

Cyclist Near-miss Reporting System

Qualitative Review

Portsmouth City Council

November 2018

Notice

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1. Introduction

Portsmouth City Council (PCC) have been undertaking a trial of a web-based portal system whereby cyclists can report near-misses they have experienced while cycling around the city.

This system was developed in-house by PCC and, at the time of this commission, had been operating for a six-month period.

PCC have commissioned Atkins to undertake a concise, in-depth review of the reporting system to understand whether the system might be of potential benefit in helping them prioritise spending on critical cycling infrastructure and to recommend whether the system be continued or abandoned.

2. Overview of cyclist safety in Portsmouth

To understand the significance of the near-miss reporting system, an analysis of the existing collision record was carried out. This compares PCC data with data given in Department for Transport's Annual Report on Reported Road Casualties, Great Britain.

In particular, PCC cyclist casualty numbers were compared with:

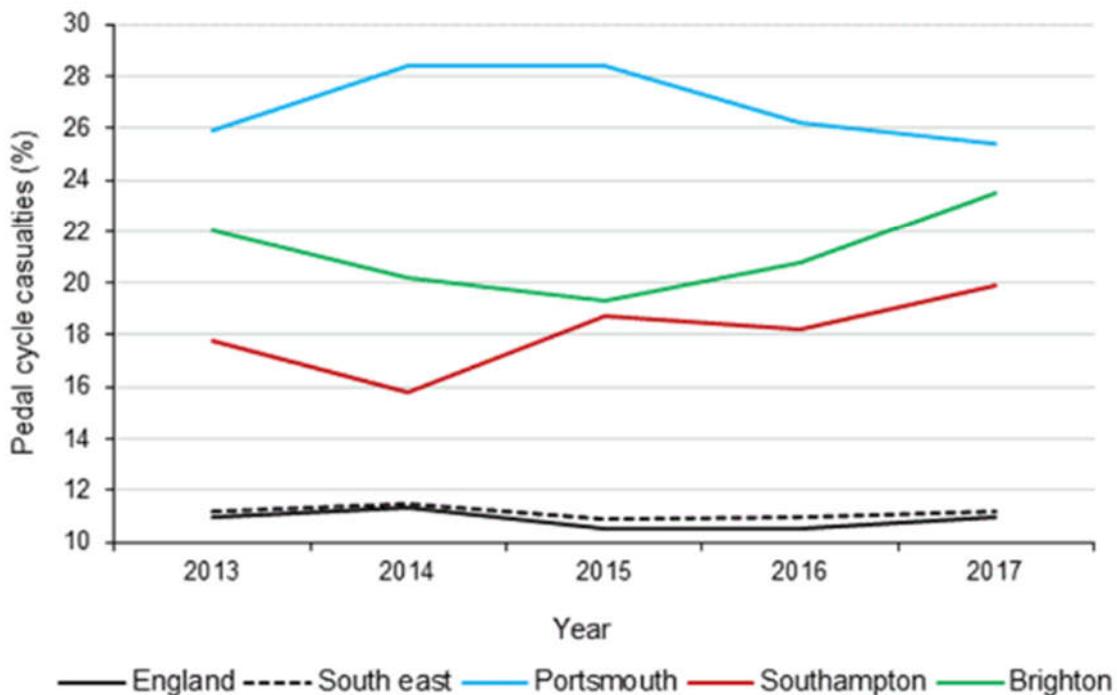
- England;
- The South-east;
- Southampton; and
- Brighton.

The collision data studied spans January 2013 to December 2017.

In that time period, a total of 834 collisions were recorded in Portsmouth, of which 299 (35%) involved a cyclist.

The percentage of all Portsmouth casualties who were cyclists is shown in the chart below which compares these percentages with those of other areas with similar characteristics.

Figure 2-1 - The percentage of all casualties who were cyclists.



Portsmouth demonstrated a higher proportion of cyclist casualties than those recorded in the comparison areas. Promisingly, the proportion of cyclist casualties in Portsmouth is showing a downward trend.

3. Analysis of the near-miss reporting system

The near-miss reporting system has been trialled **from March to September 2018** (incl.) which provided seven months of near-miss data for analysis. The system was developed in-house and is a web-based portal by which members of the public could record any near-misses they had experienced as cyclists on PCC’s road networks.

The findings of the near-miss reporting system analysis is outlined in five sections covering Location, Type, Personal Experience, Temporal Patterns and includes some comparisons between near-misses and actual collisions.

In total, 422 near-miss incidents were reported in the seven-month period examined.

The collision data for the near-miss reporting period is not yet available so comparisons in this section have averaged the collision data for the **March to September periods between 2013 and 2017.**

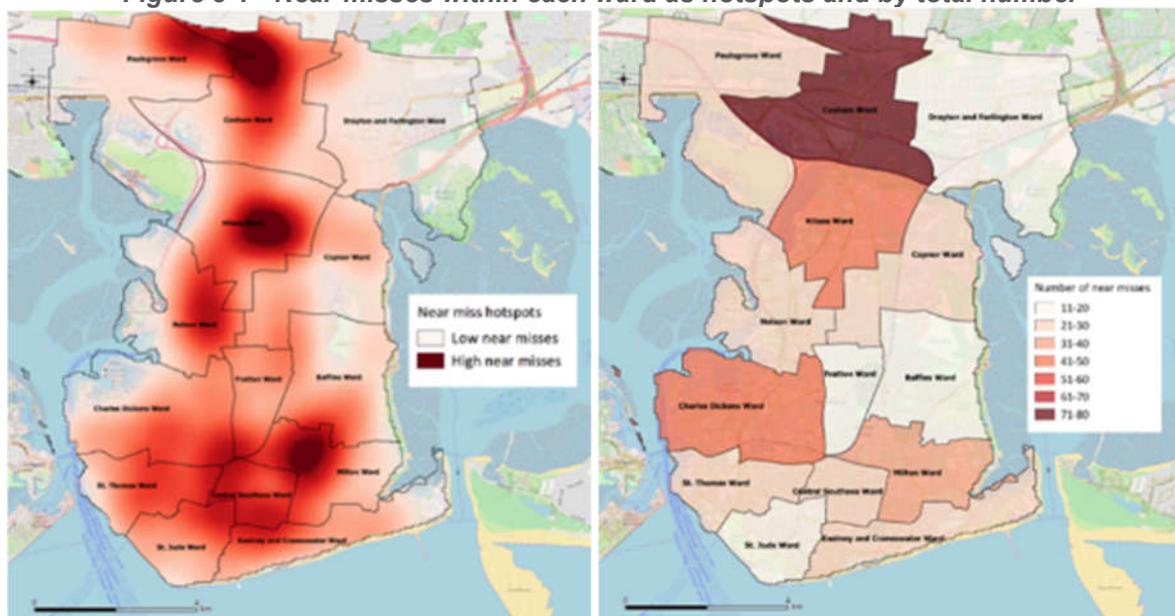
3.1. Location

3.1.1. Near-misses by location

The near-miss reporting system has provided detailed location of near-misses highlighting areas of potential danger as perceived by cyclists using the reporting system.

These near-miss locations are visualised below as hotspots (left) and by the number of near-misses for each ward.

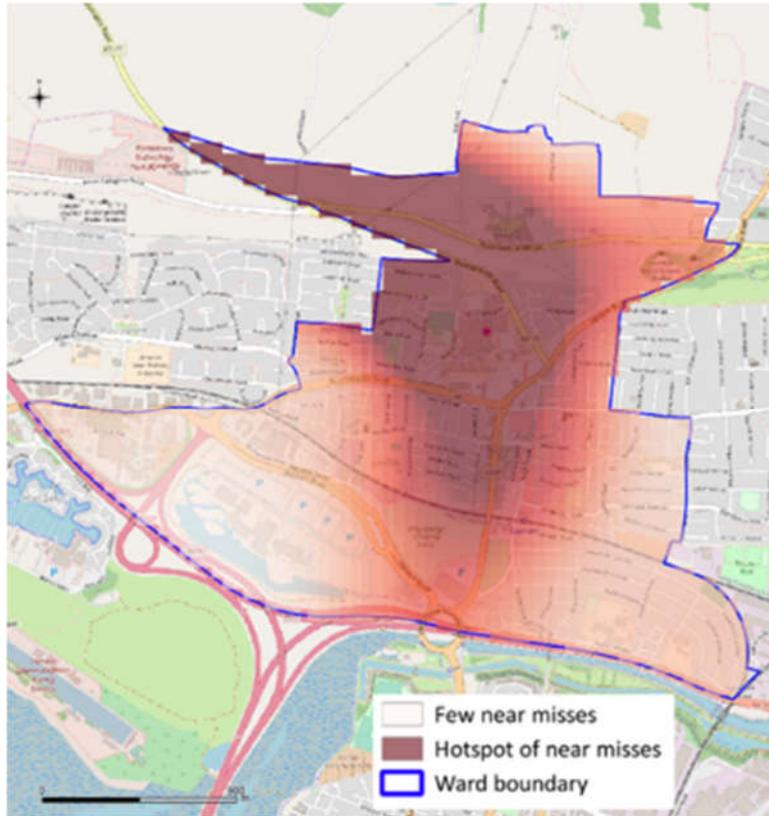
Figure 3-1 - Near-misses within each ward as hotspots and by total number



The hotspot analysis of near-misses shows three locations where recorded near-misses are particularly prevalent. These are in Cosham, in Hilsea and in Milton wards.

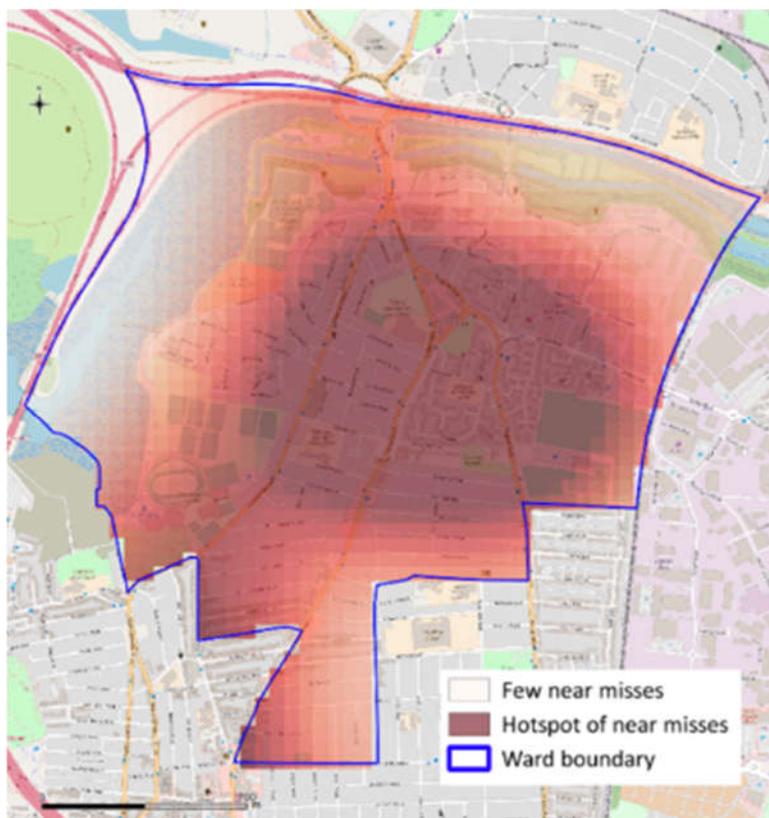
The three ‘hotspot’ wards are shown in closer detail overleaf.

Figure 3-2 - Cosham near-miss hotspot



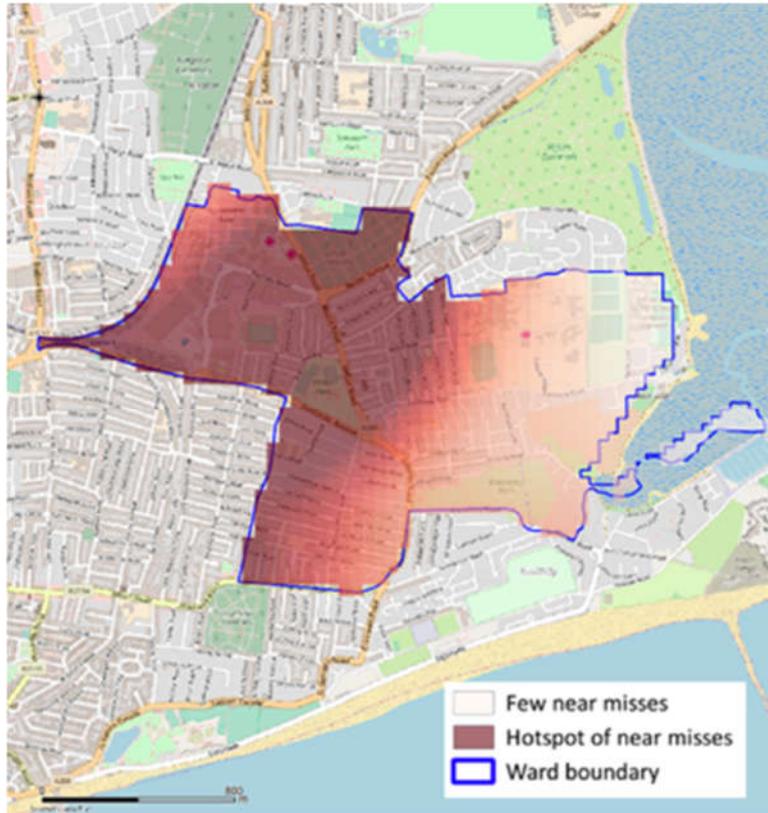
In Cosham the hotspot was centred around the B2177, Portsdown Hill Road and Southwick Hill Road

Figure 3-3 - Hilsea near-miss hotspot



In Hilsea, the hotspot centres around the A2407 and A288.

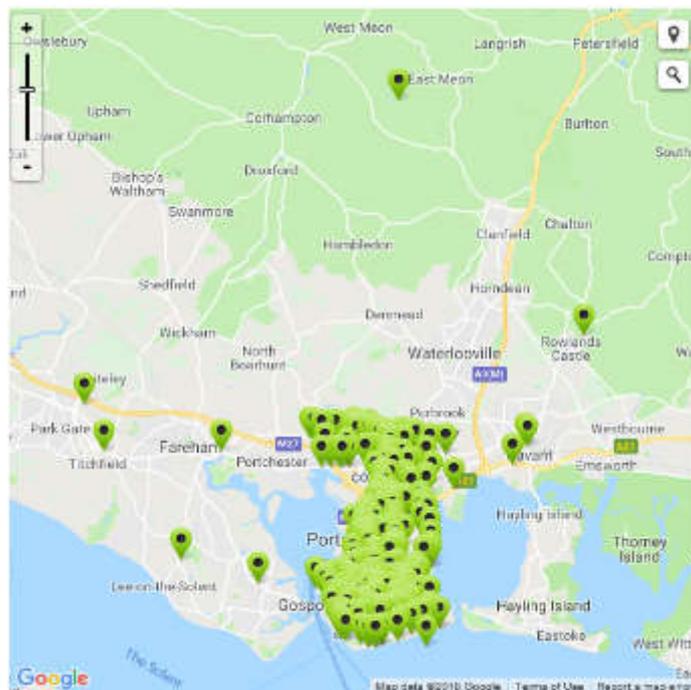
Figure 3-4 – Milton near-miss hotspot



In Milton the near-miss hotspot was focussed mainly on residential roads in the west of the ward.

It should be noted that a small number of near-miss reports located the incident outside the PCC boundary. The PCC-provided map plotting all near-miss reports shows incidents reported in as far away as East Meon.

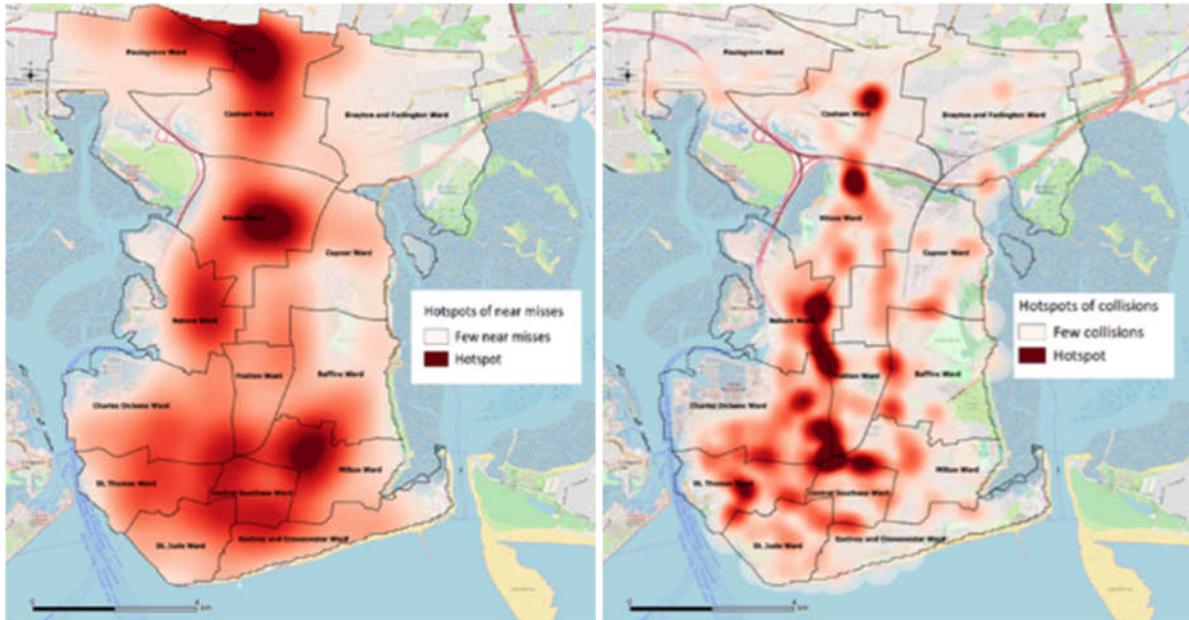
Figure 3-5 – All near-miss locations reported



3.1.2. Comparison with Collision Locations

Near-miss and collision locations were compared. In the figure below, it is clear that, whilst there is some correlation between the overall shape of the two heat-maps, there is seemingly no direct correlation between the near-miss incident hotspot localities and those of collisions.

Figure 3-6 – Near-miss (left) and Collision (right) Heatmaps



3.2. Type

Near-misses were reported with a description of the incident and other vehicle involved together with the type, or cause, of the near-miss.

For the incident description, the majority of near-misses involved private cars (57%), LGVs (16%) and Taxis (9%). Mini-buses, HGVs and other vehicles were involved in less than 5% of the near-misses reported.

Figure 3-7 - User description of other vehicles involved

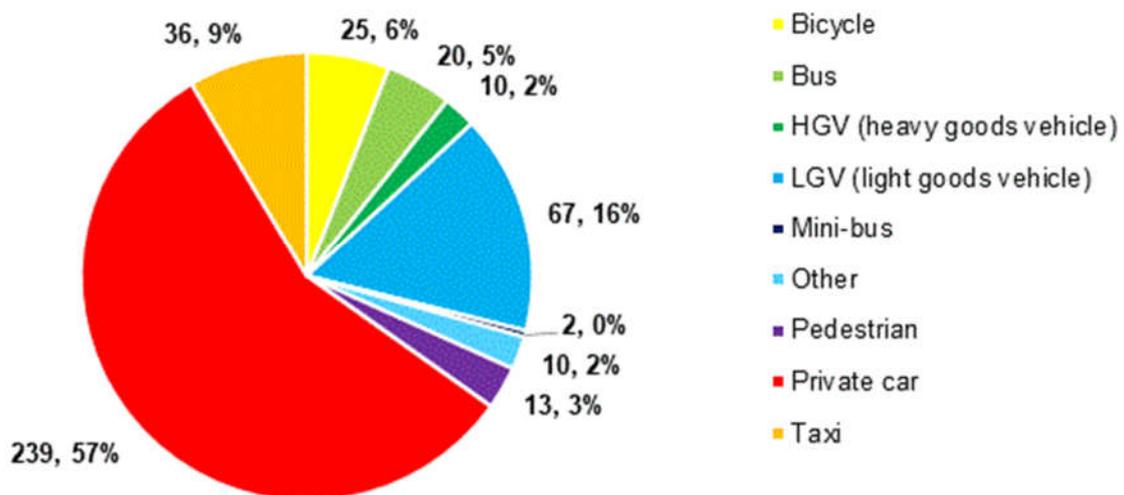
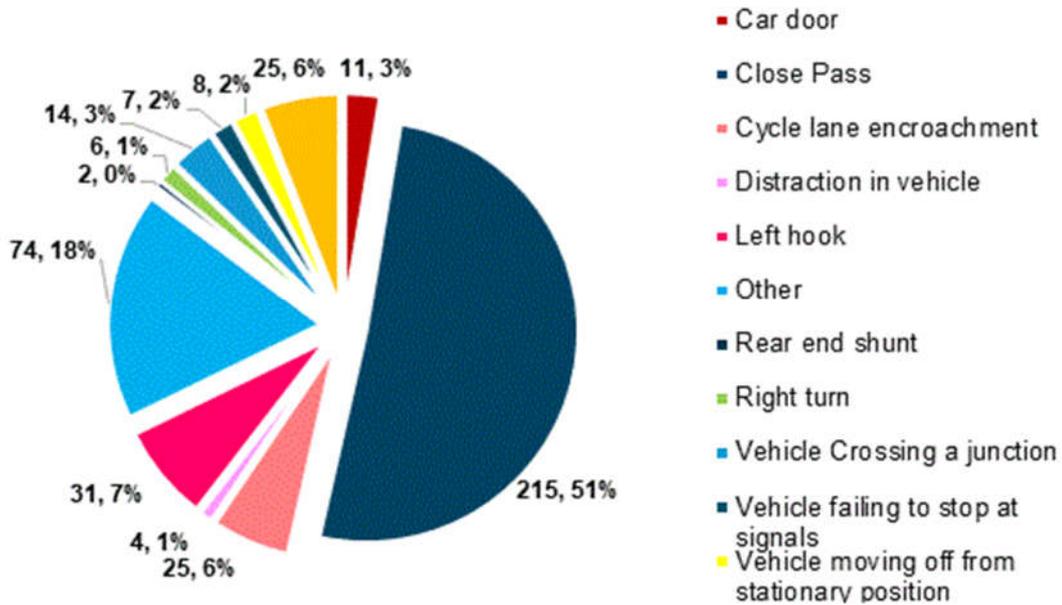


Figure 3-8 - User description of the type or cause of near-miss.



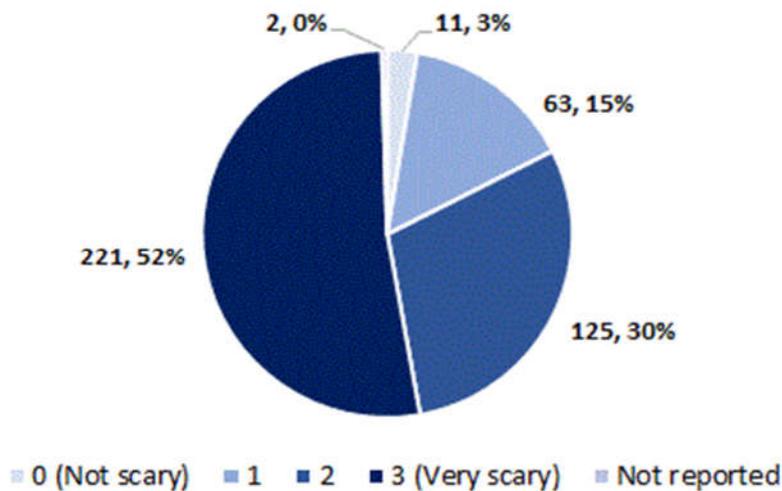
The type of near-misses most predominantly recorded was that of 'Close Pass' (51%). The next most prevalent was 'Other' (18%). Further elaboration of the 'Other' category included near-misses involving stationary or parked cars and incidents involving animals such as dogs.

3.3. Near-misses by Scariness, Annoyance and Deliberateness

A valuable aspect of the near-miss reporting system were questions which asked the cyclists about their perception of the near-miss in terms of the scariness and annoyance they experienced. They were also asked whether or not they perceived the near-miss to have been the result of deliberate action.

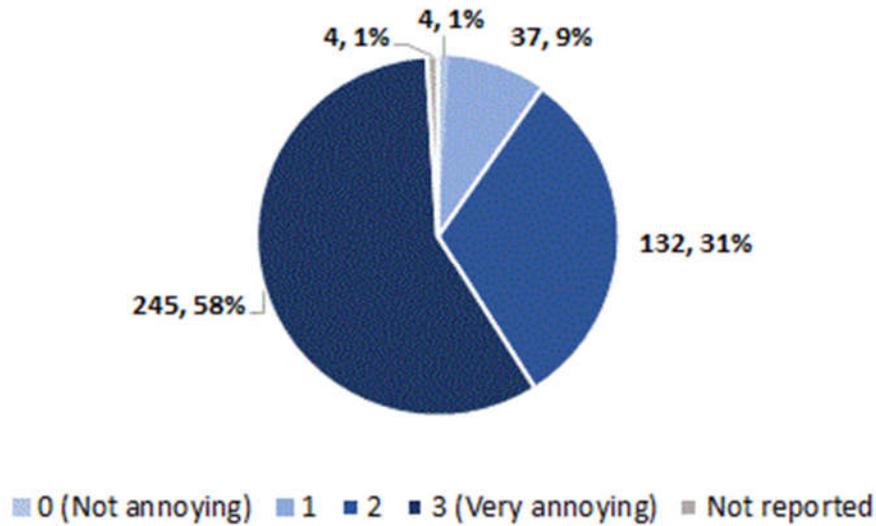
Scariness and annoyance were ranked by the user on a scale of 0-3, with 0 as the lowest level of scariness or annoyance and 3 as the highest.

Figure 3-9 - User description of the scariness



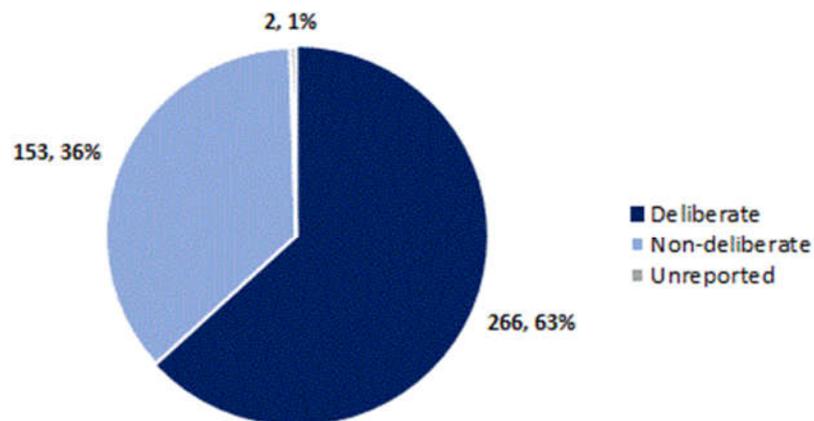
A majority (53%) of those who reported a near-miss said that they found the experience very scary.

Figure 3-10 - User description of the annoyance



A majority (59%) of those who reported a near-miss said that they found the experience very annoying.

Figure 3-11 - User description of perceived deliberateness.



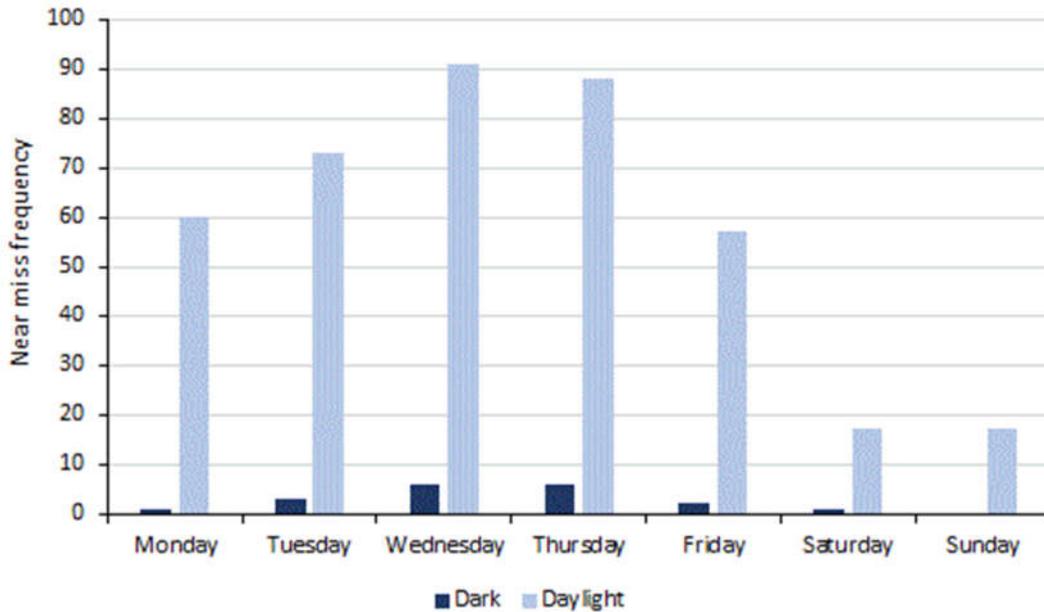
Around two-thirds of those reporting near-misses believed that their near-miss was the result of deliberate action by the other road-user involved.

3.4. Temporal Patterns

An examination of near-misses by temporal factors was carried out. This analysis has charted the total number of collisions by day of the week over the seven-month period and the average number of near-misses by hour of the day.

In the analysis by day of the week, the chart shows light conditions defined by the cyclist reporting the near-misses.

Figure 3-12 – Near-misses by day of the week and by dark/daylight.

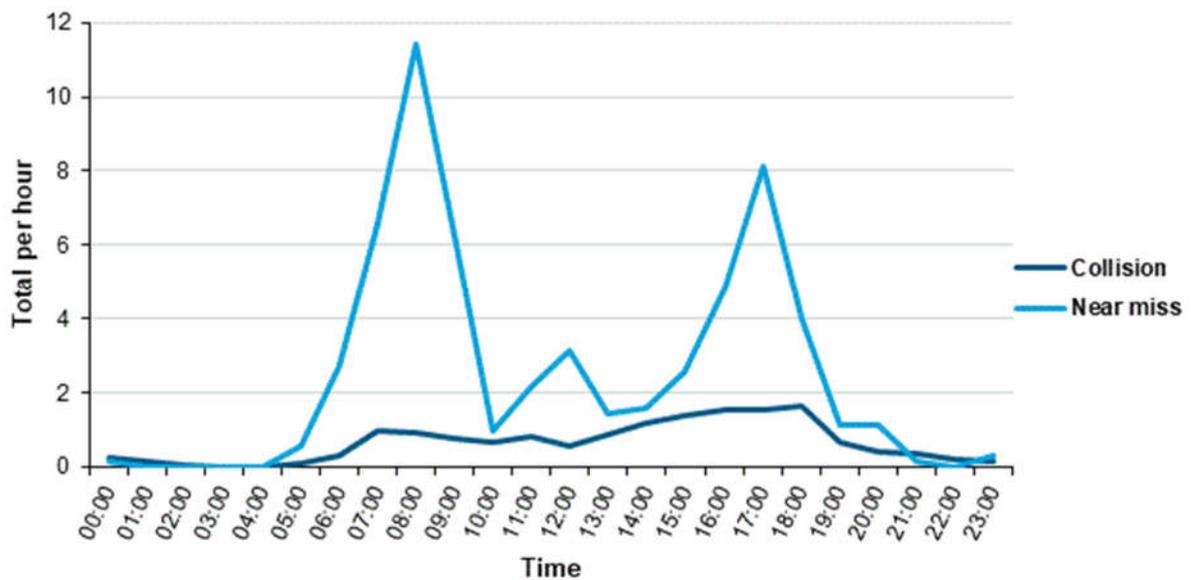


It is evident, that near-misses occurred predominantly in daylight rather than in darkness, but the dark incidents followed a similar trend in proportion to the daylight incidents. For both conditions there were a higher number of near-misses during weekdays than at the weekends. On average near-misses show a peak in the middle of the week.

Collisions and near-misses were compared to assess the possible relationship between the two types of incidents in terms of the time of day that they were occurring.

The average number of collisions per hour (March-September 2013-2018) was compared with the monthly total of near-misses (March-September 2018). In general, collisions occurred less frequently than near-misses but the two did follow a broadly comparative trajectory.

Figure 3-13 – Near-misses and collisions by hour of the day



There were two prominent peaks in near-misses between the hours of 07:00-10:00 and 16:00-19:00, with a lesser peak between 11:00 and 13:00. These peaks are consistent with trends which are displayed in national collision data.

Collisions and near-misses occurred predominantly in the daylight hours and remained minimal outside of these hours.

3.5. Correlation Analysis

A correlation analysis of average hourly near-misses and collisions per month was completed.

It should be noted that this analysis should not be taken as evidence that there is a direct relationship between near-misses and collisions but gives an indication of whether or not there might be a statistical correlation.

Figure 3-14 – Near-misses and collisions by hour of the day

Month	Correlation	Strength of correlation
March	Positive	Weak
April	Positive	Strong
May	Positive	Weak
June	Positive	Moderate
July	Positive	Moderate
August	Positive	Weak
September	Positive	Strong
March-September average	Positive	Strong

The strength of positive correlation varied by month, with the strongest correlations in April and September and the weakest in March, May and August.

There was an evident correlation between total hourly near-misses and collisions during peak hours and an increased total for both during daylight hours. Overall, near-misses and collisions followed similar daily trajectories.

4. Use of the near-miss reporting system

The system collects key demographics of users making near-miss reports by their self-reported home postcode, gender and age.

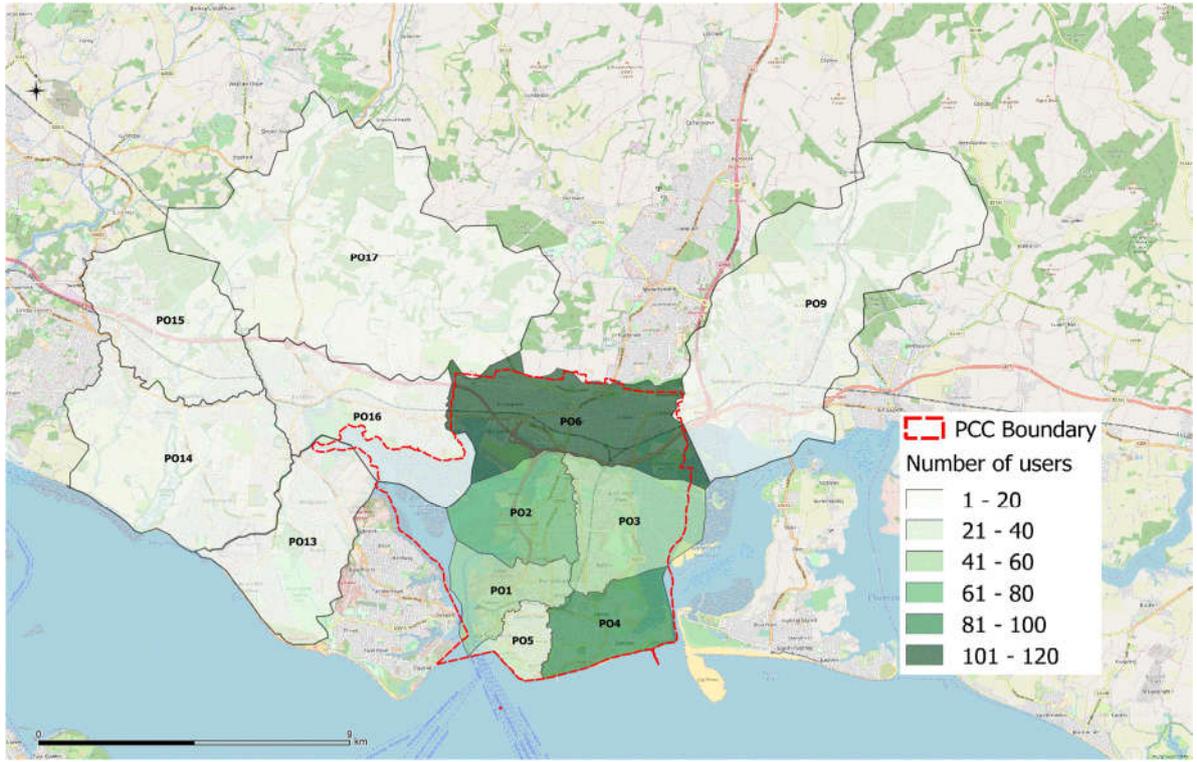
4.1. Near-misses by home postcode

The near-miss reporting system also gives the user the opportunity to enter their home postcode.

The majority (276) of cyclists reporting near-misses recorded that they lived within the PCC boundary, with most living in the PO2, PO4, PO5 and PO6.

Only a small number of cyclists (14) using the system reported that they lived outside the boundary of PCC.

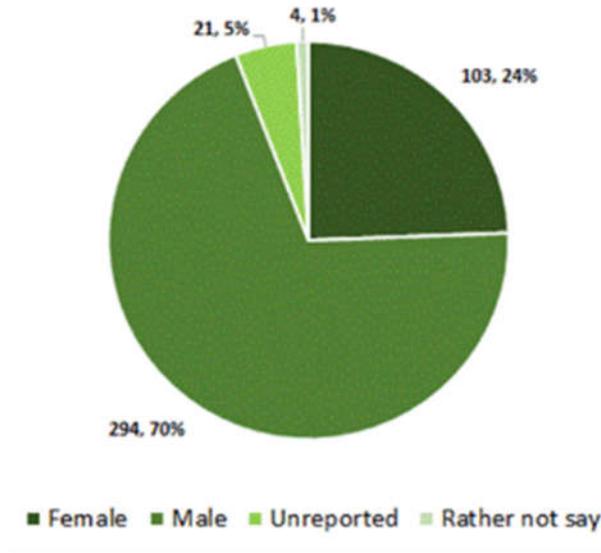
Figure 4-1 – Near-miss reports by postcode



4.2. Gender

The majority of users were male (70%), with a minority of female users (25%) and a small number of users who chose not to identify themselves as a particular gender.

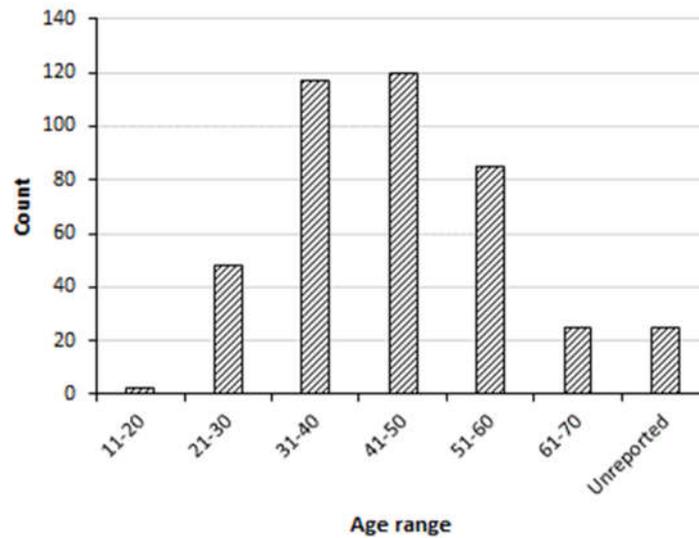
Figure 4-2 – Reporting by gender



4.3. Age

The age of users showed predominance of those aged 31-40 and 41-50. The numbers of users in the youngest age-group, 11-20, and in the oldest, 61-70 were lowest. However, this is all possibly commensurate with the cycling populations in these age groups.

Figure 4-3 – Reporting by age



5. Marketing and usability assessment

5.1. Marketing and publicity

5.1.1. The campaign

In early 2018, Portsmouth County Council conducted a marketing campaign, to raise awareness of a six-month trial of their new online near-miss reporting system for cyclists.

Taking a 'soft launch' approach, the campaign focused predominantly on local media and online activity, including:

- A dedicated page on the council website
- Near-miss buttons, linking directly to the reporting portal placed on a variety of websites, including PCC, partners, supporters, and local forums
- Web banners appearing on the 'Cycling in Portsmouth' and 'My Journey Portsmouth' websites
- Social media posts, on the Pedal Portsmouth Facebook, PCC twitter and partner platforms
- Inclusion in the Pedal Portsmouth quarterly email newsletter
- Press releases out to local media, released midway through trial period
- Communication with council staff, using the internal PCC intranet system
- Creation of a promotional banner to be used at events

The key messages were:

- Our ultimate aim is to make cycling safer in Portsmouth
- Possibly the first local authority to do this
- This is a trial
- Information will be used to identify patterns and behaviour, which will inform future planning
- This is for everyone to use - all cycling abilities not just cycling enthusiasts/'serious cyclists'
- Dangerous incidents and/or collisions MUST be reported in the usual way

Bearing in mind the intentional light-touch approach, broadly speaking, the campaign was a success, with coverage on breakfast BBC South Today; solid social media interactions (1,500 total impressions); 871 unique page views within the first month; and reports submitted jumping from 91 to 131 following the media release and social media activity.

5.1.2. Opportunities for improvement

In reviewing the communication strategy, and the materials subsequently produced, a number of opportunities to strengthen marketing activity as the project moves into its official launch have been identified.

Issues identified are outlined below, with recommendations provided in the following section.

5.1.2.1. Audiences

The communications strategy defines the audience for the campaign quite broadly as "*All Portsmouth Cyclists*". While this may remain the ultimate aim, from a communications perspective, it would make sense to break the audience down into different groups, in order to develop the most effective strategic approach to communicating with each one, both from a messaging/content perspective and in the channels used.

5.1.2.2. Pull-up banner

While the display banner above has been executed in a clear and concise way; effectively leads with a strong message about safety; and provides a clear call to action, there are areas for improvement.

There are several messages being communicated at once, some of which add little value for the audience. Being the first local authority to do this, or the fact that safety concerns affect cyclist confidence perhaps do not warrant the space that they occupy. The space could arguably have been used instead to clarify what we mean by “Near-miss”, the kind of information that we are looking for, and how that will be used. This would reduce the likelihood that a user would erroneously use the platform to report an actual accident or provide a report that had little constructive information.

The visual style of the banner could also perhaps be improved. Currently with its minimalist design and blue colour pallet it feels quite sterile, and perhaps even has a calming effect. As a result, it neither grabs your attention, or says ‘safety’.

Finally, the call to action, requesting that people visit the website and search is somewhat convoluted, and could even put people off bothering.

5.1.2.3. Web banner

The web banner above appeared on sites including 'Cycling in Portsmouth' and 'My Journey Portsmouth', linking through to further information on the initiative and the reporting portal itself.

Again, the messaging is clear and concise, with a clear call to action and an emotive safety-driven mission. Considering the format, it would be difficult to unpack the term “Near-miss” in any great detail, however it is reasonably intuitive, and assuming that supporting content provides further clarity it should be understandable.

However, once again, we see a relatively sterile visual style, which is perhaps unlikely to be eye-catching, and does not reinforce themes or messages surrounding safety. The lack of human imagery is perhaps even more stark, with the bike portrayed seemingly being without a rider.

5.1.2.4. Social media posts

This is just one example of the social media posts promoting the launch of the trial.

Again, the messaging clear and concise, with a clear call to action and emotive safety mission. Twitter is of course a character restricted medium, again, reducing the extent to which we can unpack what is and is not a “Near-miss”.

Here though, we do see more human imagery, which gives the post a very different, more emotive feel.

5.1.2.5. Partnerships

The online activity was distributed in partnership with various other brands, with near-miss buttons, social media posts and email newsletters all going out to the audiences of respective partners. However, most of the collaboration seems to be with other PCC owned brands and shared on only a handful of occasions.

While this is in-keeping with the planned soft approach, as the initiative transitions into a full launch, there is an opportunity to be more ambitious, thinking more broadly about potential partners and more deeply about ongoing collaborations, ensuring continued presence over a sustained period.

The same can also be said for internal, organisational communications networks, with current activity only being focused on the PCC intranet.

5.1.2.6. Online focus

Again, the soft launch approach was by design, however, moving into launch, there are significant opportunities to go beyond online into the real world, leveraging partnerships to achieve strong reach in a cost-effective way, and potentially reaching new audiences.

It would appear that the banner stand was designed with this purpose in mind and recommendations on specific demographics put forward in the two-month review moved in this direction, however, it is unclear if the banner was used or if any of this activity materialised.

5.1.2.7. Media release

The press release, sent out to local media midway through the trial period did a good job of explaining the initiative, its aims and why it is unique. It also provided further clarity on the meaning of a near-miss, reducing the likelihood of confusion. Some of this information could usefully be included in other material.

Perhaps, also, there are opportunities to provide further clarity on the pertinent information the initiative looks to capture, and, with the trial now complete, there are obvious opportunities to tell richer good news stories in future releases, on the success of the trial, the benefits delivered by the system thus far and the improvements that have been made in response.

5.1.2.8. Customer satisfaction survey

While the communications strategy refers to a customer satisfaction survey, it is unclear if this has been conducted. There is also an opportunity to broaden the scope beyond merely the system itself, to explore how the user might have found out about the system, and potentially even media habits, to inform future marketing activity.

5.2. Usability

Drop-down options, unambiguous questions together with a functional location map would appear to make the system easy to use for cyclists from most age-groups.

6. Key Conclusions

6.1. Near-miss and collision data

It should be noted that a small number of near-miss reports located the incident outside the PCC boundary.

Categorisation of deliberateness is highly subjective but, along with metrics of scariness and annoyance, is very useful in summarising cyclists' feelings regarding near-misses they have experienced

Most users described their near-miss as a deliberate act by the other person involved. It is difficult from the data collected to judge the accuracy of the cyclist's perception of deliberateness or to rule out that this might be an emotive response.

It is evident, that near-misses occurred predominantly in daylight rather than in darkness, but they followed a similar trend trajectory to collisions in proportion to the daylight incidents. For both conditions there were more near-misses during weekdays than at the weekends. On average, near-misses show a peak in the middle of the week.

Home post-code data provides useful data which could be used in future studies to examine the relationship (if any) between home locations and near-miss locations.

The most prominent hotspots for near-misses are in Cosham, Hilsea and Milton and are generally associated with key main roads such as the A2047, A288 and the B2177. In particular, hotspots of near-misses were located at junctions and roundabouts, where there would naturally be a higher risk of conflicts.

One of the hotspots in Milton seems centred on residential roads, suggesting that other factors, such as narrower roads and parked vehicles, might need to be considered.

The majority of near-misses involved a private car or LGVs. This may be the result of the prevalence of these vehicle types on PCC roads but could be characteristic of behaviours towards cyclists demonstrated by the drivers of these vehicles.

It should be noted that whilst HGV and LGV have definitions set by the Department of Transport, members of the public might misclassify such vehicles. It might be useful if the definitions were illustrated by symbols to help cyclists pick the right one.

The type of near-misses most predominantly recorded was that of "Close Pass" (51%). The next most prevalent was "Other" (18%). Further elaboration of the "Other" incidents revealed that they involved stationary or parked vehicles, or they involved animals such as dogs.

Spatially, collisions were more highly concentrated in hotspots than near-misses, indicating that near-misses are more widely spread than collisions.

Correlation analysis yielded an overall strong positive correlation between total hourly near-misses and collisions (averaged over March to September).

A number of near-miss reports were from outside the PCC boundary.

6.2. Extension to other modes of transport

Given the usefulness of the data collected, there would appear to be scope to extend the near-miss reporting system to include pedestrians and other modes of transport. For pedestrians, a similar form to that used for cyclists would seem appropriate but for vehicle drivers, there might be issues with data volume.

7. Recommendations

7.1. Usefulness of the reporting output

It is recommended that:

- The system should be continued, and the data collected should be subjected to regular analysis.
- There is some clear scope to use the near-miss data to monitor the effects of cycling infrastructure improvements or even other schemes.
- The data collected should be used to explore funding options outside PCC's own budgets. For example, Highways England funding might be available for infrastructure improvements on trunk-roads within the PCC boundary.
- Whilst there are some limitations on the scope to use the data to predict future collisions, continual monitoring over a longer time period may enable the identification of stronger and more focussed correlations which could be used to prioritise future remedial schemes and Local Transport Plan spending.
- The usefulness of including a 'Deliberateness' metric should be improved by including additional questions such as "Describe why you think that the near-miss was a deliberate act?" for example.
- If deliberateness or other adverse road-user behaviours can be confidently identified, as a significant factor in near-misses, consideration should be given to tailoring road-user education, training and publicity measures to combat this.

7.2. Reach of the service

It is recommended that:

- It would be useful to extend the near-miss reporting system, or have a parallel system, to gather reports from other road user types. The reporting systems for other road users should be tailored as appropriate to gather succinct and manageable data.
- The system should limit reporting to near-misses within the PCC boundary only. Alternatively, reciprocal arrangements with neighbouring authorities should be considered.
- The data collected could be expanded to include information on the local environment at the time of the near-miss. For example, was it at a crossing; on-carriageway; off-carriageway; cycle lane; or traffic signals junction? Did the incident involve mixing with traffic; was there a shared use path/cycle-track available but not used? If an existing facility was not used, it might also be useful to gather information on reasons why. All of this information would further help in the targeting of remedial spending.

7.3. Usability

- The system is very easy to use, there are no recommended improvements with regard to the functional aspects of entering the data.
- There is an opportunity to guide users towards using the system more effectively, by providing clarity on what a near-miss is and the kind of information that is most useful to capture, perhaps developing catchy straplines for these key messages. This could be achieved by more drop-down options and by the inclusion of example entries to show users the kind of information required.

7.4. Future marketing and communications of the service

- For the next phase of marketing, we would strongly recommend dividing the audiences into different segments; exploring their differing behaviours, needs and perspectives; and adapting the strategic approach to each of them, in terms of channels, content and messaging. This could be developed through a workshop using empathy mapping. Key audiences could include commuters, leisure road cyclists, BMXers and school children. Hard to reach demographics within these groups could then subsequently be planned for through the lens of each segmentation.
- While some good work has already been done to leverage the existing audiences of other brands, there are clear opportunities to broaden and deepen these relationships to reach new audiences and ensure sustained presence. For example:
 - Broaden the number of partner organisations, from road cycling clubs, to schools, to business networks. This would facilitate enhanced contact directly with cyclists, or with an audience where there might be cyclists.
 - Collaborate with active, cycling related social media brands to deliver content driven campaigns around safety (e.g. near-miss stories).
 - ‘Sponsor’ cycling related events (e.g. ‘glow ride’), so that links to the system appear on promotional material on an ongoing basis.
 - Work with major employers to promote the system through their internal channels, such as travel plans, intranets, notice boards and newsletters.
- Banner stands, leaflets and posters, displayed by partner organisations can be used to cheaply and effectively reach different audiences. Locations could include:
 - Bike shops.
 - Schools and youth clubs.
 - Skate parks.
 - Bike sheds and other areas that bikes are often stored.
 - Locations where near-misses have repeatedly been logged.
 - Municipal buildings.
 - You could also contribute banner stands, leaflets and posters to other initiatives that are doing a lot of events, essentially providing an unstaffed exhibition.
- The materials could benefit from a more eye-catching colour pallet, perhaps playing with the oranges, yellows and reds that would normally be associated with road safety.
- More human imagery could also contribute a more emotive feel to the materials.
- While messaging surrounding the need for the initiative and the mission to improve safety in Portsmouth is strong, as the initiative transitions from trial to actual launch, there’s an opportunity to move the story on, with messaging surrounding the success of the trial and the improvements made since the trial.
- The call to action would also benefit from a dedicated URL, rather than a convoluted system of visiting the site and searching for the portal. This could be shared across social media platforms more easily.
- While it can be difficult to get the nuances of what a near-miss is, or what information we most need to capture in a tweet, or a Facebook post, an animation, embedded in social media posts, or linked to email newsletters can be a quick, accessible and engaging way of communicating key messages.
- While it is unclear if a user survey has already been conducted, this could be an opportunity to identify information that could inform a future marketing strategy. For example, questions could explore:
 - Where the user heard of the system?
 - What persuaded them to report their near-miss?
 - Their media habits (e.g. what papers they read, social media platforms they use)?

- Any cycling, or audience specific groups or organisations they belong too?

Appendices

Appendix A. Near-misses and collisions by ward

Figure A-1 – Baffins near-misses (left) and collisions (right)

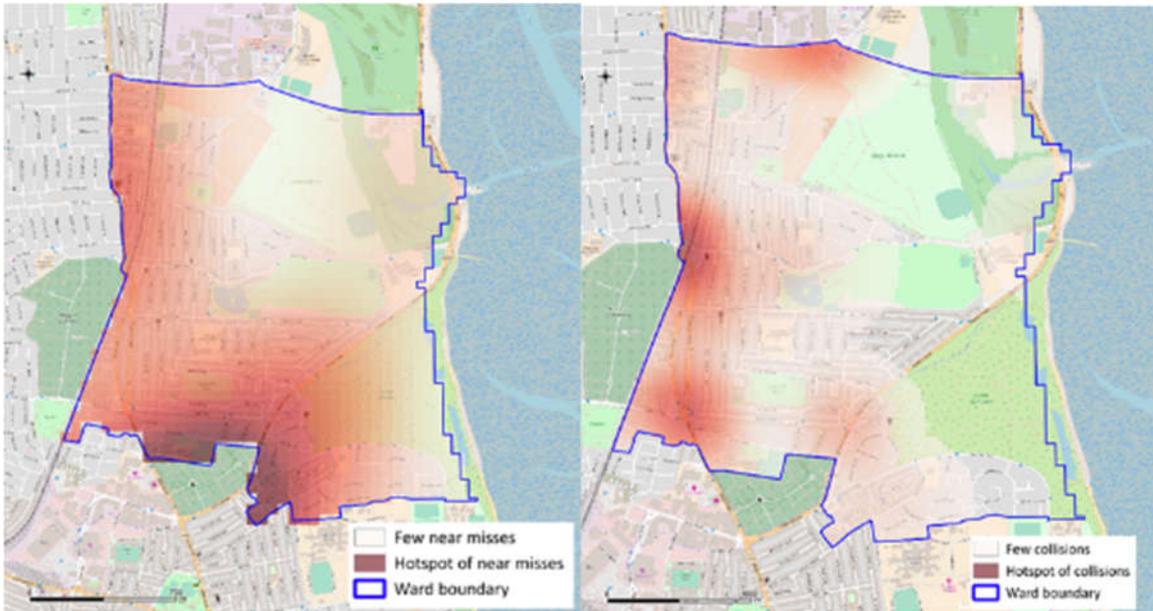


Figure A-2 – Central Southsea near-misses (left) and collisions (right)

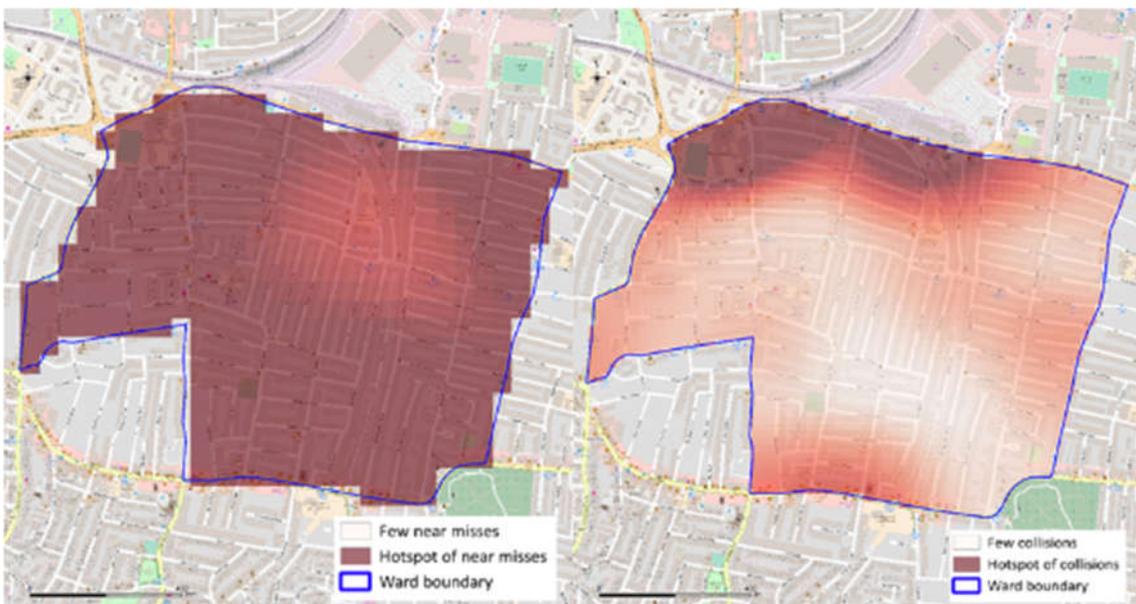


Figure A-3 – Charles Dickens near-misses (left) and collisions (right)

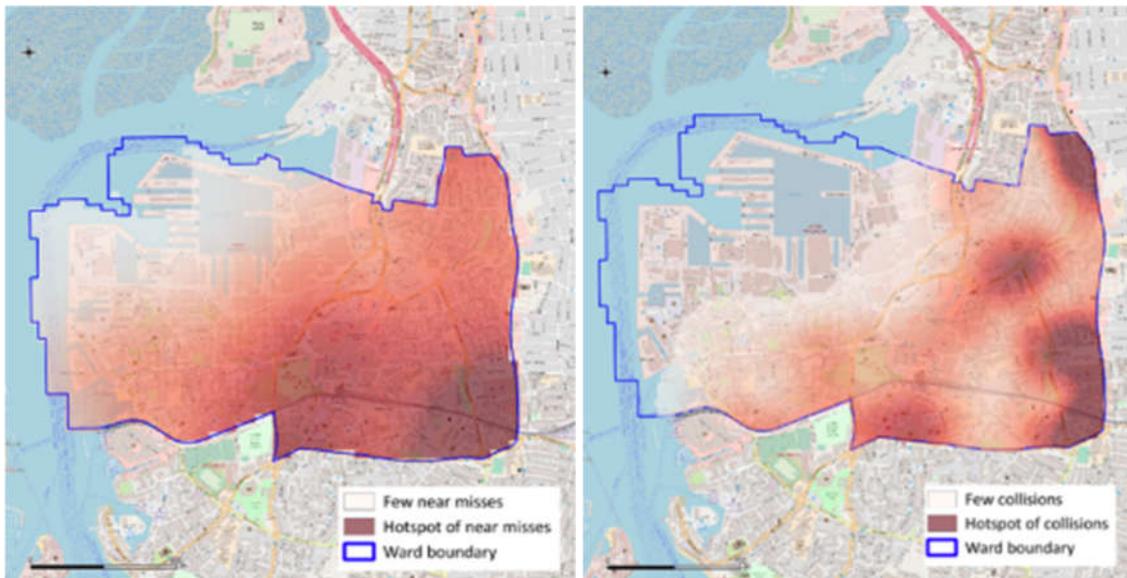


Figure A-4 – Copnor near-misses (left) and collisions (right)

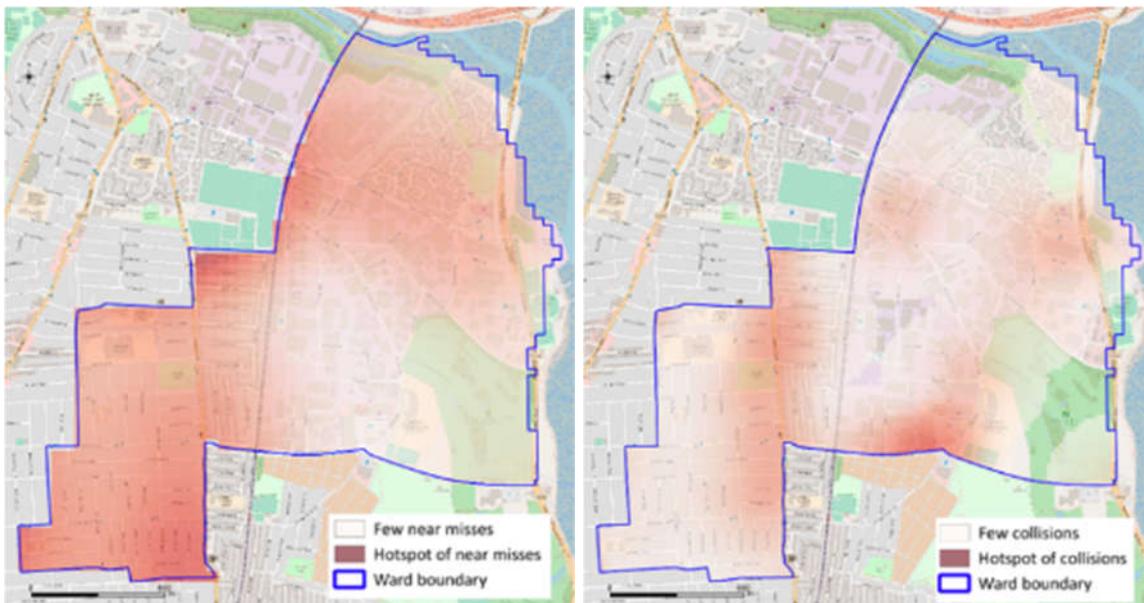


Figure A-5 – Cosham near-misses (left) and collisions (right)



Figure A-6 – Drayton and Farlington near-misses (left) and collisions (right)



Figure A-7 – Eastney and Craneswater near-misses (left) and collisions (right)



Figure A-8 – Fratton near-misses (left) and collisions (right)

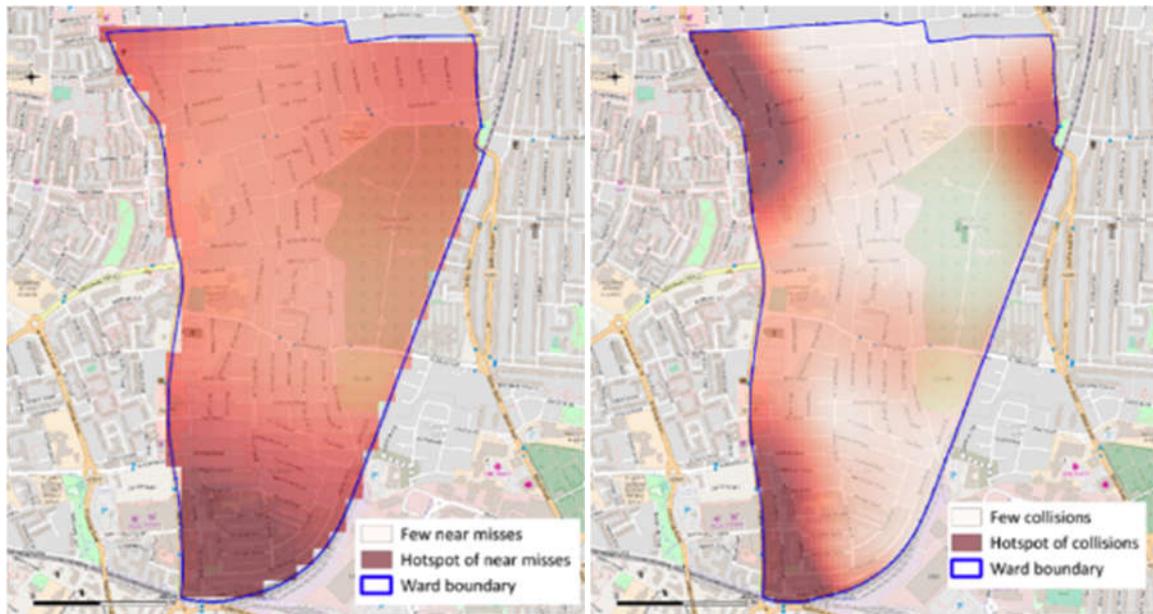


Figure A-9 – Hilsea near-misses (left) and collisions (right)

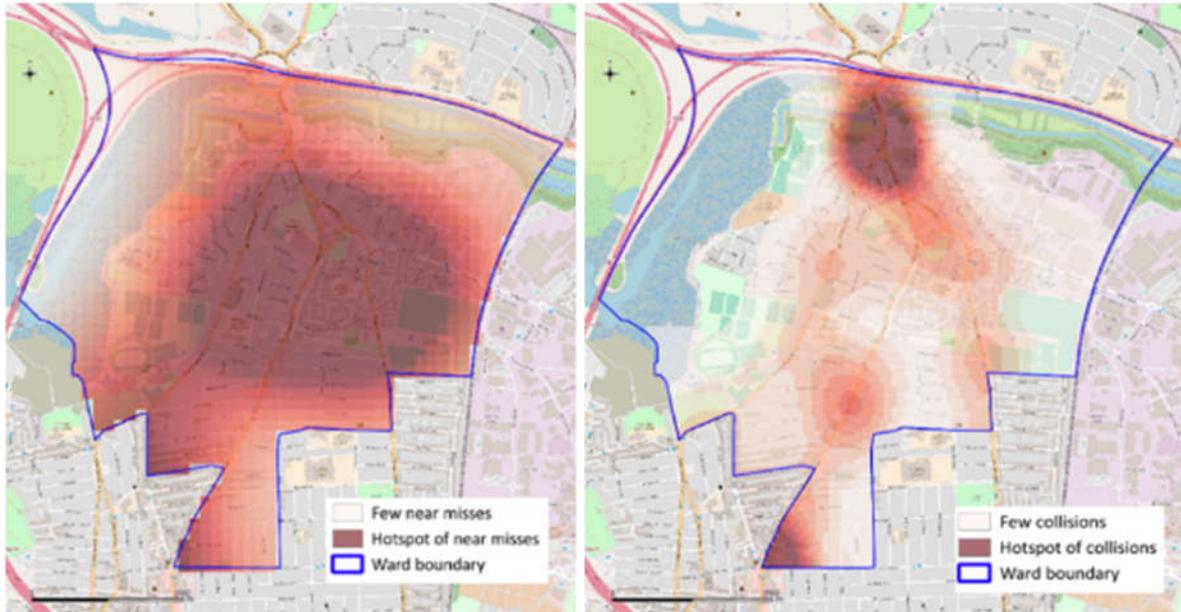


Figure A-10 – Milton near-misses (left) and collisions (right)

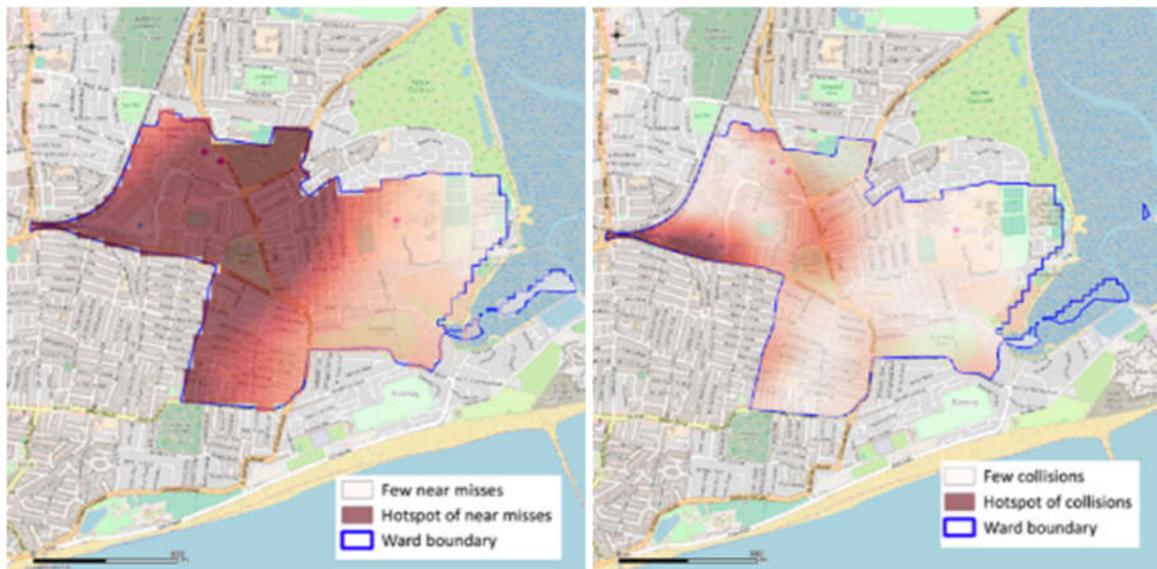


Figure A-11 – Nelson near-misses (left) and collisions (right)

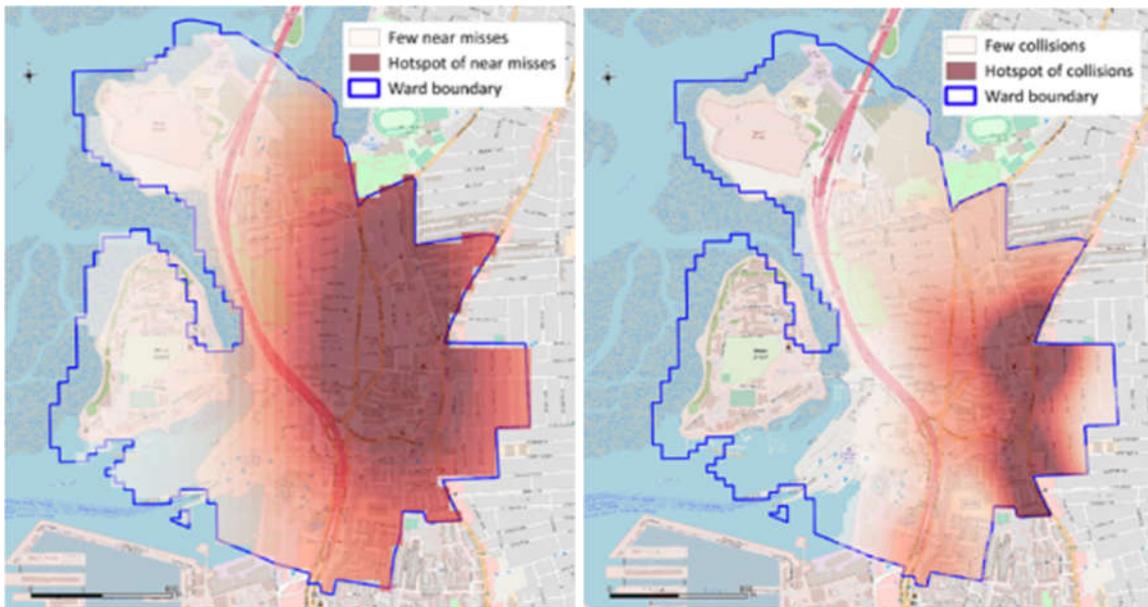


Figure A-12 – Paulsgrove near-misses (left) and collisions (right)

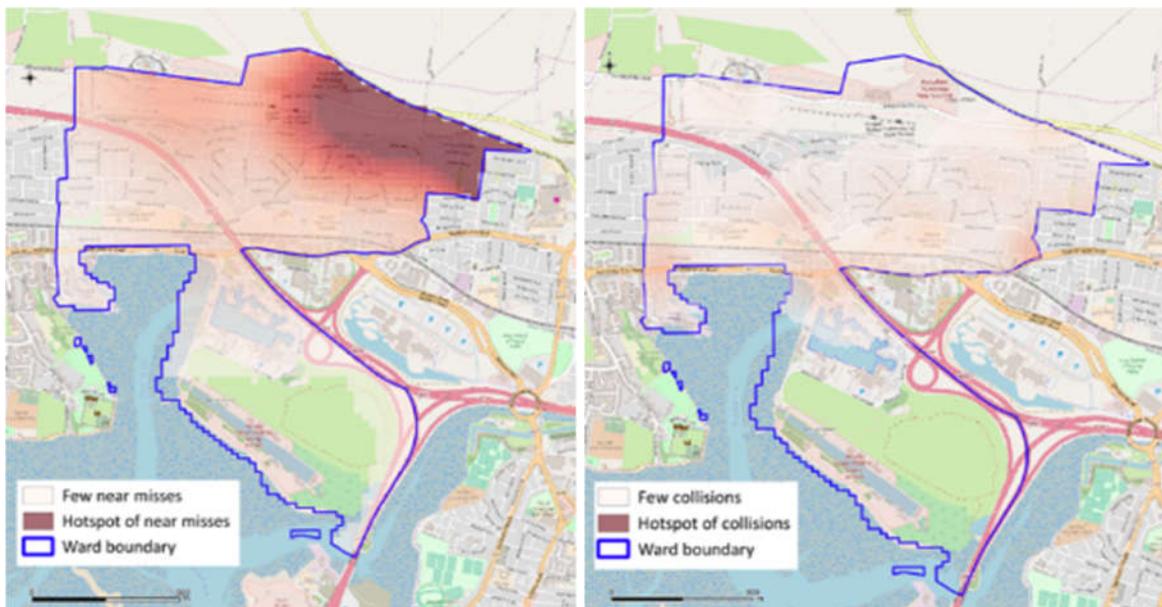


Figure A-13 – St Jude near-misses (left) and collisions (right)

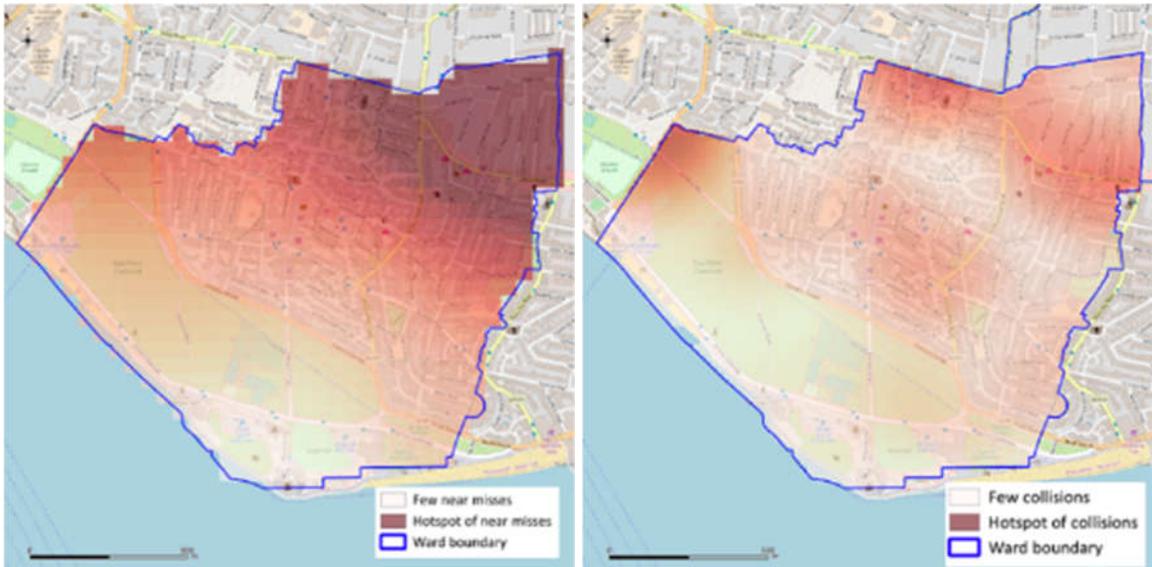
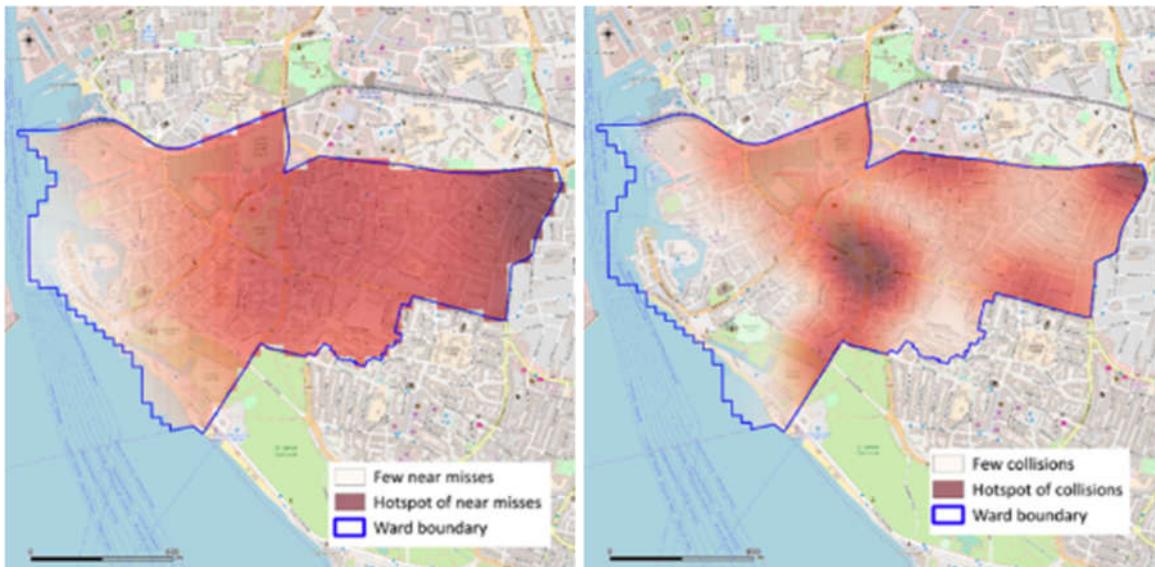


Figure A-14 – St Thomas near-misses (left) and collisions (right)



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