Insight Studies

Commuters involved in collisions on the Strategic Road Network

Version 1.0

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Road Safety Analysis

CONTENTS

INTRODUCTION

This analysis focuses on drivers with commuting as the recorded journey purpose, involved in collisions on England's Strategic Road Network (SRN).

For a better grasp of the circumstances surrounding collisions involving commuter drivers on the SRN, analysis will look at these drivers on all Great Britain's and England's roads to provide context and comparison to the SRN analysis. Starting with the chapter 'WHAT?', in depth analysis of collisions on the SRN involving the commuting drivers will be undertaken. Comparison between different levels will also be covered where appropriate.

It is important to remember that, since driver journey purposes are likely to be under reported by police forces, all absolute figures in this report should be understood as representative samples which probably do not embody the totality of road risk for commuter drivers. Because there are no reliable figures which distinguish miles driven for commuting as opposed to other purposes, it cannot be known whether overall risk for commuting drivers is higher or lower than the general driving population.

In Great Britain, **on all roads**, in 2015, 231 commuter drivers were involved in fatal collisions; 3,673 were involved in serious collisions; and a further 23,066 were involved in slight collisions. Figure 1 also shows a general downward trend for all commuter drivers on GB's roads from 2006 until 2013 followed by an increase in 2014 and a slight decrease in 2015.

FIGURE 1 – GB ALL ROADS COMMUTER DRIVERS BY SEVERITY (2006-2015)

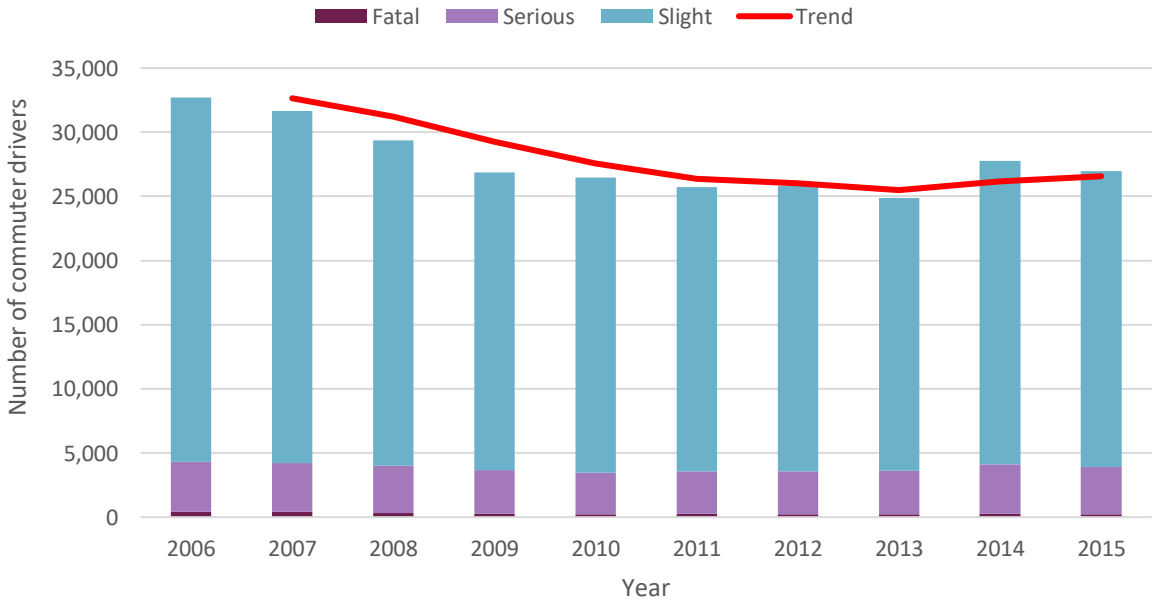
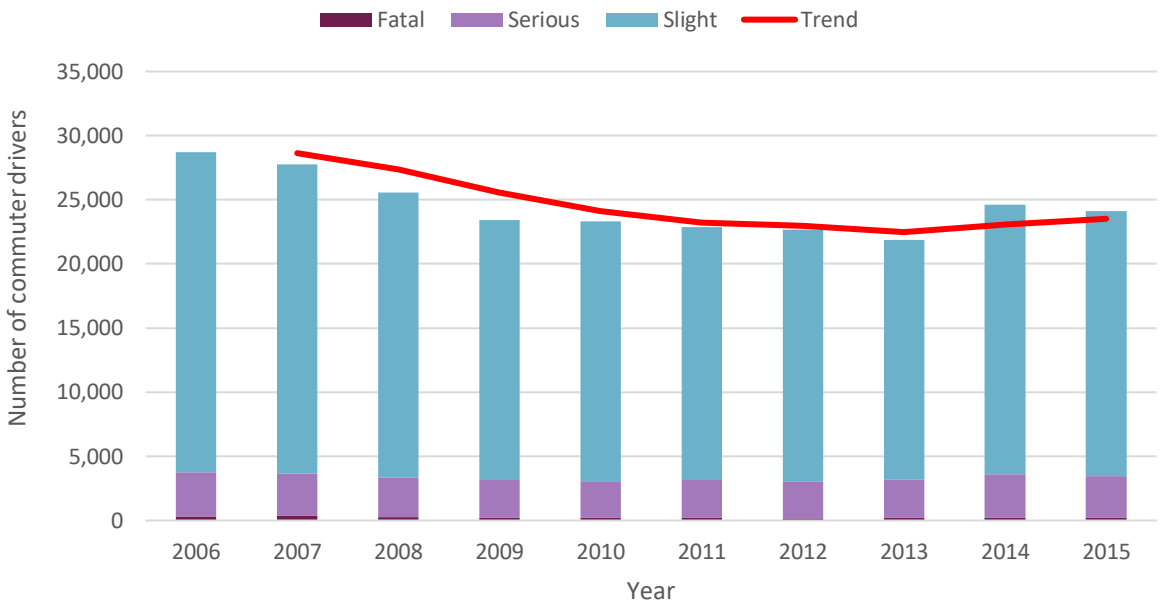


Figure 2 presents a similar analysis for all England's roads. The figure also shows a general downward trend for all commuter drivers on England's roads from 2006 until 2013 followed by an increase in 2014 and a slight decrease in 2015.

FIGURE 2 – ENGLAND ALL ROADS COMMUTER DRIVERS BY SEVERITY (2006-2015)



On all English roads in 2015, 192 commuter drivers were involved in fatal collisions; 3,282 were involved in serious collisions; and a further 20,621 were involved in slight collisions.

RISK PROFILE

This profile covers two distinct areas: information about the collision and information about the person involved. Both are relevant to the analysis and are considered separately.

COLLISION PROFILES

WHAT?

The analysis for commuter drivers will now focus on English commuter drivers involved in collisions on the SRN between 2011 and 2015. There were 12,298 English commuter drivers involved in collisions on the SRN between 2011 and 2015. In the same period, on the SRN there were also 1,030 commuter drivers who lived elsewhere in the UK or whose home location was not reported.

Between 2011 and 2015, commuter drivers accounted for 13.1% of all drivers on the SRN. When looking at the percentage of drivers involved in all fatal or serious (KSI) collisions, commuter drivers accounted for 11.2% of all drivers involved in KSI collisions. Commuter drivers have a KSI ratio (12.0%) higher than drivers with school related journey purposes but lower than the other two categories, driving for work or other journey purpose. The actual numbers are shown in Table 1 showing drivers by journey purpose on the Strategic Road Network (2011-2015).

Comparisons with drivers from England on all roads in England have been made and 100-based indices calculated. Where drivers from England on the SRN are over-represented compared to England's roads as a whole, the value in the last column is over 100. This is the case for drivers with driving for work, and drivers with commute journey purpose. For cases where the values are too small or represent under 1% of the drivers, no index was calculated.

TABLE 1 – 2011-2015 COMMUTER DRIVERS FROM ENGLAND INVOLVED IN COLLISIONS ON THE STRATEGIC ROAD NETWORK (SRN)

Drivers on by journey purpose	Fatal	Serious	Slight	Total	% KSI	% of All KSI	% of All Drivers	All roads index
Driving for work	568	2,516	18,326	21,410	14.4%	23.6%	22.8%	137
School Related	4	23	273	300	9.0%	0.2%	0.3%	-
Commute	152	1320	10,826	12,298	12.0%	11.2%	13.1%	118
Other	1,141	7362	51,465	59,968	14.2%	65.0%	63.8%	90
Total	**1,865**	**11,221**	**80,890**	**93,976**	**13.9%**	**100.0%**	**100.0%**	**100**

Figure 3 presents the analysis of resident commuter drivers involved in collisions on England's SRN. The figure shows the trend for the last ten years, with the lowest number of commuter drivers involved in collisions for the year 2009 and a slight upwards trend since then.

FIGURE 3 – ENGLAND SRN COMMUTER DRIVERS BY SEVERITY (2006-2015)

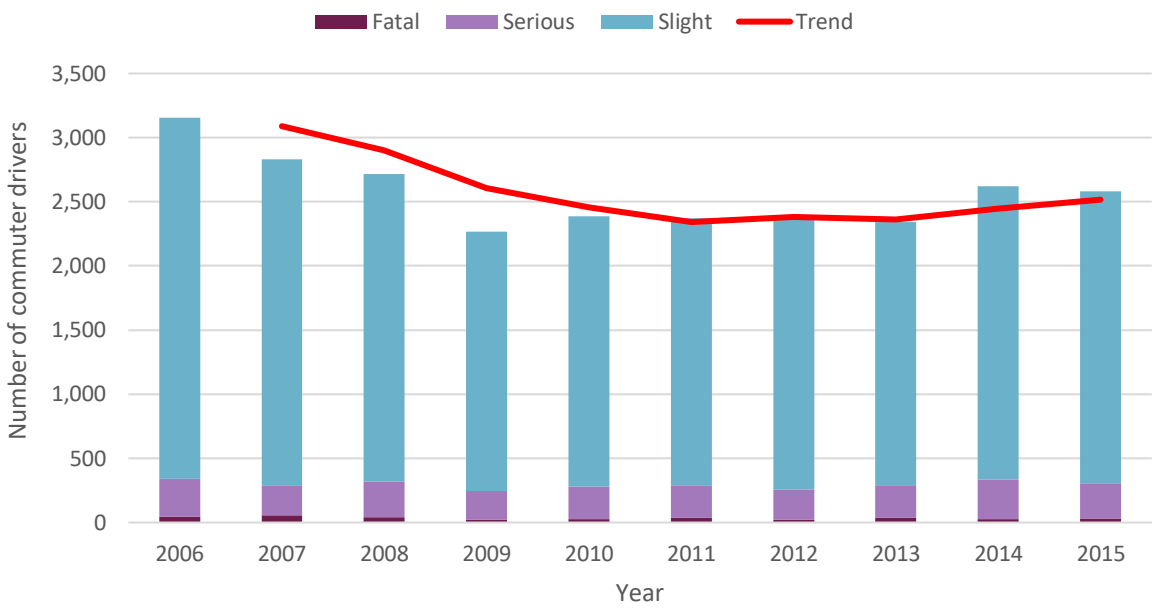


Table 2 presents the number of commuter drivers on the SRN between 2006 and 2015 by severity. In 2015, 30 commuter drivers were involved in fatal collisions, 277 were involved in serious collisions, and a further 2,276 were involved in slight collisions.

TABLE 2 – NUMBER OF COMMUTER DRIVERS ON THE SRN, BY SEVERITY (2006-2015)

Year	Fatal	Serious	KSI	Slight	Total
2006	47	292	339	2,817	**3,156**
2007	55	231	286	2,547	**2,833**
2008	42	279	321	2,397	**2,718**
2009	20	226	246	2,022	**2,268**
2010	27	256	283	2,104	**2,387**
2011	37	247	284	2,087	**2,371**
2012	22	233	255	2,126	**2,381**
2013	35	255	290	2,050	**2,340**
2014	28	308	336	2,287	**2,623**
2015	30	277	307	2,276	**2,583**
Total	**343**	**2,604**	**2,947**	**22,713**	**25,660**

Figure 4 presents a comparison between the severity rates of collision involving commuter drivers in GB on all roads, England's all roads, and England's SRN.

On average, for the last 5 analysed years (2011-2015), on all GB's roads 0.9% of all collisions with commuter drivers involved were fatal and 13.4% were serious. For all England's roads, 0.8% of all collisions with commuter drivers involved were fatal and 13.4% were serious, and for England's SRN, 1.2% of all collision on the SRN involving commuter drivers were fatal and a further 10.7% were serious.

FIGURE 4 – COMMUTER DRIVERS SEVERITY RATIOS FOR GB ALL ROADS, ENGLAND ALL ROADS, AND ENGLAND SRN (2011-2015)

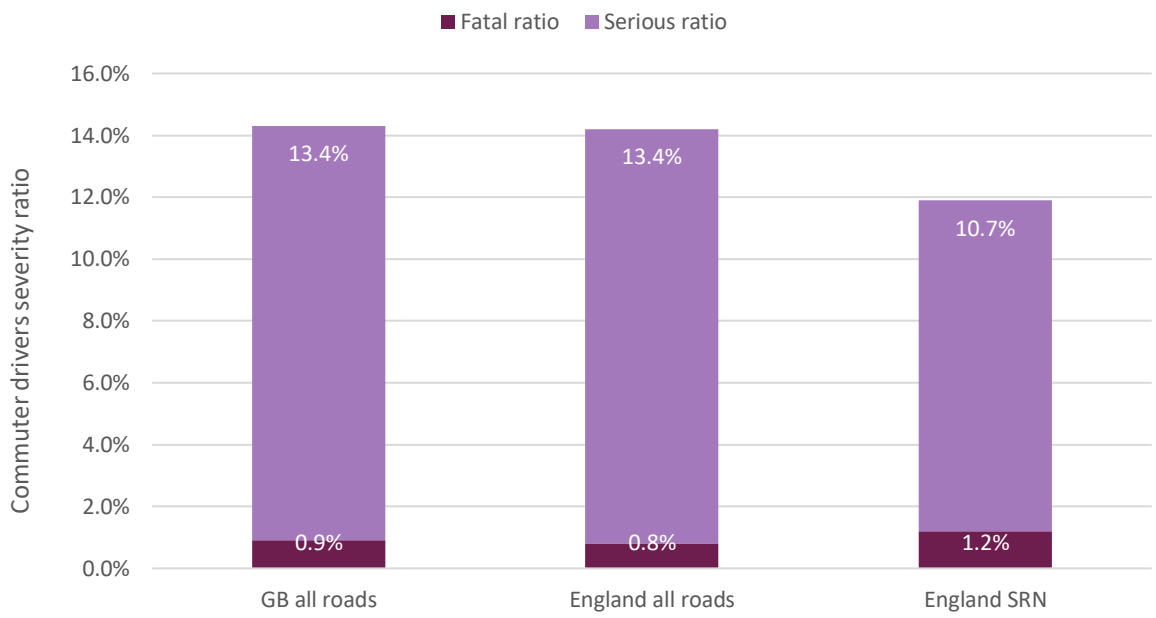


Figure 5 presents annual commuter drivers collision indices for all GB's roads, all England's roads and England's SRN, with 2006 as a base. For all three areas, there has been a general downwards trend between 2006 and 2013, followed by an increase in 2014 and a slight decrease in 2015. The SRN had a slightly more pronounced decrease until 2009, but by 2015 the index became quite similar with those for all England's roads and all GB.

FIGURE 5 - COMMUTER DRIVERS INDICES, FOR GB ALL ROADS, ENGLAND ALL ROADS AND ENGLAND SRN, WITH 2006 AS A BASE

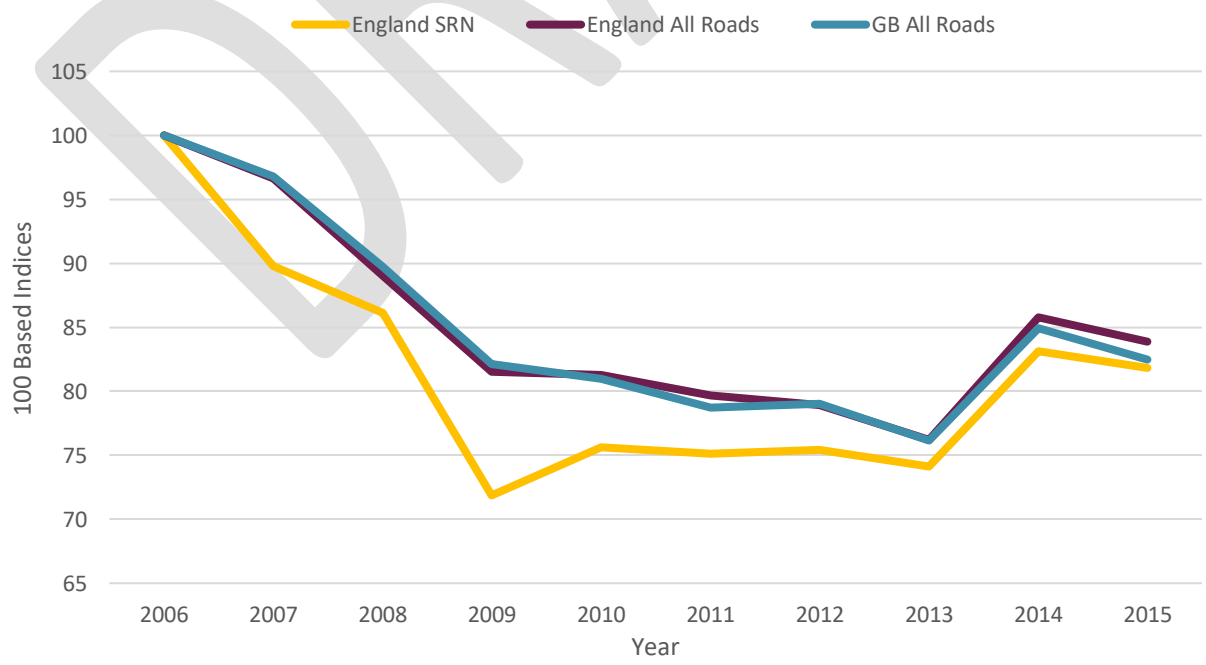
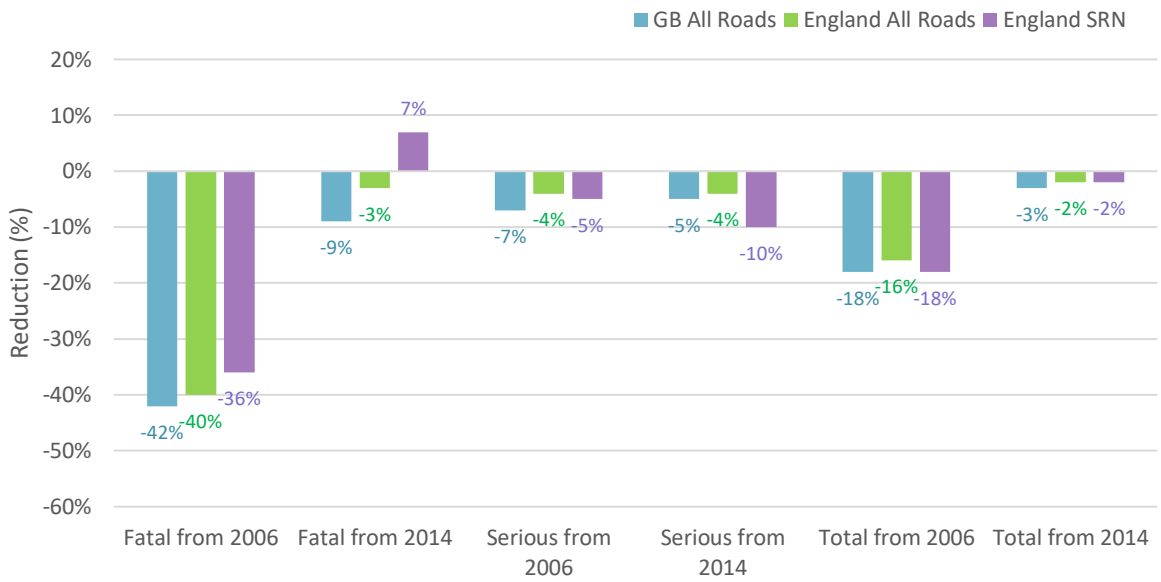


Figure 6 presents a comparison between 2015 reductions in the number of commuter drivers involved in fatal, serious and total collisions, with 2006 and 2014 as bases, on all GB roads, all England roads and England's SRN.

FIGURE 6 – REDUCTIONS IN COMMUTER DRIVERS INVOLVED IN COLLISIONS IN 2015, WITH 2006 AND 2014 AS BASES, ON GB ALL ROADS, ENGLAND ALL ROADS AND SRN



On all GB roads, there has been a 42% reduction in the number of commuter drivers involved in fatal collisions; a 7% reduction for commuter drivers involved in serious collisions and an 18% reduction in the total number of commuter drivers involved in collisions since 2006. Compared to 2014, there has been a 9% reduction in commuter drivers involved in fatal collisions; a 5% reduction in commuter drivers involved in serious collisions; and a 2% in the total number of commuter drivers involved in collisions. On all England's roads, there has been a 40% reduction in the number of commuter drivers involved in fatal collisions; a 4% reduction for commuter drivers involved in serious collisions and a 16% reduction in the total number of commuter drivers involved in collisions since 2006. Compared to 2014, there has been a 3% reduction in commuter drivers involved in fatal collisions; a 4% reduction in commuter drivers involved in serious collisions; and a 2% in the total number of commuter drivers involved in collisions. On the SRN, from 2006 there has been a 36% reduction in the number of commuter drivers involved in fatal collisions; a 5% reduction for commuter drivers involved in serious collisions and a 18% reduction in the total number of commuter drivers involved in collisions. Since 2014 there has been a 7% increase in the number of commuter drivers involved in fatal collisions; a 10% reduction for commuter drivers involved in serious collisions and a 2% reduction in the total number of commuter drivers involved in collisions.

WHEN?

This section of the analysis looks at when commuter drivers from England were involved in collisions on the SRN between 2011 and 2015.

FIGURE 7 – TIME OF DAY WHEN COMMUTER DRIVERS WERE INVOLVED IN COLLISIONS ON THE SRN

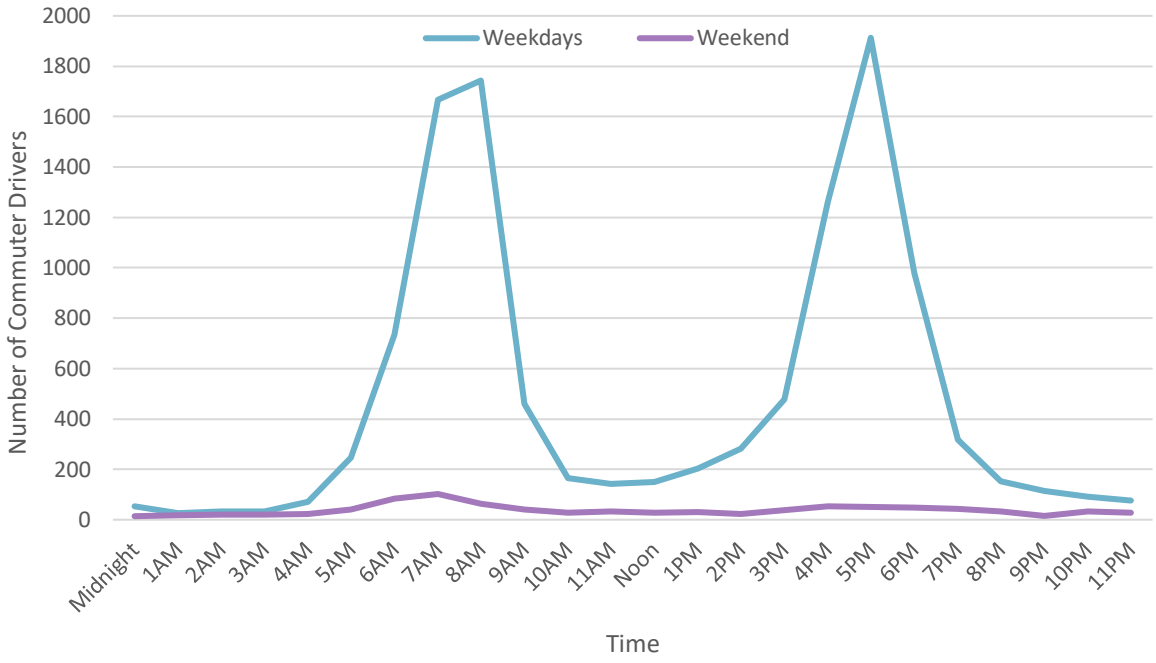
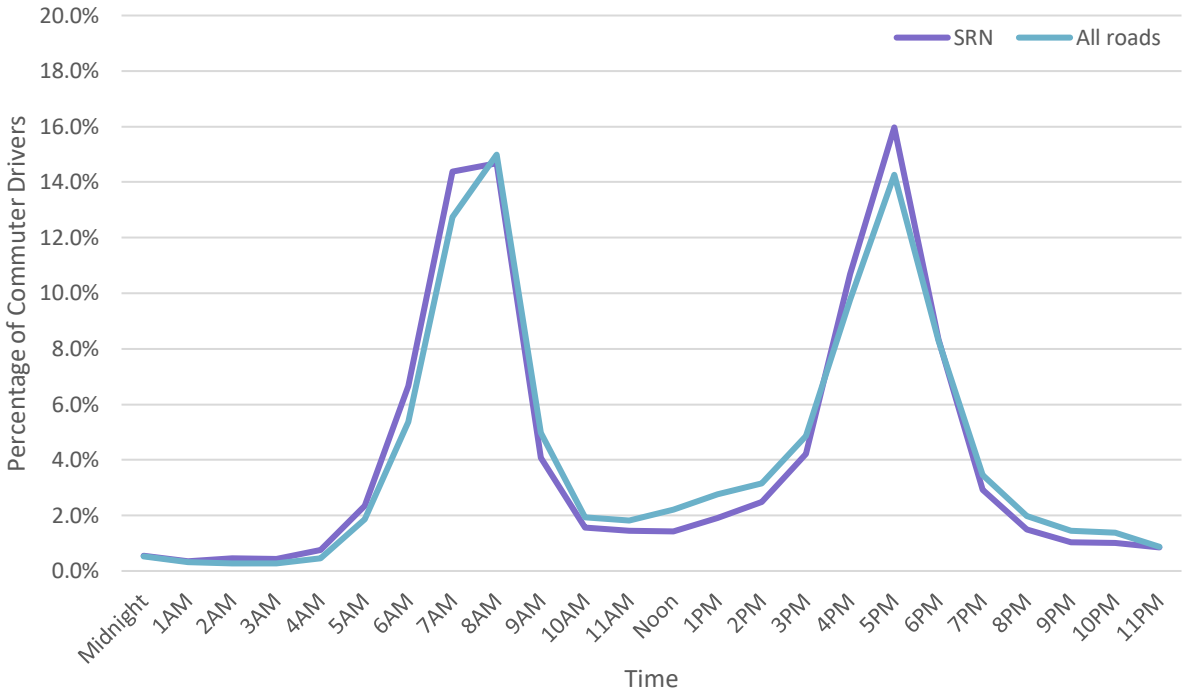


Figure 7 is showing the distribution of commuter drivers collisions on the SRN, by hour, distinctly for weekdays and weekend. There are two definite peaks for commuter drivers' collisions on the SRN for weekdays, as expected, during the two commuting periods: between 6am and 9am, and between 3pm and 6pm respectively. In weekends and outside the commuting hours in weekdays the percentage of commuter drivers involved in collisions on the SRN are very low. On the SRN, only 7.4% of commuter drivers are involved in collisions during weekends and 92.6% during weekdays, compared to 9.1% in weekend and 90.9% during weekdays for England when all roads are taken in to account.

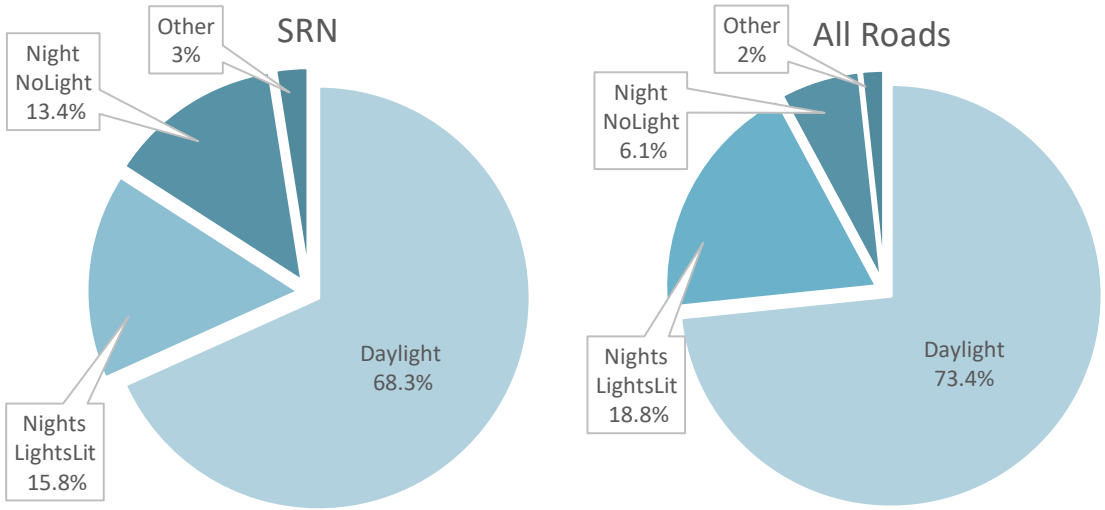
In order to understand if the time of day analysis reveals a trend unique to the SRN, analysis has been undertaken comparing commuter drivers on the SRN to those on all England's roads. Figure 8 shows the time of day when commuter drivers are involved in collisions on the SRN as well as on all roads in England. The trends are fairly similar, except that for the SRN there seem to be a more pronounced peak during afternoon commuting hours, especially around 5pm. They also seem to start traveling one hour earlier than the commuters traveling on all the other roads, according to the more pronounced peak at 6AM.

FIGURE 8 – TIME OF DAY WHEN COMMUTER DRIVERS ARE INVOLVED IN COLLISIONS ON THE SRN AND ON ALL ENGLAND ROADS



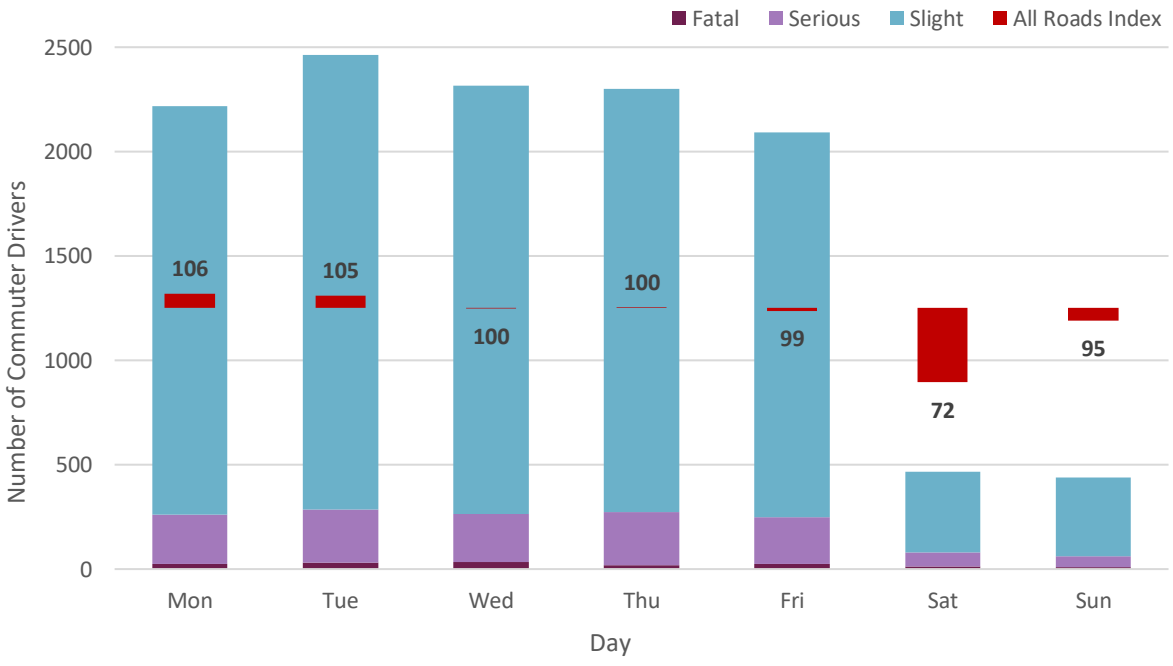
Related to time of day analysis are lighting conditions. Figure 9 shows the lighting conditions at the times when the commuter drivers were involved in collisions on the SRN and on all England's roads. It shows that 68.3% of the commuter drivers involved in collisions on the SRN were in daylight at the time and the remaining commuter drivers were involved in collisions at night: 15.8% with streetlights lit, 13.4% with no street lighting and 3% other (streetlights unlit or unknown). For all England's roads there is a somewhat different situation with 73.4% of the commuter drivers involved in collisions on the SRN in daylight at the time and the rest happening at night: 18.8% with streetlights lit, 6.1% with no street lighting and 2% other (streetlights unlit or unknown). The proportion of commuter drivers involved in collisions at night with no street light is highly over-represented (more than twice bigger than expected) compared to England when all roads are taken in to account. This may suggest there is either a bigger proportion of roads with no light on the SRN than on all England's roads or that the roads with no lights on SRN present a bigger risk than when all roads are taken in to account.

FIGURE 9 – LIGHTING CONDITIONS WHEN COMMUTER DRIVERS WERE INVOLVED IN COLLISIONS



The days of the week on which the commuter drivers were involved in collisions on the SRN are shown in Figure 10. Between 17% and 20% of all collisions involving commuter drivers on the SRN occurred on each weekday, and around 4% on each weekend day. The red bars compare commuter drivers involved in collisions on the SRN with those on all England's roads as a whole. It shows that commuter drivers involved in collisions on the SRN are slightly over-represented on Monday and Tuesday; slightly under-represented on Sunday; fairly equally represented on Wednesday, Thursday and Friday; and under-represented on Saturday.

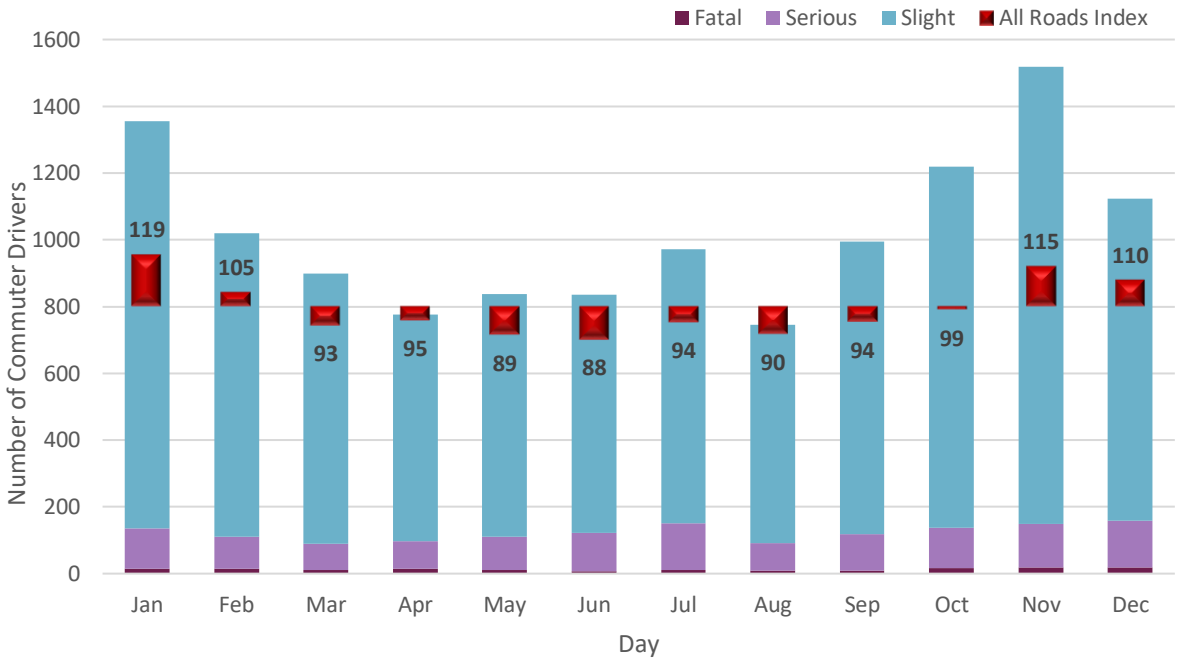
FIGURE 10 – DAY OF WEEK WHEN COMMUTER DRIVERS WERE INVOLVED IN COLLISIONS ON THE SRN



The month of the year in which commuter drivers were involved in collisions on the SRN are shown in Figure 11. There are two peaks in November and January which accounts for 12% and 11% respectively

of all commuter drivers involved in collisions on the SRN; there are two low months, April and August with 6% for each. The remaining months account for 7% or 8% of the total commuter drivers involved in collisions. The red bars show the index score compared to all roads in England. The months of May, June and August are under-represented, whilst November and January, as well as containing the highest numbers, are also over-represented. February and December are also slightly over-represented.

FIGURE 11 – MONTH OF YEAR WHEN COMMUTER DRIVERS WERE INVOLVED IN COLLISIONS ON THE SRN



Weather conditions at the time commuter drivers were involved in collisions are examined in Table 3. The index column compares SRN with England's all roads. Over three quarters of commuter drivers on both the SRN and all roads in England were involved in collisions in fine and still weather, and moreover those on the SRN are similarly represented compared to England's all roads. On the other hand, although in smaller numbers, commuter drivers involved in collisions on the SRN in wet and windy or fog or mist are highly over-represented when compared to England's all roads. Commuter drivers involved in collisions on fine and windy weather are also over-represented when compared to England's all roads.

TABLE 3 – WEATHER CONDITIONS WHEN COMMUTER DRIVERS WERE INVOLVED IN COLLISIONS

Weather Conditions	SRN	All England Roads	Index
Fine & Windy	1.6%	1.4%	114
Fog or Mist	1.2%	1.0%	123
Other	1.6%	2.1%	77
Wet & Still	15.1%	14.3%	106
Wet & Windy	2.6%	1.8%	144
Fine & Still	77.4%	78.6%	98
Not Known	0.5%	0.9%	-

Associated with weather is the road surface condition. Table 4 shows the road surface conditions when commuter drivers were involved in collisions on the SRN and on all England's roads. The index column is comparing these two cases. Sixty-two percent of commuter drivers were involved in collisions on dry roads at the time of their collision (similarly represented when compared to all roads in England), with a further 34% on wet or damp road surfaces (slightly over-represented when compared to all roads in England).

TABLE 4 – ROAD SURFACE CONDITIONS WHEN COMMUTER DRIVERS WERE INJURED IN COLLISIONS

Road Surface Conditions	SRN	All England Roads	Index
Dry	62.4%	63.1%	99
Wet	34.7%	33.7%	103
Other	3.0%	3.3%	91

The next section looks at road characteristics where commuter drivers were involved in collisions on the SRN.

In terms of road class, 54.0% of commuter drivers were involved in collisions on A roads and another 42.4% of commuter drivers involved in collisions on Motorways (with an additional 3.7% on A(M) roads), as can be observed in Figure 12.

FIGURE 12 – ROAD CLASS WHERE COMMUTER DRIVERS WERE INVOLVED IN COLLISIONS ON THE SRN

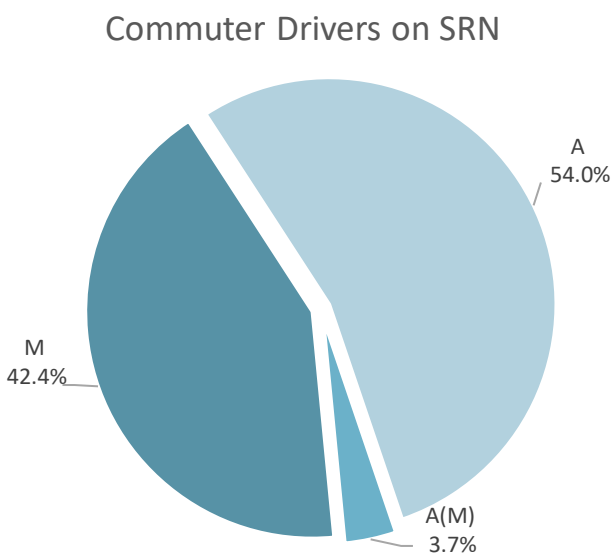


Figure 13 shows speed limits on roads where commuter drivers were involved in collisions on the SRN compared with all drivers on the SRN. A large majority (72.1%) of commuter drivers involved in collisions on the SRN are involving in collisions on 70mph roads. They are slightly over-represented on these roads compared to all drivers involved in collisions on the SRN. On 60mph and on 30mph roads, commuter drivers involved on collisions on the SRN are under-represented, but on the 40mph and 50mph roads they are over-represented. For the 20mph roads the numbers are too small to calculate an index.

FIGURE 13 – SPEED LIMIT WHERE COMMUTER DRIVERS WERE INVOLVED IN COLLISIONS ON THE SRN COMPARED TO ALL DRIVERS ON THE SRN

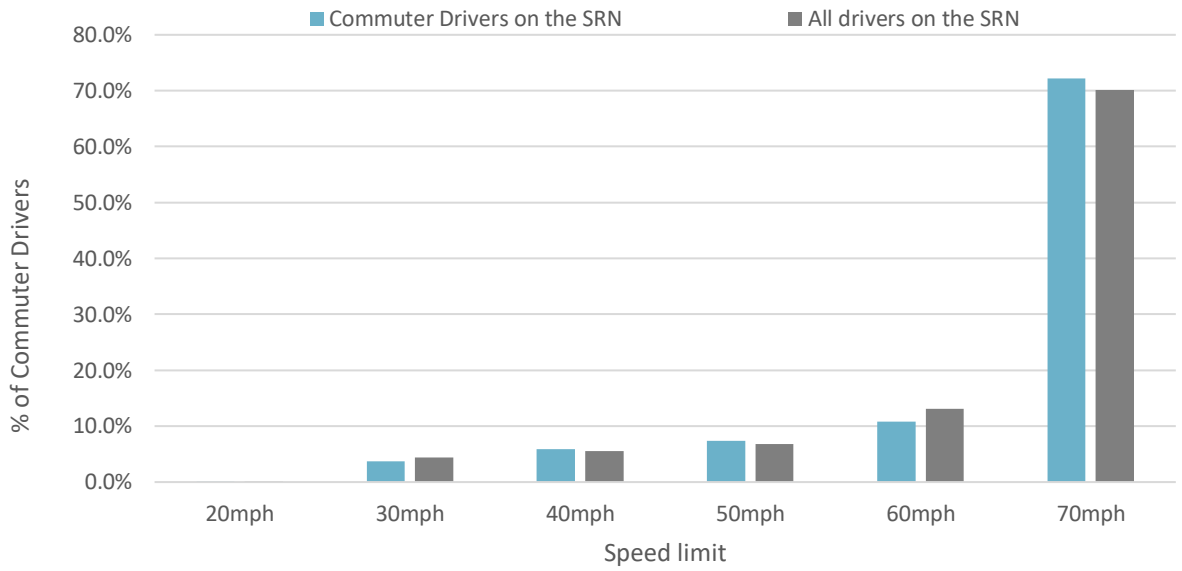


Figure 14 shows the location (urban/rural) of commuter drivers when they were involved in collisions on the SRN and the location of all drivers involved in collisions on the SRN. There is a slightly larger proportion of commuter drivers involved in collisions in urban locations on the SRN than the proportion of all drivers. However, both categories are involved in collisions in bigger proportions in rural locations.

FIGURE 14 – LOCATION (URBAN/RURAL) WHERE COMMUTER DRIVERS WERE INVOLVED IN COLLISION COMPARED TO ALL DRIVERS

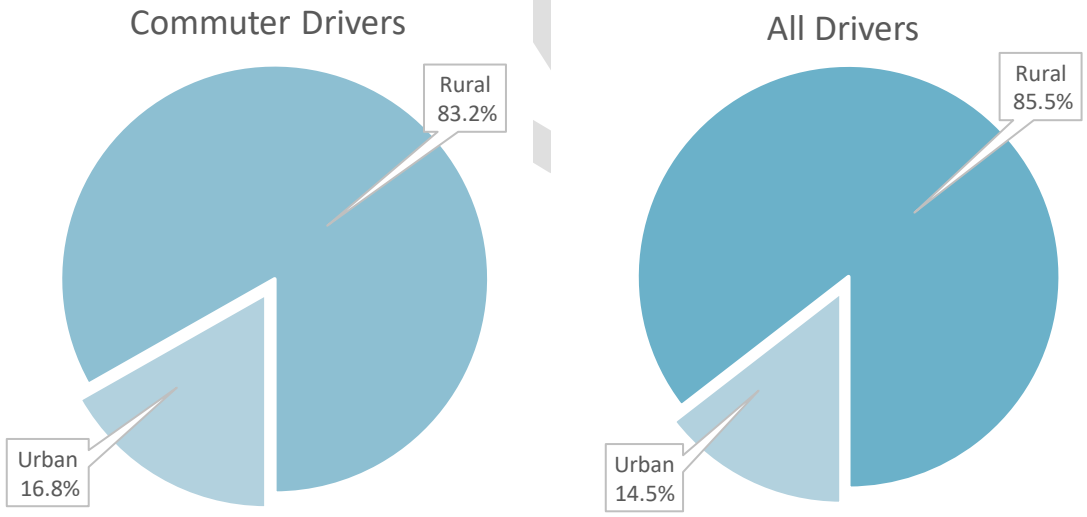


Table 5 shows junction detail for collisions on the SRN where commuter drivers were involved. Almost three quarters (69.7%) of the commuter drivers involved in collisions on the SRN were involved in collisions on sections of the road with no junction. This proportion is highly over-representative when comparing to all England's roads but fairly represented when compared to all drivers involved in collisions on the SRN. Compared to all England's roads, commuter drivers involved in collisions on the SRN were also highly over-represented on slip roads, although the number of collision was relatively

small, but under-represented or highly under-represented for the other categories of junctions. Comparison with all England's roads from the junction details perspective provides little insight since the density and distribution of these types of junction details is less likely to be similar between SRN and the whole of England's roads network. A comparison with all other drivers is more appropriate in this case. Compared to all drivers involved in collisions on the SRN, commuter drivers were over-represented on slip roads, fairly represented for roundabouts and under-represented for the other categories of junctions.

TABLE 5 – JUNCTION DETAIL FOR COMMUTER DRIVERS INVOLVED IN COLLISIONS ON THE SRN WITH ALL ROADS AND ALL DRIVERS INDICES

Junction details	SRN Commuter Drivers	All England Roads Index	All SRN Drivers Index
No Junction	69.7%	188	100
T Junction	4.7%	15	88
X-Roads	1.0%	10	74
Slip	11.1%	516	118
Private	0.9%	19	90
Roundabout	11.7%	92	101
Other	1.0%	37	69

Table 6 shows junction control for commuter drivers involved in collisions on the SRN. The largest percentage of commuter drivers involved in collisions near a junction on the SRN (25.9% of the total or 85.5% of the applicable cases) were in the vicinity of uncontrolled junctions or give way junctions. The column 'All England Roads Index' compares commuter drivers on the SRN with England commuter drivers on all roads. Commuter drivers involved in collisions on the SRN are highly under-represented on junctions with auto traffic signals and on uncontrolled or give way junctions. Again, as for Table 5, the comparison with all England's roads is not the most appropriate because of dissimilarities in density and distribution for these types of junctions on the SRN and the England's entire roads network.

Comparison with all drivers on the SRN is more informative. The column 'All SRN Drivers Index' compares commuter drivers involved in collisions on the SRN with all involved drivers on the SRN. SRN commuter drivers are slightly over-represented for junctions with no control or give way, and under-represented on auto traffic signal junctions. The vast majority of collisions involving commuter drivers on the SRN occur with no junction nearby; this is over-represented in comparison to all England's roads, but fairly represented in comparison to all drivers on the SRN.

TABLE 6 – JUNCTION CONTROL FOR COMMUTER DRIVERS INVOLVED IN COLLISION ON THE SRN WITH ALL ROADS AND ALL DRIVERS INDICES

Junction control	SRN Commuter Drivers	All England Roads Index	All SRN Drivers Index
Authorised person	0.0%	-	-
Auto traffic signal	4.3%	44	92
Give way or uncontrolled	25.9%	49	103
Stop sign	0.1%	-	-
Not applicable	69.7%	188	100

After looking at when and where commuter drivers are involved in collisions on the SRN, the analysis now explores how these collisions occurred.

In order to understand the circumstances surrounding how commuter drivers were involved in collisions, it is important to look at their vehicles and at the other vehicles involved. Figure 15 shows the percentage of commuter drivers involved in collisions on the SRN by vehicle type, indexed against all drivers involved in collisions on the SRN and against commuter drivers involved in collisions on all England's roads. The vast majority (85.5%) of the commuter drivers involved in collisions on the SRN are car drivers. They are slightly over-represented when compared to all drivers involved in collisions on the SRN and over-represented when compared to commuter drivers involved in collisions on all England's roads. Commuter riders on motorbikes and bicycles are highly over-represented when compared to all drivers on the SRN and under-represented or highly under-represented when compared to commuters on all England's roads.
on the SRN.

Table 7 shows the breakdown of commuter drivers involved in collisions on the SRN between 2011 and 2015, by vehicle type.

TABLE 7 – COMMUTER DRIVERS INVOLVED IN COLLISIONS ON THE SRN, BY VEHICLE TYPE

Year	Car	Motorbike up to 125cc	Motorbike over 125cc	Goods Light	Goods Heavy	Bus	Cycle	Other	Total
2011	2,002	35	142	129	28	-	29	6	**2,371**
2012	2,039	35	95	152	14	-	45	4	**2,384**
2013	2,014	43	118	122	11	1	30	1	**2,340**
2014	2,226	42	117	168	25	1	40	4	**2,623**
2015	2,235	43	110	154	14	1	22	1	**2,580**
Total	**10,516**	**198**	**582**	**725**	**92**	**3**	**166**	**16**	**12,298**

FIGURE 15 – VEHICLE TYPE FOR COMMUTER DRIVERS INVOLVED IN COLLISIONS ON THE SRN, INDEXED AGAINST ALL DRIVERS ON THE SRN AN AGAINST COMMUTER DRIVERS ON ALL ENGLAND'S ROADS

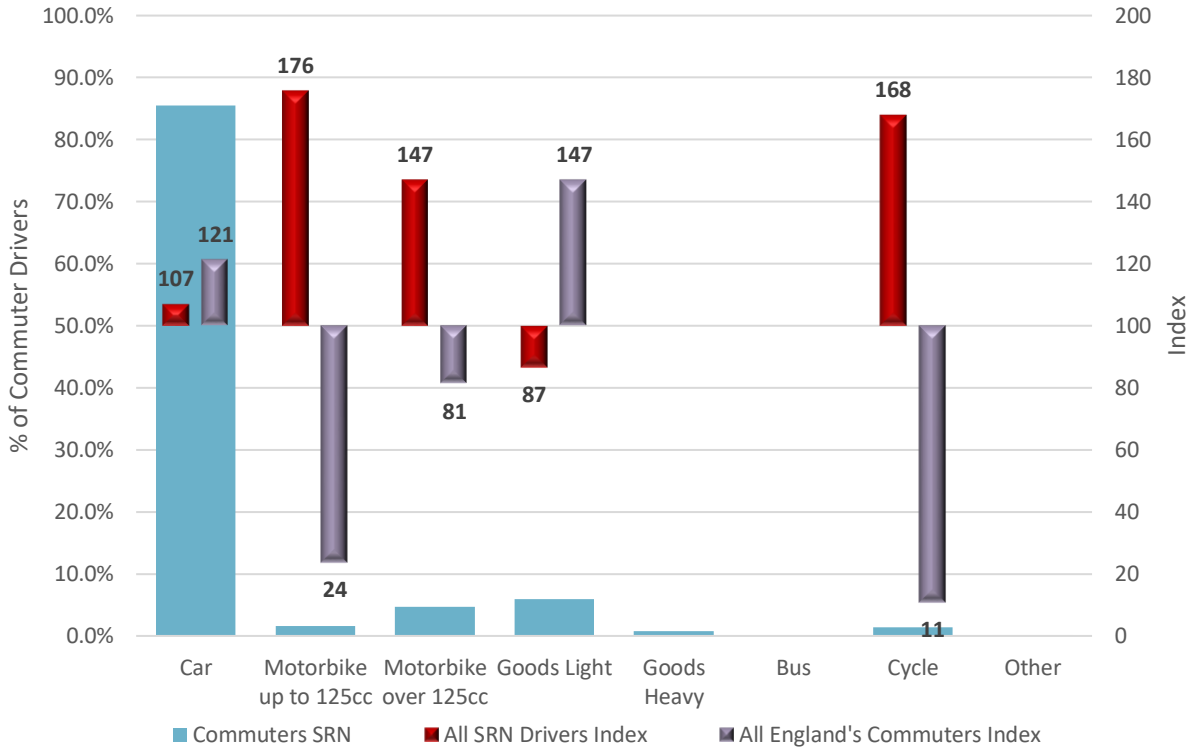


Figure 16 shows the number of vehicles involved in collisions where commuter drivers were involved. The biggest proportion (47.7%) of the commuter drivers involved in a collision on the SRN were involved in two vehicle collisions. However, these collisions are highly under-represented when compared to the percentage of commuter drivers involved in two vehicle collisions on all England's roads (67.5%). Commuter drivers on SRN are also highly under-represented when compared to all England's roads for single vehicle collisions (10.0% compared to 14.3%). For collisions involving 3 or more vehicles, commuter drivers involved in collisions on the SRN are highly over-represented when compared to commuter drivers on all England's roads (34.4% compared to 16.7% for three or four vehicles and 8.0% compared to 1.6% for five or more vehicles involved).

FIGURE 16 – COMMUTER DRIVERS INVOLVED IN COLLISIONS BY THE NUMBER OF VEHICLES INVOLVED IN THE COLLISION

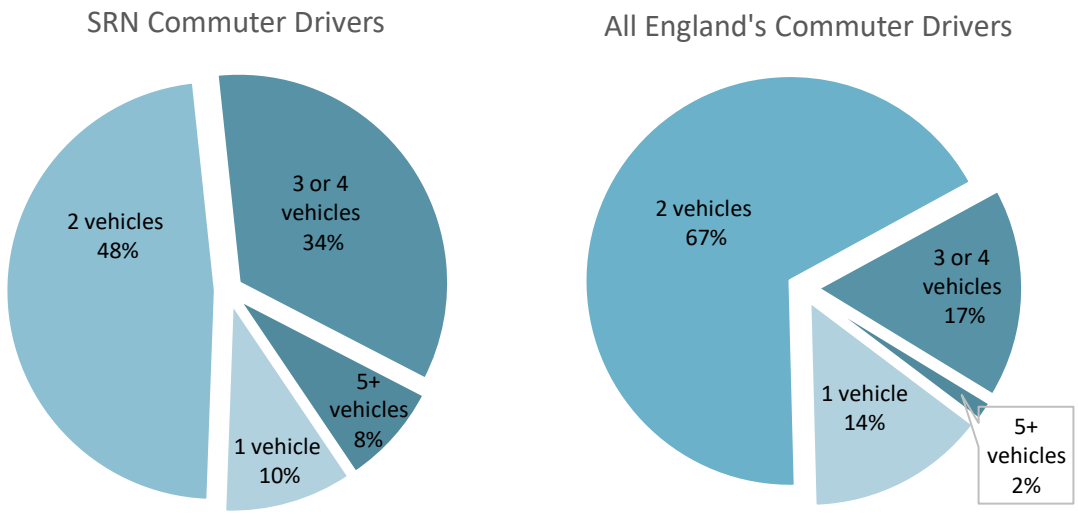


Figure 17, Figure 18, Figure 19 and Figure 20 analyse in depth commuter drivers involved in collisions on the SRN where the number of vehicles involved was three or more; these types of collisions are highly over-represented on the SRN compared to commuter drivers on all England's roads.

Figure 17 shows the proportion of commuter drivers involved in collisions with three or more vehicles, with and without goods vehicle involved, by road type. More than a quarter (25.6%) of these collisions involved goods vehicle and were on dual carriageway roads. This is a very high proportion when compared to the proportion of goods vehicles involved in all types of collisions.

FIGURE 17 – COMMUTER DRIVERS INVOLVED IN COLLISIONS THAT INVOLVED THREE OR MORE VEHICLES ON THE SRN, BY ROAD TYPE

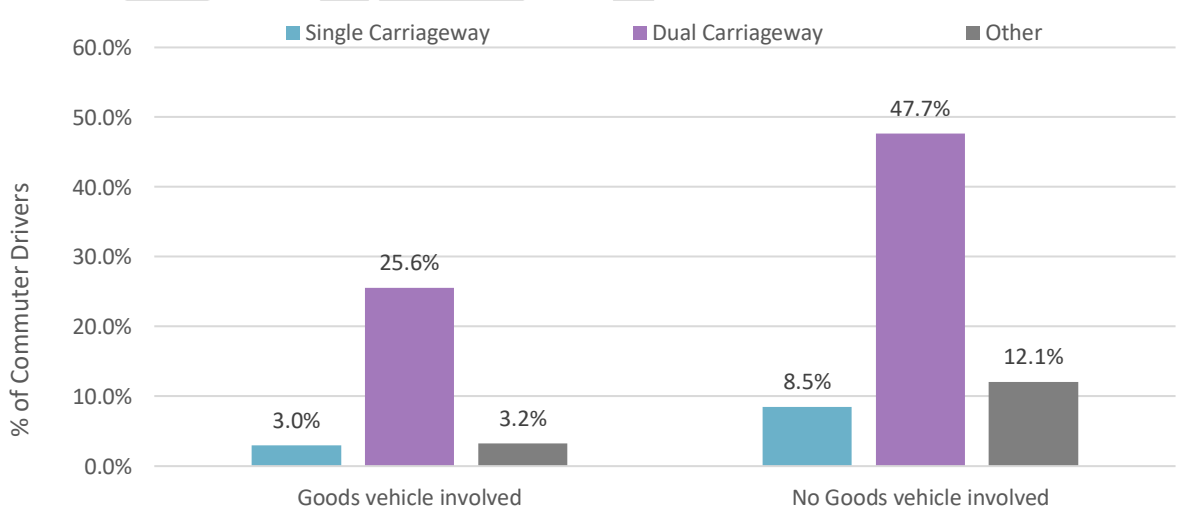


Figure 18 examines types of goods vehicle involved in collisions of three or more vehicles on the SRN where at least one commuter driver was involved. It shows that both light and heavy goods vehicles exhibit high percentages on dual carriageway roads, and small proportions on single carriageway and other types of road.

FIGURE 18 – COMMUTER DRIVERS INVOLVED IN COLLISIONS THAT INVOLVED THREE OR MORE VEHICLES ON THE SRN, AND ONE OR MORE GOODS VEHICLE, BY ROAD TYPE

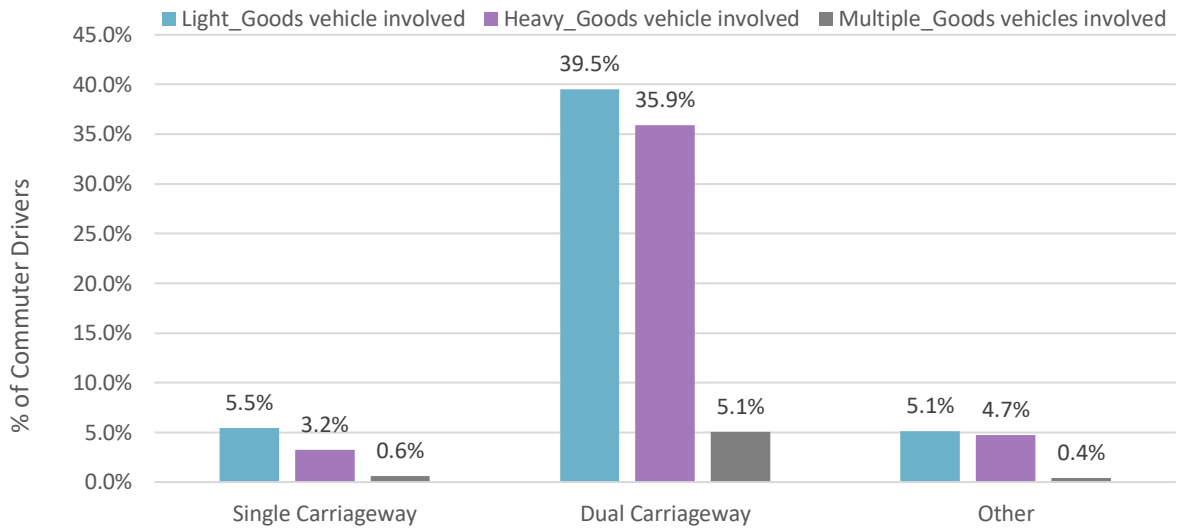


Figure 19 shows the proportion of commuter drivers involved in three or more vehicle collisions, with and without goods vehicles involved, by road class. Commuter drivers involved in three or more vehicle collisions on the SRN with at least one goods vehicle involved represent over 30% of all commuter drivers involved in three or more vehicle collisions on the SRN, with a fairly equal split between A roads and motorways.

FIGURE 19 – COMMUTER DRIVERS INVOLVED IN COLLISIONS THAT INVOLVED THREE OR MORE VEHICLES ON THE SRN, BY ROAD CLASS

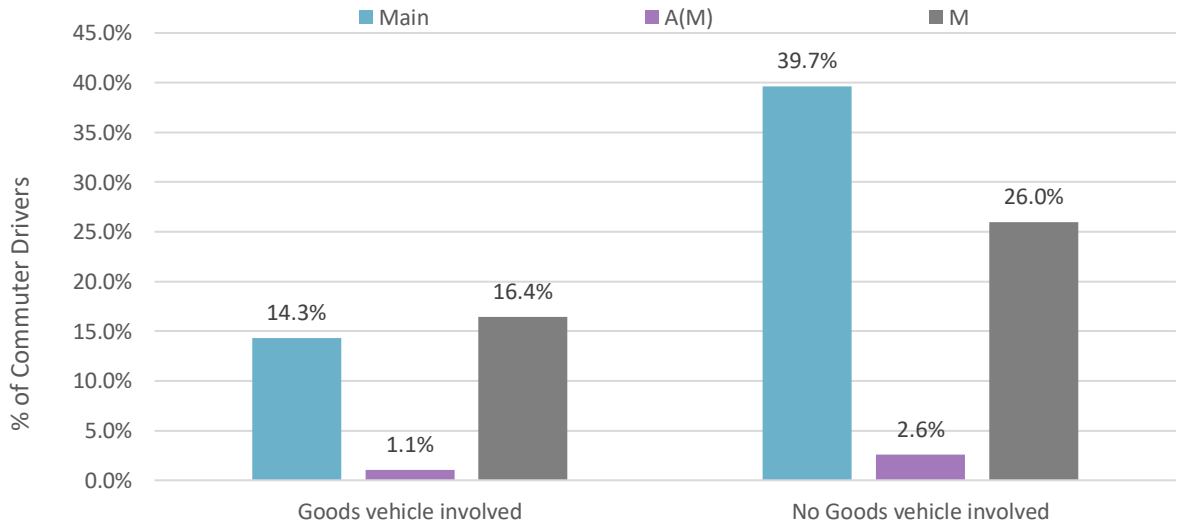


Figure 20 shows the percentages of commuter drivers involved in three or more vehicle collisions on the SRN with at least one goods vehicle involved, by road class and type of goods vehicle involved. On A roads, there is a higher percentage of commuter drivers involved in three or more vehicle collisions with light goods vehicles involved than in similar collisions with heavy goods vehicles involved. For motorways, the percentages are identical for both types of goods vehicles. For both A and M roads,

there is a significant percentage of commuter drivers involved in three or more vehicle collisions where at least one light and at least one heavy goods vehicle are also involved.

FIGURE 20 – COMMUTER DRIVERS INVOLVED IN COLLISIONS THAT INVOLVED THREE OR MORE VEHICLES ON THE SRN, AND ONE OR MORE GOODS VEHICLE, BY ROAD CLASS

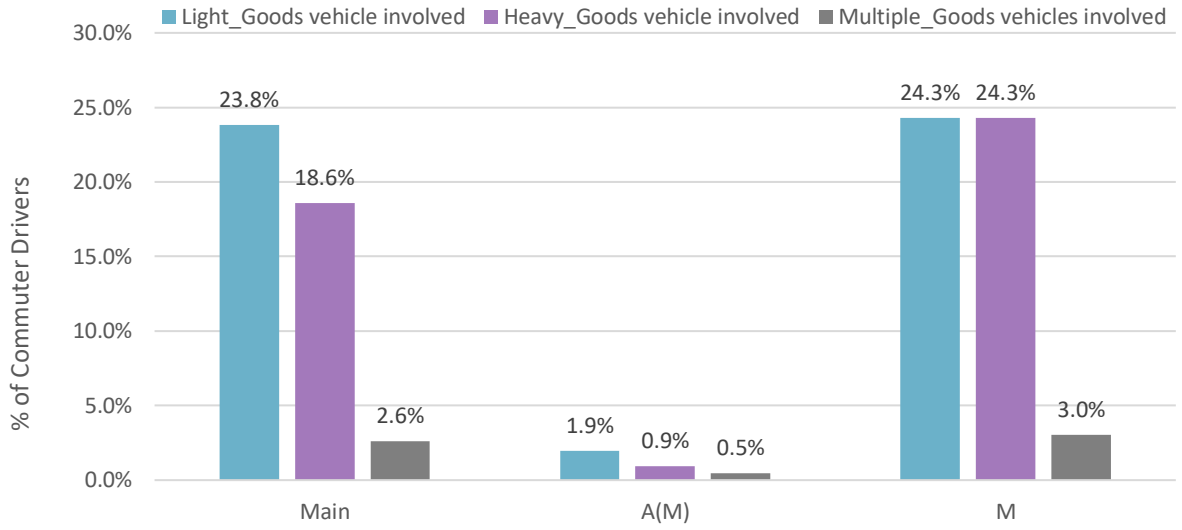


Table 8 shows the proportions of commuter drivers involved in collisions where at least one contributory factor (CF) was assigned, on the SRN and on all roads in England, compared to the proportion of all drivers involved in collisions where at least one contributory factor was assigned. It shows that 90.2% of commuter drivers were involved in collisions on the SRN where at least one CF was assigned. This proportion is higher than the proportion of commuter drivers involved in collisions where at least one CF was assigned on all England's roads and the proportion for all drivers involved in collisions assigned any CF on all England's roads, and slightly higher than the proportion of all drivers involved in collisions where was assigned any CF on the SRN.

TABLE 8 - PERCENTAGE OF COMMUTER DRIVERS INVOLVED IN COLLISIONS WHERE AT LEAST ONE CF WAS ASSIGNED, ON THE SRN AND ON ALL ENGLAND ROADS, COMPARED TO PERCENTAGE OF ALL DRIVERS INVOLVED IN COLLISIONS ASSIGNED ANY CF ON SRN AND ON ENGLAND ROADS

Assigned Any CF	Commuter Drivers	All Drivers
SRN	90.2%	87.8%
All England Roads	84.3%	78.3%

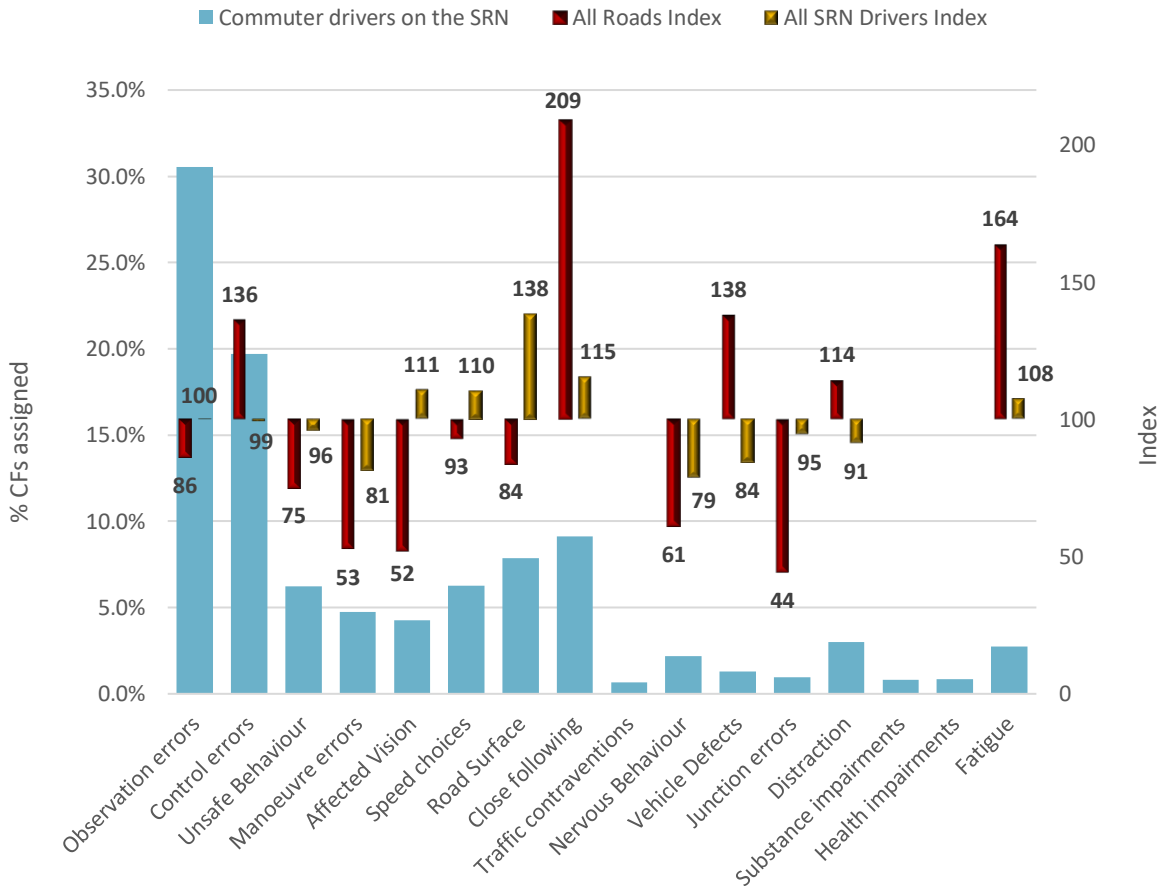
It is possible to analyse the contributory factors (CFs) recorded by a police officer when completing the collision records. The following analysis only looks at collisions investigated at the scene by an officer and even then, it needs to be remembered that these factors reflect the officer's opinion at the time of reporting and might not be the result of extensive investigation.

Appendix B – Contributory Factor Groupings. Analysis shows that commuter drivers assigned 'Close following' and 'Fatigue' contributory factors on the SRN are highly over-represented when compared to commuter drivers from all England's roads and over-represented when compared to all drivers on the SRN. Commuter drivers assigned 'Control errors', 'Vehicle Defects', and 'Distraction' are over-represented when compared to commuter drivers on all England's roads and fairly or under-represented when compared to all drivers on the SRN. Commuter drivers on the SRN assigned 'Affected Vision' and 'Speed Choice' CFs are over-represented when compared to all drivers on the SRN but under-represented when compared to commuter drivers on all England's roads. Commuter drivers on the SRN assigned 'Observation errors', 'Unsafe Behaviour', 'Manoeuvre errors', 'Nervous Behaviour', and 'Junction errors' are under-represented or highly under-represented when compared to commuter drivers on all England's roads and fairly or under-represented when compared to all drivers on the SRN.

Figure 21 shows the percentage of commuter drivers involved in collisions on the SRN assigned contributory factors, as a percentage of all commuter drivers involved in collisions on the SRN receiving any CF (in collisions attended by a police officer) indexed against the percentage of commuter drivers with CFs assigned on all roads in England and against the percentage of all drivers with CFs assigned on the SRN. Individual CFs have been grouped together in categories as shown in

Appendix B – Contributory Factor Groupings. Analysis shows that commuter drivers assigned 'Close following' and 'Fatigue' contributory factors on the SRN are highly over-represented when compared to commuter drivers from all England's roads and over-represented when compared to all drivers on the SRN. Commuter drivers assigned 'Control errors', 'Vehicle Defects', and 'Distraction' are over-represented when compared to commuter drivers on all England's roads and fairly or under-represented when compared to all drivers on the SRN. Commuter drivers on the SRN assigned 'Affected Vision' and 'Speed Choice' CFs are over-represented when compared to all drivers on the SRN but under-represented when compared to commuter drivers on all England's roads. Commuter drivers on the SRN assigned 'Observation errors', 'Unsafe Behaviour', 'Manoeuvre errors', 'Nervous Behaviour', and 'Junction errors' are under-represented or highly under-represented when compared to commuter drivers on all England's roads and fairly or under-represented when compared to all drivers on the SRN.

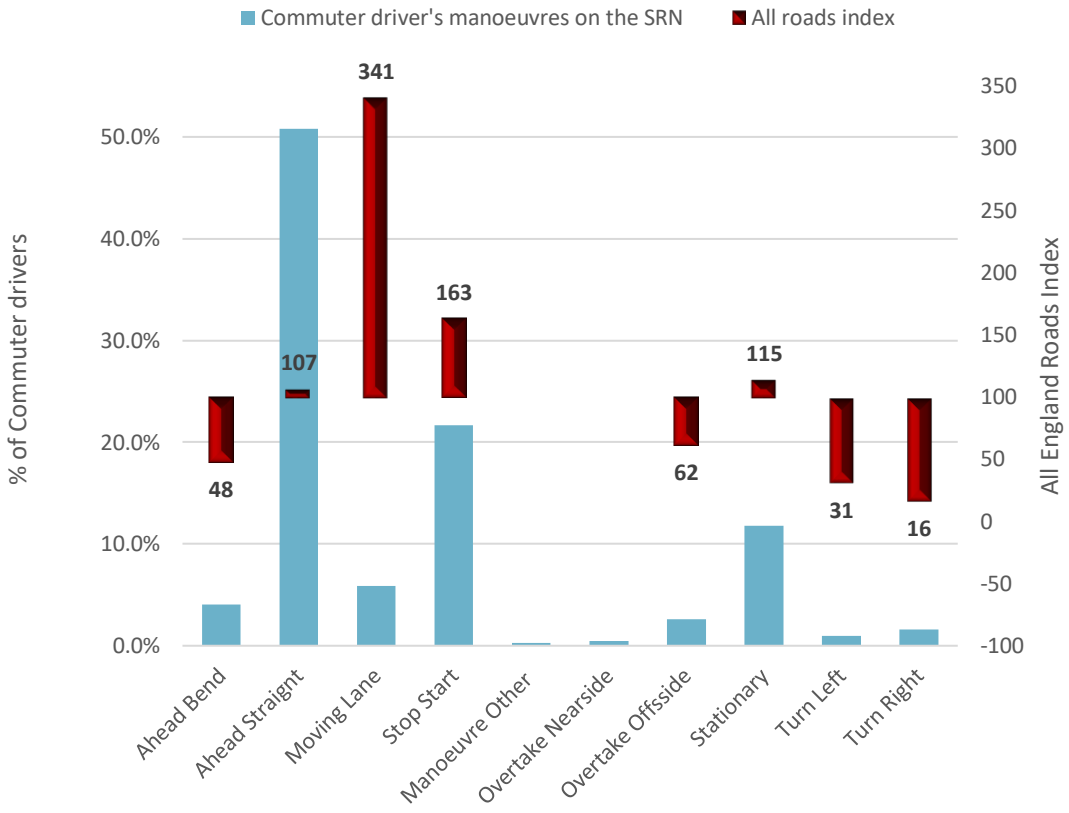
FIGURE 21 – COMMUTER DRIVERS' CFS ASSIGNED IN COLLISIONS ON THE SRN, INDEXED AGAINST COMMUTER DRIVERS ON ALL ENGLAND'S ROADS AND AGAINST ALL DRIVERS ON SRN



Also related to drivers' behaviour on the roads are the manoeuvres they are undertaking when they are involved in collisions. Figure 22 analyses the manoeuvres of commuter drivers involved in collisions on the SRN, indexed against all England's roads. The highest proportion of commuter drivers are involved in collisions on the SRN (50.8%) when they are going straight ahead. This proportion is slightly over-represented when compared to all England's roads. Other common situations for commuter drivers involved in collisions on the SRN are when they stop or start the vehicle or with the vehicle

stationary. Both situations are also over-represented when compared to all England's roads. Although with a lower percentage, 'Moving Lane' manoeuvre is highly over-represented when compared to all England's roads. Turning manoeuvres, overtaking offside, and moving ahead on a bend manoeuvres represent lower percentages and are also highly under-represented when compared to all England's roads.

FIGURE 22 – COMMUTER DRIVER MANOEUVRES INVOLVED IN COLLISION ON THE SRN, INDEXED AGAINST ALL ENGLAND'S ROADS



COMMUTER DRIVERS PROFILES

Moving away from the 'when, where and how' questions, we can now explore the 'who' question. It is essential to understand more about the people involved in the collisions, including information about their everyday lives, as well as demographics.

The ages of commuter drivers from England involved in collisions on the SRN, by severity, are shown in Figure 23. It shows that the largest group are aged 25-29, accounting for 14.7% of all commuter drivers involved in collisions on the SRN. This group is followed by commuter drivers aged 20-24 who account for 13.2%, and those aged 30-34 who account for 12.9% of all commuter drivers involved in collisions on the SRN. A total of 84.9% of SRN commuters are aged 20 and 54 years old, and each five-year age group in that range accounts for at least 9.3%. All bar one of these groups are also slightly over represented when compared to commuter drivers on all England's roads (except the 20-24 group which is slightly under-represented). The group 16-19 is highly under-represented when compared to commuter drivers on all England's roads, and all groups over 60 years old are under-represented when compared to England's all roads commuter drivers involved in collisions.

FIGURE 23 – AGE OF COMMUTER DRIVERS FROM ENGLAND INVOLVED IN COLLISIONS ON THE STRATEGIC ROAD NETWORK

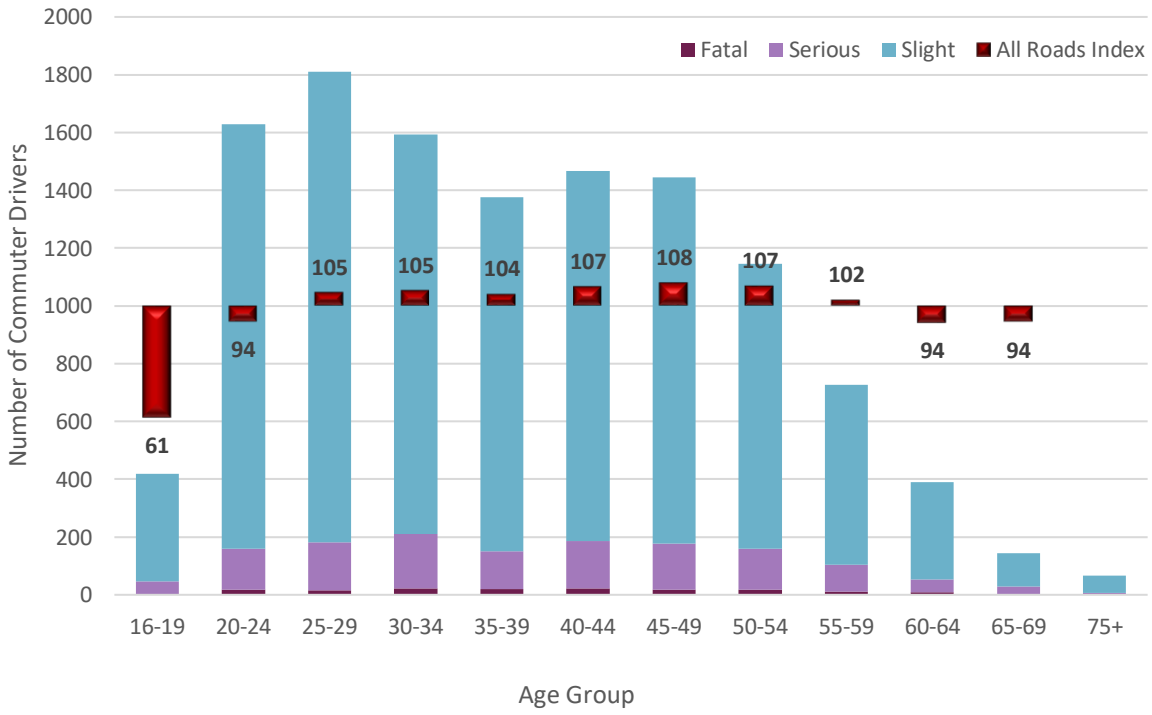


Figure 24 below shows the breakdown of commuter drivers from England involved in collisions on the SRN by home region, and by casualty severity. South West has the highest proportion of resident commuter drivers involved in fatal and serious collisions on the SRN (15.4%) compared to lowest rate in London (9.3%). The average split for the whole of England is 12.0% fatal and serious collisions and 88.0% slight collisions. Overall there were 1,472 commuter drivers from England involved in fatal or serious collisions on the strategic road network.

FIGURE 24 – COMMUTER DRIVERS INVOLVED IN COLLISIONS ON THE STRATEGIC ROAD NETWORK BY HOME REGION AND SEVERITY

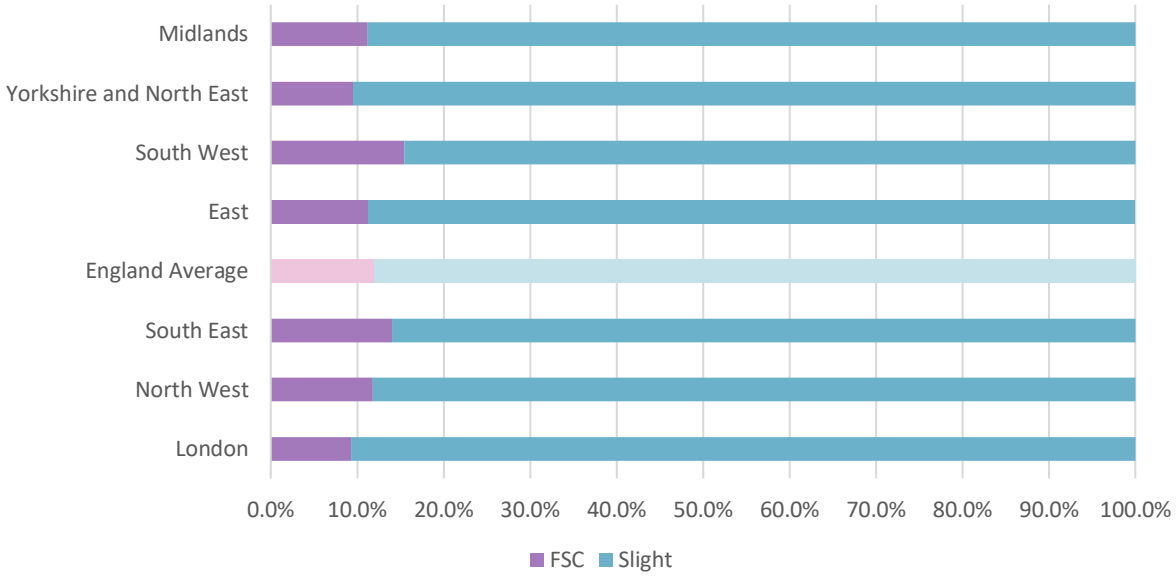


Figure 25 shows the percentage of commuter drivers involved in fatal and serious collisions on the SRN by home region indexed against the percentage of commuter drivers involved in fatal and serious collisions by region when all roads are taken in to account. All regions except London are slightly under-represented or under-represented on the SRN compared to England when all roads taken in to account. London, with 0.6% of commuter drivers involved in fatal collisions on the SRN and a further 8.7% involved in serious collisions is slightly over-represented when compared to commuter drivers involved in collisions on all England's roads.

FIGURE 25 – PERCENTAGE OF COMMUTER DRIVERS INVOLVED IN FATAL AND SERIOUS COLLISIONS ON THE STRATEGIC ROAD NETWORK BY HOME REGION WITH ALL ROADS INDEX

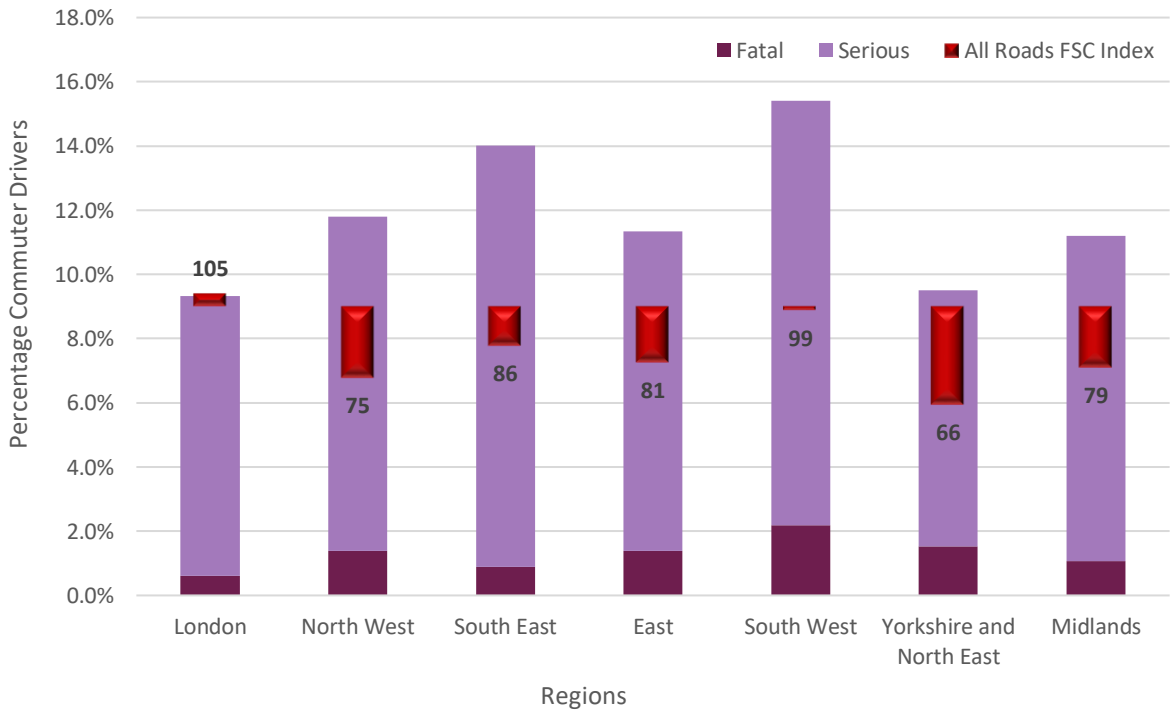


Figure 26 shows the gender breakdown by home region for commuter drivers involved in collisions on the SRN. The Midlands have the highest proportion of female commuter drivers involved in collisions with 36.2%, whilst London has the lowest with 28.9%. The average for England is 34.2% female and 65.8% male.

FIGURE 26 – COMMUTER DRIVERS INVOLVED IN COLLISIONS ON THE STRATEGIC ROAD NETWORK BY HOME REGION AND GENDER

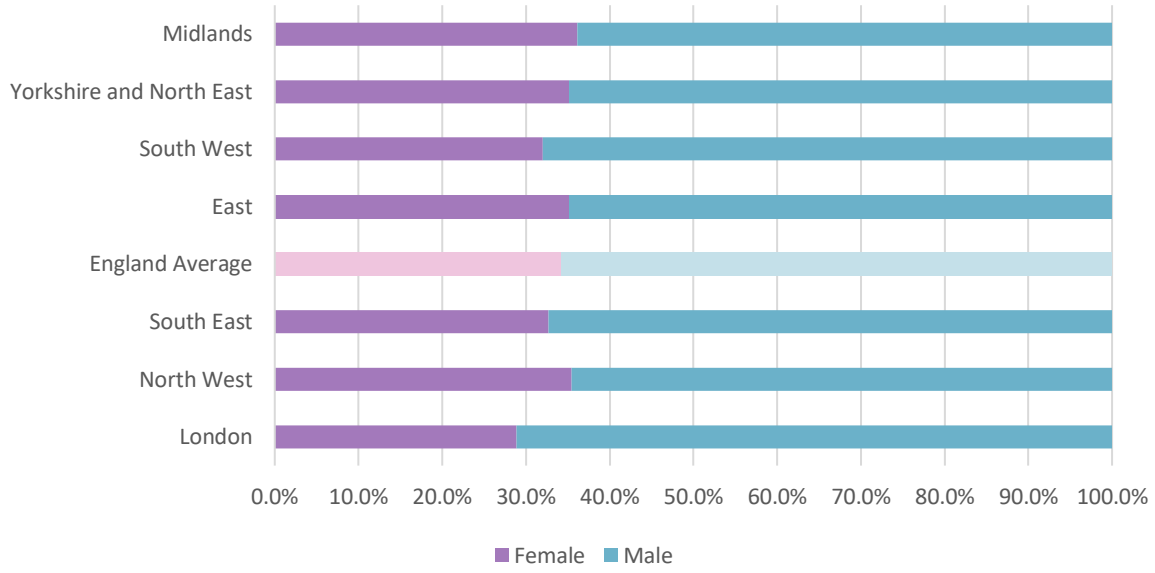
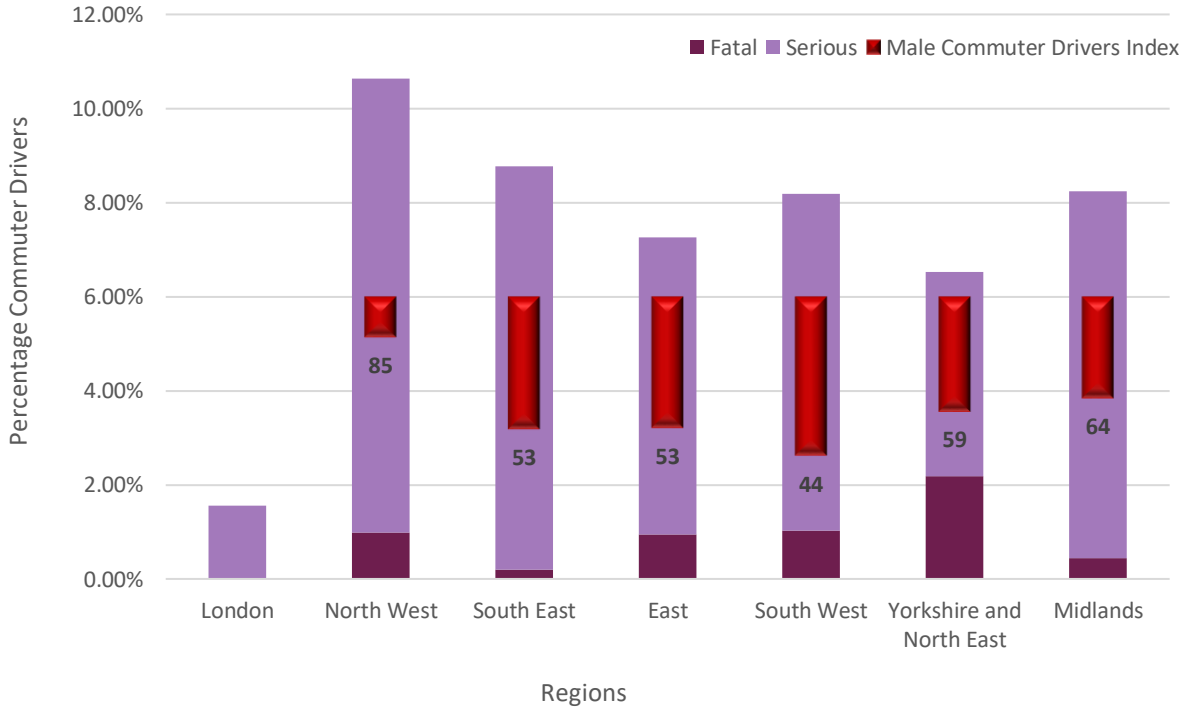


Figure 27 shows female commuter drivers involved in KSI collisions on the SRN as a percentage of female commuter drivers involved in collisions of all severities on the SRN, by home region and severity, and indexed against male commuter drivers.

FIGURE 27 – PERCENTAGE OF FEMALE COMMUTER DRIVERS INVOLVED IN KSI COLLISIONS ON THE STRATEGIC ROAD NETWORK BY HOME REGION AND SEVERITY, WITH MALE COMMUTER DRIVERS INDEX



North West is the region where the proportion of resident female commuters involved in KSI collisions is highest, accounting for 10.6% of the total number of female commuters from the region involved in collisions on the SRN. London is the lowest, with only 1.6% and the national average is 7.9%. Nevertheless, all regions are highly under-represented in comparison to the KSI index for male commuter drivers, which suggests that women commuter drivers are less likely to be involved in KSI collisions on the SRN. The index comparing female commuter drivers to male commuter drivers varies between 44 and 85, with a national average of 56, where 100 is the value that would be expected for a similar distribution and values under 100 mean under-representation and values over 100 mean over- representation.

Distance from home can be calculated in kilometres using the distance between crash location and home postcode for each commuter driver, averaged across the whole group of commuter drivers. The calculation does not plot along routes but is instead an 'as the crow flies' distance. Figure 28 below shows the average distance from home for commuter drivers involved in collisions on the SRN, indexed against the SRN average. Commuter drivers from South West are the farthest from home when they are involved in collisions on the SRN, with an average of 39.2 km and an index of 134, followed by those from London with 34.2 km and an index of 117. South East is the region where resident commuter drivers are involved in collisions on the SRN closest to their home location, with an average of 25.6 km and an index of 88. The national average distance from home of commuter drivers from England involved in collisions on the SRN is 29.2 km.

FIGURE 28 – AVERAGE DISTANCE FROM HOME FOR COMMUTER DRIVERS INDEXED AGAINST SRN AVERAGE

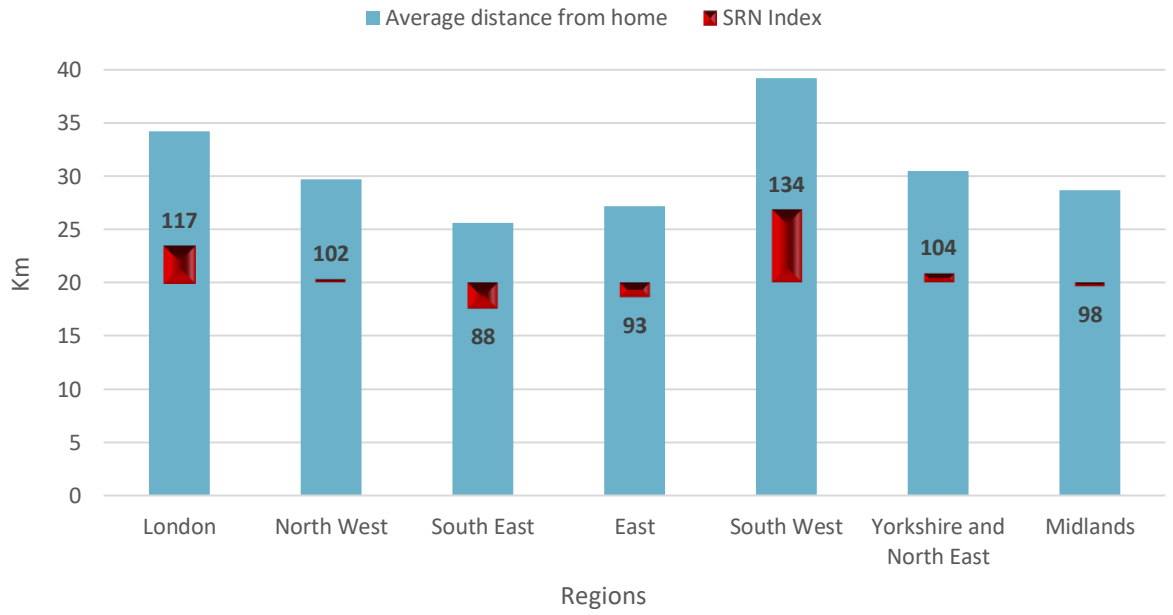


Figure 29 below shows the percentage of commuter drivers from each region involved in collisions (on the strategic road network), indexed against all roads compared to the percentage of commuter drivers involved in collisions in each region (on the SRN), indexed against all roads.

London has the smallest number of resident SRN collision involved commuter drivers, partly due to the low number of SRN collisions involving commuters in London. London is also highly under-represented when compared to all roads for both categories. South East and East regions have the

highest percentages of commuter drivers from and also in the region, also over-represented when compared to all England's roads for both categories. All the other regions are fairly represented when compared to all England's roads for both categories, except South West which is slightly under-represented when comparing commuter drivers involved in collisions on the SRN in the region with commuter drivers involved in collisions on all roads in the region.

FIGURE 29 – COMMUTER DRIVERS BY REGIONAL RESIDENCY INVOLVED IN COLLISIONS ANYWHERE ON THE SRN, COMPARED TO ALL COMMUTER DRIVERS INVOLVED IN COLLISIONS ON REGIONAL SRNS, WITH ALL ENGLAND ROADS INDICES

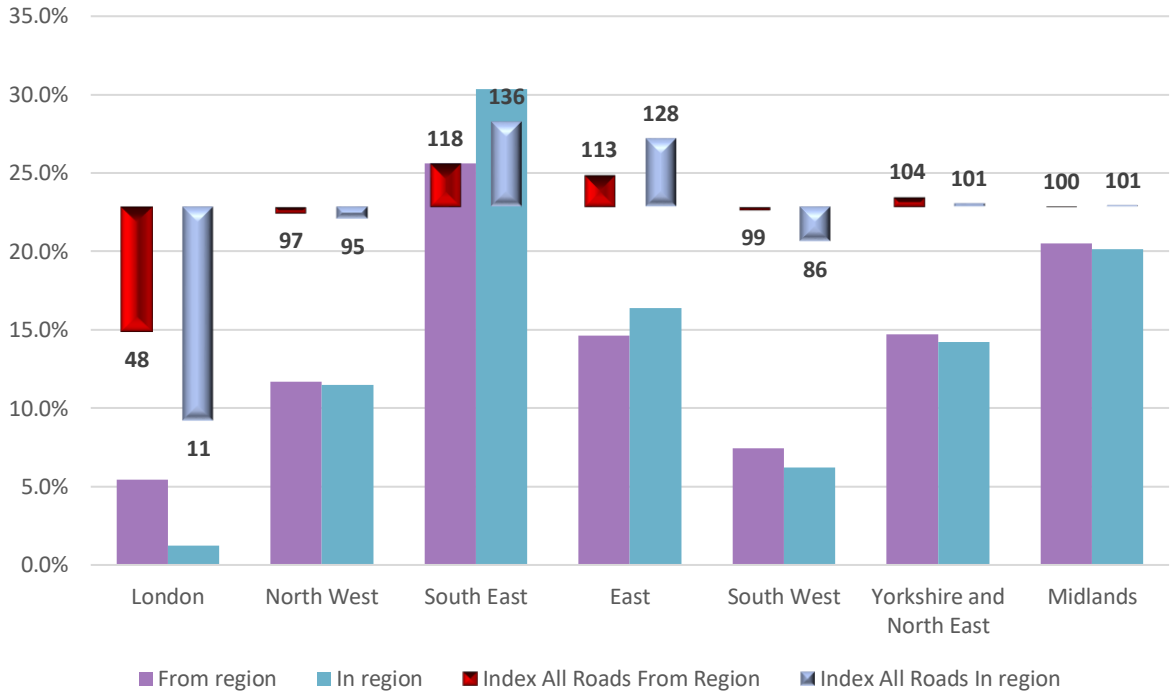


Figure 30 shows the percentage of commuter drivers from each region involved in collisions in their own home region (for the SRN), with all roads index. All regions except London have high rates of commuter drivers involved in collisions on the SRN in their own region (between 72.0% for South West and 90.6% for South East). All the regions (except London) are also slightly under-represented when compared to all England's roads, except South East which is fairly represented when compared to England with all roads taken in to account. London have a very low percent (9.6%) of commuter drivers involved in collisions on the SRN in London region and is also highly under-represented when compared to all London's roads.

FIGURE 30 – COMMUTER DRIVERS FROM REGION INVOLVED IN COLLISIONS ON THE SRN IN THEIR HOME REGION, WITH ALL ROADS INDEX

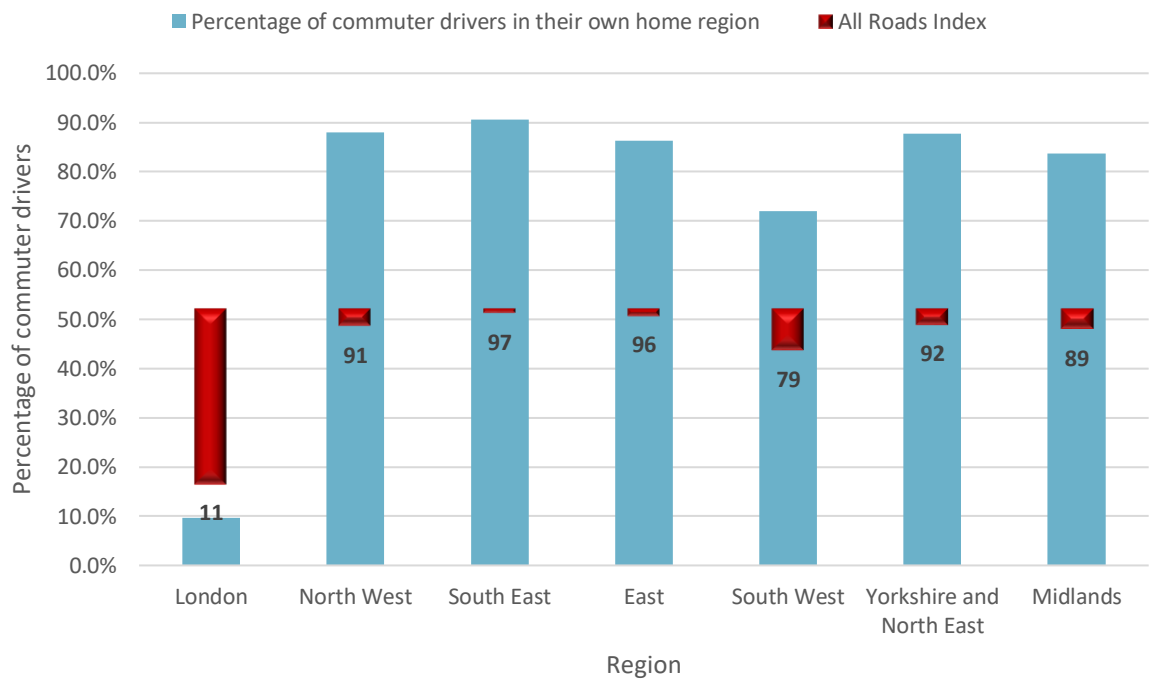


Figure 31 below shows the breakdown of commuter drivers from England involved in collisions on the SRN by home region, and by road class. South West has the highest proportion of resident commuter drivers involved in collisions on the SRN on A roads (86.1%) compared to lowest rate in London (11.4%). The average split for the whole of England's SRN is 54.0% commuter drivers involved in collisions on A roads and 46.0% on motorways.

FIGURE 31 – COMMUTER DRIVERS INVOLVED IN COLLISIONS ON THE STRATEGIC ROAD NETWORK BY HOME REGION AND ROAD CLASS

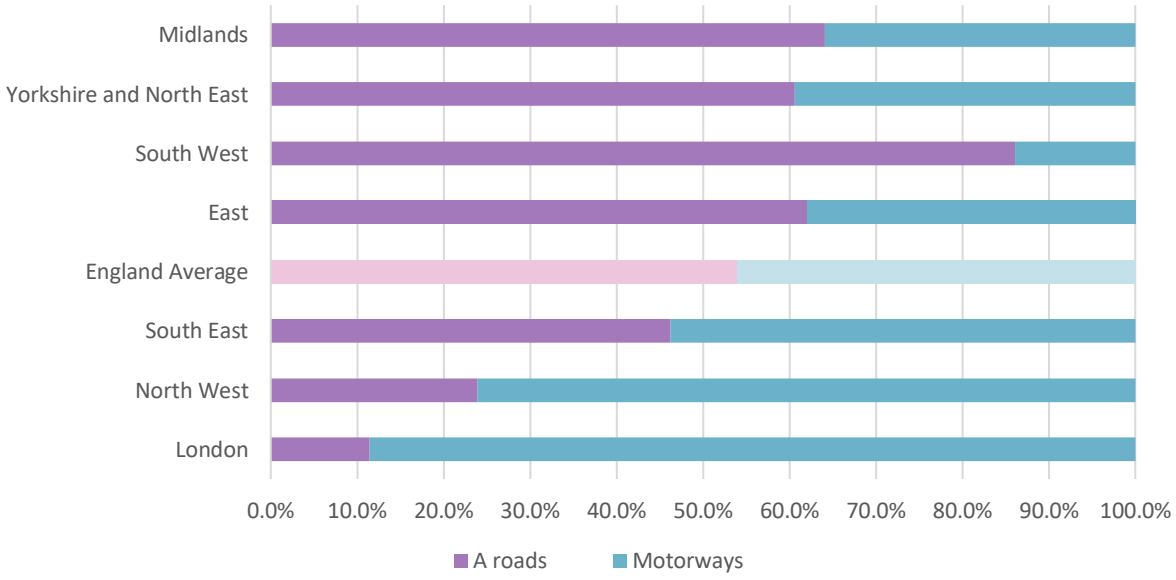
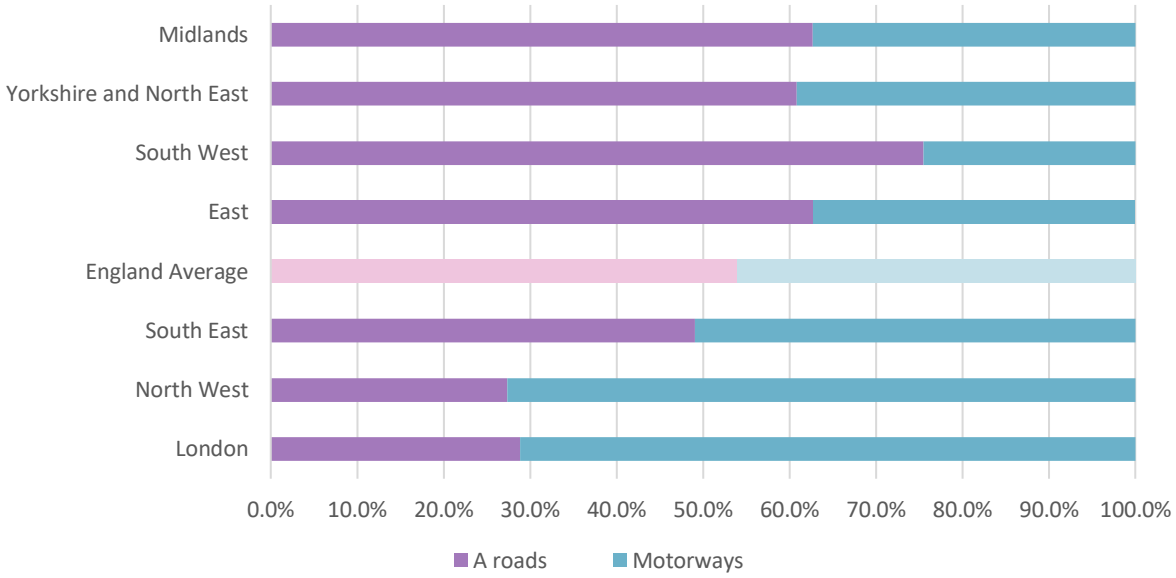


Figure 32 below shows the breakdown of commuter drivers from England involved in collisions on the SRN by collision location, and by road class. South West has the highest proportion of commuter

drivers involved in collisions on the SRN on A roads in the region (75.5%) compared to lowest rate in North West (27.4%).

FIGURE 32 – COMMUTER DRIVERS INVOLVED IN COLLISIONS ON THE STRATEGIC ROAD NETWORK BY COLLISION LOCATION AND ROAD CLASS



MOSAIC ANALYSIS

Mosaic classification is based on the individual postcodes provided in STATS 19 records for each commuter driver, and uses the Experian Mosaic socio-demographic classification system (for details see **http://publicsector.experian.co.uk/Products/Mosaic Public Sector.aspx**). Typically, 85% of postcodes can be matched to a Mosaic Type, so this analysis is based on about five out of six of all commuter drivers. There are a number of Mosaic Types in each group, and for this analysis Mosaic Type has been used as the most appropriate choice for available sample sizes.

The blue bars indicate the number of commuter drivers in each Mosaic Type, with figures corresponding to the left hand vertical axis. The red bars show the "Index" for each Mosaic Type. An Index value of 100 indicates that the number of commuter drivers is in proportion to the adult population of England's communities where that Type predominates. A value of 200 would mean that this Type is involved in collisions at twice the expected rate; a value of 50 would imply half the expected rate. Displaying the data overlaid on a single chart allows quick and easy analysis of commuter drivers and relative risk.

FIGURE 33 – COMMUTER DRIVERS BY MOSAIC TYPE, INDEXED AGAINST ENGLAND ADULT RESIDENTS

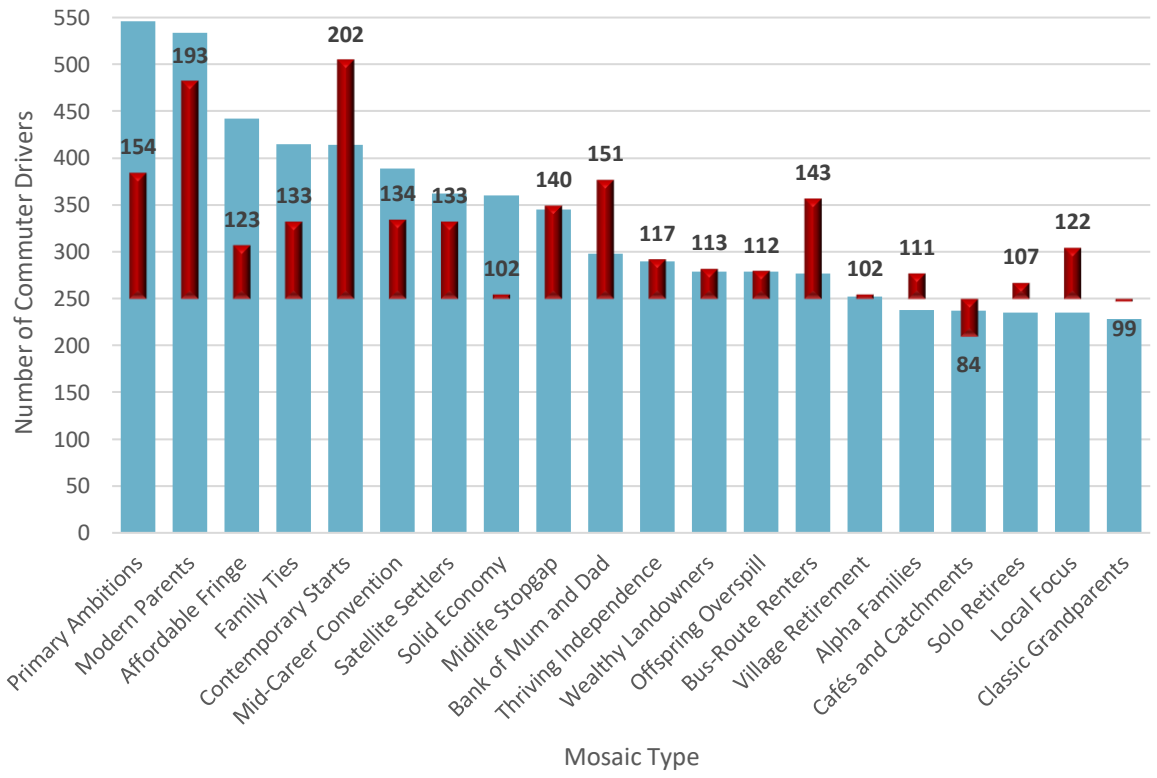


Figure 33 shows commuter drivers involved in collisions by Mosaic Type of the postcode they live in (only the top twenty largest Types are presented in Figure 33). The red bars show the index value based on the population of these groups living in England. Three of the first five Types with the highest number come from Group H - *Aspiring Homemakers*. These Types are: *Primary Ambitions* (Type H35) with the highest number of commuter drivers involved in collisions on the SRN and also highly over-represented; *Affordable Fringe* (Type H30), the third largest Type and over-represented; and *Contemporary Starts* (Type H34), the fifth largest Type and also highly over-represented with more

than twice the number of commuter drivers involved in collisions on the SRN than expected when taking into account the proportion of the population of that type.

Also featuring in top five largest Types are *Modern Parents* (Type D15), second largest type and also highly over-represented, and *Family Ties* (Type E21), the fourth largest and also over-represented.

Mid-Career Convention (Type D16), *Satellite Settlers* (Type G29), and *Midlife Stopgap* (Type L52) are just outside the top five but have also high numbers of commuter drivers involved in collisions on the SRN and are over-represented too.

Bank of Mum and Dad (Type B06) and *Bus-Route Renters* (Type J45), although have smaller numbers of commuter drivers involved in collisions on the SRN are highly over-represented when compared to the proportions of their Types in the population.

Table 9 below details some most over-represented Mosaic Types amongst commuter drivers involved in collisions on the SRN.

TABLE 9 – PROFILE OF MOST OVER-REPRESENTED MOSAIC TYPES

Type H35 Primary Ambitions	Primary Ambitions are aspiring young families who have sought out affordable homes in better neighbourhoods which are manageable within the family budget given their good household incomes. Having lived there for a number of years, they may now be out-growing these homes which were chosen because of their proximity to good schools and nurseries for their children. The typical Primary Ambitions family is headed by parents aged in their 30s, who often co-habit rather than marry. They have one or two children who attend local nurseries and primary schools, and their homes, although the cheaper properties in their neighbourhoods, were chosen when they were first-time buyers perhaps because of the good schools in the location. Properties tend to be three-bedroom terraced or occasionally semi-detached homes and 90 per cent are owned with a mortgage. With most having lived there for between four and ten years and children growing up, they may now be considering how to acquire more space. Both parents work and many have degrees, meaning they earn decent household incomes from jobs in lower managerial and lower professional roles and are motivated in their careers by the prospect of increasing their earnings further. When not at work, Primary Ambitions are the most likely type of all to take short breaks away from home. They are regular internet users making many purchases online and are likely to keep in touch with friends on social networks
Type D15 Modern Parents	Modern Parents are busy, double-income families juggling the demands of school age children and careers. Typically married couples, they live in modern detached homes of good design and quality, on newer estates or streets popular with similar families. Typically aged 36-45, Modern Parents are generally married with one or two children who are often under five or of primary school age. Both parents work, one may well work part-time, and most will be educated to degree level. They work for larger companies in finance, retail or manufacturing in

	higher managerial or technical roles or may be working their way up in education, healthcare or professional practices. Homes are commonly on modern, good quality housing developments, arranged around small cul-de-sacs, attractive to families. Houses tend to be detached though not on a large plot, and well-designed to provide four bedrooms. They moved into these homes between four and ten years ago, perhaps around the time children were born, and enjoy living alongside neighbours at a similar life stage. Ninety-five per cent of Modern Parents own their home, most with a significant amount remaining on their mortgage. Modern Parents are most likely to own two cars, used for getting to work, ferrying children around and weekend shopping. With both parents and children competent at using technology, these families are the most likely to own a tablet. Smartphone ownership is similarly high; over 90 per cent of households have one. Adept at internet searching, people frequently use online aggregator sites to find and research the best financial deals or find holidays.
Type H34 Contemporary Starts	Contemporary Starts are fashion conscious younger couples and singles in their 20s and 30s setting up home in neighbourhoods attractive to themselves and their peers. Most do not yet have children and are instead focusing on building their careers. This type also includes military bases. Contemporary Starts tend to be aged 26 to 35 and are single or co-habiting. A few have one child under the age of five. They live on new-build developments located further away from urban centres, in more affordable two-bedroom homes. Those that have been able to put together a deposit have bought their own homes but many rent from private landlords. Shared ownership schemes are also a good option for Contemporary Starts. This type includes military bases and military personnel who are housed in accommodation provided by the Services. Others are young professionals working full-time in lower managerial and technical roles or sales and customers service. Individual incomes tend to be between £20,000 and £30,000 which allow for a reasonable standard of living. But to maximise their spending power they are attracted to bargains and will use auction sites to track them down. The internet is often used to buy DVDs and for day to day online banking. They are more likely to be influenced by advertisements on TV.

Type L52 Midlife Stopgap	Midlife Stopgap are working single people who are privately renting short-term affordable homes. Sometimes living with other home sharers, they do not have children and their length of residence at this address is likely to be low. Midlife Stopgap are older people, typically aged between 35 and 55, renting small, affordable homes from private landlords. They don't live with children and they've usually lived in the property for less than three years. Homes can often be shared with other adults, tend to have two or three bedrooms and are generally Victorian or Edwardian terraced properties. While Midlife Stopgap are typically in full-time employment, they have diverse roles, levels of responsibility and levels of educational attainment and work in variety of industries. While some are able to cope on their incomes, others find it more difficult to do so. Although their present situation is fairly transient, they have ambitions for the future. A good proportion of Midlife Stopgap view their work as a career rather than a job and want to move up the career ladder. They are moderate users of the internet and will download music and place sports bets online. The reasons for this type's current status are varied. They may be making a fresh start following work opportunities, renting while looking for a home to buy, or making a new home after the end of a relationship.
Type B06 Bank of Mum and Dad	Bank of Mum and Dad are well-off families in upmarket suburban homes, whose older children are still living at home, benefiting from the continued financial support of their middle-aged parents. Bank of Mum and Dad comprises married couples typically aged 50 to 65 whose adult children, generally aged 18 to 25, are still enjoying the comfort of their childhood home and the lifestyle and financial support their parents offer them. With combined high salaries from continued employment in senior positions, Bank of Mum and Dad have now almost paid off the mortgage on their quality four bedrooms detached homes. Their homes are expensive, often fairly modern and, given the income available and the presence of tech-savvy young adults in the household, are well equipped with an array of digital and consumer technology from smartphones, HD and smart TVs to MP3s, laptops and tablets. The search for entertainment the whole family can enjoy together means that frequent trips to the cinema are popular. Grocery shopping is generally done at upmarket supermarkets where they are likely to opt for well-known brands. However, catering for the needs of their extended family, Bank of Mum and Dad often find it easier to grocery shop online.

INDEX OF MULTIPLE DEPRIVATION (IMD)

As well as looking at the Mosaic socio-demographic classifications, it also possible to look at relative deprivation using the UK IMD values for each postcode. IMD uses a range of economic, social and housing data to create a single deprivation score for each small area of the country. The analysis uses deciles, which creates ten groups of equal frequency across the entire population, ranging from the 10% most deprived areas to the 10% least deprived areas.

Figure 34 below shows the breakdown of commuter drivers from England who were involved in collisions on the strategic road network. The more deprived deciles vary from 6.2% to 10.1% whilst the least deprived vary from 10.4% to 12.7%. The least deprived 50% account for 57.1%, compared to most deprived 50% which accounts for 42.9%.

FIGURE 34 – IMD OF COMMUTER DRIVERS INVOLVED IN COLLISIONS ON THE SRN

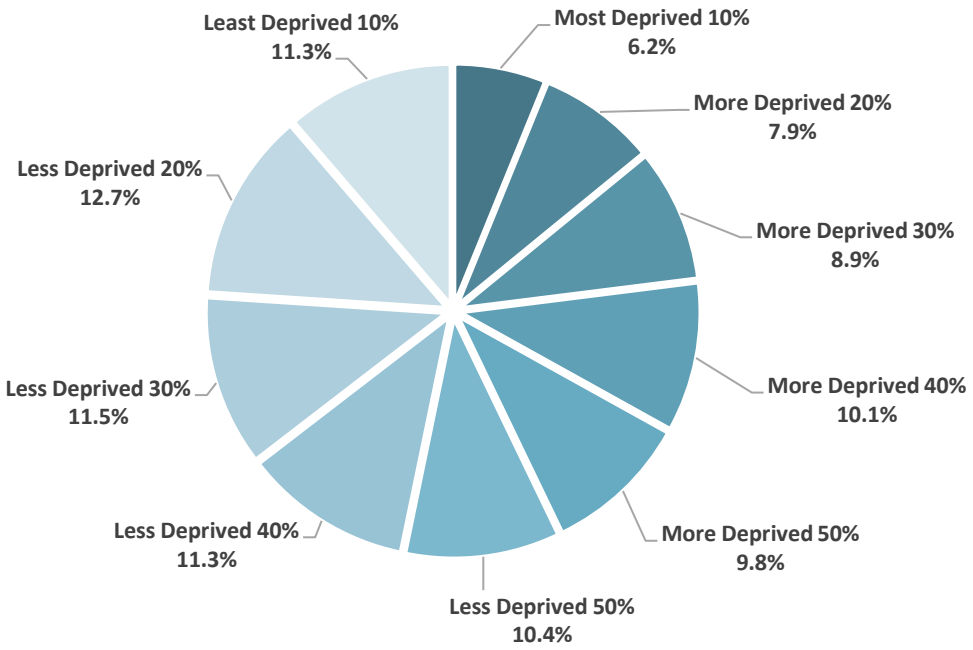


Figure 35 and Figure 36 below show the breakdown by region of commuter drivers within the less deprived 10-50% IMD deciles and the most deprived 10-50% compared to the national average. The regions with the highest percentage from the least deprived deciles are from the South East, East and South West, also over-represented or slightly over-represented. The regions with the fewest commuter drivers from the least deprived deciles and most under-represented are North West and London. When looking at the most deprived deciles this pattern reverses with the East and South East accounting for the smallest percentage and the most under-represented.

FIGURE 35 – REGIONAL BREAKDOWN OF COMMUTER DRIVERS IN THE LEAST DEPRIVED 10-50% IMD DECILES

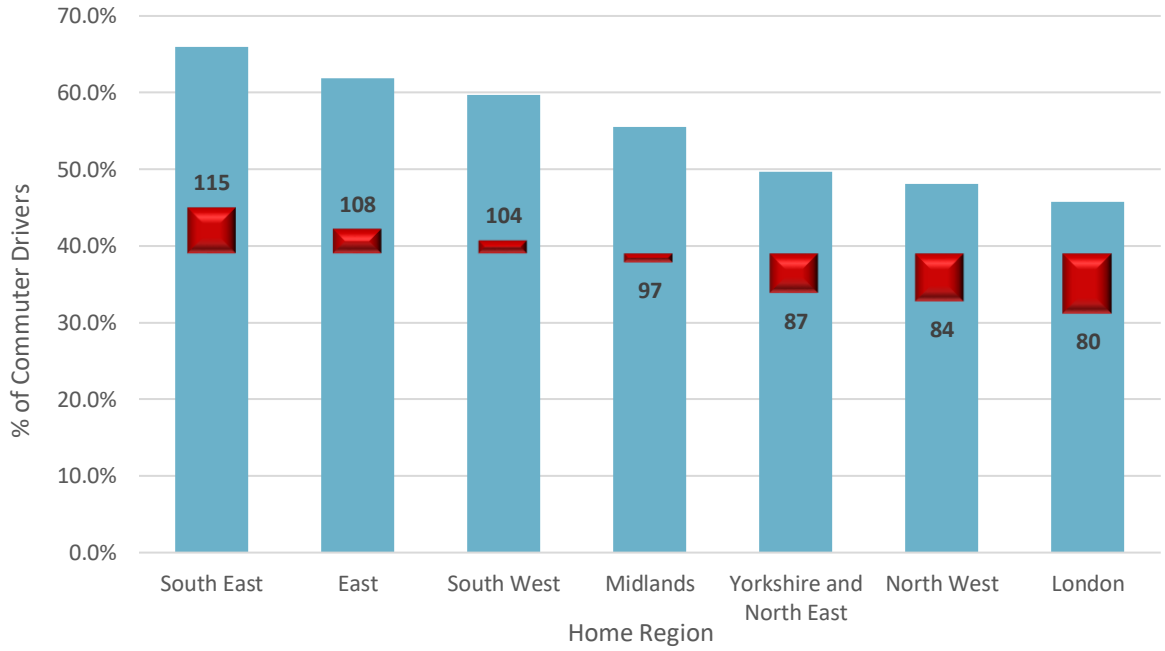


FIGURE 36 – REGIONAL BREAKDOWN OF COMMUTER DRIVERS IN THE MOST DEPRIVED 10-50% IMD DECILES

PERSONAS

The analysis of the socio-demographic data as well as the collision information has allowed a picture to be built up about the kinds of commuter drivers who are involved in collisions on the SRN. The analysis also allocated these types of commuter for each region, based on their prevalence. More than one type for each region has emerged, both in terms of socio-demographic profiling and collision analysis. The findings allow key characteristics to be collated into personas. Parallels have been drawn from the multiple data sets in the creation of these personas to ensure alignment along clear data points.

There are **two female** personas and **five male** personas which have emerged from the analysis:

1 – 'Emma and Matthew' – are in their early 30s and live in an affordable three bedrooms terraced house in a good neighbourhood together with their two small children. Having lived there for several years, they may now be out-growing the home which was chosen because of its proximity to good schools and nurseries for the children. Their community belongs to Mosaic Group H. The family has a good income, well above the average. Both Emma and Matthew are highly educated. Emma works in Financial and insurance or Public administration and defence whilst Matthew works in Transport and storage or in the Information and communication industry. The family owns two cars and both partners are commuting to work. Both partners travel high mileage. Matthew is also likely to own a light van and/or a motorbike that can also be used to commute. Both Emma and Matthew are more likely to get involved in a collision on a 70mph dual carriageway rural road, during morning commuting hours on weekdays, mostly on daylight conditions, during cold season months. Both Emma and Matthew are likely to get involved in collisions on segments of roads with no junctions in proximity or close to roundabouts or junctions with no control or with give way. Whilst Emma is more likely to be driving a car, Matthew may also be driving his light van or riding his motorcycle. Both are likely to be involved in two or more vehicle collisions with high probability that at least one of the vehicles to be a goods vehicle.

Collision circumstances	Emma	Matthew
Speed limit	70mph (76.2%)	70mph (77.3%)
Location Urban/Rural	Rural (83.4%)	Rural (85.3%)
Road type	Dual cway (75.6%)	Dual cway (73.4%)
Day of week	Weekdays (95.3%)	Weekdays (92.9%)
Time of day	6AM-9AM (39.4%)	6AM-9AM (37.7%)
Light conditions	Daylight (77.2%)	Daylight (67.1%)
Vehicle type	Car (96.4%)	Car (74.8%)
Junction control	Give way (25.4%)	Give way (24.4%)
Junction detail	Roundabout (11.4%)	Roundabout (9.9%)
Number of cars involved	3 or 4 (26.4%)	3 or 4 (34.0%)
Goods vehicles involved	Yes (31.6%)	Yes (35.1%)
Severity	KSI (4.1%)	KSI (16.7%)
Distance from home	22.2 km	29.1 km
Population Index	159	151

Whilst Emma is more likely to be involved in the collision when moving straight ahead and to be assigned control errors or road surface

related contributory factors, Matthew is more likely to be moving lanes when he is involved in collisions and to receive fatigue or close following related contributory factors. Emma gets mostly involved in slight collisions at about 20 km from home while Matthew gets involved in more severe collisions and at about 30 km from home.

The family trusts and supports police overall so they can be used to deliver safety messages or campaigns. They are regular internet users making many purchases online and are likely to keep in touch with friends on social networks so internet and social media can be used to address emotional campaign having children, families and ambitions as a central focus. Perhaps for Emma some additional training on wet roads and better control of the car would be beneficial whilst for Matthew reminders about the dangers of fatigue and close following or aggressive driving can be used in emotional, family centric campaigns. The bottom line is that both Emma and Matthew are young and ambitious people who care about their pseudo families and are likely to be open to improve their safety and their chances to successfully accomplish their ambitions.

Being a couple who share similar risks on the commuting activity each day, campaigns targeted on each of them separately but with focus on the family and encouraging them to take care of each other and to make sure they both come back safe to their family in the evening can be used to reinforce the safety message within the couple.

These families are more likely to live in East, South East, Midlands or Yorkshire and North East regions.

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2 – 'Alison and Craig' – are in their early 40s and live affluent lifestyles in upmarket homes situated in sought after residential neighbourhoods. Their busy lives revolve around their children and successful careers in higher managerial and professional roles. Their community belongs to Mosaic Group D. The family has a very high income, well above the average. Both Alison and Craig are highly educated, degree level or higher. Alison works in Education, Financial and insurance or in Public administration and defence whilst Craig works in Transport and storage or in the Information and communication industry. They have company cars and both are commuting to work and they both travel high mileage. Both Alison and Craig are more likely to get involved in a collision on a 70mph dual carriageway rural road, during commuting hours in week days, mostly on daylight conditions, during cold season months. Whilst Craig is more likely to get involved in collisions during morning commuting hours, Alison is more likely to be involved in collisions during afternoon commuting hours.

Both Alison and Craig are likely to get involved in collisions on segments of roads with no junctions in proximity or close to roundabouts or junctions with no control or with give way.

Collision circumstances	Alison	Craig
Speed limit	70mph (72.0%)	70mph (76.7%)
Location Urban/Rural	Rural (87.9%)	Rural (83.2%)
Road type	Dual cway (73.6%)	Dual cway (75.0%)

Day of week	Weekdays (96.7%)	Weekdays (95.5%)
Time of day	3PM-6PM (34.6%)	6AM-9AM (37.2%)
Light conditions	Daylight (76.4%)	Daylight (72.2%)
Vehicle type	Car (100.0%)	Car (84.1%)
Junction control	Give way (29.7%)	Give way (24.1%)
Junction detail	Roundabout (11.5%)	Roundabout (11.4%)
Number of cars involved	3 or 4 (34.6%)	3 or 4 (41.2%)
Goods vehicles involved	Yes (22.0%)	Yes (33.2%)
Severity	KSI (3.8%)	KSI (13.1%)
Distance from home	24.2 km	30.5 km
Population Index	192	194

Whilst Alison is definitely driving a car, Craig may also be, although with a low probability, driving a light van or riding his motorcycle. Both are very likely to be involved in two or more vehicle collisions with high probability for three or four vehicles and at least one of the vehicles to be a goods vehicle.

Like Emma and Matthew, Alison is more likely to be involved in the collision when moving straight ahead and to be assigned control errors or road surface related contributory factors, whilst Craig is more likely to be moving lanes when he is involved in collisions and to receive fatigue or close following related contributory factors. Alison gets mostly involved in slight collisions at about 25 km from home while Craig gets involved in more severe collisions and at about 30 km from home.

The family trusts and supports police overall so they can be used to deliver safety messages or campaigns. They are heavy internet users making many purchases online and are likely to keep in touch with friends on social networks, Twitter and Facebook being used at a daily basis. Some practical skills training and probably some rules/advice for safe driving could during busy traffic hours could be useful for both Alison and Craig. Speed management and safe distance are also subjects of interest for Craig.

Although, at the first glance, the differences between this type of families and the previous type (Emma and Matthew) looks to lie on age and income, there are some other differences in terms of marketing campaigns management and targeting. First, both members of the families are involved now when driving a car and less in other types of vehicle. Second, these cars are company cars and therefore, fleet safety campaigns can be appropriated to target these people. Moreover, working at a high management level, they can be actively involved in fleet safety campaigns. Third, when comparing to the previous family profile (Emma and Matthew), Alison and Craig tend to be safer (lower KSI proportion) and therefore they are probably more willing to take the message and to become safer drivers.

Similar to the previous couple, campaigns targeted on Alison and Craig them separately but with focus on the family and encouraging them to take care of each other and to make sure they both come back safe to their family in the evening, can be used to reinforce the safety message within the couple.

These families are more likely to live in London, North West, South East, Midlands or Yorkshire and North East regions.

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3 – 'Alex' – is in his mid-40s, a working single man who is privately renting short-term affordable homes. Living with other east European home sharers, Alex, also an east European person, does not have children and his length of residence at one address is likely to be low. His community belongs to Mosaic Group L. Alex has a low income and is educated to a GCSE level or equivalent. He is employed full-time in Manufacturing, Transport and storage or the Water supply, sewerage, waste management industry in a lower supervisory or

semi-routine occupation. Alex is likely to own an older car or van or a motorbike. He sometimes uses the bicycle too, but because of

the long distance he commutes he doesn't use it for commuting.

Alex is likely to get involved in collisions on rural dual carriageway roads with 70mph speed limits, but he can also be involved in collisions on lower speed limit roads.

Weekday commuting hours also morning and afternoon, with daylight conditions, and fine and still weather are the most common circumstances for Alex's collisions. Alex is driving his car the most of the times when he is involved in collisions on the SRN but he can also be driving his van or riding his motorcycle. When travelling straight ahead Steve gets involved in collisions near roundabouts or junctions with give way or that are uncontrolled. The most common manoeuvres for his vehicle are 'Moving Lane' or 'Straight Ahead'. An unusually high proportion of collisions with Alex involved occur when the vehicle is stationary (10%), or is stopping or starting (23.1%) on a slip road or the main carriageway. That could suggest that Alex's is being hit by other vehicles. He also carries colleagues with him in the vehicle for their commute. vehicle may be breaking down, and his vehicle His (younger) passengers are also identified in the non-motorised study.

Collision circumstances	Alex
Speed limit	70mph (66.5%)
Location Urban/Rural	Rural (81.4%)
Road type	Dual cway (70.2%)
Day of week	Weekdays (89.3%)
Time of day	6AM-9AM (36.0%) 3PM-6PM (31.8%)
Light conditions	Daylight (62.8%)
Vehicle type	Car (80.0%) Goods vehicle (9.9%) Motorbike (7.4%)
Junction control	Give way (27.3%)
Junction detail	Roundabout (10.3%)
Number of cars involved	2 (50.8%) 3 or 4 (32.6%)
Goods vehicles involved	Yes (31.0%)
Severity	KSI (14.0%)
Distance from home	34.0 km
Population Index	150

A good proportion (14%) of the collisions that Alex is involved in are fatal or serious, and Alex receives often 'Close following' or Fatigue' related contributory factors. He is also involved in collision quite far from home, at an average of 34 km from his residence address.

Alex neither agrees nor disagrees with the role and effectiveness of police forces so maybe other agencies are more appropriate to use for safety campaigns. Alex is a heavy internet user, making use of platforms like Twitter and Facebook daily. Key messages about car maintenance and about how to act in the event of a breakdown could be delivered either through a social media campaign or through a fleet-safety campaign addressed to employers. Alex is more likely to live in South West, South East or North West region

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4 – 'Billy' – is in a black African ethnic adult in his early 40s. He lives in a three-bedroom terraced house with his wife Paige, their three children and other family adults. Although they aren't highly educated they manage to have stable lower wage jobs in service or retail industries. Their community belongs to Mosaic Group M. Family finances are topped up with

child benefits and tax credits and they feel it is difficult to cope on their incomes, and aspire to a better standard of living. They use credit cards to afford larger purchases but they are price conscious.

The family owns a light van, a motorcycle and a few bicycles. Billy usually commutes to work in his car but sometimes he can use the light van or even the motorcycle. Normally he is likely to give a lift to other work colleagues. The bicycles are used for other journeys.

Billy is more likely to get involved in collisions on the SRN on dual carriageway rural road with 70mph speed limit. Most of the collisions happen in daylight and around commuting hours, but a significant proportion happen also between 6PM and 9PM, because of the long shifts Billy needs sometimes to work.

Billy is usually driving his car when he is involved in collisions on the SRN, but, quite often, he can also be driving his light van or riding his motorbike. Outside the usual cases when the collision happens on a straight road with no junctions in proximity, Billy also collides with 2, 3 or 4 vehicles in the proximity of roundabouts or give way junctions. These collisions are likely to involve at least one goods vehicle (in addition to the one Billy may be driving).

Billy is also likely to be involved quite often in collisions when starting or stopping the vehicle, or with the vehicle stationary, probably because of a breakdown.

Billy sends a lot of texts and usually keeps in touch with friends on social networks. He doesn't frequently shop using the internet but he goes online for entertainment such as bingo.

Collision circumstances	Billy
Speed limit	70mph (80.3%)
Location Urban/Rural	Rural (82.7%)
Road type	Dual cway (76.0%)
Day of week	Weekdays (90.6%)
Time of day	6AM-9AM (34.6%) 3PM-6PM (24.4%) 6PM-9PM (14.2%)
Light conditions	Daylight (66.1%)
Vehicle type	Car (69.3%) Goods vehicle (16.9%) Motorbike (11.4%)
Junction control	Give way (21.3%)
Junction detail	Roundabout (11.0%)
Number of cars involved	2 (49.2%) 3 or 4 (29.5%)
Goods vehicles involved	Yes (37.0%)
Severity	KSI (15.7%)
Distance from home	28.4 km
Population Index	161

Billy and his family don't especially like or trust the police so other agencies may be better placed to deliver safety campaigns. If the campaign is more enforcement focused, Billy tends to comply to rules and regulations.

Having a high proportion of assigned contributory factors related to 'Close following' and 'Speed', campaigns about safe distances and speed management would be appropriate. Also, key messages about car maintenance and maybe fleet car checks can be appropriate too for making Billy safer on the network.

Billy and his family are more likely to live in the London region.

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5 – 'Ross' – is in a European adult in his early 30s. He lives alone in a low cost flat, further away from city centre amenities, close to main roads. His home is unmodernised and of poor quality. His community belongs to Mosaic Group J. Ross is working in a lower supervisory or technical position in the accommodation and food service industry and has a low

income. Ross is likely to own an old car, a light van or a small motorcycle and he could be using any to commute to work.

Ross is likely to get involved in collisions on the SRN in similar conditions as Billy described above, on 70mph speed limit, rural dual carriageway roads, during weekdays on daylight, during commuting hours. He is likely to be driving his car but quite often he might be driving his van or his motorbike. When not on a straight road, Ross is likely to be in the proximity of a roundabout or a give way junction and his manoeuvre is likely to be moving lane or moving straight ahead. He is likely to receive 'Close following' or 'Speed' related contributory factors and the collisions are likely to involve more than 2 cars, one of which is likely to be a goods vehicle.

Like Billy, Ross is also likely to be quite often involved in collisions when starting or stopping the vehicle, or with the vehicle stationary, probably because of a breakdown.

Ross are less up-to-date with technology than other young renters but relies on his mobile for communication and sends a lot of texts, particularly at weekends. He goes online for entertainment – listening to music and placing online bets.

Since Ross doesn't have to much confidence in police overall but he is likely to comply to rules and regulations, other agencies than the police should be used to deliver safety messages.

Since Ross doesn't have a family, emotional messages are less appropriate and enforcement based campaigns might have better success.

Collision circumstances	Ross
Speed limit	70mph (65.0%) 50 & 60mph (21.9%)
Location Urban/Rural	Rural (83.1%)
Road type	Dual cway (65.0%)
Day of week	Weekdays (91.8%)
Time of day	6AM-9AM (30.6%) 3PM-6PM (32.2%) 6PM-9PM (11.5%)
Light conditions	Daylight (60.1%)
Vehicle type	Car (74.9%) Goods vehicle (10.4%) Motorbike (12.0%)
Junction control	Give way (26.8%)
Junction detail	Roundabout (13.1%)
Number of cars involved	2 (49.2%) 3 or 4 (30.1%)
Goods vehicles involved	Yes (34.4%)
Severity	KSI (15.8%)
Distance from home	28.1 km
Population Index	143

Checkpoints for investigating the car safety and fleet events with the companies where Ross can get the chance to check the condition of his vehicle might be a good approach since a lot of the collisions he is involved in are likely to occur as a following of a breakdown or a car defect.

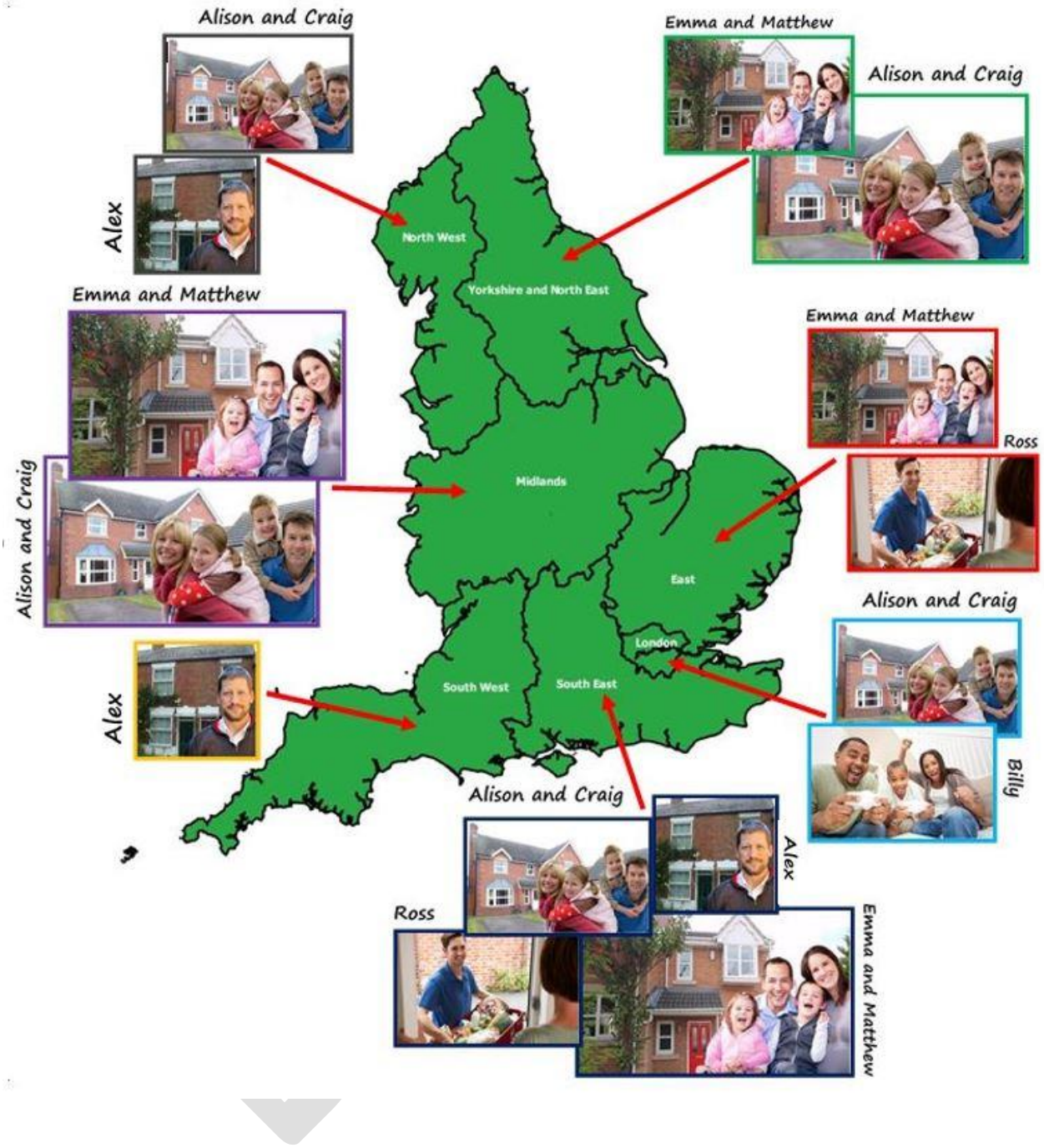
Ross is more likely to live in the East and South East regions.

After analysis of the socio-demographic and collision data to provide a basis for the commuter driver personas highlighted above, these were then assigned to the regions in England in which they are generally more likely to live.

Figure 37 below shows this information with the 'main' personas for each region (the size of the picture reflects the size of the sample in the region) and some additional personas for types who are also represented in that region but not as prominent.

For London region, there are three personas that are over-represented and represent also big samples of the total commuter drivers from the region involved in collisions on the SRN. Based on many their characteristics, the analysis groups the three personas as follows: Alison and Craig represents a 'couple persona', and Billy. All personas presented in this chapter and in Figure 37 are analysed in the Personas section above. For the South West region, the analysis identified one prominent persona, Alex. The South East region features with two 'couple personas', Emma and Matthew and Alison and Craig, and other two male personas, Ross and Alex. For the East region, Emma and Matthew, and Ross are the prominent personas. The Midlands region and Yorkshire and North East region feature with two 'couple personas', Emma and Matthew, and Alison and Craig; and North West region have Alison and Craig, and Alex as prominent personas.

FIGURE 37 – PERSONAS BY REGION



APPENDIX A – MOSAIC GROUPS COMPOSITION

Group /Type	Name	Description
A	**Country Living**	Well-off owners in rural locations enjoying the benefits of country life
A01	Rural Vogue	Country-loving families pursuing a rural idyll in comfortable village homes while commuting some distance to work
A02	Scattered Homesteads	Older households appreciating rural calm in stand-alone houses within agricultural landscapes
A03	Wealthy Landowners	Prosperous owners of country houses including the rural upper class, successful farmers and second-home owners
A04	Village Retirement	Retirees enjoying pleasant village locations with amenities to service their social and practical needs
B	**Prestige Positions**	Established families in large detached homes living upmarket lifestyles
B05	Empty-Nest Adventure	Mature couples in comfortable detached houses who have the means to enjoy their empty-nest status
B06	Bank of Mum and Dad	Well-off families in upmarket suburban homes where grown-up children benefit from continued financial support
B07	Alpha Families	High-achieving families living fast-track lives, advancing careers, finances and their school-age kids' development
B08	Premium Fortunes	Influential families with substantial income established in distinctive, expansive homes in wealthy enclaves
B09	Diamond Days	Retired residents in sizeable homes whose finances are secured by significant assets and generous pensions
C	**City Prosperity**	High status city dwellers living in central locations and pursuing careers with high rewards
C10	World-Class Wealth	Global high flyers and families of privilege living luxurious lifestyles in London's most exclusive boroughs
C11	Penthouse Chic	City suits renting premium-priced flats in prestige central locations where they work hard and play hard
C12	Metro High-Flyers	Ambitious 20 and 30-somethings renting expensive apartments in highly commutable areas of major cities
C13	Uptown Elite	High status households owning elegant homes in accessible inner suburbs where they enjoy city life in comfort

D	**Domestic Success**	Thriving families who are busy bringing up children and following careers
D14	Cafés and Catchments	Affluent families with growing children living in upmarket housing in city environs
D15	Modern Parents	Busy couples in modern detached homes juggling the demands of school-age children and careers
D16	Mid-Career Convention	Professional families with children in traditional mid-range suburbs where neighbours are often older
D17	Thriving Independence	Well-qualified older singles with incomes from successful professional careers in good quality housing
E	**Suburban Stability**	Mature suburban owners living settled lives in mid-range housing
E18	Dependable Me	Single mature owners settled in traditional suburban semis working in intermediate occupations
E19	Fledgling Free	Pre-retirement couples with respectable incomes enjoying greater space and spare cash since children left home
E20	Boomerang Boarders	Long-term couples with mid-range incomes whose adult children have returned to the shelter of the family home
E21	Family Ties	Active families with teens and adult children whose prolonged support is eating up household resources
F	**Senior Security**	Elderly people with assets who are enjoying a comfortable retirement
F22	Legacy Elders	Time-honoured elders now mostly living alone in comfortable suburban homes on final salary pensions
F23	Solo Retirees	Senior singles whose reduced incomes are satisfactory in their affordable but pleasant owned homes
F24	Bungalow Haven	Peace-seeking seniors appreciating the calm of bungalow estates designed for the elderly
F25	Classic Grandparents	Lifelong couples in standard suburban homes enjoying retirement through grandchildren and gardening
G	**Rural Reality**	Householders living in inexpensive homes in village communities
G26	Far-Flung Outposts	Inter-dependent households living in the most remote communities with long travel times to larger towns
G27	Outlying Seniors	Pensioners living in inexpensive housing in out of the way locations

G28	Local Focus	Rural families in affordable village homes who are reliant on the local economy for jobs
G29	Satellite Settlers	Mature households living in expanding developments around larger villages with good transport links
H	**Aspiring Homemakers**	Younger households settling down in housing priced within their means
H30	Affordable Fringe	Settled families with children owning modest, 3-bed semis in areas where there's more house for less money
H31	First-Rung Futures	Pre-family newcomers who have bought value homes with space to grow in affordable but pleasant areas
H32	Flying Solo	Bright young singles on starter salaries choosing to rent homes in family suburbs
H33	New Foundations	Occupants of brand new homes who are often younger singles or couples with children
H34	Contemporary Starts	Fashion-conscious young singles and partners setting up home in developments attractive to their peers
H35	Primary Ambitions	Forward-thinking younger families who sought affordable homes in good suburbs which they may now be out-growing
I	**Urban Cohesion**	Residents of settled urban communities with a strong sense of identity
I36	Cultural Comfort	Thriving families with good incomes in multi-cultural urban communities
I37	Community Elders	Established older households owning city homes in diverse neighbourhoods
I38	Asian Heritage	Large extended families in neighbourhoods with a strong South Asian tradition
I39	Ageing Access	Older residents owning small inner suburban properties with good access to amenities
J	**Rental Hubs**	Educated young people privately renting in urban neighbourhoods
J40	Career Builders	Motivated singles and couples in their 20s and 30s progressing in their field of work from commutable properties
J41	Central Pulse	Entertainment-seeking youngsters renting city centre flats in vibrant locations close to jobs and night life

J42	Learners & Earners	Inhabitants of the university fringe where students and older residents mix in cosmopolitan locations
J43	Student Scene	Students living in high density accommodation close to universities and educational centres
J44	Flexible Workforce	Self-starting young renters ready to move to follow worthwhile incomes from service sector jobs
J45	Bus-Route Renters	Singles renting affordable private flats away from central amenities and often on main roads
K	**Modest Traditions**	Mature homeowners of value homes enjoying stable lifestyles
K46	Self-Supporters	Hard-working mature singles who own budget terraces manageable within their modest wage
K47	Offspring Overspill	Lower income owners whose adult children are still striving to gain independence meaning space is limited
K48	Down-to-Earth Owners	Ageing couples who have owned their inexpensive home for many years while working in routine jobs
L	**Transient Renters**	Single people privately renting low cost homes for the short term
L49	Disconnected Youth	Young people endeavouring to gain employment footholds while renting cheap flats and terraces
L50	Renting a Room	Transient renters of low cost accommodation often within subdivided older properties
L51	Make Do & Move On	Yet to settle younger singles and couples making interim homes in low cost properties
L52	Midlife Stopgap	Maturing singles in employment who are renting short-term affordable homes
M	**Family Basics**	Families with limited resources who have to budget to make ends meet
M53	Budget Generations	Families supporting both adult and younger children where expenditure can exceed income
M54	Childcare Squeeze	Younger families with children who own a budget home and are striving to cover all expenses
M55	Families with Needs	Families with many children living in areas of high deprivation and who need support
M56	Solid Economy	Stable families with children renting better quality homes from social landlords
N	**Vintage Value**	Elderly people reliant on support to meet financial or practical needs

N57	Seasoned Survivors	Deep-rooted single elderly owners of low value properties whose modest home equity provides some security
N58	Aided Elderly	Supported elders in specialised accommodation including retirement homes and complexes of small homes
N59	Pocket Pensions	Penny-wise elderly singles renting in developments of compact social homes
N60	Dependent Greys	Ageing social renters with high levels of need in centrally located developments of small units
N61	Estate Veterans	Longstanding elderly renters of social homes who have seen neighbours change to a mix of owners and renters
O	**Municipal Challenge**	Urban renters of social housing facing an array of challenges
O62	Low Income Workers	Older social renters settled in low value homes in communities where employment is harder to find
O63	Streetwise Singles	Hard-pressed singles in low cost social flats searching for opportunities
O64	High Rise Residents	Renters of social flats in high rise blocks where levels of need are significant
O65	Crowded Kaleidoscope	Multi-cultural households with children renting social flats in over-crowded conditions
O66	Inner City Stalwarts	Long-term renters of inner city social flats who have witnessed many changes

APPENDIX B – CONTRIBUTORY FACTOR GROUPINGS

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

APPENDIX C – MAPS

FIGURE 38 – MAP OF THE ROADS ON THE STRATEGIC ROAD NETWORK

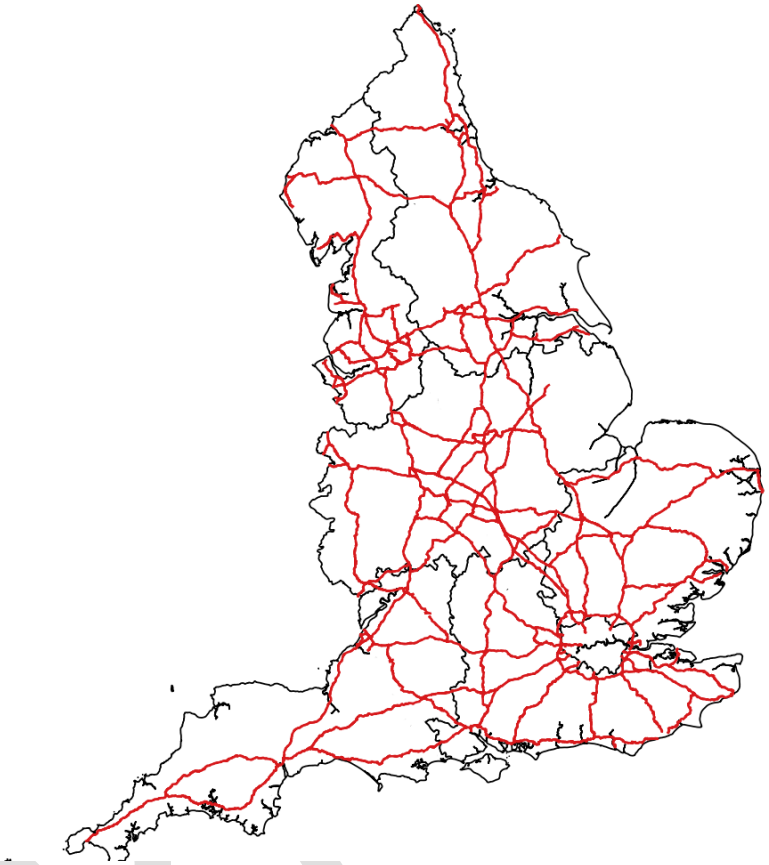


FIGURE 39 – EAST OF ENGLAND OUTPUT BY LOCAL AUTHORITY DISTRICT - DIFFERENCE TO NATIONAL ANNUAL RATE

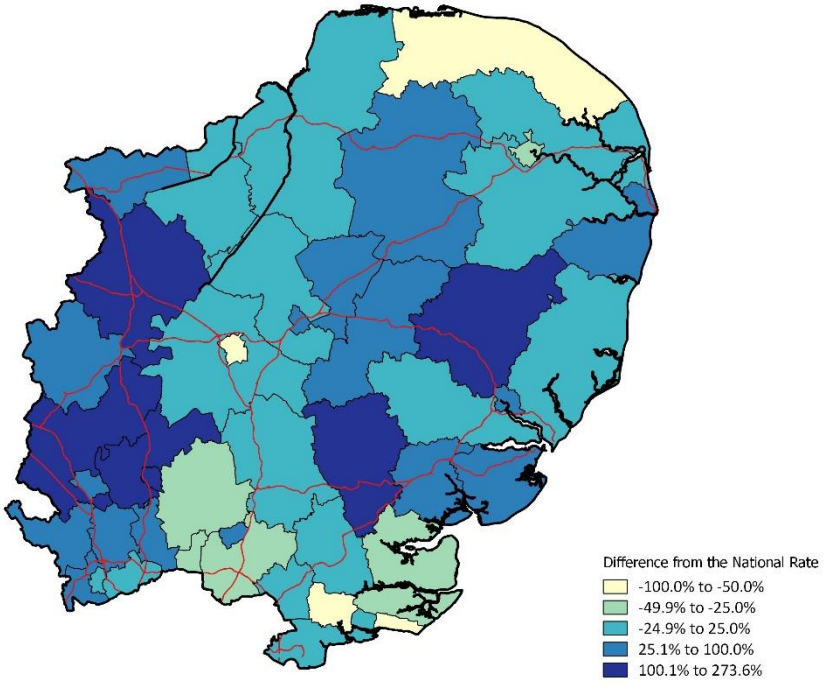


FIGURE 40 – LONDON OUTPUT BY LOCAL AUTHRITY DISTRICT - DIFFERENCE TO NATIONAL ANNUAL RATE

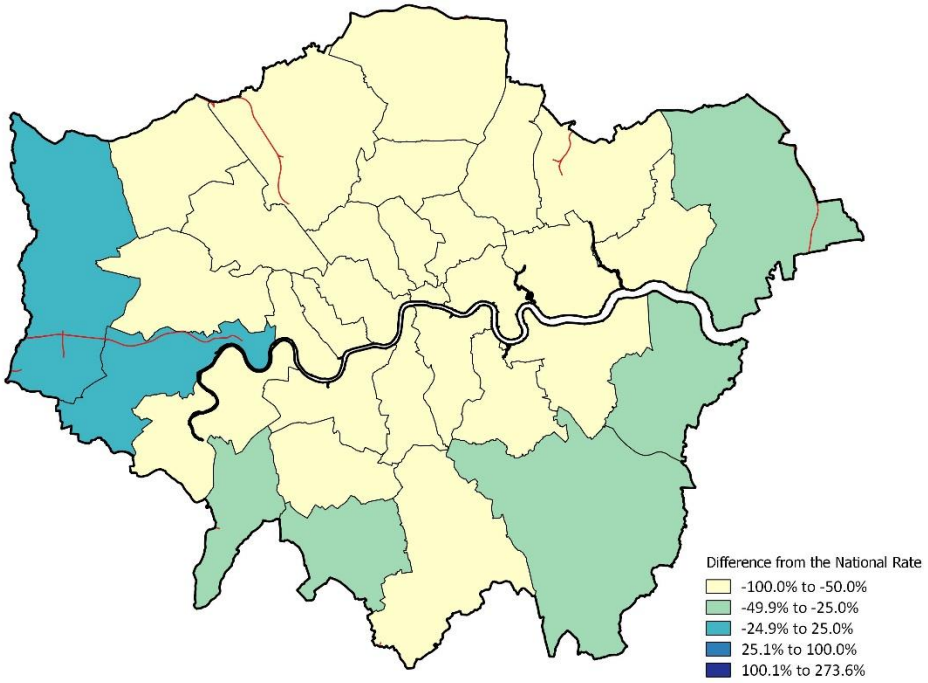


FIGURE 41 – MIDLANDS OUTPUT BY LOCAL AUTHORITY DISTRICT - DIFFERENCE TO NATIONAL ANNUAL RATE

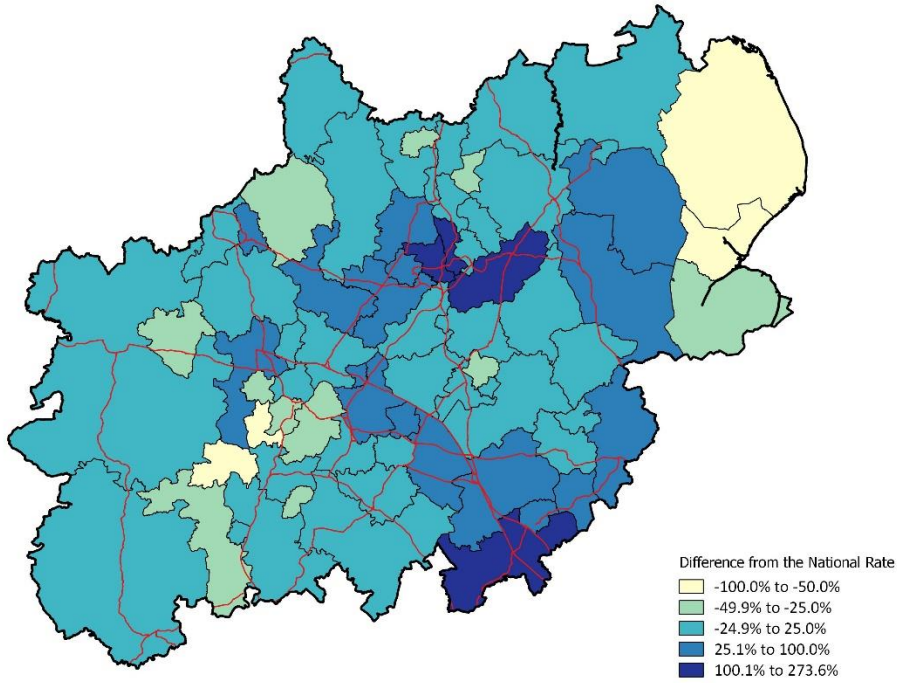


FIGURE 42 – NORTH WEST OUTPUT BY LOCAL AUTHORITY DISTRICT- DIFFERENCE TO NATIONAL ANNUAL RATE

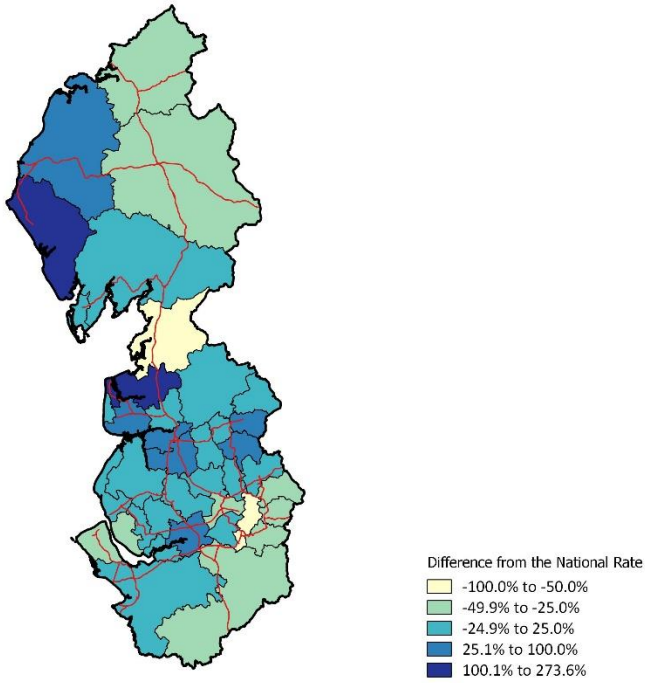


FIGURE 43 – SOUTH EAST OUTPUT BY LOCAL AUTHORITY DISTRICT - DIFFERENCE TO NATIONAL ANNUAL RATE

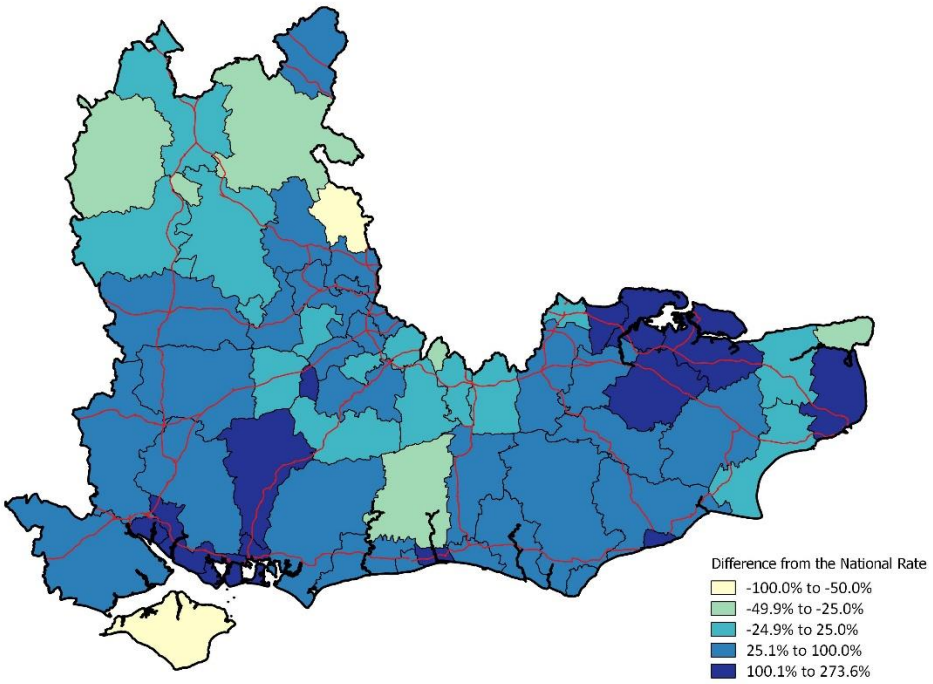


FIGURE 44 – SOUTH WEST OUTPUT BY LOCAL AUTHORITY DISTRICT- DIFFERENCE TO NATIONAL ANNUAL RATE

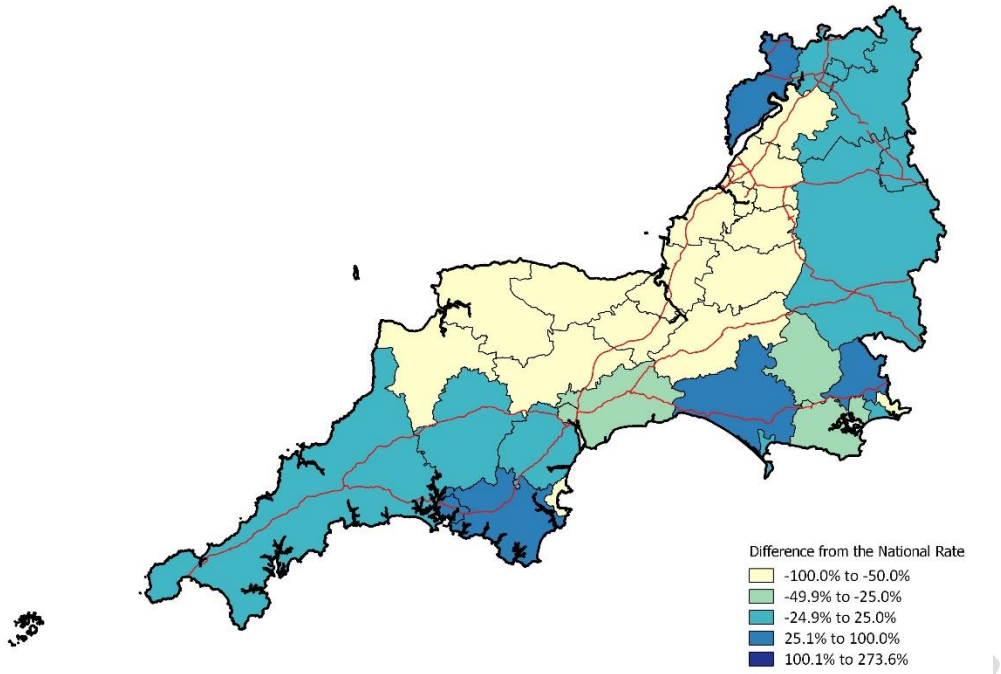
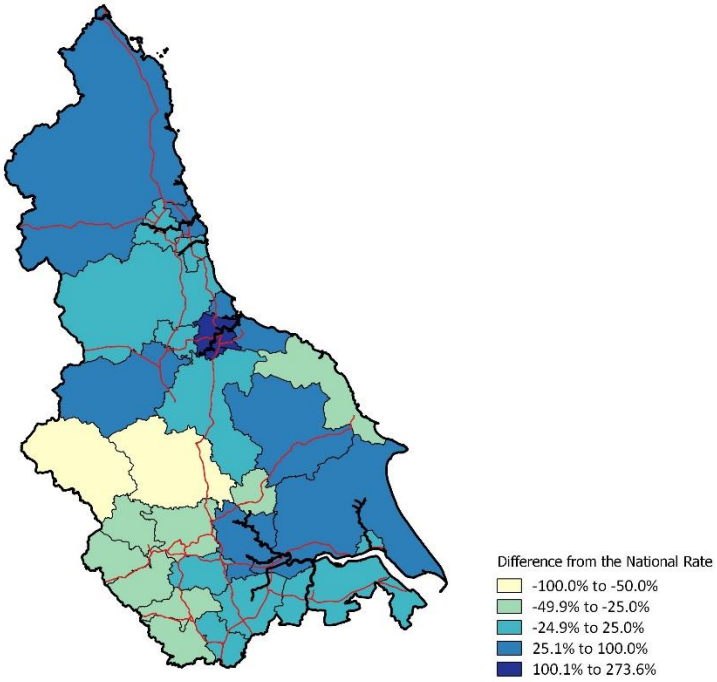


FIGURE 45 – YORKSHIRE AND NORTH EAST OUTPUT BY LOCAL AUTHORITY DISTRICT- DIFFERENCE TO NATIONAL ANNUAL RATE



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