
CYCLING NEAR MISSES:

Findings from Year One of the **Near Miss Project**

THE NEAR MISS PROJECT

The Near Miss Project is the first study to calculate a per-mile near miss rate for people cycling in the UK.

ABOUT THE PROJECT

The research was funded by **Creative Exchange** and **Blaze**. **Westminster University** led the project with Goldsmiths College and The Bike Show as collaborators. **Rachel Aldred** was Principal Investigator. Others involved include **Emily Brooke, Sian Croweller, Diana Danova, William Dunk, Katrina Jungnickel, Natasha Lytton, and Jack Thurston**. The total amount of funding was **£23,422.58**.

ABOUT THIS REPORT

This report outlines some key findings about cycling near misses. It sets out why near misses are important, giving results from the study that show the scale of the problem, and how it affects different groups of cyclists. The effects of near misses are explored, including how people say they will affect their future cycling and how people think near misses might have been prevented.

NB: names of participants are pseudonyms.

“

You need your wits about you the whole time and it is hard to see how and when I will be confident to let my son cycle by himself on the road as I can't trust other people to take care”

Marcia, Brighton



FURTHER READING:

Our first academic paper *‘Investigating the rates and impacts of near misses and related incidents among UK cyclists’* has already been published and can be read on the Science Direct portal - [goo.gl/vJ8UpL](https://doi.org/10.1016/j.ssci.2018.04.011).

FOR NEWSPAPER COVERAGE OF THE PROJECT, SEE:

‘Female cyclists bear brunt of bad driving and harassment, study finds’ The Guardian - [goo.gl/EBGKj8](https://www.theguardian.com/uk-news/2018/may/17/female-cyclists-harassment-study)

‘Why cycling in the UK is so scary’ The Guardian - [goo.gl/Ta9p4t](https://www.theguardian.com/uk-news/2018/may/17/why-cycling-in-the-uk-is-so-scary)

‘Londoners on the road: Beware the SMIDSY’... (*‘sorry, mate, I didn’t see you’*) The Evening Standard - [goo.gl/Wrn557](https://www.eveningstandard.com/news/londoners-on-the-road-beware-the-smidsy-1.1011111)

SUMMARY OF CYCLING NEAR MISSES

“
Around one
in four of all
incidents were
judged to be
“very scary”

01



Near misses are an **everyday experience** for cyclists in the UK.

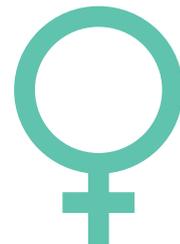
- Rates are similar for people living inside and outside London; they were higher during the **morning peak**.
- Rates were **lower for those on touring weekend rides**; but when incidents did happen they tended to be **more serious**.

02



Cycling speed is the main factor affecting near miss rates: those who reach their destination at an average speed of under 8 mph have around three times more near misses per mile compared to those who get there at 12 mph or faster.

- **Women**, who on average cycle more slowly, have higher near miss rates than men.



03

The vast majority of incidents fall into one of five general types of incident: **being blocked, being passed too close, another vehicle pulling in or out across a cyclist's path, being driven at,** and a **near left or right hook.**

- With the exception of blocking, these all connect to types of collision.
- Incidents could be categorised into two types in terms of how scary they are - blocking incidents (often annoying, but rarely very scary) and other types of incident, such as close passes (more likely to be very scary).

04

1/4

Around one in four of all incidents were judged to be **'very scary'**, with many – like some near left hook incidents – bearing similarities to incidents that have killed cyclists.

05



Cyclists felt they could do little to prevent most incidents, but most incidents were judged **preventable.**

06



Over half, suggested cyclists, could have been prevented by **improvements to the road** condition, layout, or route infrastructure.

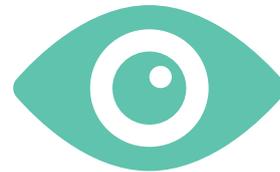
- In particular, this meant separation from motorised traffic, followed by better repairs and **maintenance** to routes or infrastructure used by cyclists.
 - Those cycling more slowly were more likely to suggest that **separation** would have helped prevent their incidents.
-

07

3/4

Over three-quarters of incidents could, suggested cyclists, have been prevented if **other road users** had **behaved differently.**

08



Behaviour changes included greater patience, care for – and **awareness** of – others.

WHY NEAR MISSES MATTER

WHY ARE NON-INJURY INCIDENTS IMPORTANT?

Near misses may discourage people from cycling, at a time when government policy seeks to increase cycling levels.

Near misses can represent a missing link between 'perceived risk' (how risky people think cycling is) and 'objective risk' (how risky it actually is, in terms of injuries and/or deaths). This is because they may tell us about 'experienced risk' – how risky cycling feels. Studying experienced risk could help us understand why perceived risk seems much greater than objective risk.

Near misses can potentially be used as part of injury prevention. If types of situation common in the injury statistics (like left hooks) also show up in near miss statistics, this suggests that collecting localised data on near misses might help identify problem areas where we can take preventive action before injury occurs.

But near misses could come in all shapes and sizes. So we need information about different types of incident, and how they vary in terms of the emotional impact on the cyclist, the level of risk they pose, and how/whether they could be prevented.

OTHER ACADEMIC WORK ON NEAR MISSES

Perceived risk has long been recognised as being a major barrier to uptake (Horton, 2007). However, often this is seen as ‘just perception’, given the very low likelihood of being injured while cycling on any given trip. Recent research has started to move beyond this approach, to examine if non-injury incidents – which happen more often than actual injuries – might have profound effects on people experiencing (and even seeing, or hearing about) them.

This research has generally been locally-based. A recent study in the San Francisco Bay Area (**Sanders, 2015**) found 86% of those who cycled at least annually had experienced a near miss, with 20% having been hit. Because of their frequency, that research found near misses were more strongly associated than collisions with perceived traffic risk. Similarly, earlier research in Oxford, UK, by **Joshi et al** (2001) had highlighted near misses as a relatively common experience for cyclists.

STUDY METHODS

This report draws on a **One Day Diary** with 1,532 participants across the UK. Each signed up in advance to keep a record of all cycle trips made on their diary day and any scary and/or annoying incidents that happened while they were cycling. This produced detailed records of 3,994 incidents, after data cleaning and checking.

Cyclists gave details of their journeys including timings and distance. Details of incidents included the location, other road user involvement, and how scary or annoying the incident was (0-3 scales).

Qualitative information included a description of the incident, the emotional impact (if any) and how the incident might have been prevented.

Diary days were between Monday 20th October and Sunday 2nd November 2014. Basic demographic information was collected including area of residence.

THE SCALE OF THE PROBLEM

The first four figures below are derived from other published literature and the bottom three from Near Miss Project data. More in our academic paper - goo.gl/vJ8UpL

FREQUENCY

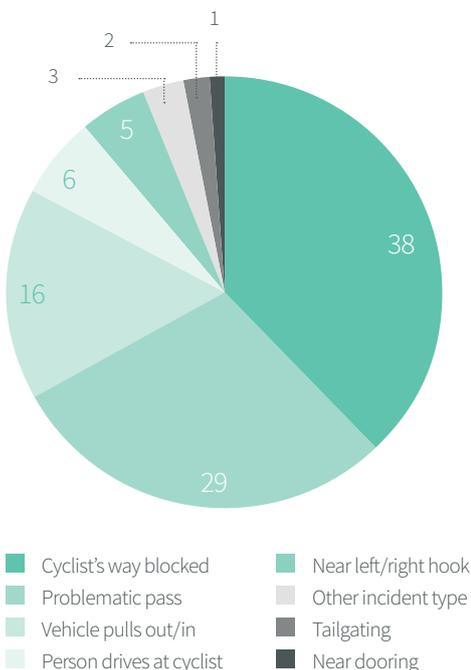
Non-injury incidents happen much more frequently than injury collisions. Data from Stats19 (police collision reports) show a regular commuting cyclist could expect to ride daily for 8,000 years before being killed on the roads. The same cyclist might expect to experience an injury (most likely very minor) once every twenty years.

By contrast, s/he is likely to experience a **'very scary'** incident once every week.

Around six in seven participants experienced at least one incident on their diary day, while a quarter experienced a 'very scary' incident, and half a 'very annoying' incident.

| Type of incident | How long, on average, before a regular UK commuting cyclist would experience it |
|------------------------------|---|
| Death | 8,000 Years |
| Reported serious injury | 400 Years |
| Reported slight injury | 67 Years |
| Any injury (reported or not) | 20 Years |
| Harassed/abused | 3 Weeks |
| 'Very scary' incident | 1 Week |
| Any non-injury incident | One day or less |

TYPES OF INCIDENT



The diary study allowed people to decide what counted as an incident: they were asked just to record anything that made them annoyed or scared.

However, strong patterns were found when coding the data.

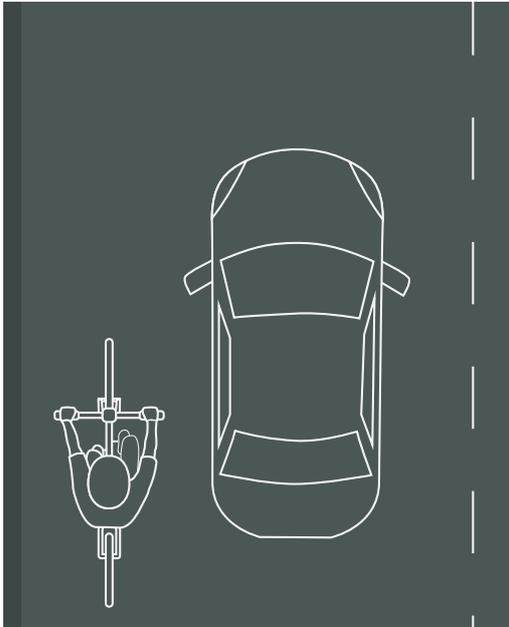
Almost 19 in every 20 incidents could be placed in one of five categories. These were, in descending order of frequency, having your way blocked, a problematic (usually too close) pass, a vehicle pulling out or in, being driven at, and experiencing a near left or right hook.

Three other categories accounted for relatively small numbers of incidents: 'other' type of incident (for example, a driver throwing something or shouting), tailgating, and near doorings.

Around one in twenty incidents involved what the researchers judged to be deliberate aggression.

Near misses: some examples of what happens and how it feels

CLOSE PASS



“

I was travelling down a narrow(ish) road with cars parked either side. A car was behind me, far closer than was necessary and started beeping their horn for me to get out of the way. Obviously I ignored this. Felt pissed off!! I have the right to be in the road and car drivers really should know this. If they don't have the space to overtake they should wait until there is space - not try and intimidate me to pull over.”

Diane, Manchester

“

I had enough escape room to my left to give me some safety. In this case it was annoying but if another car or a pedestrian refuge had caused the car to move in quickly it could have got very scary or dangerous quickly”

Andy, London

“

It is a frequent event, so although it is very annoying and can be scary, you just have to let it pass you by as you have no influence on the drivers and if you do let this get to you too much it can put you off cycling.”

Allen, Chester

“

Whilst approaching a [...] bend in the road, I was overtaken by a loaded tipper truck. The bend in the road and the angle of the truck meant that, as I was passed, the truck was turning somewhat into my path, and passed me with less than 30-40cm to spare. This felt extremely close at the time.”

Steve, Wokingham

“

A simple cut in by a driver approaching a pedestrian refuge. Mildly annoying. I've had much, much worse. And there was a worse one later on this ride! Felt stoic but slightly annoyed. This sort of pass is totally unnecessary [...] Within about 50m or so, the traffic had stopped. What was the point?”

Horace, Birmingham

“

There was a bus coming up quite quickly behind me and I needed to swerve out in front of it to avoid the potholes, which was annoying and a little bit scary.”

Ali, London

SPOTLIGHT ON CLOSE PASSES

Close passes made up nearly a third of all incidents and were a particularly common type of incident in rural locations – **close passes made up nearly half of all rural incidents**, but only just over a quarter of urban incidents. This could be related to the potentially higher speeds in rural locations, which **Llorca et al** (2014) suggest affects perceived danger along with vehicle size. We also found larger vehicle sizes associated with increased incident scariness (we didn't have information about speeds).

We compared the frequency of reported close passes to that found in **Walker et al's** (2014) recent study which physically measured how close passing motor vehicles came to a cyclist. Walker et al found that consistently 1-2% of passes were within 50cm of the cyclist.

Using data in Walker et al's article we estimate that the rate per mile is similar to that found in our data. This is perhaps one close pass every 10-20 cycled miles. A regular cycle commuter then might be expected to experience a close pass about every day or two.

“

The bus was trying to overtake me all along the street, but it was too narrow, so he followed me really closely and then shot past as the road widened, missing me by inches. I felt very angry after, and very nervous as he followed me.”

Arun, Welwyn Hatfield

“

One driver overtook extremely close while I was in a narrow cycle lane. The driver's nearside wheels were on the outside line of the cycle lane. There was no oncoming traffic and they were followed quickly by another driver passing similarly closely. I felt scared, the overtake was extremely close and quite fast and the first driver was in a large SUV. Annoyed as it was completely unnecessary, there was no oncoming traffic, the drivers simply made no attempt to move to the right.”

Lorena, Sheffield

“

Very narrow country lane. Car approaches from rear, does not slow down from about 40 mph, and passes me very close - within 1 metre. Felt scared and intimidated.”

Barry, Cheltenham

“

Dual carriageway road, I needed to turn right so needed to move out to the right hand lane. I gave a very clear hand signal and shoulder checked seeing a van approaching in the right hand lane from behind, but there was space to move out. Van then speeds up to try and deny me any access to the right hand lane.”

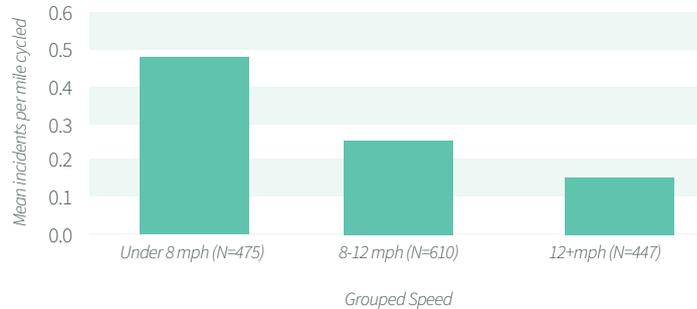
Jon, Epsom



WHO? WHERE? WHEN?

WHO?

Variation in mean incident rates by grouped speed.



Near miss rates per mile were higher for people who reported slower cycle journeys. People who maintained an average of under 8 mph reported three times as many near misses per mile as did those maintaining an average of 12 mph or more.

Because women on average rode more slowly than men, this fed through into women experiencing a higher rate of near misses than men: for example, they reported around 50% more close passes per mile. There was relatively little difference by age; although over-55s experienced somewhat lower rates.

WHERE?

Although people expected that London might be different to other parts of the country, overall near miss rates did not vary significantly depending on whether someone was resident in the capital. Living in a place with higher levels of cycling (as measured in the 2011 Census), or where cycling had increased 2001-11, was not associated with lower near miss rates.

We did though find differences in the types of incident that happen in different types of area. Rural areas, urban metropolitan areas outside London, and London seem to see different patterns. London incidents involve a greater range of road users, while outside London incidents with cars dominate.

The types of incident varied, with incidents taking place in rural areas more likely to be close passes than those in urban areas. One in nine rural incidents involved being driven at; this was more like one in twenty for urban incidents.

Location patterns suggest that while more than half of all incidents in London were within 20m of a junction, this was less likely for rural or non-London urban incidents. One in fifteen London incidents was a near left or right hook, but this was lower for non-London urban incidents (one in twenty) and rural incidents (one in thirty).

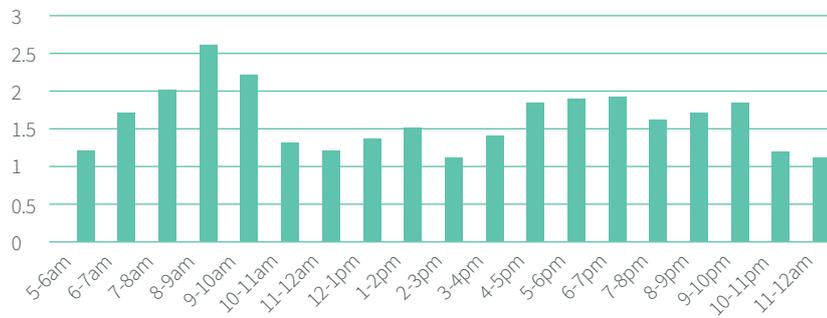
Potentially, as patterns of injury collisions also differ by area type, more geographically detailed near miss data might be used as part of injury prevention.

WHEN?

Near miss rates did not vary significantly by week of diary; neither did the types of incidents reported. The similarity in rates was perhaps surprising given that the second week was half-term for many English schools, which is associated with lower motor vehicle volumes.

There was a substantial difference in rates depending on whether people were cycling on a weekday or weekend. Weekend cyclists experienced 1.39 incidents per hour, against 2.60 for weekday cyclists. While much weekday riding was commuting, many people riding at the weekend were on longer, leisure-focused rides: the average time spent cycling was 151.4 vs 81.3 minutes.

Near miss rates varied by time of day, with a higher rate per hour for people cycling in the morning peak in particular.



Average incident rate per hour, in one hour time bins, 5-12 am

THE IMPACT OF NEAR MISSES

Illustrations of the different kinds of incidents mentioned are to be found on page 14.

WHAT CYCLISTS FEEL

Incidents can be divided into two broad types in terms of how scary they are. Blocking incidents plus a much smaller number of ‘other’ incidents, around 40% of the dataset, are judged relatively unlikely to be ‘very scary’. The other 60% of the dataset represents incident types that are much more likely to be ‘very scary’, with the most common being problematic passes.

| Category | Description | Number in dataset | Percent judged as ‘very scary’ | Approx. frequency annual ¹ |
|---------------------------------------|---|-------------------|--------------------------------|---------------------------------------|
| Less likely to be ‘very scary’ | | | | |
| BLOCK | Cyclist’s way blocked | 1506 | 6.2% | 170 |
| OTHER | Other incident | 107 | 7.5% | 10 |
| More likely to be ‘very scary’ | | | | |
| PASS | Problematic pass (usually too close) | 1169 | 22.0% | 130 |
| PULL | Vehicle pulls out or in across cyclist | 644 | 16.4% | 70 |
| DRIVE AT | Person drove (or cycled) at cyclist head on | 255 | 17.3% | 30 |
| HOOK | Road user turns across cyclist’s path | 215 | 22.0% | 25 |
| TAILGATE | Tailgates cyclist without passing | 72 | 18.1% | <10 |
| DOOR | Opens car door in cyclist’s way | 26 | 23.1% | <10 |
| | | 3994 (TOTAL) | 14.4% | 450 |

¹ Assuming a regular commuting cyclist, riding 2,500 miles per year.

As well as being asked to rate incidents as ‘annoying’ or ‘scary’ on a scale from 0-3, respondents were asked to describe how incidents made them feel. Excluding ‘annoyed and ‘frightened’, the top four descriptions (each with over 150 spontaneous mentions) were ‘angry’, ‘frustrated’, ‘irritated’ and ‘vulnerable’. Descriptions eloquently expressed how incidents could be simultaneously frightening and mundane:

“My heart stopped. But this happens every time. This is a terrifying interchange for cyclists.”
Serena, London

“I felt a bit sad that everyone is in such a rush, as to cut others up and make the morning stressful.”
Carolyn, Havant

“I felt annoyed. This happens a lot. They are prepared to stop for cars but so many do not notice bikes at all.”
Terry, Glasgow

“

My impatience was ever growing at just trying to get home and being fed up of cars blocking me, I also felt that I had made a mistake, and was scared of being hit.”

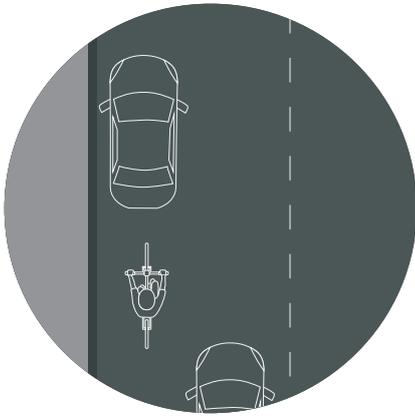
Irena, Southampton

“

Felt really vulnerable and angry at how drivers don't realise how vulnerable we are, and how little actions on their part put us in more danger.”

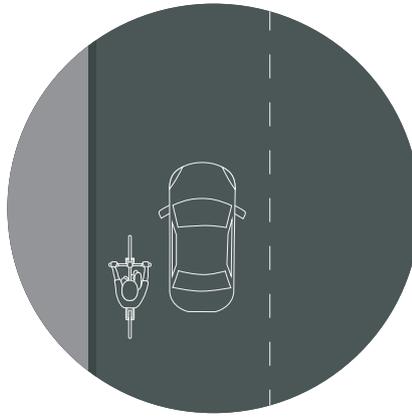
Simon, London

CYCLIST'S WAY BLOCKED



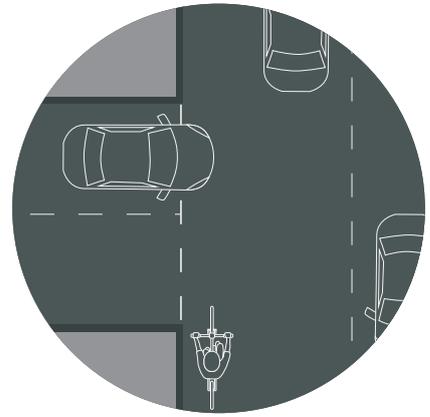
When a cyclist's way is blocked by an obstruction e.g - a parked car.

PROBLEMATIC PASS



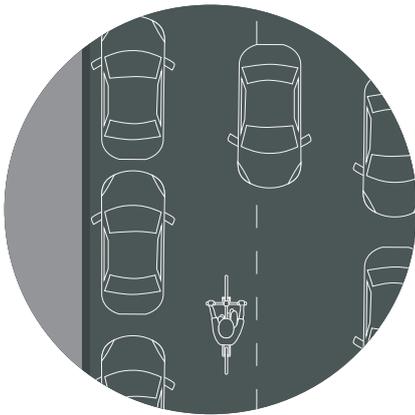
A close pass is when a motorist gives too little space when overtaking a cyclist.

VEHICLE PULLING OUT



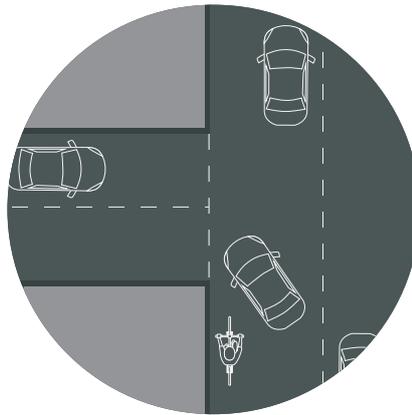
When a driver pulls out or in across a cyclist's path.

A CYCLIST IS DRIVEN AT



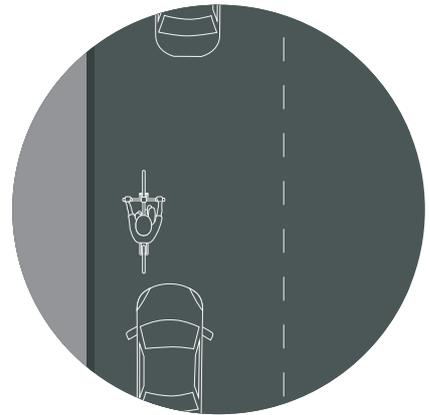
Occurs on narrow(ed) roads when a driver continues straight on forcing the cyclist to pull in or swerve into a pavement.

NEAR LEFT / RIGHT HOOK



When a motorist (or cyclist) turns left / right across the cyclist's path.

TAILGATING



When a driver follows a cyclist too closely without passing.



NEAR DOORING

When a passenger opens a car door in the cyclist's way.

IMPACTS ON CYCLING

Near misses can have immediate emotional impacts but in more serious cases can even stop people cycling. Our data suggest that a regular commuting cyclist in the UK can expect on an annual basis to experience an event that is so frightening that it alone makes them consider giving up cycling.

More common reactions were to become even more vigilant, cautious or alert. Each of these was mentioned spontaneously over 150 times:

“

I already approach this junction, and indeed every portion of the campus where I have to cycle on the road, with considerable caution. I can only attempt to cycle even more cautiously in future.”

Mike, Birmingham

“

An accumulation of these events over the years has made me super cautious, and I now believe it's not sufficient simply to obey the rules to stay alive. To stay alive one must also anticipate that all others will be careless.”

Owen, Edinburgh

Comments about vigilance overlapped with mention of negative emotions that people expected to experience in the future. Very scary events in particular were characterised by these kinds of descriptions, such as expecting to be ‘paranoid’ around trucks:

“

‘I will be a lot more cautious cycling on roundabouts as it has affected my confidence levels. I feel vulnerable on the roads.’

Mina, Bolton

“

At the moment I lack confidence & feel nervous when vehicles come from behind. I'm fed up with drivers overtaking me towards oncoming traffic & providing me with insufficient room &/or nearly pushing the other vehicle off the road.”

Helen, Sheffield

CYCLISTS' VIEWS ON PREVENTING INCIDENTS

Cyclists thought that one in five incidents could have been prevented by them doing something differently. Many of these 'doing something different' involved cycling less, or choosing routes with other problems (for example, other dangers, much longer journeys, unsuitable after dark). Others involved avoiding mistakes or carelessness, for example:

“

‘It was horrible, & the driver was unnecessarily careless, even aggressive, but my behaviour in waiting on the road was partly to blame.’

Ceri, Powys

Respondents expressed doubt in their ability to prevent near misses. In relation to close passes, respondents mentioned or suggested use of 'primary position' (cycling in the middle of the lane) to block dangerous overtaking, but many also said they had experienced or feared abuse or harassment for using this tactic.

ARE INCIDENTS INEVITABLE?

However, cyclists only classed one in forty incidents as definitely not preventable. According to cyclists, over half could have been prevented by a change in road condition, layout or route infrastructure, and over three-quarters by another road user behaving differently.

“

‘All three roads into the centre of the village are heavily potholed and parking on the roads around the cross are congested with parking especially around the Co-op. You have to try and take the lane while avoiding potholes, oncoming cars and illegal parking. It makes me feel very annoyed that the roads are in such a poor state and parking regulations are always flouted making the road dangerous.’

Colin, Stroud

“

The car suddenly pulled into my path. I was scared, my son was with me, we left the road and pushed the bikes around the corner and then continued our ride to his grandmother's house.[...] A protected cycle path kerbed on near and offside separating the cyclists and road users would have protected me from the dangerous driving. 3 incidents in the space of a minute. No care, no acknowledgement.’

Pierre, Swansea

OTHER PEOPLE'S BEHAVIOUR

One of the most frequently mentioned change in behaviour was for other road users to show greater patience and care for others. This was often mentioned in relation to passing manoeuvres, with cyclists asking for a greater willingness from drivers to wait and pass only when there is space.

“

Driver should have slowed down and indicated, instead of whizzing past me and ignoring my rights on the road.”

Samantha, London, near left hook incident

“

HGV driver should have held back for a few more seconds until the oncoming traffic had cleared.”

Alan, South Tyneside, close pass incident

CHANGES TO THE ROAD ENVIRONMENT, CONDITION OR INFRASTRUCTURE

The top change suggested to reduce the risk of near miss incidents was an increase and/or improvement in dedicated space for cycling. Two-fifths of those citing an environmental change specifically asked for this. In the majority of cases this meant space separated from motor traffic, generally described as ‘cycle lanes’, ‘cycle tracks’ or ‘cycle paths’, although in a minority of cases participants were instead (or also) referring to separation from pedestrians.

“

There is no cycling provision on this road, and it has a lot of traffic, rather than wait buses & cars will squeeze past [...] it needs a segregated bike lane.”

Patrick, Cornwall, close pass incident

“

Segregation - that road is wide enough for it. At the moment I always have to fight for space as a cyclist here - people speed, as the infrastructure seems to encourage it, giving motorists the feeling they are king there - perhaps the pedestrian barriers, the wide streets encouraging speed [...] It's rare I travel through it on my bike without feeling besieged or at times openly threatened by those in motor vehicles - and it's near my home so that happens a lot. I lost count of the times I've been on the receiving end of drivers wanting to 'punish' me for cycling here, two incidences of which have been serious enough to result in police action - it's pretty hellish. The pedestrian environment needs serious work, too - multi-stage crossings, etc.”

Emma, London, tailgating incident

“

A raised kerb between the pedestrian and cycle paths, and cycle path markers on the surface to clearly show its purpose. It's too vague. Having said that, I am used to it and cycle accordingly. Not everyone does though.”

Geoff, Sheffield, blocking incident – pedestrian

“

There could be a light prioritising cyclists, allowing us into the gyratory first. Even better, there could be a segregated, multi stage bike path so we can cross at dedicated points.’

Teresa, London, blocking incident – motor traffic

The second most popular type of change mentioned was repairs, incorporating better maintenance and the removal of barriers. In some cases this related to roads, in others to off-road infrastructure of various types. Just under three out of ten respondents cited repairs/maintenance/barrier removal as having had the potential to prevent an incident.

“

Along a busy bus corridor, the road should be built for heavy weight and not buckle within months. Also, repairs should be done properly.”

Douglas, Edinburgh, blocking incident – pothole

“

A section of the canal towpath is National Cycle Route 5. The sealed surface is being damaged by tree roots which make it corrugated or have broken through the surface leading to a need to ride over tree roots and broken surface material. This is a vital commuting and leisure route. I am very annoyed that funding does not seem available to maintain it. I am especially put out that it is used by inexperienced and young cyclists to whom wet tree roots could be very dangerous. Further deterioration will cause me to consider whether it would be easier to use the parallel road, although it can be busy. [There should be a] legal requirement to maintain cycling infrastructure.”

Chris, Stafford, blocking incident

Other suggested changes (in order of frequency) included junction redesign; traffic calming suggestions including slower speeds and narrowing roads; widening roads, including to remove pinch points; removing or relocating car parking; enforcement of existing regulations; and changes to pedestrian provision, such as more footway space.

Those reporting slower journeys not only experienced higher incident rates, but were also more likely to say that separation would have prevented their incidents.



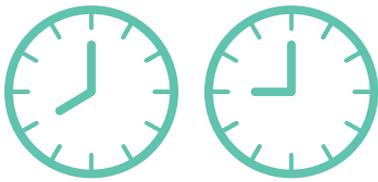
60

the number of **'very scary'** incidents a UK commuter cyclist might expect, annually.



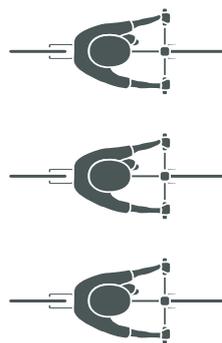
TWENTY

the number of **deliberate incidents** a UK commuter cyclist might expect, annually.



8AM - 9AM

the time of day when incident rates per hour are highest.



8mph

X3

cyclists reaching their destination at a speed of **8 mph** or slower have **three times more** near misses per mile as those travelling at **12 mph or faster**.

19%

THE PROPORTION OF INCIDENTS CYCLISTS THOUGHT THEY COULD HAVE PREVENTED

83%

the proportion of incidents cyclists thought could have been **prevented by others behaving differently** and/or changes to the road layout, infrastructure or condition





“

I cycle because I love it and it's the best part of my day. I ride assertively but I do know that if I was a new cyclist now in London I would think twice about getting on a bike. I also have a daughter now (almost 4) and I have serious misgiving about what to do once she starts wanting to ride her bike on the road.”

Deanne, London

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CONTACT INFORMATION

Rachel Aldred

R.Aldred@westminster.ac.uk
info@nearmiss.bike