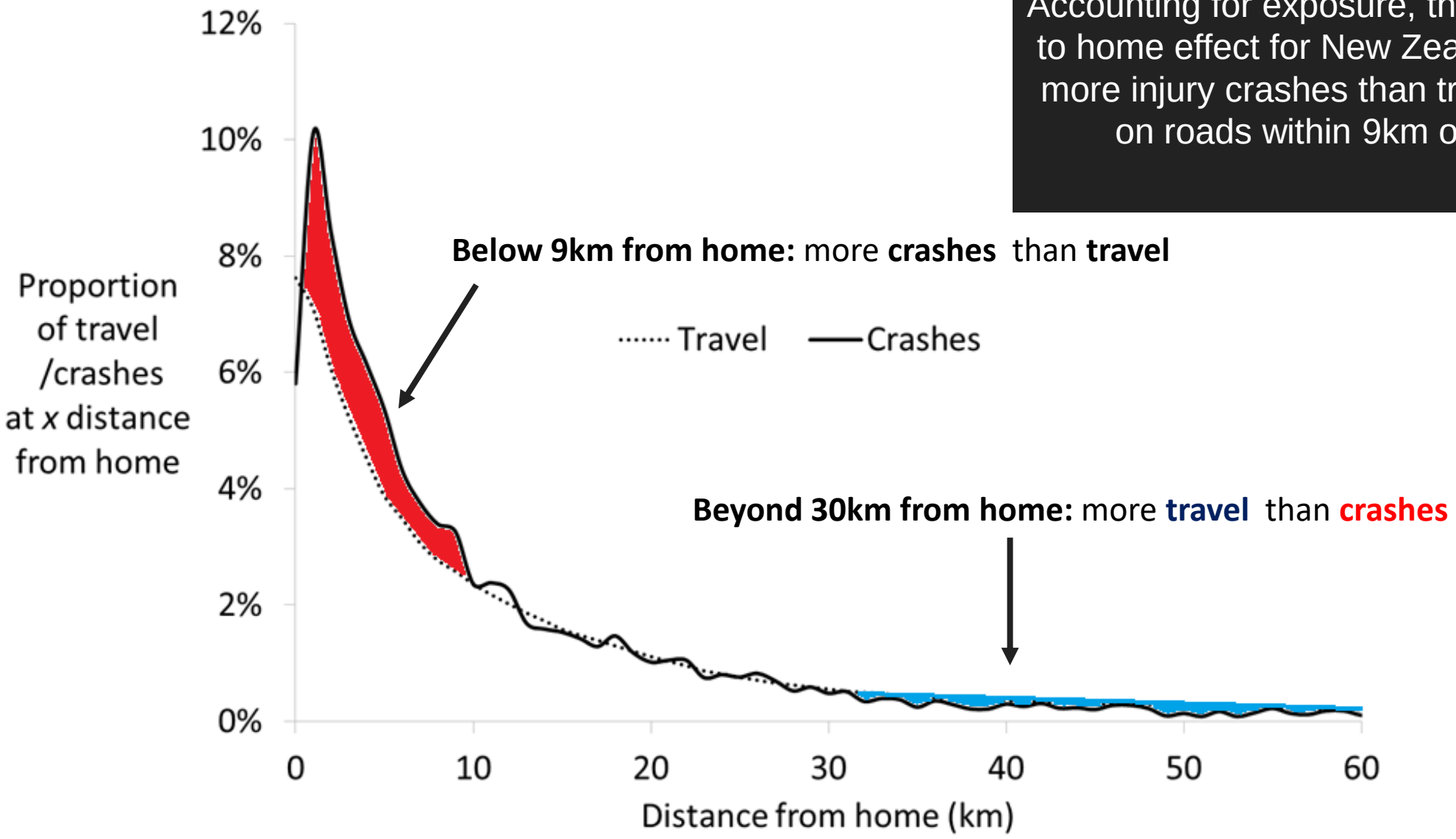
Exposure is a really important concept in road safety, and we don't seem to understand it very well.

To establish a ‘close to home’ effect I needed a representative sample of all crashes and all travel in New Zealand, and then needed to convert those data into distributions of distance from home: it took a lot of number crunching.

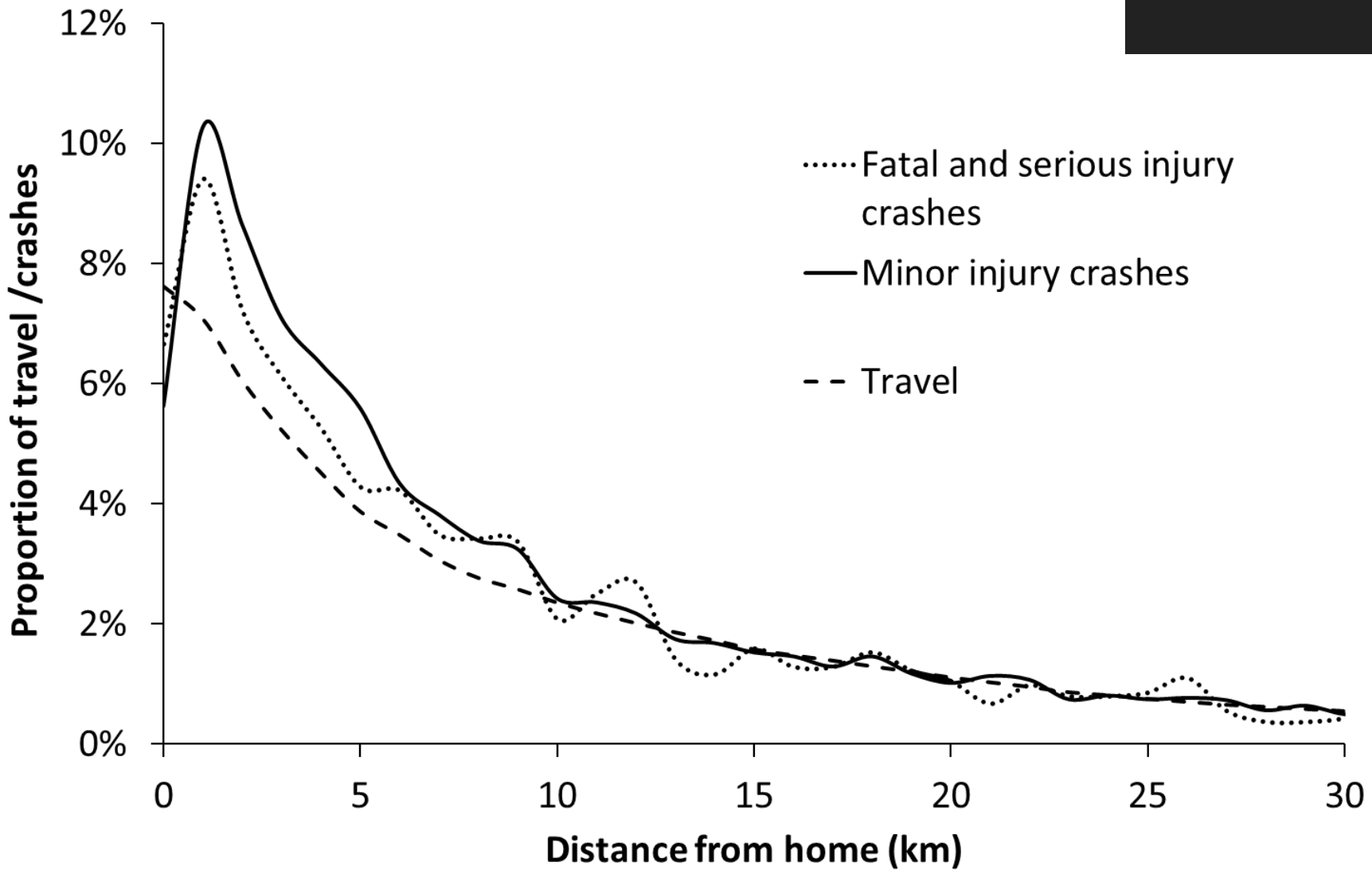
Proportions | Travel by year (2) | Age <25 | Age 25-50 | Age >50 | Numbers | Odds ratios gender | Odds ratios age | Risk ratios | NZ crashes | NZ travel

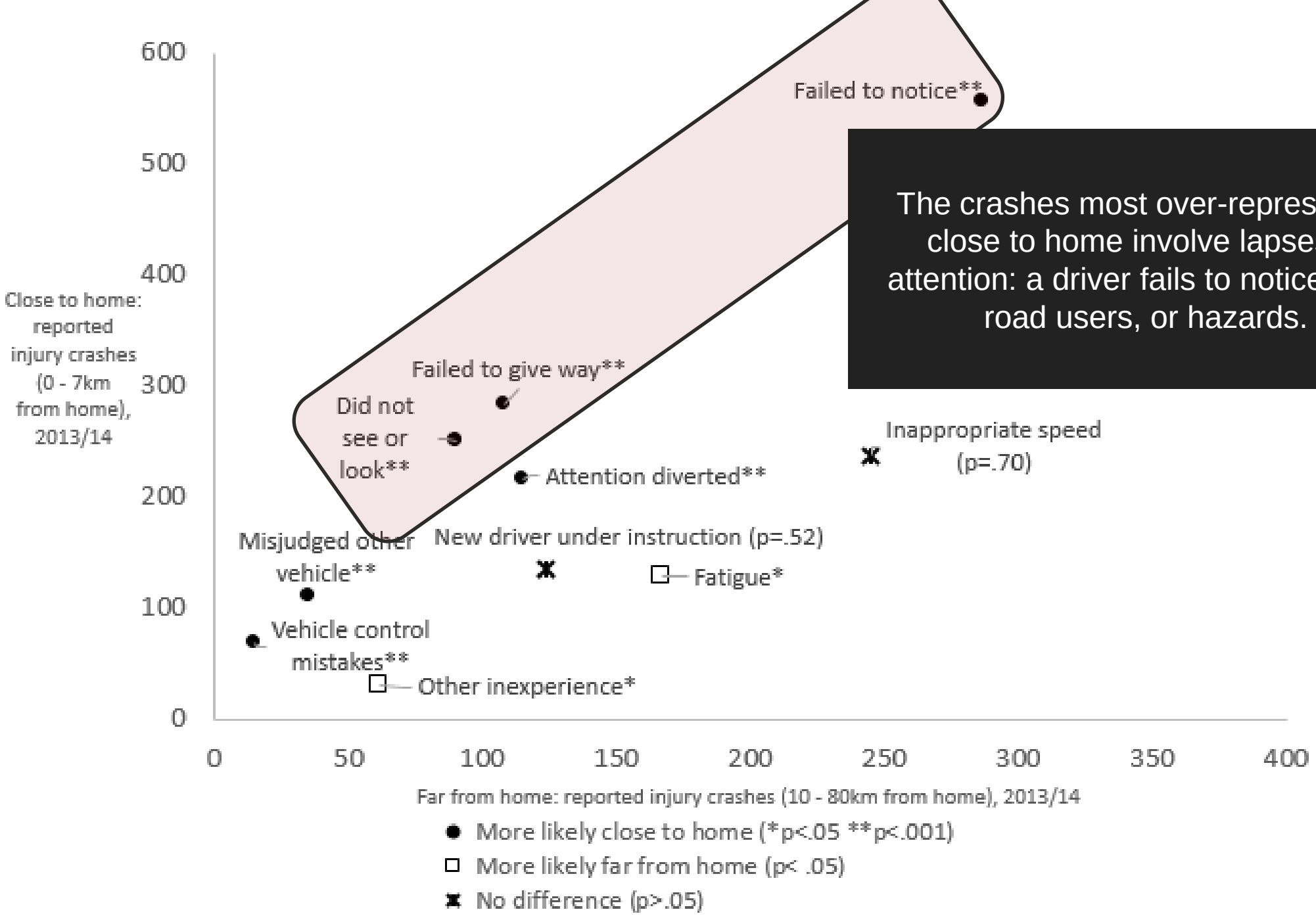
Results

Accounting for exposure, there is a close to home effect for New Zealand drivers: more injury crashes than travel happen on roads within 9km of home.



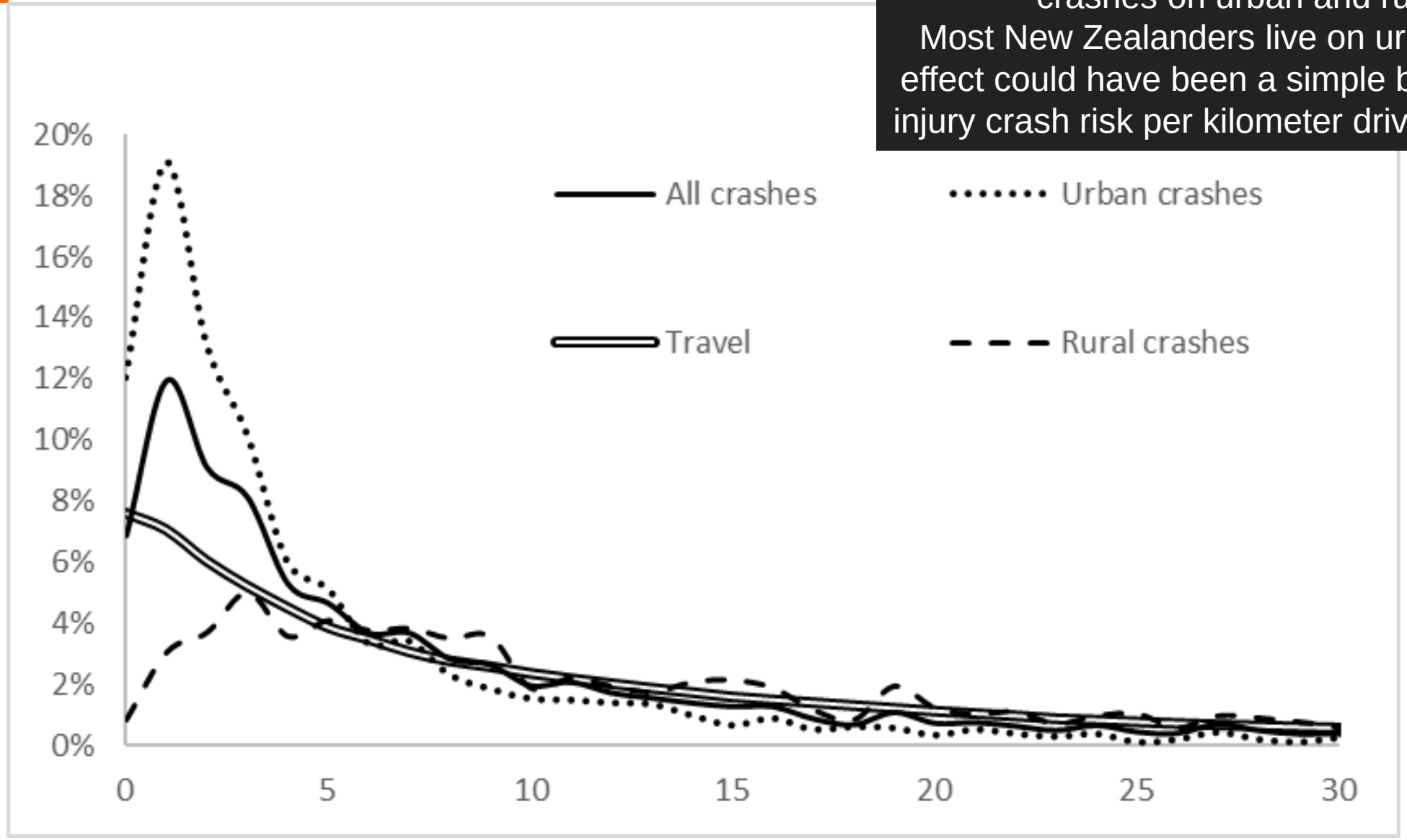
The close to home effect also holds for fatal and serious crashes.



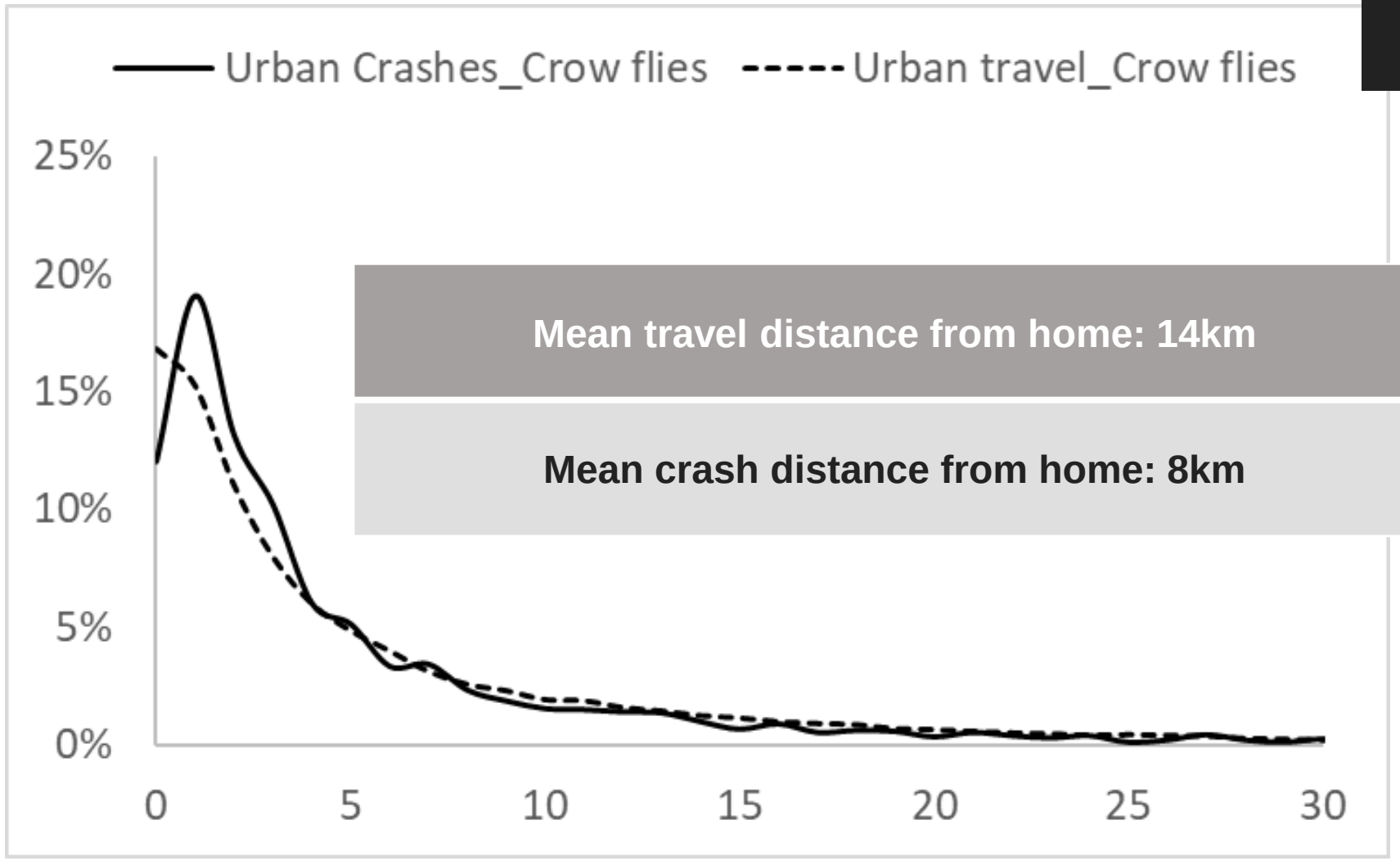


The crashes most over-represented close to home involve lapses of attention: a driver fails to notice other road users, or hazards.

There is a big difference in distance from home for crashes on urban and rural roads.
Most New Zealanders live on urban roads, so the effect could have been a simple byproduct of higher injury crash risk per kilometer driven on urban roads.



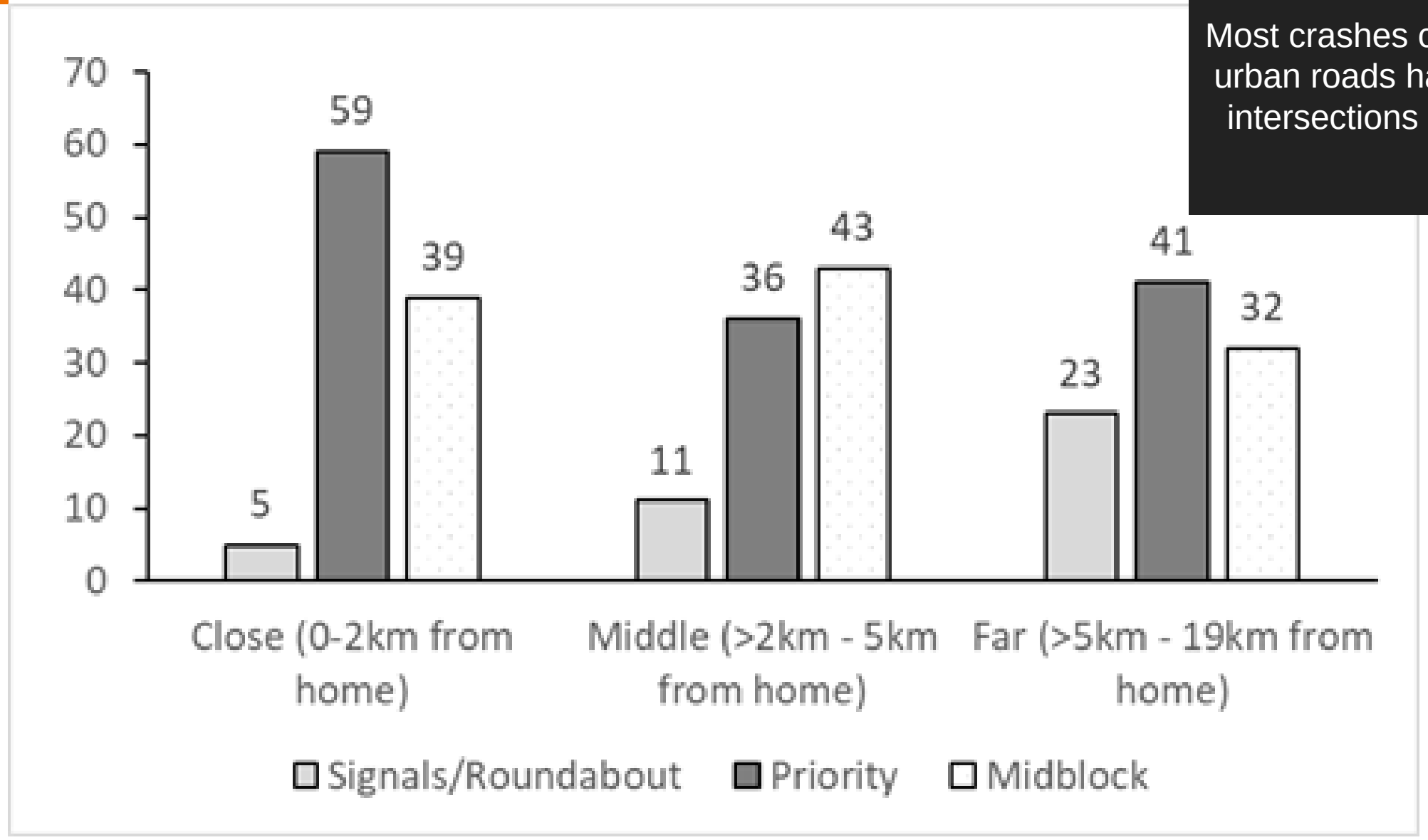
Even on urban roads, there seems to be a close to home effect: more crashes than travel are recorded within 5km of home.

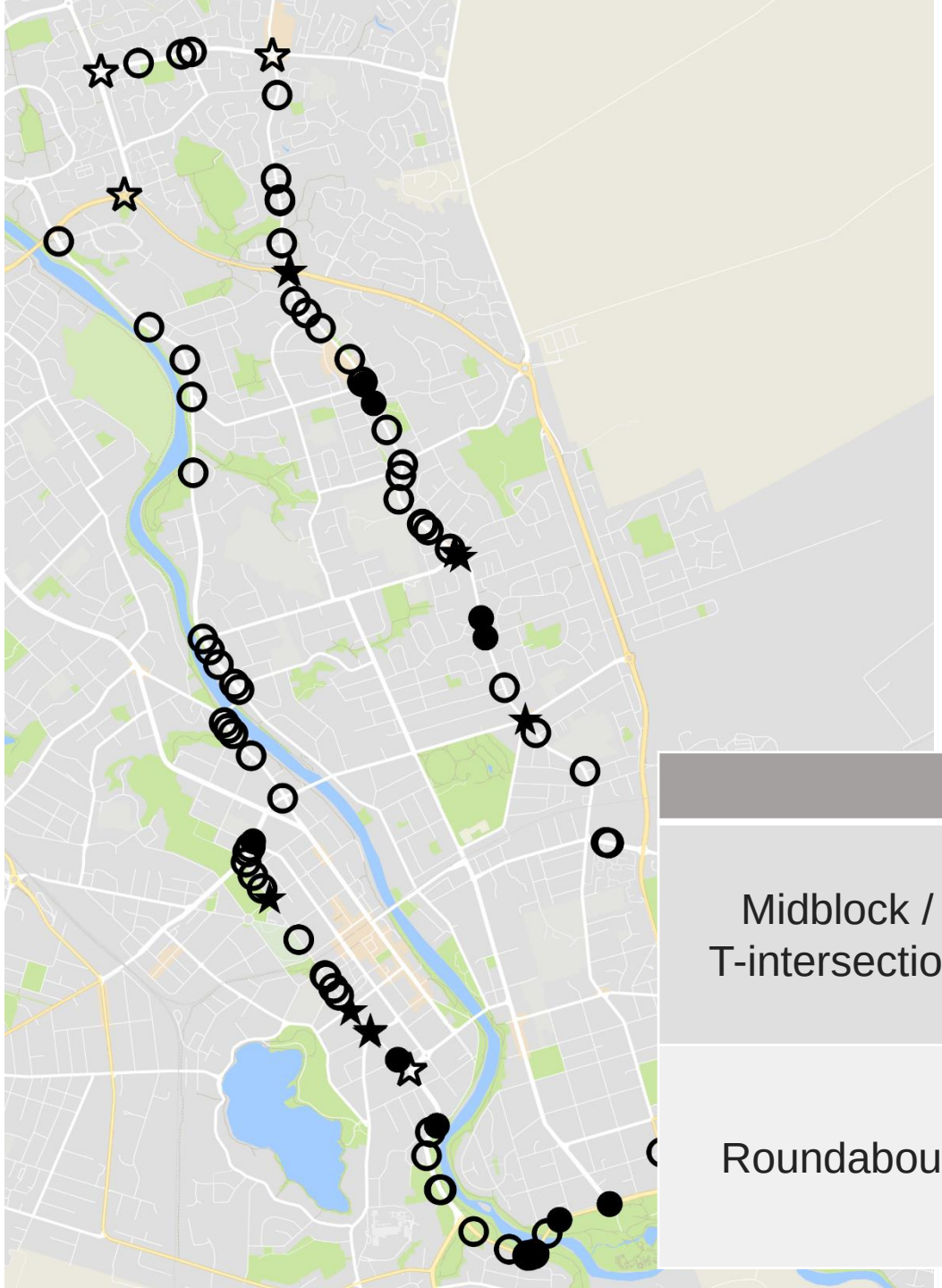


Mean travel distance from home: 14km

Mean crash distance from home: 8km

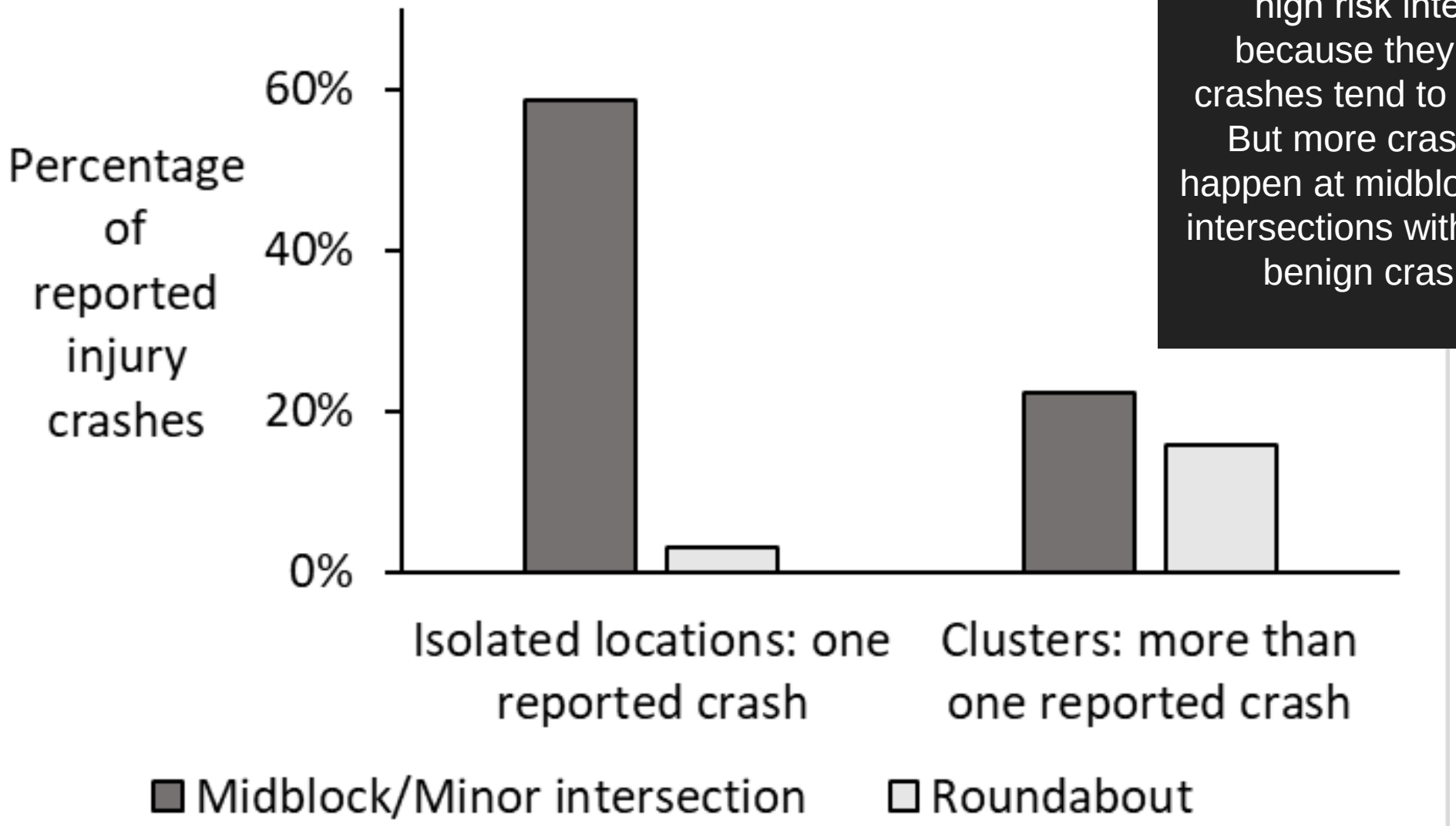
Most crashes close to home on urban roads happen at priority intersections and midblocks.





Most crashes close to home on urban roads happen at priority intersections and midblocks: this crash map shows an example of a loop in Hamilton where most crashes are spread across individual midblocks and priority intersections.

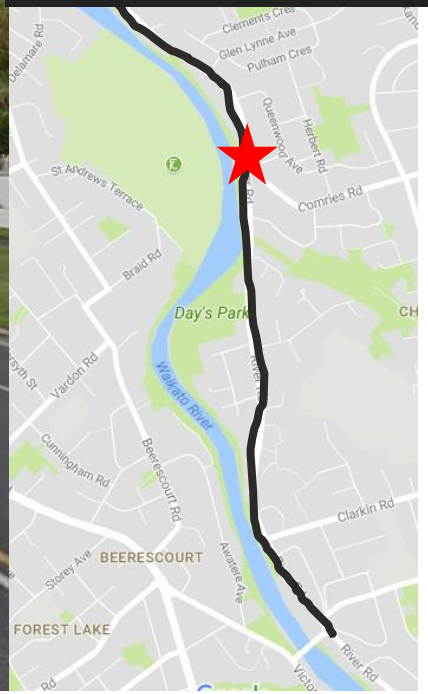
	Sole crash	Multiple crashes
Midblock / T-intersection	○	●
Roundabout	☆	★



We tend to focus on so-called ‘high risk intersections’ because they are where crashes tend to be clustered. But more crashes overall happen at midblocks or priority intersections with a seemingly benign crash record.

Most mind wandering

In terms of mind wandering, drivers are much more likely to report mind wandering at midbocks and priority intersections than they are at roundabouts.



Least mind wandering

In terms of mind wandering, drivers are much more likely to report mind wandering at midbocks and priority intersections than they are at roundabouts.

Conclusions

Why do drivers crash close to home?

So perhaps part of the close to home effect is related to mind wandering. Drivers ‘switch off’ in places they know best, and might not react quickly to unusual hazards.

…because they drive there a lot

…because risk is high in innocuous urban places

…because drivers close to home are not paying attention to driving

…because urban streets are not safe systems


Though I'm past one
hundred thousand miles
I'm feeling very still
And I think my
spaceship knows which
way to go
David Bowie