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Research Report 2014

Van Crashes in Great Britain

How van drivers compare to all motorists

Road Safety Analysis

Van drivers are our everyday heroes, Let's take care of them

Foreword by Darrell Sansom, Managing Director, AXA Business Insurance

As one of the UK's major commercial vehicle insurers, we commissioned this study from our partners at Road Safety Analysis, because we felt there was a crying need for definitive data on the unique risks that van drivers face on our roads.

I believe that we should all be vitally interested in the safety and well-being of the nation's van drivers at work – beleaguered as they often are by 'white van man' stereotypes. After all, van drivers are the everyday heroes of our economic recovery: they are the self-employed businesspeople who are driving growth; shift workers contributing to our current construction boom; and delivery drivers making the online retail revolution possible.

Our report shows that in many respects, they are also professional, confident drivers who come out better than everyone else on things like speed, drink-driving and handling heavy traffic. The study does, however, raise the red flag on a range of areas where van drivers are a higher risk on the roads.

Chief among them, tiredness – whether that's down to unrealistic scheduling or a tendency to ignore the warning signs in order "to get on with the job". You'll find similarly worrying trends when we come to reversing, tailgating, motorway driving and parking up.

We're now working with partner road safety bodies to develop recommendations on how best to address these areas of concern. In the meantime, the message we are sending to drivers is: take van driving lessons before you get behind the wheel of this highly specialised vehicle. Learn how it responds differently to a car and how stopping distances vary massively depending on your vehicle and load.

And employers, take care of your drivers! Be aware that a driver's working day can quickly become dangerously long, especially when they're combining a long shift doing other work with very early starts and lengthy journeys home.

About AXA Business Insurance

AXA Business Insurance is part of AXA Insurance UK plc, which belongs to the AXA group of companies. With us, you choose the business insurance that's right for you. We offer public liability, employers' liability and professional indemnity insurance online to start ups, sole traders, self-employed people and small businesses. In addition we offer van insurance and landlord insurance.

AXA Business Insurance also runs Business Guardian Angel which provides resources to help protect and grow small businesses. You can follow AXA Business Insurance on Twitter @AXAbizteam, for business insurance help, and @AXABizAngel, for the latest business news.

Executive Summary

This report looks at all reported injury collisions in Britain between 2008 and 2012 and compares trends for van drivers with all motor vehicles. Van is defined as a motor vehicle primarily designed for carriage of goods of 3.5 tonnes maximum gross weight and under, including car based vans.

Van drivers are more likely to be in their early 40's than any other age group, although the differences are quite slight, other than for very young drivers under the age of 25 and those aged 60 or over where numbers are low. Within the 25 to 54 age range we see that van drivers are crash-involved between 14 and 24% more than expected based on trends seen for all drivers of other vehicles. This is likely to reflect increased exposure on the road as they drive much greater distances than other drivers. Van drivers are more likely to come from lower-income households, with higher crash rates than those seen for drivers of other vehicles from similar backgrounds.

Van drivers are more likely to crash on Primary roads (motorways and dual carriageways) than expected, and much less likely to be crash-involved on urban roads of all type. On all types of roads van drivers are likely to be much further away from home (5 miles as the crow flies) than drivers of other vehicles which heavily reflects their driving patterns. We can see that van drivers are less likely to be involved in crashes at junctions (except slip roads) than other drivers, especially roundabouts.

As well as looking at the total number of crashes involving van drivers by region, we can also reflect on the over-representation based on other vehicles. This shows that in London, vans are crash-involved at a rate 22% higher than other vehicles, with the North East (18%) and West Midlands (13%) also showing increased crash rates.

Unsurprisingly we see much greater crash-involvement rates on weekdays, although with a noticeable different trend on Fridays which is lower than Monday to Thursday. Van drivers are 14% more likely than drivers of other vehicles to be involved in a crash in the first four days of the working week. Monthly trends show little if any difference to all other drivers although hourly rates are significantly changed. Mornings (6am – 12 noon) show crash-involvement rates over a third higher than other vehicles.

Astonishing figures are reported for vehicle manoeuvres where vans are almost one and a half times more likely to be involved in a crash while reversing compared to all other vehicles. Contribution to collisions can also be analysed with different factors groups and reviewed separately compared to the trend for all other vehicles. This shows increased levels of close following, fatigue impairment, observation and manoeuvre errors. On the positive side van drivers are less likely to be reported as contributing to a crash by speeding, or drink and drug impairment.

Contents

INTRODUCTION

Road Safety Analysis (RSA) was commissioned by AXA Business Insurance to analyse the circumstances of crashes involving van drivers. The research is primarily based on STATS19 collision data collected by police forces and reported to the Department for Transport, then supplied to RSA for inclusion in the web based analysis tool MAST Online.

Scope

The analysis focuses on drivers involved in injury collisions (as reported to the police) in Britain between 2008 and 2012. It compares trends for van drivers and the crashes in which they are involved with outcomes typical for all motor vehicle drivers involved in such incidents. Throughout this study, 'van' is defined as a motor vehicle primarily designed for carriage of goods of 3.5 tonnes maximum gross weight and under, including car based vans.

Presentation of results

Since the principal objective of this research is to identify how road risk for van drivers compares to other road users, conclusions are generally communicated in terms of how much they differ. These differences are expressed numerically as 100 based indices, where a value of exactly 100 indicates van drivers at the same level as all drivers involved in collisions, while an index over 100 indicates a higher frequency than average and under 100 indicates a lower frequency.

In order to provide context for these indices, absolute numbers of van drivers are also included. To provide a quantitative indication of over or under representation, absolute numbers are often compared with what would be expected if van drivers did not differ from the crash-involved driving population as a whole. Because it is acknowledged that police records of injury crashes are likely to be subject to a significant degree of under reporting, such numbers should always be understood as a sample rather than a total measure.

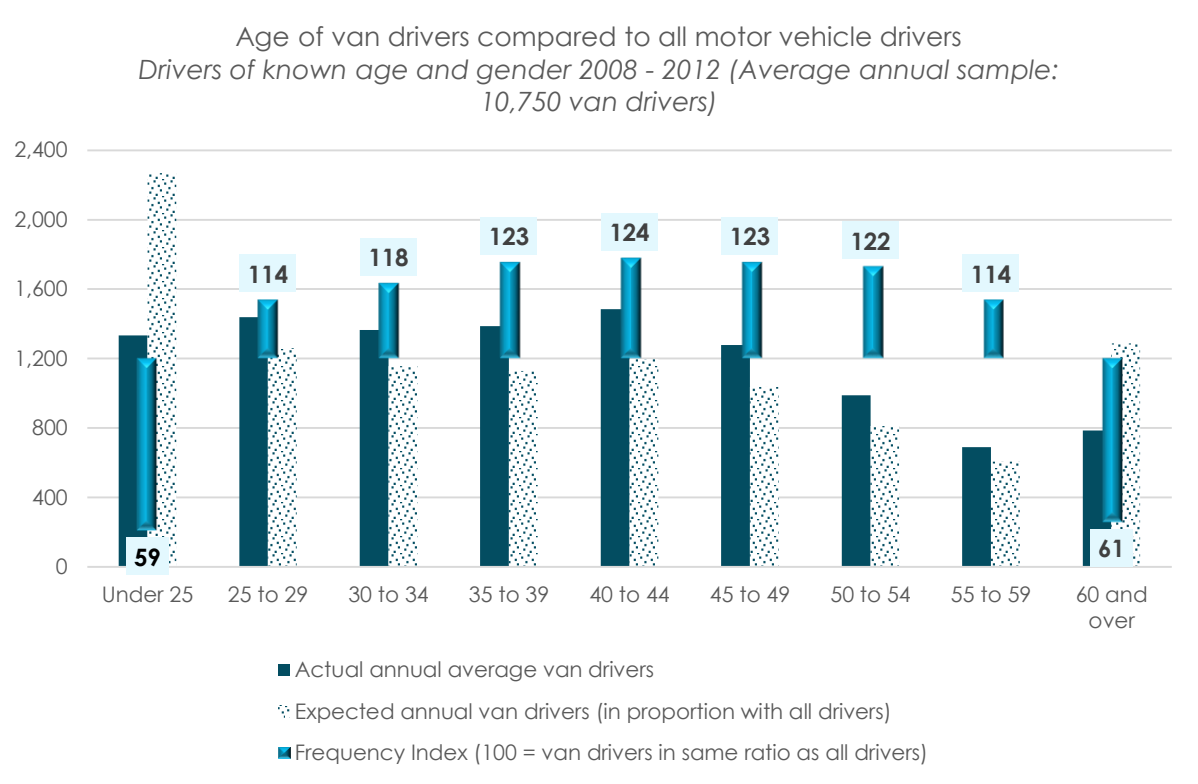
Results are generally presented in a graphical format using column charts. In order to facilitate understanding and comparison, most charts follow a standard format in which certain chart elements are consistently used and presented in the same manner, as follows:

- **Main title:** which metric related to van driver collision involvement is being examined
- **Horizontal axis**: categories into which that metric is divided (selected to highlight important trends)
- **3-D bevelled columns**: 100 based indices for van drivers compared to all motor vehicle drivers
- **Solid columns**: Actual recorded number of van drivers of the variety indicated by the colour
- **Patterned columns:** Expected number of van drivers of the variety indicated by the colour, if they had been distributed across the metric in exactly the same proportions as all recorded drivers

WHO ARE CRASH-INVOLVED VAN DRIVERS?

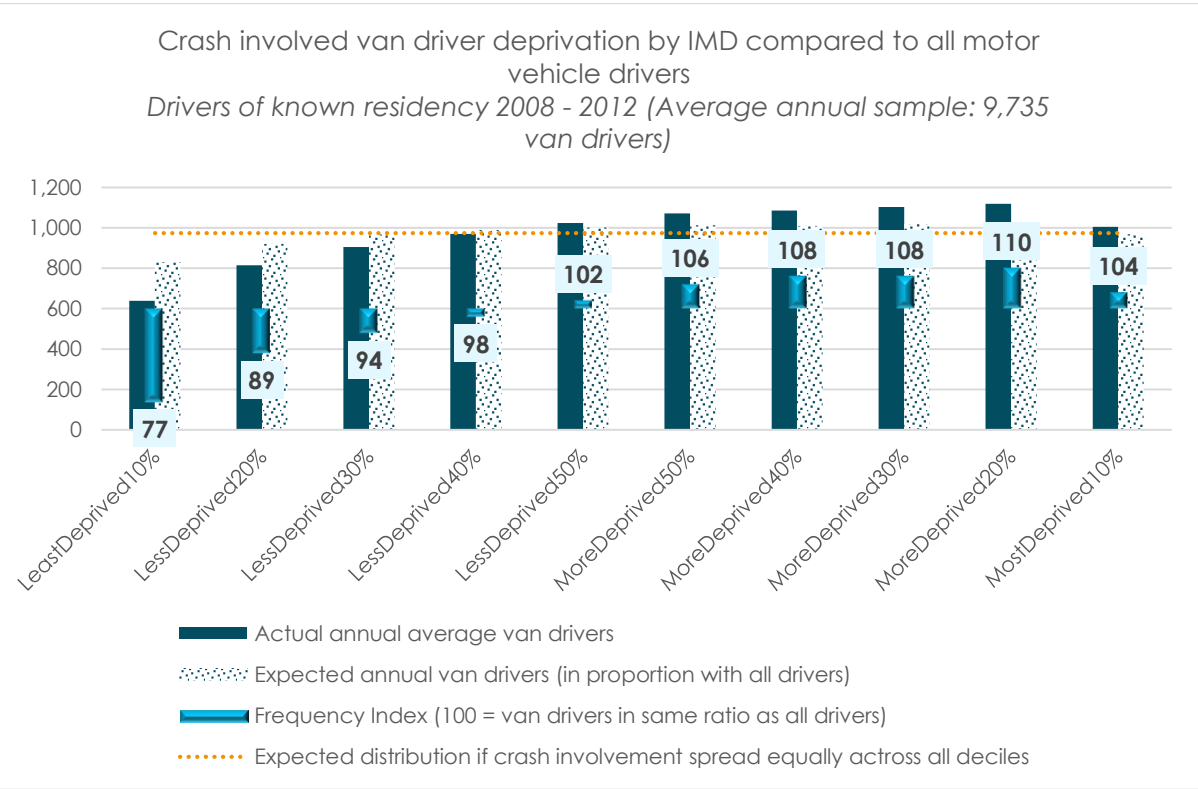
This section explores who the van drivers involved in collisions are, in terms of socio-demographics.

The first chart shows the annual average number of van drivers in each age group, compared to the expected annual average if van drivers shared the same age-distribution patterns as all drivers involved in collisions. It shows that van drivers involved in collisions are aged between 17 and 49 years old. However, when compared to all drivers, there are significantly fewer van drivers who are aged under 25 years old and who are involved in collisions. Instead, van drivers aged between 25 and 59 years old are all over-represented compared to all crash-involved drivers, with those between 35 and 54 years old particularly over-represented. There is an under-representation at 60 years and over, compared to all drivers. Overall, the age analysis suggests that van drivers are of working age.



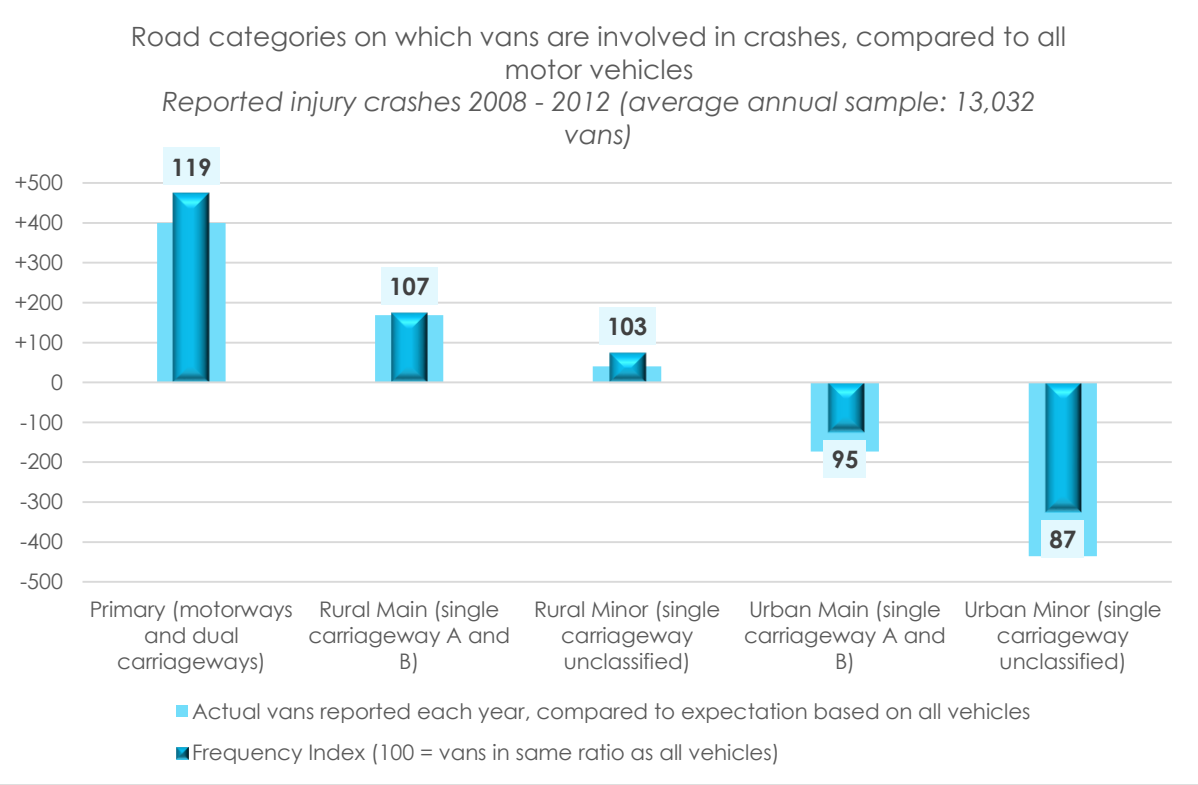
The home postcodes of van drivers involved in collisions were analysed to gain an understanding of levels of deprivation amongst these drivers compared to all drivers. Home postcodes were recorded for three-quarters of the van drivers included in the dataset. Those with known residency were examined using the UK Index of Multiple Deprivation (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. In England and Wales, small areas are known as lower layer super output areas (LSOAs) whilst in Scotland, they are data zones. Each small area has an average population of 1,400 residents, enabling comparative analysis across the country. IMD analysis uses deciles, which create ten groups of equal frequency, ranging from the 10% most deprived areas to the 10% least deprived areas. It should be remembered that the indices of multiple deprivation include income, employment, health, education, access to services and living environment and are not merely about relative wealth.

The following chart shows the results of the IMD analysis. The dashed orange shows the expected distribution of the number of annual average van drivers if crash involvement was equally spread across all the deciles. The chart shows that in the 10% to 40% least deprived deciles, van drivers are under-represented, so drivers from these areas are not as frequently involved in collisions as would be expected if they were represented at the same levels as all drivers. Instead, van drivers from the 50% to 20% most deprived deciles are over-represented, compared to all crash involved drivers.



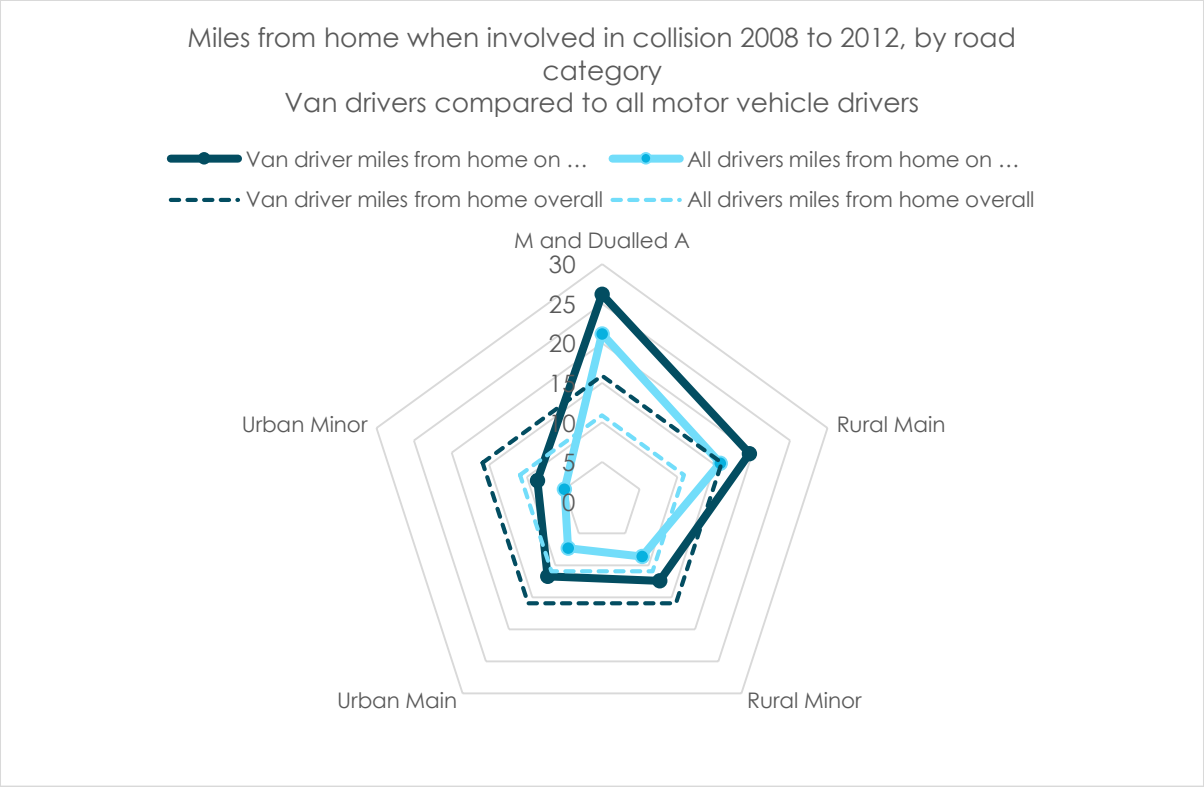
WHERE ARE VAN DRIVERS INVOLVED IN CRASHES?

The places where van drivers were involved in collisions, compared to all drivers, were analysed to see if any interesting trends emerged.



Compared to all drivers, van drivers are over-represented on primary roads and slightly over-represented on rural main roads. This is slightly surprising as it might be expected that van drivers would spend a high percentage of their time on short urban journeys (as delivery drivers or tradesmen). The charts shows that each

year, 400 more van drivers are involved in collisions on primary roads (motorways and dual carriageways) than would be expected if their crash involvement patterns were the same as all drivers.



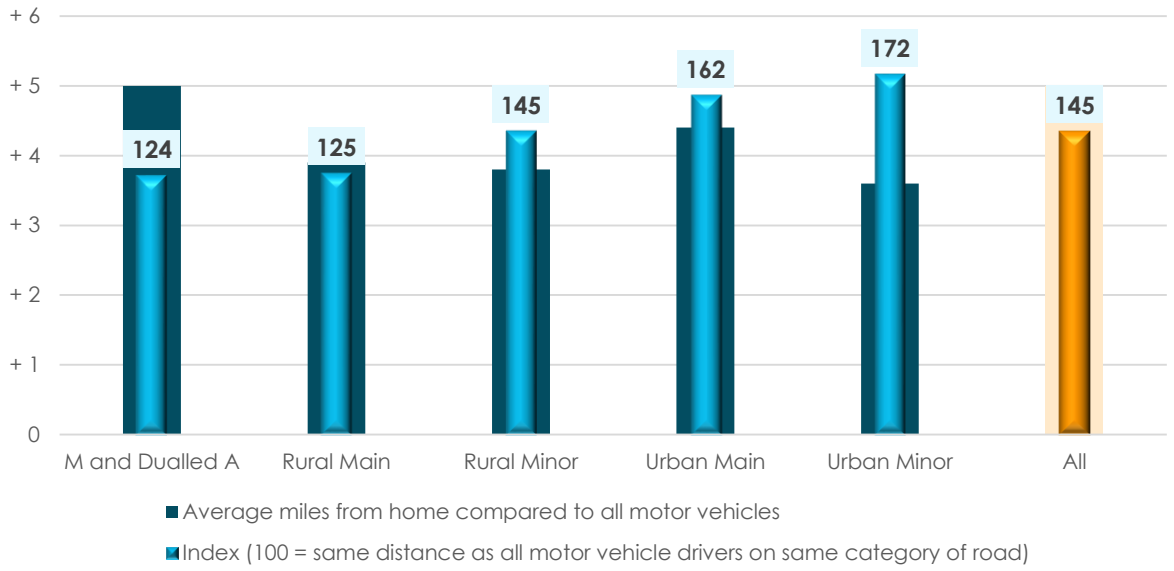
Distance from home is calculated using crash location information and the home postcode of the related driver. It is an 'as the crow flies' measure in miles. Absolute average distance from home values are often not very meaningful in themselves, especially over large sample sizes. The value of this measure lies principally in identifying and examining cases which differ significantly from relevant norms. For van drivers, distance from home was analysed against road type and road class and compared to all crash-involved drivers. The Department for Transport classifies roads as either 'rural' or 'urban', where rural roads are located outside urban areas and have a population of less than 10,000 people. Urban roads are those that are located within urban areas with a population of 10,000 or more. For road class, there are three main categories: Motorway and dualled A roads; main roads which are A and B category roads; and minor roads, which are C and unclassified roads.

When van drivers are involved in a collision, they tend to be further from home on motorways and dualled A roads and on rural main roads than on other road types (where the distance from home figures are below the van driver miles from home overall figure). This finding is shown in the chart above where for M and dualled A roads and for Rural Main roads, the distance from home is higher than the dashed dark blue line representing the van driver average distance from home. For the other road types, the distance from home is below the dashed average line. The higher distance from home on certain roads is interesting when considered in conjunction with their over-representation on these types of roads.

Compared to all drivers, van drivers tend to be further from home on all road types. This is shown in the following chart where all road types have an index over 120. Van drivers are on average 5 miles further away from home on motorways and dualled A roads and 3.6 miles further on urban minor roads than all drivers. Overall, van drivers are on average 5 miles further from home on all road types at the time of their collision, compared to all crash-involved drivers. Whilst van drivers are involved in collisions on Urban Main and Urban Minor roads at lower than expected rates compared to all drivers, they have higher distances from home on these roads than other drivers, as indicated by the high indices of 162 and 172 for urban main and urban minor roads respectively. This might suggest that the urban roads on which van drivers are involved in crashes on are not local to them (in the way that they would be with other types of driver) and instead might reflect the business purposes they are using the van for.

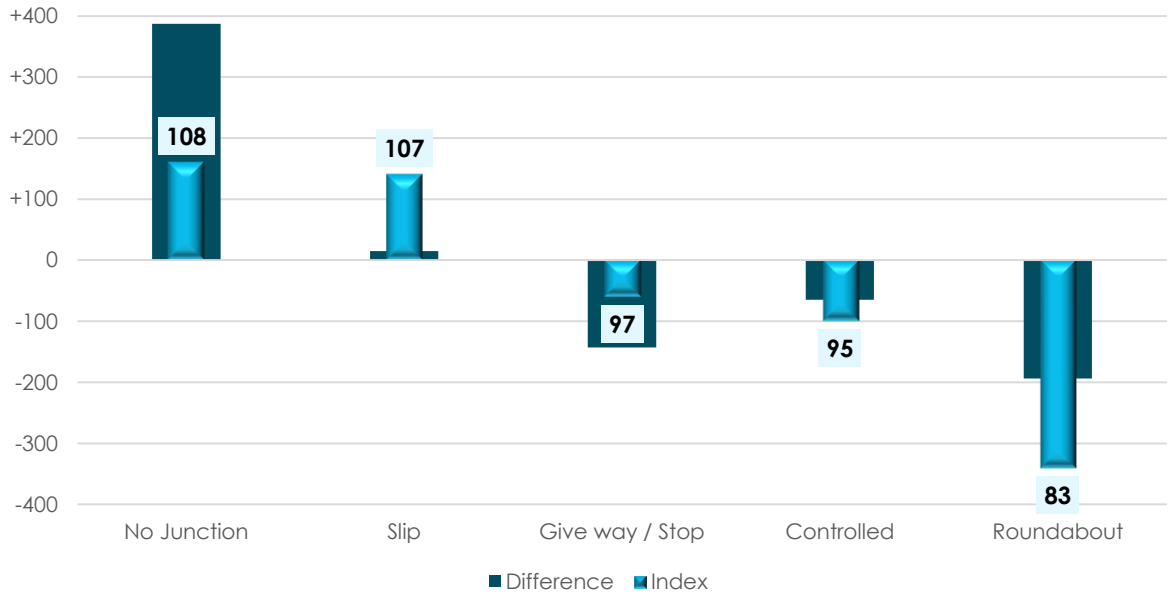
Van drivers distance from home when collision involved, relative to motor vehicle drivers

By road category 2008 - 2012 (Average annual sample: 9,759 van drivers)
All motor vehicle drivers average 11 miles from home; van drivers 16 miles from home



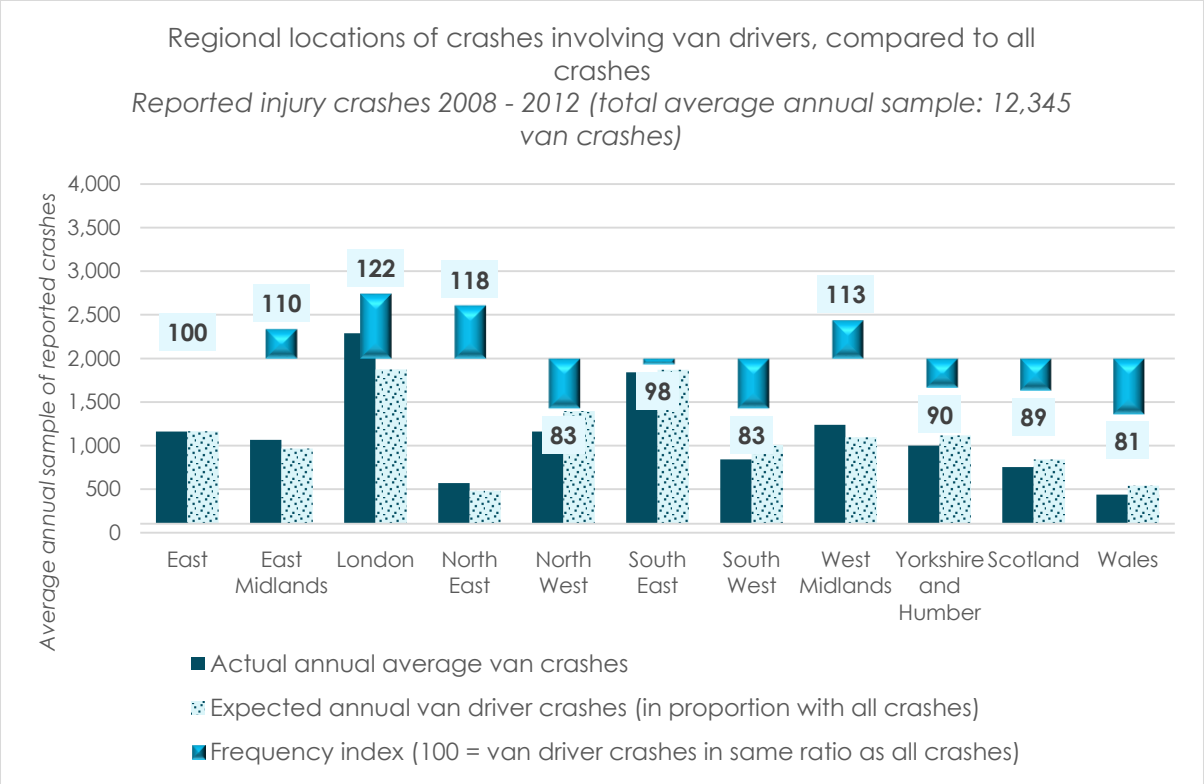
Junction categories at which vans are involved in crashes, compared to all motor vehicles

Reported injury crashes 2008 - 2012 (average annual sample: 13,032 vans)



In addition to the road class, road type and distance from home, the junctions at the crash locations of van drivers can be analysed. Van drivers are slightly over-represented away from junctions, compared to all drivers, and are also slightly over-represented on slip roads. However, the numbers involved on slip roads is far less than those away from junctions (nearly 5,500 van drivers are involved in collisions away from junctions each year, compared to just over 200 van drivers on slip roads). This analysis shows that there are high numbers of all types of driver involved in collisions away from junctions, but for van drivers, their involvement away from junctions is slightly higher than expected. The slip road over-representation might reflect the types of road that they are over-represented on (such as motorways and dualled A roads). Lastly, it is worth noting that high numbers of

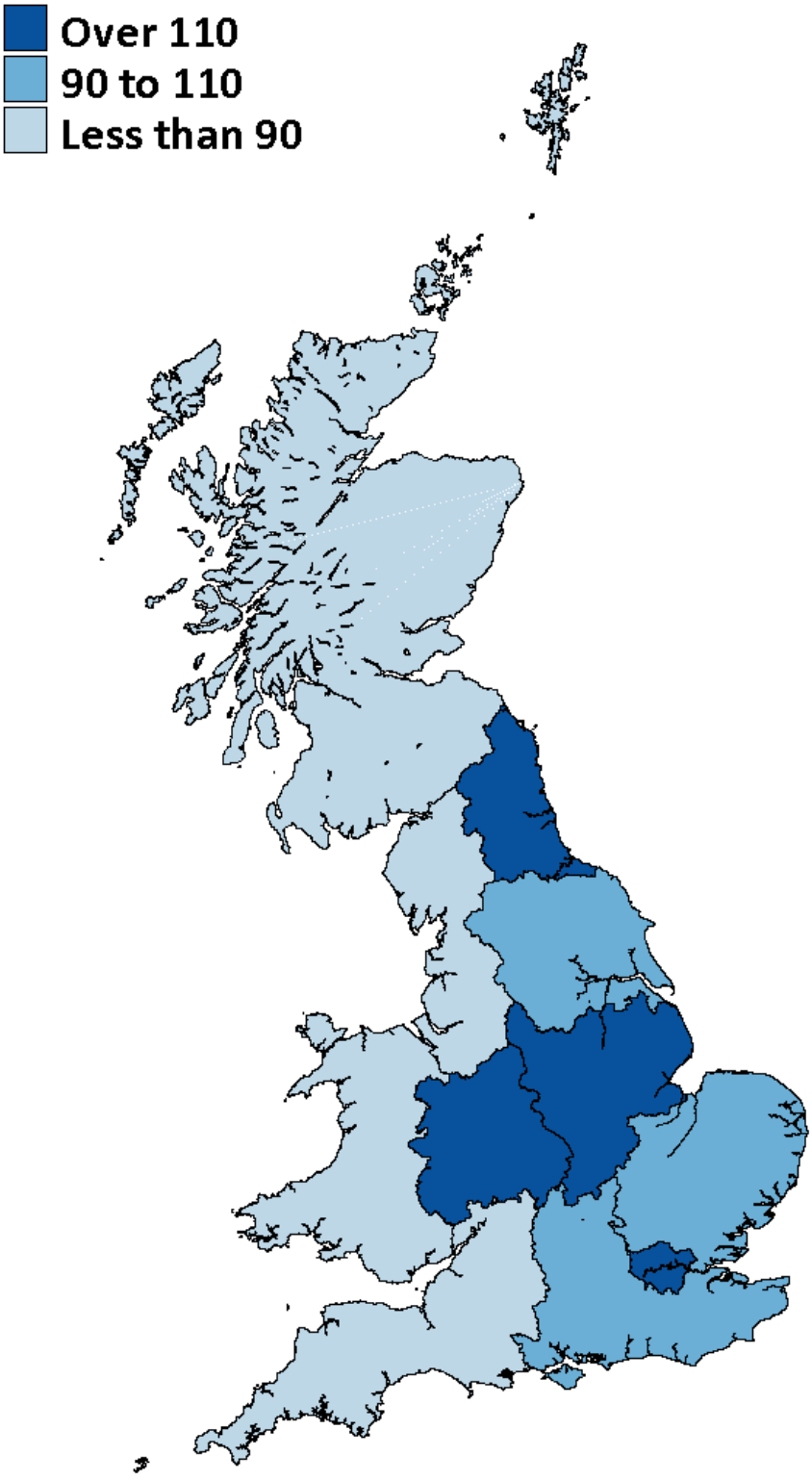
van drivers (approximately 5,000 a year) are involved in collisions at Give Way or Stop junctions but that this is lower than expected when compared to the crash involvement patterns of all drivers.



The locations where van drivers were involved in collisions were analysed at a regional level. The regions used are those formerly covered by the Government Office regions of England. These areas are used because they are a convenient way to categorise parts of England on a regional basis, even though regional governmental offices as such no longer exist. The other countries of the UK are shown as a single region.

The chart above shows that crashes involving van drivers in the East are exactly as expected when compared to the distribution of all crashes. In comparison, there are higher than expected annual average number of van driver crashes in the East Midlands, the North East, the West Midlands and especially in London. For the rest of the UK, there are lower than expected numbers of van driver crashes when compared to the distribution of all crashes.

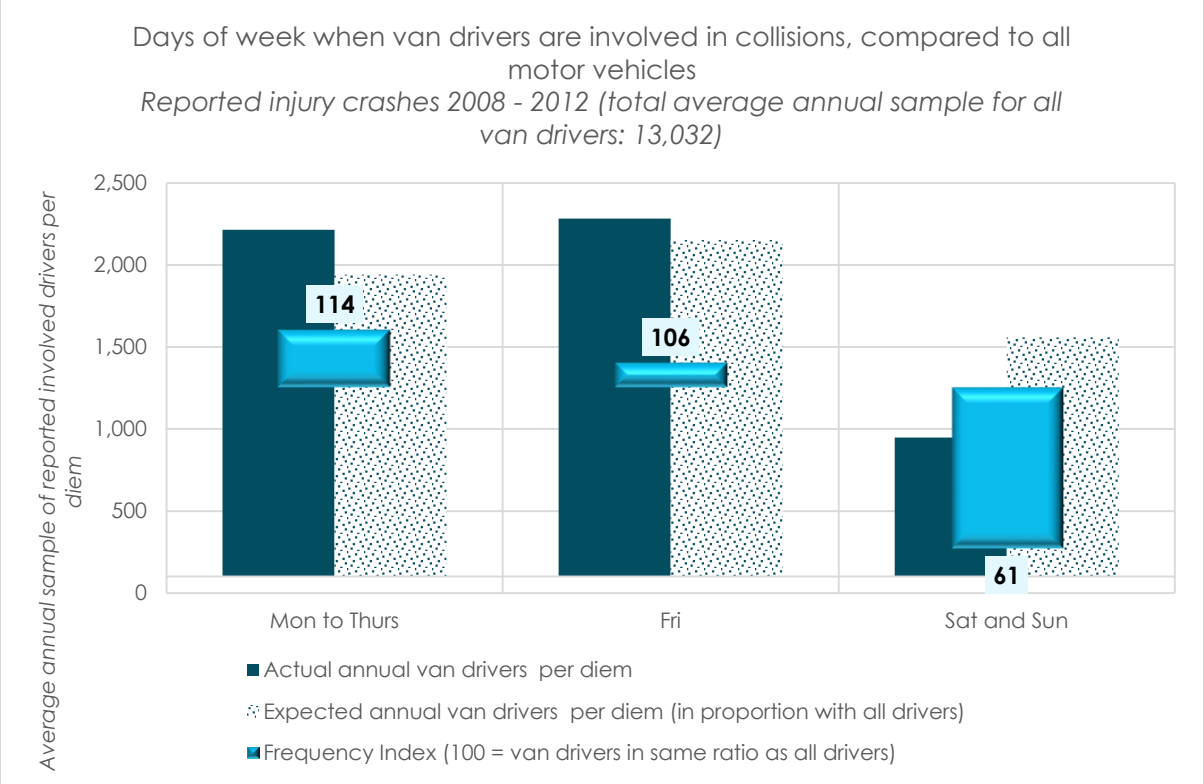
The thematic map overleaf shows the indices from the chart, where it is easy to see the over-representation of van driver crashes in London, the Midlands and the North East. It also shows that the west of England and Scotland and Wales are the regions which are under-represented.


Over 110
90 to 110
Less than 90

WHEN ARE VAN DRIVERS INVOLVED IN CRASHES?

The times when van drivers were involved in collisions were analysed to identify trends in day, time or month of year.

Compared to all drivers, van drivers are unsurprisingly over-represented on weekdays, especially between Monday and Thursday (with an over-representation of 14%). Whilst on average each year 2,283 van drivers are involved in collisions on Fridays (which is similar to the average number on Mondays to Thursdays), this is not as over-represented compared to all drivers. This suggests that overall, all types of driver have high crash involvement on Fridays. Van drivers are involved in collisions at the weekends less often than expected if they crashed at the same frequency as all drivers. The day of week analysis appears to reflect that many van drivers will be travelling for work purposes.

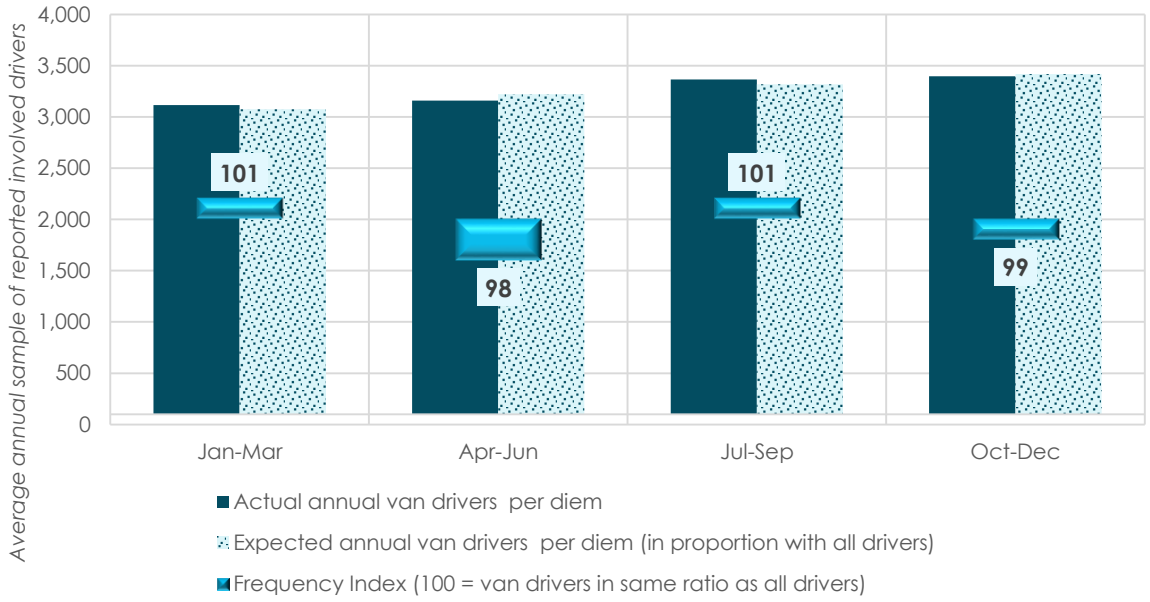


The month of year analysis produced indices of close to 100 across all four quarters of the year. This shows that van drivers are involved in collisions throughout the year at similar frequencies to all drivers. The overall highest numbers of van drivers involved in collisions were seen in July to September (with an average of 3,364 a year) and October to December (with an average of 3,396 a year).

The time of day analysis (shown overleaf) also reflects the working nature of van drivers. Van drivers are over-represented in collisions by over 30%, compared to all drivers, between 6am and noon. Whilst the highest numbers of van drivers are involved in collisions between 3pm and 6pm (3,103 on average annually), the numbers involved are slightly lower than expected if they were involved in collisions at the same frequency as all drivers. Van drivers feature in collisions less often than expected, compared to all drivers between 6pm and 3am.

Months of year when van drivers are involved in collisions, compared to all motor vehicles

Reported injury crashes 2008 - 2012 (total average annual sample: 13,032 vehicles)



Times of day when van drivers are involved in collisions, compared to all motor vehicles

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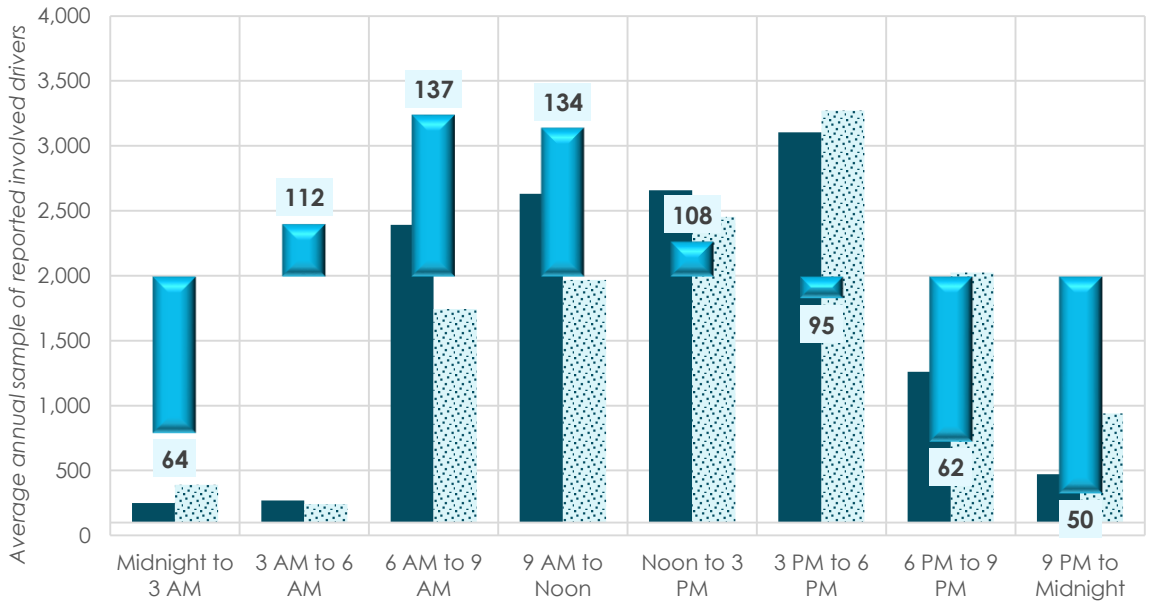
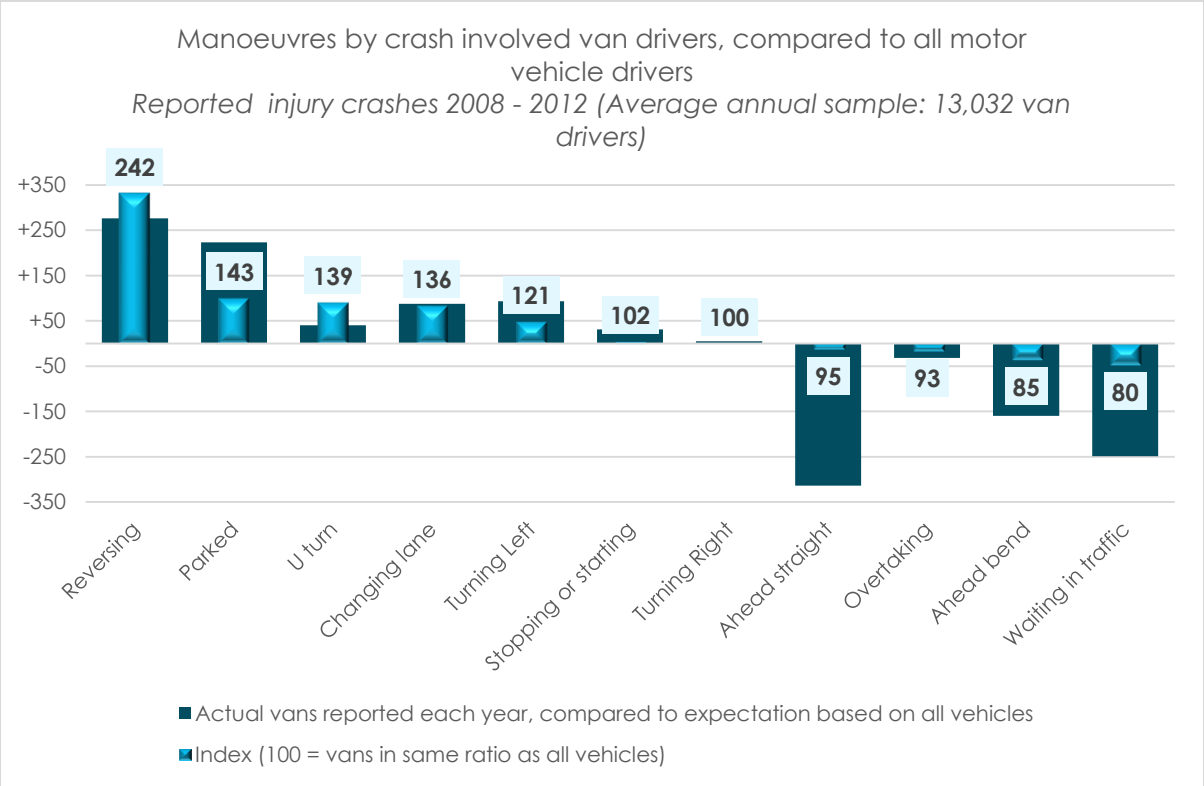


HOW ARE VAN DRIVERS INVOLVED IN CRASHES?

Analysis of the manoeuvres of van drivers produces some interesting results.

More van drivers than expected were involved in collisions when reversing or parked, compared to all drivers. Van drivers are also over-represented with U turns and changing lanes compared to all drivers, although the actual additional numbers compared to expectations are small. There are, on average annually, 470 van drivers who were reversing and 744 who were parked at the time of their collision. There are also 1,629 each year who were stopping or starting at the time of their collision and a further 1,290 who were turning right but these are both at similar frequencies to all crash-involved drivers. There are over 5,500 van drivers each year who were travelling straight ahead at the time of their collision, however, this is slightly lower than expected, given how often all drivers were travelling straight ahead.



It is possible to analyse the contributory factors (CFs) recorded by a police officer when they completed the collisions 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.

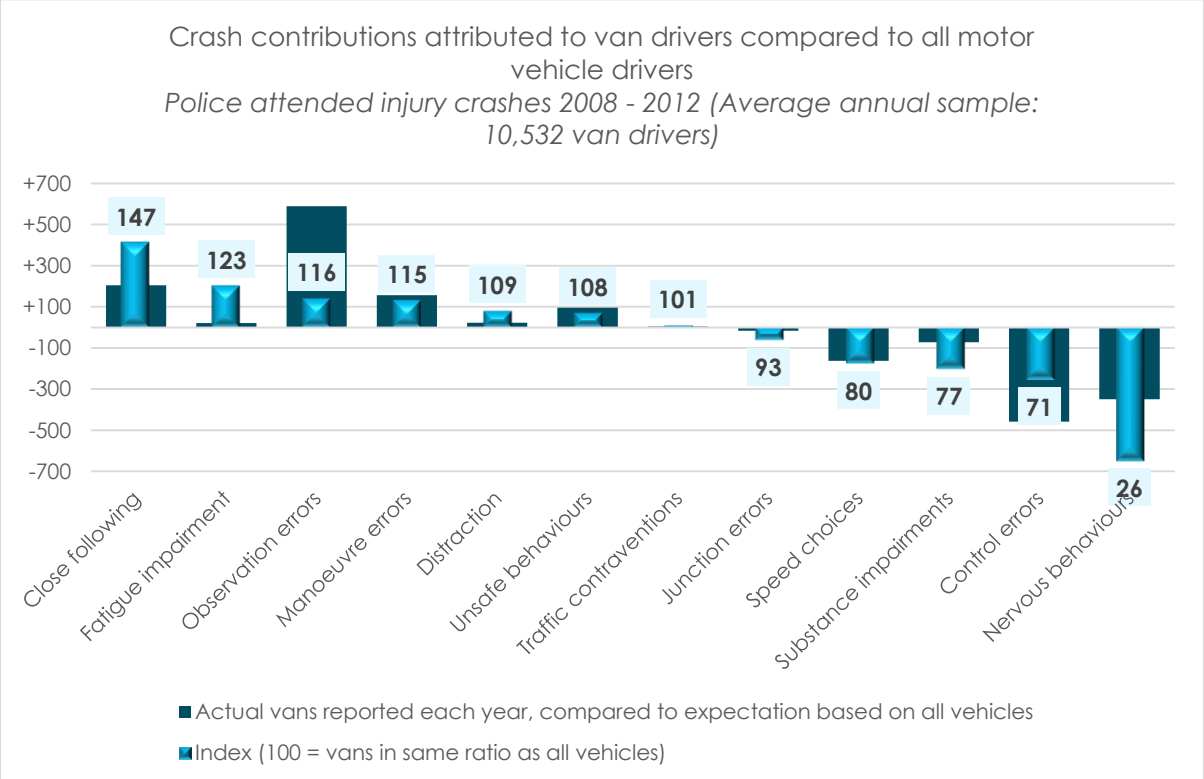
For analytical purposes, contributory factors have been grouped into four themed groups and 13 sub-categories, as shown in the table overleaf.

The chart overleaf shows the crash contributions attributed to van drivers, compared to all drivers, ordered by indices. Van drivers are over-represented, compared to all drivers, as being assigned Close Following, Fatigue Impairment and Observation Error contributory factors. There are, on average, 640 van drivers who are thought to have contributed to their collision through close following each year. There were just over 100 each year who were thought to have contributed through fatigue. Road users of all types are most likely to be attributed 'Observation Error' contributory factors, reflected in the annual average of 4,289 van drivers. Despite all road users being regularly assigned these contributory factors, there were nearly 600 more van drivers than expected assigned these CFs each year.

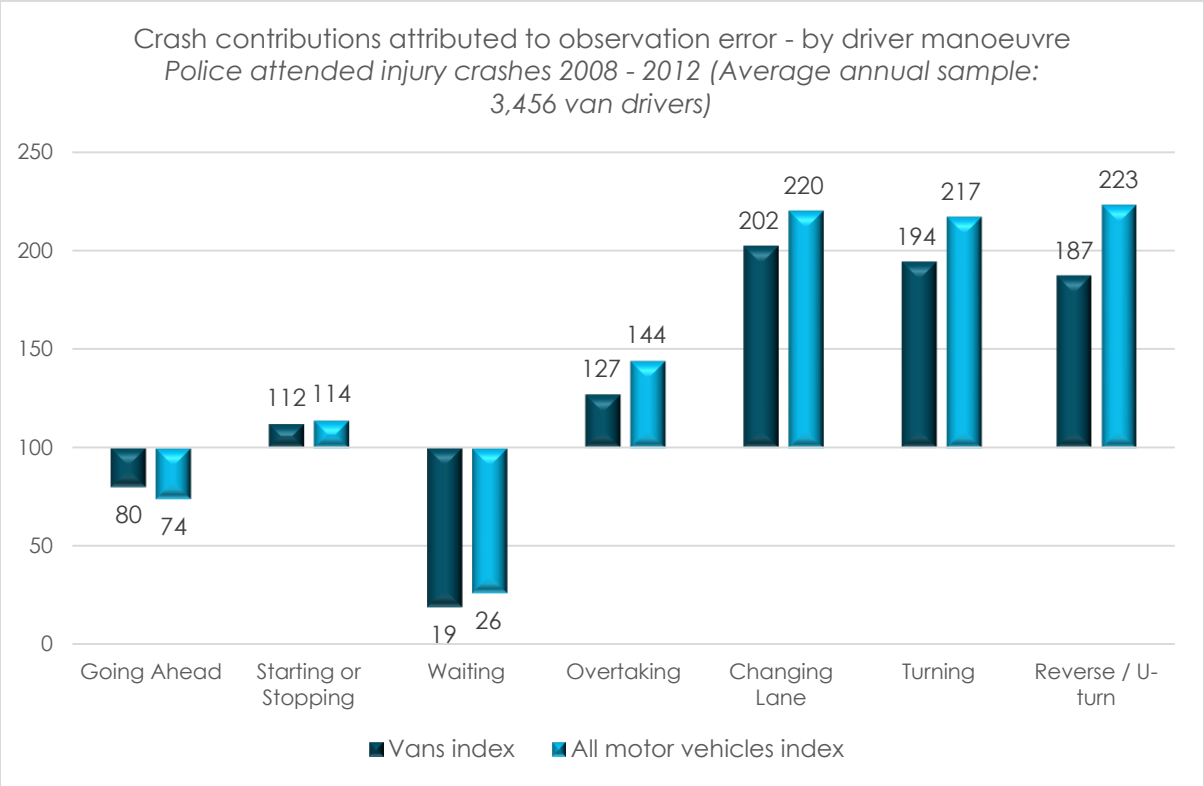
At the other end of the scale, van drivers are particularly under-represented, compared to all drivers, in being assigned 'Nervous Behaviour' contributory factors. This would suggest that they drive in a confident manner and are not inexperienced drivers. Other areas where van drivers are under-represented, compared to all

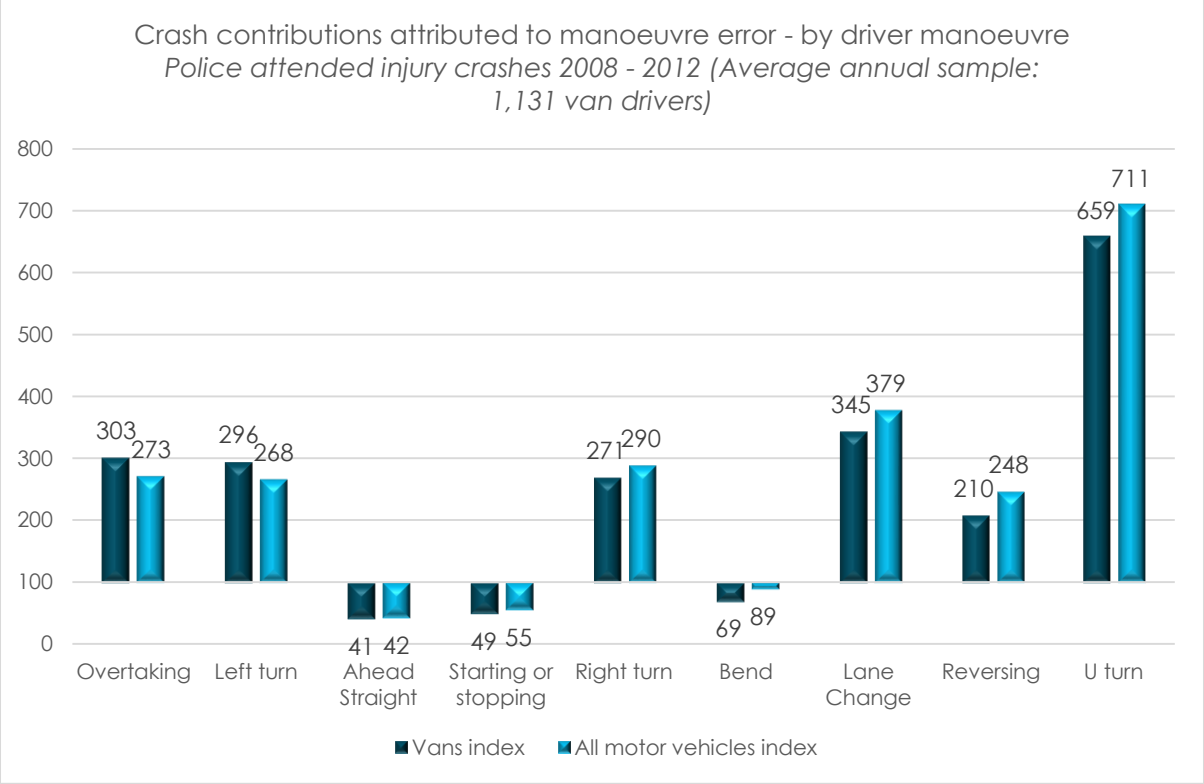
drivers, are in the assignment of contributory factors related to control errors, substance impairment, speed choices and junction errors.

Injudicious Action	Driver Errors or Reactions	Driver Impairment or Distraction	Driver Behaviour or Inexperience
Traffic Contraventions	**Manoeuvre Errors**	**Substance Impairments**	**Nervous Behaviour**
Disobeyed automatic traffic signal	*Poor turn or manoeuvre*	*Impaired by alcohol*	*Nervous, uncertain or panic*
Disobeyed double white lines	*Failed to signal or misleading signal*	*Impaired by drugs (illicit or medicinal)*	*Learner or inexperienced driver/rider*
Disobeyed 'Give way' or 'Stop' signs or markings	*Passing too close to cyclist, horse rider or pedestrian*		*Inexperience of driving on the left*
Disobeyed pedestrian crossing facility			*Unfamiliar with model of vehicle*
Illegal turn or direction of travel			
Speed Choices	**Control Errors**	**Distraction**	**Unsafe Behaviour**
Exceeding speed limit	*Sudden braking*	*Driver using mobile phone*	*Aggressive driving*
Travelling too fast for conditions	*Swerved*	*Distraction in vehicle*	*Careless, reckless or in a hurry*
	Loss of control	*Distraction outside vehicle*	
Close Following	**Observation Error**	**Health Impairments**	
Following too close	*Failed to look properly*	*Uncorrected, defective eyesight*	
	Failed to judge other person's path or speed	*Illness or disability, mental or physical*	
	Junction Errors	**Fatigue Impairment**	
	Junction overshoot	*Fatigue*	
	Junction restart (moving off at junction)		



The following charts look at the over-represented contributory factors of observation errors, manoeuvre errors and close following against the manoeuvre the van driver was making at the time. Each chart shows two indices – one for van drivers and one for all motor vehicles, as a comparison.

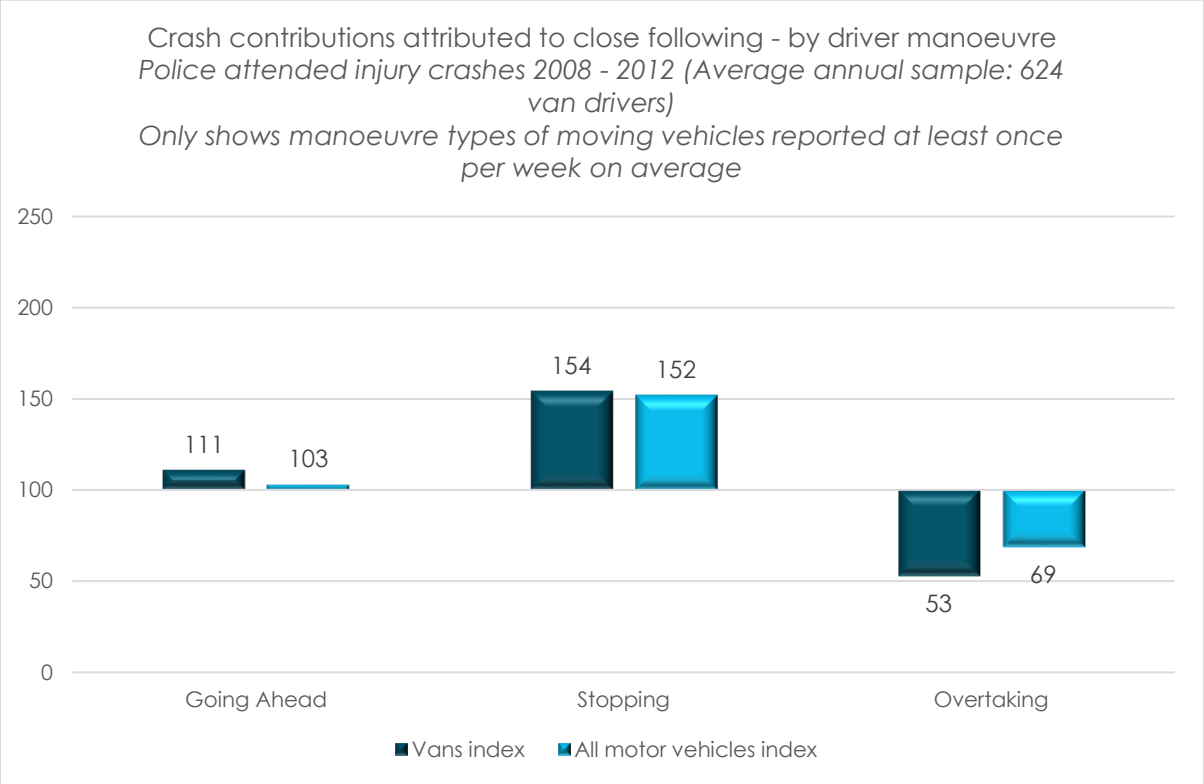




Van drivers were more likely than all drivers to be assigned observation error contributory factors. When looking at these contributory factors against vehicle manoeuvre, it can be seen that van drivers follow a similar pattern to all drivers regarding when these contributory factors were attributed: both categories of driver were more likely to be assigned these CFs when changing lane, turning, or reversing/performing a U Turn. Van drivers and

all drivers were less likely to be attributed these contributory factors when going ahead or waiting. It shows that observation errors are most likely to occur when drivers are performing a manoeuvre as opposed to just generally driving.

Similarly, manoeuvre error contributory factor by driver manoeuvre analysis shows that van drivers and all drivers undertake comparable behaviour. Both categories of driver were assigned manoeuvre error contributory factors when overtaking, performing a left or right turn, a lane change and especially a U turn at similar rates. It should be remembered that whilst van drivers were over-represented overall as crashing whilst performing a U-turn, there were only 142 van drivers each year who were involved in a collision whilst performing this manoeuvre.



Van drivers and all drivers were most likely to be assigned the close following contributory factor when stopping. Van drivers were slightly more over-represented with this CF when going ahead. Combined with the observation error factors, it would suggest that van drivers need to be more aware of the stopping distances required for their type of vehicle, given its size and weight, and ensure that they leave sufficient time and space in order to react.

As seen earlier, van drivers are over-represented on primary roads; tend to be further from home at the time of their collision; and are often tired. The combination of these elements, with the close following, observation and manoeuvre errors, reveal the unique circumstances of their crashes.