



# COVID-19 IMPACT



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# COVID-19 IMPACT INSIGHT STUDY

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## INTRODUCTION

Analysis of national data showed that the coronavirus pandemic and lockdowns in 2020 saw a reduction in collisions and casualties in 2020. The UK's first national lockdown began on 23<sup>rd</sup> March 2020, and a second national lockdown on 5<sup>th</sup> November 2020. Overall, road casualties saw the greatest monthly percentage decrease of 68% in April 2020 compared to a 3-year average for 2017 to 2019. This aligns with the first lockdown and also a reduction in traffic on the roads overall in the same period.

This report compares the national data with that for Safer Roads Berkshire<sup>1</sup>, where available and also compares local trends during the 3 years pre-pandemic with the 2020 data.

Figure 1 illustrates the extent of the decrease in the number of casualties killed or injured in collisions during 2020. In Great Britain as a whole, there was a 25% decrease in casualties between 2019 and 2020.

FIGURE 1 - GB CASUALTIES BY YEAR AND SEVERITY (2011-2020)



Figure 2 illustrates how the traffic on the roads of Great Britain decreased over the same period by 21%.

<sup>1</sup> Safer Roads Berkshire includes the authorities of Wokingham, Royal Borough of Windsor and Maidenhead, Slough, Bracknell Forest and West Berkshire. Excludes Reading.

FIGURE 2 - GB MOTOR VEHICLE TRAFFIC BY YEAR (2011-2020)

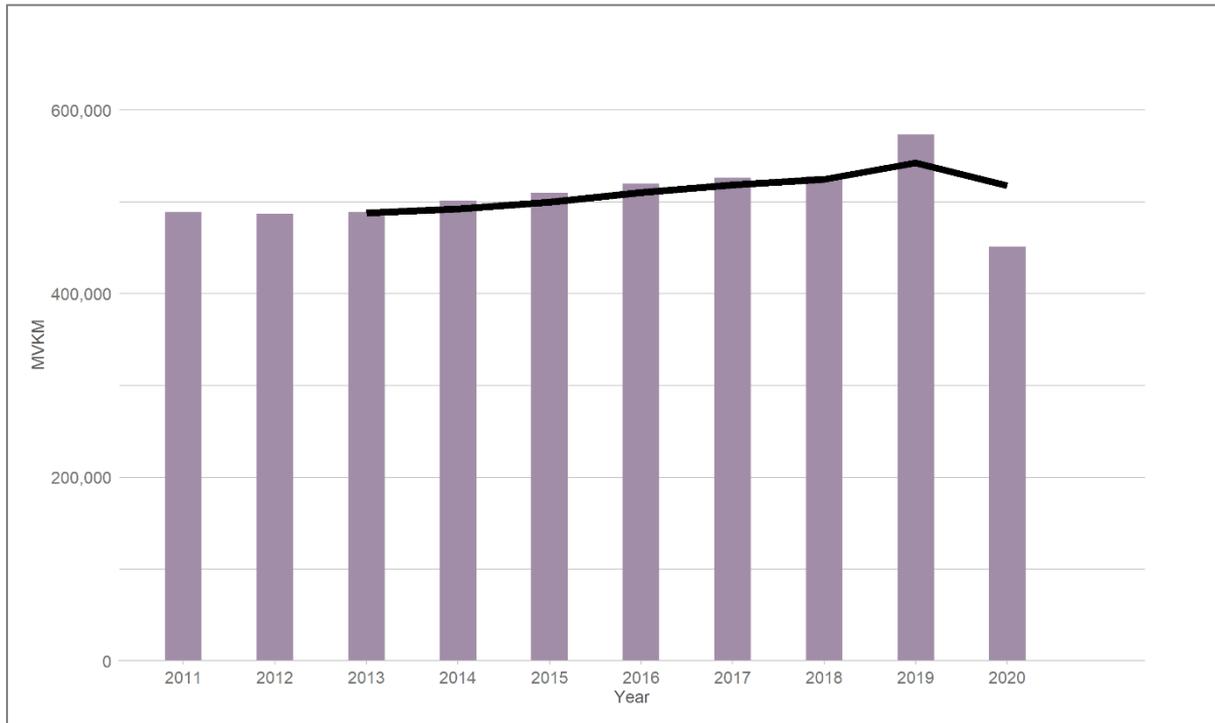


Figure 3 shows what happened to the numbers of reported road casualties in Safer Roads Berkshire in 2020 when compared with a calculated baseline for the 3 years previous (2017 to 2019). The Safer Roads Berkshire area saw a decrease of 56% in reported road casualties during the first full month of lockdown in 2020 (April), which is less than the national decrease of 68%. However, in October and November 2020, the Safer Roads Berkshire area saw a decrease in reported road casualties of 44%, which was greater than the national decrease over the same period.

**FIGURE 3 - PERCENTAGE CHANGE OF CASUALTIES OF ALL SEVERITIES, COMPARED TO A 3-YEAR AVERAGE FOR 2017-2019, GREAT BRITAIN AND SAFER ROADS BERKSHIRE**

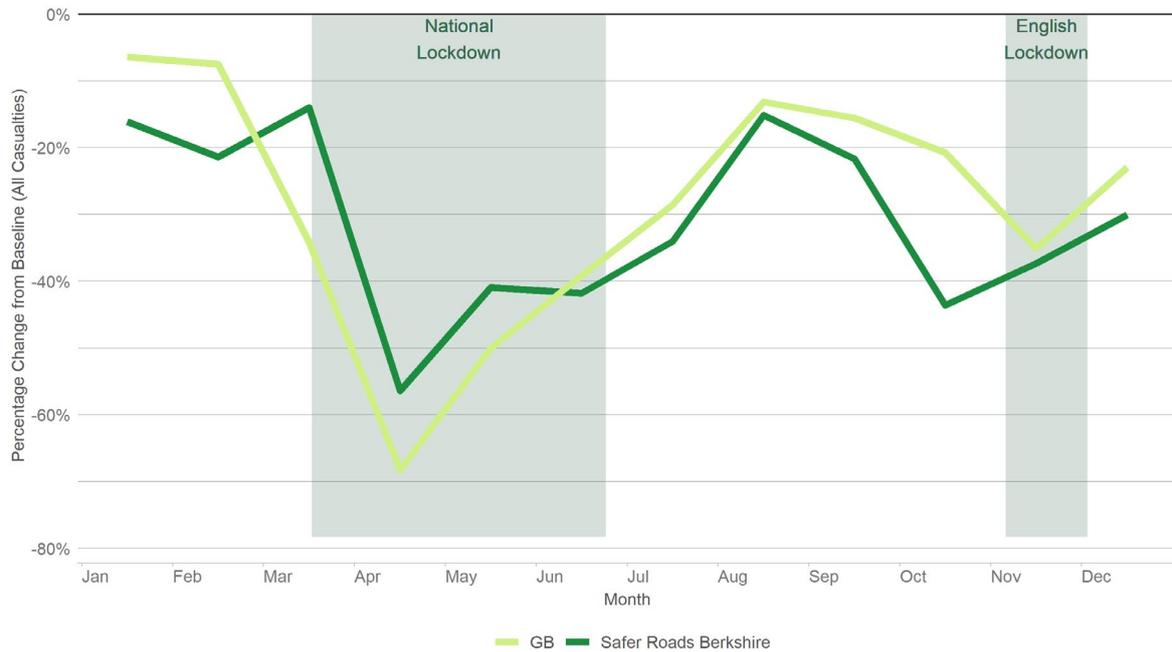
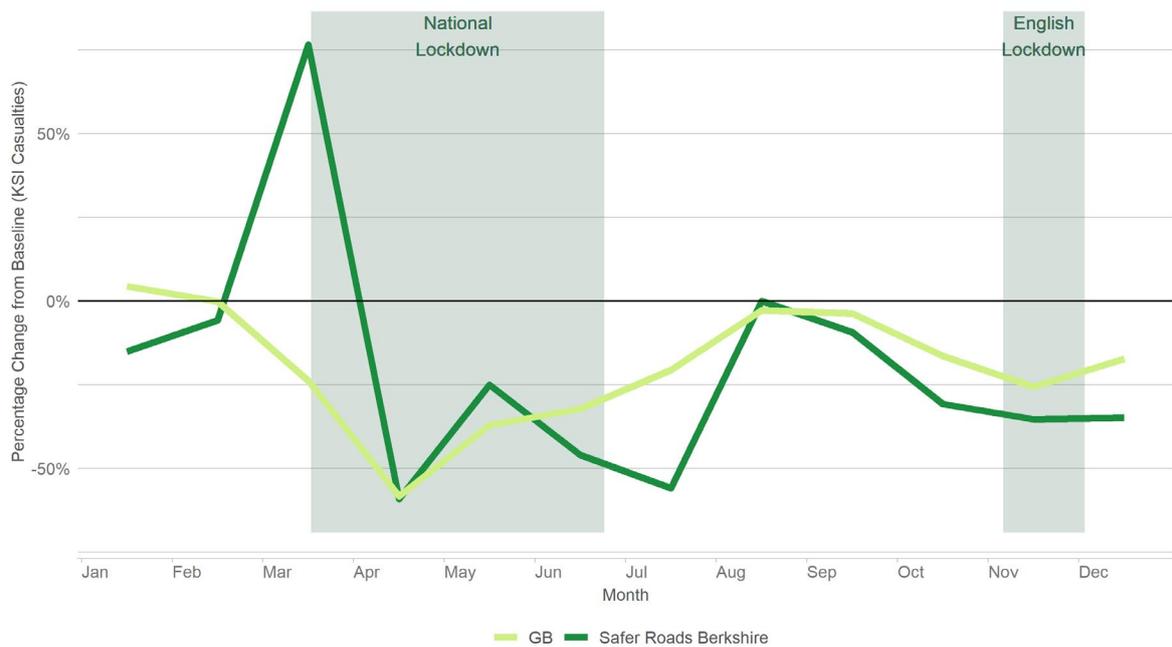


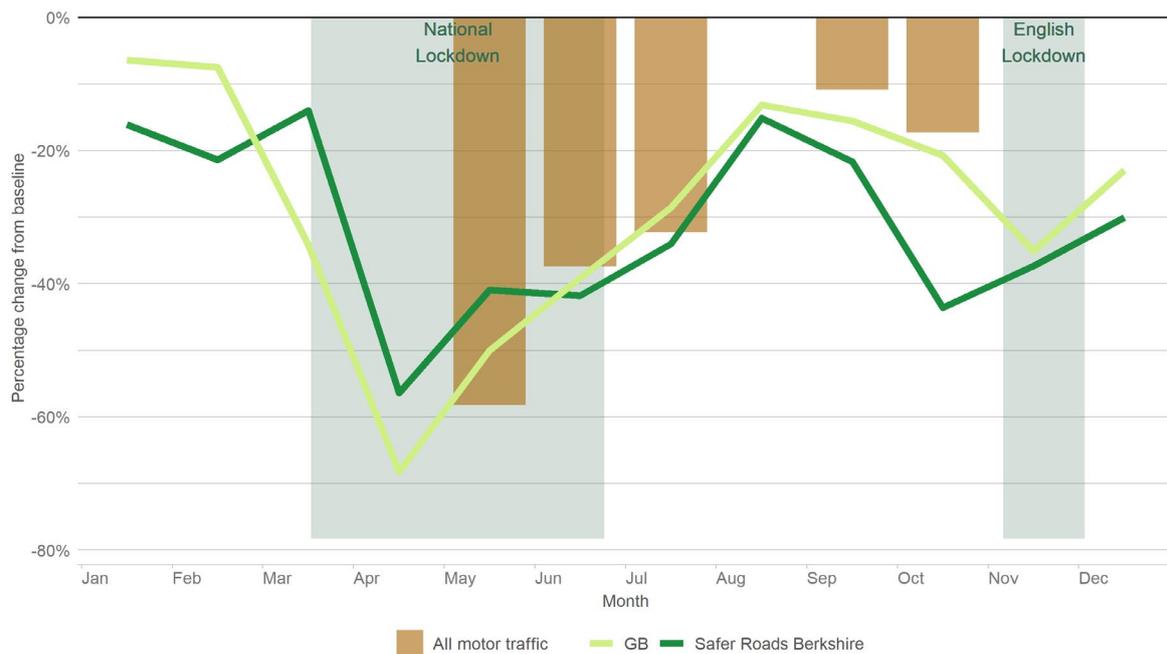
Figure 4 shows the trend change in killed or seriously injured (KSI) reported road casualties in the Safer Roads Berkshire area compared with the national trend. Whilst the lockdown periods show a broadly similar trend, there was a 76% increase above the baseline in KSI casualties in March, just before the full lockdown. (increase from a baseline of 11 KSI's to 20 in March 2020)

**FIGURE 4 - PERCENTAGE OF KSI CASUALTIES COMPARED TO A 3-YEAR AVERAGE FOR 2017 TO 2019, GREAT BRITAIN AND SAFER ROADS BERKSHIRE 2020**



Complimentary to the casualty percentage change data, it makes sense to look at how traffic flows differed during 2020. For this the only open source data available is the count point flow data for 2020 on the DfT website<sup>2</sup>. This is limited as the data is only available for May, June, July, September and October 2020. Despite this, the relationship between the number of road casualties and traffic flow is clear, as illustrated in Figure 5.

**FIGURE 5 - PERCENTAGE CHANGE IN THE FLOW OF ALL TRAFFIC USING DFT TRAFFIC COUNTS AGAINST THE PERCENTAGE CHANGE OF ALL CASUALTIES (BASELINE 2017-2019 USED)**



For all motor vehicles (Figure 6), there was a reduction in road traffic levels during the first lockdown. However, pedal cyclist traffic increased compared to the 3-year average in May and again in October 2020.

The DfT COVID 19 transport use statistics<sup>3</sup> and the National Travel Attitude study (NTAS)<sup>4</sup> suggest that there has been an increase in pedal cycle traffic volume over the period following COVID-19 restrictions, while motor vehicle traffic has reduced. This may be linked to guidance issued to avoid public transport wherever possible and an increase in modes of ‘active travel’ during the pandemic.

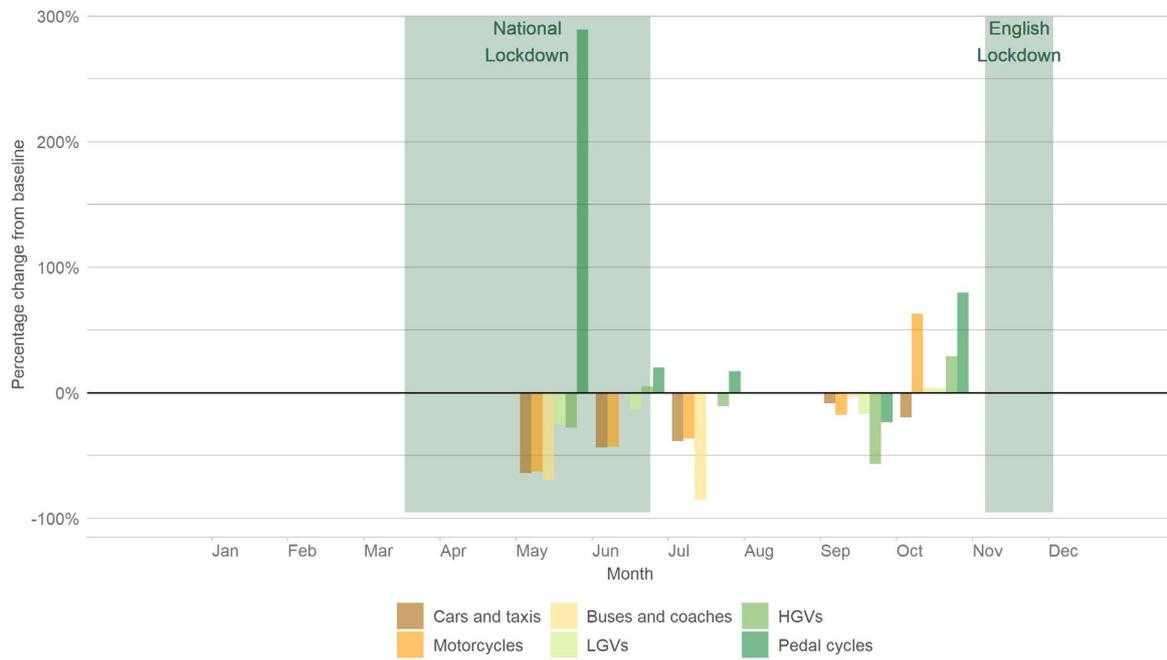
<sup>2</sup> <https://roadtraffic.dft.gov.uk/regions/1>

<sup>3</sup> <https://www.gov.uk/government/statistics/transport-use-during-the-coronavirus-covid-19-pandemic>

<sup>4</sup>

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/956170/national-travel-attitudes-study-wave-4-final.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/956170/national-travel-attitudes-study-wave-4-final.pdf)

**FIGURE 6 - PERCENTAGE CHANGE IN TRAFFIC FLOW FOR ALL VEHICLE TYPES IN SAFER ROADS BERKSHIRE IN 2020 AGAINST A 2017-2019 BASELINE FOR THE SAME MONTH (SOURCE DFT)**



Using the 2011 Rural-Urban classifications for small area geographies<sup>5</sup>, Agilysis have used GIS tools to assign roads to Lower Super Output Areas (LSOAs) and thus apply the relevant urban and rural classification. Figure 7 shows that although rural roads nationally saw the biggest percentage decrease in collisions against the baseline during the first lockdown, this was not the case for rural roads in Berkshire.

**FIGURE 7 - PERCENTAGE CHANGE IN COLLISIONS BY RURALITY IN SAFER ROADS BERKSHIRE, COMPARED TO A 3-YEAR AVERAGE FOR 2017-2019**



<sup>5</sup> <https://www.ons.gov.uk/methodology/geography/geographicalproducts/ruralurbanclassifications/2011ruralurbanclassification>

## COMPARATOR AUTHORITIES

Within the Safer Roads Berkshire area, it is possible to look at how the percentage change in road casualties varied from authority to authority during 2020. A national and regional comparator has also been included in Table 1 below. By far the largest decrease was in the Royal Borough of Windsor and Maidenhead, with the smallest being Bracknell Forest.

**TABLE 1 – PERCENTAGE CHANGE IN ANNUAL AVERAGE SAFER ROADS BERKSHIRE CASUALTIES PER 100KM OF ROAD, BASELINE YEARS (2017-2019) AND PANDEMIC (2020)**

|                        | Baseline | Pandemic | Percentage Change |
|------------------------|----------|----------|-------------------|
| GB                     | 40.7     | 29.0     | -28.7%            |
| South East             | 52.9     | 41.2     | -22.2%            |
| Berkshire              | 42.1     | 29.6     | -29.8%            |
| Bracknell Forest       | 33.4     | 31.1     | -7.0%             |
| Slough                 | 120.4    | 77.4     | -35.7%            |
| West Berkshire         | 21.2     | 15.0     | -29.1%            |
| Windsor and Maidenhead | 43.0     | 23.2     | -46.0%            |
| Wokingham              | 33.1     | 23.9     | -27.6%            |
| Reading                | 80.0     | 64.4     | -19.4%            |

## COLLISION PROFILES

This section explores more detail around how collision profiles may have differed pre and during the pandemic in Safer Roads Berkshire.

### WHAT HAPPENED DURING 2020?

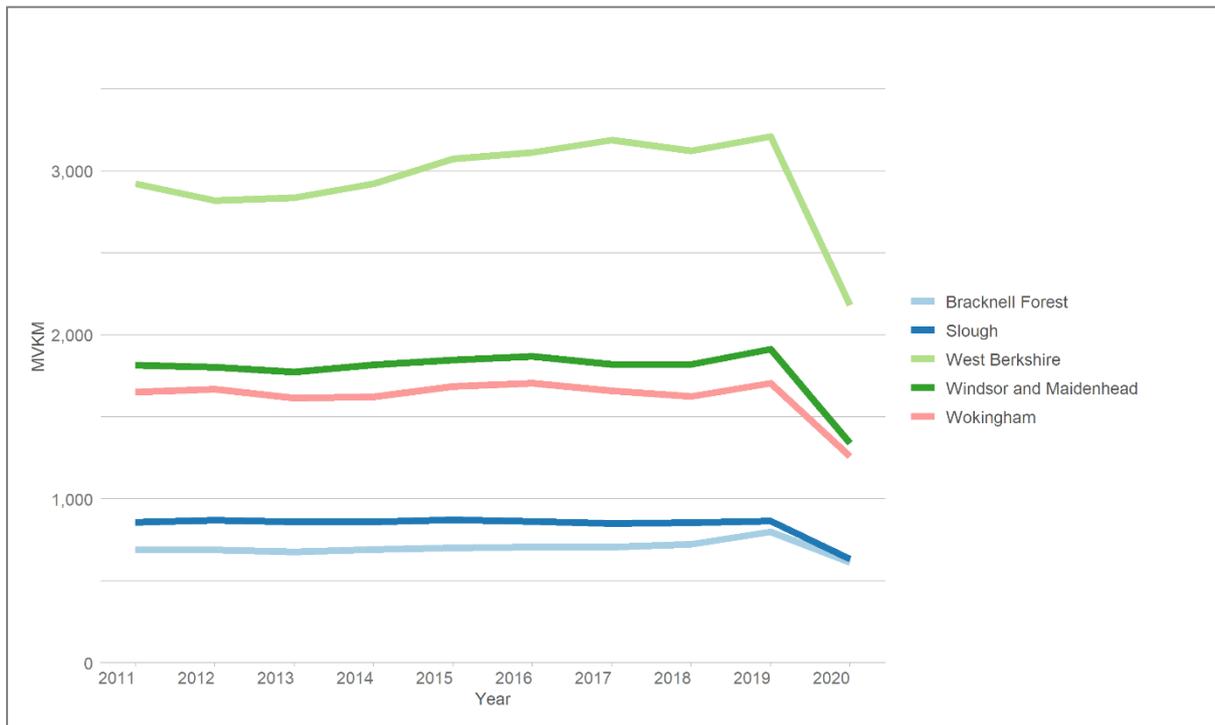
The number of road casualties killed or seriously injured on the roads of Safer Roads Berkshire was already decreasing in the 2017 to 2019 period but 2020 saw a further decrease of 24% compared with 2019, as shown in Figure 8.

**FIGURE 8 - SAFER ROADS BERKSHIRE CASUALTIES BY YEAR AND SEVERITY (2011-2020)**



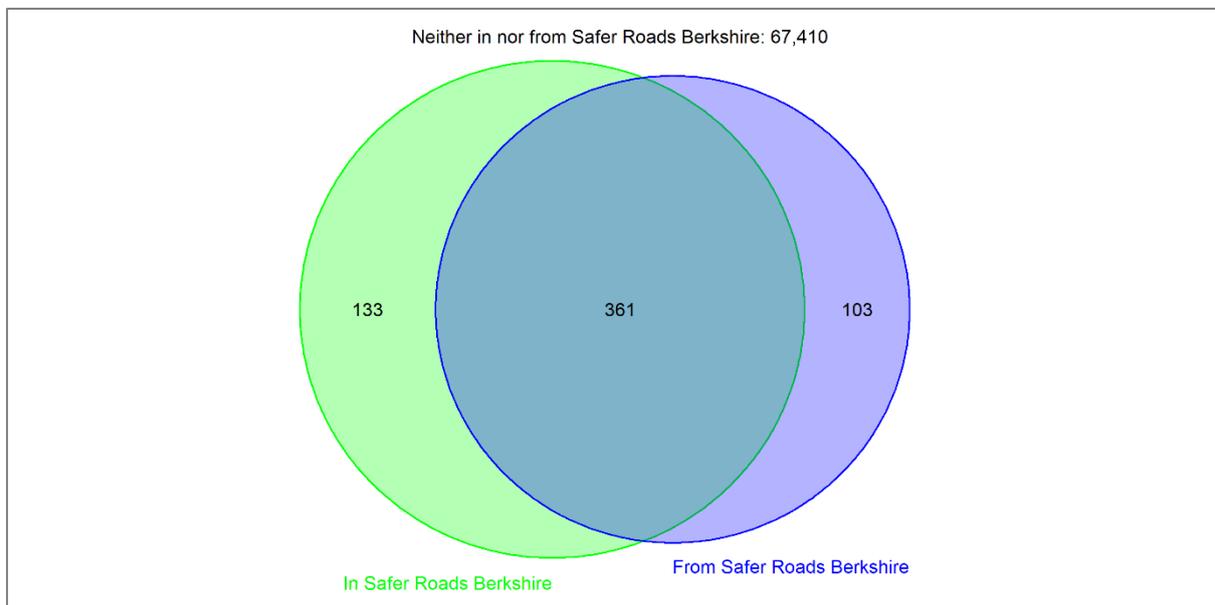
Similarly, the traffic volumes reduced overall for Safer Roads Berkshire reduced by 29% in 2020 when compared with 2019 levels as shown in Figure 9. Within Safer Roads, West Berkshire saw the biggest decrease with a 32% reduction in traffic levels.

**FIGURE 9 - SAFER ROADS BERKSHIRE MOTOR VEHICLE TRAFFIC BY YEAR (2011-2020) SOURCE DFT**



During the 3-year period pre-pandemic (2017-2019), 73% of casualties injured in Safer Roads Berkshire were actually from Safer Roads Berkshire (Figure 10). This compares with 85% during 2020. (Figure 11). This would indicate that travel outside of the Safer Roads area was less likely during 2020.

**FIGURE 10 - CASUALTIES IN AND FROM SAFER ROADS BERKSHIRE, BASELINE YEARS (2017-2019)**



**FIGURE 11 - CASUALTIES IN AND FROM SAFER ROADS BERKSHIRE, PANDEMIC (2020)**

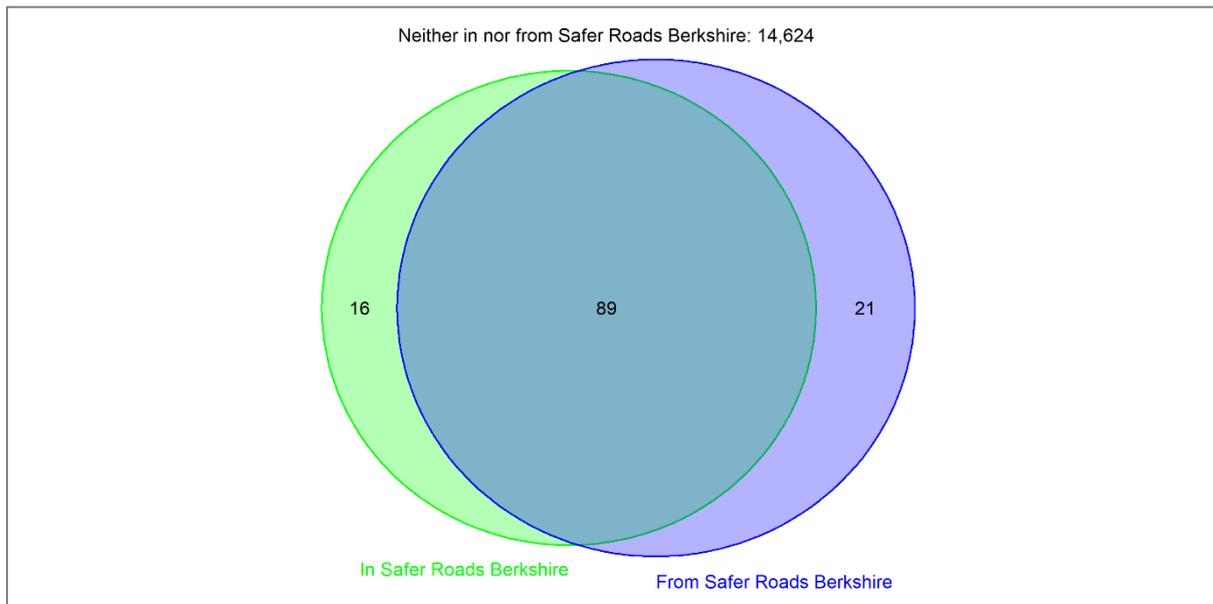
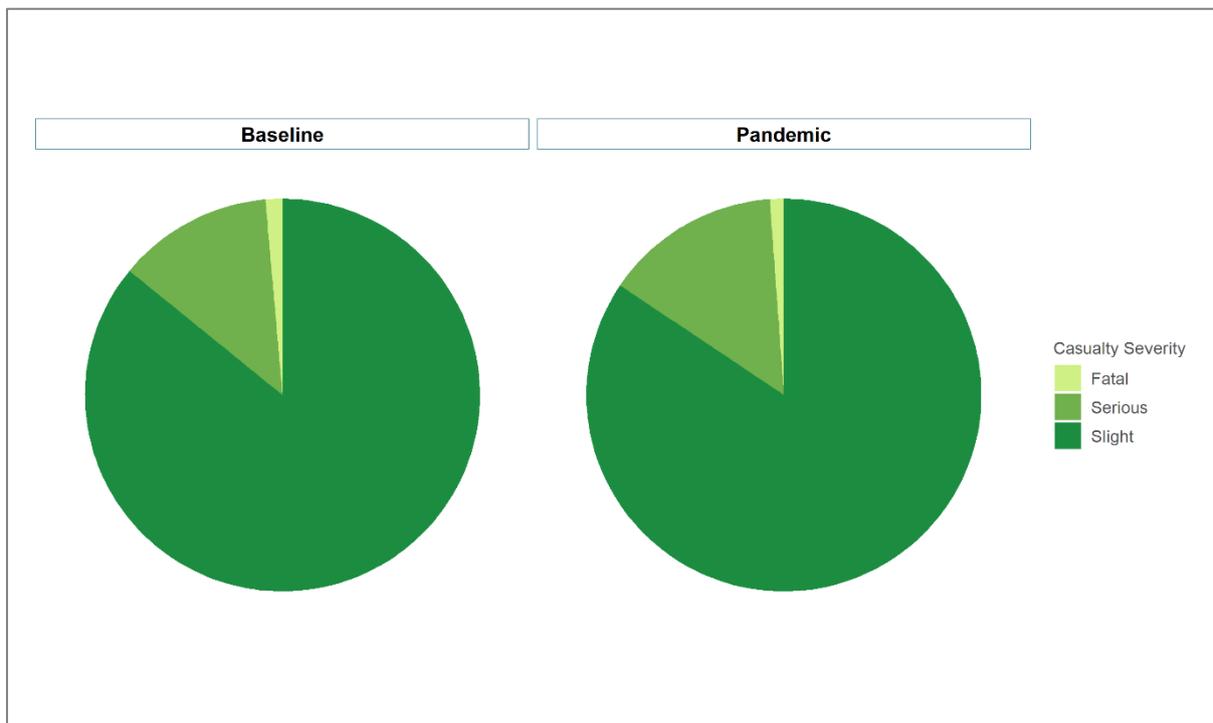


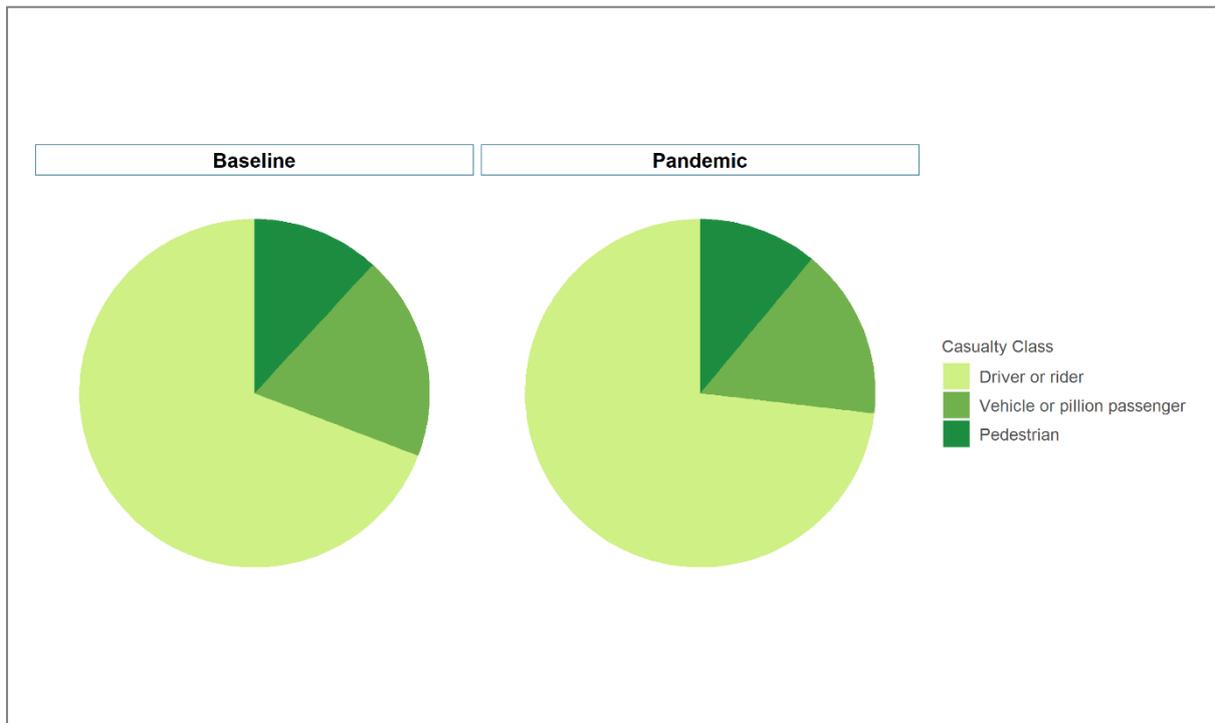
Figure 12 shows that the percentage of casualties who were killed or seriously injured during the pandemic was slightly higher (16%) compared with the pre pandemic period (14%).

**FIGURE 12 - SAFER ROADS BERKSHIRE CASUALTIES BY CASUALTY SEVERITY, BASELINE (2017-2019) AND PANDEMIC (2020)**



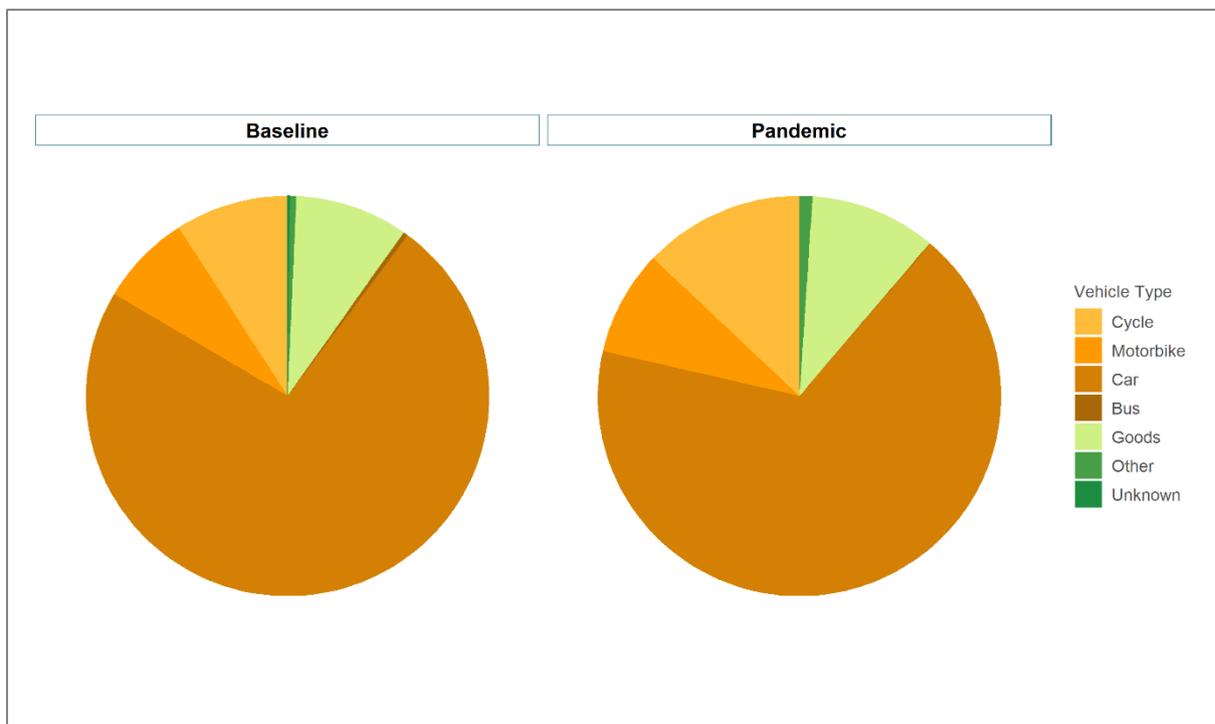
A greater proportion of road casualties were drivers or riders during the pandemic (73%) compared with the pre pandemic period (69%) as illustrated in Figure 13. This is indicative of less car sharing and slightly fewer passengers being present in vehicles during 2020.

**FIGURE 13 - SAFER ROADS BERKSHIRE CASUALTIES BY CASUALTY CLASS, BASELINE (2017-2019) AND PANDEMIC (2020)**



In terms of the types of vehicles involved in collisions in Safer Roads Berkshire, Figure 14 illustrates the shift in modes of transport during 2020, compared with the pre-pandemic period. Figure 14 illustrates that a greater percentage of vehicles involved were pedal cycles (13%) and motorbikes (8%) in 2020 compared with the pre-pandemic baseline period. (9% and 7%).

**FIGURE 14 - SAFER ROADS BERKSHIRE COLLISION-INVOLVED DRIVERS BY VEHICLE TYPE, BASELINE (2017-2019) AND PANDEMIC (2020)**

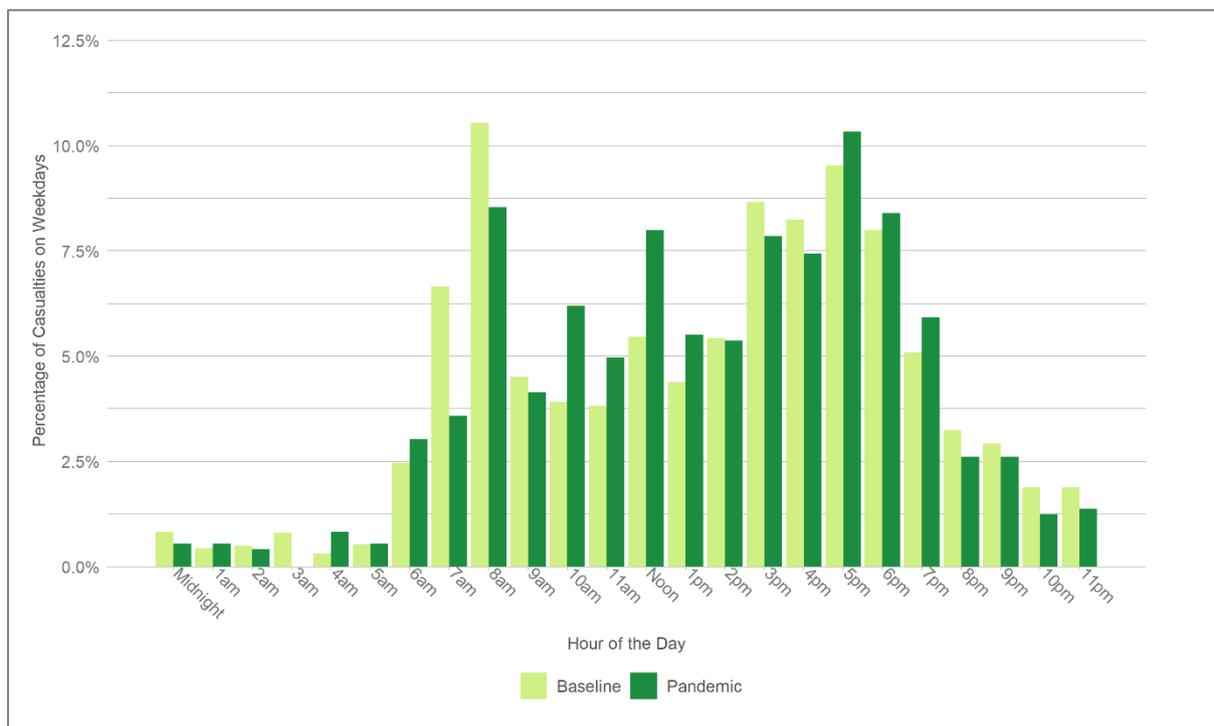


## WHEN?

This section of the analysis looks at when Safer Roads Berkshire Road casualties were injured in 2020 compared with the pre-pandemic period (2017-2019 baseline).

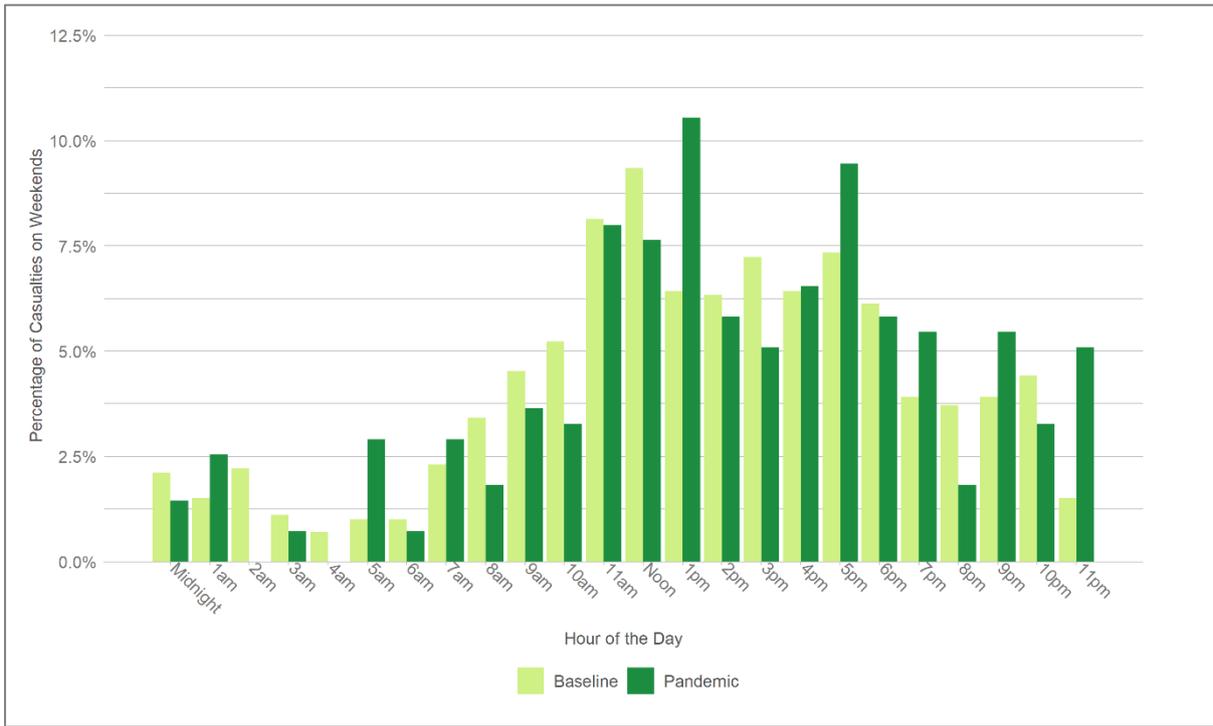
Figure 15 illustrates less pronounced peaks at commuter times and school dropping off/picking up times of weekdays during 2020 compared with the pre pandemic period. However, there are still peaks in casualties at certain times of the day.

**FIGURE 15 - SAFER ROADS BERKSHIRE CASUALTIES BY TIME OF DAY ON WEEKDAYS, BASELINE YEARS (2017-2019) AND PANDEMIC (2020)**



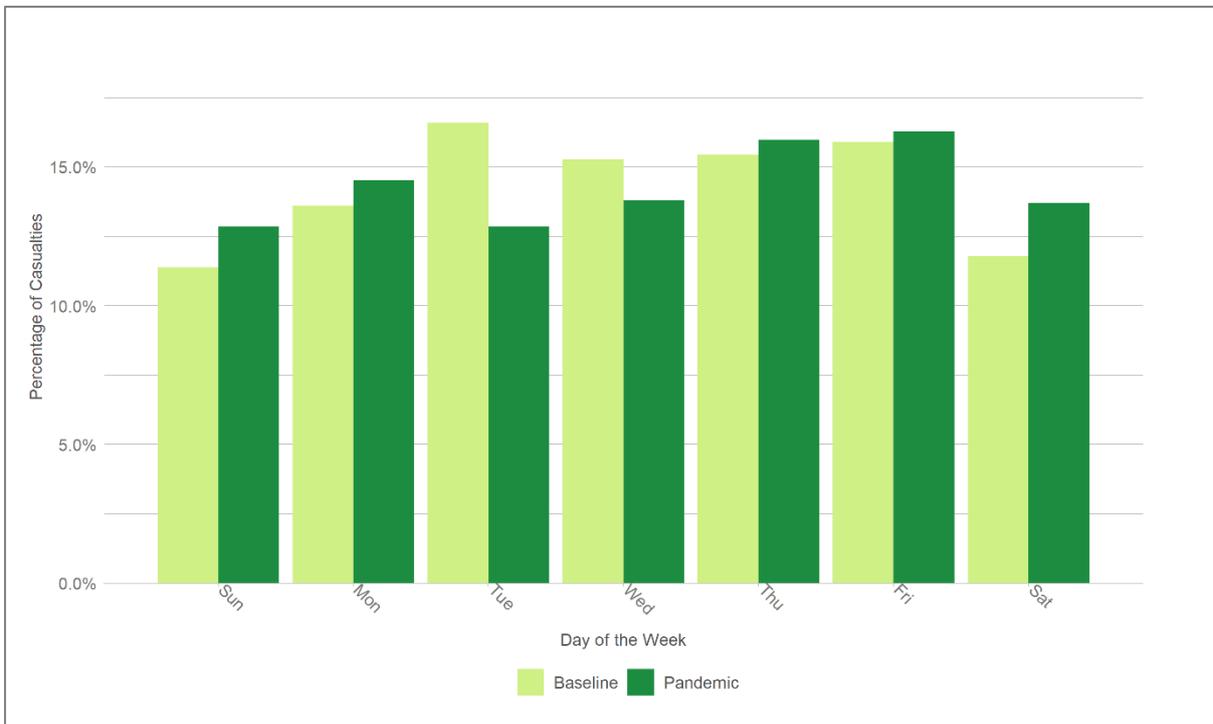
Road casualties at weekends in Safer Roads Berkshire are perhaps more evenly spread over the 24-hour period in 2020 compared with the pre-pandemic period. (Figure 16). It is difficult to say what this may mean, if anything.

**FIGURE 16 - SAFER ROADS BERKSHIRE CASUALTIES BY TIME OF DAY ON WEEKENDS, BASELINE YEARS (2017-2019) AND PANDEMIC (2020)**



When considering days of the week when road casualties took place, a greater proportion occurred at weekends during 2020 compared with pre-pandemic. (Figure 17) This could be a result of reduced commuting on weekdays, but the differences are small.

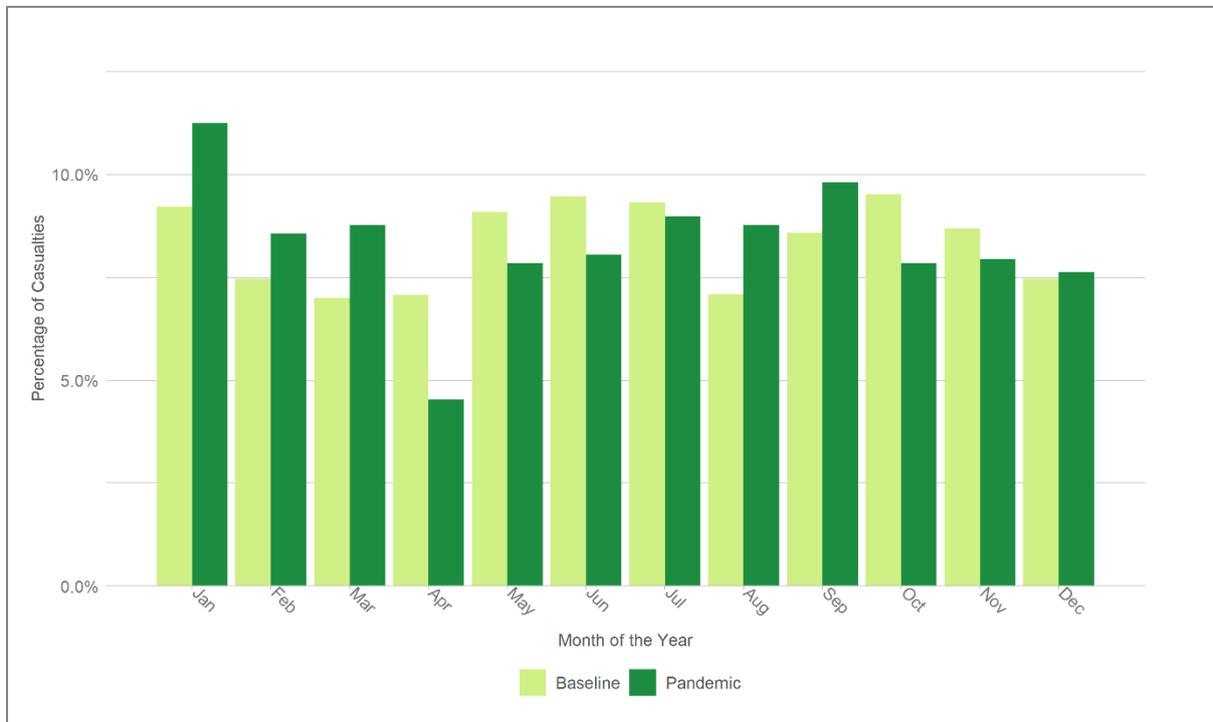
**FIGURE 17 - SAFER ROADS BERKSHIRE CASUALTIES BY DAY OF THE WEEK, BASELINE YEARS (2017-2019) AND PANDEMIC (2020)**



As to be expected, the greatest proportion of road casualties occurred in the months of January, February, and March during 2020, prior to the country going into a full lockdown for the month of

April. (Figure 18). The trend illustrated in Figure 18 for the 2020 reflects the trend in traffic flow charges over the same period.

FIGURE 18 - SAFER ROADS BERKSHIRE CASUALTIES BY MONTH OF THE YEAR, BASELINE YEARS (2017-2019) AND PANDEMIC (2020)

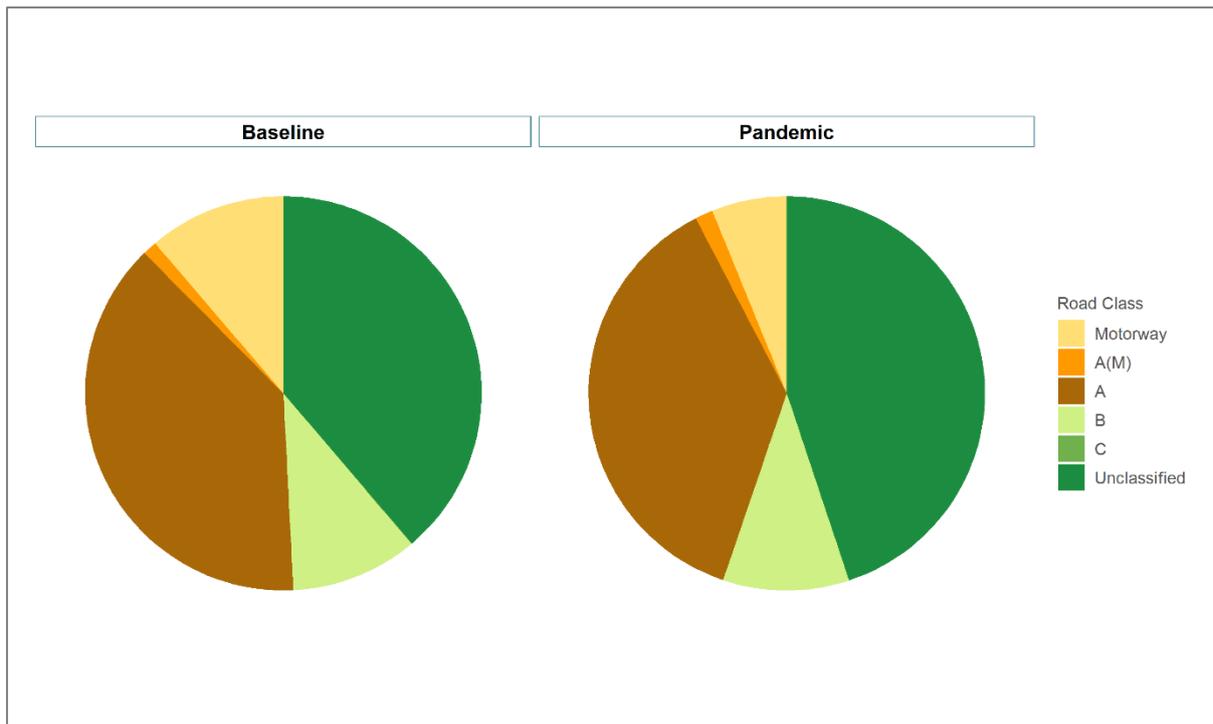


## WHERE?

The next section looks at the road characteristics of where Safer Roads Berkshire road casualties were involved in collisions during 2020, compared to the pre pandemic period.

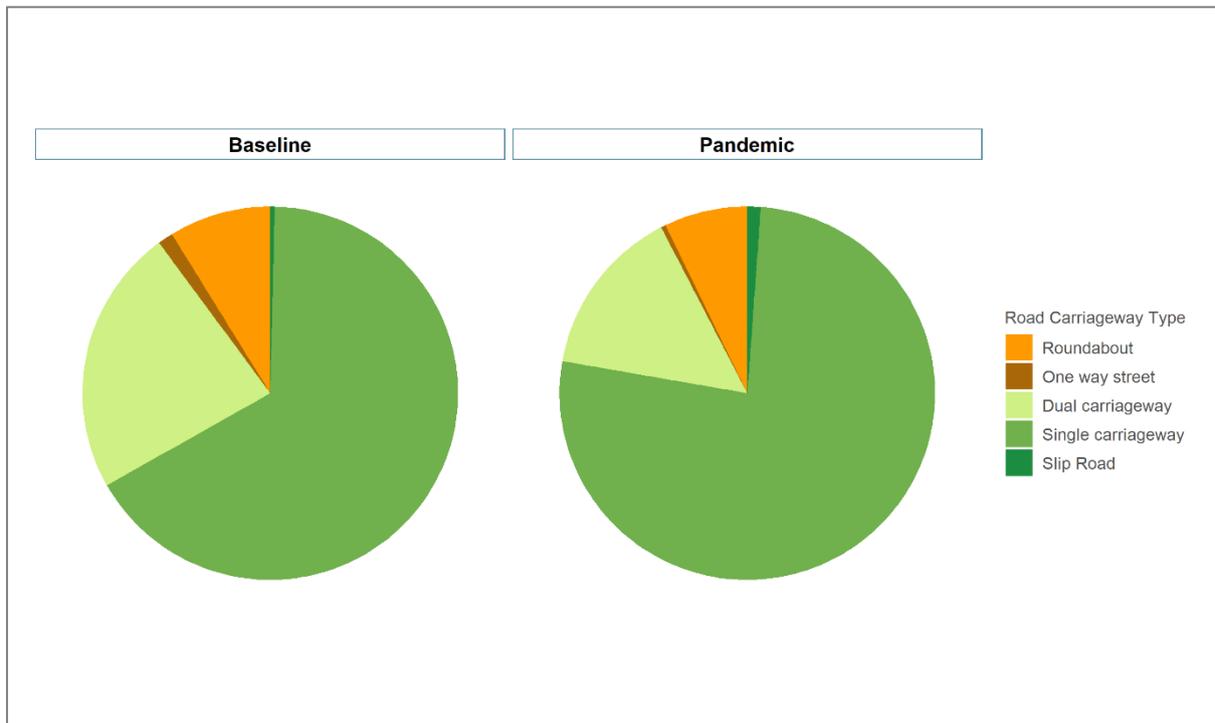
In terms of road class, a greater proportion of casualties were injured on unclassified roads during 2020 (45%) compared with the pre pandemic period (39%) and a lower proportion of casualties were injured on motorways during 2020 (6%) compared with the pre pandemic period (11%).

FIGURE 19 - SAFER ROADS BERKSHIRE CASUALTIES BY ROAD CLASS, BASELINE YEARS (2017-2019) AND PANDEMIC (2020)



The analysis of carriageway type in Figure 20 shows that a greater proportion of casualties were injured on single carriageway roads during 2020 (77%) than in the 3 years pre pandemic (66%).

**FIGURE 20 - SAFER ROADS BERKSHIRE CASUALTIES BY ROAD CARRIAGEWAY TYPE, BASELINE YEARS (2017-2019) AND PANDEMIC (2020)**



Of interest is the fact that a greater proportion of road casualties occurred on roads where the speed limit was lower (20, 30 and 40mph) during 2020 than before the pandemic. Figure 21 illustrates that 69% of casualties occurred on lower speed limit roads pre pandemic and 74% during 2020.

**FIGURE 21 - SAFER ROADS BERKSHIRE CASUALTIES BY ROAD SPEED LIMIT, BASELINE YEARS (2017-2019) AND PANDEMIC (2020)**

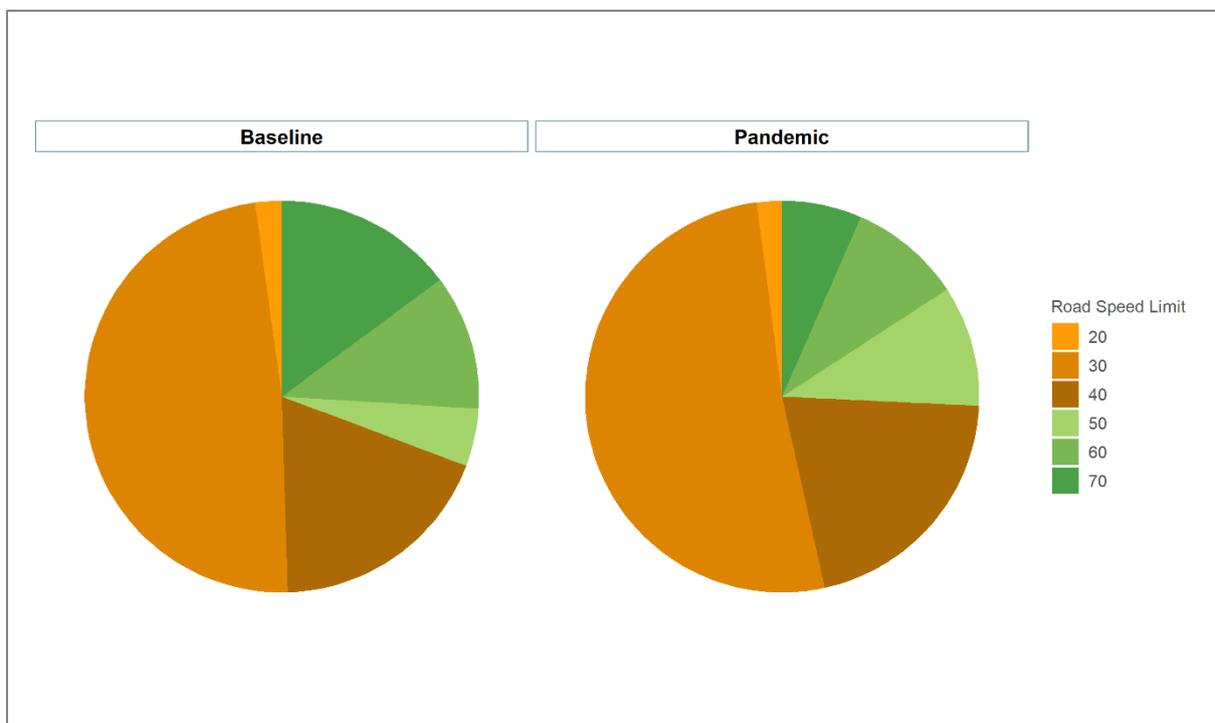
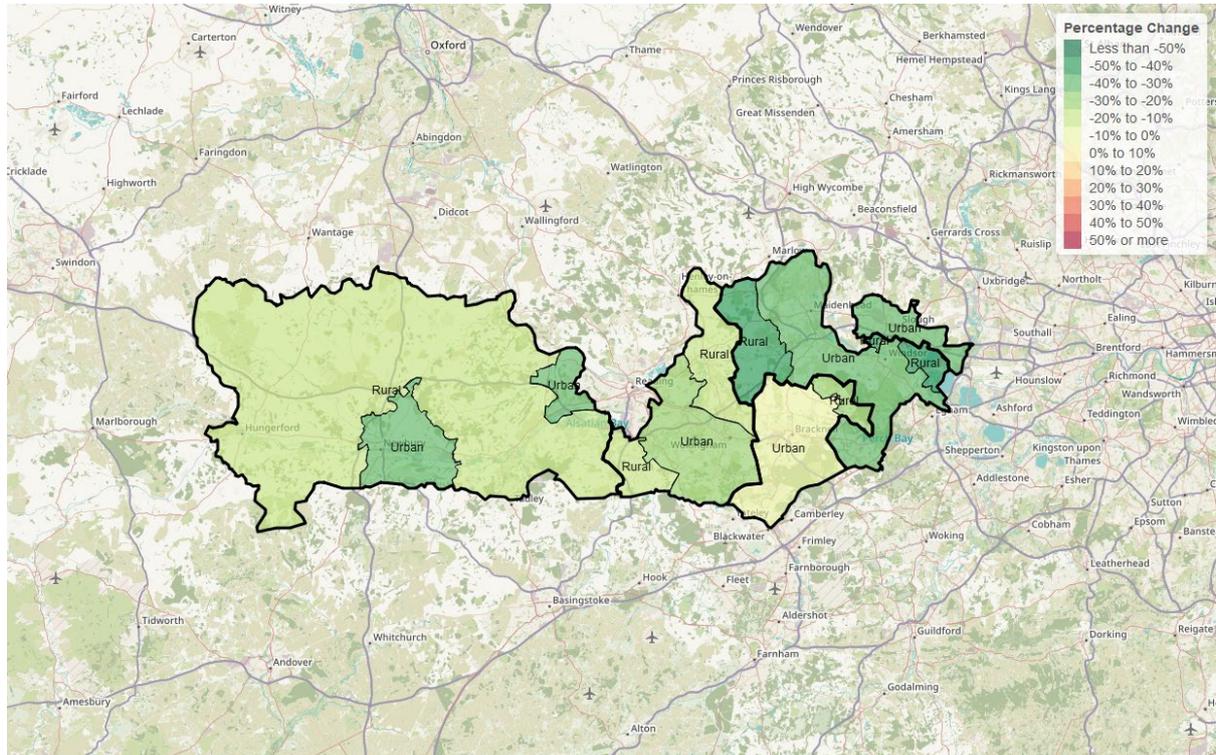


Figure 22 is a map of the Safer Roads area and the percentage change in the number of collisions by rurality in 2020. Agilysis have used the 2011 rural/urban classifications<sup>6</sup> for small area geographies to assign rural and urban classifications to Lower Super Output Areas (LSOA's). This map illustrates that urban areas of Safer Roads Berkshire have seen a greater decrease in the number of collisions during 2020.

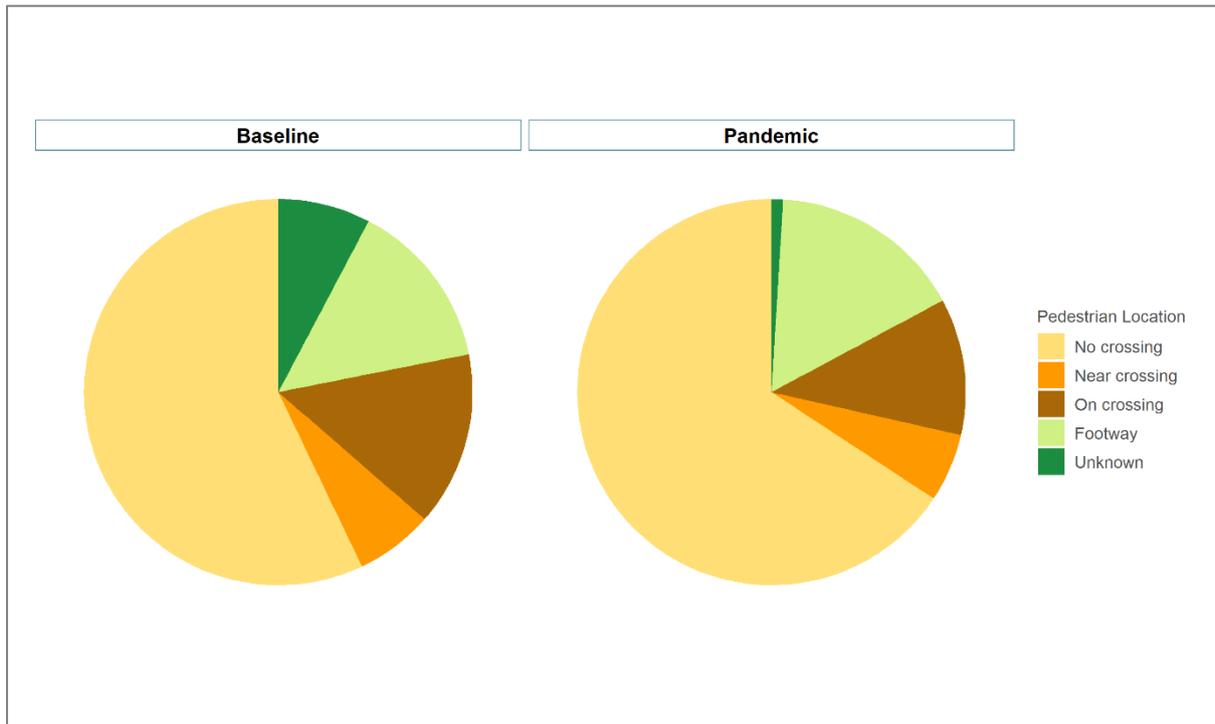
**FIGURE 22 - THE PERCENTAGE CHANGE IN COLLISIONS IN 2020 COMPARED TO A 3-YEAR AVERAGE BASELINE (2017-2019) FOR SAFER ROADS BERKSHIRE, BY RURALITY**



Looking specifically at pedestrian casualties in Safer Roads Berkshire and the location of those pedestrians when the collision took place, a greater proportion were away from a crossing during 2020 (66%) compared with pre pandemic (57%). However, there were also significantly less 'unknown' locations in 2020. (1 compared with 38) which indicates better data quality.

<sup>6</sup> <https://www.ons.gov.uk/methodology/geography/geographicalproducts/ruralurbanclassifications/2011ruralurbanclassification>

FIGURE 23 - SAFER ROADS BERKSHIRE PEDESTRIAN CASUALTIES BY PEDESTRIAN LOCATION, BASELINE YEARS (2017-2019) AND PANDEMIC (2020)

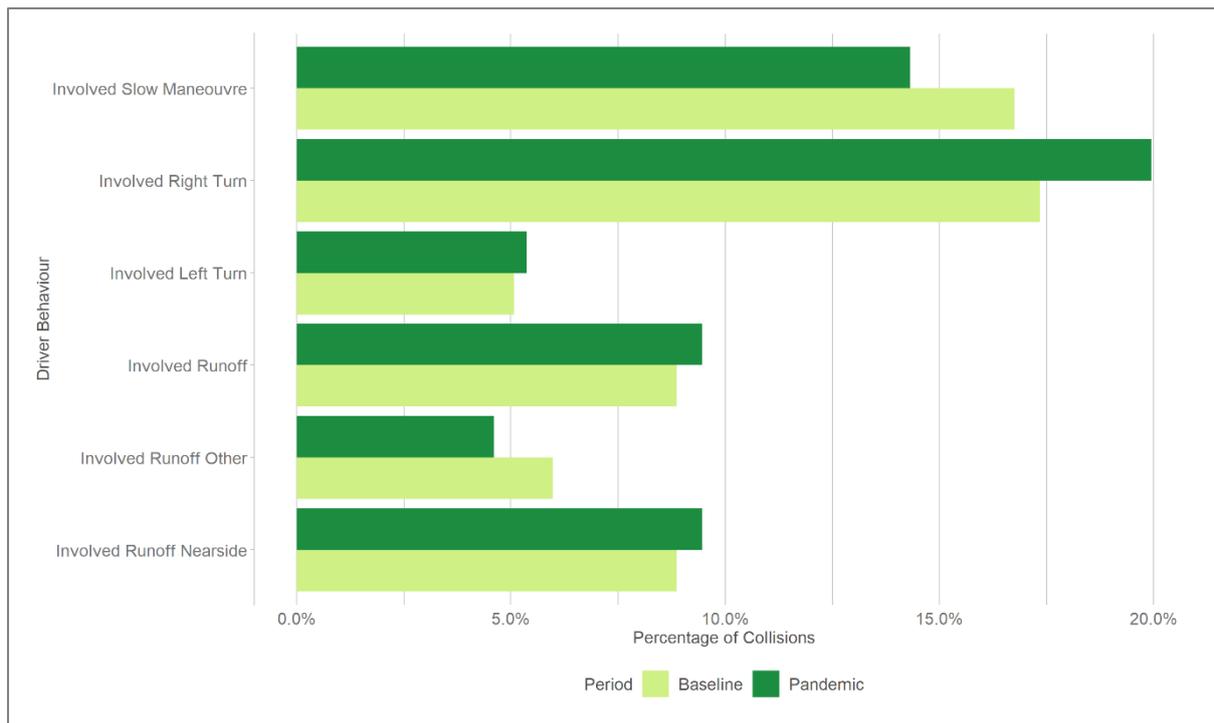


## HOW?

This section of analysis explores how the collisions involving Safer Roads casualties occurred during 2020, compared with the pre pandemic baseline period (2017-2019).

Figure 24 shows collisions in Safer Roads Berkshire by the presence of different driver actions. This is derived using a combination of two data collection fields: 'Vehicle Manoeuvres' and 'Vehicle leaving carriageway'. 'Involved right turn' (which means that the vehicle was turning right or waiting to do so) was the most prevalent driver action both before and more so during 2020.

**FIGURE 24 - PERCENTAGE OF SAFER ROADS BERKSHIRE COLLISIONS INVOLVING DRIVER ACTIONS DRIVER ACTION, BASELINE YEARS (2017-2019) AND PANDEMIC (2020)**



This section examines the trends in reported collisions on Safer Roads Berkshire's roads involving related contributory factors (CF's). More information about contributory factors can be found on page 34.

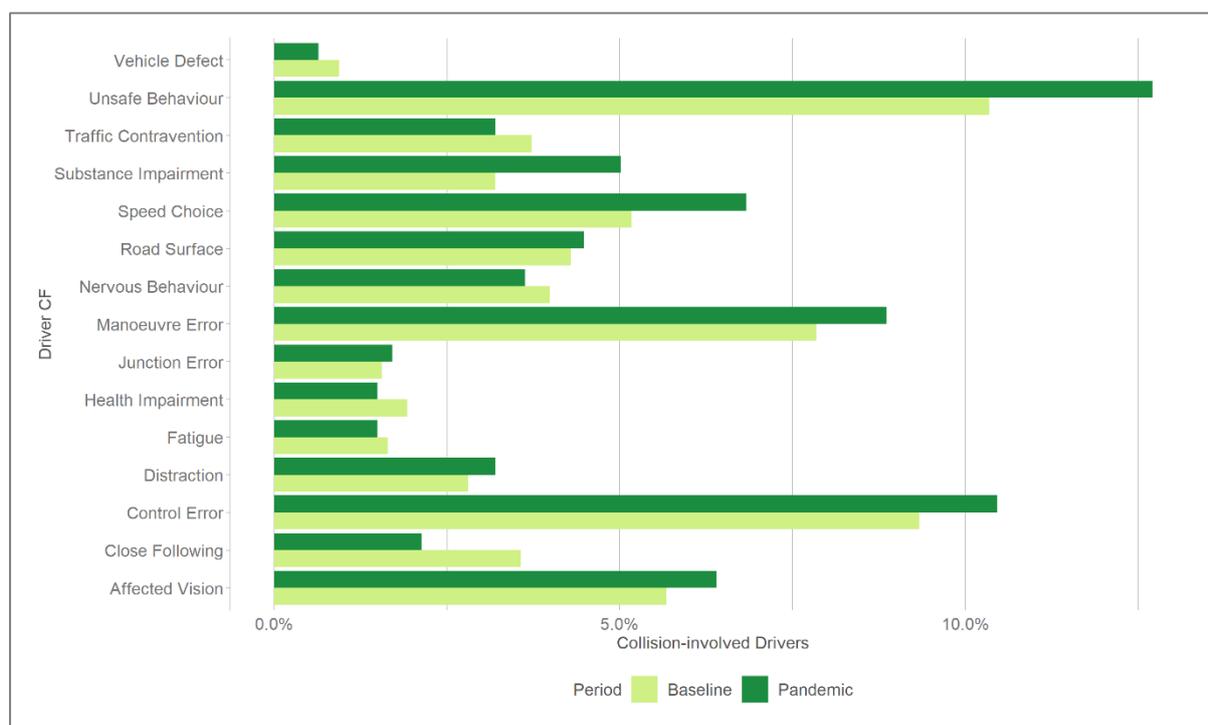
Table 2 shows the percentage of collisions attributed a CF for each of the Safer Roads authorities and provides a comparison before and during 2020. The percentage of collisions attributed a CF was lower during 2020 in all authorities, apart from Bracknell Forest. This trend is consistent with that seen nationally.

**TABLE 2 - PERCENTAGE OF ALL COLLISIONS WITH POLICE ATTENDANCE AND ATTRIBUTED A CF**

|                        | Percentage Attributed CF |          |
|------------------------|--------------------------|----------|
|                        | Baseline                 | Pandemic |
| Bracknell Forest       | 74.9%                    | 74.4%    |
| West Berkshire         | 80.6%                    | 74.7%    |
| Slough                 | 69.2%                    | 51.5%    |
| Windsor and Maidenhead | 73.7%                    | 62.9%    |
| Wokingham              | 76.8%                    | 72.3%    |
| GB                     | 69.4%                    | 65.8%    |

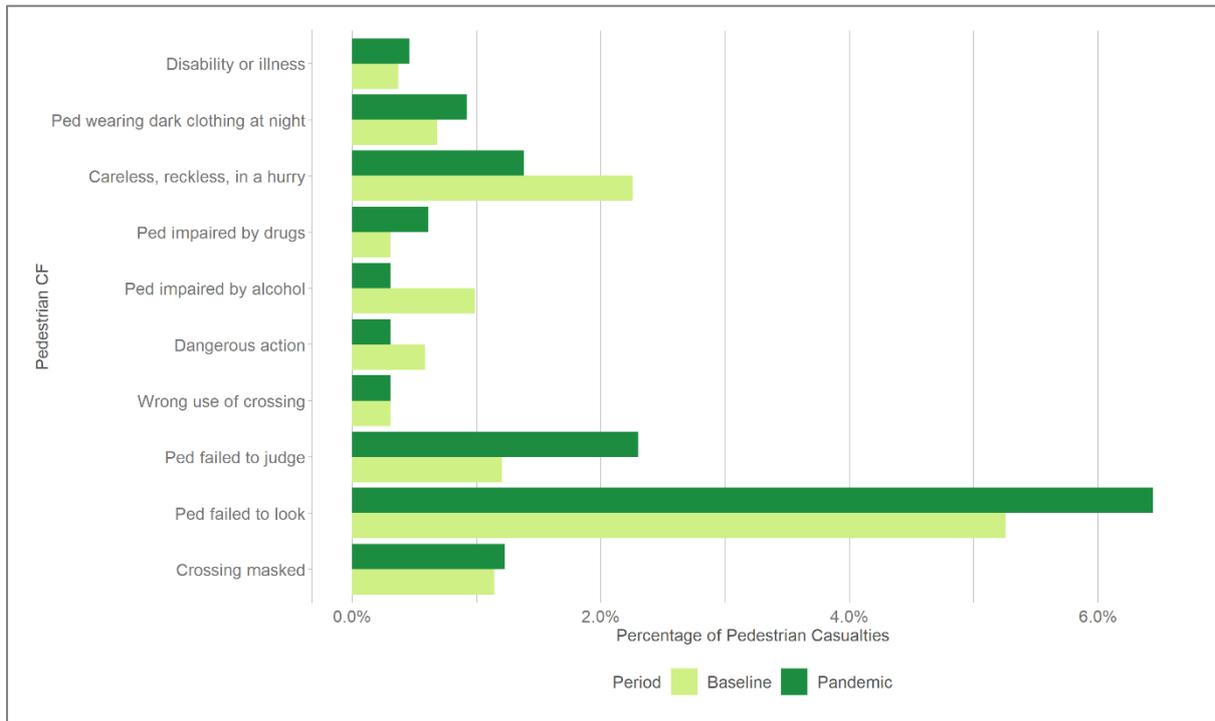
For the purposes of this report, we have grouped driver contributory factors, and more information about this grouping can be found on page 34. Figure 25 shows that the greatest percentages of drivers involved in officer attended collisions were attributed either an ‘unsafe behaviour’ or a ‘control error’ CF but this was more frequently recorded during 2020 than the three years previous.

**FIGURE 25 - PERCENTAGE OF DRIVERS INVOLVED IN OFFICER ATTENDED COLLISIONS IN SAFER ROADS BERKSHIRE ATTRIBUTED CFS, BASELINE YEARS (2017-2019) AND PANDEMIC (2020)**



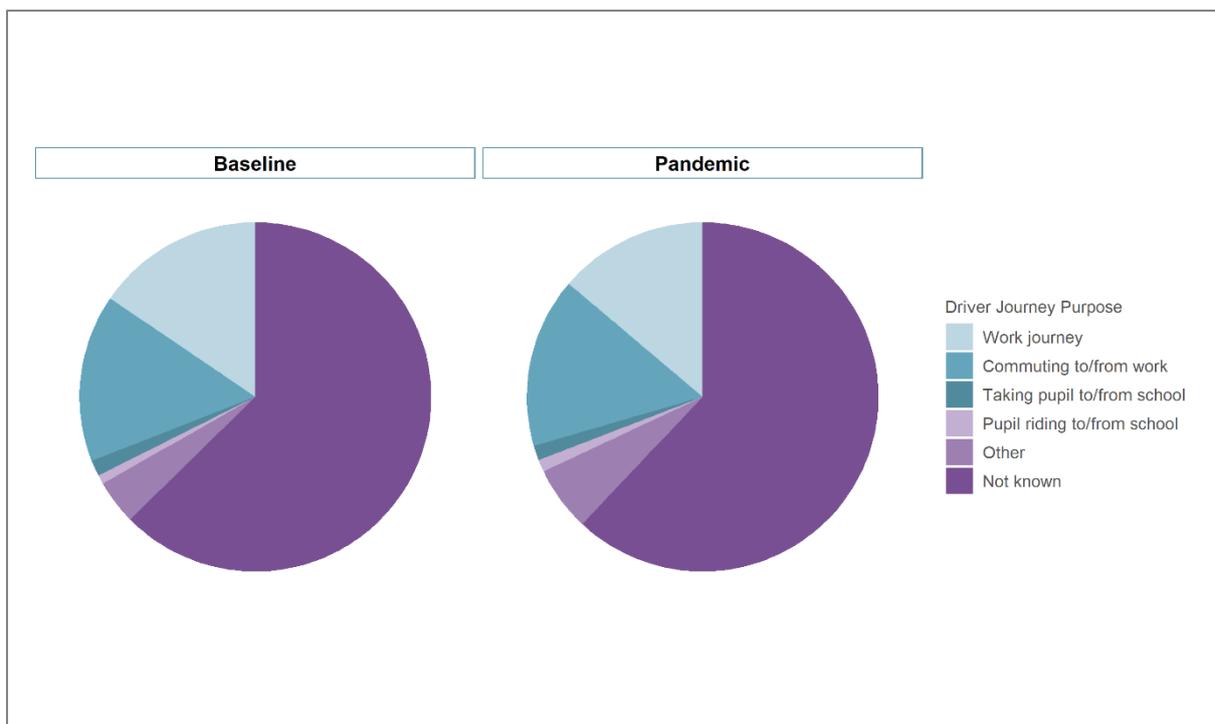
As well as the contributory factors attributed to the drivers involved in a collision, it is possible to report on the contributory factors attributed to a pedestrian casualty. (Figure 26) By far the most frequently recorded CF is ‘Pedestrian failed to look’. This CF was more frequently recorded during 2020 than in the three years previous.

**FIGURE 26 - PERCENTAGE OF PEDESTRIAN CASUALTIES INJURED IN OFFICER ATTENDED SAFER ROADS BERKSHIRE COLLISIONS ATTRIBUTED CFS, BASELINE YEARS (2017-2019) AND PANDEMIC (2020)**



Interestingly, when analysing the journey purpose recorded (Figure 27) against the driver involved in reported injury collisions in Safer Roads Berkshire, the percentages are very similar pre and during 2020. This means that no one journey purpose seems to have been impacted on during the pandemic. This trend is consistent with that seen nationally.

**FIGURE 27 - SAFER ROADS BERKSHIRE RESIDENT CASUALTIES BY JOURNEY PURPOSE, BASELINE YEARS (2017-2019) AND PANDEMIC (2020)**



## AIR QUALITY

Concerns about air quality and its impacts on public health have become a major concern of the public, professionals, and politicians. The Department for Environment Food and Rural Affairs (Defra) published a report in September 2021<sup>7</sup>, in which they investigated the effects of Covid-19 restrictions in air quality. The decrease in traffic flows during 2020 had the effect of reducing urban ambient NO<sub>2</sub> concentrations which improved compliance with the limits set for the pollutant compared to 2019. Interestingly, data for 2020 suggests that levels of ozone, which is removed from the air by reaction with nitric oxide from vehicle emissions, may have become higher in urban areas. Other pollutants were affected but were compliant with the limit values (PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub>, CO, benzene and lead) and target values for ozone, arsenic and cadmium were met.

## AIR QUALITY IN BERKSHIRE

Modelled background pollution data from 2017 to 2020, published by Defra<sup>8</sup> at a 1km resolution, was analysed to determine the trends in air quality leading up to and including the pandemic, as well as to determine what changes were observed across Berkshire.

Nitrogen dioxide (NO<sub>2</sub>), and more generally nitrogen oxides (NO<sub>x</sub>), are gasses released into the atmosphere when fossil fuels are burned. Evidence shows that high levels of nitrogen oxides can have negative health implications, leading to inflamed airways in the lungs, particularly in those with asthma.

Figure 28 shows the trend in modelled background NO<sub>2</sub> levels in Berkshire between 2017 and 2020. These show a marked reduction in NO<sub>2</sub> levels across Berkshire, most likely the result of reduced traffic on the road network. The greatest relative reduction from the 2017-2019 baseline was seen in West Berkshire, with a percentage reduction of 32%. Slough, which has the highest levels of background NO<sub>2</sub>, saw a reduction of 31%. The lowest percentage change was by 21% in Bracknell Forest.

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<sup>7</sup> [https://uk-air.defra.gov.uk/library/annualreport/viewonline?year=2020\\_issue\\_1#report\\_pdf](https://uk-air.defra.gov.uk/library/annualreport/viewonline?year=2020_issue_1#report_pdf)

<sup>8</sup> <https://uk-air.defra.gov.uk/data/pcm-data>

**FIGURE 28 – DEFRA MODELLED NO<sub>2</sub> LEVELS IN SAFER ROADS BERKSHIRE (2017-2020)**

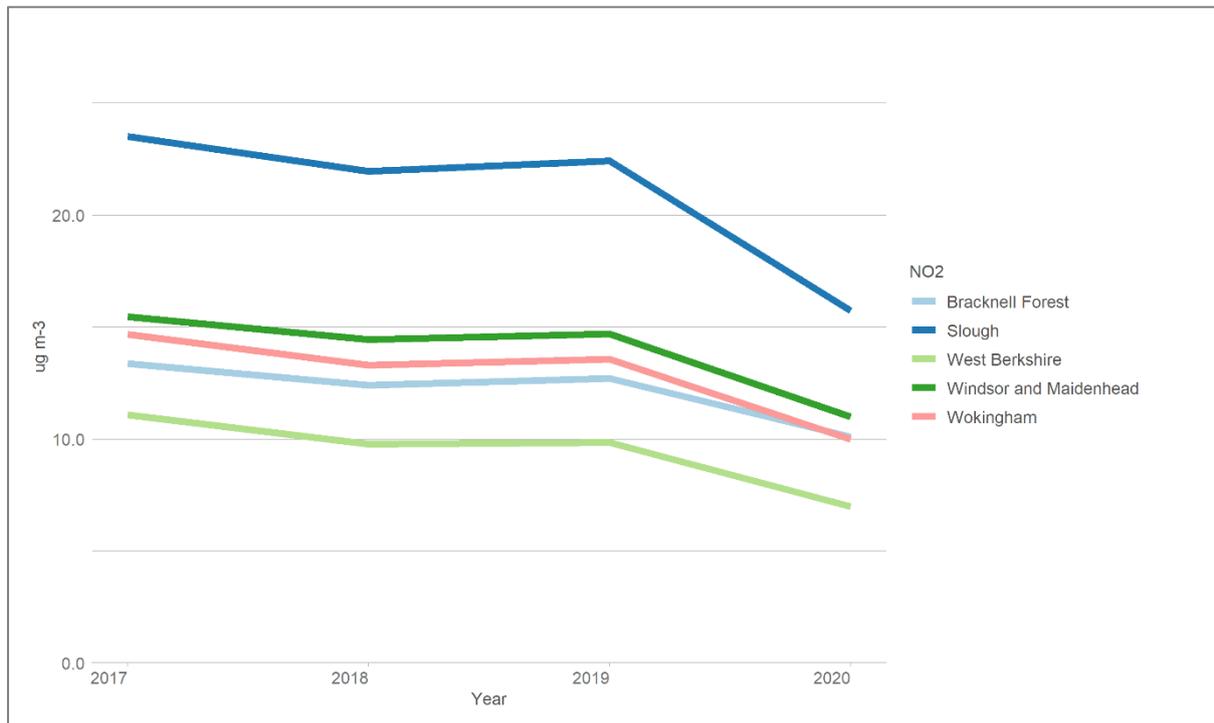
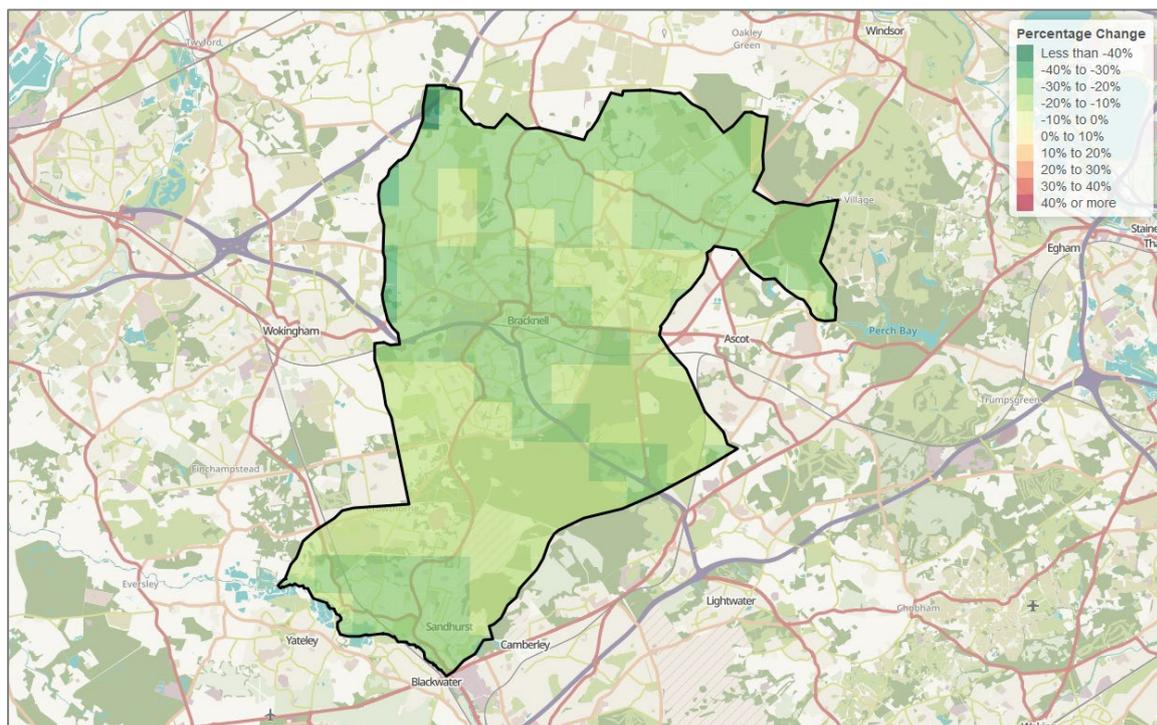
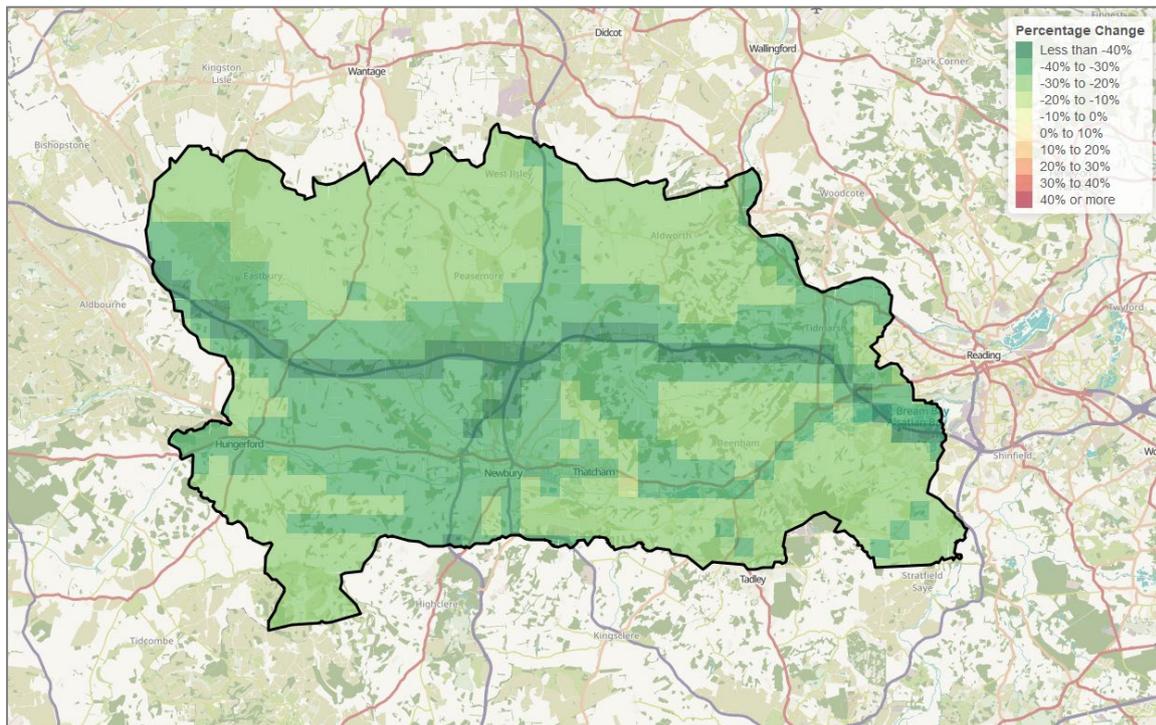


Figure 29, Figure 30, Figure 31, Figure 32 and Figure 33 show maps coloured by the percentage change in background NO<sub>2</sub> in Bracknell Forest, West Berkshire, Slough, Windsor & Maidenhead, and Wokingham respectively. These show that, across the five authorities, background levels of NO<sub>2</sub> fell by up to 40%. This is particularly the case around major roads, where reduced traffic will have led to significant reductions in the burning of fossil fuels.

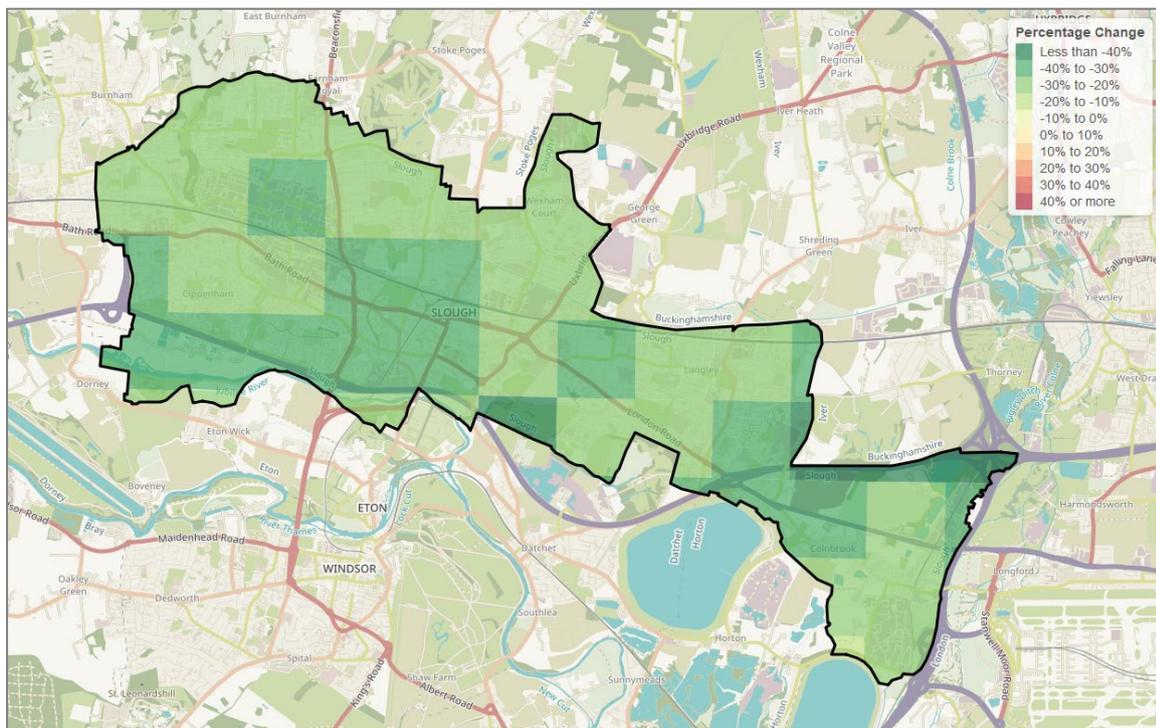
**FIGURE 29 – PERCENTAGE CHANGE IN DEFRA MODELLED NO<sub>2</sub> LEVELS, BASELINE (2017-2019) TO PANDEMIC (2020), BRACKNELL FOREST**



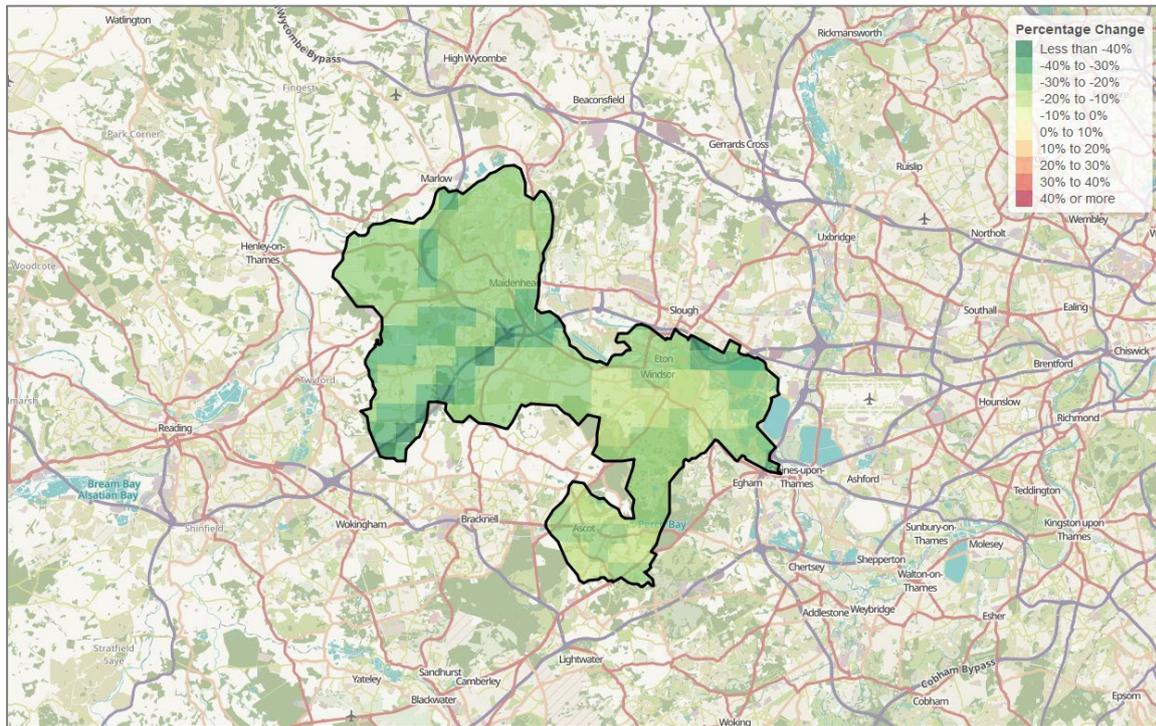
**FIGURE 30 – PERCENTAGE CHANGE IN DEFRA MODELLED NO<sub>2</sub> LEVELS, BASELINE (2017-2019) TO PANDEMIC (2020), WEST BERKSHIRE**



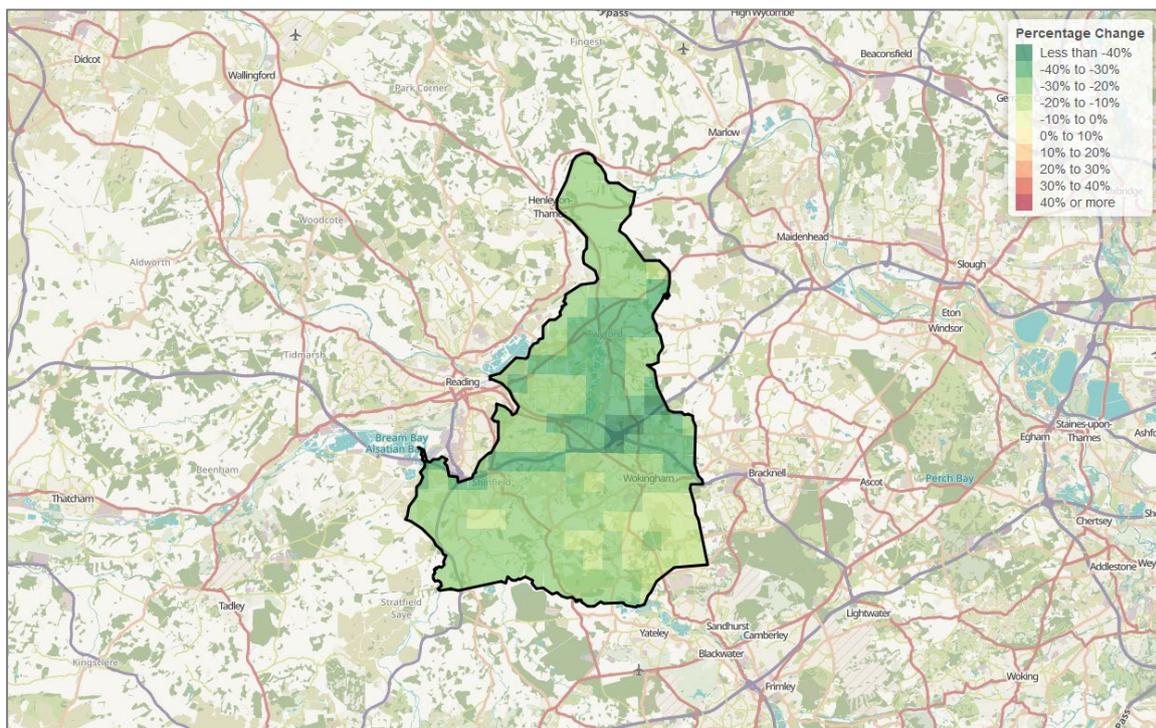
**FIGURE 31 – PERCENTAGE CHANGE IN DEFRA MODELLED NO<sub>2</sub> LEVELS, BASELINE (2017-2019) TO PANDEMIC (2020), SLOUGH**



**FIGURE 32 – PERCENTAGE CHANGE IN DEFRA MODELLED NO<sub>2</sub> LEVELS, BASELINE (2017-2019) TO PANDEMIC (2020), WINDSOR AND MAIDENHEAD**

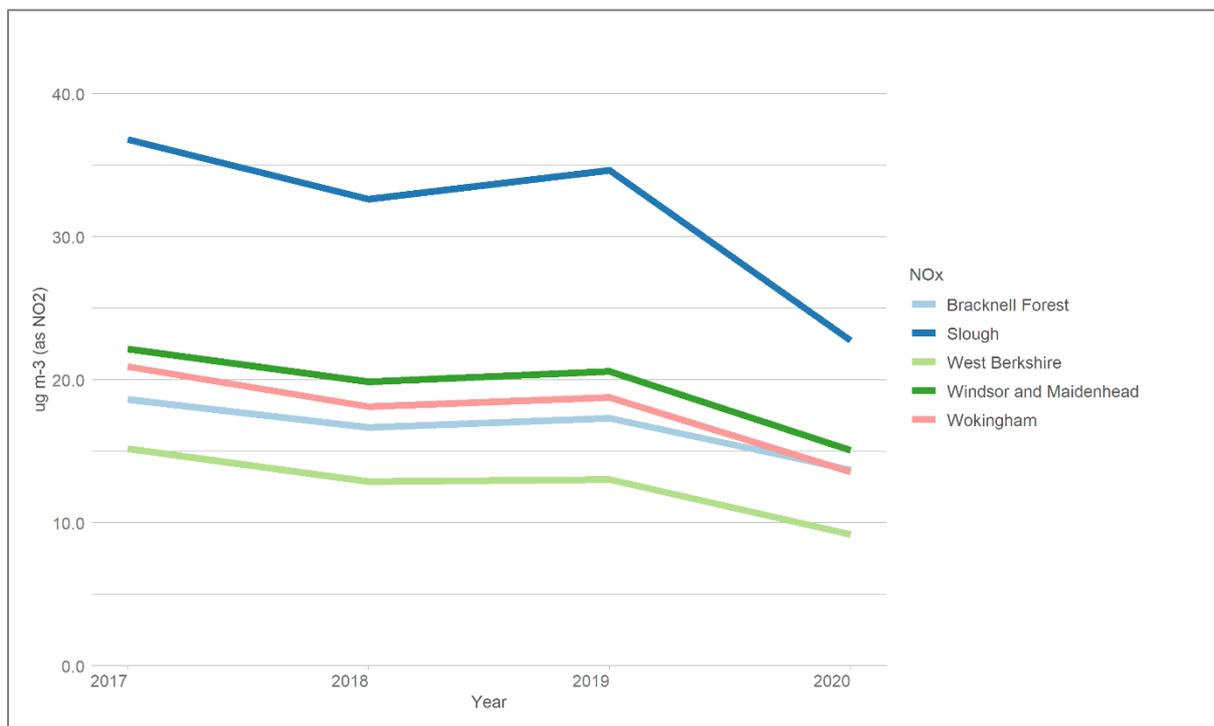


**FIGURE 33 – PERCENTAGE CHANGE IN DEFRA MODELLED NO<sub>2</sub> LEVELS, BASELINE (2017-2019) TO PANDEMIC (2020), WOKINGHAM**



As with nitrogen dioxide, NO<sub>x</sub> levels fell across Berkshire, as seen in Figure 34. The greatest reduction from the 2017-2019 baseline was seen in Slough, which has the highest levels of background NO<sub>x</sub>, with a reduction of 34%. This is followed by West Berkshire, with a reduction of 33%. The smallest reduction was observed in Bracknell Forest, by 22%.

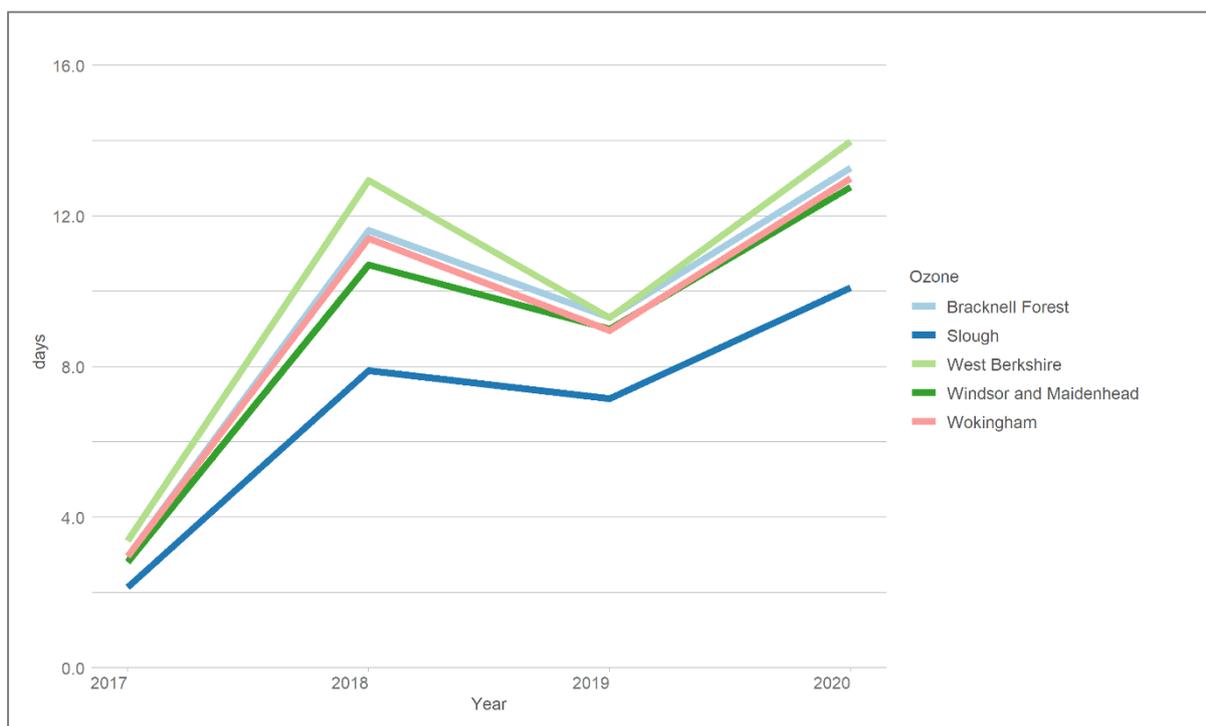
FIGURE 34 – DEFRA MODELLED NO<sub>x</sub> LEVELS IN SAFER ROADS BERKSHIRE (2017-2020)



Ozone is a gas that can have negative effects on health. It is formed at ground level by sunlight-driven reactions between NO<sub>x</sub> and volatile organic compounds (VOCs). These reactions take place slowly, over the space of hours or days. As a result, ozone disperses over large distances, and measured ozone levels often mask the source of the pollutant. Like nitrogen oxides, these VOCs are released through the burning of fossil fuels.

However, ozone does react with NO to remove it from the air and produce secondary NO<sub>2</sub>. As such, background ozone levels tend to be lower in more urban areas. Reductions in NO<sub>x</sub> can often lead to increases in ozone, as there is less NO to react with the ozone to remove it from the air. This is shown in Figure 35, as the average number of days in which ozone has exceeded the threshold of 120µgm<sup>-3</sup> has risen across Berkshire compared to the 2017-2019 baseline. It should be noted that the hot and sunny weather of 2020 could also have contributed to the increases in ozone.

FIGURE 35 – DEFRA MODELLED OZONE LEVELS IN SAFER ROADS BERKSHIRE (2017-2020)

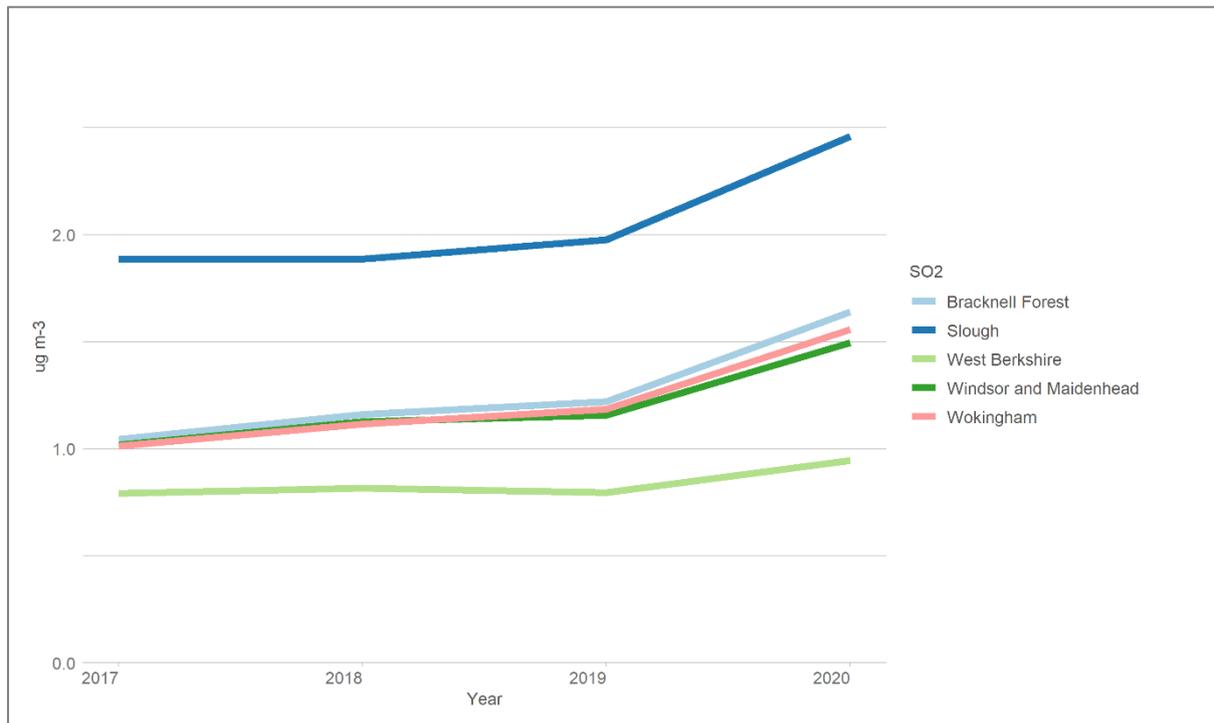


Sulphur dioxide is a corrosive gas produced in the burning of fossil fuels such as coal and crude oil. As with many pollutants, it is associated with inflammation of the airways. It may also combine with nitrogen oxides and ammonia to form particulate matter.

Background levels of SO<sub>2</sub> have fallen dramatically since the 1990s, mainly due to the closure of coal-fired power plants and restrictions of fuel sulphur content. According to government published data<sup>9</sup>, most SO<sub>2</sub> emissions in 2020 were from domestic consumption (32%). However, as seen in Figure 36, there was a slight increase in SO<sub>2</sub> across Berkshire in 2020. Although not enough evidence has been published to conclude why this increase was observed, experts believe that the reductions in other pollutants such as NO<sub>x</sub> may have imbalanced the complex air chemistry and changed pollutant concentrations.

<sup>9</sup> <https://www.gov.uk/government/statistics/emissions-of-air-pollutants/emissions-of-air-pollutants-in-the-uk-sulphur-dioxide-so2>

FIGURE 36 – DEFRA MODELLED SO<sub>2</sub> LEVELS IN SAFER ROADS BERKSHIRE (2017-2020)



Particulate Matter (PM) is the term used to refer to any atmospheric matter that is either solid particles or liquid droplets. This covers a broad range of chemical compounds, some of which are toxic, that can enter the bloodstream due to their small size and have serious health implications. Particulate Matter is classified based on the size of particles, with most focus on those less than 10µm (PM<sub>10</sub>) and those less than 2.5µm (PM<sub>2.5</sub>).

According to a report published by Defra<sup>10</sup>, around half of the UK concentrations of PM come from man-made sources. Around 12% of PM<sub>10</sub> and 13% PM<sub>2.5</sub> emissions arises from road transport emissions<sup>11</sup>, with an estimated 10% coming from non-exhaust traffic, such as brake and tyre wear.

Figure 37 shows the trends in PM<sub>2.5</sub> concentrations across Berkshire from 2017 and 2020. From the baseline period (2017-2019), the greatest reduction was seen in Slough, with a reduction of 24%. However, all five authorities saw reductions in PM<sub>2.5</sub> concentrations, most likely attributable to reductions in motor vehicle traffic.

<sup>10</sup> [https://uk-air.defra.gov.uk/assets/documents/reports/cat11/1508060903\\_DEF-PB14161\\_Mitigation\\_of\\_UK\\_PM25.pdf](https://uk-air.defra.gov.uk/assets/documents/reports/cat11/1508060903_DEF-PB14161_Mitigation_of_UK_PM25.pdf)

<sup>11</sup> <https://www.gov.uk/government/statistics/emissions-of-air-pollutants/emissions-of-air-pollutants-in-the-uk-particulate-matter-pm10-and-pm25>

FIGURE 37 – DEFRA MODELLED PM<sub>2.5</sub> LEVELS IN SAFER ROADS BERKSHIRE (2017-2020)

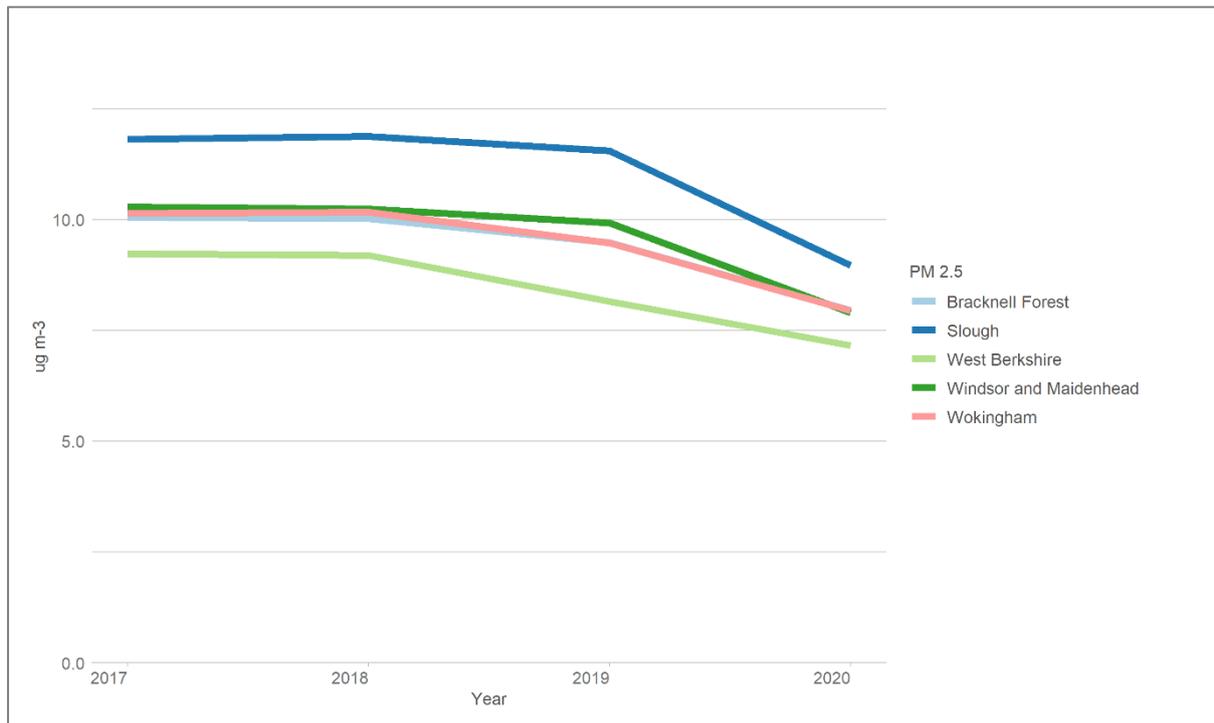
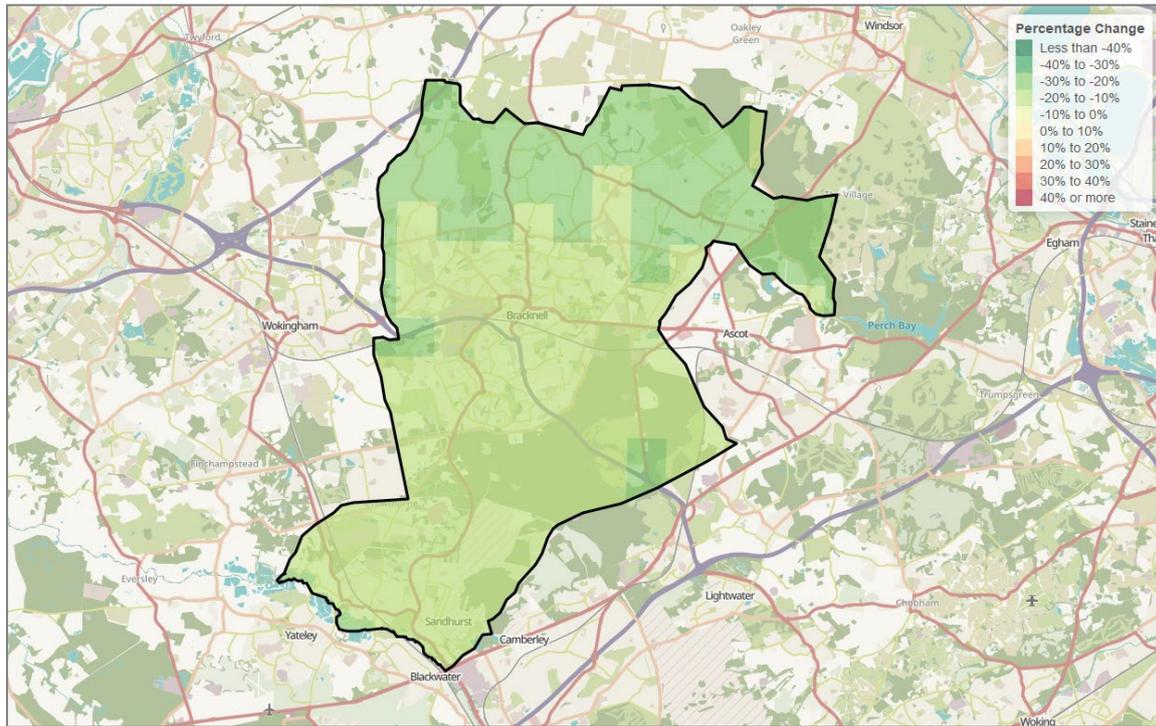
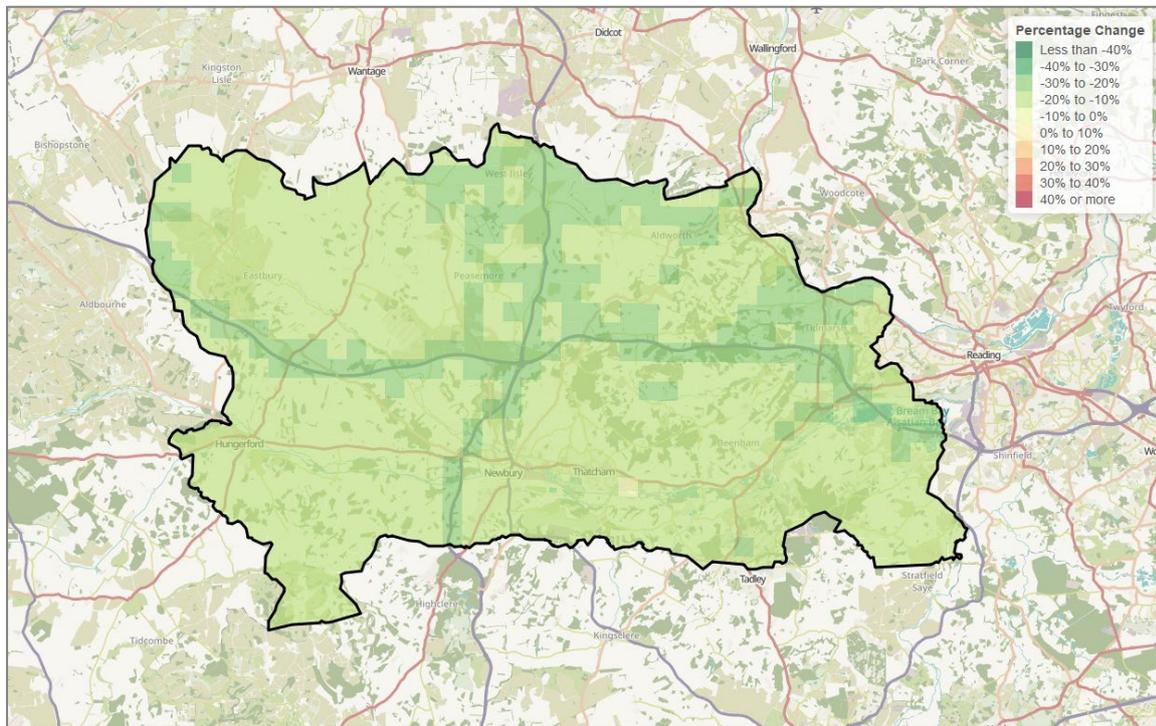


Figure 38, Figure 39, Figure 40, Figure 41 and Figure 42 show maps coloured by the percentage change in background PM<sub>2.5</sub> in Bracknell Forest, West Berkshire, Slough, Windsor & Maidenhead, and Wokingham respectively. The reductions in Slough are evenly distributed across the local authority area, which is similar to in Windsor & Maidenhead. Bracknell Forest has seen greater reductions in PM<sub>2.5</sub> towards the north of the area. The reductions in West Berkshire and Wokingham were greatest around major roads, such as the M4, the A34, and the A329.

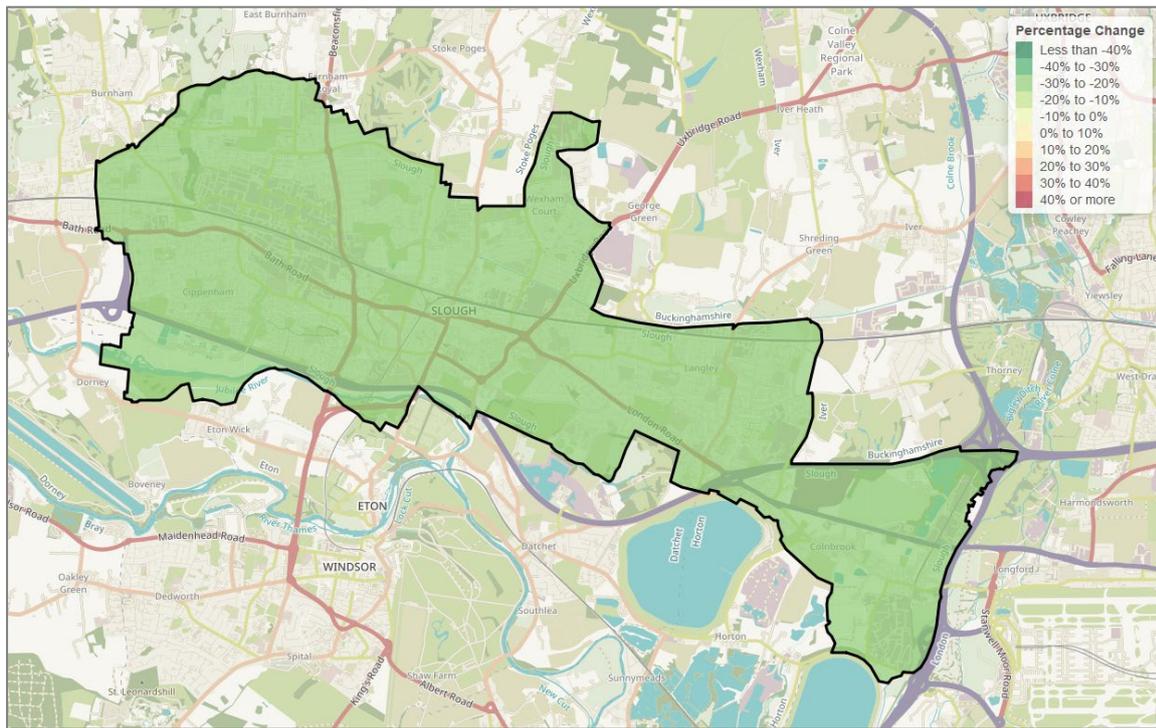
**FIGURE 38 – PERCENTAGE CHANGE IN DEFRA MODELLED PM<sub>2.5</sub> LEVELS, BASELINE (2017-2019) TO PANDEMIC (2020), BRACKNELL FOREST**



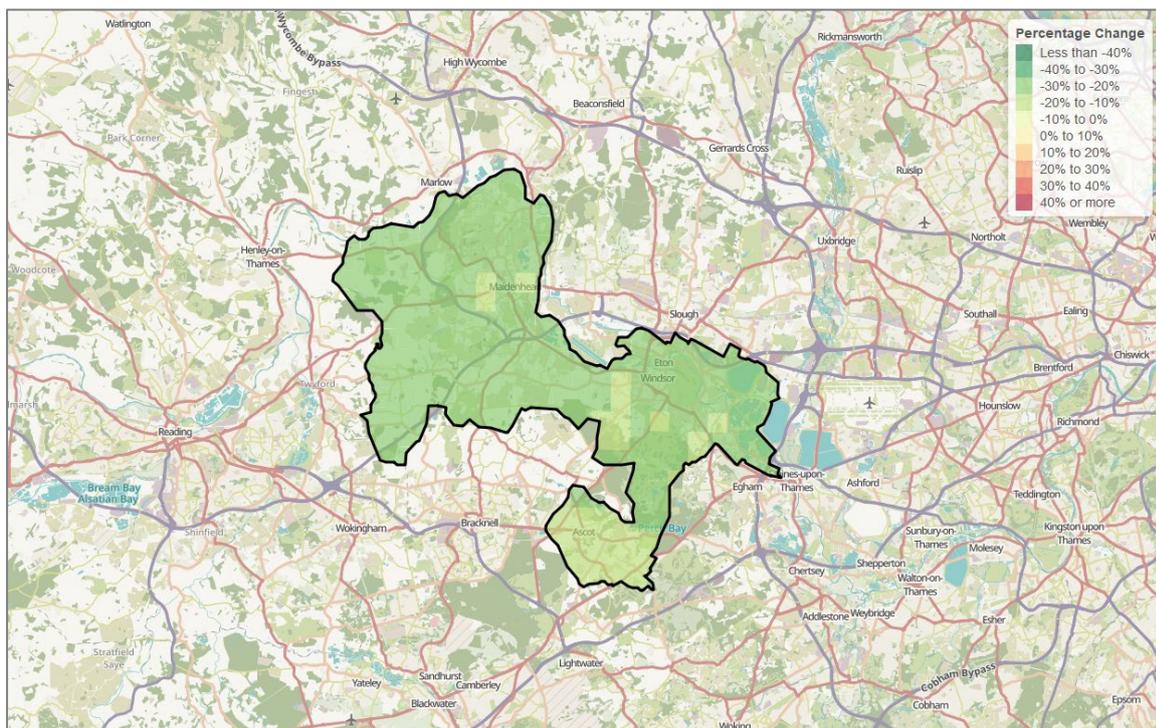
**FIGURE 39 – PERCENTAGE CHANGE IN DEFRA MODELLED PM<sub>2.5</sub> LEVELS, BASELINE (2017-2019) TO PANDEMIC (2020), WEST BERKSHIRE**



**FIGURE 40 – PERCENTAGE CHANGE IN DEFRA MODELLED PM<sub>2.5</sub> LEVELS, BASELINE (2017-2019) TO PANDEMIC (2020), SLOUGH**



**FIGURE 41 – PERCENTAGE CHANGE IN DEFRA MODELLED PM<sub>2.5</sub> LEVELS, BASELINE (2017-2019) TO PANDEMIC (2020), WINDSOR AND MAIDENHEAD**



**FIGURE 42 – PERCENTAGE CHANGE IN DEFRA MODELLED PM<sub>2.5</sub> LEVELS, BASELINE (2017-2019) TO PANDEMIC (2020), WOKINGHAM**

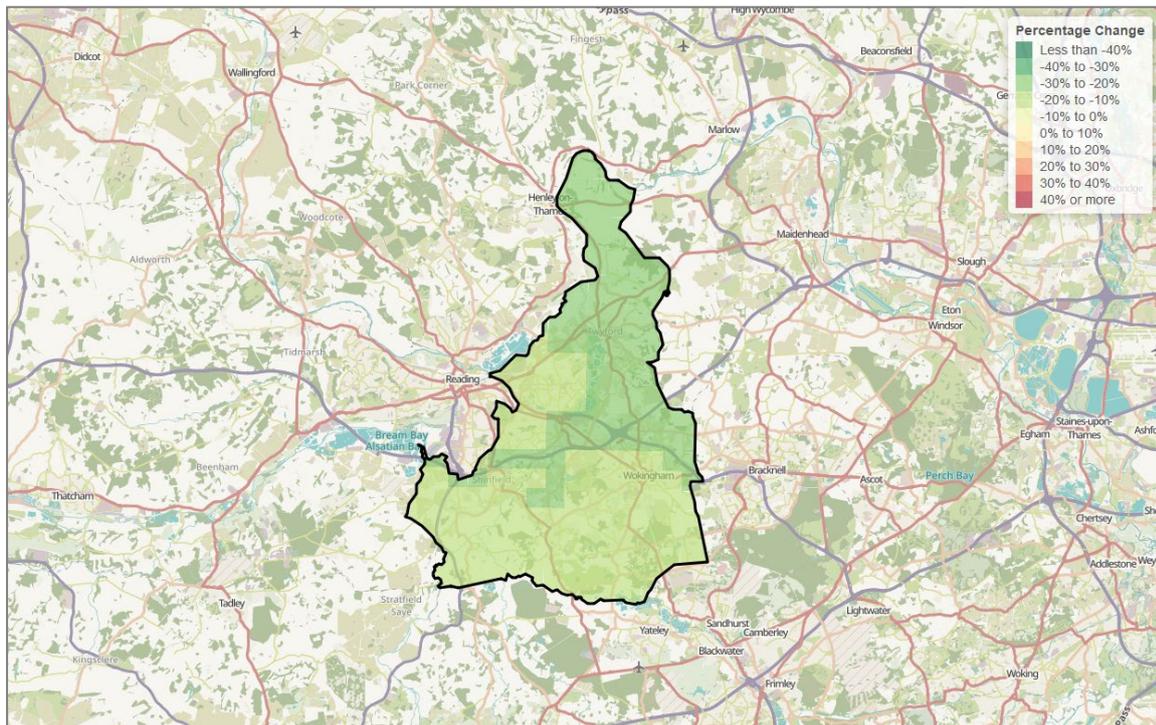
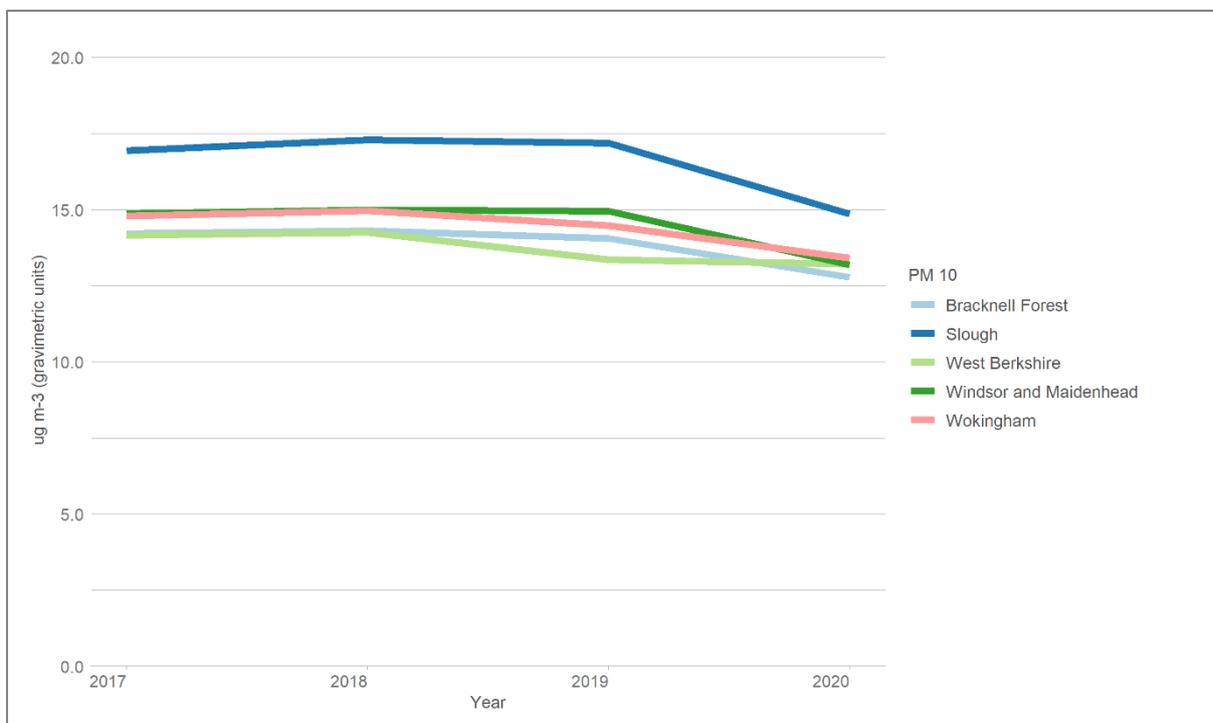


Figure 43 shows the trend in PM<sub>2.5</sub> concentrations in Berkshire in recent years. Although levels have dropped from the baseline (2017-2019), this is by a much smaller amount than for PM<sub>2.5</sub>, with reductions ranging from 5% in West Berkshire to 13% in Slough.

**FIGURE 43 – DEFRA MODELLED PM<sub>10</sub> LEVELS IN SAFER ROADS BERKSHIRE (2017-2020)**



## APPENDICES

### APPENDIX A - CONTRIBUTORY FACTOR GROUPINGS

| Injudicious Action                                      | Driver Errors or Reactions                                     | Driver Impairment or Distraction                 | Behaviour or Inexperience                                   | Other  |
|---|--|--|---|--|
| <b>Traffic Contraventions</b>                           | <b>Manoeuvre Errors</b>  | <b>Substance Impairments</b>                     | <b>Nervous Behaviour</b>                                    | <b>Vehicle Defects</b>                                   |
| <i>Disobeyed automatic traffic signal</i>               | <i>Poor turn or manoeuvre</i>                                  | <i>Impaired by alcohol</i>                       | <i>Nervous, uncertain or panic</i>                          | <i>Tyres illegal, defective or under-inflated</i>        |
| <i>Disobeyed double white lines</i>                     | <i>Failed to signal or misleading signal</i>                   | <i>Impaired by drugs (illicit or medicinal)</i>  | <i>Learner or inexperienced driver/rider</i>                | <i>Defective lights or indicators</i>                    |
| <i>Disobeyed 'Give way' or 'Stop' signs or markings</i> | <i>Passing too close to cyclist, horse rider or pedestrian</i> |  | <i>Inexperience of driving on the left</i>                  | <i>Defective brakes</i>                                  |
| <i>Disobeyed pedestrian crossing facility</i>           |  |  | <i>Unfamiliar with model of vehicle</i>                     | <i>Defective steering or suspension</i>                  |
| <i>Illegal turn or direction of travel</i>              |  |  |   | <i>Defective or missing mirrors</i>                      |
|   |  |  |   | <i>Overloaded or poorly loaded vehicle or trailer</i>    |
| <b>Speed Choices</b>                                    | <b>Control Errors</b>  | <b>Distraction</b>                               | <b>Unsafe Behaviour</b>                                     | <b>Road Surface</b>                                      |
| <i>Exceeding speed limit</i>                            | <i>Sudden braking</i>  | <i>Driver using mobile phone</i>                 | <i>Aggressive driving</i>                                   | <i>Poor or defective road surface</i>                    |
| <i>Travelling too fast for conditions</i>               | <i>Swerved</i>   | <i>Distraction in vehicle</i>                    | <i>Careless, reckless or in a hurry</i>                     | <i>Deposit on road (e.g. oil, mud, chippings)</i>        |
|   | <i>Loss of control</i>   | <i>Distraction outside vehicle</i>               |   | <i>Slippery road (due to weather)</i>                    |
| <b>Close Following</b>                                  | <b>Observation Error</b>                                       | <b>Health Impairments</b>                        | <b>Pedal Cycle Behaviour</b>                                | <b>Affected Vision</b>                                   |
| <i>Following too close</i>                              | <i>Failed to look properly</i>                                 | <i>Uncorrected, defective eyesight</i>           | <i>Vehicle travelling along pavement</i>                    | <i>Stationary or parked vehicle(s)</i>                   |
|   | <i>Failed to judge other person's path or speed</i>            | <i>Illness or disability, mental or physical</i> | <i>Cyclist entering road from pavement</i>                  | <i>Vegetation</i>  |
|   |  |  | <i>Not displaying lights at night or in poor visibility</i> | <i>Road layout (e.g. bend, winding road, hill crest)</i> |
|   |  |  | <i>Cyclist wearing dark clothing at night</i>               | <i>Buildings, road signs, street furniture</i>           |
|   | <b>Junction Errors</b>   | <b>Fatigue Impairment</b>                        | <b>Pedestrian Behaviour</b>                                 | <b>Dazzling headlights</b>                               |
|   | <i>Junction overshoot</i>                                      | <i>Fatigue</i>                                   | <i>Crossing road masked by stationary or parked vehicle</i> | <i>Dazzling sun</i>                                      |
|   | <i>Junction restart (moving off at junction)</i>               |  | <i>Failed to look properly</i>                              | <i>Rain, sleet, snow or fog</i>                          |
|   |  |  | <i>Failed to judge vehicle's path or speed</i>              | <i>Spray from other vehicles</i>                         |
|   |  |  | <i>Wrong use of pedestrian crossing facility</i>            | <i>Visor or windscreen dirty or scratched</i>            |
|   |  |  | <i>Dangerous action in carriageway (e.g. playing)</i>       | <i>Vehicle blind spot</i>                                |
|   |  |  | <i>Careless, reckless or in a hurry</i>                     |  |
|   |  |  | <i>Impaired by alcohol</i>                                  |  |
|   |  |  | <i>Impaired by drugs (illicit or medicinal)</i>             |  |
|   |  |  | <i>Pedestrian wearing dark clothing at night</i>            |  |
|   |  |  | <i>Disability or illness, mental or physical</i>            |  |