

Analysis of Road Traffic Collisions in Sandwell & Dudley

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

Strategic Hub
September 2015



Prevention Protection Response

Making West Midlands Safer

WEST MIDLANDS FIRE SERVICE

www.wmfs.net

ROAD TRAFFIC COLLISIONS IN THE BLACK COUNTRY SOUTH

I. KEY FINDINGS AND RECOMMENDATIONS

KEY FINDINGS

- Over the last three financial years, WMFS attended 1,379 RTCs within the Black Country South (BCS) Command Area, involving 3,333 motor vehicles and resulting in 1,289 casualties.
- RTCs attended by WMFS in the BCS have increased by 8.8% over the last three financial years. The number of casualties resulting from RTCs has increased to an even greater extent, a result of the rise in multi-casualty RTCs.
- RTCs in the BCS rise slightly between September and November. They are slightly higher on Fridays and at the weekend, and peak during the evening and morning rush hours.
- Incidents attended by WMFS to 'make vehicle or area safe' have increased, as have incidents where someone had to be assisted from a vehicle (no tools). RTCs where WMFS's service was not required and those necessitating extrication (with tools) have fallen.
- There has been an increase in multi-vehicle RTCs in both boroughs.
- Geographical RTC hotspots include Dudley city centre, Junction 2 of the M5, Junction 7 of the M6, Wednesbury, and the area from Smethwick to Black Lake in West Bromwich.
- 45.0% of incidents took place on A-roads; in particular, 16.9% of RTCs took place on a dual carriageway A-road, despite accounting for just 3.8% of the BCS's road network.
- 80.0% collisions took place on roads where the speed limit was set at 30mph; however, proportionally, collisions on 60mph roads were more likely to be fatal.
- RTCs were most likely to take place either away from a junction or at a T or staggered junction. Fatal collisions were more likely away from junction.
- 70.2% of drivers involved in and RTCs were male, a third of which were driving goods vehicle or motorcycles.
- 29.0% of RTCs involved a driver who lived in the 10% most deprived LSOAs. 71.0% of drivers whose home address location was recorded lived within the Black Country South, in particular Cradley and Yewtree Hill/Dudley Wood in Dudley, and Old Hill/Haden Cross, the Grace Mary Estate, and Horseley Heath in Sandwell.
- RTCs involving a motorcycle are more likely to lead to fatal or serious injuries, particularly those involving a motorcycle over 500cc. Collisions involving motorcycles were more likely to be fatal in Dudley.
- Motorcyclists were more likely than any other type of motorists involved in RTCs to be commuting to or from work.
- Male casualties were more likely to be the vehicle's driver, and female casualties, passengers. Male casualties tended to be more seriously injured. Casualties aged over 65 were more likely than any other age group to be fatalities.
- Cyclists and motorcyclists are over-represented as casualties when compared to vehicle traffic, and motorcyclists and pedestrians are over-represented as KSIs compared to the proportion of collisions they are involved in. Drivers or riders of a vehicle were more likely to be a KSI than passengers.
- High winds and darkness tend to increase the likelihood of a collision resulting in a killed or seriously injured casualty.

- Road surface conditions did not significantly impact on the seriousness of the RTC, suggesting that motorists may be more careful when driving on wet or icy roads.
- Failing to look properly was the most common factor contributing to RTCs in the Black Country South.
- Over a quarter of RTCs where a driver was impaired by alcohol resulted in fatal or serious injuries, as did a quarter of incidents where exceeding the speed limit was recorded as a factor contributing to the collision.
- Half of drivers exceeding the speed limit were aged between 16 and 25, and 56.2% of drivers impaired by alcohol were aged between 21 and 35. Male drivers were more likely than female drivers to have been exceeding the speed limit at the time of the collision, and were also more likely to have been impaired by alcohol.

RECOMMENDATIONS

- Consider prevention work around Junction 2 of the M5, Junction 7 of the M6, Wednesbury, and the area between Smethwick and Black Lake in West Bromwich.
- Consider prevention and education opportunities for residents of more deprived areas.
- Consider education opportunities in the areas where drivers involved in collisions reside, in particular Cradley and Yewtree Hill/Dudley Wood in Dudley, and Old Hill/Haden Cross, the Grace Mary Estate, and Horseley Heath in Sandwell.
- Consider motorcycle-specific prevention activities, particularly focusing on riders of motorcycles over 500cc.
- Consider different approaches to road safety education based on gender and age.
- Consider targeted prevention activities focused on drink-driving for drivers aged 21-35, and on speeding for those aged 16-25, particularly male drivers.

II. METHODOLOGY AND LIMITATIONS

METHODOLOGY

Two Road Traffic Collisions (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.

KSI are casualties who are killed or seriously injured. The full definition of serious and slight injuries can be found in the document "Reported Road Casualties in Great Britain, notes, definitions, symbols and conventions"¹.

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 2012, 2013, and 2014 calendar years has been used unless indicated otherwise.

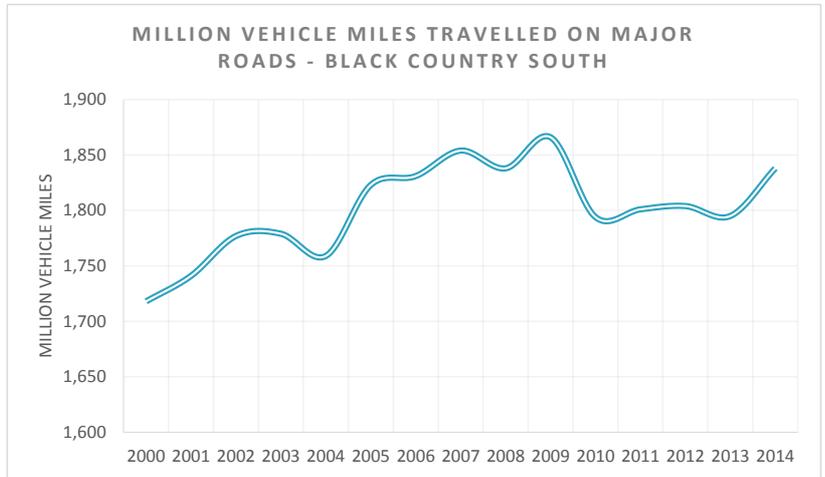
WMFS records minimal data on attended RTCs; as such a substantial proportion of the analysis was made using STATS19 data, in order to provide a more accurate and thorough profile of road traffic collisions in the Black Country South.

¹ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/254717/reported-road-casualties-gb-notes-definitions.pdf

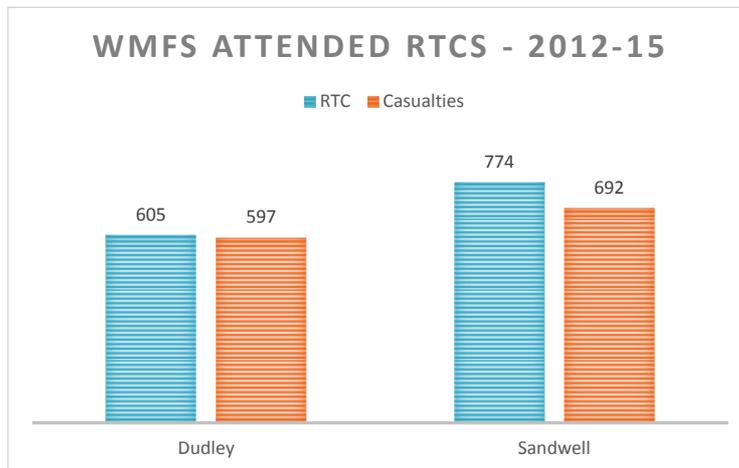
III. OVERVIEW

At the end of 2014, there were 474,937 vehicles registered in the postcode districts covered by Sandwell and Dudley², of which 404,244 were cars. This is a 2.2% increase on the previous year.

The Department for Transport (DfT) publishes yearly figures providing the total volume of traffic on major roads³ in the UK in vehicle miles⁴. The graph below shows how traffic has increased by 3.4% in the Command Area since 2000. Last year showed the greatest yearly increase in nine years: +2.4% in 2014 compared to 2013.



Over the last three financial years, WMFS attended 1,379 RTCs within the Black Country South, involving 2,333 motor vehicles and resulting in 1,289 casualties, including 20 fatalities. 56.1% of RTCs and 53.7% of casualties were in Sandwell.



In the last three calendar years in the same area, 2,939 RTCs were recorded by the Police, involving 5,389 vehicles and resulting in 4,024 casualties. (Please note some RTCs will be included in both WMFS and Police data)

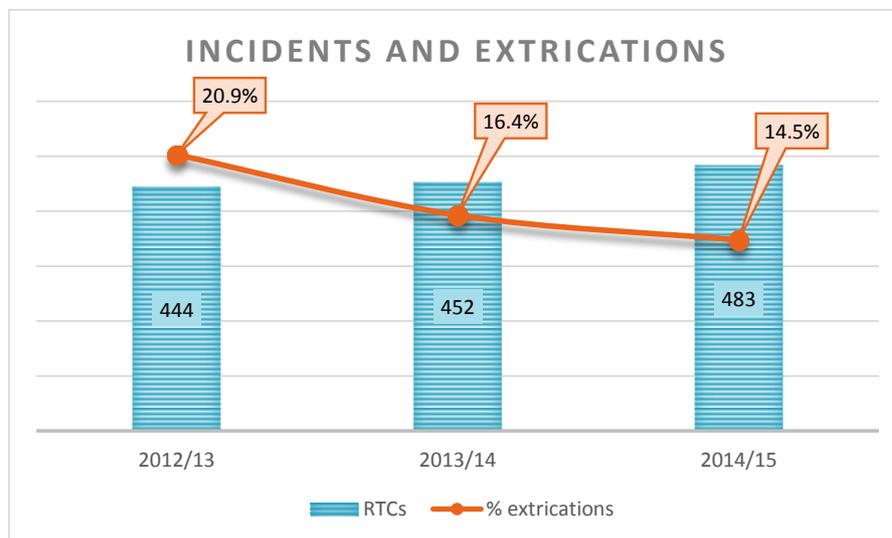
² Department for Transport Vehicle Licensing Statistics, Table VEH0122. Please note the statistics are for postcode districts and may include areas outside of Dudley and Sandwell boroughs or not include areas within them where the postcode overlaps boroughs.

³ DfT Road Traffic Estimates in Great Britain: table TRA8903. Major roads are 'A' roads and motorways.

⁴ 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)

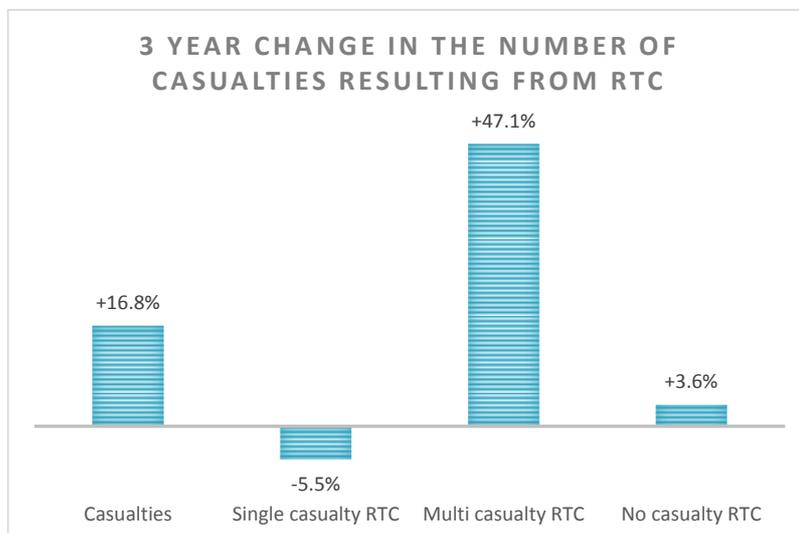
In 2014/15, the Black Country South Command accounted for 21.3% of RTCs attended by the Brigade within borders, while representing 22.5% of the Brigade area's population⁵ and 30.7% of its geographical area.

Road traffic collisions attended by WMFS in Sandwell and Dudley have increased by 8.8% over the last three financial years, which is comparable to the rise seen by the Brigade as a whole, while the proportion of incidents resulting in extrications (using tools) has fallen.



The number of casualties resulting from RTCs has also increased, but to a greater extent than RTCs did: 16.8% more casualties compared to 8.8% more RTCs over three years.

The graph below shows that this is the result of a rise in the number of multi-casualty RTCs:

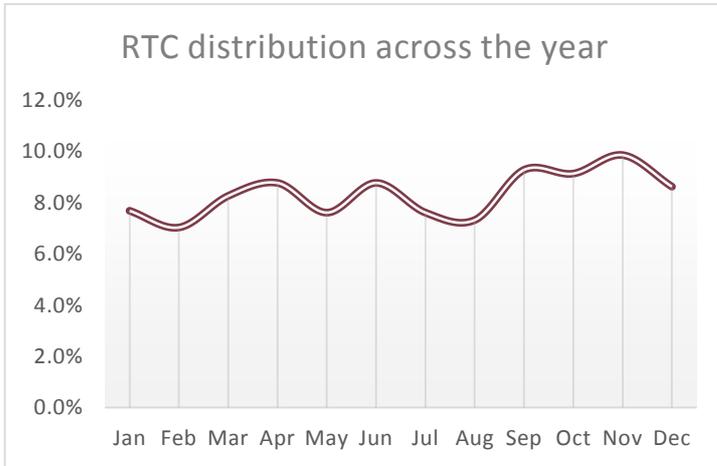


Nevertheless, only Sandwell actually incurred an increase in casualties: +43.6% (+82 casualties) compared to -5.2% for Dudley (-12), although both experienced a rise in multi-casualty RTCs (+25%, or 12 incidents for Dudley, and +74.4% or 29 incidents for Sandwell).

⁵ ONS population estimates, 2014

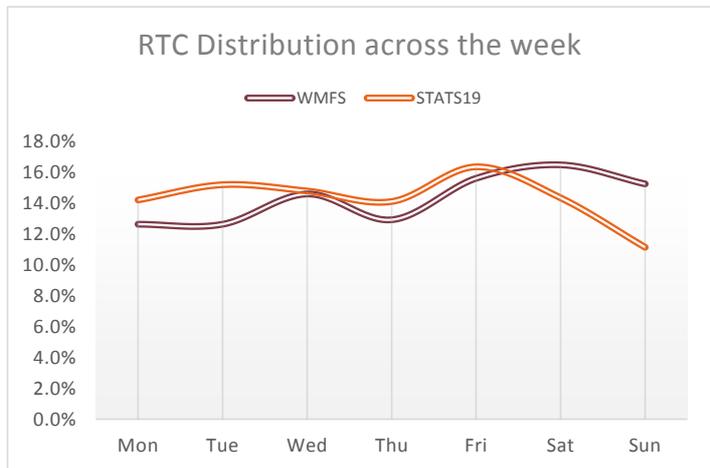
IV. TEMPORAL ANALYSIS

Analysis suggests that incidents are fairly consistently distributed throughout the year, although there is a slight increase from **September to November**.

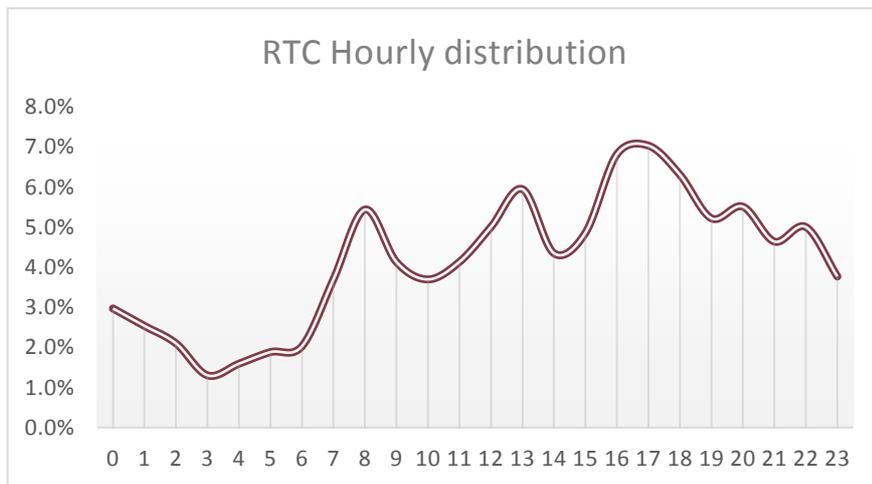


RTCs recorded by the Police also show an increase towards the end of the year, however it is a later one, in November and December.

Friday 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 reduce at the weekend, after a small peak on Friday.



The hourly distribution of incidents attended by WMFS shows an increase throughout the day, peaking during the morning and evening **rush hours**, with an added peak between 13:00 and 14:00. Police recorded incidents displays the same peaks and dips.



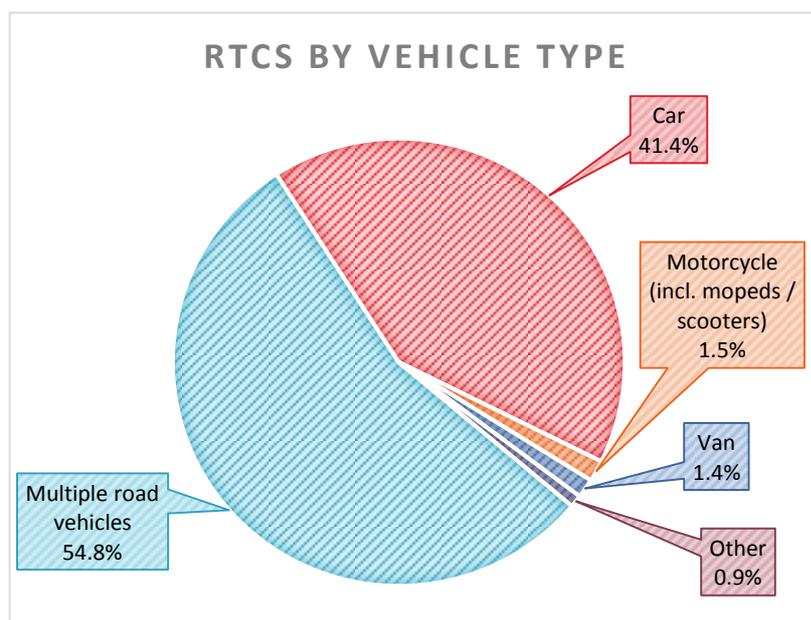
V. INCIDENT TYPE

67.4% of RTCs attended by WMFS in the Black Country South over the last three financial years were to **make vehicle or area safe**; this type of incident has increased by 26.4% since 2012/13 (+73 incidents).

RTCs where someone had to be assisted from a vehicle (no tools) also increased, by 13.8% (+4). All other incident types reduced or stayed the same.

The greatest proportional reduction has been in RTCs where **service was not required**, which fell by 40.7%. However this is just 11 fewer incidents; the greatest reduction in number was for **extrications (using tools)** with 23 fewer incidents per year (-24.7%).

RTCs involving more than one vehicle accounted for over half of RTCs attended by WMFS, with 54.8%. There has been an increasing number of multiple-vehicle RTCs in both Sandwell and Dudley (+27.3% and +22.4% respectively since 2012/13).



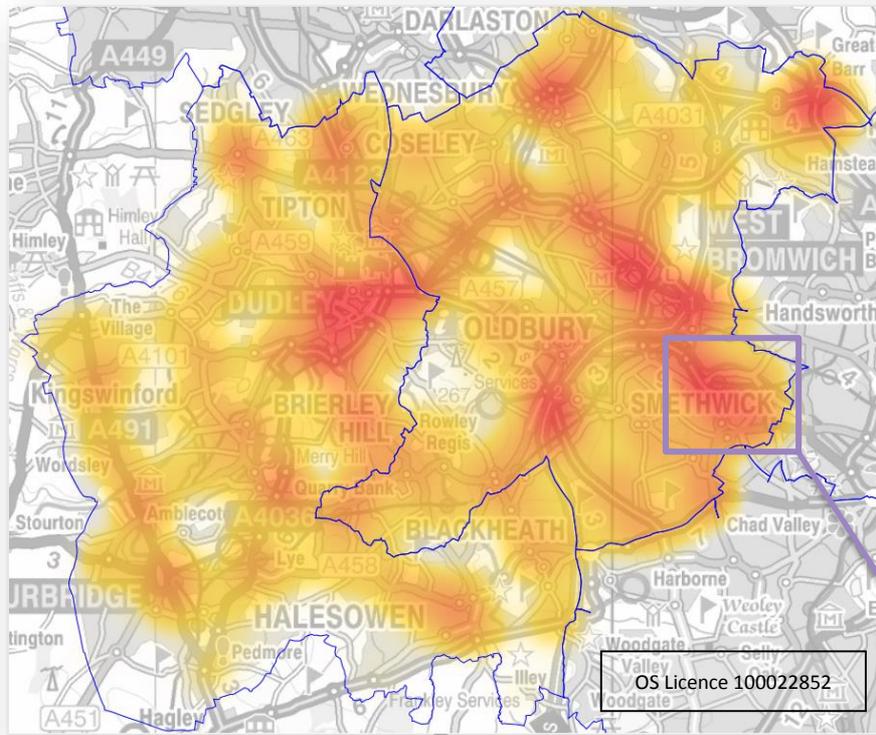
68.4% of extrications were at RTCs involving multiple vehicles, a higher proportion than other RTC types.

VI. LOCATION

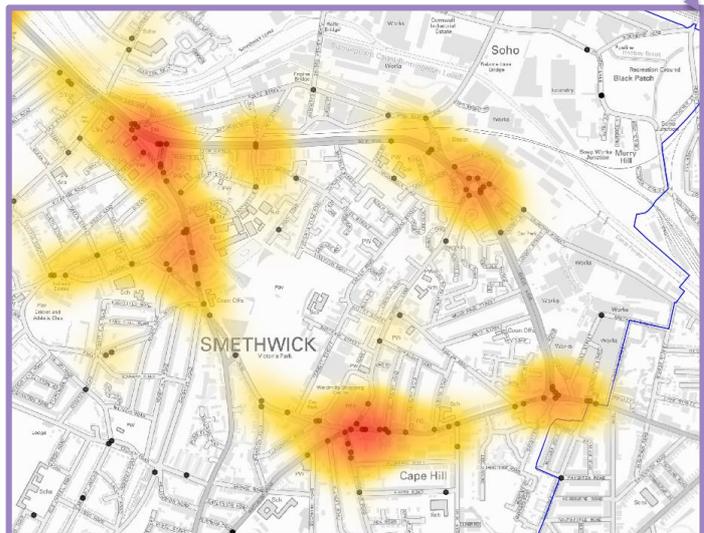
GEOGRAPHICAL ANALYSIS

Hotspot mapping for STATS19 RTCs in the Black Country South highlights a number of areas, including **Dudley city centre**, **Junction 2 of the M5**, **Junction 7 of the M6**, **Wednesbury**, and the area **from Smethwick to Black Lake in West Bromwich**.

Analysis of RTCs attended by WMFS highlight similar but less defined areas.



Further analysis of the high-density area between Smethwick and West Bromwich highlights the roads in Smethwick on the **map to the right**, as well as **Junction 1 of the M5**, the junction of the **A4252 and A457 at Galton Bridge**, the junction of **Trinity Way (A4031) and High Street**, the road from **Moor Street to the All Saints Interchange**, and the **Swan roundabout (A41)**.

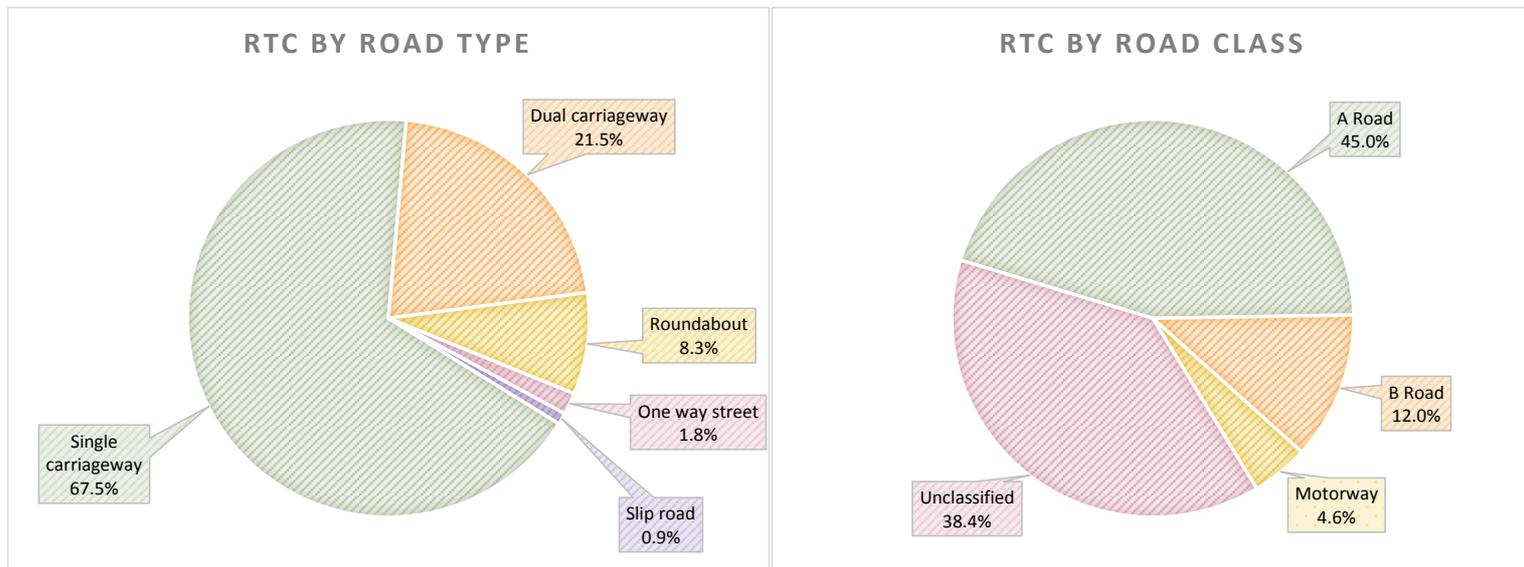


Recommendation: Consider prevention work around **Junction 2 of the M5**, **Junction 7 of the M6**, **Wednesbury**, and the area between **Smethwick and Black Lake in West Bromwich**.

ROADS⁶

Type and class of roads

45.0% of incidents took place on A-roads, despite this class of roads accounting for just 9.1% of the Command Area's road network⁷. More specifically, 16.9% of RTCs took place on a dual carriageway A-road, although the latter accounted for just 3.8% of the Black Country South's road network.



82.4% of motorway incidents were multiple vehicle RTCs, more than any other road type.

The majority of collisions (80.0%) took place on roads where the speed limit was set at **30mph**, which is consistent with 96.2% of RTCs taking place in areas classed as 'urban'.

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

Type of Junction

Almost two thirds of RTCs were evenly divided between happening **away from a junction** (32.6%), and taking place at a **T or staggered junction** (32.6%). **Crossroads** were next with 11.4%.

However, **fatal collisions were more likely away from junctions** than RTCs resulting in injured casualties, which is likely linked to the speed at which vehicle travel on stretches of roads, while they tend to reduce their speed at junctions. Fatal RTCs were also more likely than non-fatal at crossroads.

⁶ Unless otherwise indicated, the analysis in this section refers to STATS19 data, and covers the three calendar years from 2012 to 2014.

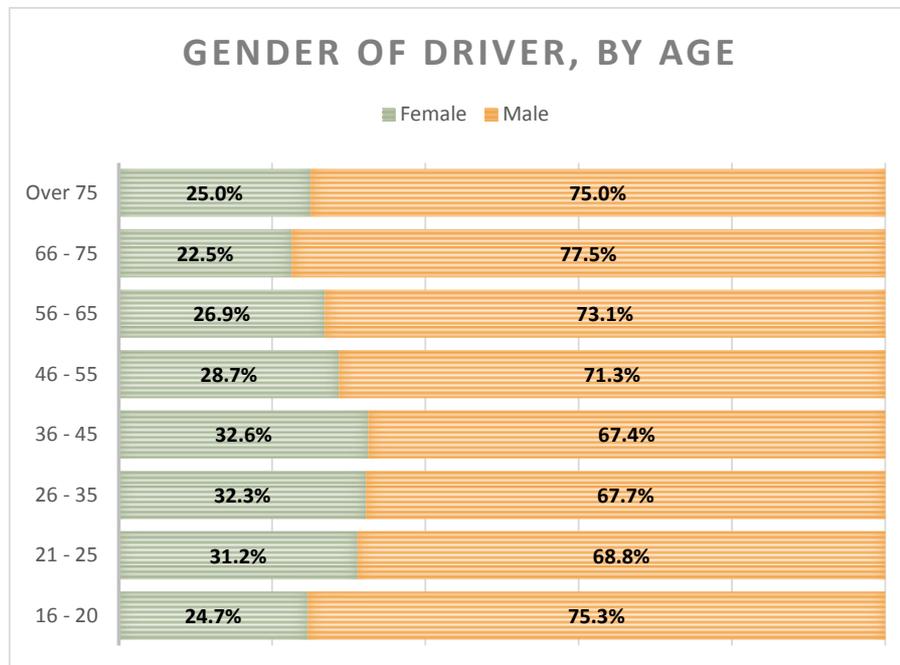
⁷ DfT Road Length in Great Britain: 2014, table RDL0202a

VII. DRIVERS AND CASUALTIES⁸

DRIVERS

Demographics

Where gender and age were recorded (no gender was recorded for 5.9% of drivers, and no age range was recorded for 12.6%), 70.2% of motor vehicle drivers were **male**.



The gender distribution of drivers did not vary significantly with age, although female drivers were slightly more likely to be aged between 21 and 45.

Female drivers were more likely to be in charge of a **car** (94.1%), while almost a third of **male** drivers were driving other vehicles in particular **goods vehicles** (9.9%) and **motorcycles** (9.8%).

Although in most instances the purpose of the driver's journey is recorded as 'not known', 21.0% of male drivers involved in a collision were driving as part of work compared to 12.5% of female drivers, whereas 3.3% of female drivers were taking a pupil to/from school compared to 0.8% of male drivers.

Where recorded, 29.0% of RTCs involved a driver who lived within the **10% most deprived LSOAs**⁹. One third of fatal RTCs involved a driver who lived the 10% most deprived LSOAs, compared to 19.5% of those resulting in serious injuries and 27.0% of those resulting in slight injuries.

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

Almost a third of RTCs (31.2%) involved a driver aged between 26 and 35. However, no particular age group was disproportionately involved in serious or fatal collisions.

⁸ Unless otherwise indicated, the analysis of driver and casualty data refers to STATS19 data, and covers the three calendar years from 2012 to 2014

⁹ Lower Super Output Areas, the smallest geographical areas available for analysis

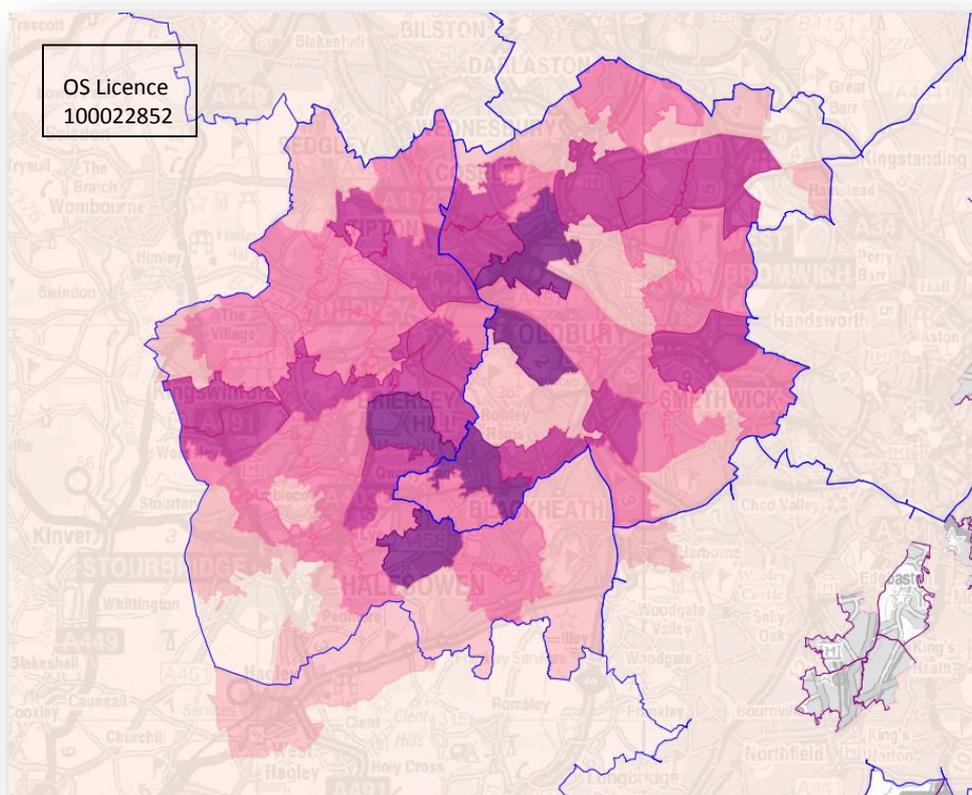
Place of residence

71.0% of drivers whose home address location was recorded lived within the Black Country South: 67.0% of drivers involved in collisions in Dudley and 53.4% of those in Sandwell resided in the same district as where the RTC took place.

Driver Home Location	RTCs in Dudley	RTCs in Sandwell	Total
Dudley	67.0%	11.7%	37.0%
Sandwell	11.1%	53.4%	34.0%
Rest of West Midlands	11.1%	24.6%	18.4%
Rest of UK	10.8%	10.3%	10.6%

It is likely the smaller proportion of local drivers in Sandwell is linked to the greater length of motorways in this district.

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 2012 to 2014: the darker the area, the higher the number of home addresses.



The areas in a darker shade are **Cradley** and **Yewtree Hill/Dudley Wood** in Dudley, and **Old Hill/Haden Cross**, the **Grace Mary Estate**, and **Horseley Heath** in Sandwell.

Recommendation: Consider education opportunities in the areas where drivers involved in collisions reside, in particular **Cradley** and **Yewtree Hill/Dudley Wood** in Dudley, and **Old Hill/Haden Cross**, the **Grace Mary Estate**, and **Horseley Heath** in Sandwell.

Vehicle types

As expected, 90.6% of RTCs in the Black Country South involved a car. However, although only 12.9% of RTCs involved a motorcycle, 22.4% of collisions which resulted in a KSI did, suggesting **that RTCs involving a motorcycle are more likely to lead to fatal or serious injuries**. 41.4% of collisions involving a motorcycle **over 500cc** resulted in someone being killed or seriously injured.

Motorcycle riders involved in collisions were younger than drivers in general: 29.1% were aged 16-20, compared to 7.4% of drivers. However, 52.3% of riders of motorcycles over 500cc were aged 36-55, compared to 30.2% of drivers in general.

Motorcycle riders involved in RTCs in the Black Country South were more likely to be **exceeding the speed limit** at the time of the collision.

Where the purpose of the journey was known, motorcyclists were more likely than any other type of motorists to be **commuting to or from work**. 29.8% of motorcyclists commuting to or from work were involved in a KSI collision, compared to 18.0% of motorists in general.

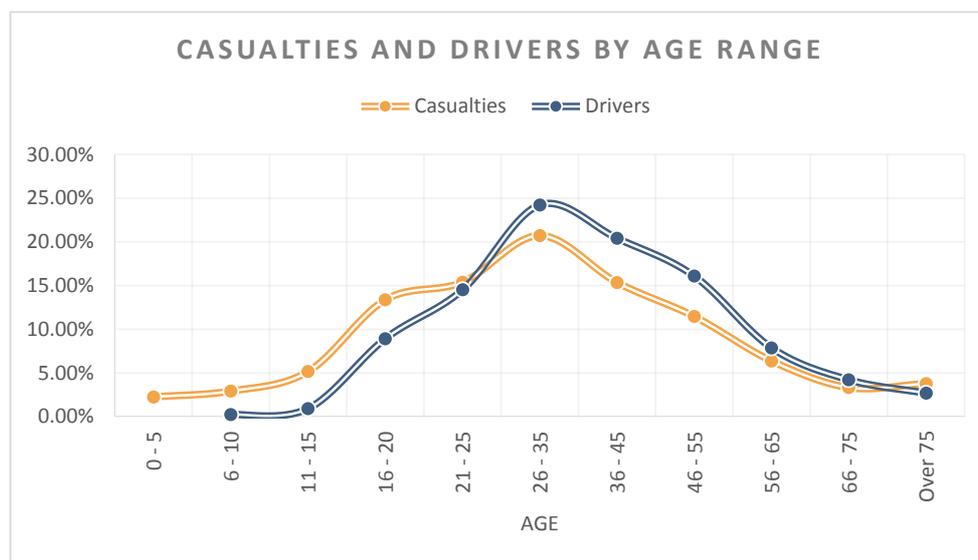
Collisions involving motorcycles were **more likely to be fatal in Dudley** than Sandwell.

Recommendation: Consider motorcycle-specific prevention activities, particularly focusing on riders of motorcycles over 500cc.

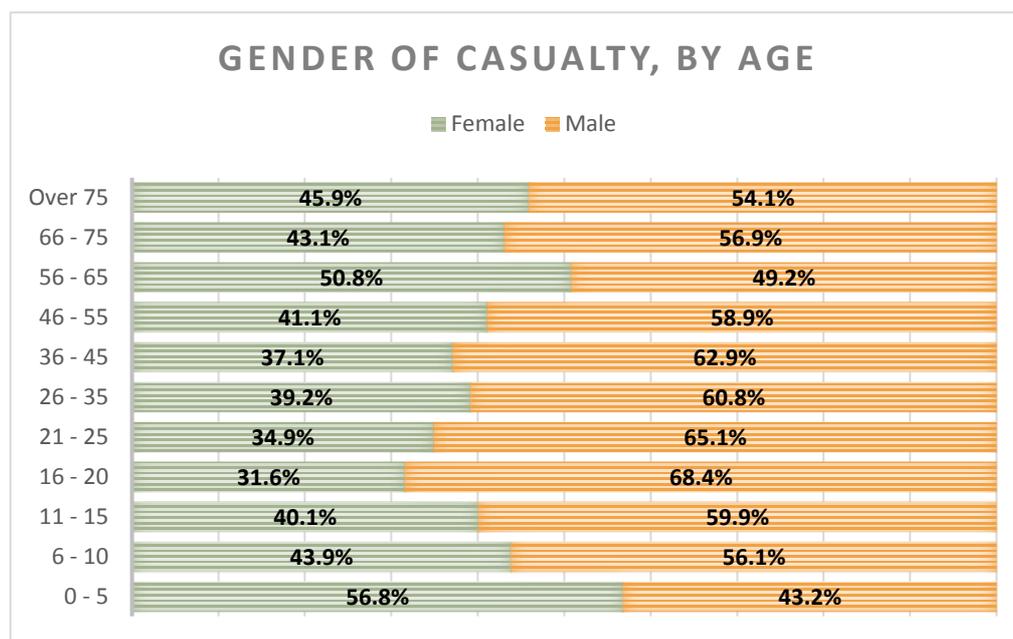
CASUALTIES

Demographics

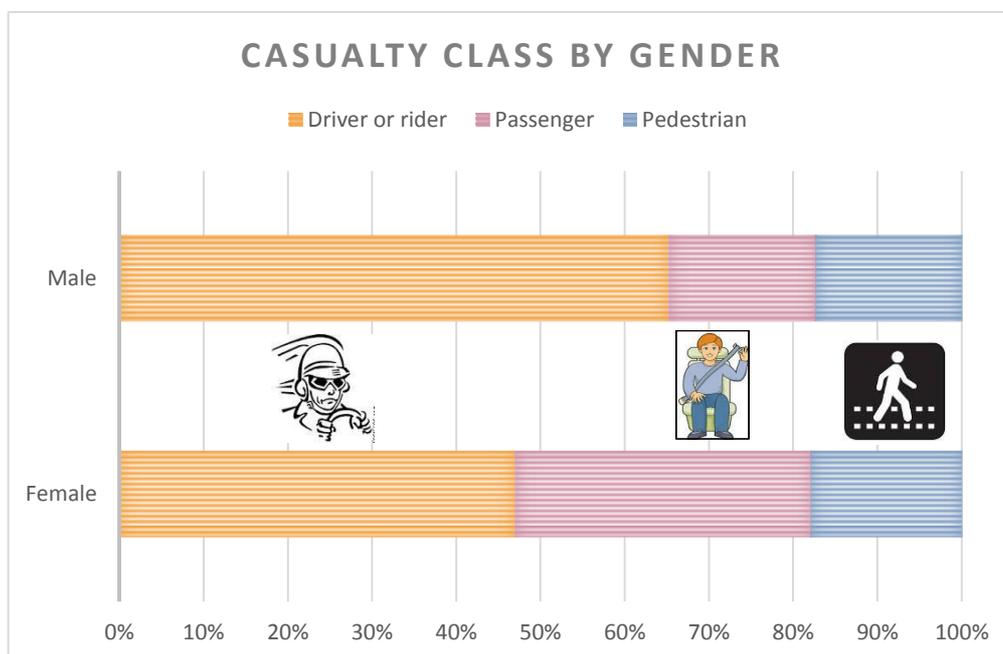
As illustrated in the next graph, casualties follow a similar trend to drivers, although the former tend to be younger: 39.0% of casualties were 25 or under, compared to 24.5% of drivers whose age was recorded.



Unlike drivers, casualties were more evenly distributed between the genders, although casualties aged between 16 and 25 were slightly more likely to be male than other age groups:



Male casualties were more likely to be the vehicle's **driver** (64.8%, compared to 46.7% 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.



Male casualties tended to be more seriously injured; the proportion of male casualties who were fatalities was double that of female (1.4% and 0.7 % respectively). This could be linked to there being more male drivers of buses, motorcycles and goods vehicles, which tend to be involved in more fatal collisions than cars.

Casualties aged over 65 were more likely than any other age group to be fatalities, 3.8% of casualties aged 66 to 75 and 5.4% of those aged over 75 died as a result of an RTC in the Black

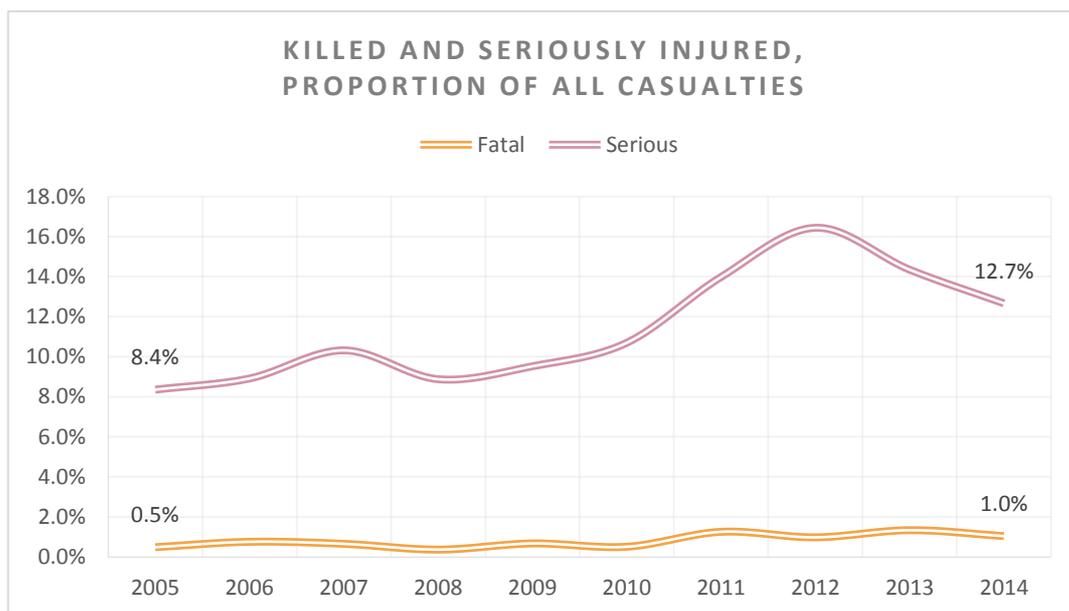
Country South, compared to 1.1% of casualties overall. Those aged over 65 represented 28.9% of the total number of fatalities, despite accounting for just 6.9% of total casualties.

Over a third of fatalities (37.8%) were aged between 21 and 35, although this is consistent with the proportion of overall casualties they represent (35.2%).

Recommendation: Consider different approaches to road safety education based on gender and age.

Severity

As the graph below shows, the proportion of casualties which were killed as a result of an RTC in the Black Country South since 2005 has seen a slight increase, whereas that of seriously injured casualties has experienced a more significant rise.



This change is mostly due to an **increase in both killed and seriously injured casualties in Sandwell**, which rose by 18.4% in 10 years, while Dudley reduced its KSIs by a third in the same time frame. Although it should be noted that the overall number of casualties increased in both districts in 2014.

However, there has been a change in trends in the last two years, with the proportion of seriously injured casualties starting to reduce in Sandwell after a peak in 2012, and in Dudley after a peak in 2013.

Within the West Midlands metropolitan area as a whole, the proportion of seriously injured casualties has also increased, from 8.5% in 2005 to 11.6% 10 years later.

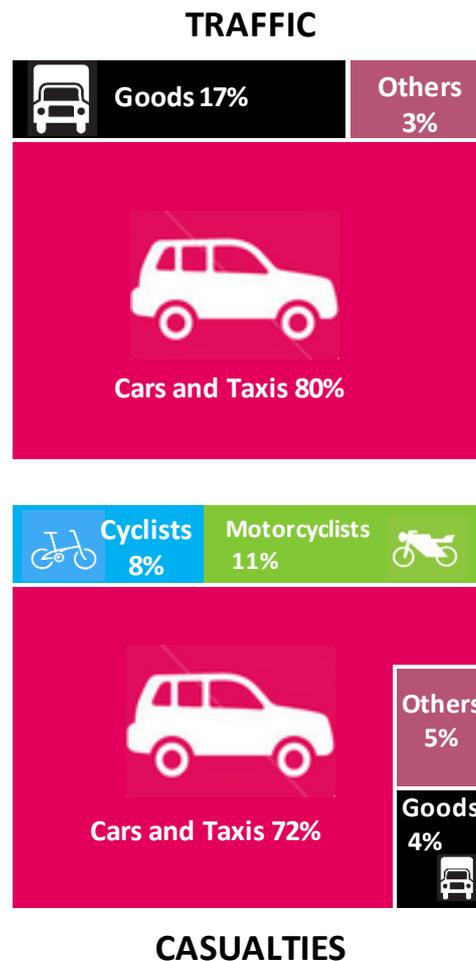
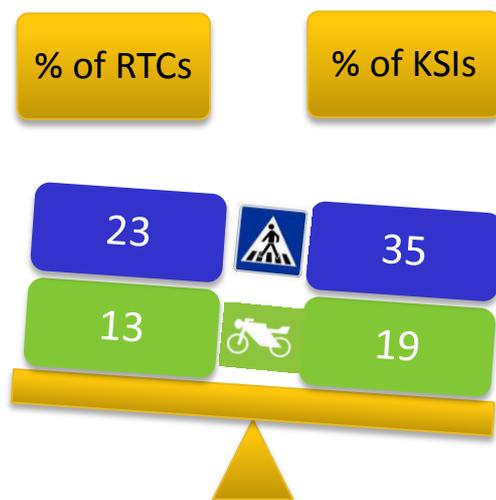
Of the other metropolitan brigades¹⁰, Greater Manchester, Merseyside and West Yorkshire have also experienced such increase in the proportion of seriously injured casualties, while London experienced an increase and South Yorkshire was stable.

¹⁰ 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

Casualty and vehicle types

When comparing casualties in vehicles to traffic in the West Midlands¹¹ (illustration to the right), occupants of cars and taxis represent the greatest proportion in both. However, **cyclists and motorcyclists** are over-represented as casualties.

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



Drivers or riders of a vehicle were more likely to be a KSI than passengers: 13.2% of drivers were killed or seriously injured, compared to 9.9% of passengers. There was a minimal difference between front and rear seat passenger.

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

¹¹ DfT, Road traffic in billion vehicle miles by vehicle type, 2014 (tables TRA0413 and TRA206), in the Former Metropolitan county of West Midlands. Data not available at district level

VIII. CONDITIONS AND CONTRIBUTORY FACTORS¹²

WEATHER AND LIGHT CONDITIONS

52.8% of RTCs took place during **daylight hours with fine weather and no high winds**. Regardless of other weather conditions (fine, raining, snowing, etc.), **high winds** tend to increase the likelihood of a collision resulting in a killed or seriously injured casualty.

Just over a quarter of RTCs took place in darkness; collisions which took place in **darkness**, especially in areas with no lighting, were more likely to be fatal or serious.

64.2% occurred when the road surface was dry. **Road surface conditions did not significantly impact on the seriousness of the RTC**. This suggests that motorists may be more careful when driving on wet or icy roads. Nevertheless, slippery road due to the weather is recorded as a contributory factor in 10.9% of RTCs (see next section).

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 always be possible 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 the Black Country South, being recorded against over a third of collisions.

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
Driver/Rider Error or Reaction - Failed to look properly	38.3%
Driver/Rider Error or Reaction - Failed to judge other person's path or speed	20.7%
Behaviour or Inexperience - Careless, reckless or in a hurry	14.5%
Driver/Rider Error or Reaction - Poor turn or manoeuvre	13.8%
Pedestrian Only (Casualty or Uninjured) - Failed to look properly	11.8%
Road environment contributed - Slippery road (due to weather)	10.6%
Special Codes - Other	10.4%
Driver/Rider Error or Reaction - Loss of control	8.7%
Injudicious Action - Exceeding speed limit	7.1%
Behaviour or Inexperience - Aggressive driving	5.8%

Using a mobile phone while driving contributed to just 0.4% of RTCs in the Black Country South. This could indicate that either driving while on the phone is not an issue – or at least does not contribute to 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 phone and there are few other ways to determine if this was the case.

¹² Unless otherwise indicated, the analysis of weather, road conditions and contributing factors data refers to STATS19 data, and covers the three calendar years from 2012 to 2014

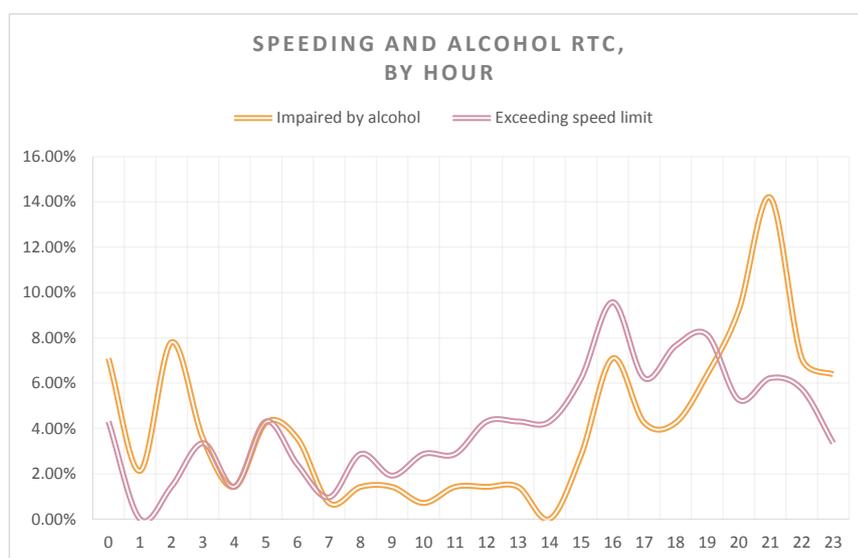
Whilst contributing to only 4.7% collisions, over a quarter of RTCs where a driver was **impaired by alcohol** resulted in fatal or serious injuries (27.7%), compared to 18.7% of those where alcohol was not listed as a contributory factor.

Likewise, 25.8% incidents where **exceeding the speed limit** was listed as a contributory factor resulted in fatal or serious injuries, compared to 18.6% of those where it was not. Speeding was contributory to 7.1% of collisions.

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

There was no significant difference between Sandwell and Dudley for either factors.

Speeding follows a similar trend to overall incidents, peaking around afternoon rush hour, while alcohol impairment also increased around 16:00, then peaks between 20:00 and 22:00 and remains moderately high until 03:00.



Where an age was recorded, 50.9% of drivers exceeding the speed limit were aged between 16 and 25, despite representing just 24.4% of drivers, and 56.2% of drivers impaired by alcohol were aged between 21 and 35, while they account for 38.7% of drivers involved in collisions.

Age group	% of drivers exceeding the speed limit	% of drivers impaired by alcohol	% of all drivers
16 - 20	15.95%	14.29%	8.92%
21 - 25	34.97%	24.11%	14.51%
26 - 35	29.45%	32.14%	24.23%

Male drivers were more likely than female drivers to have been exceeding the speed limit at the time of the collision, and were also more likely to have been impaired by alcohol. The latter is consistent with the proportion of positive breath tests being greater for male drivers than female drivers when requested.

Recommendation: Consider targeted prevention activities focused on drink-driving for drivers aged 21-35, and on speeding for those aged 16-25, particularly male drivers.