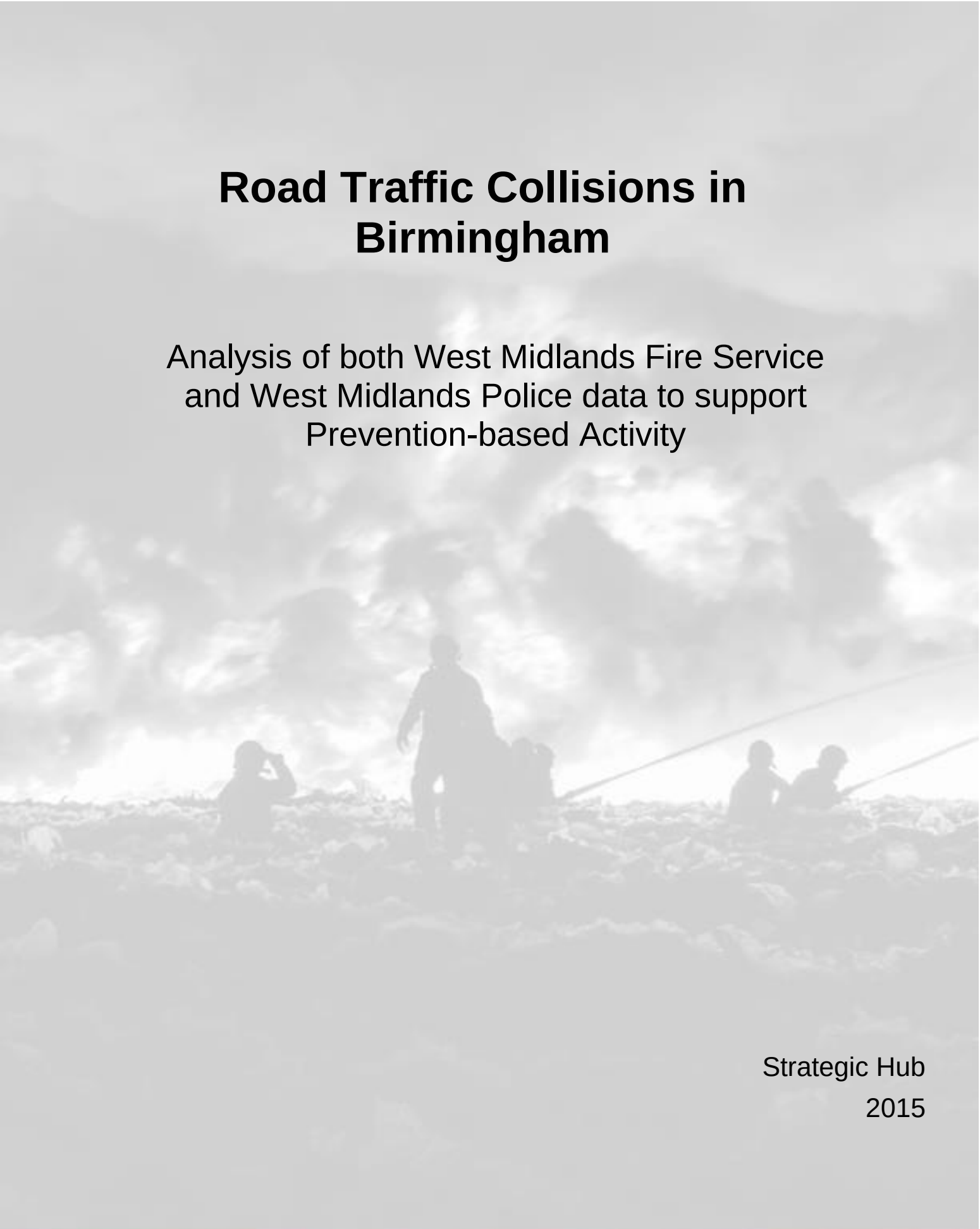
Road Traffic Collisions in Birmingham

Analysis of both West Midlands Fire Service and West Midlands Police data to support Prevention-based Activity



Strategic Hub

2015

Prevention Protection Response

Making West Midlands Safer

WEST MIDLANDS FIRE SERVICE

www.wmfs.net

ROAD TRAFFIC COLLISIONS IN BIRMINGHAM 2012-2015

I. SUMMARY OF FINDINGS AND RECOMMENDATIONS

SUMMARY OF FINDINGS

- In the last three financial years, 2012/13 to 2014/15, West Midlands Fire Service attended 2,811 RTC incidents in Birmingham. These involved 4,849 vehicles and resulted in 29 deaths and 2,622 injuries. The police in the same time period recorded 7,145 incidents involving 13,058 vehicles resulting in 66 deaths and 27,945 injuries
- Incidents peak in the morning and evening rush hours, with Friday being the busiest day and August to October being the busiest months for the Brigade
- Incidents attended by WMFS increased by 12.2% over the three financial years, with an increase of 5.0% in casualties (fatalities and injuries) There was an increase of 26.4% in incidents between 2013/14 and 2014/15
- The proportion of incidents attended where there was no casualty increased slightly from 40.0% to 42.4% over the three year period
- 64% of the incidents attended by the Brigade were to make 'vehicle or area safe'
- The only incident type to reduce over each of the three financial years is 'extrications of persons (using tools)'
- Comparatively, a larger proportion of extrications take place at multiple vehicle incidents
- Multiple vehicle RTCs in Birmingham have increased by 14.7% over the last three financial years (by 24.9% between 2013/14 and 2014/15) and made up over 60% of all RTCs attended by WMFS
- The main hotspot for incidents attended by WMFS (and from police data for the same period) is the city centre. Other hotspots attended by WMFS cover Spaghetti Junction, Minworth & Northfield
- POLICE data shows that almost half (45.6%) of incidents in Birmingham took place on unclassified roads but most accidents per mile take place on A Roads
- 58.0% of drivers involved in an RTC in Birmingham actually reside in Birmingham and 71.9% of drivers who had a collision have a home location within the West Midlands
- The majority of incidents (88.8%) took place on roads where the speed limit was set at 30mph
- The greatest number of fatal RTCs occurred on 30mph roads but proportionately collisions on 60mph roads were more likely to be serious or fatal
- Almost a third of collisions did not take place at or within 20 metres of a junction but 40.6% of those collisions resulted in a KSI casualty, probably linked to speed as injuries tend to be less serious at slower speeds
- The MSOA map for all drivers show larger numbers of home addresses around the areas of Hodge Hill, Bordesley Green and Sparkhill
- For motorcycle accidents in Birmingham the largest proportion of home addresses are in the south west of Birmingham and for pedal cyclists in Kings Heath, Brandwood, Northfield and Chad Valley
- Where gender was recorded, 71.2% of drivers involved in collisions were male
- 95% of female drivers in collisions were in charge of a private car, with the equivalent proportion for males being only 70%, the remaining 30% being in charge of motorcycles, goods vehicles, taxis or buses and minibuses
- Where recorded, 26.6% of RTCs involved a driver who lived in the 10% most deprived areas. These drivers were also involved in almost 30% of the fatal and serious collisions

- RTCs involving motorcycles are more likely to result in fatal or serious injuries
- Casualties aged 16-45 are over represented when compared with the 2014 mid-year population figures from the Office of National Statistics
- All casualties (rather than just driver casualties) are split fairly evenly between male and female
- There were 63 fatalities from 2012-2014 in Birmingham, almost a quarter of them in the age group 21-25, and 33% of these involving riding a motorcycle
- 43.1% of KSI casualties were pedestrians
- 17.5% of the fatalities were over 75 (by far the majority being pedestrians), even though that age range only represented only 2.2% of all casualties
- The weather and road conditions do not significantly contribute to RTCs
- Failure to look properly was the most frequently reported contributory factor – in the three years 2012-2014, it was reported in 22.3% of all accidents reported to the police which occurred in Birmingham
- Three of the five most frequently reported contributory factors involved driver /rider error or reaction
- Exceeding the speed limit was reported as a factor in only 8.2% of incidents but these accidents involved 17.5% of fatalities while impaired by alcohol was listed as a contributory factor in 5.5% of incidents but, again, these accidents involved 17.5% of fatalities

RECOMMENDATIONS

- Consider prevention and education for residents in the most deprived areas
- Consider prevention and education in areas where the majority of drivers reside, Hodge Hill & Bordesley Green for cars, Northfield/Longbridge areas for motorcycles, etc
- Consider prevention and education for school age children as pedestrians, while concentrating on the 16-35 age range group for education on the dangers of being a passenger in a vehicle
- Consider prevention work on speeding for the 16-35 age group and prevention work on drink-driving for the 21-45 age group (but particularly those between 26 and 35

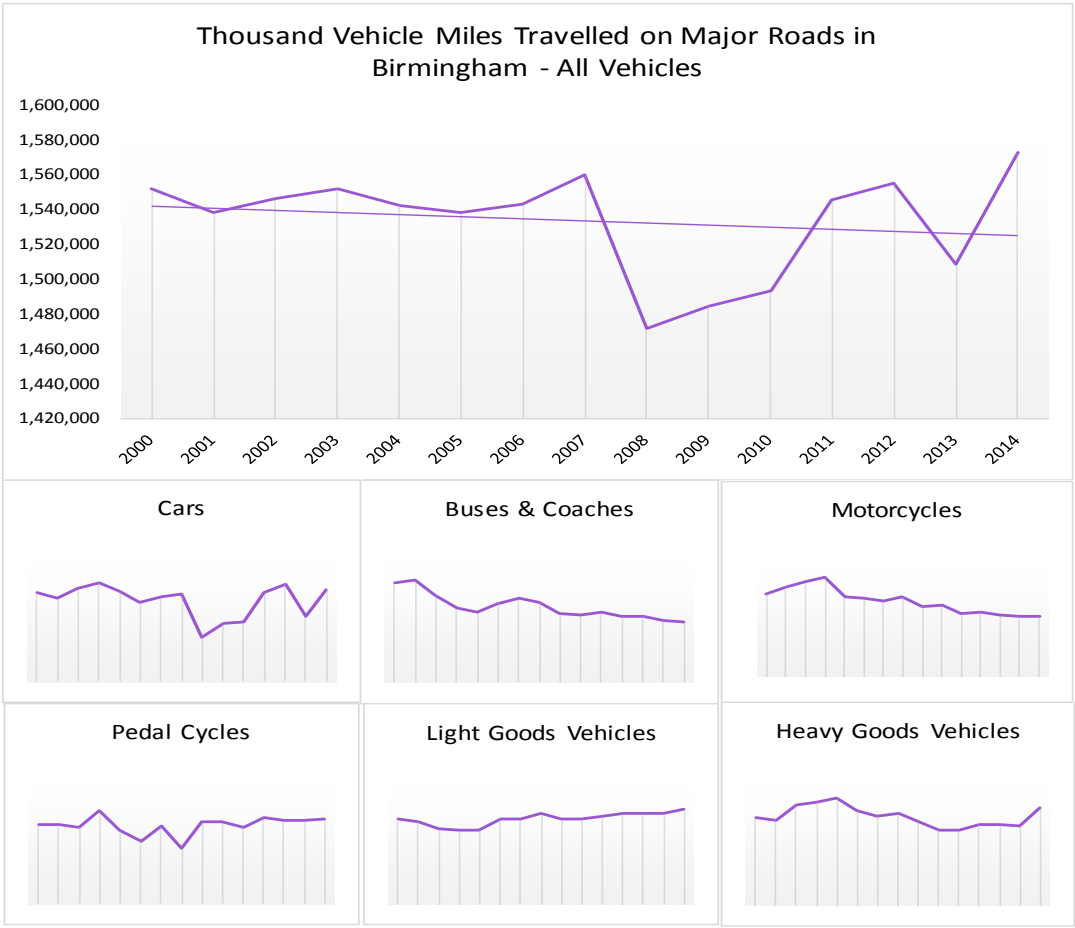
II. INTRODUCTION

Birmingham Local Authority has 138.7 miles of major roads (A roads and motorways) and 1,439.7 miles of minor roads according to the Department for Transport statistics for 2014. At the end of 2014, there were 758,022 vehicles registered in Birmingham postcodes* – 635,363 cars, 12,081 motorcycles, scooters & mopeds and 110,578 other vehicles (vans, HGVs etc)

* Every attempt has been made to exclude 'B' postcodes that are outside the Birmingham border (eg in Solihull) but there are five postcodes that cover areas both inside and outside Birmingham, which have been included in the above numbers

The Department for Transport (DfT) publishes yearly data for the total volume of daily traffic on major roads in the UK in vehicle miles**. Although the trend for all vehicles over the last 14 years is slightly downward, there was a marked increase in 2014 as can be seen in the graph below

** 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 (ie one vehicle travelling one mile each day for a year would equal 365 vehicle miles



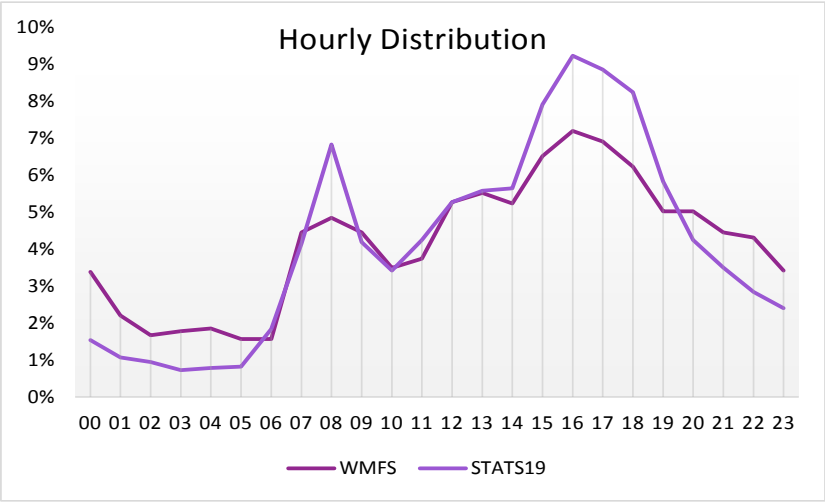
III. OVERVIEW

In the last three financial years, 2012/13 to 2014/15, West Midlands Fire Service attended 2,811 RTC incidents in Birmingham. These involved 4,849 vehicles and resulted in 29 deaths and 2,622 injuries. The police in the same time period recorded 7,145 incidents involving 13,058 vehicles resulting in 66 deaths and 27,945 injuries

Although the police record many more incidents than WMFS, there are some incidents attended by the Fire Brigade not recorded by the police

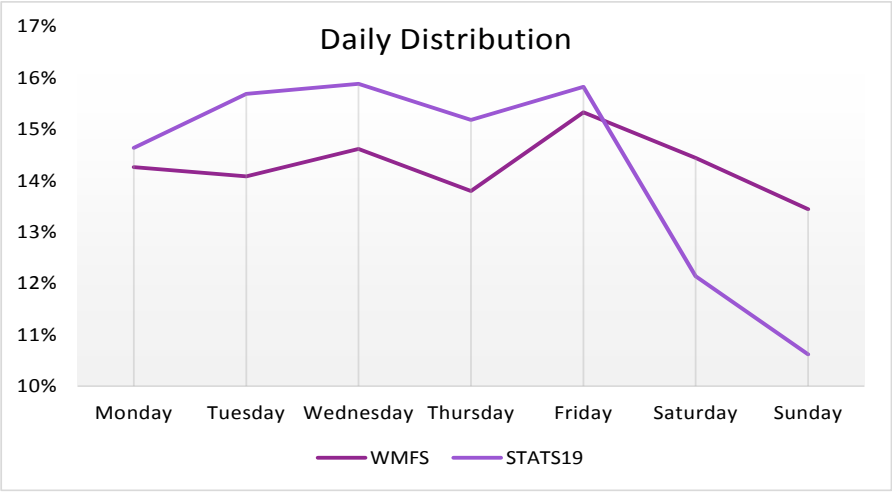
IV. TEMPORAL ANALYSIS

Hourly, daily and monthly distributions of incidents attended by WMFS are shown below

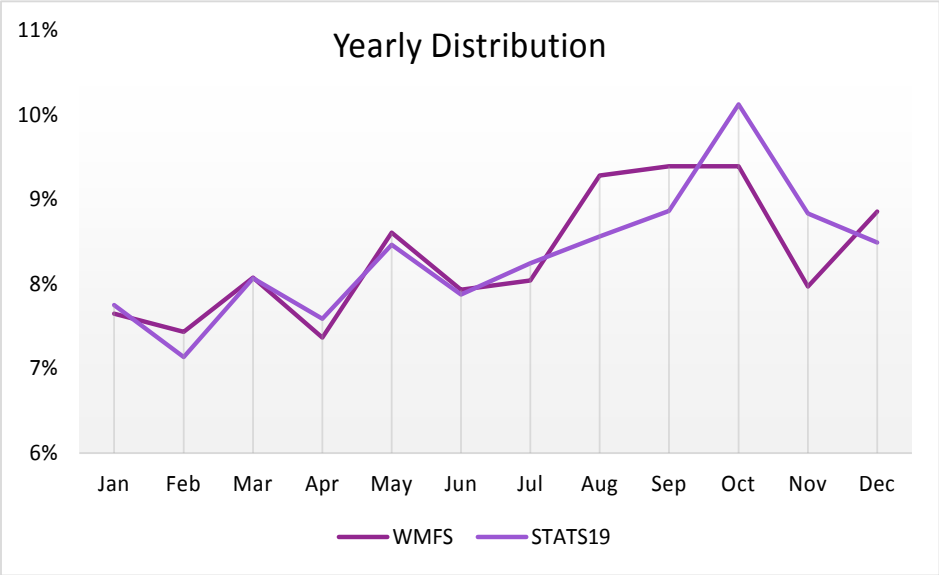


Incidents attended by WMFS broadly follow the same pattern as incidents recorded by the police with two rush hour peaks in the morning and late afternoon

Friday, Wednesday and Saturday are the busiest days for WMFS, while Friday and Wednesday see the largest proportion recorded by the police, with a smaller proportion at the weekend

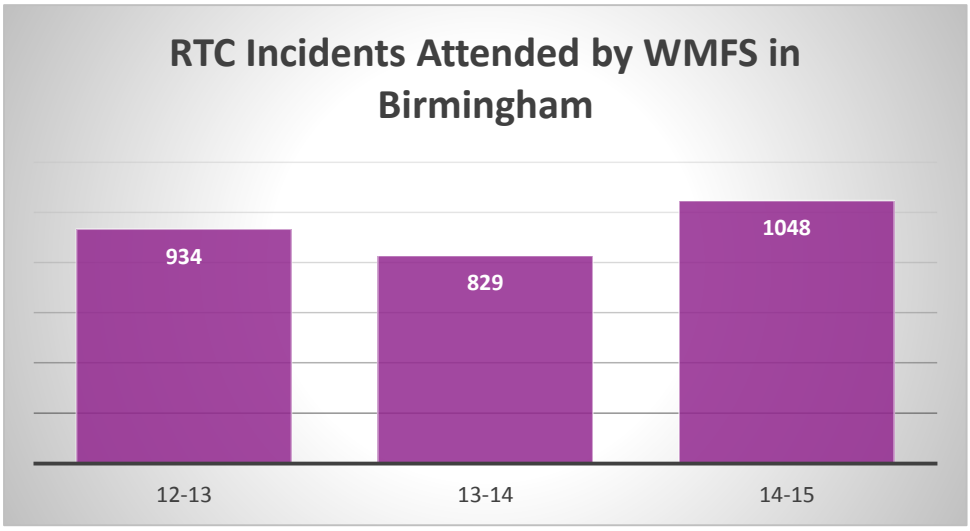


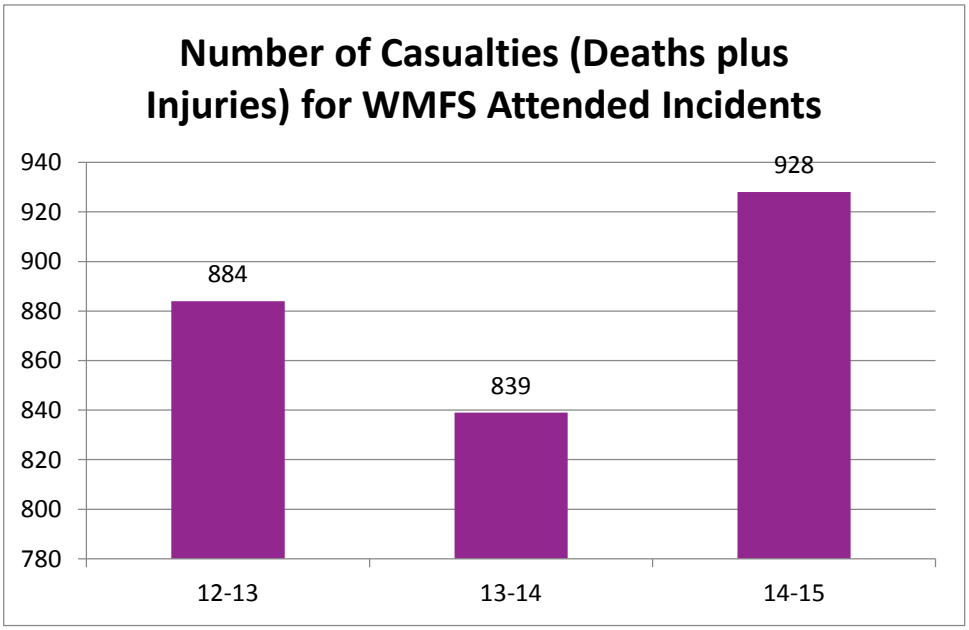
For the first six months of the year, WMFS and police data follow a similar pattern but WMFS experience an even proportion of incidents over the three months from August to October, while the police data shows a distinct peak of incidents in October



Incidents

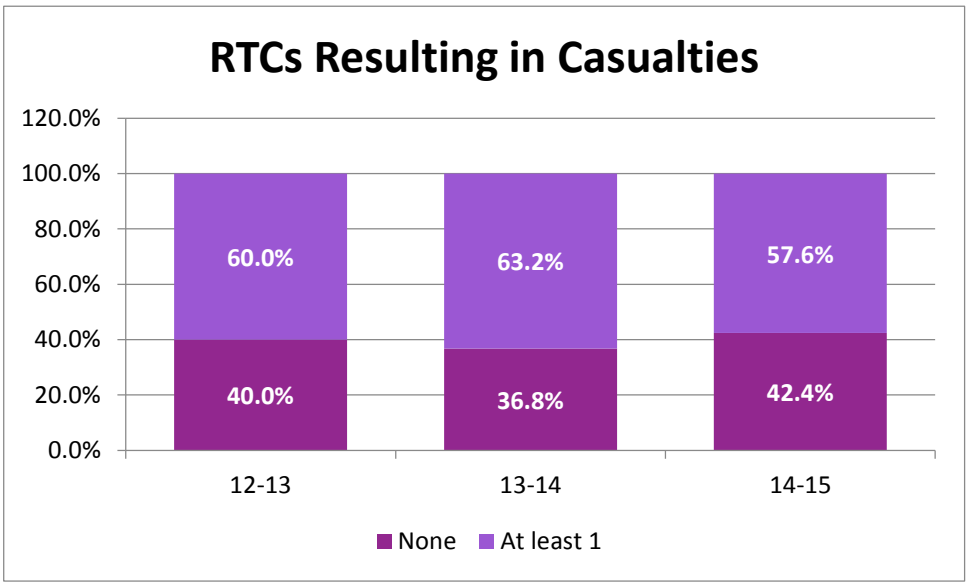
RTCs attended by WMFS in Birmingham decreased by 11.2% between 2012/13 and 2013/14 but then increased by 26.4% between 2013/14 and 2014/15, which resulted in an overall increase over the three financial years reviewed of 12.2%



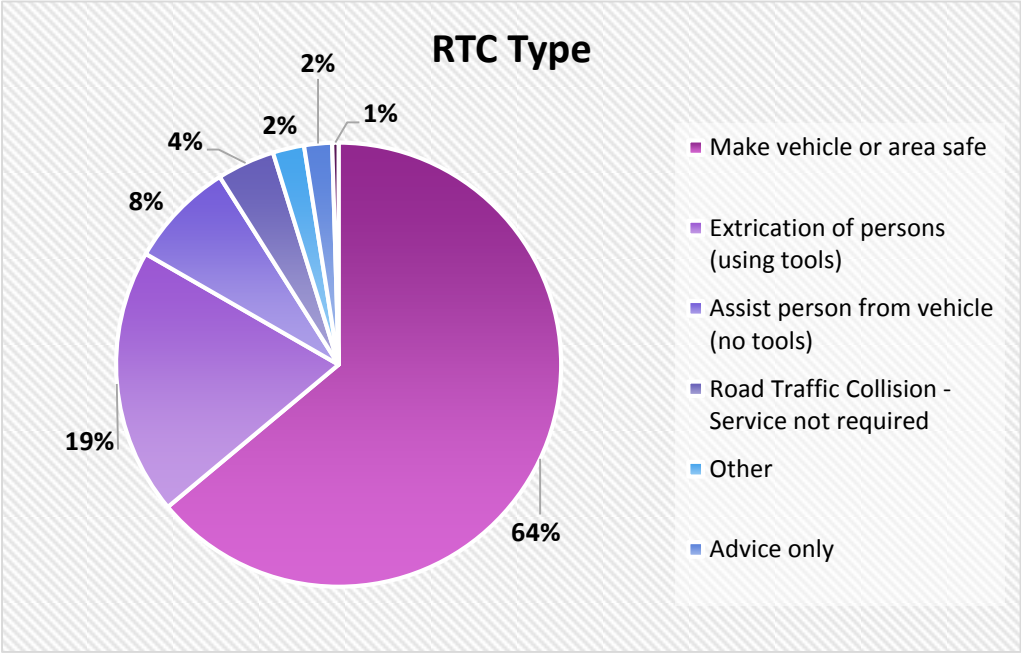


Casualties increased by 5.0% over the same three year period

The proportion of incidents attended where there is no casualty has slightly increased over the last three financial years:

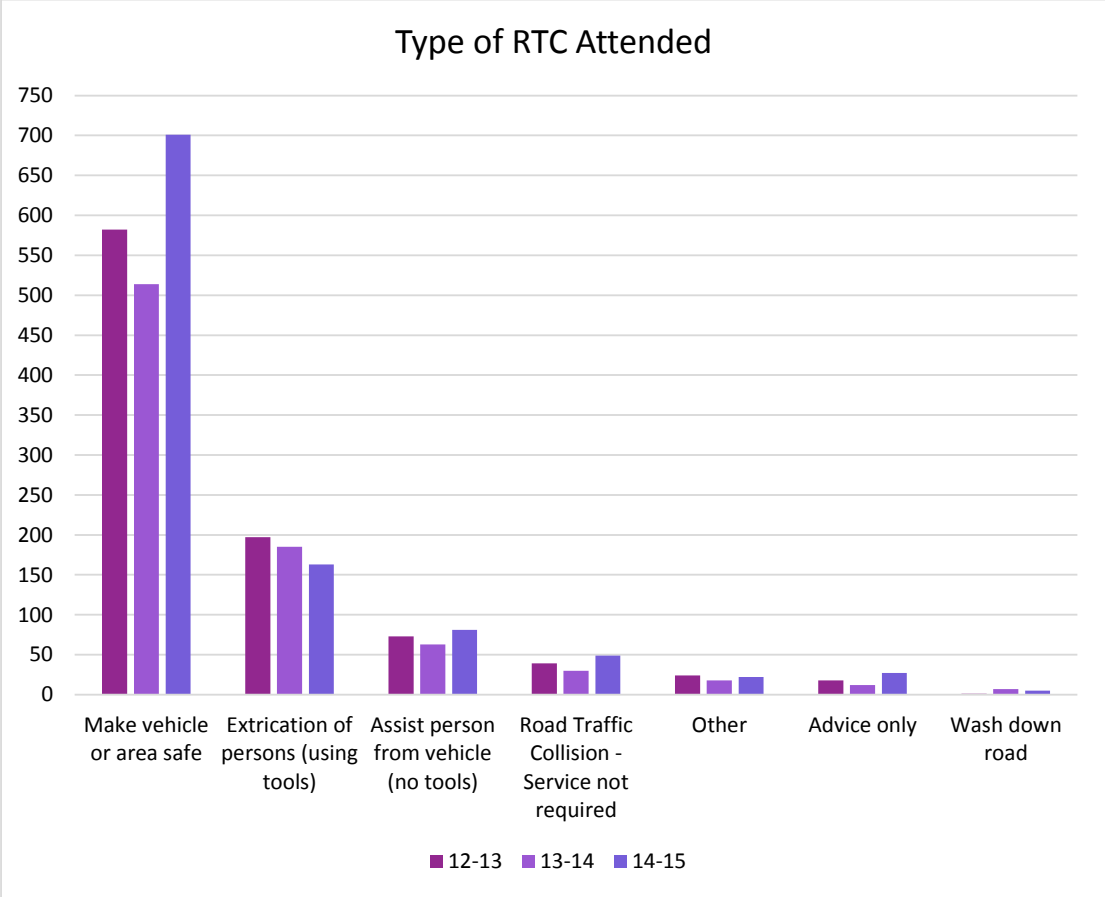


V. INCIDENT & VEHICLE TYPE



Of the RTCs attended by WMFS in Birmingham from Apr 12 to Mar 15, over 83% were either to **make vehicle or area safe** or to **extricate persons using tools**.

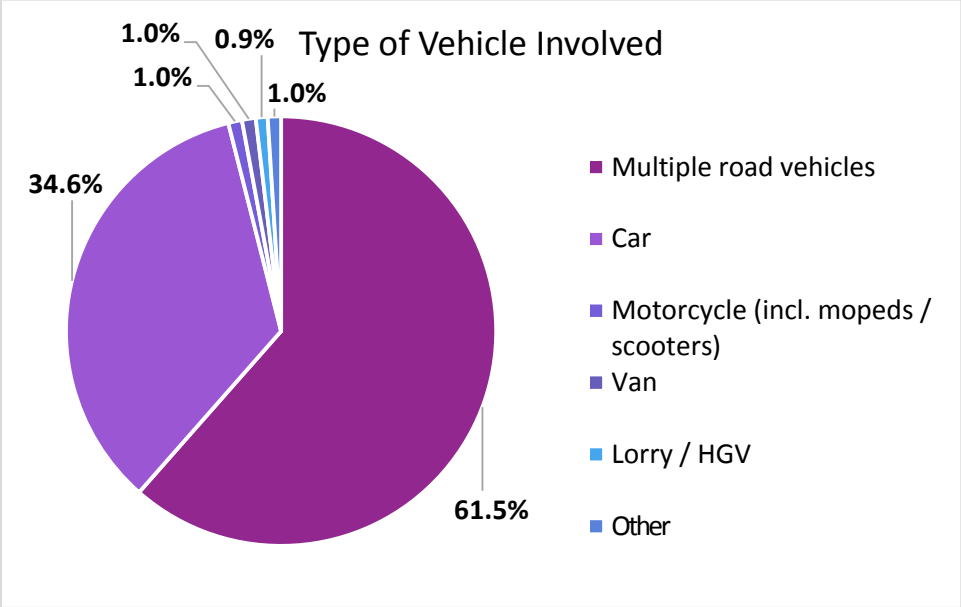
However, the number of incidents requiring extrications is the only RTC type to have fallen each financial year as can be seen in the graph below



The work carried out by the Brigade varies in proportion depending on whether the incident is for a single vehicle or multiple vehicles: it is more likely for an extrication to be performed at a multiple vehicle accident

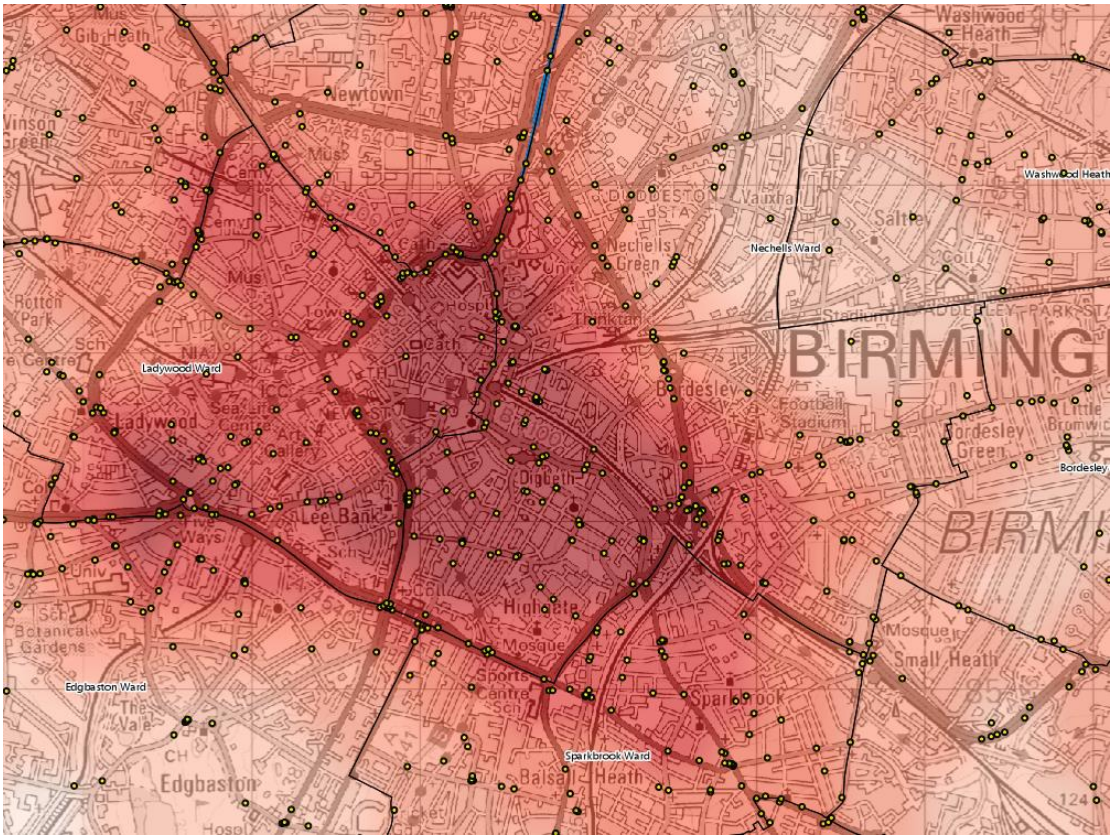
	Multiple Vehicle Incident	Single Vehicle Incident
Make vehicle or area safe	60.1%	70.1%
Extrication of persons (using tools)	23.7%	12.5%
Assist person from vehicle (no tools)	8.8%	6.0%
Road Traffic Collision - Service not required	2.9%	6.2%
Other	2.4%	3.4%
Advice only	1.6%	1.4%
Wash down road	0.5%	0.5%

Multiple vehicle RTCs in Birmingham have increased by 14.7% over the last three financial years (by 24.9% between 2013/14 and 2014/15) and made up over 60% of all RTCs attended by WMFS. Single vehicle incidents attended have also increased (by 8.4% over the three years and by 28.9% between 2013/14 and 2014/15)

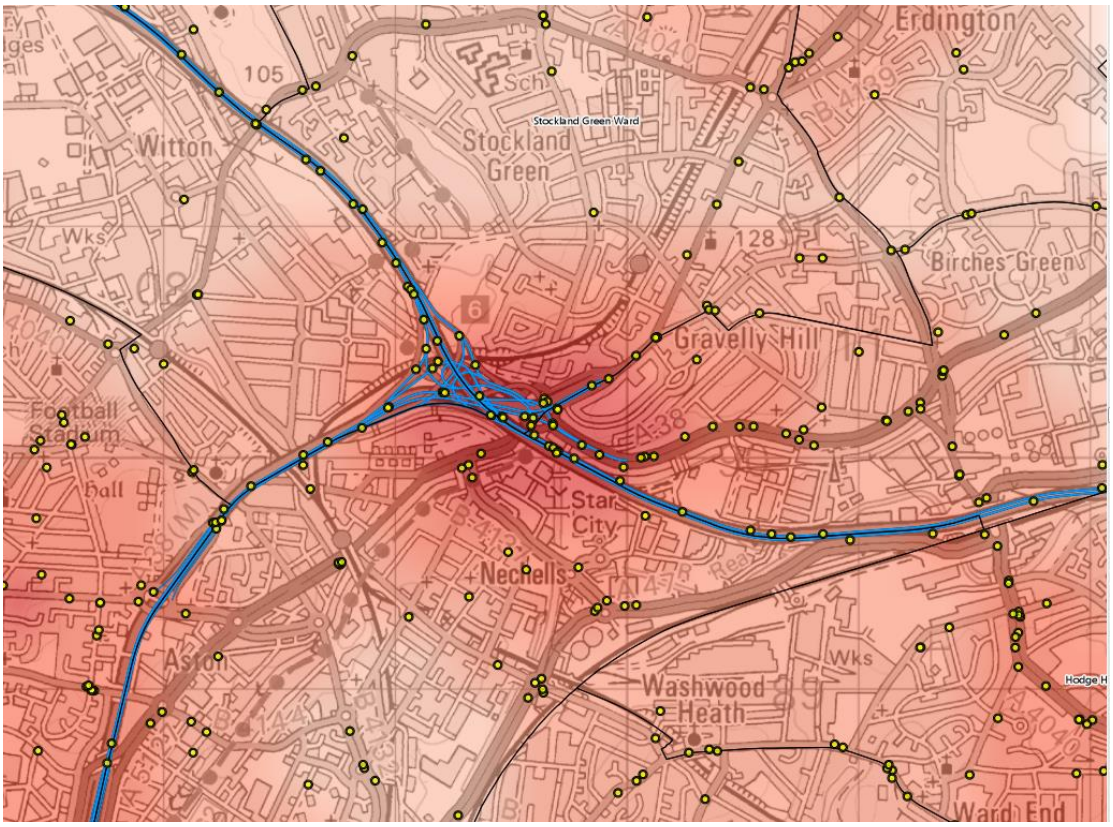


VI. HOTSPOTS

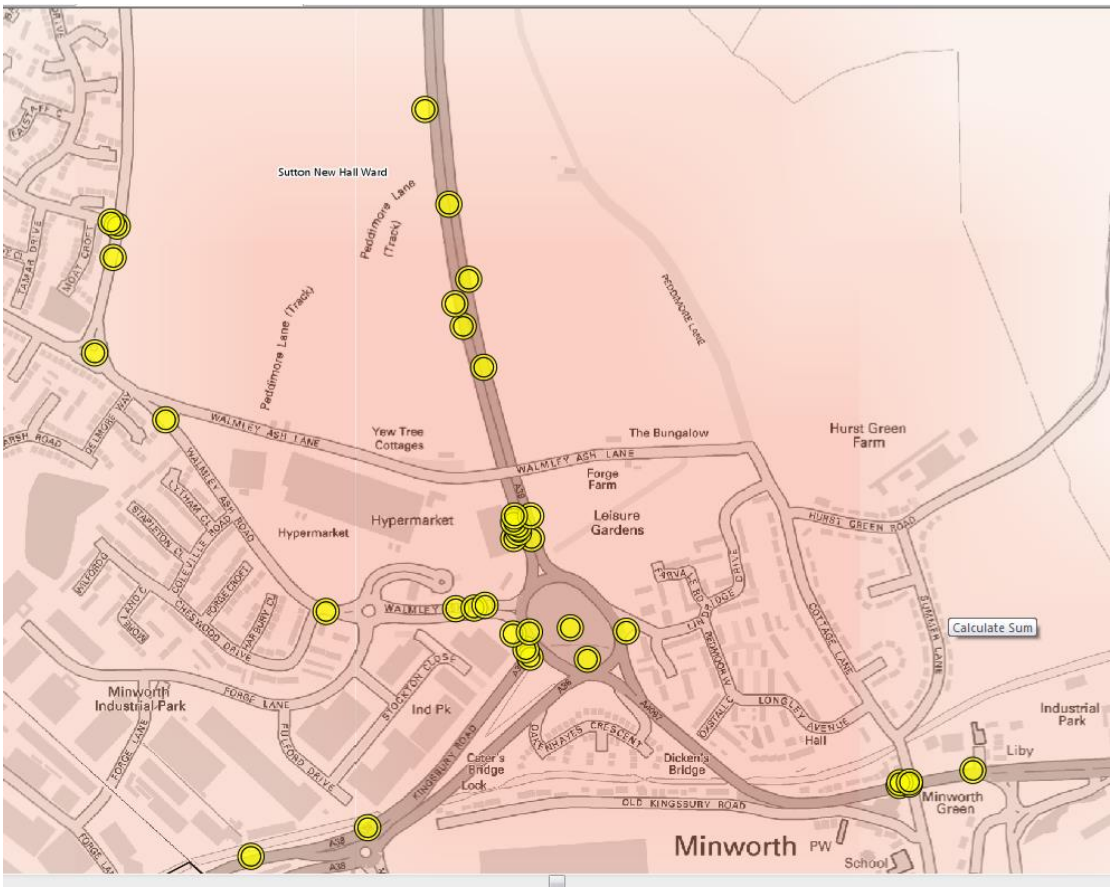
The main hotspot for incidents attended by WMFS over the last three financial years is the centre of Birmingham as can be seen in the map below



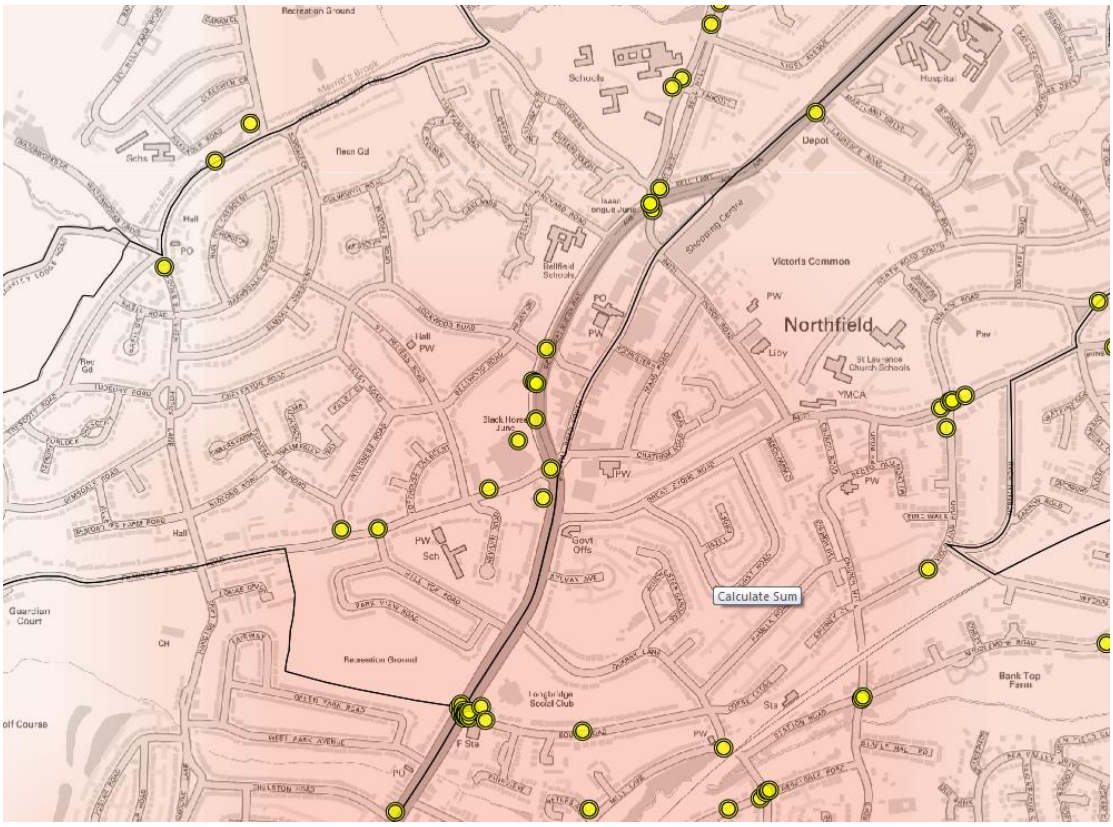
There is also a significant hotspot around Spaghetti Junction



There have been a number of incidents around the main roundabout in Minworth



and also a number of incidents along the Northfield bypass and also outside Northfield Fire Station:



Other roads with multiple incidents are Soho Road, the intersection of the A4040 and the B4114 between Ward End and Hodge Hill

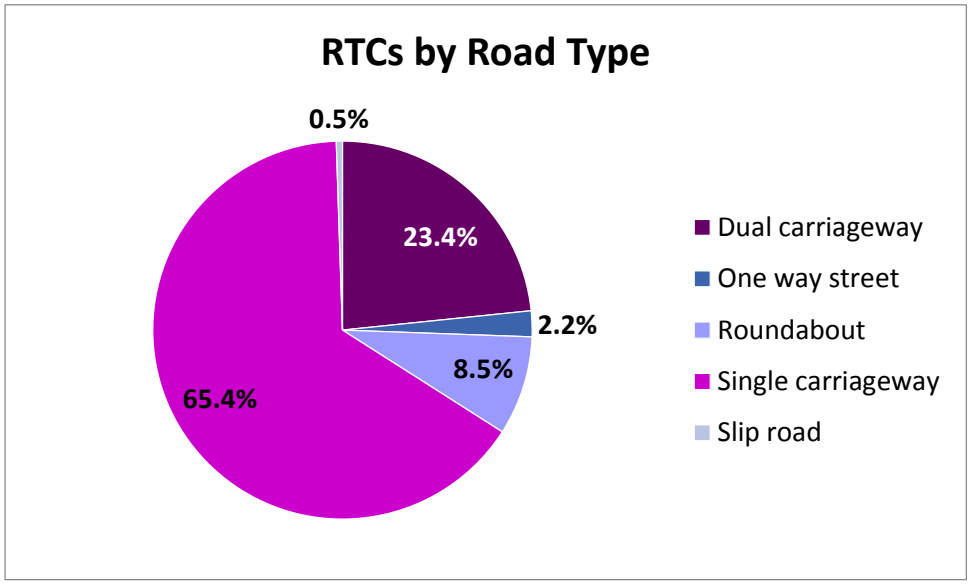
FROM THIS POINT, POLICE DATA FROM 2012 – 2014 HAS BEEN USED (UNLESS INDICATED OTHERWISE)

VII. ROADS

Almost half (45.6%) of incidents took place on unclassified roads (ie local roads intended for local traffic) which is consistent with 58.0% of drivers involved in an RTC in Birmingham actually residing in Birmingham. However, using the Department for Transport Road Lengths table for Birmingham (RDL0102), it can be seen in the table below that there were most accidents per mile on A Roads

	Miles of road	Incidents	Incidents per mile
A	123	2601	21.1
B	77.2	1172	15.2
Motorway & A(M)	15.7	192	12.2
Unclassified	1362.5	3324	2.4

As can be seen by the pie chart below, almost 90% of incidents took place on either dual carriageways or single carriageways.



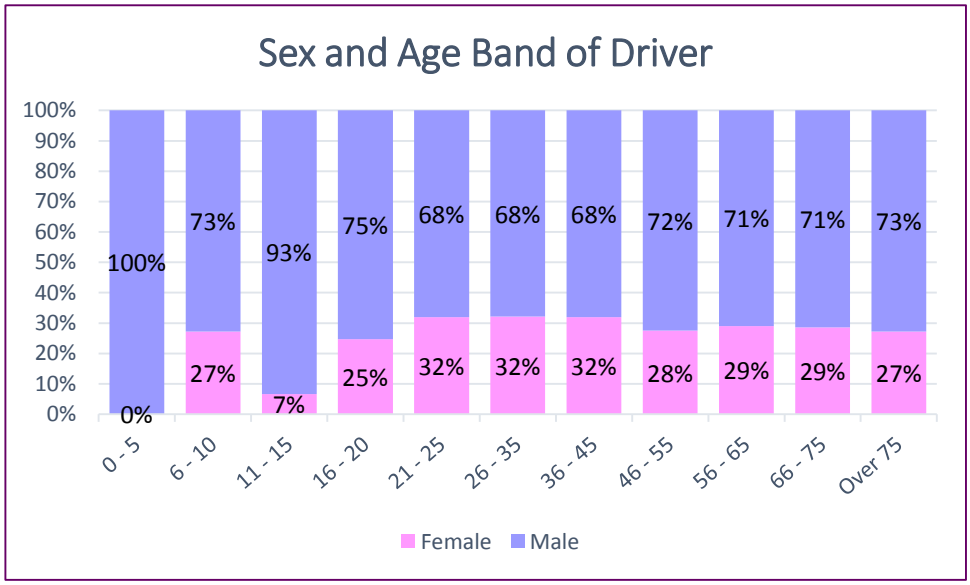
The majority of incidents (88.8%) took place on roads where the speed limit was set at 30mph. The second highest proportion of incidents (8%) were on roads with a 40mph limit with only 2% on 70mph roads

The greatest number of fatal RTCs occurred on 30mph roads but proportionately collisions on 60mph roads were more likely to be serious or fatal

Almost 30% of incidents took place at a T or staggered junction and a further 20% were at crossroads. Almost a third of collisions did not take place at or within 20 metres of a junction but 40.6% of those collisions resulted in a KSI casualty, probably linked to speed as injuries tend to be less serious at slower speeds

VIII. DRIVERS AND CASUALTIES

Where gender and age were recorded, 71.2% of drivers were male. NB In the data below, pedal cyclists are counted as drivers but there are very few



95% of female drivers in collisions were in charge of a private car, with the equivalent proportion for males being only 70%, the remaining 30% being in charge of motorcycles, goods vehicles, taxis or buses and minibuses.

17.7% of collisions were recorded as occurring on a journey as part of work, while 11.4% were commuting either to or from work

Where recorded, 26.6% of RTCs involved a driver who lived in the 10% most deprived LSOAs (Lower Super Output Areas, the smallest geographical area available for analysis) These drivers were also involved in almost 30% of the fatal and serious collisions

Recommendation – Consider prevention and education for residents in the most deprived areas

Place of residence –

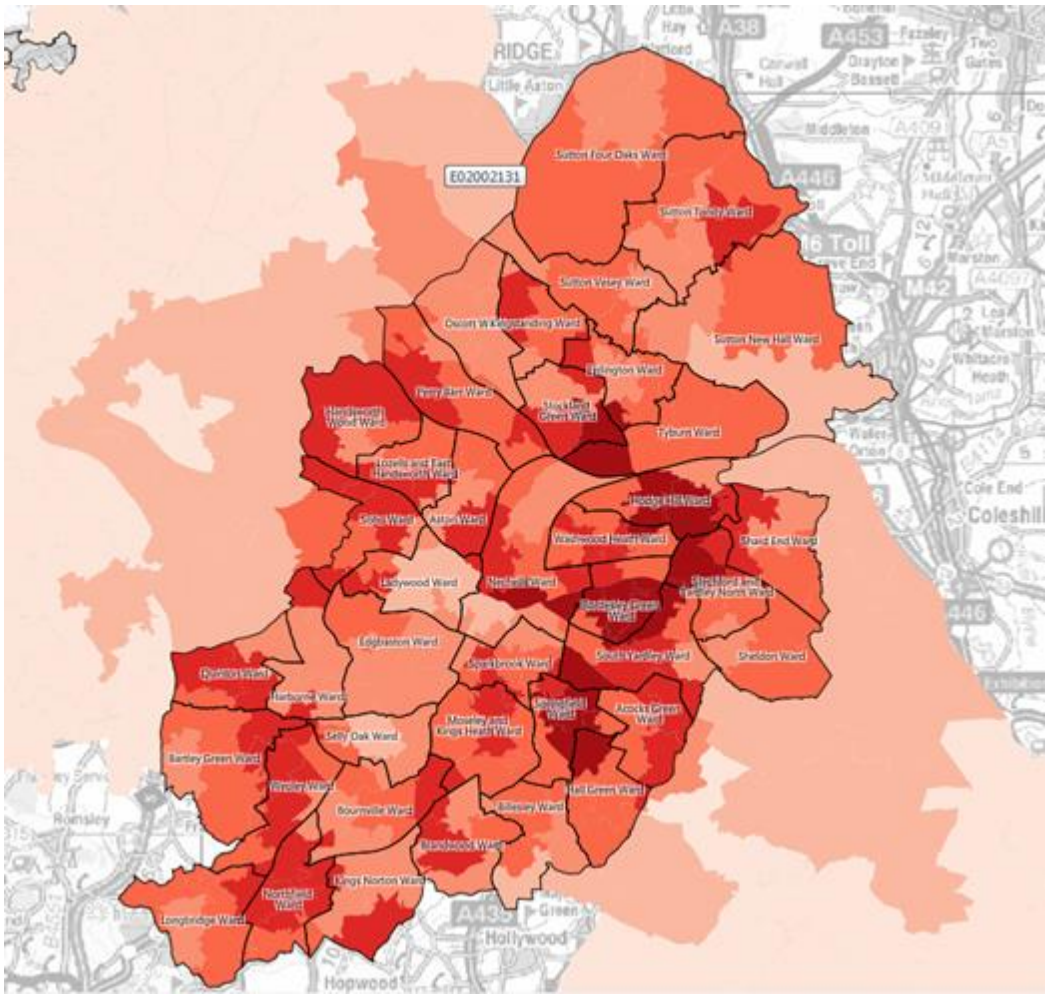
MAST data was used to find the MSOA (Middle Super Output Area) of drivers involved in collisions in Birmingham for three years to end Jun 2014 (the latest data available) The following table shows that 71.9% of drivers who had a collision have a home location within the West Midlands, 58% living within Birmingham itself

Birmingham	58.0%
Coventry	0.5%
Dudley	1.5%
Not in West Midlands	28.1%
Sandwell	4.5%
Solihull	4.5%
Walsall	2.2%
Wolverhampton	0.7%

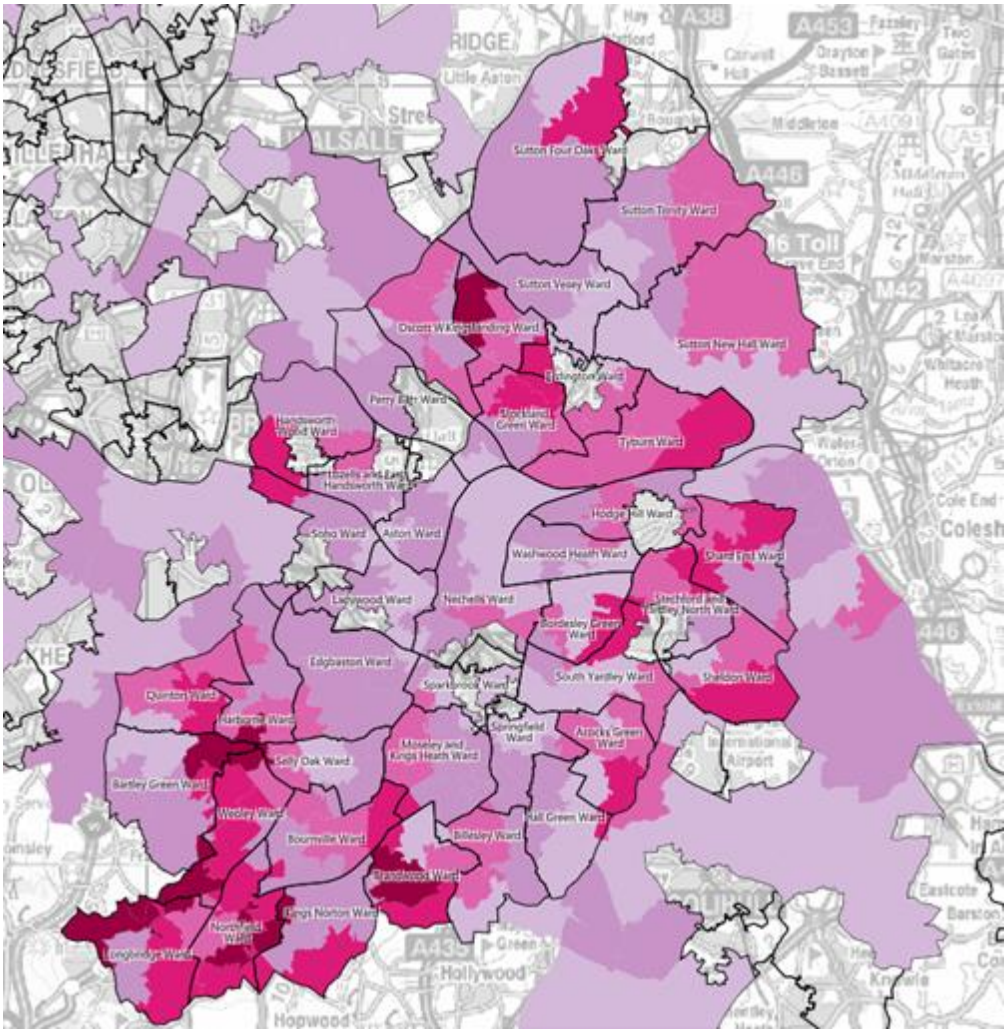
The maps below are colour coded to illustrate the number of drivers' home addresses per MSOA for three years from July 2011 to June 2014 (the darker the area, the higher the number of home addresses.

<u>All Vehicles</u>

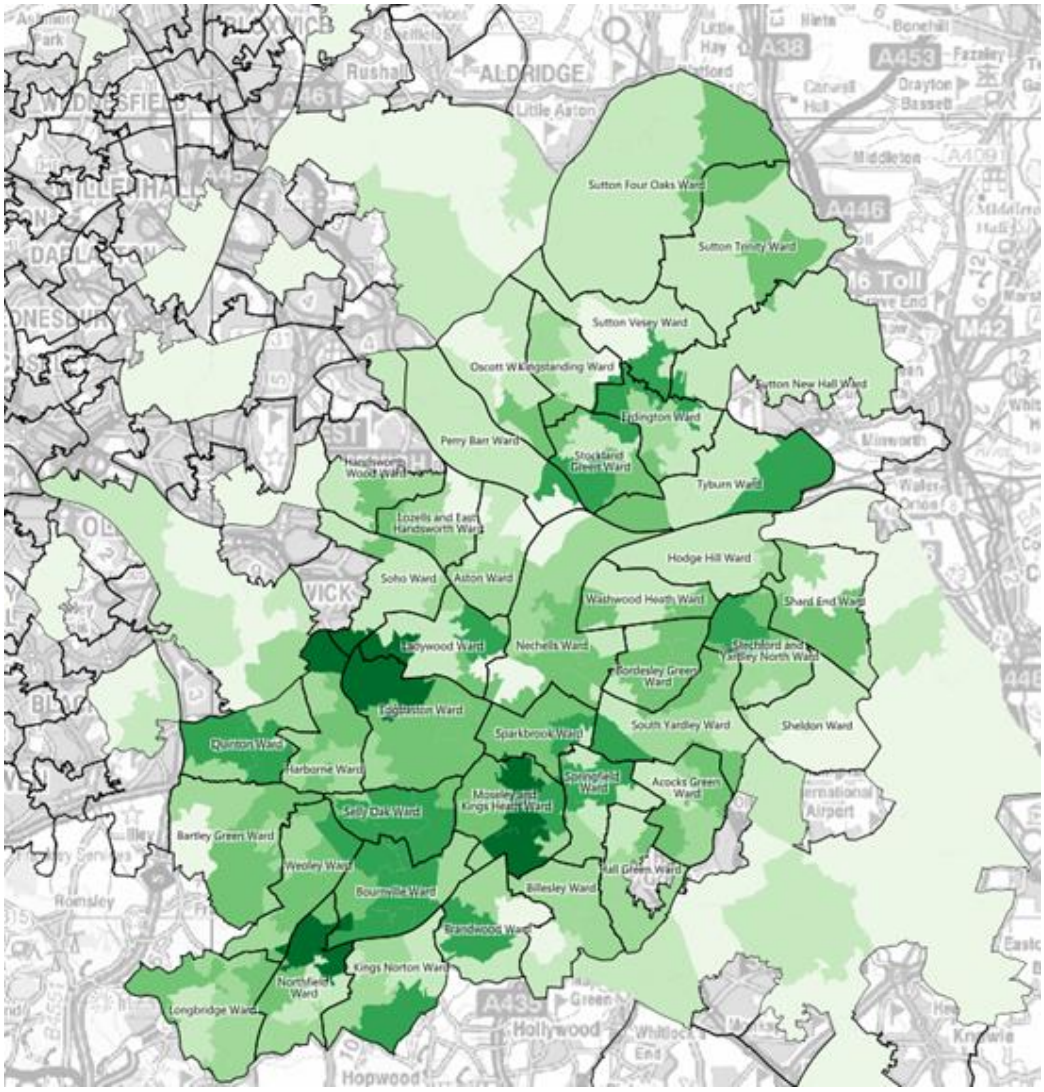
As car drivers are involved in the majority of RTCs, the MSOA map for all drivers (see below), which shows larger numbers of home addresses around the areas of Hodge Hill, Bordesley Green and Sparkhill shows is the same as that for car drivers only



The home MSOAs of drivers involved in motorcycle accidents in Birmingham shows a very different picture, with the largest proportion in the south west of Birmingham (see below)



Finally, those involved in pedal cycle incidents in Birmingham live in different areas again, namely Kings Heath, Northfield, Brandwood and Chad Valley (see below)



Recommendation – Consider prevention and education in areas where the majority of drivers reside, Hodge Hill & Bordesley Green for cars, Northfield/Longbridge areas for motorcycles, etc

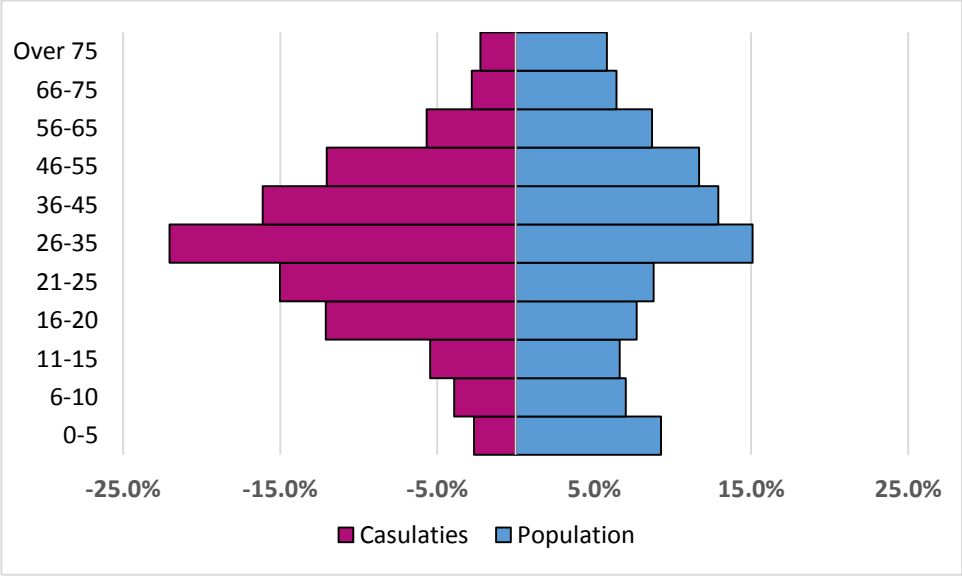
Vehicle Types

91.1% of RTCs in Birmingham involved a car, which is not unexpected. However, although only 8.9% of accidents involved a motorcycle, 18.7% of KSI incidents involved a motorcycle. This suggests that RTCs involving motorcycles are more likely to result in fatal or serious injuries

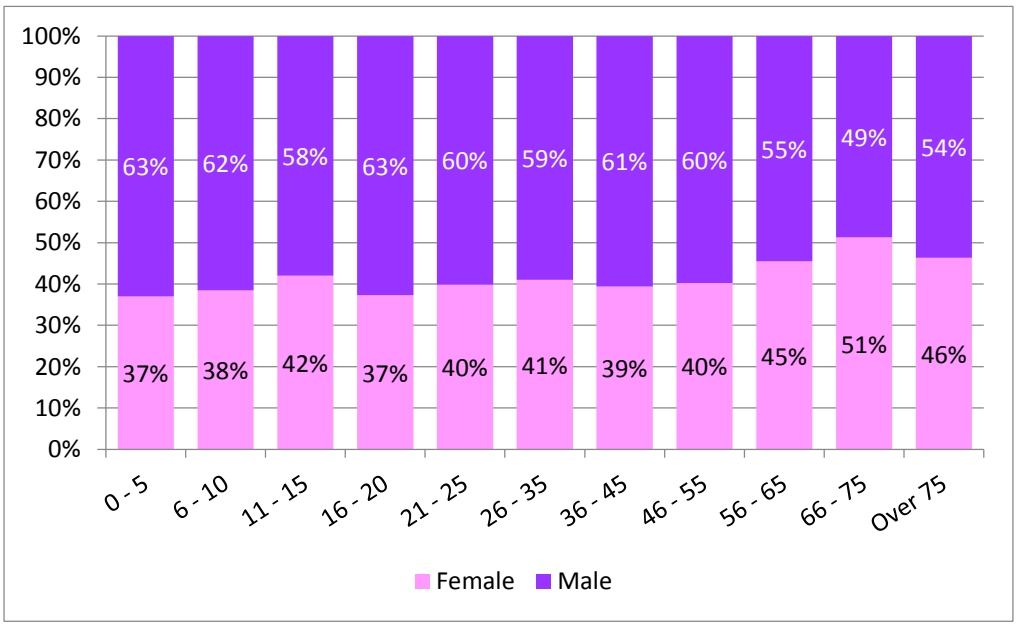
CASUALTIES

The graph below shows that casualties aged 16-45 are over represented when compared with the mid-year population figures for Birmingham for 2014 provided by the Office for

National Statistics. 65.3% of casualties fall within this age range which represents only 44.5% of the population

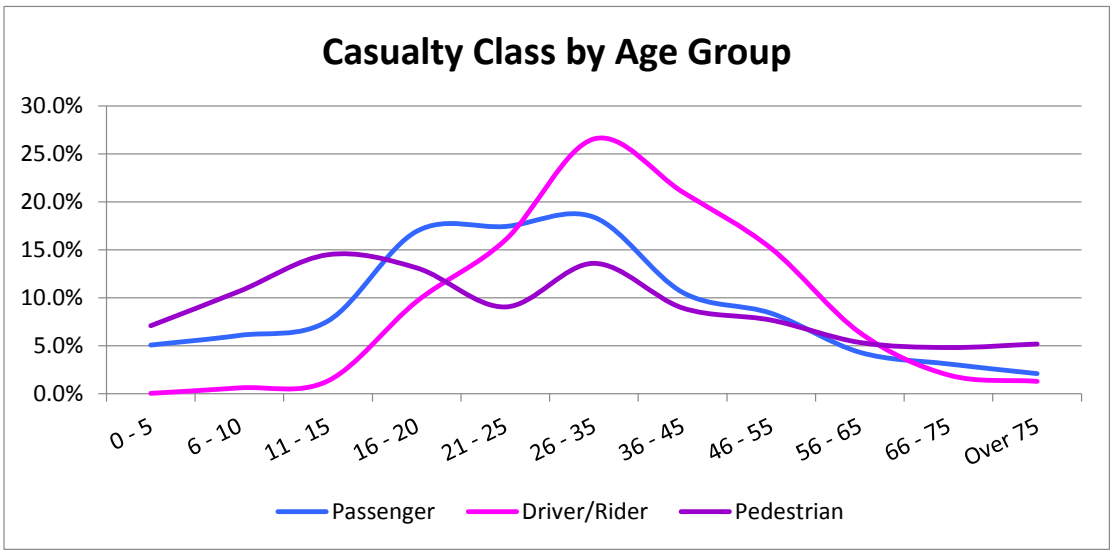


All casualties, rather than just driver casualties, are more evenly split by gender as shown in the bar chart below:



61.5% of all male casualties were the driver/rider compared with only 47.2% of female casualties – the latter were more likely to be passenger casualties in vehicles. 19% of both male and female casualties were pedestrians

The graph below looks at the age group ranges for the three different casualty classes



Recommendation – consider prevention and education for school age children as pedestrians, while concentrating on the 16-35 age range group for education on the dangers of being a passenger in a vehicle

There were 63 fatalities from 2012-2014 in Birmingham, almost a quarter of them in the age group 21-25, and 33% of these involving riding a motorcycle

Although 88% of all casualties were only slight, 17.5% of the fatalities were over 75 (by far the majority being pedestrians), even though that age range only represented only 2.2% of all casualties. 23.8% of fatalities were in the age range 21-25 (a third of those being motorcyclists) although this age range represented only 15% of all casualties

43.1% of KSI casualties were pedestrians, unsurprising as they have little protection, followed by 25.3% car occupants, 17.1% motorcyclists and 11% pedal cyclists, Passengers in the rear of a car were slightly more likely to be killed than those in the front passenger seat

IX. CONDITIONS AND CONTRIBUTORY FACTORS

Weather & Light Conditions

70.6% of RTCs occurred in daylight and on 71.9% of occasions the weather was fine with no high winds. 67.4% of collisions occurred when the road was dry. These factors all seem to suggest that the weather and road conditions do not significantly contribute to RTCs

Contributory Factors

The contributory factor system allows the recording of up to six factors in injury road accidents where the police attended the scene. It should be borne in mind that contributory factors are completed by the police officer on the scene and are therefore subjective. In Birmingham during the period reviewed, there were on average 2.5 contributory factors per incident.

Failure to look properly was the most frequently reported contributory factor – in the three years 2012-2014, it was reported in 22.3% of all accidents reported to the police which occurred in Birmingham. Three of the five most frequently reported contributory factors involved driver /rider error or reaction

The table below shows the top ten factors contributing to RTCs over the three year period. (As up to six can be recorded for each incident, the percentages add to more than 100%)

Factor	Factor Group	% of incidents factor recorded against
Failed to look properly	Driver/Rider Errror or Distraction	56.6%
Careless, reckless or in a hurry	Behaviour or Inexperience	23.7%
Failed to judge other person's path or speed	Driver/Rider Errror or Distraction	22.1%
Poor turn or manoeuvre	Driver/Rider Errror or Distraction	14.0%
Other	Special Codes	9.5%
Slippery road (due to weather)	Road Environment Contributed	8.3%
Exceeding speed limit	Injudicious Action	8.2%
Loss of control	Driver/Rider Errror or Distraction	6.0%
Travelling too fast for conditions	Injudicious Action	6.0%
Aggressive driving	Behaviour or Inexperience	5.8%

For fatal accidents, failure to look properly was also the most frequently reported, followed by exceeding the speed limit, being impaired by alcohol and aggressive driving

X. SPEEDING AND ALCOHOL

Exceeding the speed limit was reported as a factor in only 8.2% of incidents but these accidents involved 17.5% of fatalities. RTCs where excessive speed was listed as a contributory factor peaked around the evening rush hour – between 1600 and 2000. Drivers in the age group 16-35 were disproportionately involved in these RTCs

Impaired by alcohol was listed as a contributory factor in 5.5% of incidents but, again, these accidents involved 17.5% of fatalities. Overall, incidents spiked between 1800 and 0200,

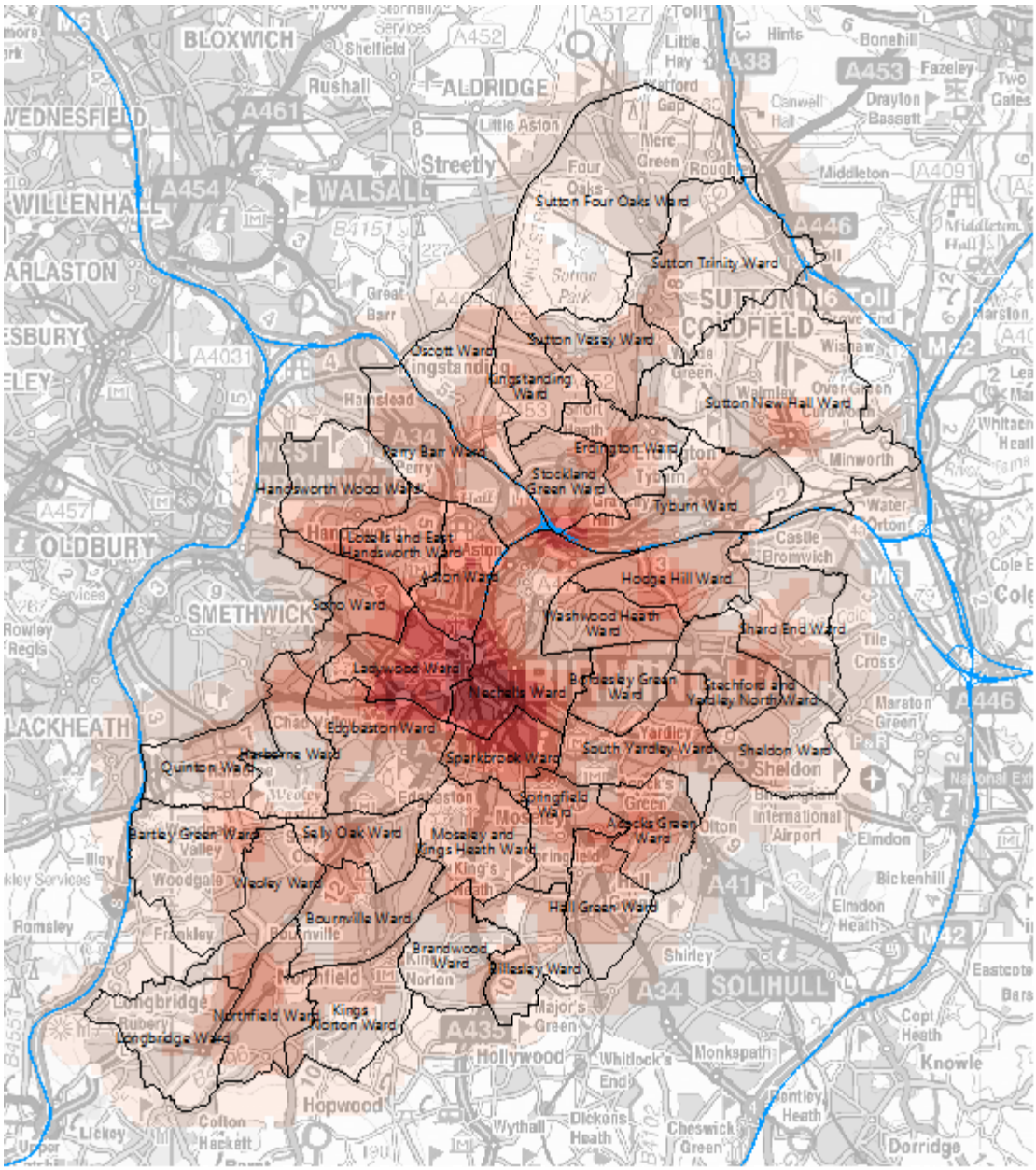
although there were incidents at all hours during the day. Drivers in the age group 21-45 (but particularly those in the 26-35 age group) were disproportionately represented here

This suggests that excessive speed and alcohol impairment are more likely to result in fatal injuries

Recommendation – consider prevention work on speeding and drink-driving for the age groups above

HOTSPOTS OF RTCs FOR THE LAST THREE FINANCIAL YEARS

Hotspot of WMFS Attended RTCs Apr 12 – Mar 15



Hotspot of POLICE Incidents Apr 12 – Mar 15