

# Analysis of Road Traffic Collisions Coventry & Solihull

Analysis of West Midlands Fire Service and Police data to identify locations and communities most at risk and support prevention-based activities

Strategic Hub

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Prevention Protection Response

Making West Midlands Safer

WEST MIDLANDS FIRE SERVICE

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# ROAD TRAFFIC COLLISIONS IN COVENTRY & SOLIHULL

## I. KEY FINDINGS AND RECOMMENDATIONS

### *KEY FINDINGS*

- Over the last three financial years, WMFS attended 1,054 Road Traffic Collisions (RTCs) in Coventry & Solihull, involving 1,462 vehicles and resulting in 916 casualties.
- RTCs attended by WMFS in Coventry & Solihull have remained stable over the last three financial years.
- The number of casualties resulting from RTCs attended by WMFS has increased in 2014/15, in particular as part of a multiple-casualty collision.
- RTCs tend to be higher in the summer and September, on Thursdays and at the weekend, and during morning and evening rush hours.
- 60.6% of RTCs attended by WMFS in Coventry & Solihull over the last three financial years were to make vehicle or area safe, although the greatest increase was for extrications (+15.3% in three years).
- There is one area showing a high-density of RTCs in Solihull, at the junction of Warwick Road and Lode Lane near Solihull Hospital; Coventry's primary hotspot is situated around the A4600 leading up to the ring road. The latter is particularly affected by single-vehicle RTCs and those involving a motorcycle.
- RTCs involving a motorcycle were more likely to result in serious or fatal injuries, in particular those over 125cc.
- While most RTCs took place on 30mph roads, proportionally, collisions on 50 mph and 60mph roads were slightly more likely to be serious or fatal.
- Casualties of collisions taking place away from a junction were more likely to be KSIs, which is likely linked to speed, as vehicles at or approaching junctions tend to slow down.
- Just over two thirds of drivers were male, and tended to live in the borough where the collision took place, in particular the north east corner of Coventry.
- Male casualties were more likely to be the vehicle's driver, while female casualties were more likely to be passengers.
- Drivers living in the 10% most deprived areas were also more likely to be involved in a fatal or serious RTC those living in less deprived areas.
- Drivers aged 16-20 and 45-55 were more likely to be involved in a serious or fatal collision than other age ranges.
- Casualties aged 16 to 45 were over-represented when compared to the population, and were more likely to be the driver of the vehicle. Those aged 16 to 35 were more likely to sustain fatal injuries.
- The proportion of casualties seriously injured in a collision in Coventry & Solihull has increased, especially in Coventry.
- Occupants of cars make up the greatest proportion of casualties, however cyclists and motorcyclists are over-represented when compared to how much of the road traffic they constitute. They are also more likely to be killed or seriously injured.

- Failing to look properly was the most common factor contributing to RTCs, however exceeding the speed limit and alcohol impairment were more likely to result in serious or fatal injuries. Drivers aged 26-35 were disproportionately involved in RTCs where alcohol impairment was listed as a contributory factor, while drivers aged 16 to 25 were disproportionately involved in collisions where exceeding the speed limit was a factor.

## ***RECOMMENDATIONS***

- Consider prevention work in the area of Coventry around the A4600 leading up to the ring road, with a particular focus on motorcycle safety
- Consider prevention and education opportunities in the areas where drivers involved in collisions reside, in particular the north east corner of Coventry
- Consider different approaches to road safety education based on gender, taking into account the differences between male and female casualties
- Consider prevention and education opportunities for residents of more deprived areas
- Consider focusing education/prevention opportunities on drivers aged 16-20 and 45-55
- Consider targeted prevention activities focused on drink-driving for drivers aged 26-35, and on speeding for those aged 16-25

## **II. METHODOLOGY AND LIMITATIONS**

### ***METHODOLOGY***

Two RTC datasets were used for this report: data from incidents attended by WMFS, and STATS19 data. The latter relates to personal injury accidents on public roads that the police attend or which are reported to them, and that are subsequently recorded using the STATS19 accident reporting form.

STATS19 data records additional details to WMFS-attended incidents, such as details of the road(s), weather conditions, vehicles and drivers involved, and casualties; these were used in the analysis to complement WMFS data.

Please note the term 'casualty' includes injured casualties and fatal casualties. 'Injuries' and 'fatalities' or related terms are used to refer to them separately.

### ***DATASETS AND THEIR LIMITATIONS***

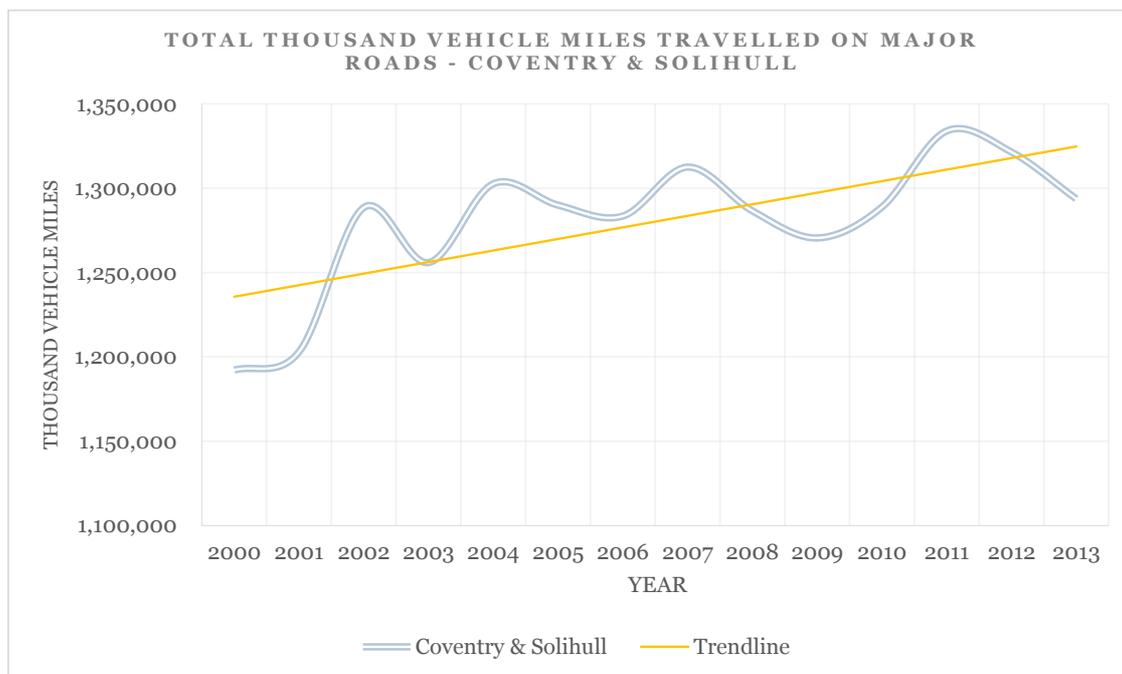
STATS19 data is only made available by the Department for Transport (DfT) once it has been confirmed and so is delayed by several months, although it is possible to obtain limited statistics on provisional data from databases such as Spectrum or MAST. However, for consistency only full data covering the years 2011, 2012, and 2013 calendar years has been used unless indicated otherwise.

WMFS records minimal data on attended RTCs; as such a substantial proportion of the analysis was made using Police (STATS19) data, in order to provide a more accurate and thorough profile of road traffic collisions in Coventry & Solihull.

### III. OVERVIEW

At the end of 2014, there were 783,221 vehicles registered in the postcode districts covered by Coventry & Solihull<sup>1</sup>, of which 605,086 were cars. This is a 3.9% increase on the previous year, but relatively similar to 2012 figures.

The Department for Transport (DfT) publishes yearly figures providing the total volume of traffic on major roads<sup>2</sup> in the UK in vehicle miles<sup>3</sup>. The graph below shows how traffic has increased by 8.5% in the Command Area since 2000, although a slight decline can be seen in 2012 and 2013 (2014 data not available at time of writing).



Over the last three financial years, WMFS attended 1,054 RTCs within Coventry and Solihull boroughs, involving 1,462 vehicles and resulting in 916 casualties.

During the same time period and in the same area, 2,818 RTCs were recorded by the Police, involving 4,885 vehicles and resulting in 3,464 casualties. (Please note some RTCs will be included in both WMFS and Police data)

In 2014/15, Coventry & Solihull Command accounted for 15.5% of RTCs attended by the Brigade within borders, while representing 19.4% of the Brigade area's population<sup>4</sup> and 30.7% of its geographical area.

<sup>1</sup> Department for Transport Vehicle Licensing Statistics, Table VEH0122. Please note the statistics are for postcode districts and may include areas outside of Coventry & Solihull Command area.

<sup>2</sup> Major roads are 'A' roads and motorways.

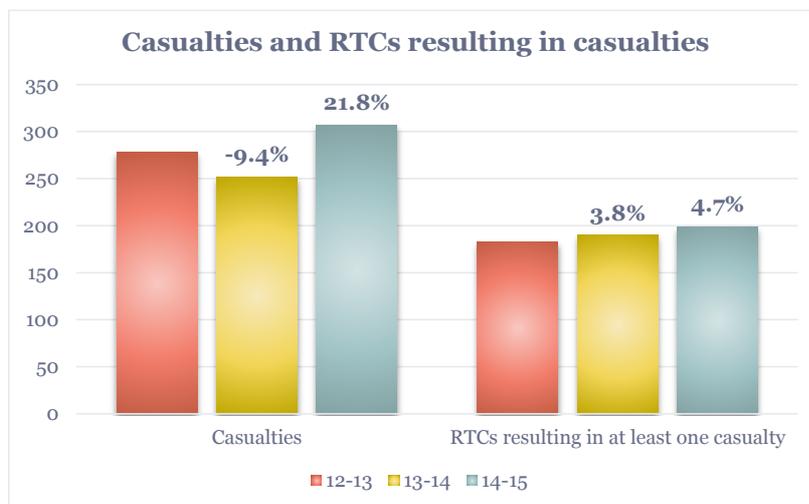
<sup>3</sup> Vehicle miles are obtained by multiplying the number of vehicles that will drive on a particular stretch of road on an average day of the year by the corresponding length of road and by the number of days in the year (i.e. one vehicle travelling one mile each day for a year would equal 365 vehicle miles)

<sup>4</sup> ONS population estimates, 2013

Road traffic collisions attended by WMFS in Coventry & Solihull have remained stable over the last three financial years, despite the increase seen by the Brigade as a whole, while the proportion of incidents resulting in extrications (using tools) has increased.

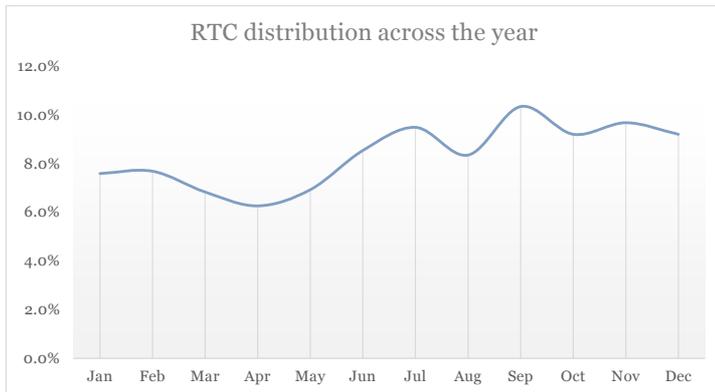


The graph below shows that the number of casualties fell in 2013/14 compared to 2012/13 despite the increase in the number of collisions resulting in casualties; both increased in 2014/15 compared to the previous year, although the increase in casualties was greater. This is in line with the greater increase experienced by **multiple-casualty** compared to single-casualty collisions.



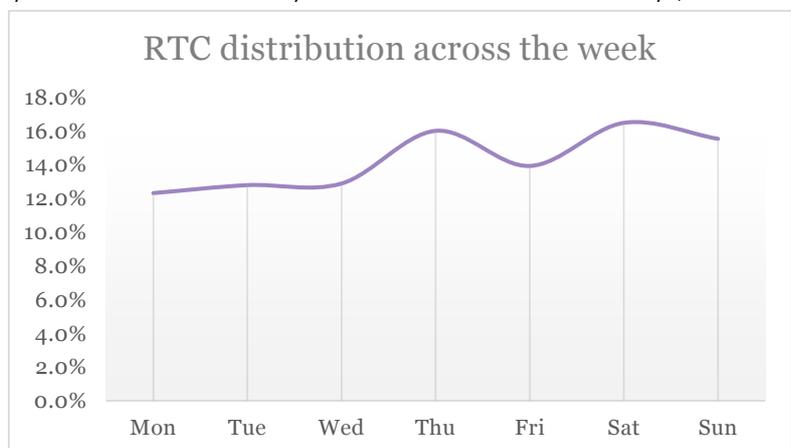
#### IV. TEMPORAL ANALYSIS

Analysis suggests that incidents are at their lowest in the spring, and increase throughout the

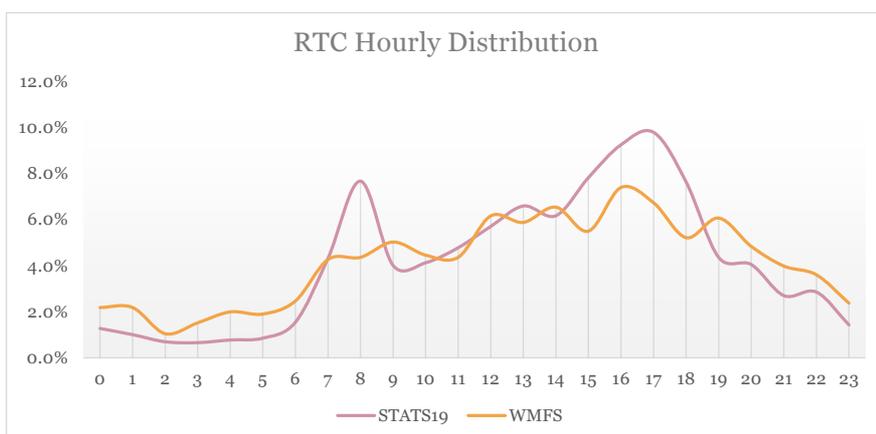


summer to peak in **September**; RTCs recorded by the Police follow the same trend. This peak could be linked to the start of the school/university year after the summer break, when recently qualified young drivers travel to their place of study for the first time. This is supported by the STATS19 records, where motor vehicles driven by those aged 16-20 and involved in an RTC peak in September.

**Thursday** and the **weekend** saw slightly more RTCs attended by WMFS than the other four days, although it is interesting to note that STATS19 data indicates that Police-recorded RTCs peak early in the week and are lowest at the weekend. WMFS incidents follow the same pattern whether they result in casualties or not.



The hourly distribution of incidents attended by WMFS shows a steady increase throughout



the day, peaking during the evening **rush hour**, while incidents recorded by the Police experience two rush hour peaks, in the morning and evening.

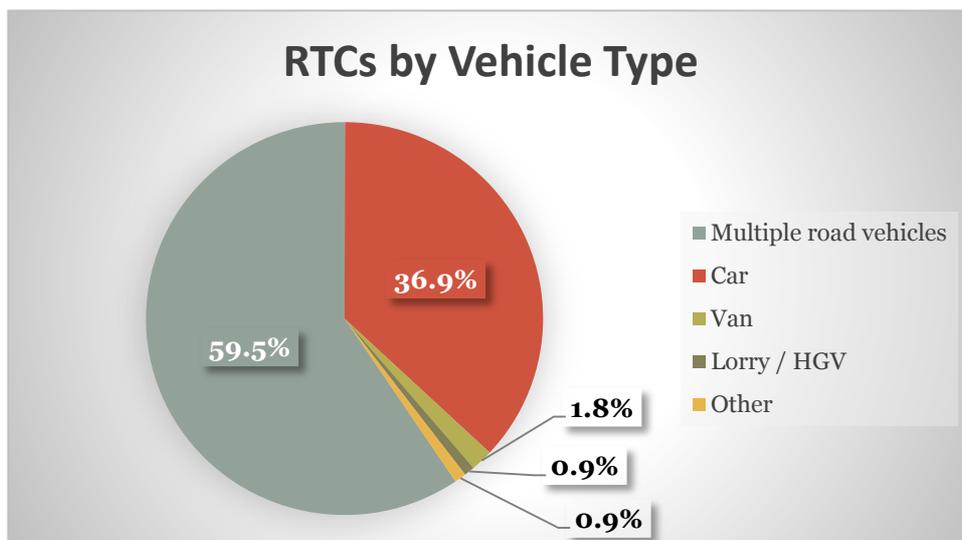
## V. INCIDENT TYPE

60.6% of RTCs attended by WMFS in Coventry & Solihull over the last three financial years were to **make vehicle or area safe**, although those have fallen by 9.8% since 2012/13.

RTCs which were attended but where WMFS services were not required have also fallen, by 4.8%.

As indicated previously, the greatest increase has been in **extrications (using tools)**, which have seen a 15.3% increase since 2012/13, which is an additional 11 incidents per year.

There has been an increasing number of multiple-vehicle RTCs in Coventry & Solihull (+10.8% since 2012/13), while single-vehicle incidents have reduced (-18.8%), with the former now accounting for almost 60% of RTCs attended by WMFS in this area.

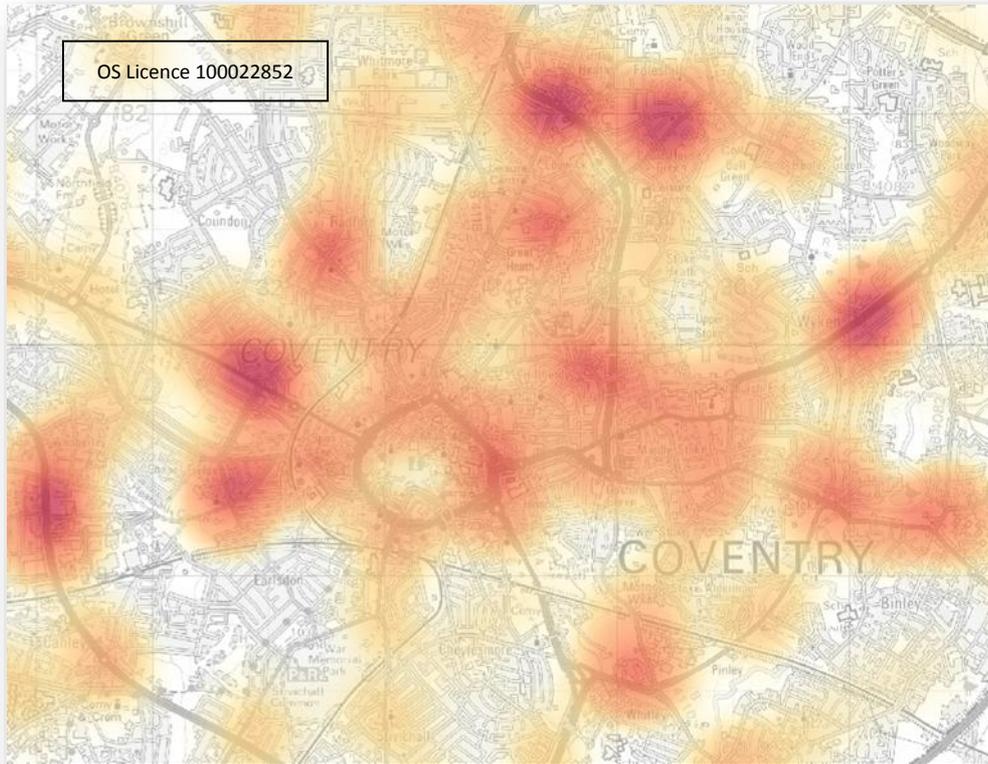


70.4% of extrications were at RTCs involving multiple vehicles, a higher proportion than other RTC types.

There is just one **single-vehicle RTC** hotspot, around the junction of the **A4600 Sky Blue Way and the A4053 Ringway Whitefriars**, where WMFS attended 21 single-vehicle incidents in the last three financial years. Most of these incidents involved the vehicle colliding with road furniture.

There are two **multi-vehicle RTC** hotspots in Solihull: the junction of **Warwick Road and Lode Lane** near Solihull Hospital, where there have been nine multi-vehicle incidents in the last three years (although none since July 2014), and **junction 6 of the M42** including the stretch of the A45 up to the airport, where there have been 19 incidents.

Multi-vehicle hotspots in Coventry are more numerous. The map below shows areas of higher density in dark red:

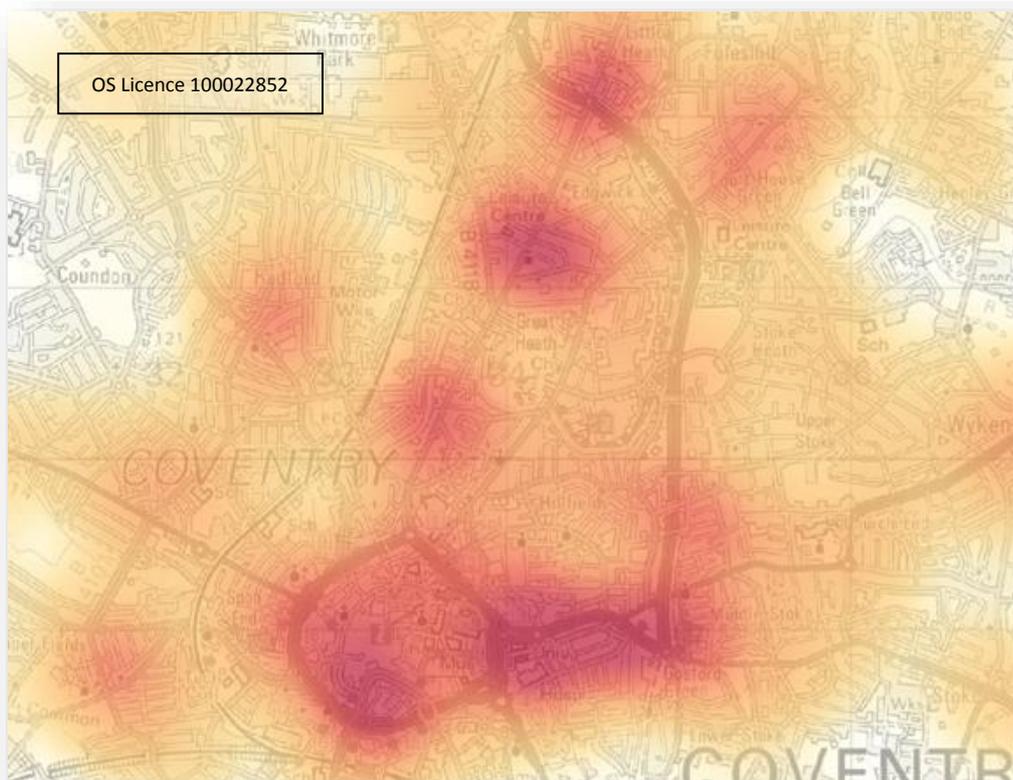


## VI. LOCATION

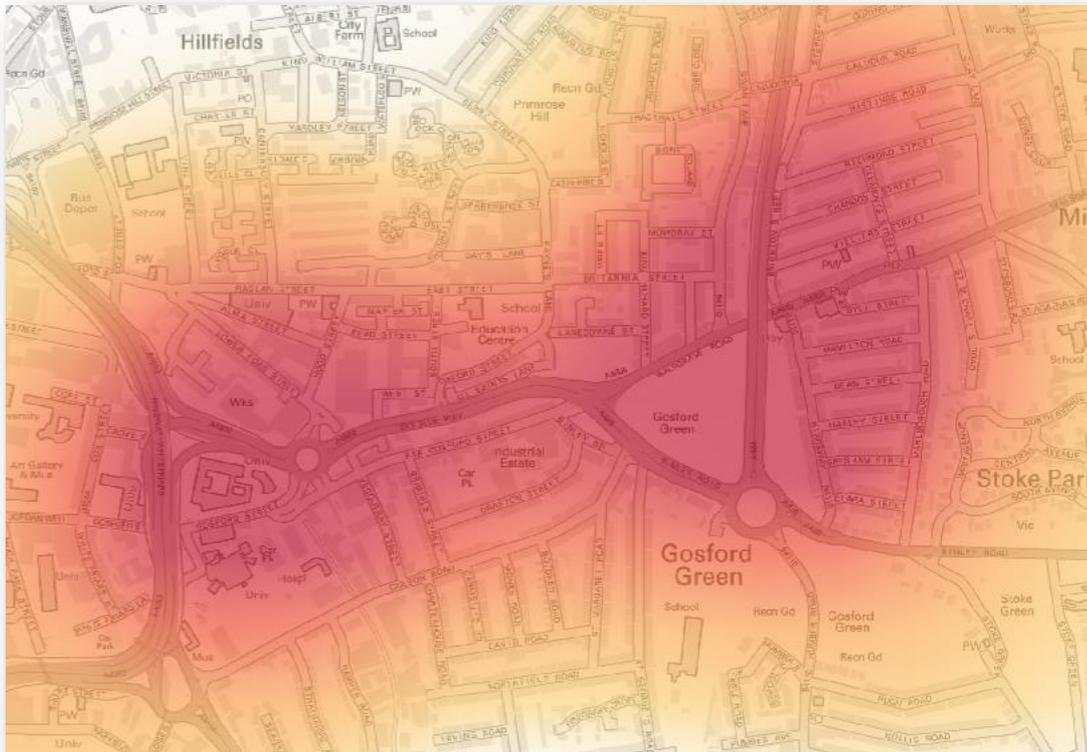
### ***GEOGRAPHICAL ANALYSIS***

Hotspot mapping for RTCs attended by WMFS in Coventry & Solihull in the last three years is heavily influenced by the aforementioned single-vehicle hotspot in Coventry.

Geographical analysis of both STATS19 and WMFS data reveals the same Solihull hotspot near the hospital, as well as the same distribution of Coventry hotspots:



Analysis of STATS19 RTCs involving **motorcycles** highlights a stretch of road already present as a high-density area on the previous map: the area around the A4600 leading up to the A4053 Ringway Whitefriars in Coventry. There were 24 RTCs involving motorcycles in the three years from 2011 to 2013 in the area highlighted in red:



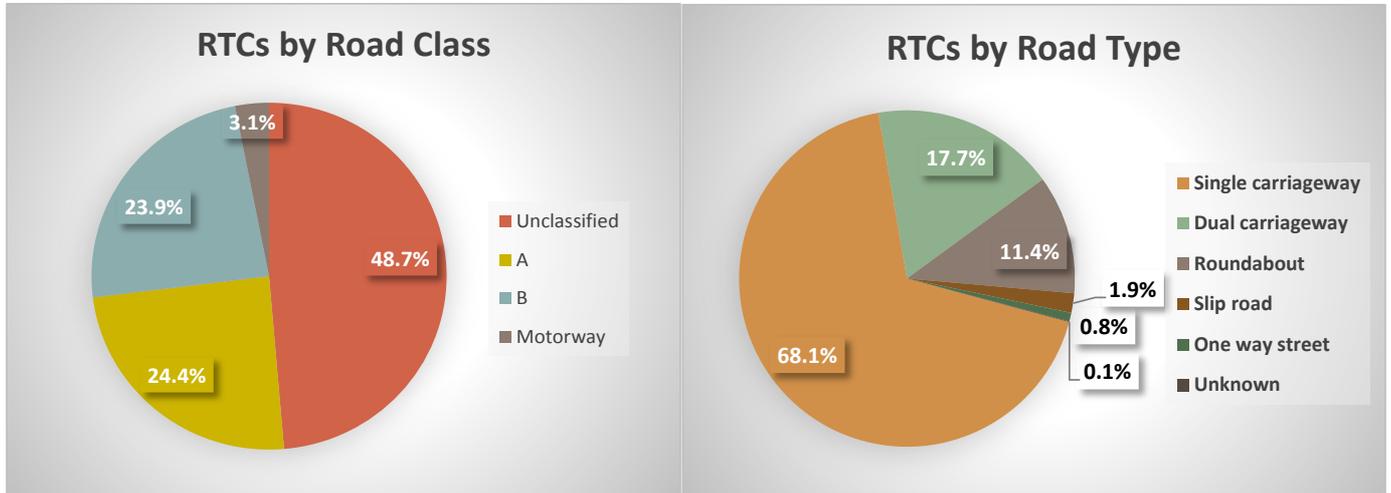
While none were fatal, a third were serious RTCs.

**Recommendation:** Consider prevention work in the area of Coventry around the A4600 leading up to the ring road, with a particular focus on motorcycle safety.

## ROADS<sup>5</sup>

### Type and class of roads

Almost half of incidents took place on **unclassified roads** (local roads intended for local traffic), which is consistent with around 60% of roads in the UK falling in this category.<sup>6</sup> This is also consistent with 68.6% of drivers involved in an RTC in the command area **residing in Coventry or in Solihull**.



90.8% of Motorway incidents were multiple vehicle RTCs, more than any other road type.

The majority of collisions (80.2%) took place on roads where the speed limit was set at **30mph**, which is likely linked to most RTCs occurring on local roads. This proportion was slightly higher in Coventry than Solihull; this is consistent with over 90% of RTCs in Coventry taking place in areas recorded as 'urban', compared to 71% for Solihull. The second highest proportion of RTCs in Solihull (8.3%) took place on 70mph roads, almost all of which were motorways.

As a result, the greatest number of fatal RTCs occurred on 30mph roads. However, proportionally, collisions on **50 mph and 60mph roads were slightly more likely to be serious or fatal**.

### Type of Junction

Around a third of collisions did not take place at or near a junction, while almost a third (31.2%) occurred at **T or staggered junctions**, followed by **roundabouts** (14.5%).

The proportion of collisions on stretches of road, as opposed to junctions, increases when looking at KSIs (killed or seriously injured) only: 40.3% of RTCs resulting in killed or seriously injured casualties. This is likely to be linked to speed, as vehicles are likely to be going slower when they reach a junction, resulting in slighter injuries.

<sup>5</sup> Unless otherwise indicated, the analysis in this section refers to STATS19 data, and covers the three calendar years from 2011 to 2013.

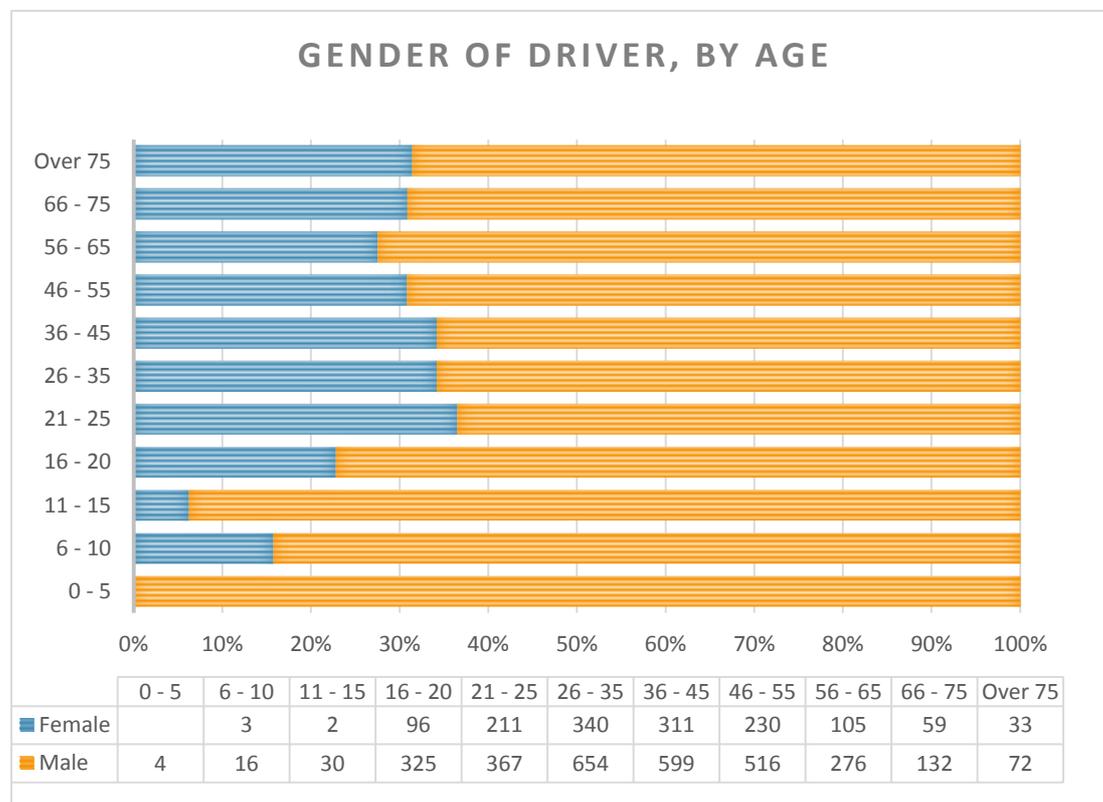
<sup>6</sup> DfT, 'Guidance on Road Classification and the Primary Route Network', January 2012.

## VII. DRIVERS AND CASUALTIES<sup>7</sup>

### DRIVERS

#### Demographics

Where gender and age were recorded, just over two thirds of drivers were **male**. Although the graph below includes horse and bicycle riders as drivers, there are very few of them and as such excluding them does not affect the proportions significantly.



Female drivers were more likely to be in charge of a private car (93.4%), while over a third of **male** drivers were driving other vehicles such as **vans and goods vehicles, taxis, buses or motorcycles**. This is consistent with the larger proportion of male drivers for whom “**journey as part of work**” was recorded as journey purpose.

Where recorded, over a quarter of RTCs involved a driver who lived within the **10% most deprived LSOAs**<sup>8</sup>, more than any other decile. Drivers living in the 10% most deprived areas were also more likely to be involved in a fatal or serious RTC those living in less deprived areas.

**Recommendation: Consider prevention and education opportunities for residents of more deprived areas.**

#### Place of residence

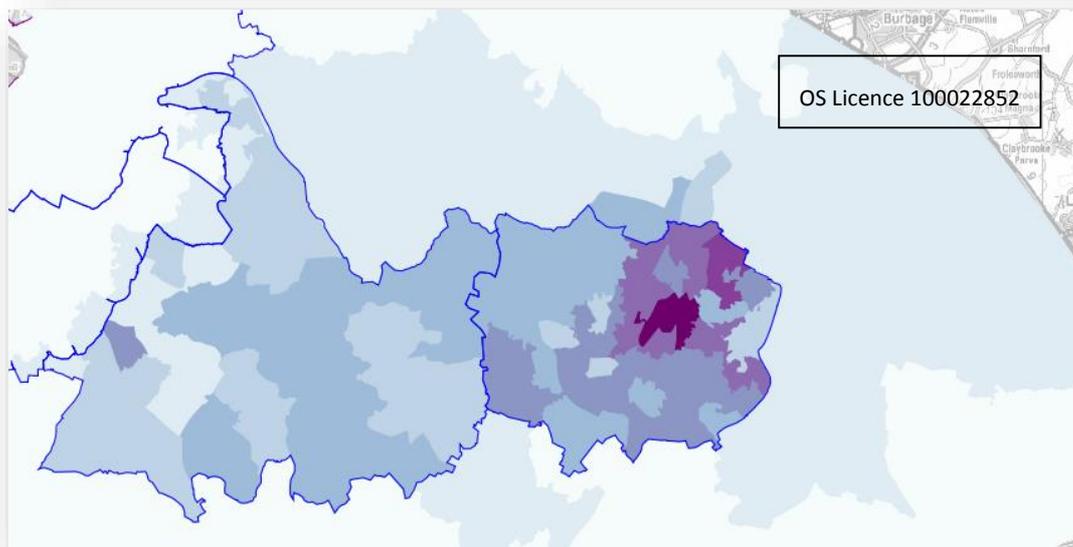
Where a home location was recorded, 76.3% of drivers involved in collisions in Coventry and 49.1% of those in Solihull resided in the **same borough** as where the RTC took place.

<sup>7</sup> Unless otherwise indicated, the analysis of driver and casualty data refers to STATS19 data, and covers the three calendar years from 2011 to 2013

<sup>8</sup> Lower Super Output Areas, the smallest geographical areas available for analysis

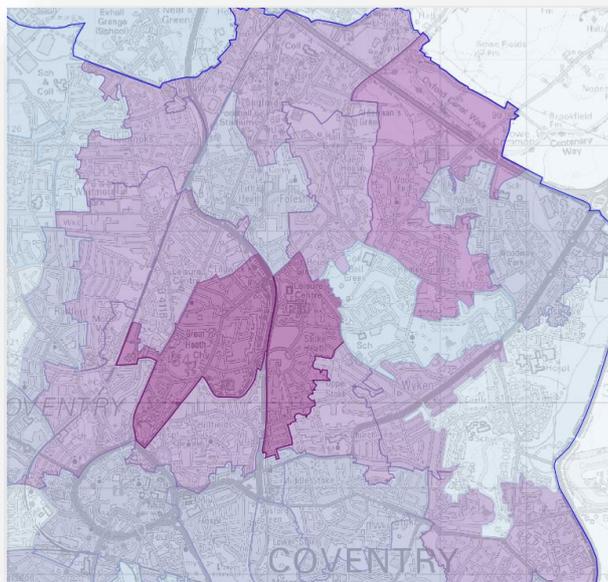
It is likely the greater proportion for Coventry is due to its isolation as an urban centre, resulting in fewer vehicles passing through, whereas Solihull is closer to Birmingham (a quarter of drivers involved in RTCs in Solihull came from Birmingham) and has a longer portion of motorway.

The map below is colour coded to illustrate the number of drivers' home addresses per MSOA (Middle Super Output Area) for the three years from 2011 to 2013 (the darker the area, the higher the number of home addresses):



It shows that most drivers come from the Solihull and Coventry area, in particular the north east corner of Coventry (17.3% of drivers).

The map to the right focuses on the aforementioned Coventry area.



**Recommendation:** Consider prevention and education opportunities in the areas where drivers involved in collisions reside, in particular the north east corner of Coventry.

**Drivers aged 16-20** were involved in 10.7% of total RTCs, but 14.3% of RTCs resulting in at least one killed or seriously injured casualty; similarly, **drivers aged 46-55** were involved in 15.7% of RTCs, but 19.5% of RTCs resulting in KSIs. This suggests that drivers in those age ranges are proportionally more likely to be involved in serious or fatal collisions.

**Recommendation: Consider focusing education/prevention opportunities on drivers aged 16-20 and 45-55.**

### Vehicle types

As expected, 89.9% of RTCs in Coventry & Solihull involved a car. However, although only 10.8% of RTCs involved a motorcycle, 23.3% of collisions which resulted in a KSI did, suggesting **that RTCs involving a motorcycle are more likely to lead to fatal or serious injuries.**

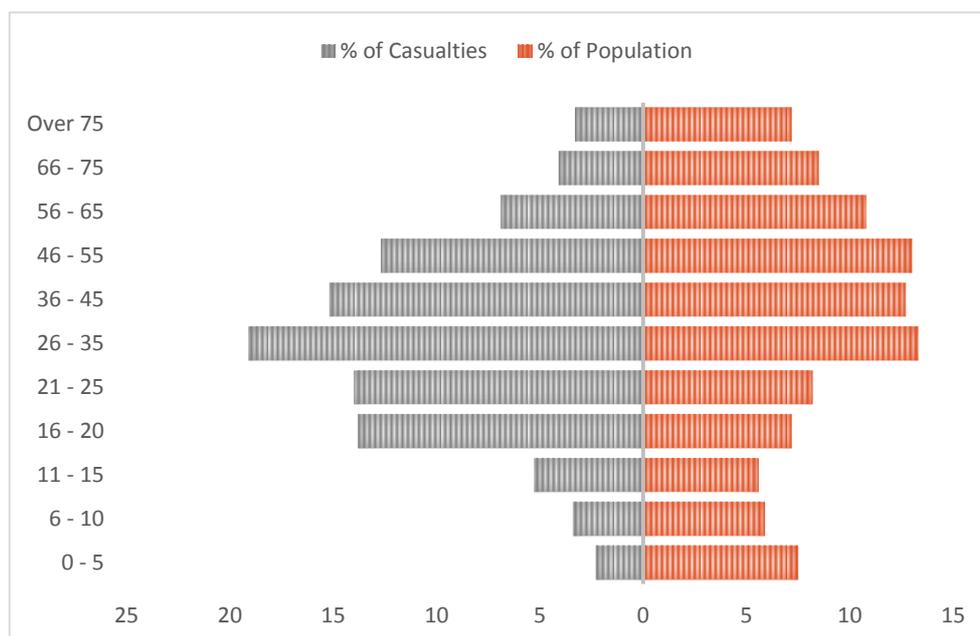
Motorcycles **over 125cc** were the most likely to be involved in a KSI collision.

Geographical analysis of the home location of drivers involved in collisions with motorcycles highlighted the same areas in Coventry's north east corner.

## CASUALTIES

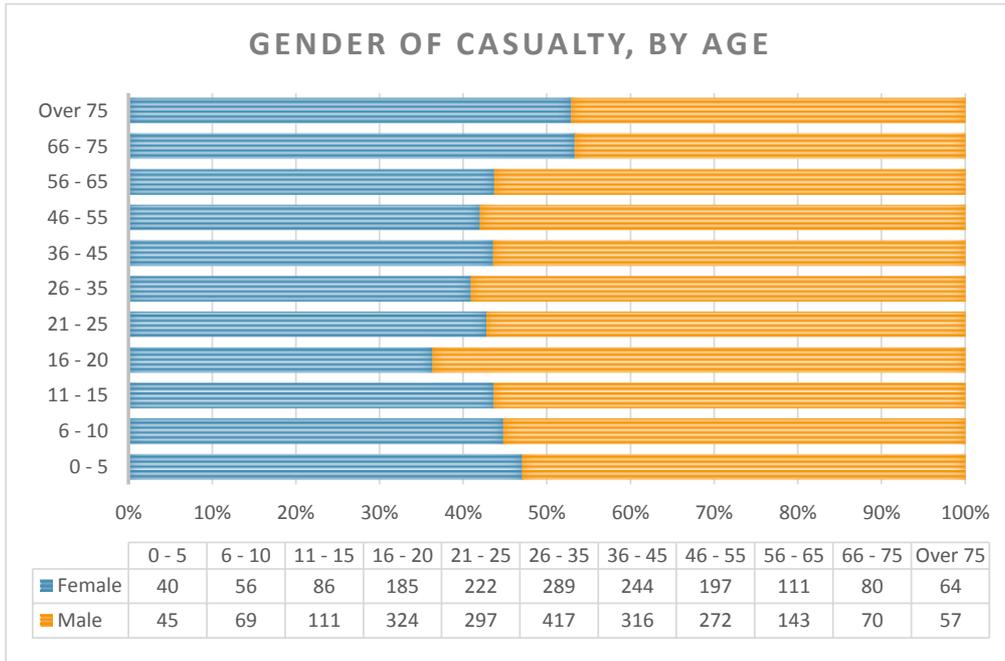
### Demographics

The graph below shows that **casualties aged 16 to 45** age range are over-represented when compared to the Command Area's population<sup>9</sup>: together they represent 62.1% of casualties, but 41.5% of the residents of Coventry & Solihull.

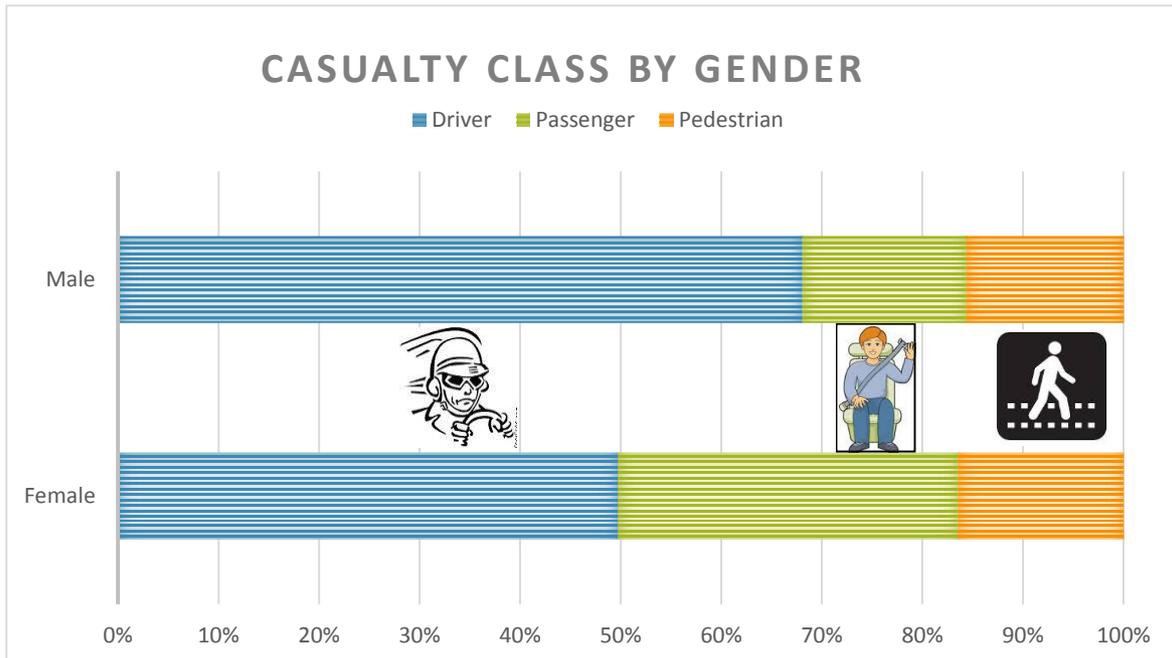


<sup>9</sup> Office for National Statistics mid-2013 population estimates

Unlike drivers, casualties were more evenly distributed between the genders:



**Male casualties** were more likely to be the vehicle's **driver** (68.1%, compared to 49.7% of female casualties). **Female casualties** were more likely than male casualties to be **passengers** in the vehicle, while the gender distribution of pedestrian casualties was relatively even.



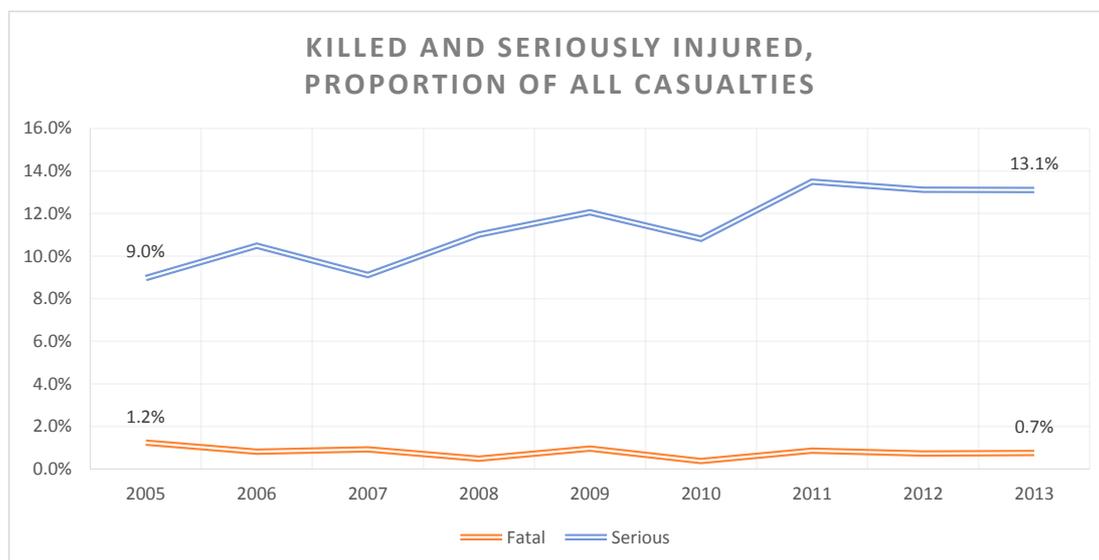
**Recommendation:** Consider different approaches to road safety education based on gender, taking into account the differences between male and female casualties.

Although the majority of casualties sustained only slight injuries, almost two thirds of **fatalities** (65.5%) were **aged between 16 and 35**, despite this age range representing less than half of total casualties (46.9%).

## Severity

As the graph below shows, the proportion of casualties which were killed as a result of an RTC in Coventry & Solihull since 2005 has been reducing, whereas that of seriously injured casualties has increased, although the latter seems to have reached a plateau in the last two years.

The proportion of casualties suffering slight injuries has seen a small reduction, from 89.8% in 2005 to 86.1% in 2013.



This increase is due to the overall number of casualties having reduced by 44.2% since 2005, while the number of serious injuries only fell by 19.4%.

This increase in the proportion of seriously injured can be observed both in Coventry and Solihull, but was much more pronounced in Coventry (+5.7, compared to +0.9 in Solihull). The greatest increase was experienced by the 46-55 and 66-75 age ranges, with rises of 12.7% and 10.6% respectively. These are the only two age groups which have also experienced an increase in the *number* of seriously injured casualties since 2005<sup>10</sup>.

A similar increase in serious injuries can be seen across the Brigade, although there are variations across the Command Areas.

All other metropolitan brigades<sup>11</sup> have also experienced such increase, apart from London where the proportion of casualties seriously injured in an RTC reduced compared to 2005.

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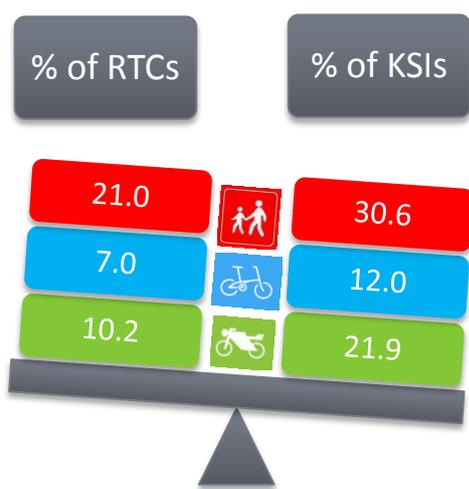
<sup>10</sup> This rise cannot be solely attributed to the decline in the proportion of fatalities – which would have suggested a reduction in severity – as the latter’s reduction represents a very small proportion; it can therefore be inferred that the proportional increase in seriously injured casualties is directly linked to the proportional reduction in slight injuries

<sup>11</sup> Metropolitan brigades are London, Greater Manchester, West Yorkshire, South Yorkshire, Merseyside, and Tyne and Wear. Please note STATS19 data is grouped under Police forces, and as such there may be geographical differences; in particular, the Police force including the Tyne and Wear area covers a much wider region and as such was not used for this comparison

### Casualty type and location

When comparing casualties to traffic in the West Midlands<sup>12</sup> (graph to the right), occupants of cars and taxis represent the greatest proportion in both. However, **cyclists and motorcyclists** are over-represented as casualties.

In Coventry & Solihull, when including all casualty types (occupants of all vehicles and pedestrians), **motorcyclists, cyclists and pedestrians** are over-represented as KSIs compared to the proportion of collisions they are involved in:



Vehicle passengers were only marginally more likely than drivers to be killed or seriously injured; however, car **passengers seated at the rear** of the vehicle were slightly more likely to sustain fatal or serious injuries than front car passengers.

## VIII. CONDITIONS AND CONTRIBUTORY FACTORS<sup>13</sup>

### WEATHER AND LIGHT CONDITIONS

60.5% of RTCs took place during daylight hours with fine weather and no high winds, although RTCs which occurred in **darkness** (whether in lit or unlit areas) were more likely to result in fatal or serious injuries.

72.7% occurred when the road surface was dry.

This suggests that the weather and its resulting road conditions are not significantly contributing factors.

<sup>12</sup> DfT, Road traffic in billion vehicle miles by vehicle type, 2013 (tables TRA0413 and TRA206), in the Former Metropolitan county of West Midlands. Data not available at borough level

<sup>13</sup> Unless otherwise indicated, the analysis of weather, road conditions and contributing factors data refers to STATS19 data, and covers the three calendar years from 2011 to 2013

## RECORDED CONTRIBUTORY FACTORS

Contributory factors are identified by police officers attending the scene. Up to six can be recorded, however it should be kept in mind that it may be difficult to identify all of the relevant factors which have contributed to an accident.

**Failing to look properly** was the most common factor contributing to RTCs in Coventry & Solihull, being recorded against almost half the incidents (46.1%).

The table below lists the top 10 factors contributory to RTCs. (Please note the same RTC can have up to six contributing factors, therefore summing up the proportions will add up to more than 100%)

Factor	% of incidents factor recorded against
Failed to look properly	46.1%
Failed to judge other persons path or speed	17.1%
Careless or Reckless or In a hurry	13.4%
Poor turn or manoeuvre	14.1%
Loss of control	5.7%
Slippery road (due to weather)	5.6%
Impaired by alcohol	4.6%
Following too close	4.7%
Sudden braking	4.0%
Aggressive driving	3.7%

Unexpectedly, using a mobile phone while driving contributed to only 0.3% of RTCs in Coventry & Solihull. This could indicate that either driving while on the phone is not an issue – or at least does not cause collisions – or that it is rarely identified as a contributing factor because it is unlikely the driver will volunteer the fact that he or she was using their mobile and there are few other ways to determine if this was the case.

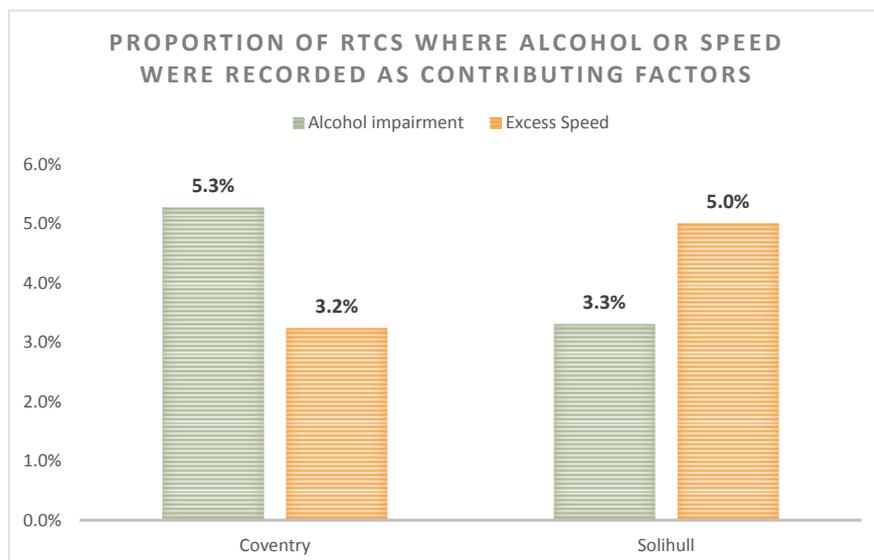
Whilst contributing to fewer collisions, almost a third of RTCs where the driver was **impaired by alcohol** resulted in fatal or serious injuries (31.8%), compared to 16.2% of those where alcohol was not listed as a contributory factor.

Likewise, 38.5% incidents where **exceeding the speed limit** was listed as a contributory factor resulted in fatal or serious injuries, compared to 16.1% of those where it was not.

The two points above suggest that alcohol impairment and excessive speed are more likely to result in serious or fatal injuries.

Speeding tended to peak consistently with overall incidents around rush hour, while alcohol impairment was highest in the late afternoon and evening, as well as early morning.

Speeding was higher in Solihull:



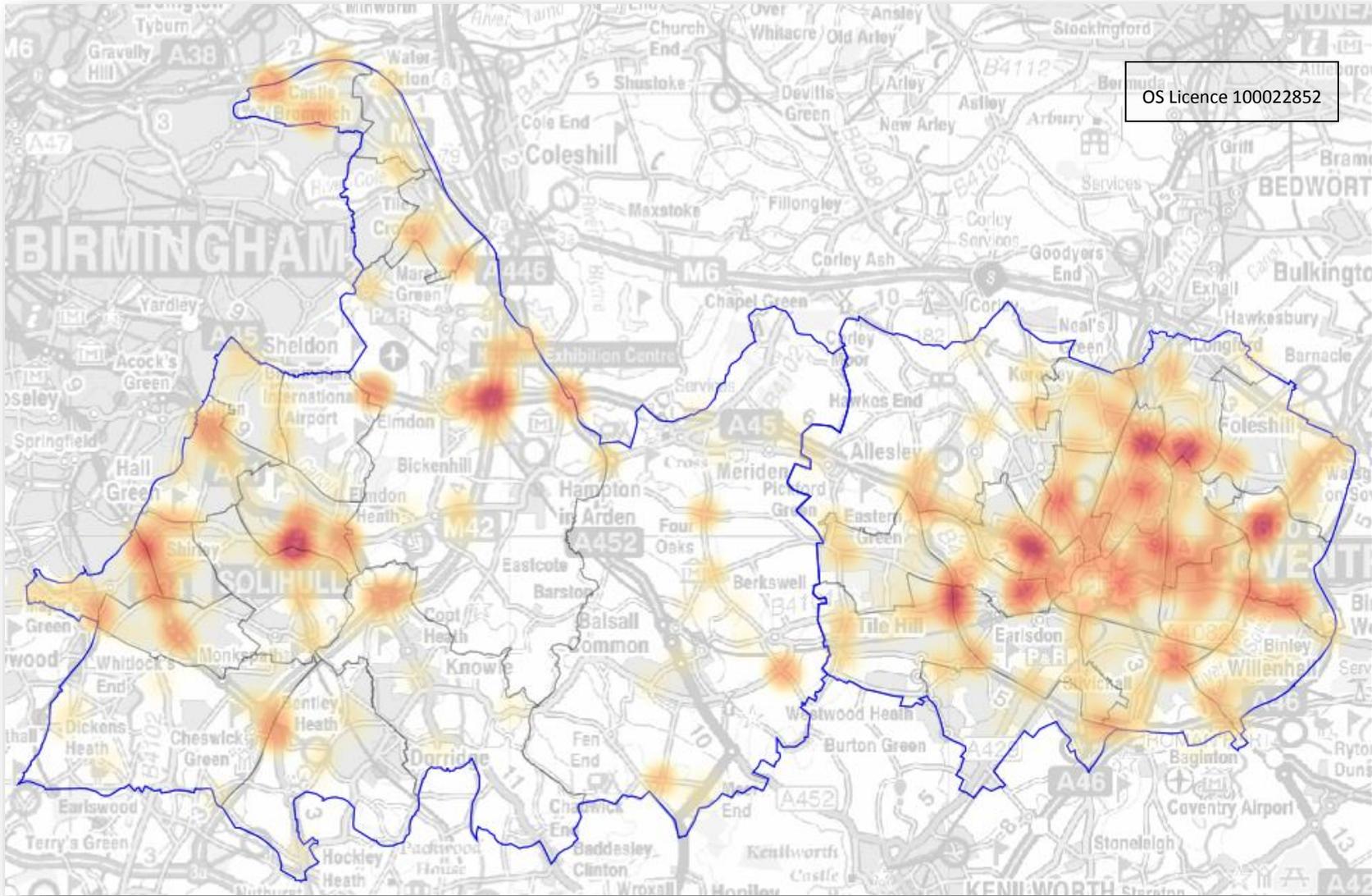
Although those factors are linked only to the RTC and not specifically to the driver(s) of the vehicle(s) involved, drivers aged 26-35 were disproportionately involved in RTCs where alcohol impairment was listed as a contributory factor, while drivers aged 16-20 and 21-25 were disproportionately involved in collisions where exceeding the speed limit was a factor.

**Recommendation:** Consider targeted prevention activities focused on drink-driving for drivers aged 26-35, and on speeding for those aged 16-25.

IX. APPENDIX

The maps below are the Command Area size version of the hotspot maps in sections V and VI.

The first map shows the multi-vehicle RTCs hotspots for RTCs attended by WMFS in the last three financial years:



The next map is that of all RTCs attended by WMFS in the last three financial years:

