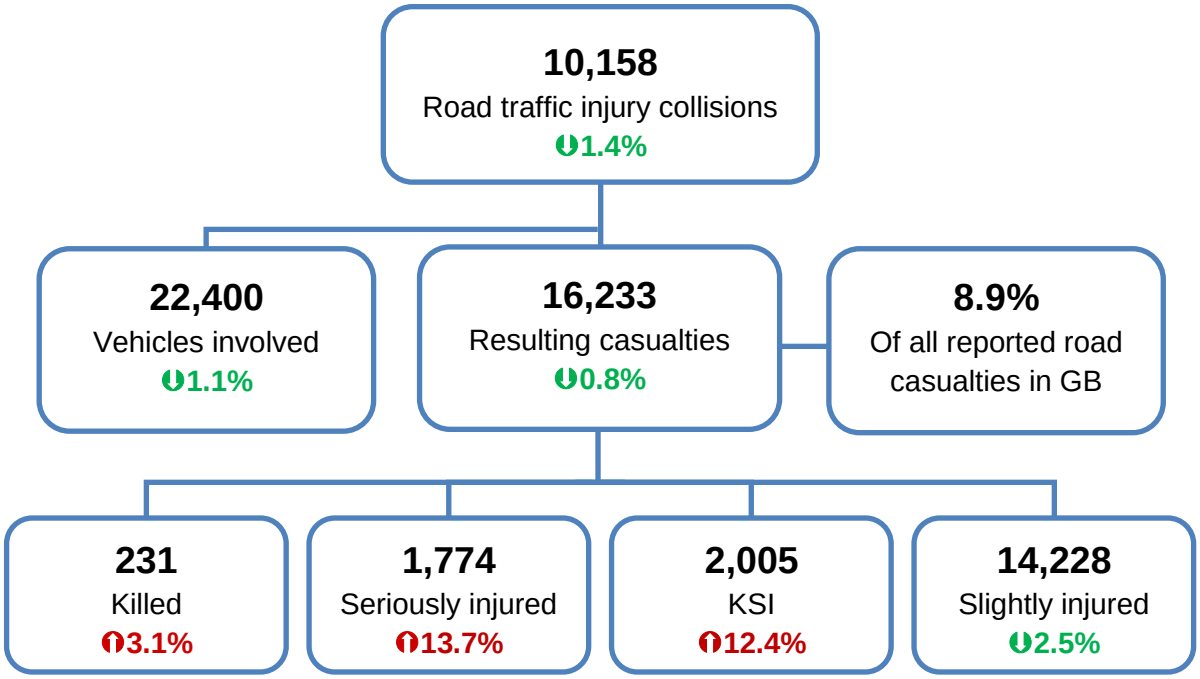
Reported Road Casualties on the Strategic Network 2016

High Level Summary

High level summary of the validated 2016 personal injury collision and casualty data is provided below. The percentages (together with the arrows) indicate the change from 2015.



		Motorway	A-road	A-road dual	A-road single
Collisions	**KSI**	692 11.6%	1,003 11.2%	698 17.5%	305 1.0%
	Total	4,738 1.8%	5,420 1.0%	4,077 0.2%	1,343 3.2%
Casualties	**KSI**	806 10.6%	1,199 13.6%	814 22.4%	385 1.3%
	Total	7,792 2.4%	8,441 0.6%	6,216 1.8%	2,225 2.6%
Traffic (provisional)	**HMVM**	602.4 2.8%	318.3 1.7%	265.2 4.4%	53.1 9.8%

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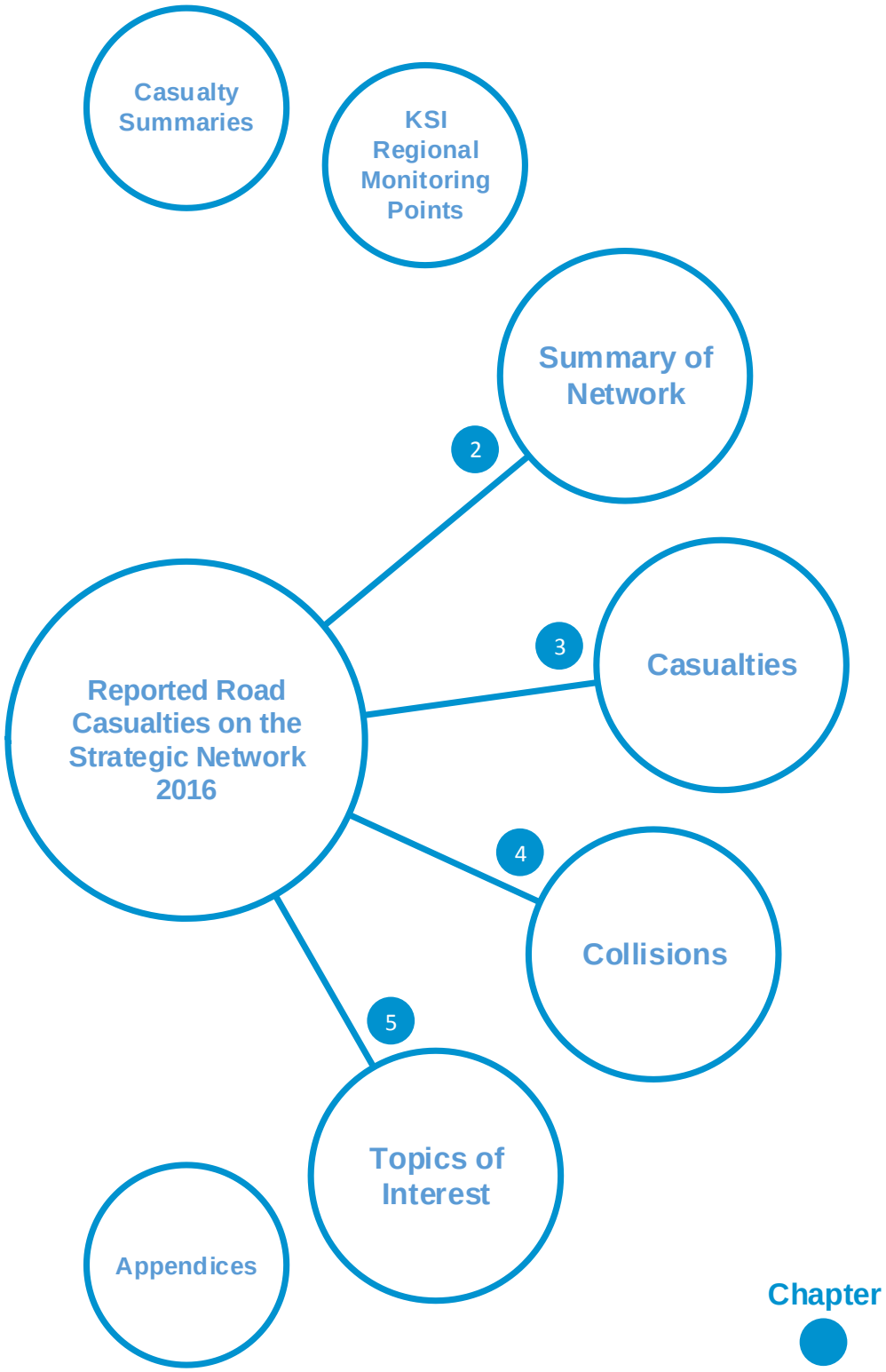
Document Map



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1. Introduction

1.1. Background

Highways England launched the 'National Incident and Casualty Reduction Plan: Our approach to road safety' (NICRP) in April 2016. The NICRP sets out the long term vision that no one should be harmed whilst travelling or working on the strategic road network (SRN). This document is supported by our 'Health and Safety Five Year Plan' which is a key document in driving forward road safety for those travelling and working on the SRN.

Following the principals of the Safe Systems Approach, the NICRP provides insight on how we are going to achieve the strategic outcomes as an organisation and what we need to do in order to deliver successful interventions on the ground. This includes the key performance indicator of reducing KSI casualties on the SRN by 40 per cent by 2020 from the 2005-2009 baseline as originally outlined in our Strategic Business Plan and as specified in the Operational Metrics Manual (OMM).

Along with other key documents including Department for Transport's (DfT's) Road Investment Strategy and our Delivery Plan, the annual casualty report 'Reported Road Casualties on the Strategic Network 2016' is a key supporting component of the Health and Safety Five Year Plan and the NICRP, allowing Highways England to identify and monitor trends impacting on the NICRP's future success.

'Reported Road Casualties on the Strategic Network 2016' follows on from the series of 'Accidents on the trunk road' and 'Reported Casualties on the HA network' documents which have been published annually since 1999. This document provides high level insight primarily based on STATS19 data collected by police on collisions, casualties and contributory factors, supplemented by other sources, to provide a more comprehensive picture.

Further information regarding the personal injury collision and casualty data can be obtained from **Highways England's Strategic Safety Team**[1].

[1] For enquiries to the Strategic Safety Team, contact Kathrine Wilson-Ellis (StrategicSafetyTeam@highwaysengland.co.uk).

1.2. Purpose of Document

This document is intended for use by Highways England staff, service providers, supply chain and those in the public arena with an interest. They provide quantified road safety information and guidance that describes the current state of Highways England's reportable network in terms of collisions and casualties.

This information is designed to enable Highways England to:

- Assess the performance of the network in achieving the key performance indicator (KPI) of a 40 per cent reduction in KSI casualties by 2020 from the baseline (2005-2009)
- Identify opportunities to reduce the number of KSI casualties to contribute to the KPI
- Monitor and evaluate effectiveness of road safety actions under the Health and Safety Five Year Plan
- Monitor changes in safety on the network year on year and against the baseline
- Provide a national safety perspective for balancing needs across the SRN
- Answer safety queries from the Government, stakeholders and other external partners
- Make sound strategic and budgeting decisions concerning the future management and safety of the SRN
- Assist in developing and monitoring the safety statements prepared by service providers
- Assist in the provision of requirements of the EU Directive on Road Infrastructure Safety Management.

The collision and casualty information in this document and the accompanying appendices are based only on STATS19 data. STATS19 is the national database of personal injury road collisions reported by, or to, the police.

1.3. Understanding Changes in Reporting Systems

The DfT reported that[2]:

"Approximately half of English police forces adopted the CRASH (**C**ollision **R**ecording **A**nd **SH**aring) system for recording reported road traffic collisions (STATS19) at the end of 2015 or the first part of 2016, although Surrey has been using the system since November 2012. In addition, the Metropolitan Police Service (MPS) switched to a new reporting system called COPA (**C**ase **O**verview **P**reparation **A**pplication) from September 2016 [see Figure 1-1].

In CRASH and COPA, the police officer records the type of injuries suffered by the casualty, rather than the severity (severity is measured simply as 'slight' or 'serious'). Under other systems, to record severity directly, police officers need to determine themselves which injury type classifies into each of the two severity types. CRASH and COPA, in contrast, automatically converts the injury type to a severity classification which eliminates the uncertainty that arises from the police officer having to make their own judgement. If this hypothesis is demonstrated to be correct then it means that the new severity level data from these systems are more accurate than the data from other systems.

The early indications are that switching to CRASH / COPA has added between 5 and 15 per cent to the Great Britain total for serious injuries. The Methodology Advisory Service in the Office of National Statistics (ONS) has been commissioned [by the DfT] to undertake some research to provide guidance to users in understanding these effects, but also to establish methods to produce adjusted back-estimates of already published severity based data."

The introduction of changes in the reporting system has impacted on the number of reported serious casualties on the SRN. These impacts will be reported fully when the ONS completes its research.

[2] DfT Reported road casualties in Great Britain: 2016 annual report, pg. 23 - 25.

Figure 1-1 Police forces by reporting system in 2016

1.4. Structure of Document

The structure of the rest of the document is as follows:

Chapter	Description
2 Network	• Overview of the SRN and its unique properties • Traffic estimates and economic factors • Estimation of usage by road classification and vehicle type
3 Casualties	• Analysis of casualty and rate trends including by severity • Analysis by road classification including by severity • Snapshot of vehicle interactions, impact and defects • Understanding of casualty trends by type and age • Understanding the contributory factor influences on casualty numbers
4 Collisions	• Analysis of collision and rate trends including by severity • Analysis by road classification including by severity • Snapshot of vehicle impact and defects • Snapshot of the types of drivers and riders involved in collisions • Understanding the contributory factor influences on collision numbers
5 Topics of Interest	Evaluation of topics of interest, including: • Fatally injured casualties • Seriously injured casualties • Killed or seriously injured (KSI) casualties • Slightly injured casualties • Young motorists • Lighting on the SRN • Weather effects on the SRN • Roadworks • Objects hit on and off carriageway • Junctions • Tyres • Goods vehicles (HGVs and LGVs) • Motorcycle users • Hardshoulders and lay-bys • Collision type • Hotspot analysis • Vulnerable and non-motorised users • Journey purpose • Towing

A to X

Appendices (provided as a separate document)

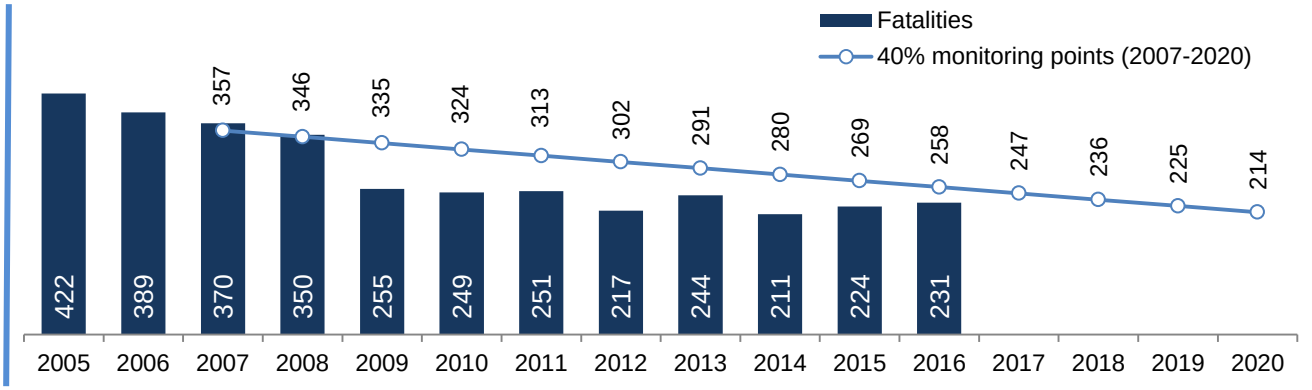
- Appendix A – Glossary of terms
- Appendix B – Collisions
- Appendix C – Casualties
- Appendix D – Traffic and collision/casualty rates
- Appendix E – Vehicles
- Appendix F – Contributory factors
- Appendix G to X – Additional topics of interest statistics

1.5. Summary Sheet of Fatal

A summary of the 2016 fatally injured casualty data can be seen below. The percentages indicate the change from 2015; percentages are only given where the 2015 value is 15 or more.

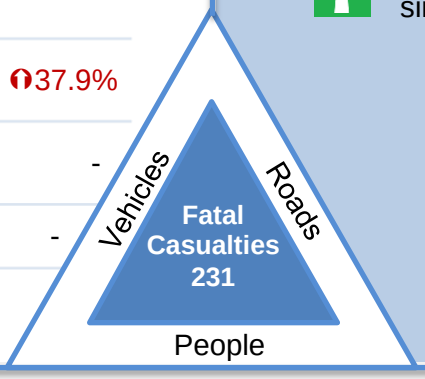
Estimated Cost: £386,253,945

Average Cost: £1,672,095



Car occupants	136	↑1.5%
Motorcycle users	27	↓ 6.9%
Goods vehicle occupants (equal to or under 3.5 tonnes)	14	-
HGV occupants (over 3.5 tonnes)	10	-
Pedestrians	40	↑37.9%
Pedal cyclists	3	-
Other/Unknown	1	-

Motorway	77	↓16.3%
A-road	154	↑16.7%
A-road dual	99	↑20.7%
A-road single	55	↑10.0%



175	?	56
↓1.1%	(Unknown)	↑19.1%
	0	

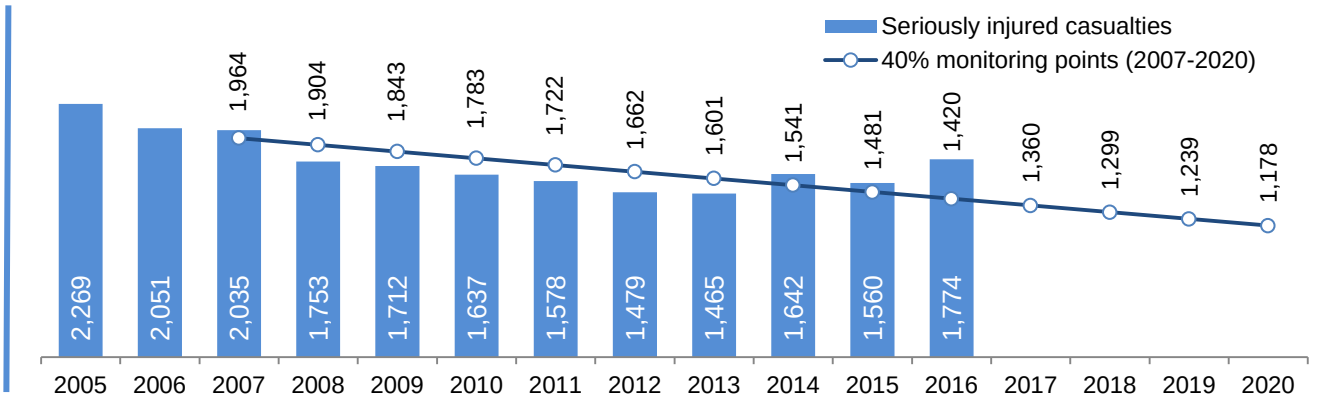
Children (0-15)	Young (16-19)	Other (20-59)	Older (60-69)	Elderly (70+)	? (Unknown)
9	8	163	19	31	1
-	-	↑3.8%	↓9.5%	↓16.2%	-

1.6. Summary Sheet of Serious

A summary of the 2016 seriously injured casualty data can be seen below. The percentages indicate the change from 2015; percentages are only given where the 2015 value is 15 or more.

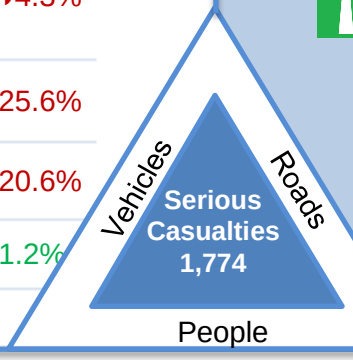
Estimated Cost: £333,327,504

Average Cost: £187,896



Car occupants	1,165	↑14.0%
Motorcycle users	345	↑19.4%
Goods vehicle occupants (equal to or under 3.5 tonnes)	87	↑1.2%
HGV occupants (over 3.5 tonnes)	72	↑4.3%
Pedestrians	54	↑25.6%
Pedal cyclists	41	↑20.6%
Other/Unknown	10	↓41.2%

Motorway	729	↑14.4%
A-road	1,045	↑13.2%
A-road dual	715	↑22.6%
A-road single	330	↓2.9%



1,159 ↑12.2%

? (Unknown) 0

615 ↑16.9%

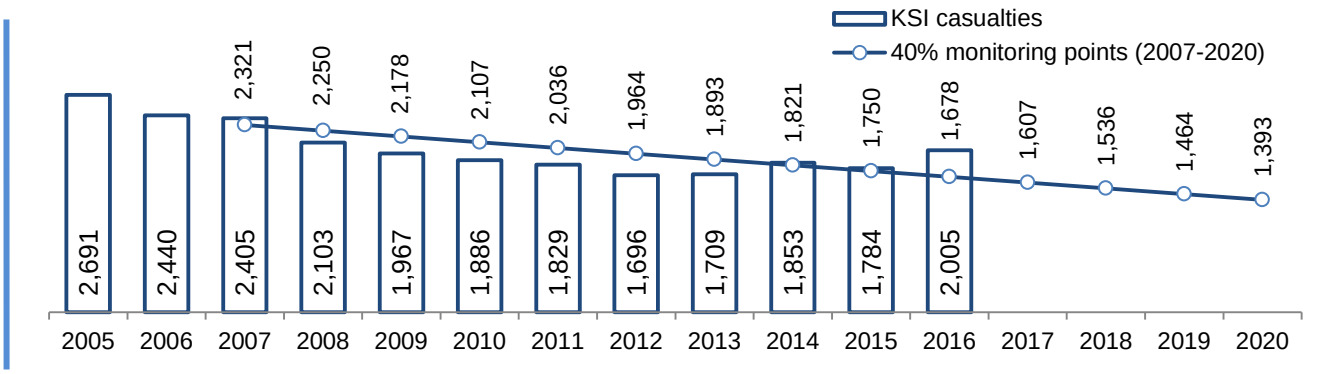
Children (0-15)	Young (16-19)	Other (20-59)	Older (60-69)	Elderly (70+)	? (Unknown)
72	110	1,269	149	162	12
↑89.5%	↑29.4%	↑14.3%	↓14.9%	↑18.2%	↓20.0%

1.7. Summary Sheet of KSI

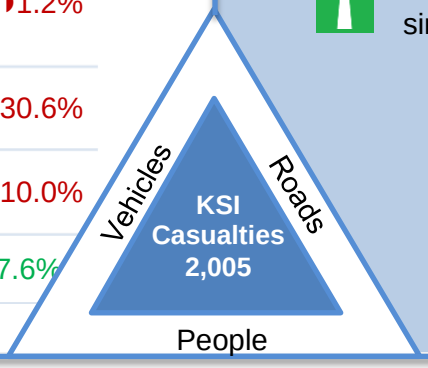
A summary of the 2016 killed or seriously injured (KSI) casualty data can be seen below. The percentages indicate the change from 2015; percentages are only given where the 2015 value is 15 or more.

Estimated Cost: £719,581,449

Average Cost: £358,893



Car occupants	1,301	↑12.5%
Motorcycle users	372	↑17.0%
Goods vehicle occupants (equal to or under 3.5 tonnes)	101	↑5.2%
HGV occupants (over 3.5 tonnes)	82	↑1.2%
Pedestrians	94	↑30.6%
Pedal cyclists	44	↑10.0%
Other/Unknown	11	↓47.6%



Motorway	806	↑10.6%
A-road	1,199	↑13.6%
A-road dual	814	↑22.4%
A-road single	385	↓1.3%

1,334 ↑10.2%

? (Unknown) 0

671 ↑17.1%

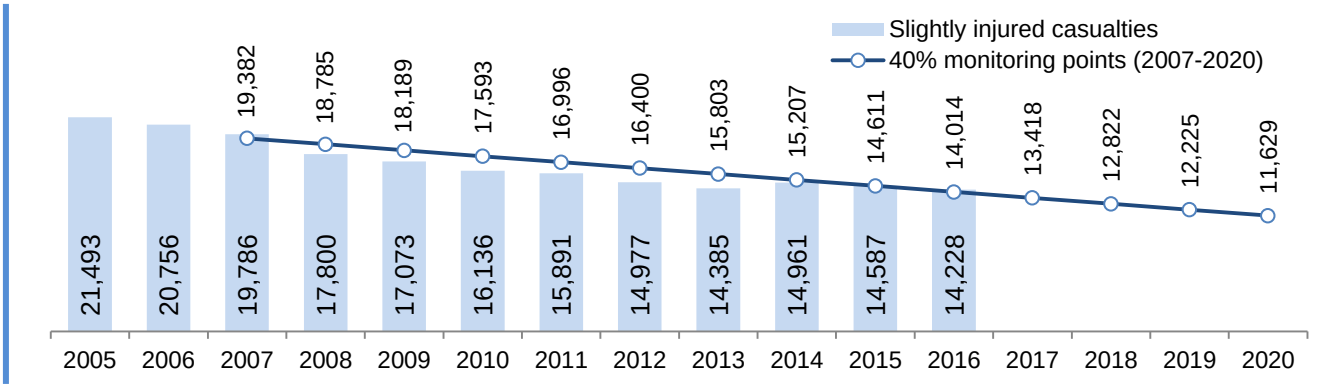
Children (0-15)	Young (16-19)	Other (20-59)	Older (60-69)	Elderly (70+)	? (Unknown)
81	118	1,432	168	193	13
↑102.5%	↑28.3%	↑13.0%	↓14.3%	↑10.9%	↓13.3%

1.8. Summary Sheet of Slight

A summary of the 2016 slightly injured casualty data can be seen below. The percentages indicate the change from 2015; percentages are only given where the 2015 value is 15 or more.

Estimated Cost: £206,092,580

Average Cost: £14,485



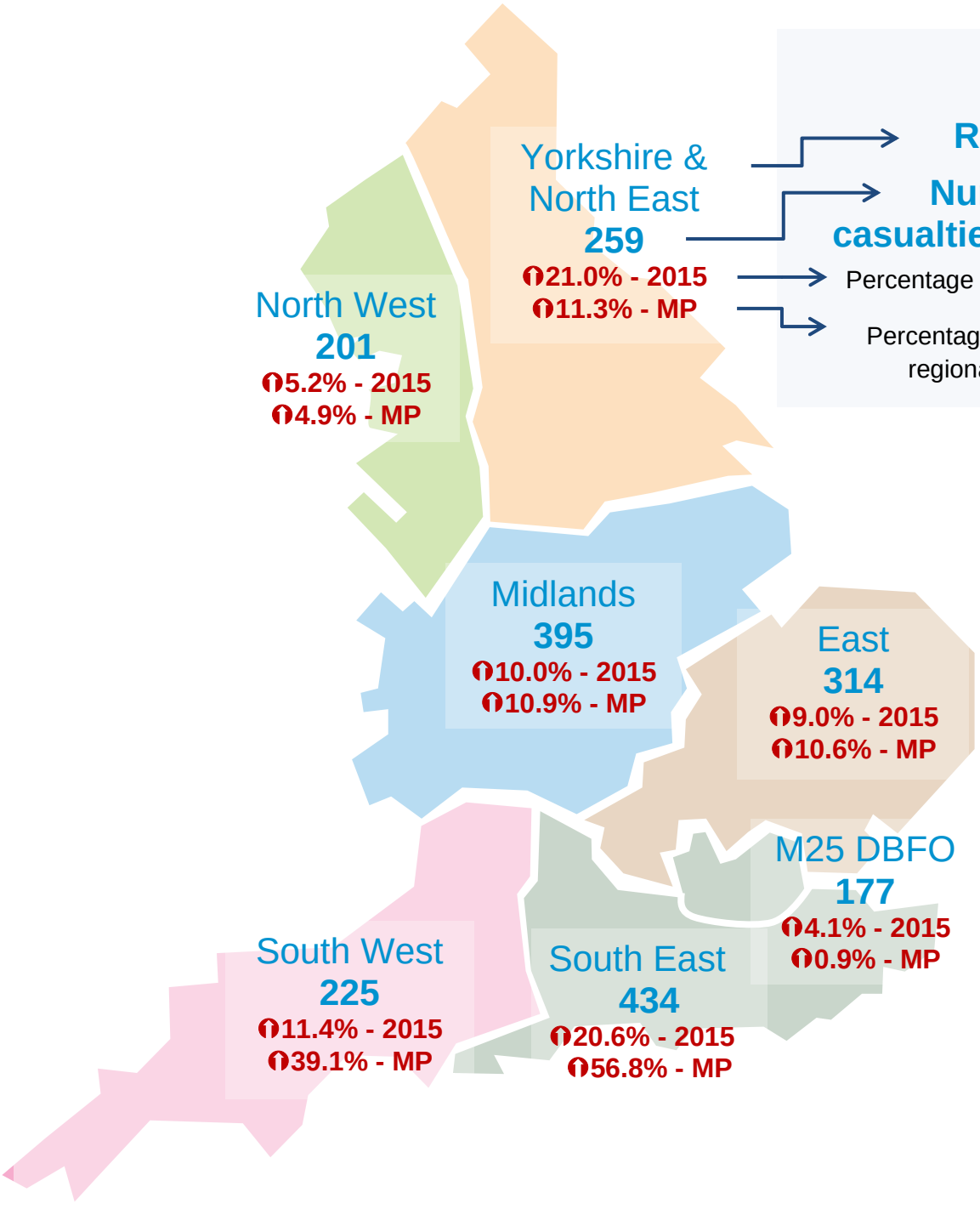
Car occupants	12,303	↓1.0%
Motorcycle users	492	↓7.3%
Goods vehicle occupants (equal to or under 3.5 tonnes)	829	↓8.0%
HGV occupants (over 3.5 tonnes)	322	↓9.0%
Pedestrians	60	↓28.6%
Pedal cyclists	104	↓8.0%
Other/Unknown	118	↓33.0%

Motorway	6,986	↓3.7%
A-road	7,242	↓1.3%
A-road dual	5,402	↓0.7%
A-road single	1,840	↓2.9%

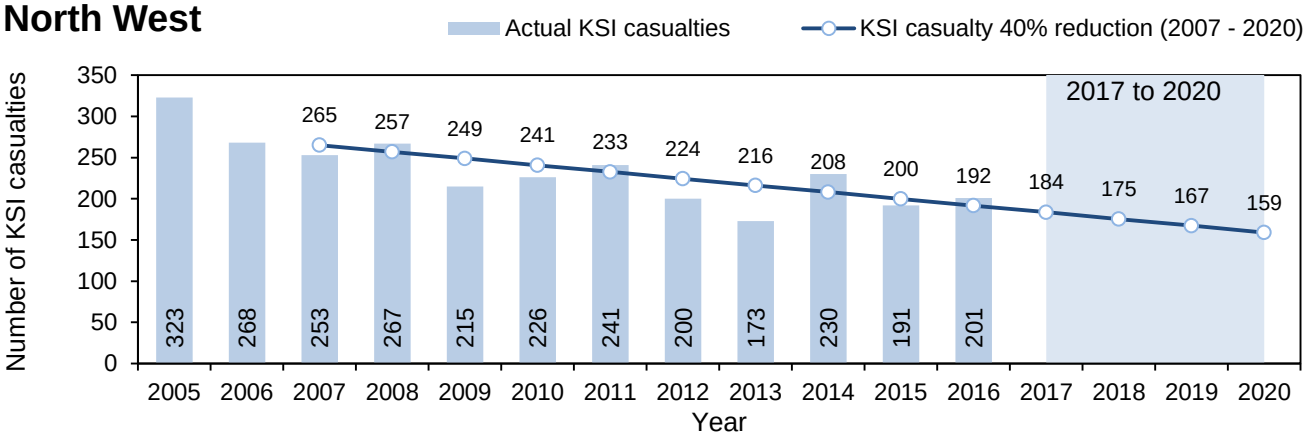
Male	? (Unknown)	Female
7,950 ↓1.6%	0	6,278 ↓3.5%

Children (0-15)	Young (16-19)	Other (20-59)	Older (60-69)	Elderly (70+)	? (Unknown)
825	798	10,815	1,006	659	125
↑2.6%	↓7.0%	↓2.8%	↓0.3%	↑0.6%	↓3.1%

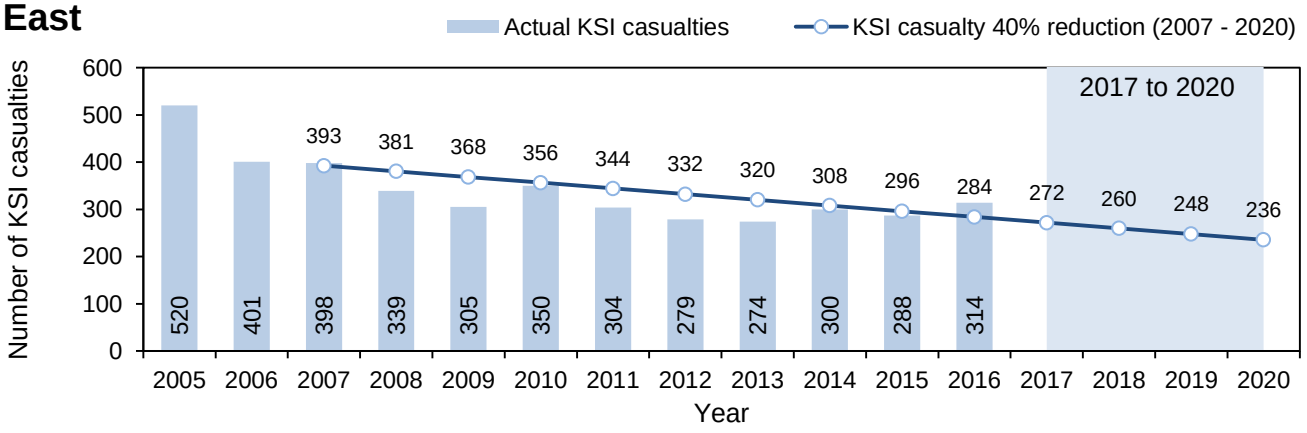
1.9. Regional KSI Values and Monitoring Points



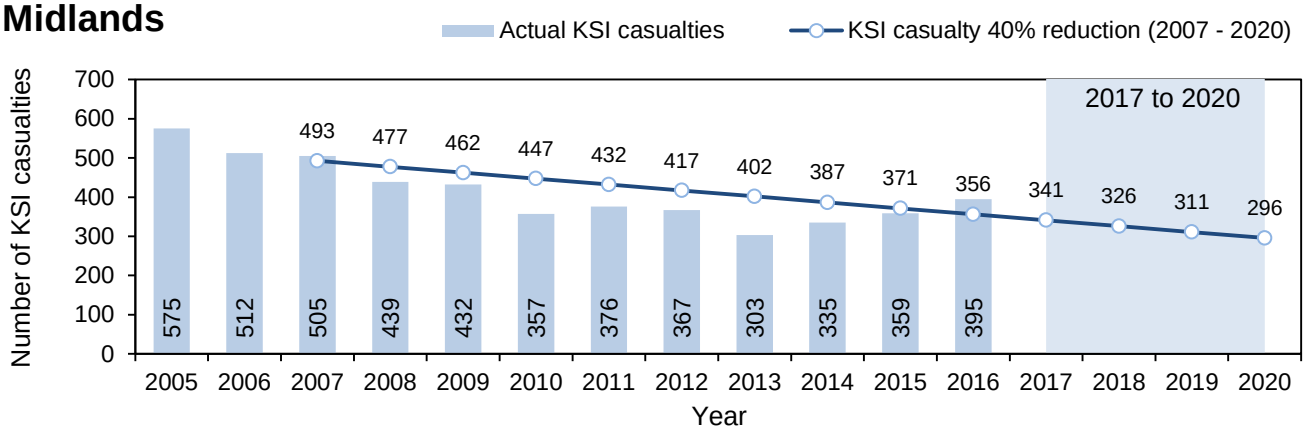
North West



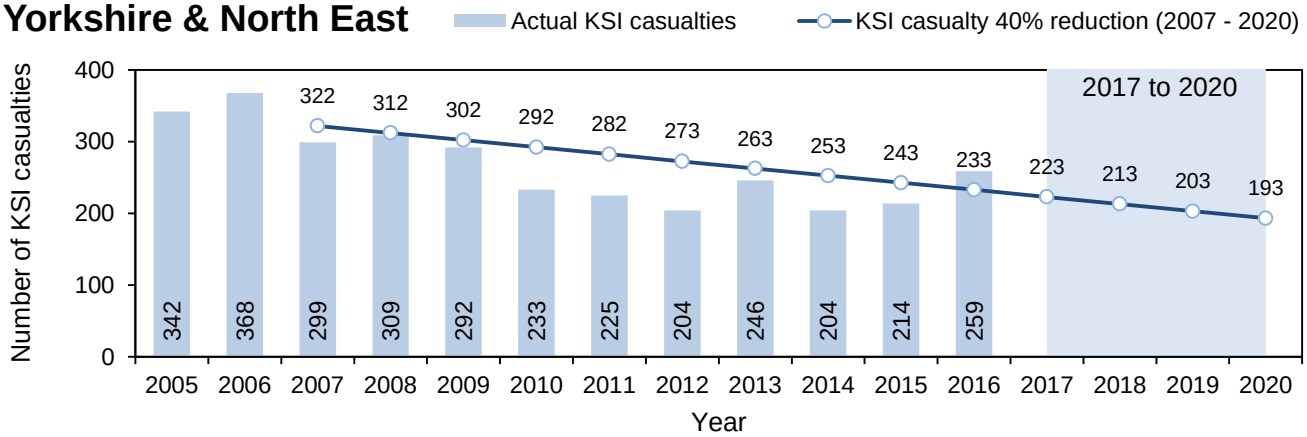
East



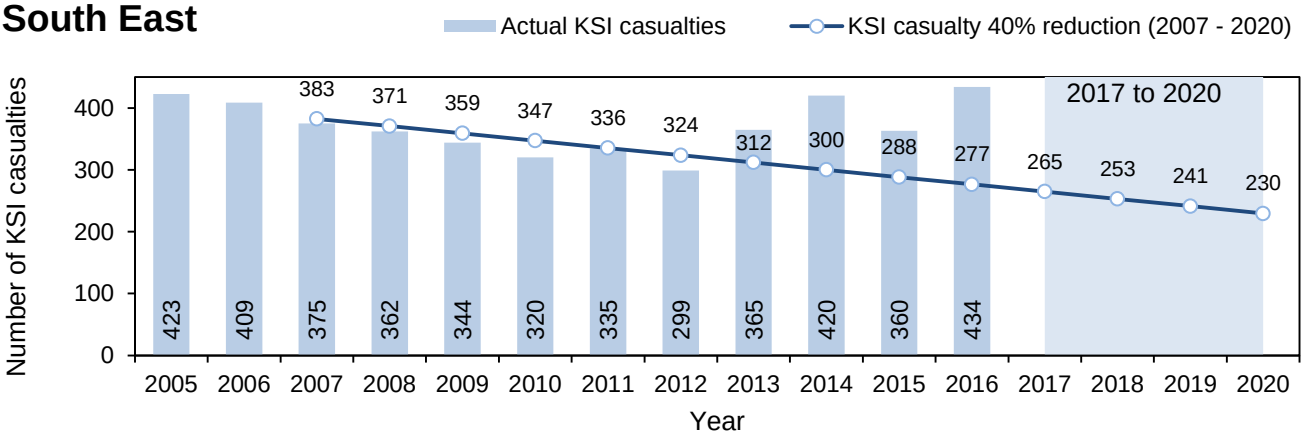
Midlands



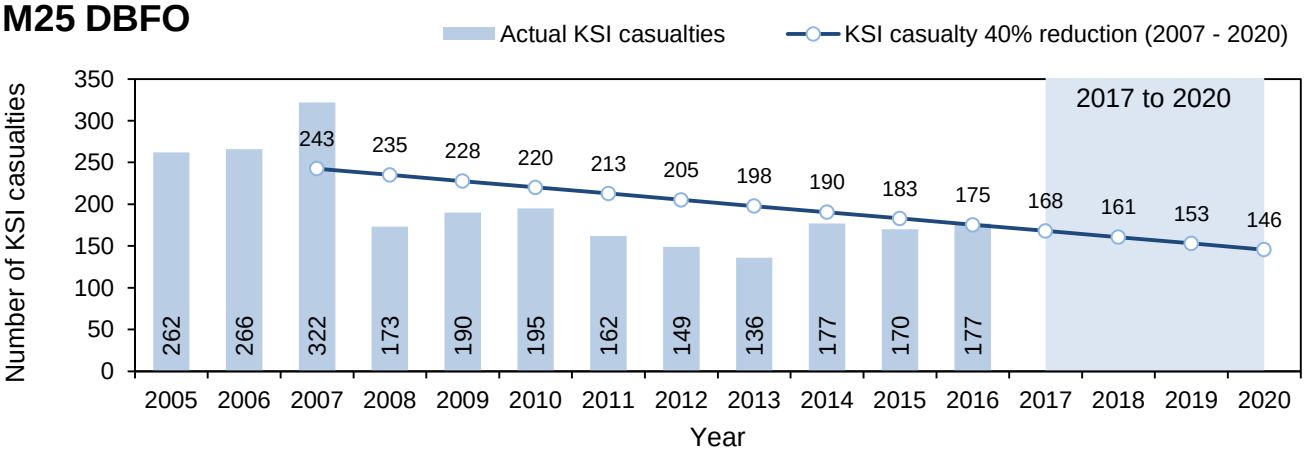
Yorkshire & North East



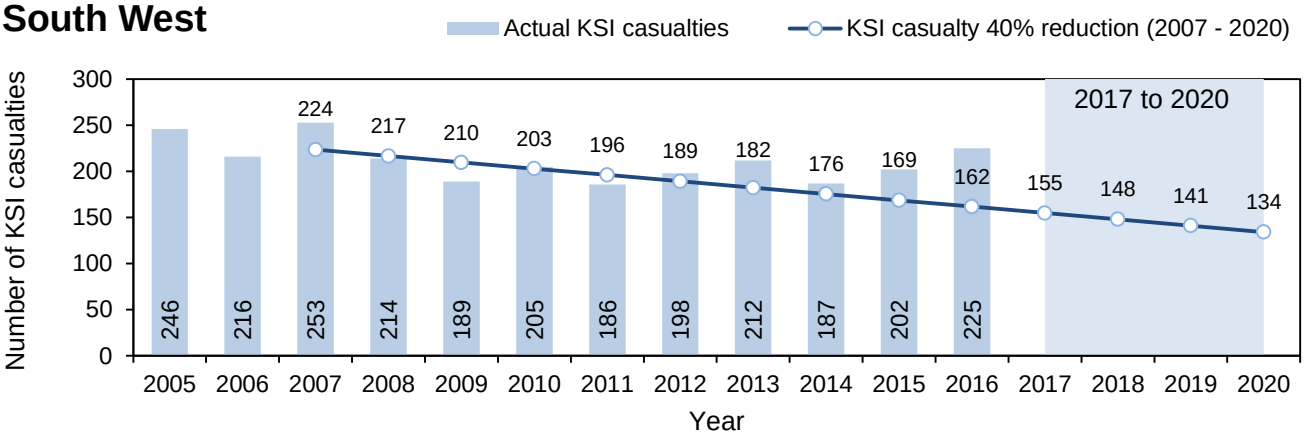
South East



M25 DBFO



South West



2. Network Summary

2.1. The SRN

Motorways
M & A(M)

Estimated length[3]
1,877 miles

Average daily flow[4]
87,926 vehicles per day

A-road carriageways

Estimated length
2,570 miles

Average daily flow
59,401 vehicles per day

A-road dual carriageways

Estimated length
1,712 miles

Average daily flow
42,447 vehicles per day

A-road single carriageways

Estimated length
858 miles

Average daily flow
16,954 vehicles per day

Figure 2-1 Highways England's 2016 Strategic Road Network
Based on the '2016 HAPMS' network

From 2016, the referenced network will be that at 1st January and will be updated annually to capture changes on the SRN in a timely manner. Pre-2016 was a fixed reference network taken in December 2010 ("2010 network").

[3] Based on summation of length from DfT count points identified as part of the 2016 SRN.
[4] Based on 2016 Annual Average Daily Flow (AADF) values obtained from DfT count points identified as part of the 2016 SRN.

2.2. Traffic Estimates and Economic Factors

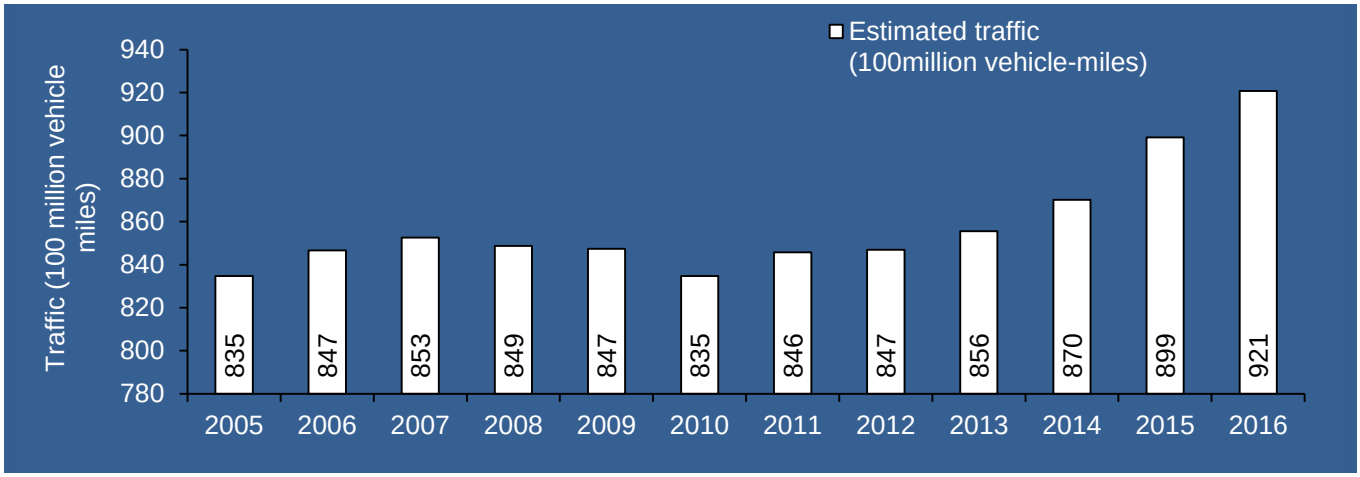


Figure 2-2 Historic traffic levels on the SRN

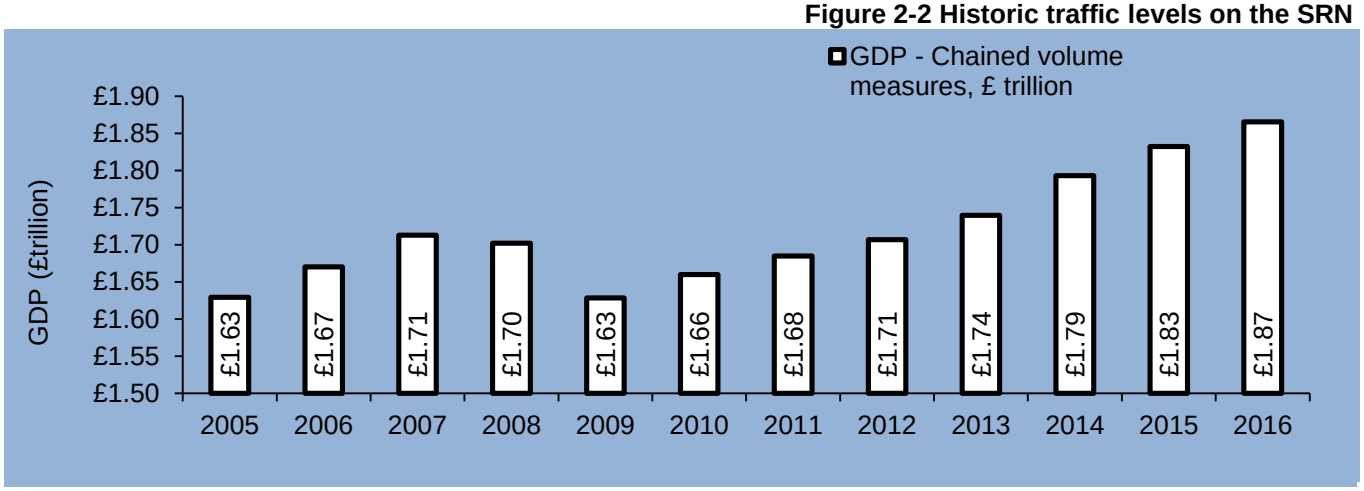


Figure 2-3 UK Gross Domestic Product between 2005 and 2016

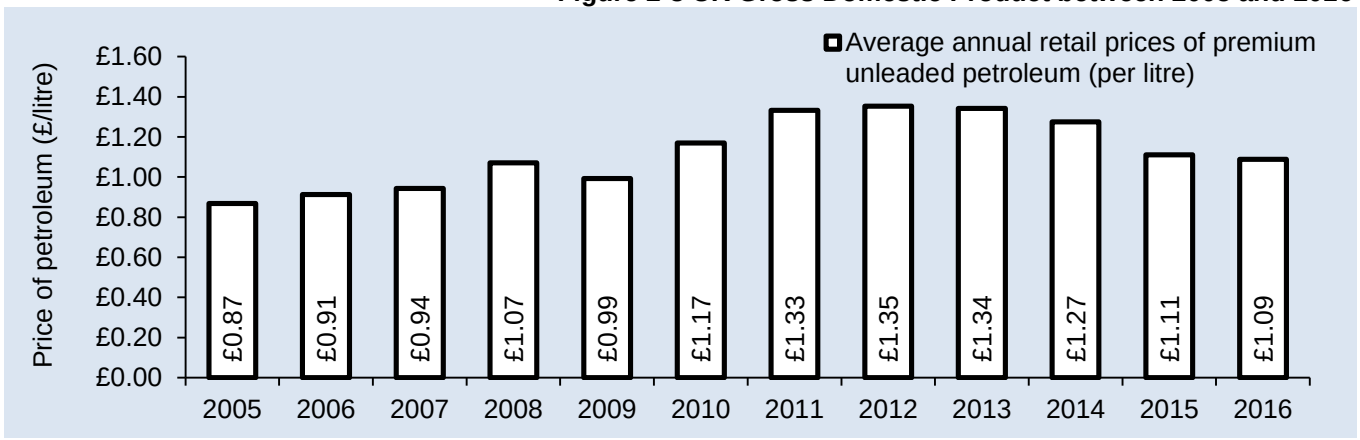


Figure 2-4 Average annual UK fuel prices between 2005 and 2016

Notes:
(a) Traffic estimates based on 2016 AADF values obtained from DfT count points identified as part of the 2016 SRN.
(b) UK GDP sourced from http://www.ons.gov.uk/ons/site-information/using-the-website/time-series/index.html#
(c) UK fuel prices sourced from DfT Table 4.1.2 Average annual retail prices of petroleum products and a crude oil price index UK.

Figure 2-2 to Figure 2-4 show estimated traffic along with economic factors. Figure 2-2 shows that between 2007 and 2010, the SRN witnessed a decline in overall usage with headline traffic levels decreasing by 2.1 per cent from 853 hundred million vehicle miles (HMVM) to 835 HMVM.

Between 2010 and 2016, traffic levels increased 10.3 per cent from 835 HMVM to 921 HMVM, with the largest percentage traffic growth within this period (3.3 per cent) occurring between 2014 and 2015. In the same period (2010 to 2016), traffic on the Great Britain network (excluding estimates for the SRN) increased 2.1 per cent from 2,268 HMVM to 2,316 HMVM.

The increase in traffic on the SRN, since 2010, (Figure 2-2) correlates with the economic recovery from 2009 (Figure 2-3). The increase in traffic is also augmented by decreasing retail prices of premium unleaded petroleum, after 2012, as shown in Figure 2-4.

2.3. Traffic Estimates by Road Classification

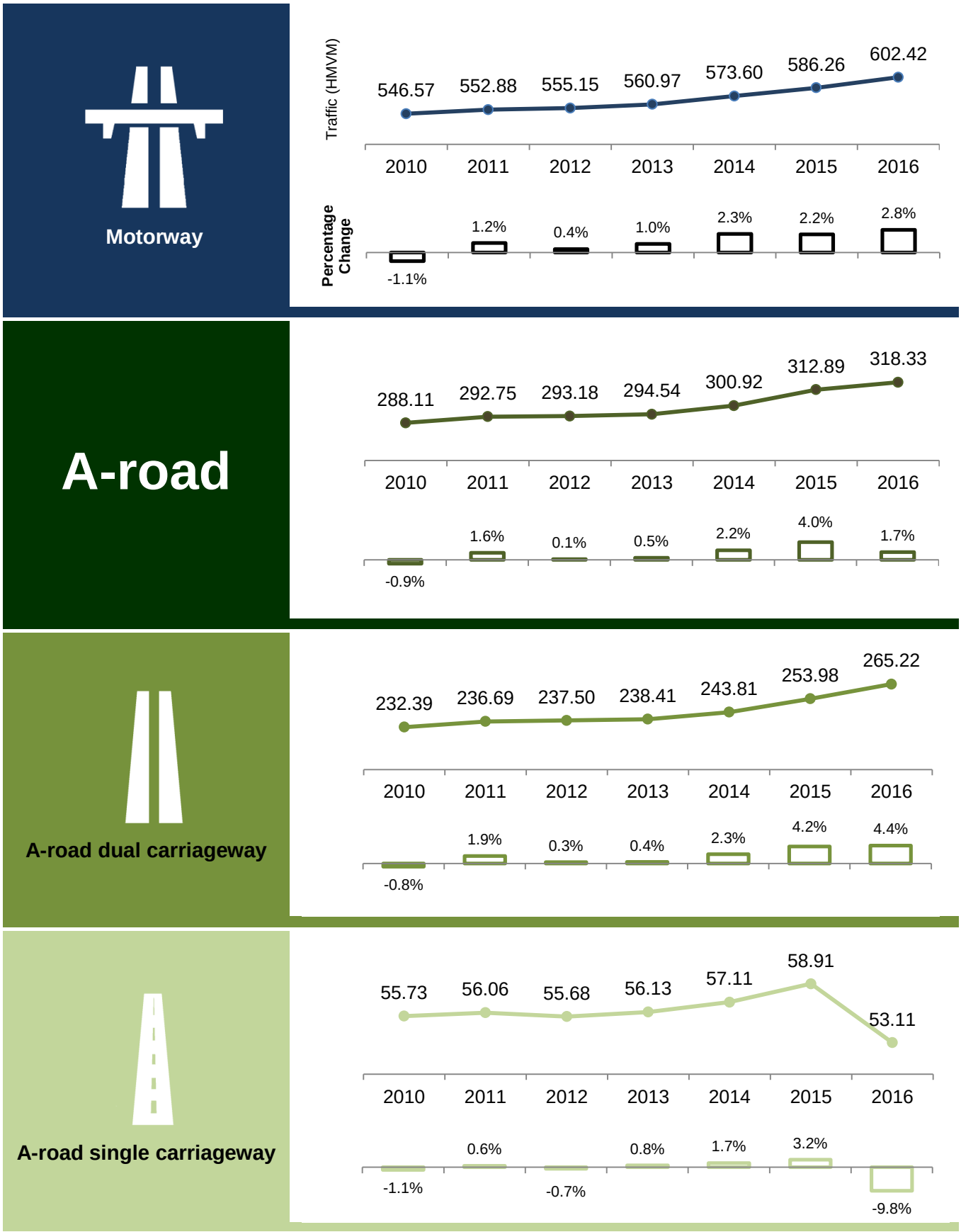


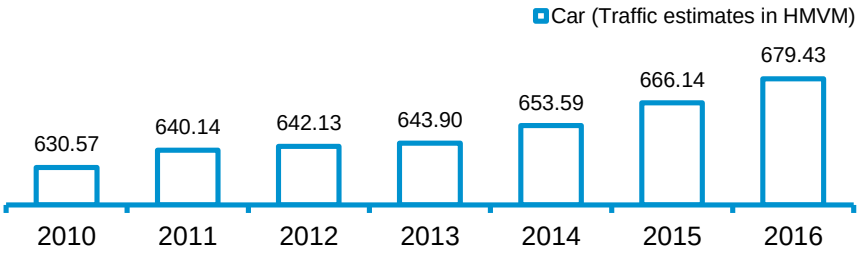
Figure 2-5 Traffic estimates by road classification

Estimates of traffic (measured in hundred million vehicle miles, HMVM) by road classification are provided in Figure 2-5. Between 2010 and 2016, there has been a 10.2 per cent increase in motorway traffic and 14.1 per cent increase in A-road dual carriageway traffic on the SRN (based on the 2016 reference network). The change in the reference network reduced the length of A-road single carriageway by 4.5 per cent. This change contributed to the overall reduction in traffic observed on A-road single carriageways, which was a decrease of 9.8 per cent from 2015 to 2016.

2.4. Traffic Estimates by Vehicle Type

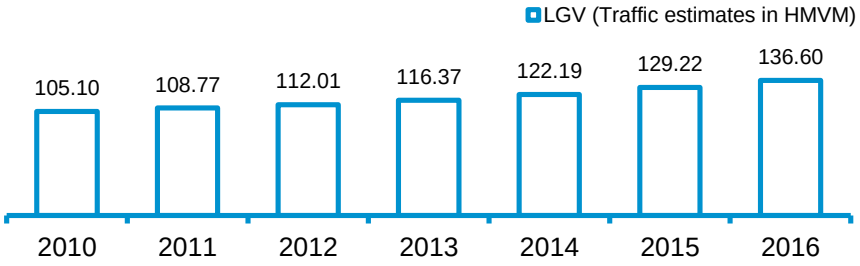
Car

7.7% from 2010



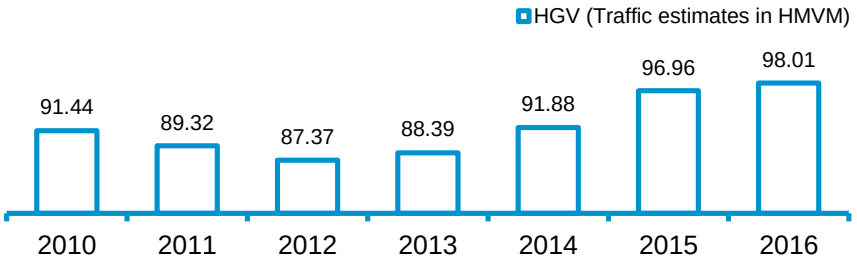
LGV (other GV)

30.0% from 2010



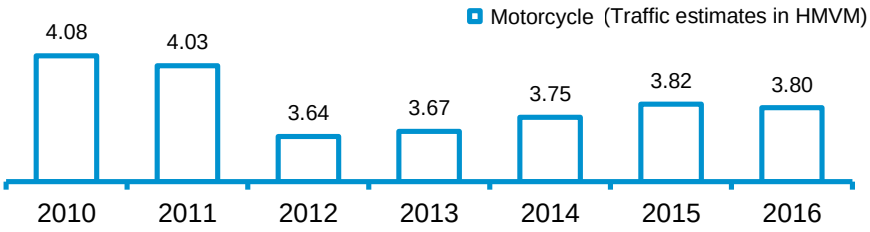
HGV (over 3.5t)

7.2% from 2010



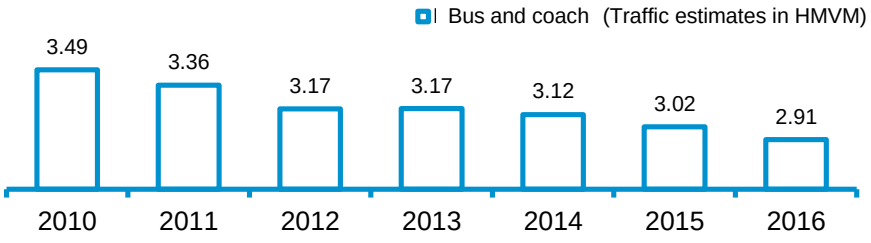
Motorcycle

6.9% from 2010



Bus / coach

16.5% from 2010



Pedal cycle

3.2% from 2010

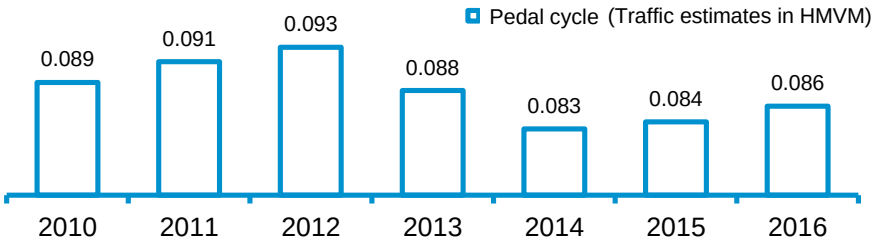


Figure 2-6 Traffic estimates by vehicle type

An estimate of vehicle traffic levels[5] on the SRN in 2016 is shown in Figure 2-6. As shown in the figure, the largest percentage of vehicle traffic on the SRN are cars (73.8 per cent) followed by LGVs (other goods vehicles[6]) with 14.8 per cent.

Between 2010 and 2016, out of the three major vehicle types (car, heavy goods vehicle (HGV) and light goods vehicle (LGV)), the largest increase was LGVs equivalent to 30.0 per cent; with a 5.7 per cent increase occurring between 2015 and 2016. As shown in Figure 2-6, LGV traffic increased steadily from 105.10 HMVM in 2010 to 136.60 HMVM in 2016. LGVs are further investigated in the goods vehicle topic of interest (Section 5.12).

In the same period, HGV traffic decreased till 2012 and subsequently increased to yield a net increase of 7.2 per cent over the period. Buses and coaches is the only vehicle type to show a continuous decrease (16.5 per cent) between 2010 and 2016.

[5] Vehicle traffic estimates were determined using count point vehicular data accessed from the DfT Traffic Counts website found at http://www.dft.gov.uk/traffic-counts/ along with the underlying assumptions and collection methods. Only count points aligned with the corresponding reference network year were used in the calculation.

[6] For the purpose of reporting traffic estimates, where the vehicle type “other goods vehicle” has been recorded these are represented by light goods vehicles (LGV) as termed by the DfT.

3. Casualties

3.1. Roads

This section provides an overview of casualties linked to road classification by severity, year (including baseline (BSL)) and rates (i.e. number of casualties per HMVM). The rates provide an indication of the likelihood of being injured. The section also considers the influence of road environment.

Figure 3-1 to Figure 3-5 illustrate the casualty distribution on motorway, A-road dual carriageway and A-road single carriageway in terms of the number and rate. Comparison of data for the road classifications shows that for 2016:

- The most fatalities (99 out of 231) occurred on A-road dual carriageways.
- The largest proportion of KSI casualties (40.6 per cent) occurred on A-road dual carriageways. However the largest proportion of total casualties (48.0 per cent) occurred on motorways.
- The likelihood of being injured on motorways was the lowest of all three road classifications across all severities. Therefore, the data in Figure 3-1 is normalised to illustrate the ratio (based on casualty rate) between the likelihood of an injury occurring on a motorway, dual carriageway or single carriageway relative to the motorway.
- The likelihood of being injured on A-road single carriageways was the highest of all three road classifications across all severities, followed by A-road dual carriageways.

3.1.1. Casualties and likelihood of injury by road classification and severity

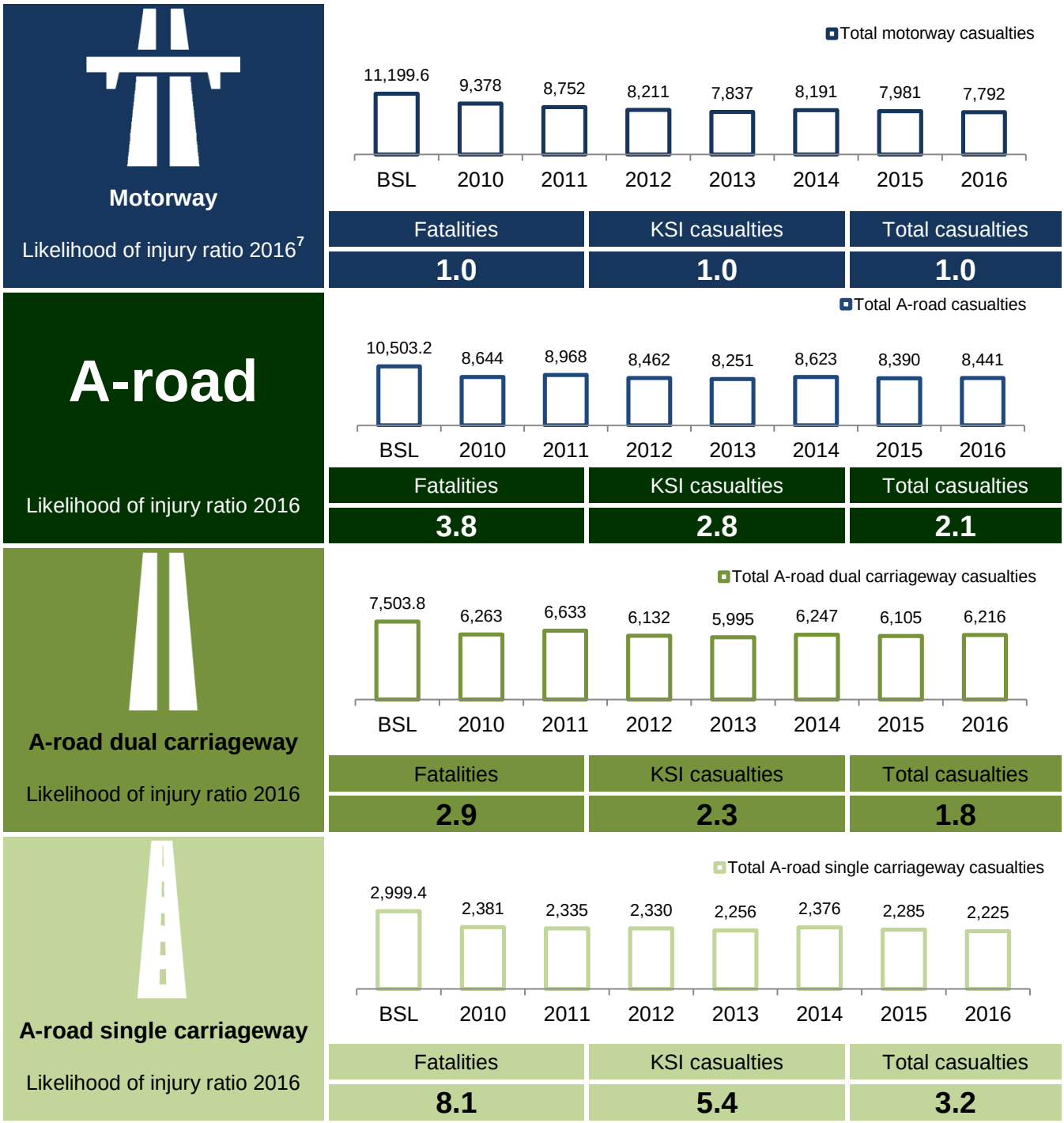


Figure 3-1 Casualties by road classification and likelihood of injury by road classification and severity

[7] 'Likelihood of injury ratio' is the ratio between casualty rates; normalised to motorway data.

3.1.2. Motorway casualties and rates by severity

Figure 3-2 Motorway casualties and rates by severity

3.1.3. A-road casualties and rates by severity

A-road Casualties	BSL	2010	2011	2012	2013	2014	2015	2016
Total rate (Cas./HMVM)	36.54	30.00	30.63	28.86	28.01	28.66	26.81	26.52
Killed	BSL	2010	2011	2012	2013	2014	2015	2016
Killed rate (Cas./HMVM)	0.71	0.48	0.55	0.47	0.53	0.42	0.42	0.48
Seriously injured	BSL	2010	2011	2012	2013	2014	2015	2016
Serious rate (Cas./HMVM)	3.84	3.20	3.16	3.08	2.95	3.34	2.95	3.28
KSI	BSL	2010	2011	2012	2013	2014	2015	2016
KSI rate (Cas./HMVM)	4.55	3.68	3.71	3.55	3.48	3.77	3.37	3.77
Slightly injured	BSL	2010	2011	2012	2013	2014	2015	2016
Slight rate (Cas./HMVM)	31.99	26.32	26.93	25.31	24.53	24.89	23.44	22.75

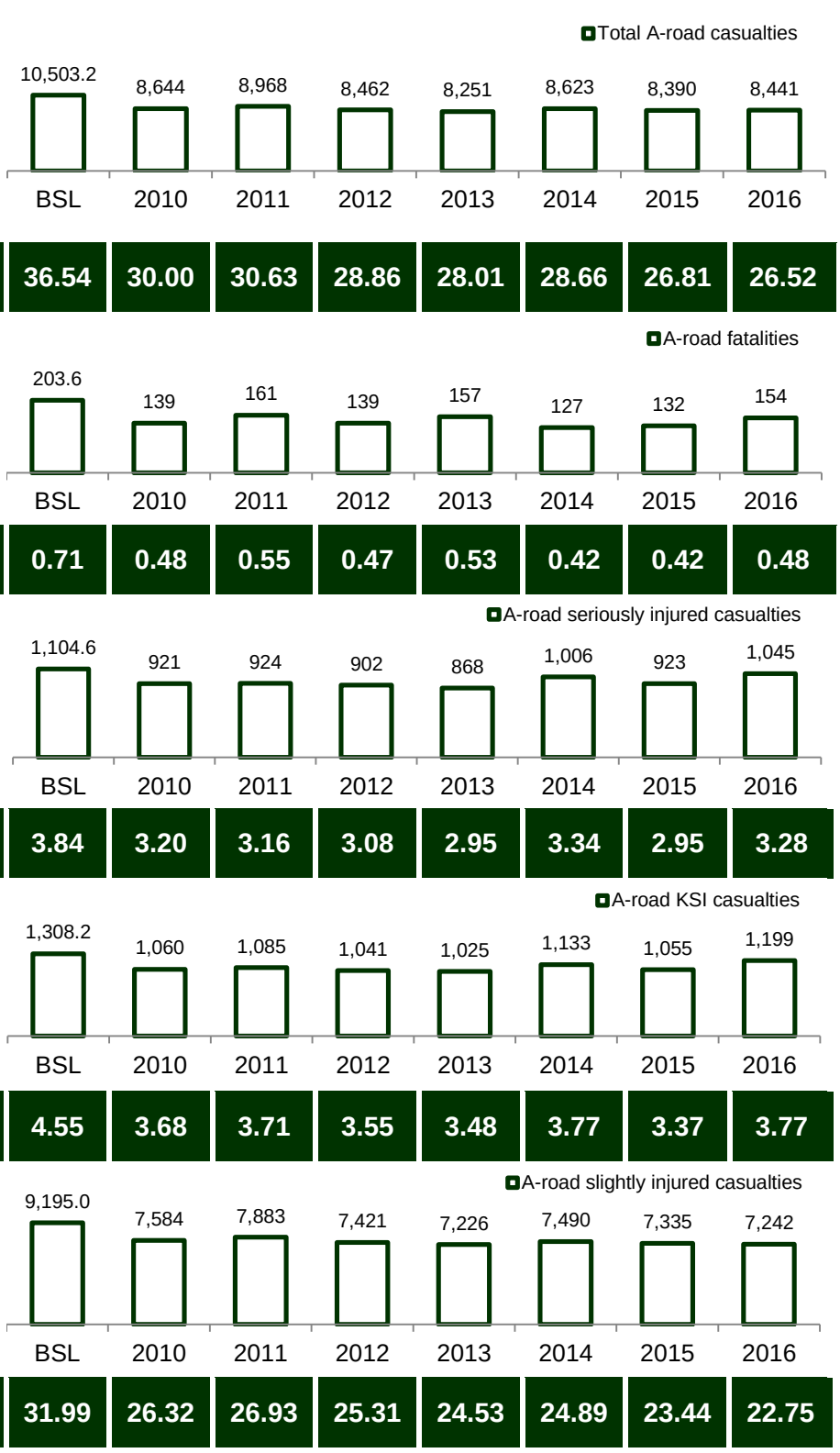


Figure 3-3 A-road casualties and rates by severity

3.1.4. A-road dual carriageway casualties and rates by severity

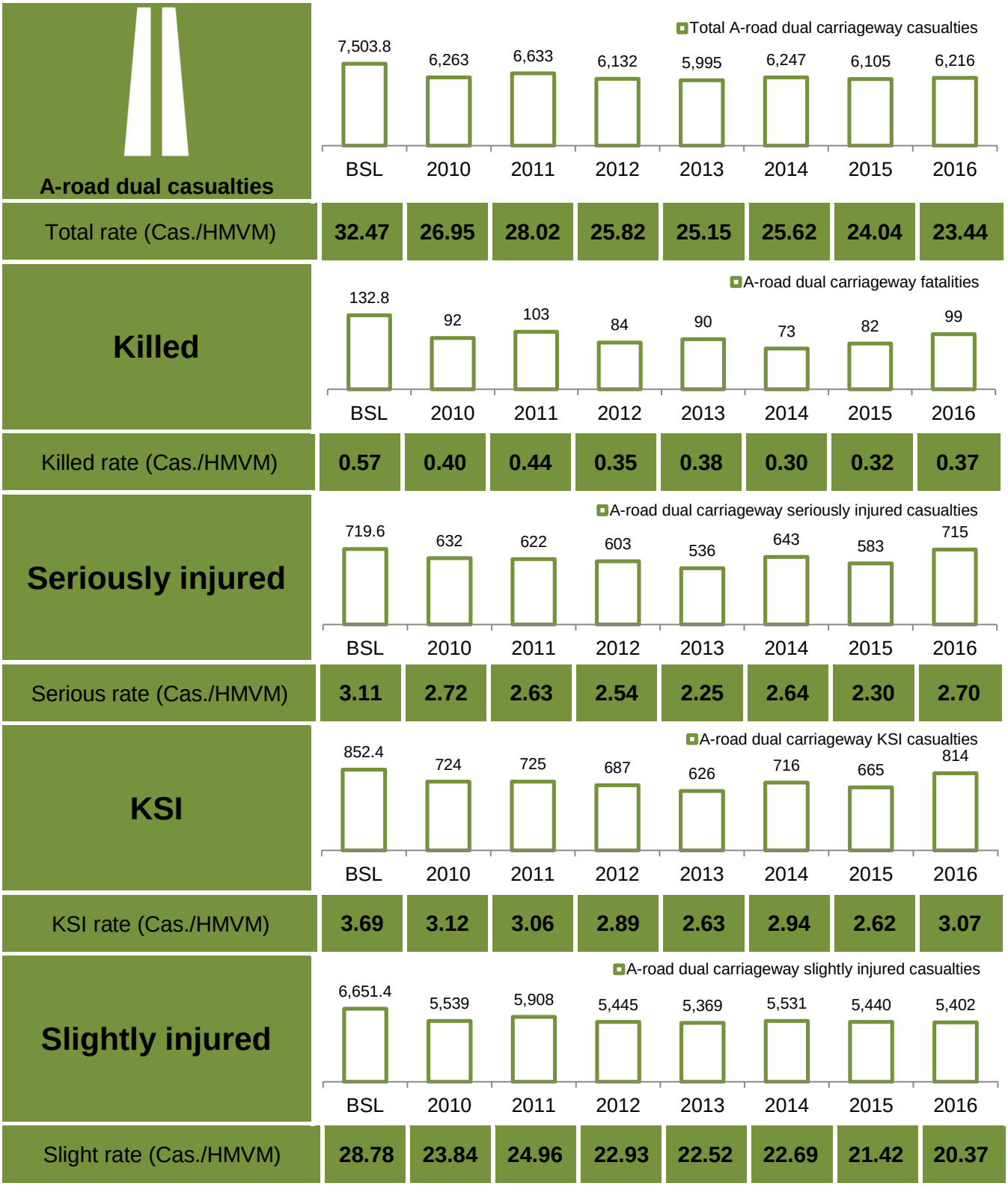
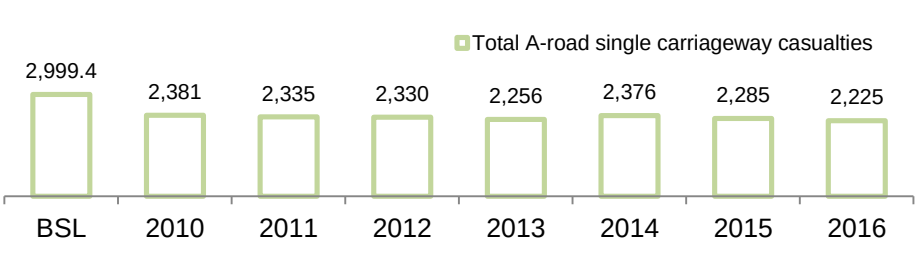
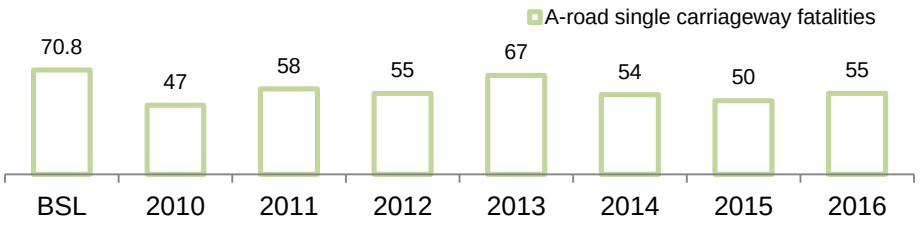


Figure 3-4 A-road dual carriageway casualties and rates by severity

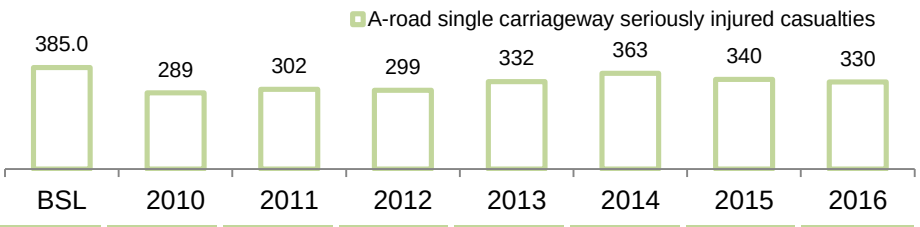
3.1.5. A-road single carriageway casualties and rates by severity



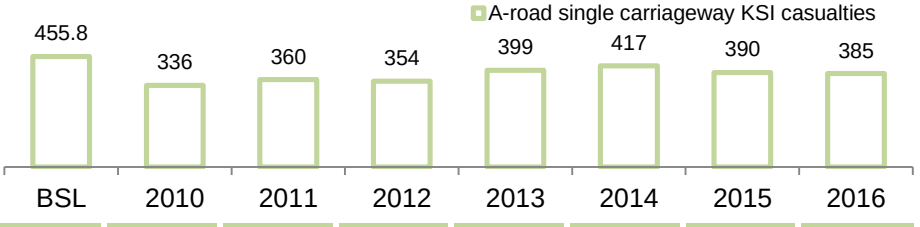
A-road single casualties	BSL	2010	2011	2012	2013	2014	2015	2016
Total rate (Cas./HMVM)	**53.26**	**42.73**	**41.65**	**41.85**	**40.19**	**41.61**	**38.79**	**41.89**



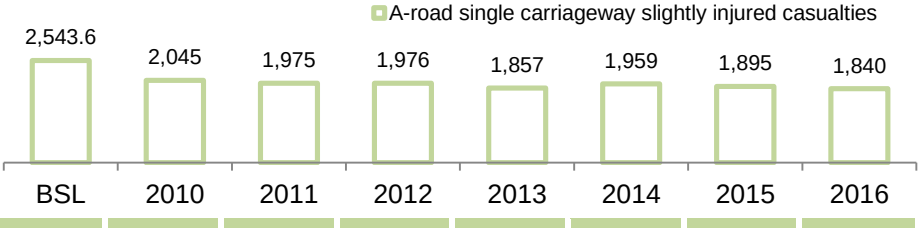
Killed	BSL	2010	2011	2012	2013	2014	2015	2016
Killed rate (Cas./HMVM)	**1.26**	**0.84**	**1.03**	**0.99**	**1.19**	**0.95**	**0.85**	**1.04**



Seriously injured	BSL	2010	2011	2012	2013	2014	2015	2016
Serious rate (Cas./HMVM)	**6.84**	**5.19**	**5.39**	**5.37**	**5.92**	**6.36**	**5.77**	**6.21**



KSI	BSL	2010	2011	2012	2013	2014	2015	2016
KSI rate (Cas./HMVM)	**8.09**	**6.03**	**6.42**	**6.36**	**7.11**	**7.30**	**6.62**	**7.25**



Slightly injured	BSL	2010	2011	2012	2013	2014	2015	2016
Slight rate (Cas./HMVM)	**45.16**	**36.70**	**35.23**	**35.49**	**33.09**	**34.30**	**32.17**	**34.64**

Figure 3-5 A-road single carriageway casualties and rates by severity

3.1.6. Casualties involving road environment

This section evaluates the number of casualties where the road environment is categorised as a contributory factor. Assessment of these factors gives an indication of how the SRN could be enhanced to mitigate further casualties where the road is a contributory factor.

In 2016, the number of KSI casualties involving road environment factors was 200 and was equivalent to 10.0 per cent of the respective total KSI casualties (2,005). This is a 30.7 per cent increase on the previous year, which was 153 and equivalent to 8.6 per cent in 2015.

Figure 3-6 summarises the number of KSI casualties involving at least one factor associated with the road environment from 2005 and 2016. The diagram depicting the split by road classification shows the trend in KSI casualties from 2005 to 2016, involving road environment factors, which indicates an overall downward trend with a continual fluctuation across all road classifications; particularly the motorways.

The primary contributory factor for road environment was “Slippery road (due to weather)" which contributed to 141 of the KSI casualties in 2016. This is a 42.4 per cent increase from 99 in 2015.

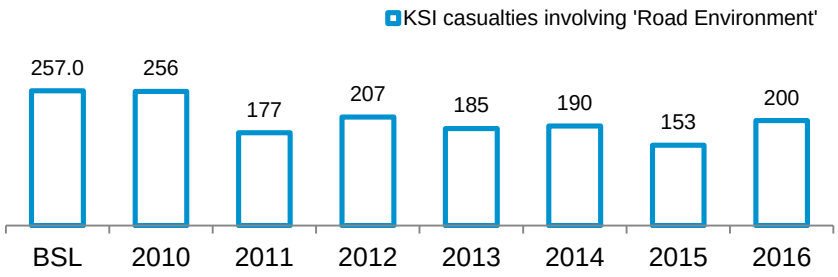
The number of casualties involving a poor or defective road surfacing on the SRN is also shown in Figure 3-6. This provides context on the potential human cost from defects in surfacing. From 2008 to 2011, England experienced harsh winters, with December 2010 being one of the coldest on record[8]. As a result, the occurrence of surface defects during and after this period became a significant concern for all stakeholders.

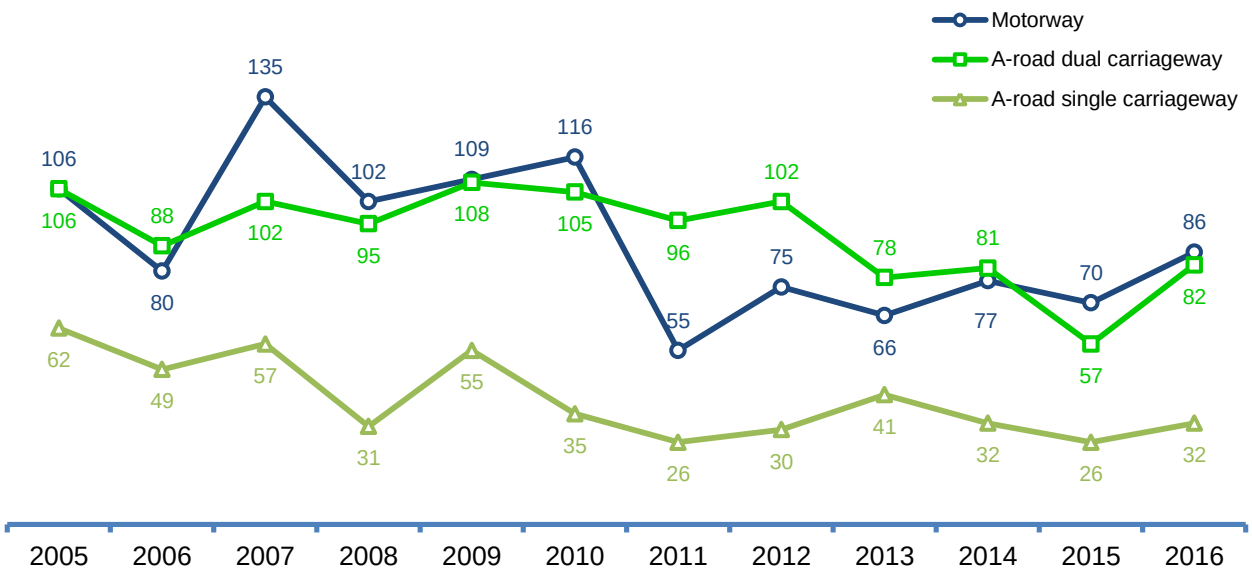
The graph depicting the trend of casualties involving poor or defective road surfacing (in Figure 3-6) shows that the number spiked in 2012; a 47.7 per cent increase from 44 in 2011 to 65 in 2012, followed by a 40.0 per cent decrease in 2013 to 39. The 2016 value is the lowest since the baseline period, with a decrease of 17.9 per cent from the 2015 value. When assessing the overall impact of this contributory factor against total casualties for all years, the typical contribution is less than one per cent per annum.

[8] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/4002/potholes-review-progress-report.pdf

Road environment contributed to 200 KSI casualties in 2016

↑ 30.7% on 2015

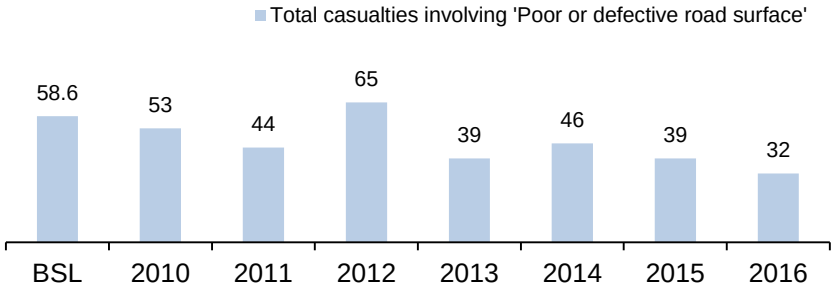




In 2016, 43.0% of KSI casualties where the road environment contributed were on motorways

'Poor or defective road surface' contributed to 32 casualties in 2016

↓ 17.9% on 2015



Slippery road contributed to 141 casualties in 2016

↑ 42.4% on 2015

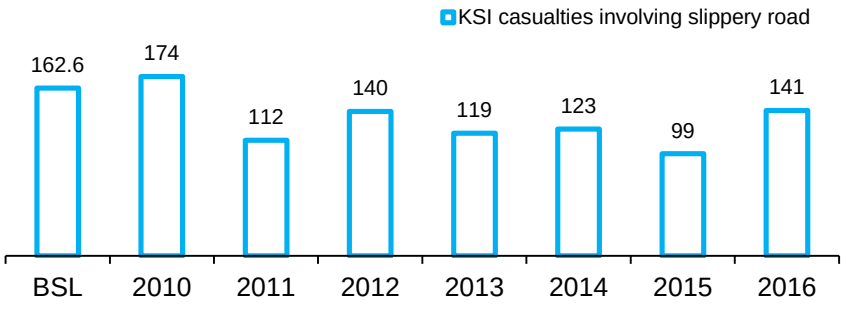


Figure 3-6 Summary of casualties where road environment contributed

3.2. Vehicles

This section briefly assesses the impact of vehicles on casualties occurring on the SRN.

The section primarily focuses on providing an overview of casualties based on first point of vehicle impact, different vehicle interactions and where vehicle defects contributed.

3.2.1. First point of impact

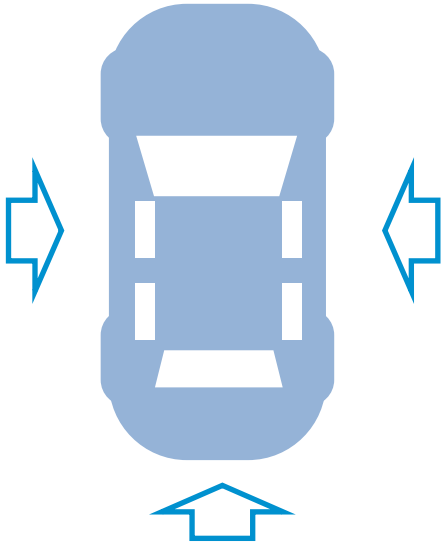
Figure 3-7 provides a breakdown of the number of KSI casualties by first point of vehicle impact. Note: The analysis excludes pedestrian casualties as it is focussed on vehicle occupants.

KSI casualties where the first point of vehicle impact was front (1,099) made up 57.5 per cent of KSI casualties in 2016 and the corresponding KSI severity ratio (KSI severity ratios are the percentage of KSI casualties to total casualties for each individual category) was 16.4 per cent. It can also be seen that both offside and nearside impacts resulted in a similar number of casualties and KSI severity ratios, whilst the back impacts resulted in the lowest KSI severity ratio of 4.8 per cent.

First point of impact:

1,099 KSI casualties
16.4% of the 6,684 front casualties

221 KSI casualties
13.3% of the 1,660 nearside casualties



264 KSI casualties
14.7% of the 1,790 offside casualties

270 KSI casualties
4.8% of the 5,615 back casualties

57 KSI casualties had no recorded first point of impact (45 in 2015)

Note: Pedestrians excluded from analysis

Figure 3-7 Casualties by first point of impact

3.2.2. Casualties from vehicle interactions

All collisions in 2016 are grouped by the various combinations of vehicle types that were involved in the collision, for instance, a car colliding with a pedal cyclist. A breakdown by number of casualties and vehicles of all collision combination types where data were available are reported in Appendix Table E-9.

There can be 45 different combinations of vehicle type interactions involved in collisions. In the Appendix table(s) each collision interaction has been labelled with a reference letter (A to AS).

An evaluation of how specific vehicle interactions influence the numbers of casualties in 2016 by severity and type is provided in Figure 3-8 and Figure 3-9.

Figure 3-8 reports the resulting casualties (including pedestrians) where only one vehicle type was involved; Figure 3-9 reports where two vehicle types were involved.

Vehicle in collision	Number of casualties by casualty type and severity		
	Fatally injured	Seriously injured	Slightly injured
Car only	13 / 88 / 75	32 / 873 / 841	40 / 8,856 / 8,816
HGV only	7 / 19 / 12	11 / 52 / 41	7 / 141 / 134
LGV only	3 / 7 / 4	2 / 29 / 27	4 / 146 / 142
Motorcycle only	1 / 6 / 5	96 / 96	4 / 114 / 110

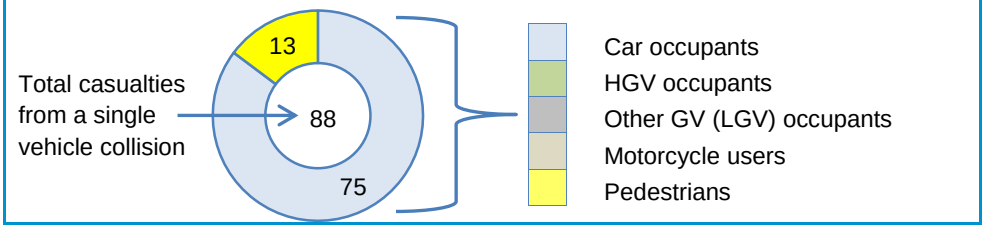
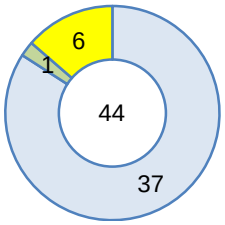
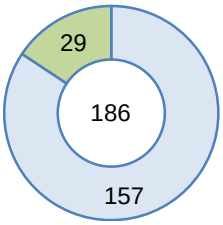
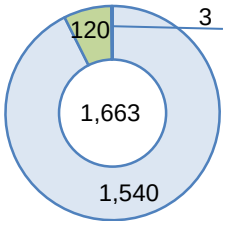
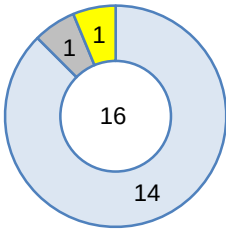
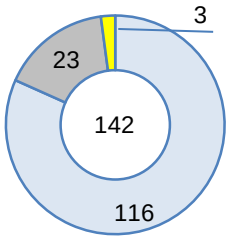
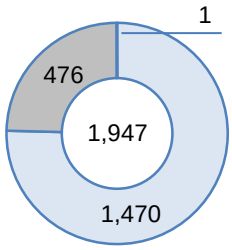
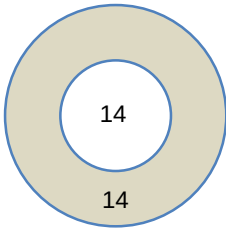
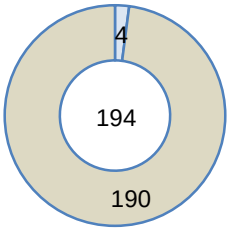
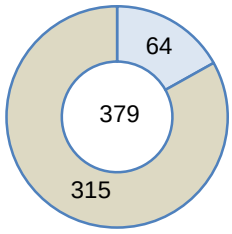
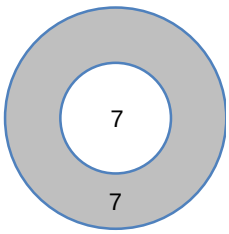
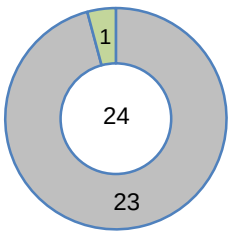
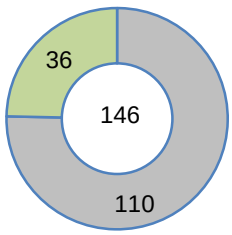
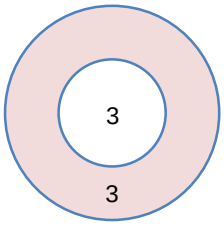
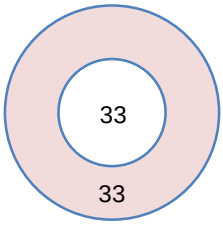
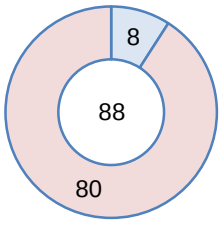


Figure 3-8 Casualty data for single vehicle

Vehicles in collision	Number of casualties by casualty type and severity		
	Fatally injured	Seriously injured	Slightly injured
Car & HGV			
Car & LGV			
Car & Motorcycle			
HGV & LGV			
Car & Cycle			

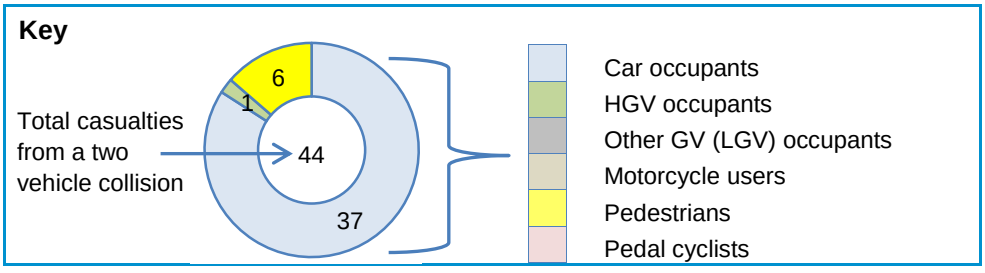


Figure 3-9 Casualty data by vehicle interaction

The most frequent interaction as shown in Figure 3-8 was car only collisions. Car only collisions resulted in 88 fatalities, equivalent to 38.1 per cent of the 231 total fatalities in 2016. In 2016, 13 pedestrian fatalities involved car only and 7 involved HGV only.

Where cars collide with vulnerable road users[9] such as motorcycle users and pedal cyclists, as shown in Figure 3-9, the vulnerable road users are at high risk of being fatally or seriously injured. In these two collision types, 98.4 per cent of the 244 KSI casualties were the vulnerable road user.

In collisions involving cars and HGVs, car occupants are disproportionately killed with 84.1 per cent of fatalities being car occupants. The corresponding KSI casualty value is 84.3 per cent. However, these values are below the corresponding 2015 values of 91.8 and 89.2 per cent respectively.

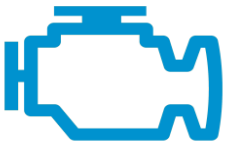
[9] Vulnerable road users include motorcycle users, pedal cyclists and pedestrians.

3.2.3. Casualties involving vehicle defects

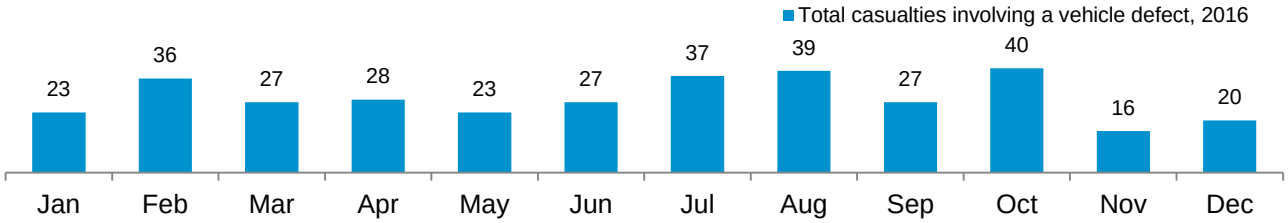
This section evaluates the number of casualties where at least one vehicle within a collision had a defect which was a contributory factor. As shown previously in Figure 2-3, it is apparent that the economic situation is recovering and hence this section also assesses the corresponding historic trends in vehicle defects.

Figure 3-10 provides a summary of casualties involving vehicle defects, including specific factors and their overall impact on KSI casualties for 2016. The latter indicates that the most common vehicle defect which contributed to 32 (55.2 per cent of) KSI casualties was tyres that were illegal, defective or under inflated. For further detailed analysis of the tyres contributory factor refer to the tyre Topic of Interest in Section 5.11.

KSI casualties resulting from incidents involving vehicle defects decreased by 45.2 per cent from the baseline value of 105.8 to 58 in 2016. In comparison, overall KSI casualties decreased by 13.6 per cent from the baseline value of 2,321.2 to 2,005 in 2016. The most significant change over the period was between 2013 and 2014, which resulted in an increase in KSI casualties associated with vehicle defects by 78.7 per cent from 47 in 2013 to 84 in 2014. However, there was subsequently a significant reduction in KSI casualties associated with vehicle defects of 31.0 per cent from 84 in 2014 to 58 in 2016.

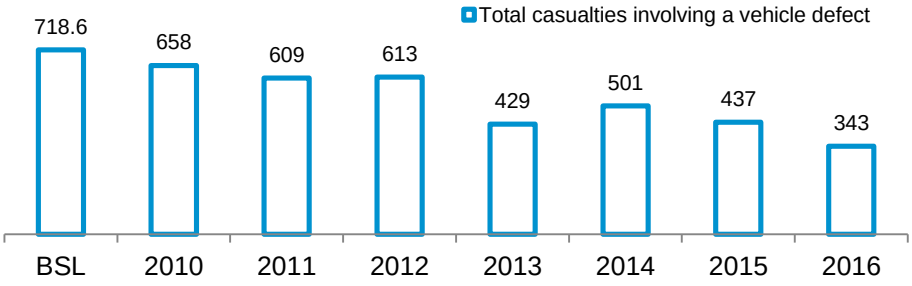


vehicle defect attributed to 343 casualties in 2016

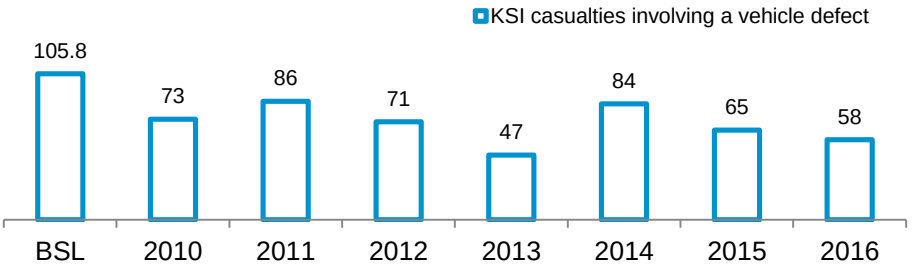


vehicle defect attributed to 40 casualites in October 2016

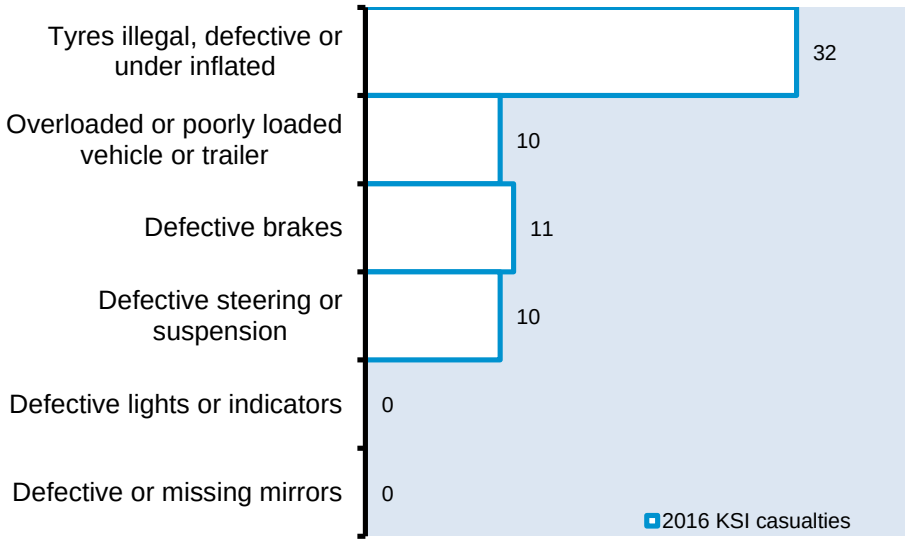
Total casualties
21.5% from 2015



KSI casualties
10.8% from 2015



55.2% of KSI casualties associated with vehicle defects were attributed to ‘Tyres illegal, defective or under inflated’



As more than one contributory factor can be recorded per collision; defects will not sum to 58 KSI casualties

Figure 3-10 Summary of casualty data involving a vehicle defect

3.3. People

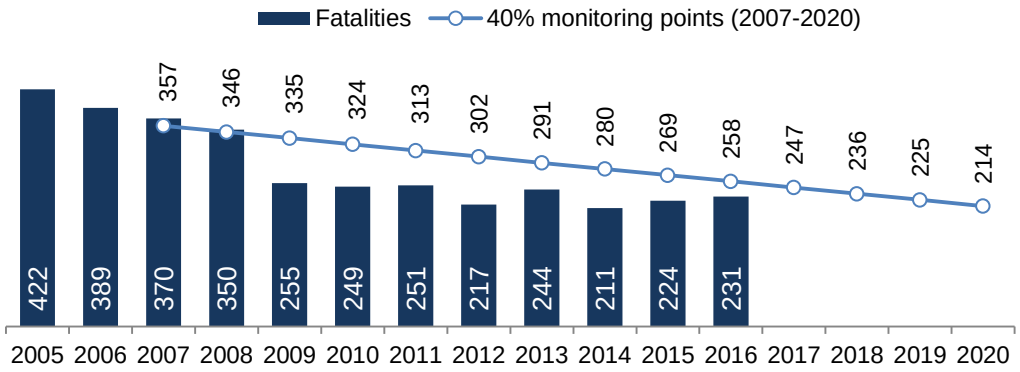
This section provides an assessment of the casualties on the SRN including an analysis of historic and future trends, casualty types and assessment of the drivers and riders including the human factors involved in collisions.

3.3.1. Casualty severity trends

This section identifies underlying trends in casualty data for each year, by severity, between 2005 and 2016. As explained in Section 1.2 the reporting of STATS19 via CRASH has had an impact on both seriously injured and slightly injured casualty data.

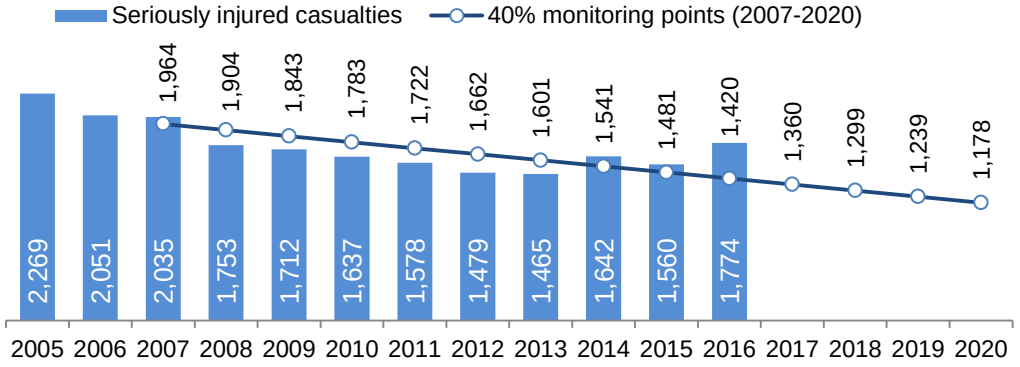
Fatalities

3.1 per cent from 2015



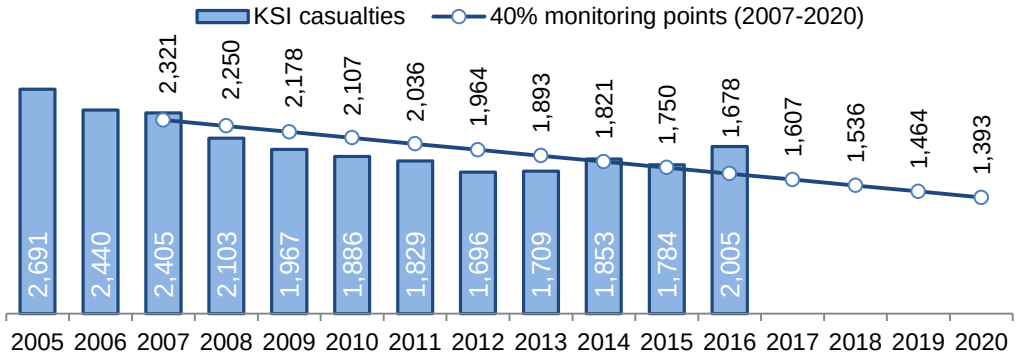
Seriously injured

13.7 per cent from 2015



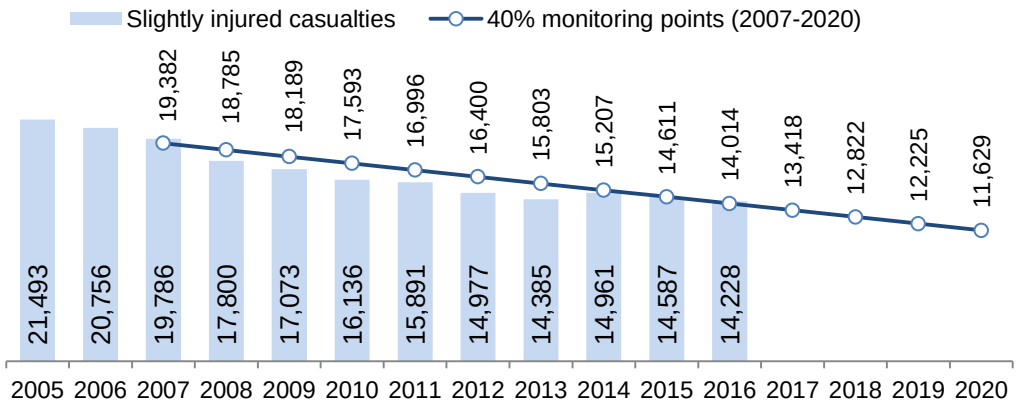
KSI

12.4 per cent from 2015



Slightly injured

2.5 per cent from 2015



Total casualties

0.8 per cent from 2015

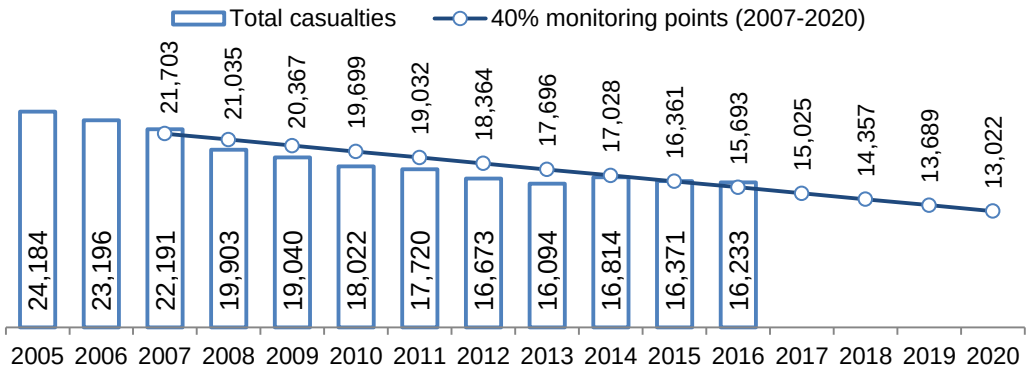


Figure 3-11 Casualty data trends by severity

Figure 3-11 provides an outline of historic casualty trends for fatally injured, seriously injured, KSI, slightly injured and total casualties between 2005 and 2016. It also provides the 40% monitoring points from 2007 to 2020.

Summarising Figure 3-11, the largest percentage change between severities from 2015 to 2016 was the seriously injured casualties which increased by 13.7 per cent (from 1,560 to 1,774). Fatalities also increased but by 3.1 per cent (from 224 to 231). This resulted in a KSI casualty increase of 12.4 per cent (from 1,784 to 2,005).

Figure 3-12 indexes all severities against a base value of 100 in order to directly compare changes in casualty numbers across severities by year. The base value is equivalent to the baseline average (2005-2009).

As shown by Figure 3-12, the change in total casualties over time has been relatively steady and decreased on average by 3.3 index points per annum. The increase in the total number of casualties between 2013 and 2014 is the only increase since at least 2005. The fatalities profile plateaued at approximately 70 index points between 2009 and 2011 after which it fluctuated between approximately 60 and 70 index points. In 2016, fatalities and KSI casualties increased from that of 2015 while total casualties decreased.

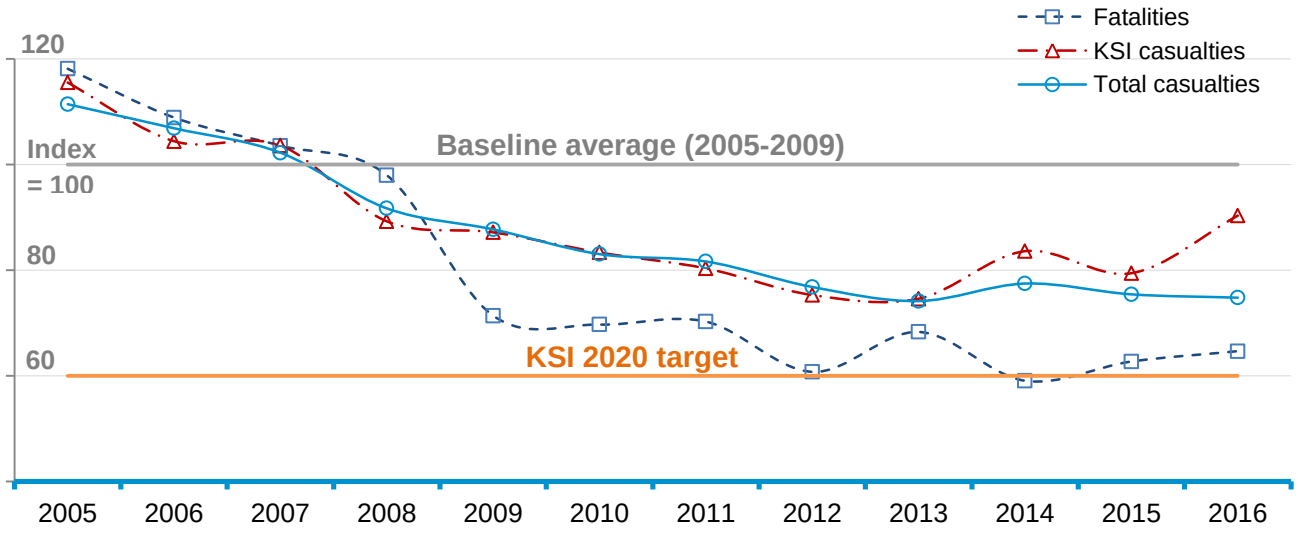


Figure 3-12 Index of changes in casualties by severity

3.3.2. Casualty by type and age

This section provides an overview of casualty types and ages involved in collisions on the SRN. Figure 3-13 illustrates all 231 fatalities in 2016 by casualty type, gender and age.

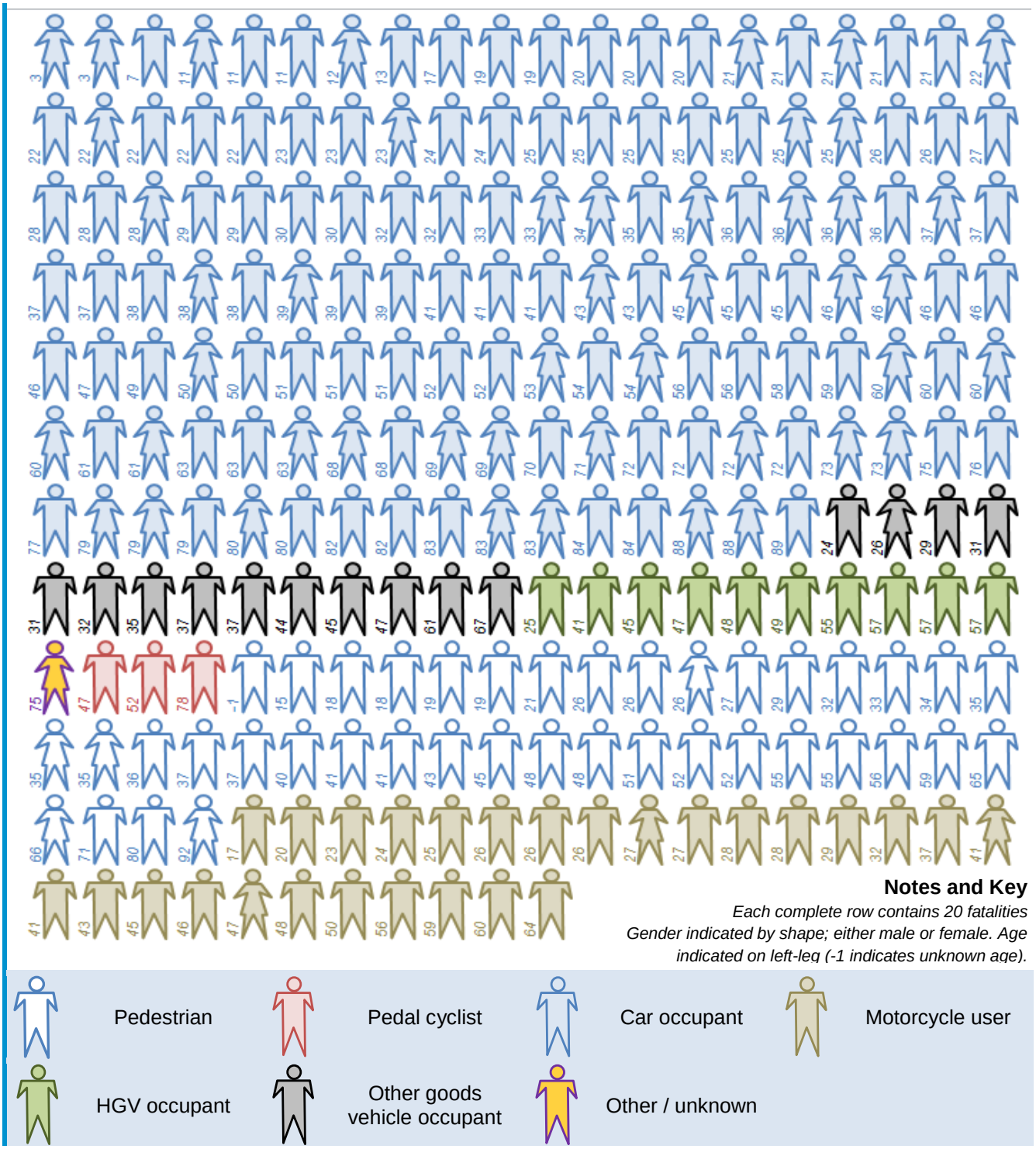


Figure 3-13 Pictogram of all SRN fatalities by casualty type, gender and age, 2016

Figure 3-13 shows that road users of multiple types and all ages and gender were killed on the SRN in 2016; including two 3-year olds who were car occupants. No bus / coach occupants or horse riders were killed on the SRN in 2016.

Further data on casualty type, including trends, are provided in Appendix Table C-13. It shows that decreases in fatalities from 2015 to 2016 occurred in motorcycle users (by 6.9 per cent from 29 to 27), pedal cyclists (by 50.0 per cent from 6 to 3) and HGV occupants (by 16.7 per cent from 12 to 10). In contrast, LGV occupants increased from 2015 to 2016 by 40.0 per cent, pedestrians by 37.9 per cent and car occupants by 1.5 per cent.

Similarly, the casualty age groups are provided in Appendix Table C-16. It highlights a decrease in Elderly (ages 70 years or over) fatalities (by 16.2 per cent) from 37 in 2015 to 31 in 2016. The data indicates that the greatest increase in fatalities from 2015 to 2016 is in the Child (0-15); from 2 in 2015 to 9 in 2016. This increase means that for the first time since 2012 there are more child fatalities than Young (16-19), which had 8 fatalities in 2016.

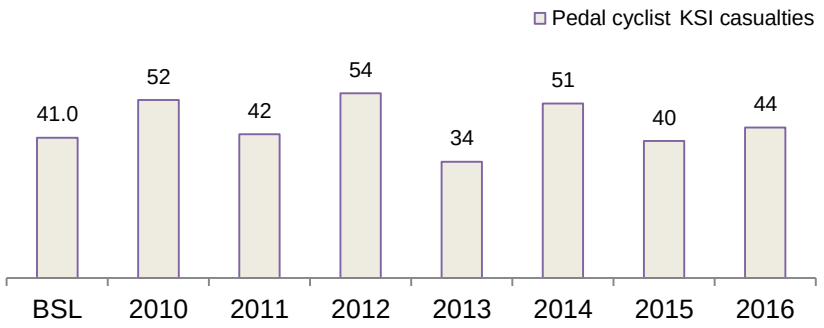
Table 3-1 illustrates the number of KSI casualties by gender and age for 2016. For further details regarding casualties breakdown by gender and age see Appendix Table C-10. Comparing with 2015, only Older (60-69) males showed a decrease of KSI casualties in 2016; Older female KSI casualties remained at 71. In 2016 the number of Young (16-19) male KSI casualties (78) was nearly twice that of Young (16-19) female KSI casualties (40). Elderly (70+) KSI casualties were comparable for males and females in 2016 (99 and 94 respectively).

Table 3-1 Summary of KSI casualties by gender and age

Gender	Children (0-15)	Young (16-19)	Other (20-59)	Older (60-69)	Elderly (70+)	? (Unknown)
Male	**39**	**78**	**1,016**	**97**	**99**	**5**
	↑95.0%	↑30.0%	↑11.5%	↓22.4%	↑17.9%	-
Female	**42**	**40**	**416**	**71**	**94**	**8**
	↑110.0%	↑25.0%	↑16.9%	0.0%	↑5.6%	-

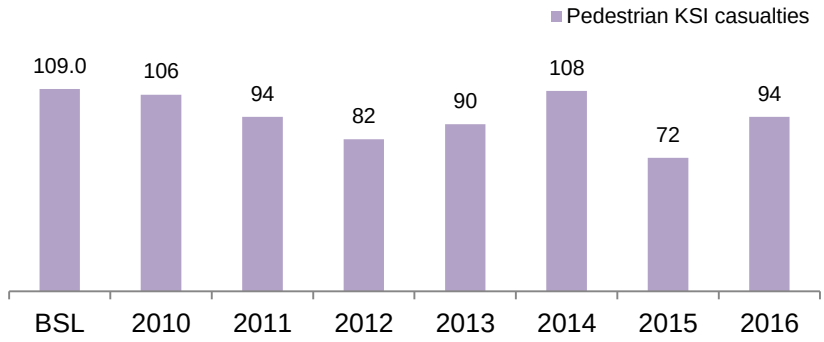
Changes in casualty types and ages between 2010 and 2016 for KSI casualties are shown below in Figure 3-14 and Figure 3-15, and Figure 3-16.

Pedal cyclists
44 KSI casualties
↑ 10.0 per cent
from 40 in 2015



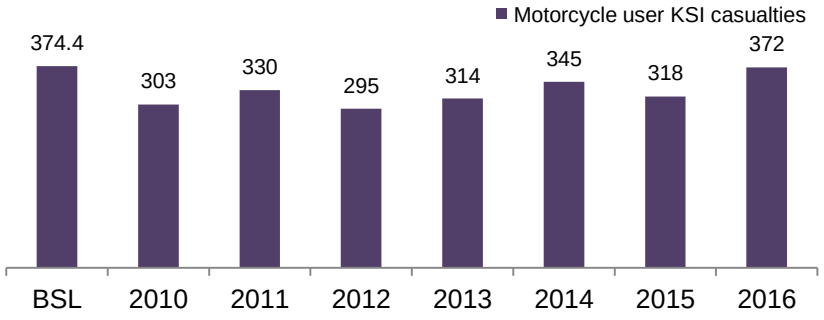
	BSL	2010	2011	2012	2013	2014	2015	2016
KSI rate (Cas./HMVM)[10]	540.53	586.42	460.56	581.13	387.76	614.03	476.77	512.80

Pedestrians
94 KSI casualties
↑ 30.6 per cent
from 72 in 2015



	BSL	2010	2011	2012	2013	2014	2015	2016
KSI rate (Cas./HMVM)[11]	-	-	-	-	-	-	-	-

Motorcycle users
372 KSI casualties
↑ 17.0 per cent
from 318 in 2015



	BSL	2010	2011	2012	2013	2014	2015	2016
KSI rate (Cas./HMVM)	87.71	74.26	81.95	80.96	85.51	92.04	83.30	97.92

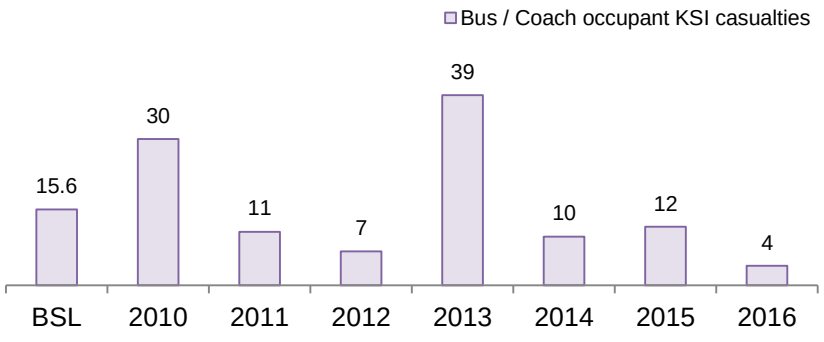
Figure 3-14 Vulnerable user KSI casualties and rates

[10] It is know that pedal cyclist traffic data is difficult to estimate on the SRN and therefore it is unlikely that the rates shown are those actually experienced.
[11] Currently no traffic statistics for pedestrians on the SRN.

Bus/ Coach occupants

4 KSI casualties

66.7 per cent from 12 in 2015

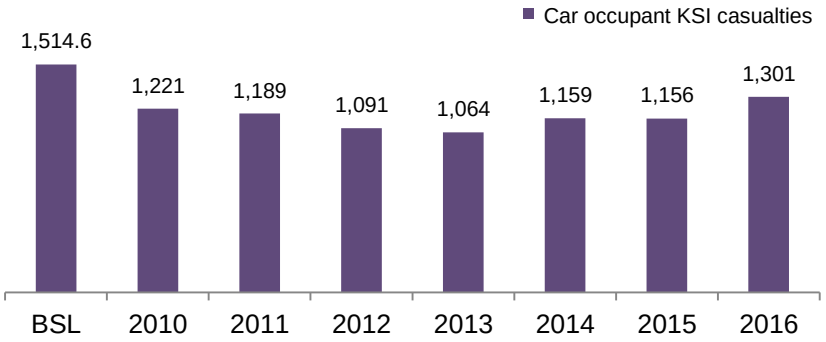


KSI rate (Cas./HMVM)	BSL	2010	2011	2012	2013	2014	2015	2016
	4.22	8.60	3.27	2.21	12.31	3.20	3.98	1.37

Car occupants

1,301 KSI casualties

12.5 per cent from 1,156 in 2015

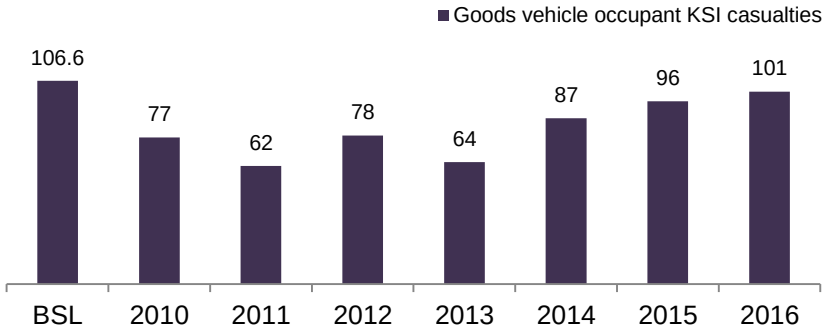


KSI rate (Cas./HMVM)	BSL	2010	2011	2012	2013	2014	2015	2016
	2.41	1.94	1.86	1.70	1.65	1.77	1.74	1.91

Goods vehicle occupants

101 KSI casualties

5.2 per cent from 96 in 2015

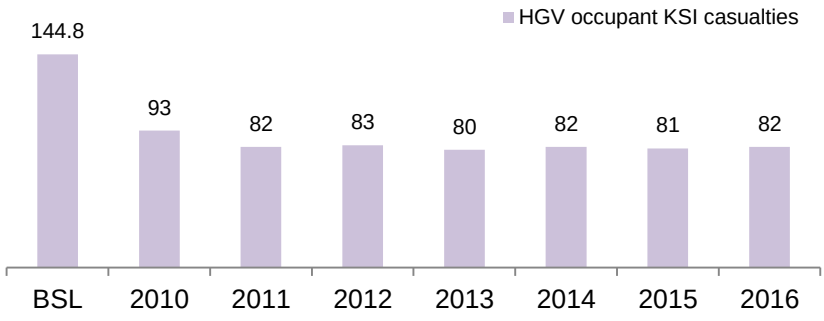


KSI rate (Cas./HMVM)	BSL	2010	2011	2012	2013	2014	2015	2016
	1.03	0.73	0.57	0.70	0.55	0.71	0.74	0.74

HGV occupants

82 KSI casualties

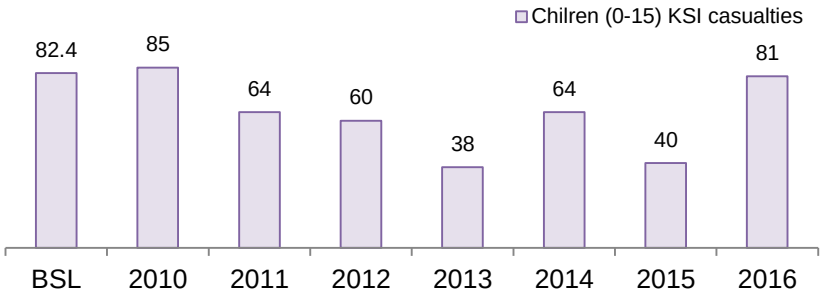
1.2 per cent from 81 in 2015



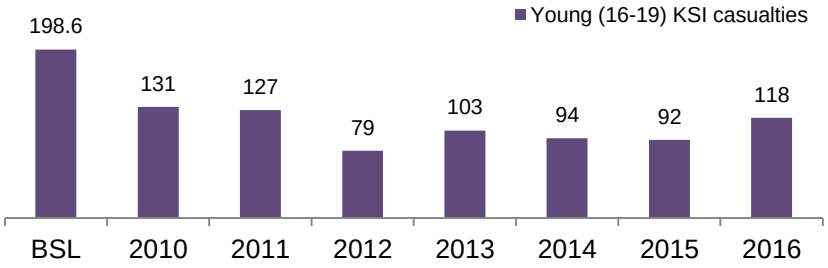
KSI rate (Cas./HMVM)	BSL	2010	2011	2012	2013	2014	2015	2016
	1.53	1.02	0.92	0.95	0.91	0.89	0.84	0.84

Figure 3-15 Non-vulnerable user KSI casualties

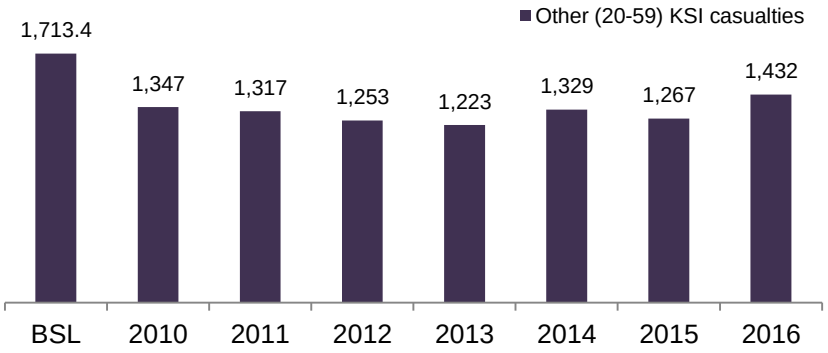
Children (0-15)
81 KSI casualties
↑ 102.5 per cent
from 40 in 2015



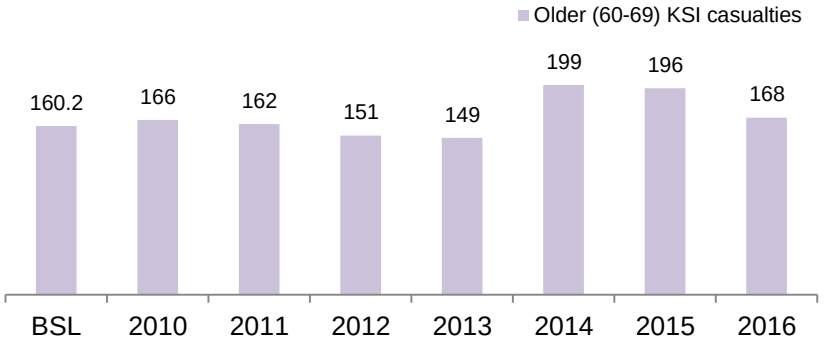
Young (16-19)
118 KSI casualties
↑ 28.3 per cent
from 92 in 2015



Other (20-59)
1,432 KSI casualties
↑ 13.0 per cent
from 1,267 in 2015



Older (60-69)
168 KSI casualties
↓ 14.3 per cent
from 196 in 2015



Elderly (70+)
193 KSI casualties
↑ 10.9 per cent
from 174 in 2015

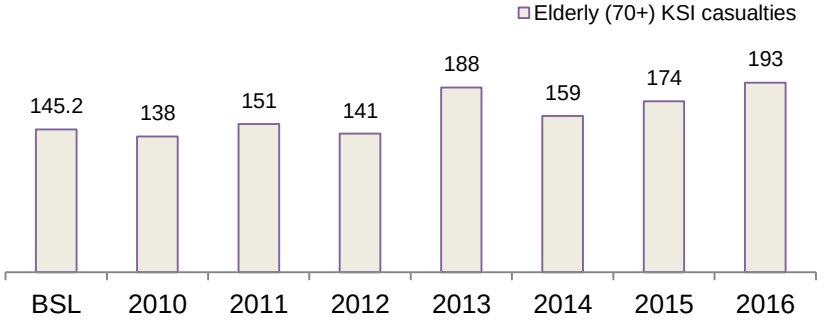


Figure 3-16 KSI casualties by age group

Figure 3-16 shows that Young (16-19) KSI casualties have decreased significantly compared to the 2005-09 baseline average, with a 40.6 per cent decrease. In contrast, the Older (60-69) and Elderly (70+) groups showed an increase in KSI casualties compared to the baseline, with the largest increase observed in Elderly (70+); a 32.9 per cent increase. However, in 2016, Older (60-69) KSI casualties decreased for the second consecutive year; whilst Elderly (70+) increased for the second consecutive year.

Analysing changes in casualty type (linked to age), as provided in Appendix Table I-24, shows that in 2016 all major categories, other than Elderly Motorist (70+) and Older Rider (60-69), showed a decrease in KSI casualties compared to the 2005-09 baseline average. Elderly Motorist (70+) and Older Rider (60-69) KSI casualties have increased by 29.3 and 34.0 per cent, respectively, against the baseline. Additionally the number of Elderly Motorist (70+) KSI casualties in 2016 is the greatest since at least 2010.

3.3.3. Casualties where human factors contributed

Human factors remain the largest single cause of killed or seriously injured casualties on the SRN. In 2016, there were 1,511 KSI casualties resulting from at least one human factor representing 75.4 per cent of total KSI casualties.

Figure 3-17 is an assessment of the contributing human factors which result in KSI casualties on the SRN. These human factors broadly fall into four categories of contributory factors:

- Driver/rider error or reaction
- Impairment or distraction
- Injudicious action
- Behaviour or inexperience

The contributory factors within these groupings are provided in the table below[12]

Driver/Rider error or reaction	
Junction overshoot	Failed to judge other person's path or speed
Junction restart (moving off at junction)	Too close to cyclist, horse rider or pedestrian
Poor turn or manoeuvre	Sudden braking
Failed to signal or misleading signal	Swerved
Failed to look properly	Loss of control
Impairment or distraction	
Impaired by alcohol	Not displaying lights at night or in poor visibility
Impaired by drugs (illicit or medicinal)	Rider wearing dark clothing
Fatigue	Driver using mobile phone
Uncorrected, defective eyesight	Distraction in vehicle
Illness or disability, mental or physical	Distraction outside vehicle
Injudicious action	
Disobeyed automatic traffic signal	Exceeding speed limit
Disobeyed 'Give Way' or 'Stop' sign or markings	Travelling too fast for conditions
Disobeyed double white lines	Following too close
Disobeyed pedestrian crossing facility	Vehicle travelling along pavement
Illegal turn or direction of travel	Cyclist entering road from pavement
Behaviour or inexperience	
Aggressive driving	Learner or inexperienced driver/rider
Careless, reckless or in a hurry	Inexperience of driving on the left
Nervous, uncertain or panic	Unfamiliar with model of vehicle
Driving too slow for conditions or slow veh (e.g. tractor)	

[12] Full listing of contributory factors of all groupings is provided in Appendix Table F-1.

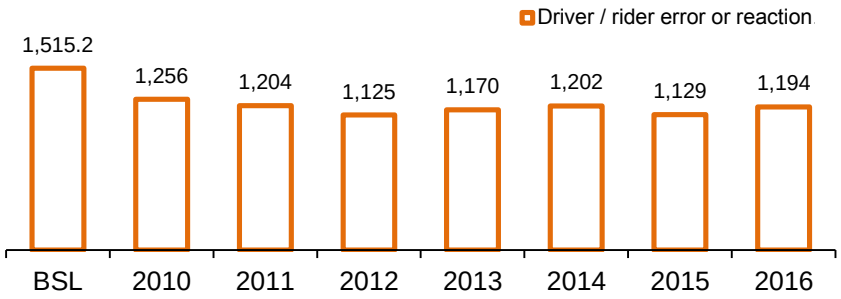
1,511 KSI casualties where human factors were attributed

75.4 per cent of the 2,005 KSI casualties in 2016

Driver/Rider error or reaction

1,194 KSI casualties

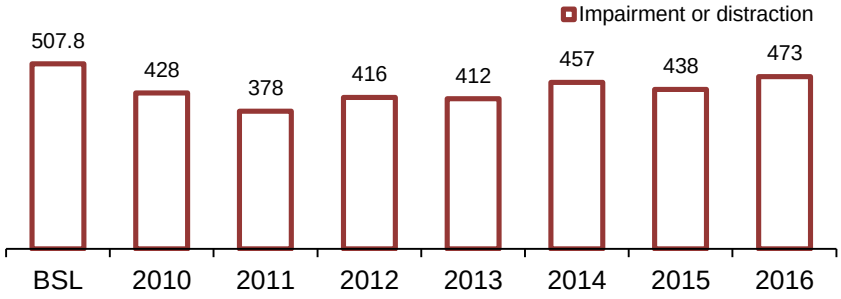
5.8 per cent from 1,129 in 2015



Impairment or distraction

473 KSI casualties

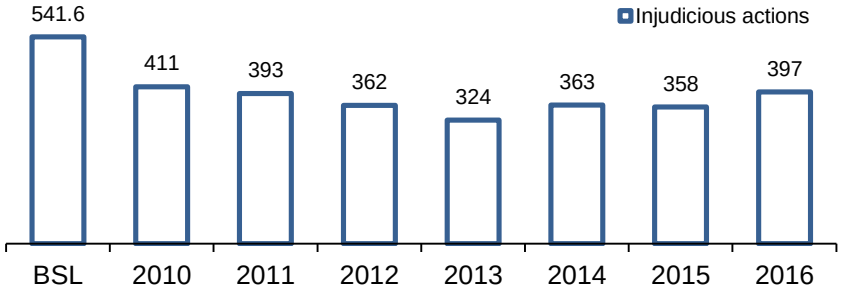
8.0 per cent from 438 in 2015



Injudicious actions

397 KSI casualties

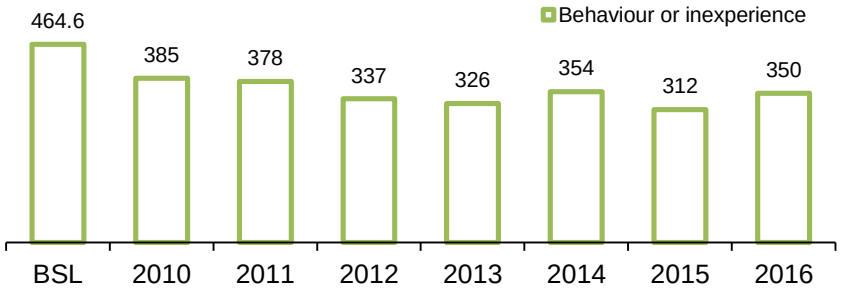
10.9 per cent from 358 in 2015



Behaviour or inexperience

350 KSI casualties

12.2 per cent from 312 in 2015



Note:
(a) Figures show the number of KSI casualties with at least one contributory factor from the relevant group. The listing of each group is provided in previous page.

Figure 3-17 KSI casualties involving human contributory factors by group and year

In 2016, Figure 3-17 shows that KSI casualties where at least one of the aforementioned human factors were attributed have increased, with behaviour or inexperience factor showing the greatest increase by 12.2 per cent from 2015.

Investigating the impairment or distraction human factor category further, Figure 3-18 shows the number of KSI casualties involving at least one driver using a mobile phone. From the figure it can be seen that the number of KSI casualties has increased by 35.0 per cent, from 20 in 2015, to 27 in 2016.

Driver using mobile phone
27 KSI casualties
35.0 per cent from 20 in 2015

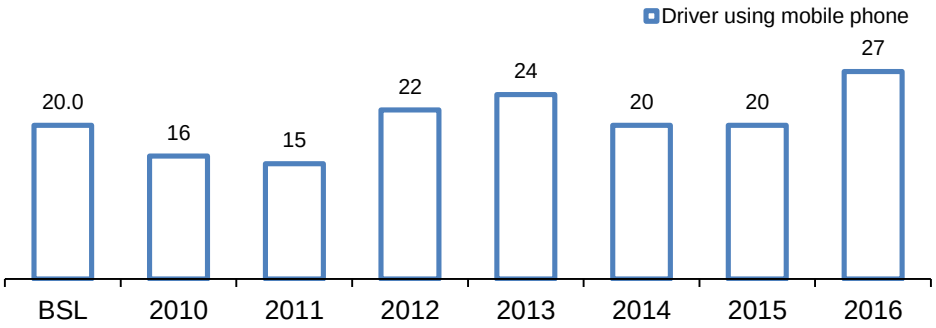


Figure 3-18 KSI casualties associated with mobile phones by year

Table 3-2 highlights the top 20 human contributory factors by severity for 2016 (ranked by KSI casualties). The top three contributory factors attributed to KSI casualties were all driver/rider error or reaction. This category features heavily in all collisions as stated previously.

From the table, it is evident that the impairment or distraction human factor category also remains a major issue. Individual factors such as fatigue, impaired by alcohol, illness or disability, mental or physical and distraction in vehicle contributed to 144, 132, 115 and 91 KSI casualties respectively, in 2016.

Table 3-2 Top 20 human contributory factors attributed to casualties by severity, 2016

Rank	Contributory Factor		KSI	Killed	Seriously Injured	Slightly Injured	Total
1	405	Failed to look properly	555	49	506	4,494	5,049
2	406	Failed to judge other person's path or speed	390	28	362	4,037	4,427
3	410	Loss of control	368	60	308	1,481	1,849
4	602	Careless, reckless or in a hurry	226	24	202	1,348	1,574
5	403	Poor turn or manoeuvre	213	27	186	1,240	1,453
6	503	Fatigue	144	21	123	499	643
7	307	Travelling too fast for conditions	135	12	123	866	1,001
8	501	Impaired by alcohol	132	14	118	393	525
9	409	Swerved	130	16	114	607	737
10	408	Sudden braking	119	6	113	1,579	1,698
11	306	Exceeding speed limit	116	22	94	325	441
12	505	Illness or disability, mental or physical	115	28	87	274	389
13	308	Following too close	112	4	108	1,784	1,896
14	509	Distraction in vehicle	91	16	75	558	649
15	605	Learner or inexperienced driver/rider	65	4	61	280	345
16	601	Aggressive driving	54	10	44	277	331
17	502	Impaired by drugs (illicit or medicinal)	47	10	37	97	144
18	510	Distraction outside vehicle	33	2	31	192	225
19	508	Driver using mobile phone	27	12	15	61	88
20	404	Failed to signal or misleading signal	25	1	24	121	146

Key (CF groups):

Driver/Rider error or reaction | Impairment or distraction | Injudicious action | Behaviour or inexperience

Notes:
(a) Table reports number of casualties.
(b) Table ranked by KSI casualties.
(c) As more than one contributory factor can be recorded per collision; columns will not sum to their respective totals.

Table 3-3 is an adaptation of the 'Fatal Four' driving offences:

- Speeding (CFs 306 and 307)
- Improper use of restraints (Casualty code "Seat belt in use – not used")
- Distraction (including use of mobile phone) (CFs 508, 509 and 510)
- Impaired by drink and drugs (CFs 501 and 502)

It can be seen from Table 3-3 that the number of fatalities and seriously injured casualties associated with distraction decreased in 2016 with KSI casualties decreasing by 8.4 per cent from 2015. The Table 3-3 also shows that fatalities across three categories decreased to that in 2015.

Due to the recording of the use of seatbelts not being mandatory this category potentially shows the minimum number of casualties by severity. In terms of casualties, Table 3-3 shows that in 2016 a minimum of 122 casualties were linked to improper use of or no restraints.

Table 3-3 Casualties involving speeding, restraints, distractions and drink/drugs, 2016

Category/ Severity	Speeding	Restraints[(a)]	Distractions	Drink/Drugs
Fatalities	**31** ↓ 11.4%	**17** -	**22** ↓ 15.4%	**21** ↓ 4.5%
Seriously injured	**206** ↑ 17.0%	**40** ↑ 11.1%	**109** ↓ 6.8%	**134** ↑ 36.7%
KSI	**237** ↑ 12.3%	**57** ↑ 16.3%	**131** ↓ 8.4%	**155** ↑ 29.2%
Slightly injured	**1,115** ↓ 22.3%	**65** ↓ 41.4%	**757** ↓ 9.7%	**466** ↑ 14.2%
Total	**1,352** ↓ 17.9%	**122** ↓ 23.8%	**888** ↓ 9.5%	**621** ↑ 17.6%

Notes:
(a) The recording of seatbelts is only required in STATS19 for fatalities who are occupants of vehicles in which the wearing of a seatbelt is mandatory. However police forces can choose to collect this data for all casualty severities and hence any large variation in 'Restraints' is likely to come from the increase or decrease of the recording by police forces.
(b) Percentages represent the per cent change of 2016 values from 2015 values; percentages are only shown where the base is 15 or more.

3.4. Contributory Factors

Table 3-4 illustrates the top 10 contributory factors related to people, vehicles[13] and roads. It is clear that contributory factors relating to people were attributed to the most casualties in 2016, compared to vehicles and roads. Vehicle related contributory factors were attributed to the fewest casualties. Failed to look properly was attributed to the majority of casualties (5,049); 31.1 per cent of all casualties in 2016. Slippery road (due to weather) was the most common road contributory factor, being attributed to 6.7 per cent (1,085) of casualties in 2016. The most common vehicle contributory factor was vehicle blind spot, which was attributed to 1.6 per cent (266) of casualties in 2016.

Table 3-4 Top 10 contributory factors attributed to casualties, 2016

	Rank	Contributory Factor		2016	Percentage of casualties, 2016
People	1	405	Failed to look properly	5,049	31.1%
	2	406	Failed to judge other person's path or speed	4,427	27.3%
	3	308	Following too close	1,896	11.7%
	4	410	Loss of control	1,849	11.4%
	5	408	Sudden braking	1,698	10.5%
	6	602	Careless, reckless or in a hurry	1,574	9.7%
	7	403	Poor turn or manoeuvre	1,453	9.0%
	8	307	Travelling too fast for conditions	1,001	6.2%
	9	409	Swerved	737	4.5%
	10	509	Distraction in vehicle	649	4.0%
Vehicles	1	710	Vehicle blind spot	266	1.6%
	2	201	Tyres illegal, defective or under inflated	182	1.1%
	3	203	Defective brakes	80	0.5%
	4	206	Overloaded or poorly loaded vehicle or trailer	46	0.3%
	5	204	Defective steering or suspension	40	0.2%
	6	709	Visor or windscreen dirty, scratched or frosted etc.	14	0.1%
	7	202	Defective lights or indicators	13	0.1%
	8	705	Dazzling headlights	9	0.1%
	9	205	Defective or missing mirrors	4	-
Roads	1	103	Slippery road (due to weather)	1,085	6.7%
	2	707	Rain, sleet, snow, or fog	295	1.8%
	3	706	Dazzling sun	225	1.4%
	4	109	Animal or object in carriageway	163	1.0%
	5	108	Road layout (eg. bend, hill, narrow carriageway)	112	0.7%
	6	701	Stationary or parked vehicle(s)	99	0.6%
	7	708	Spray from other vehicles	92	0.6%
	8	102	Deposit on road (eg. oil, mud, chippings)	90	0.6%
	9	107	Temporary road layout (eg. contraflow)	75	0.5%
	10	703	Road layout (eg. bend, winding road, hill crest)	53	0.3%

Key (CF groups):

- Driver/Rider error or reaction
- Impairment or distraction
- Injudicious action
- Vision affected by
- Road environment
- Vehicle defect
- Behaviour or inexperience

Notes:
(a) In 2016, there were a total of 16,233 casualties.
(b) There are only nine contributory factors associated with vehicles.

[13] Only nine contributory factors have been associated with vehicles.

3.4.1. Top 10 contributory factors by road classification

Table 3-5 illustrates top 10 contributory factors attributed to casualties by road classification. For more details see Appendix Table F-6, Table F-7, Table F-10 and Table F-11. Note that further analysis and discussion regarding the per cent of collisions attended by police is illustrated in Section 4.4.1. As expected “Failed to look properly” is shown as the highest factor attributed to casualties across all road classes in 2016. Four out of five contributory factors for the motorway and total A-road classes are related to “Driver/Rider error or reaction”.

Table 3-5 Top 10 contributory factors attributed to casualties by road classification, 2016

	Rank	Contributory Factor		2016
Motorway (82% of collisions attended by police)	1	405	Failed to look properly	2,375
	2	406	Failed to judge other person's path or speed	2,246
	3	308	Following too close	1,086
	4	410	Loss of control	937
	5	408	Sudden braking	929
	6	403	Poor turn or manoeuvre	629
	7	602	Careless, reckless or in a hurry	623
	8	307	Travelling too fast for conditions	518
	9	103	Slippery road (due to weather)	510
	10	409	Swerved	404
A-road (79% of collisions attended by police)	1	405	Failed to look properly	2,674
	2	406	Failed to judge other person's path or speed	2,181
	3	602	Careless, reckless or in a hurry	951
	4	410	Loss of control	912
	5	403	Poor turn or manoeuvre	824
	6	308	Following too close	810
	7	408	Sudden braking	769
	8	103	Slippery road (due to weather)	575
	9	307	Travelling too fast for conditions	483
	10	409	Swerved	333
A-road dual carriageway (78% of collisions attended by police)	1	405	Failed to look properly	1,923
	2	406	Failed to judge other person's path or speed	1,619
	3	410	Loss of control	680
	4	602	Careless, reckless or in a hurry	630
	5	408	Sudden braking	594
	6	308	Following too close	574
	7	403	Poor turn or manoeuvre	543
	8	103	Slippery road (due to weather)	412
	9	307	Travelling too fast for conditions	350
	10	409	Swerved	225
A-road single carriageway (84% of collisions attended by police)	1	405	Failed to look properly	751
	2	406	Failed to judge other person's path or speed	562
	3	602	Careless, reckless or in a hurry	321
	4	403	Poor turn or manoeuvre	281
	5	308	Following too close	236
	6	410	Loss of control	232
	7	408	Sudden braking	175
	8	103	Slippery road (due to weather)	163
	9	307	Travelling too fast for conditions	133
	10	503	Fatigue	123

Key (CF groups):

Driver/Rider error or reaction | Impairment or distraction | Injudicious action
Road environment | Behaviour or inexperience

Note:
(a) Further analysis and discussion regarding the per cent of collisions attended by police is illustrated in Section 4.4.1.

4. Collisions

4.1. Roads

This section provides an overview of personal injury collisions (PICs - but for the purpose of this document and the accompanying Appendices generally termed as 'collision') linked to road classification by severity, year (including BSL) and rates (i.e. number of collisions per HMVM). The rates discussed in this section provide an indication of the likelihood of getting involved in a collision.

Figure 4-1 to Figure 4-5 illustrate the collision distribution on motorway, A-road dual carriageway and A-road single carriageway in terms of the number and rate. Comparison of data for the road classifications shows that for 2016:

- The most fatal collisions (91 out of 213) occurred on A-road dual carriageways.
- The largest proportion of fatal and serious collisions (41.2 per cent) occurred on A-road dual carriageways.
- The largest proportion of total collisions (46.6 per cent) occurred on motorways.
- The likelihood of being involved in a collision on motorways was the lowest of all three road classifications across all severities of collision. Therefore, the data in Figure 4-1 is normalised to illustrate the ratio (based on collision rate) between the likelihood of a collision occurring on a motorway, dual carriageway or single carriageway relative to the motorway.
- The likelihood of being involved in a collision on A-road single carriageways was the highest of all three road classifications across all severities of collision, followed by A-road dual carriageways.

4.1.1. Collisions and likelihood of injury by road classification and severity

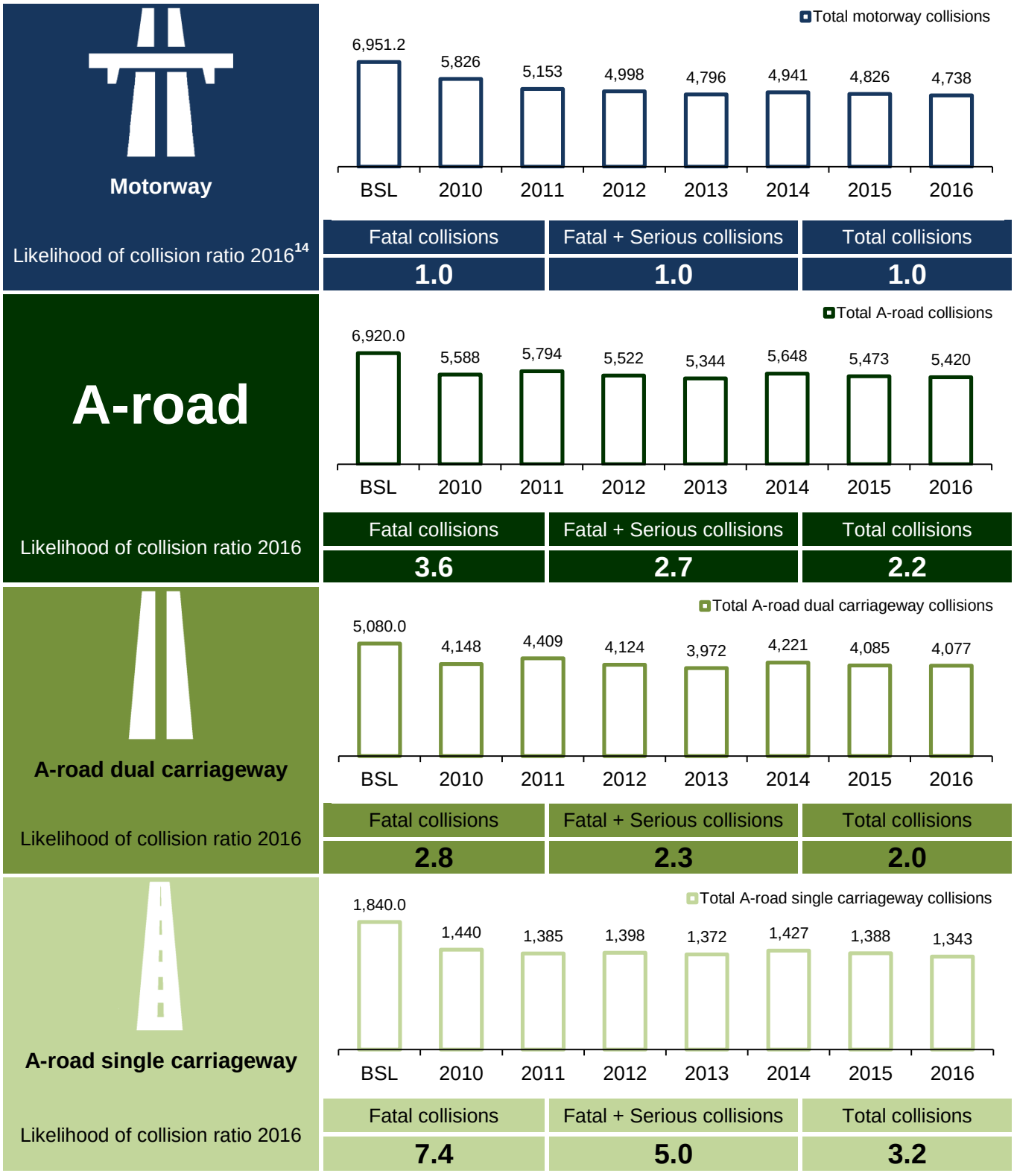


Figure 4-1 Collisions by road classification and likelihood of collision by road classification and severity

[14]'Likelihood of collision ratio' is the ratio between collision rates; normalised to motorway data.

4.1.2. Motorway collisions and rates by severity

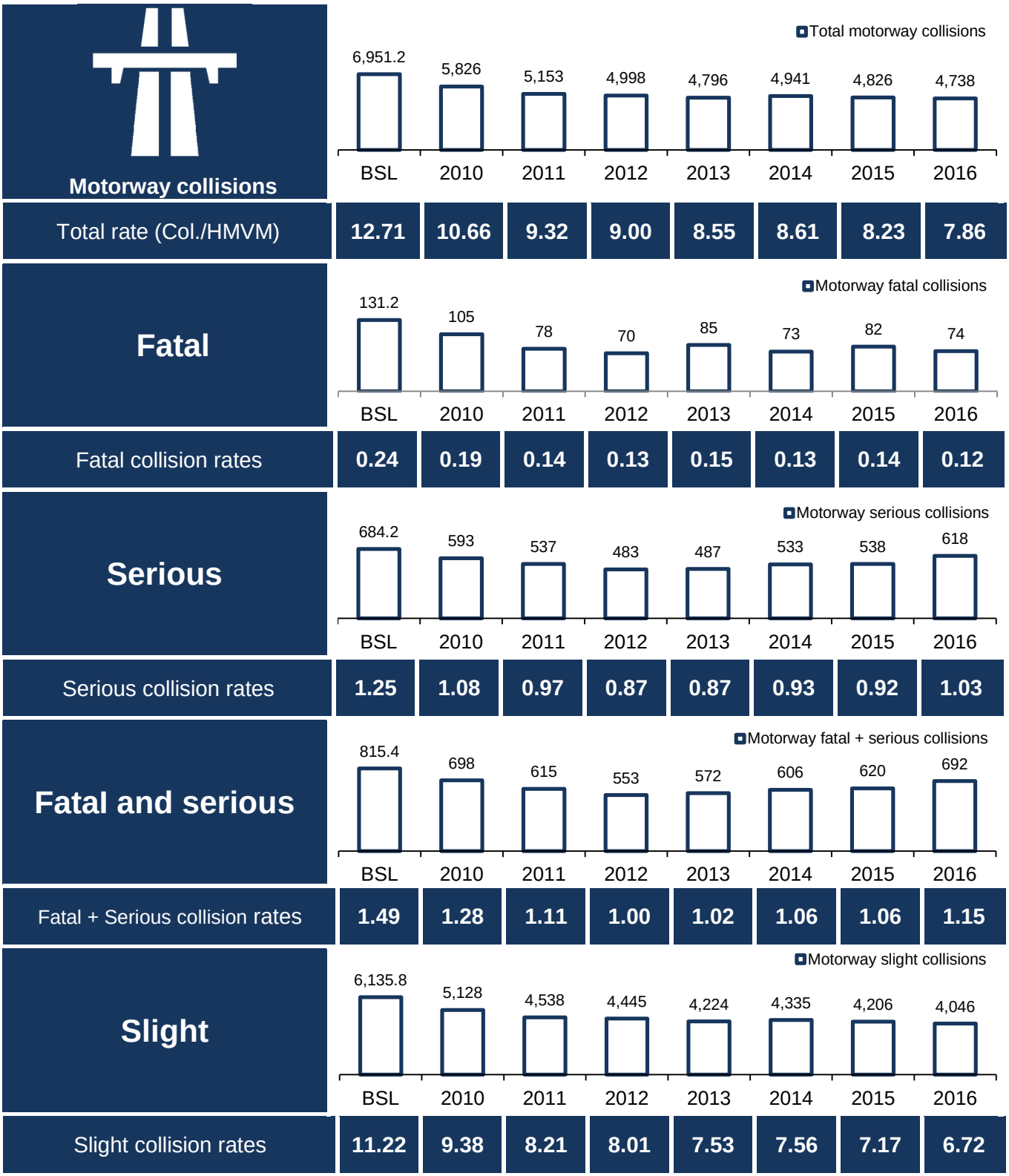


Figure 4-2 Motorway collisions and rates by severity

4.1.3. A-road collisions and rates by severity

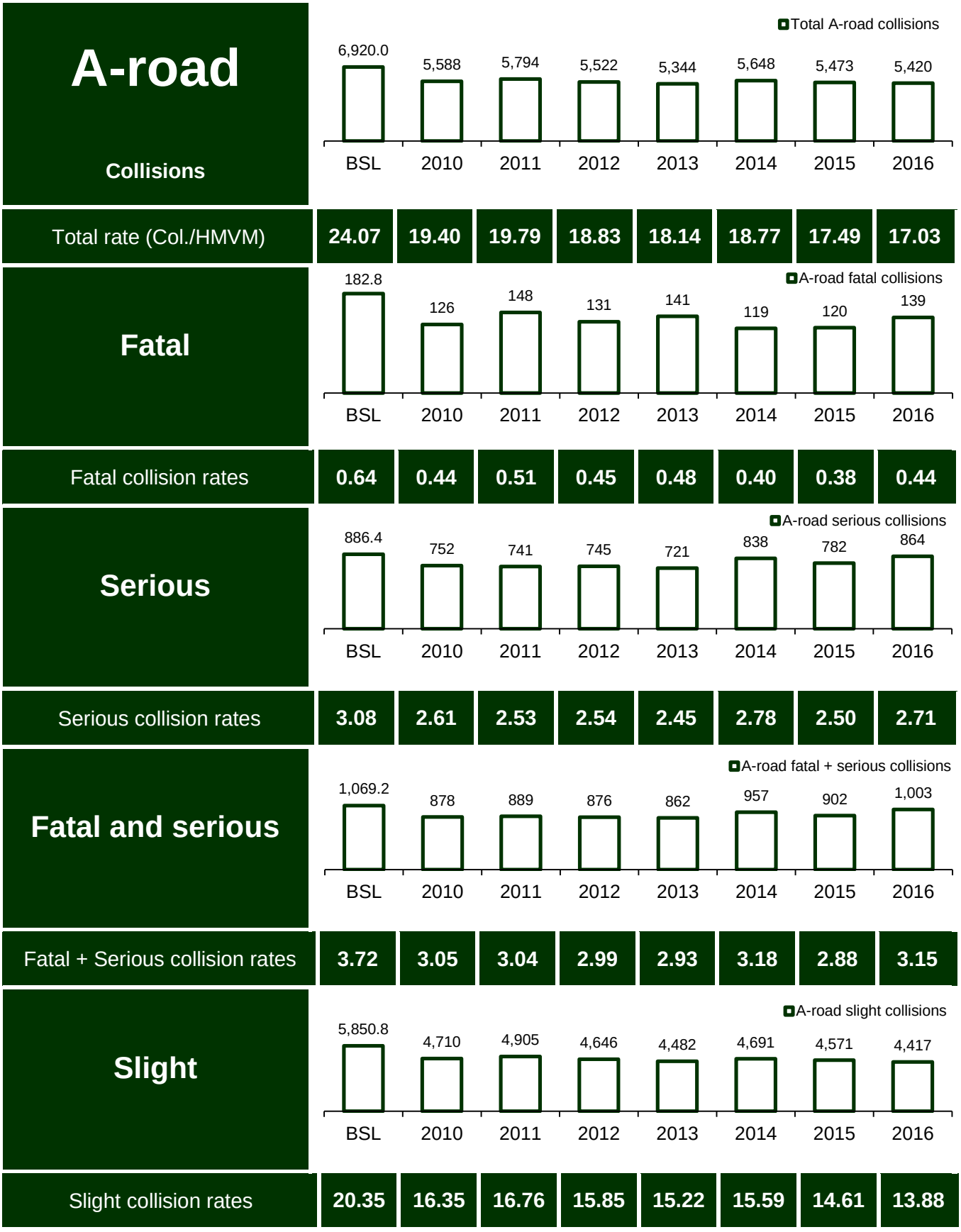


Figure 4-3 A-road collisions and rates by severity

4.1.4. A-road dual carriageway collisions and rates by severity

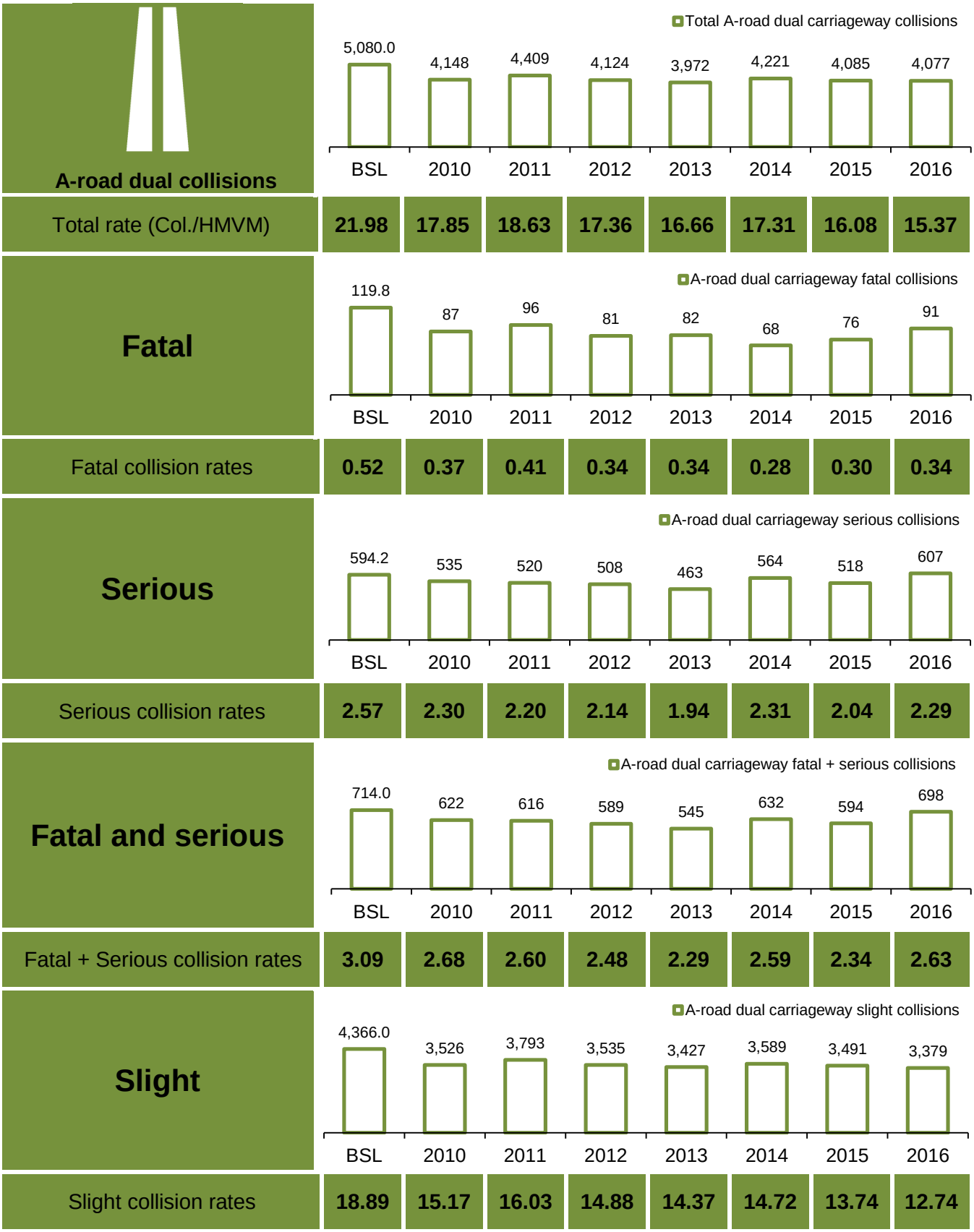
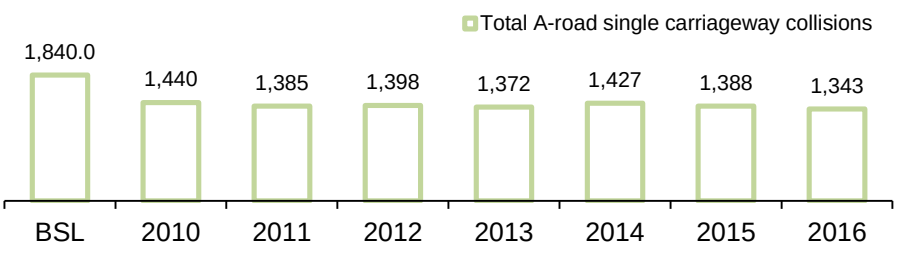


Figure 4-4 A-road dual carriageway collisions and rates by severity

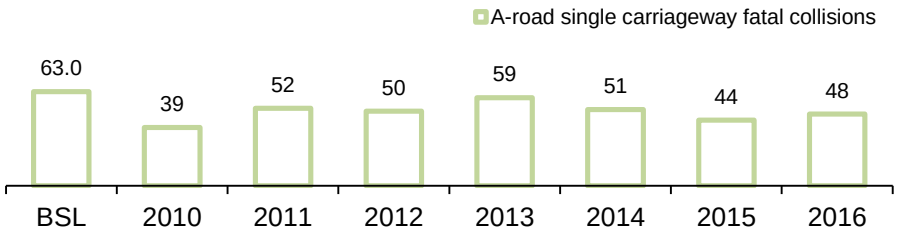
4.1.5. A-road single carriageway collisions and rates by severity

A-road single collisions



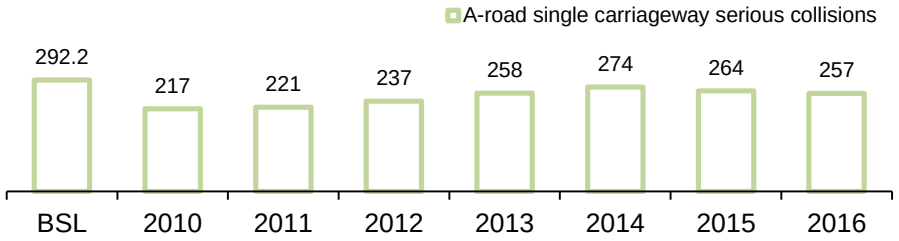
	BSL	2010	2011	2012	2013	2014	2015	2016
Total rate (Col./HMVM)	**32.67**	**25.84**	**24.71**	**25.11**	**24.44**	**24.99**	**23.56**	**25.29**

Fatal



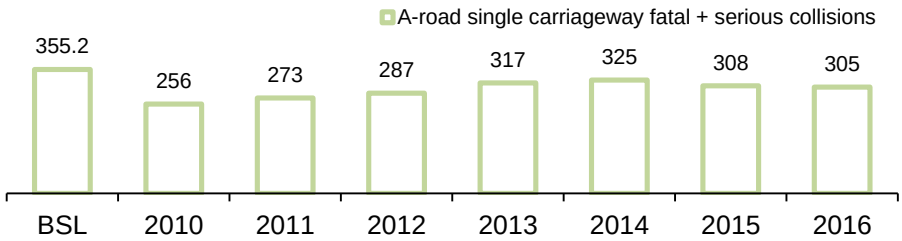
	BSL	2010	2011	2012	2013	2014	2015	2016
Fatal collision rates	**1.12**	**0.70**	**0.93**	**0.90**	**1.05**	**0.89**	**0.75**	**0.90**

Serious



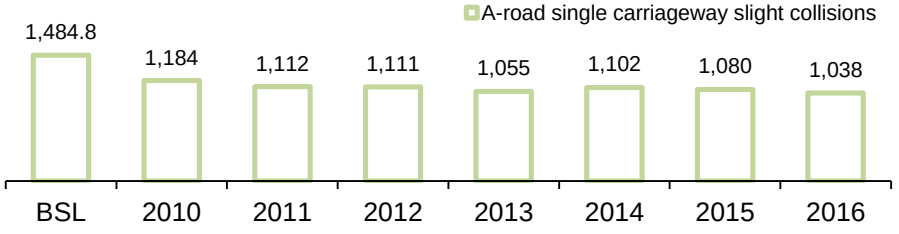
	BSL	2010	2011	2012	2013	2014	2015	2016
Serious collision rates	**5.19**	**3.89**	**3.94**	**4.26**	**4.60**	**4.80**	**4.48**	**4.84**

Fatal and serious



	BSL	2010	2011	2012	2013	2014	2015	2016
Fatal + Serious collision rates	**6.31**	**4.59**	**4.87**	**5.15**	**5.65**	**5.69**	**5.23**	**5.74**

Slight



	BSL	2010	2011	2012	2013	2014	2015	2016
Slight collision rates	**26.36**	**21.25**	**19.84**	**19.95**	**18.80**	**19.30**	**18.33**	**19.54**

Figure 4-5 A-road single carriageway collisions and rates by severity

4.1.6. Collisions involving road environment

This section evaluates the number of collisions where the road environment is categorised as a contributory factor. Assessment of these factors gives an indication of how the SRN could be enhanced to mitigate further collisions where the road is a contributing factor.

In 2016, the number of fatal and serious collisions involving road environment factors was 166 and was equivalent to 9.8 per cent of the respective total fatal and serious collisions of 1,695. This is a 17.7 per cent increase on the previous year, which was 141 and was equivalent to 9.3 per cent in 2015.

Figure 4-6 outlines the number of fatal and serious collisions associated with at least one road environment factor between 2010 and 2016. The diagram depicting the split by road classification shows the trend in fatal and serious collisions from 2005 to 2016, linked to road environment factors, fluctuates somewhat across all road classifications especially the motorways. The fluctuation is lower than observed for casualties.

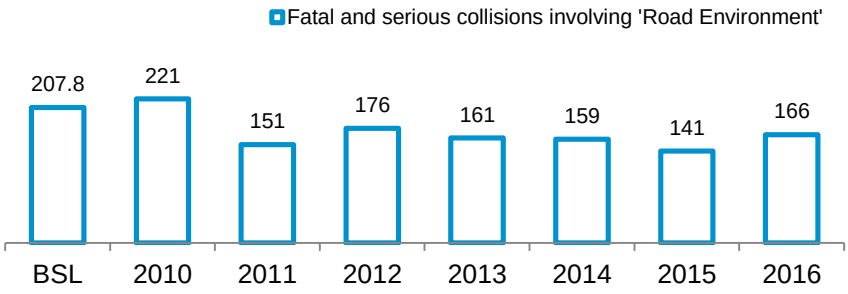
The primary contributory factor for road environment was “Slippery road (due to weather)" which contributed to 115 fatal and serious collisions in 2016, and it is a 27.8 per cent increase from 2015.

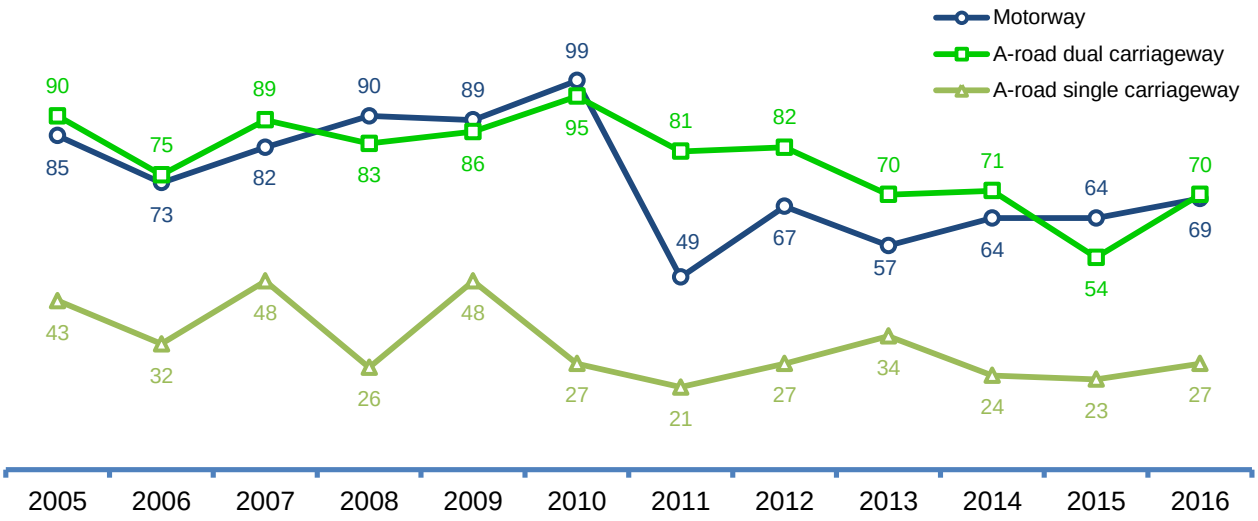
An analysis of the number of collisions involving a poor or defective road surface on the SRN is also provided in Figure 4-6. This provides context on the potential collisions from defects in surfacing. From 2008 to 2011, England experienced harsh winters, with December 2010 being one of the coldest on record[15]. As a result, the occurrence of surface defects during and after this period became a significant concern for all stakeholders.

The graph in Figure 4-6 depicting the trend of collisions involving poor or defective road surfacing shows that the number of collisions peaked in 2012; a 20.0 per cent increase from 35 in 2011 to 42 in 2012, followed by a 28.6 per cent decrease in 2013. This decrease in related collisions continued through to 2016 to yield the lowest number (20) since 2010 (48.5 per cent decrease from the baseline).

[15] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/4002/potholes-review-progress-report.pdf

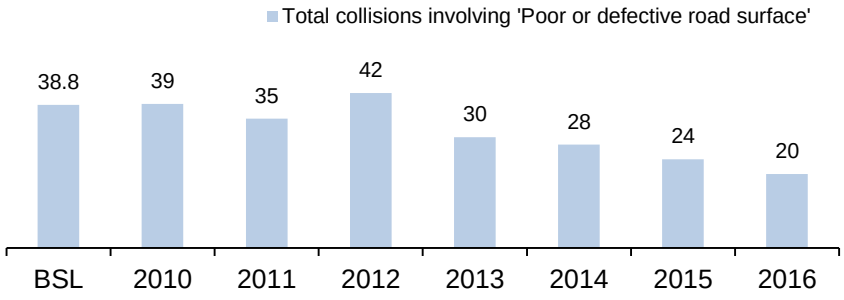
Road environment contributed to 166 fatal and serious collisions in 2016
17.7% on 2015





42.2% of fatal and serious collisions where the road environment contributed occurred on A-road dual carriageways

'Poor or defective road surface' contributed to 20 collisions in 2016
16.7% on 2015



Slippery road contributed to 115 fatal and serious collisions in 2016
27.8% on 2015

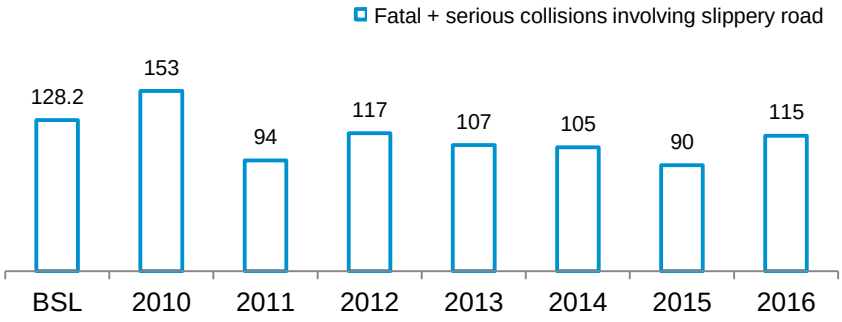


Figure 4-6 Summary of collisions where road environment contributed

4.2. Vehicles

This section briefly assesses the potential impact vehicles had towards collisions that occurred on the SRN. It focuses on providing an overview of collisions based on gender and vehicle type, first point of vehicle impact and where vehicle defects contributed to the collision.

4.2.1. Collisions by gender of driver

Table 4-1 illustrates male and female drivers involved in collisions by vehicle type. Female drivers involved in collisions decreased compared to 2015 for car, motorcycle and HGV categories. For goods vehicle (equal to or under 3.5 tonnes) female drivers showed an increase of 15.4 per cent from 2015. Male drivers involved in collisions for most of the vehicle types increased compared to 2015 with a decrease for HGV and pedal cycle categories. The number of male car drivers involved in collisions is almost double the female car drivers; whereas, male drivers for other types of vehicles accounts for over 90 to 98 per cent.

Table 4-1 Drivers involved in collisions by gender and vehicle type, 2016

Gender	Car	Motorcycle	Goods vehicle	HGV (over 3.5 tonnes)	Pedal cycle	Bus	Other[16]
Female	**5,717**	**52**	**75**	**27**	**14**	**3**	**8**
	↓3.2%	↓7.1%	↑15.4%	↓6.9%	-	-	-
Male	**10,825**	**802**	**1,719**	**1,872**	**135**	**73**	**162**
	↑0.3%	↑2.0%	↑2.2%	↓11.5%	↓2.9%	↑2.8%	↑90.6%

Notes:
(a) Goods vehicles equal to or under 3.5 tonnes.
(b) There were 915 vehicle records with unknown driver gender.

[16] Other includes where the vehicle has been recorded as others/unknown, ridden horse, or agricultural vehicle.

4.2.2. First point of impact

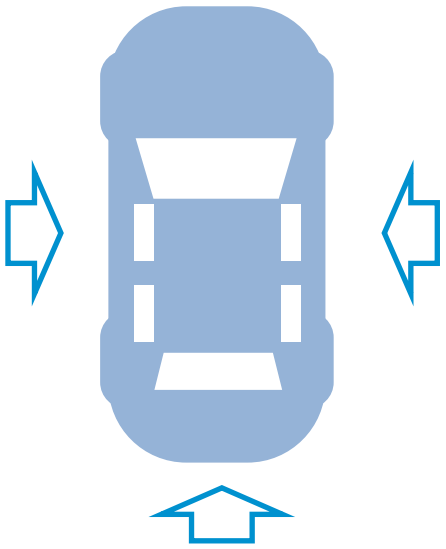
Figure 4-7 provides a breakdown of the number of vehicles involved in fatal and serious collisions by first point of vehicle impact. Note: The analysis excludes pedestrians.

Vehicles with a first point of impact as front, involved in fatal and serious collisions, made up 46.0 per cent of all vehicles involved in such collisions in 2016. The corresponding fatal and serious collision severity ratio (this is the percentage of vehicles involved in fatal and serious collisions to those in total collisions for each individual category) was 17.2 per cent. It can also be seen that, although in the similar ball-park, the offside impacts were slightly higher than the nearside impacts in terms of the vehicles involved in fatal and serious collisions and severity ratios.

First point of impact:

1,618 vehicles involved in fatal and serious collisions
17.2% of the 9,397 front collisions

348 vehicles involved in fatal and serious collisions
16.4% of the 2,124 nearside collisions



471 vehicles involved in fatal and serious collisions
18.4% of the 2,564 offside collisions

890 vehicles involved in fatal and serious collisions
12.2% of the 7,278 back collisions

193 vehicles involved in fatal or serious collisions had no recorded first point of impact (200 in 2015)

Note: Pedestrians excluded from analysis

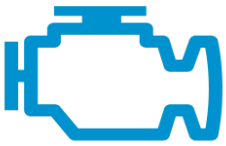
Figure 4-7 Vehicles by first point of impact

4.2.3. Collisions involving vehicle defects

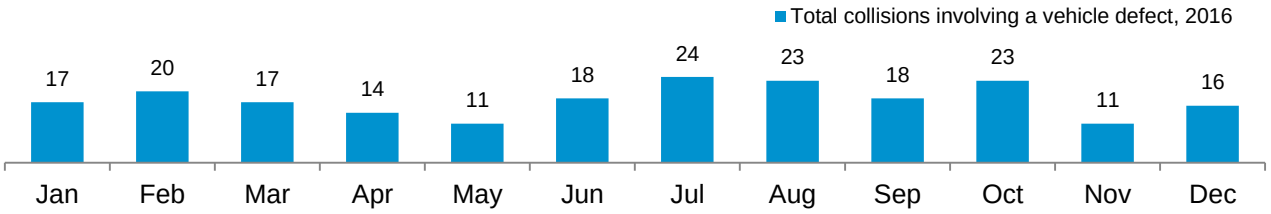
This section evaluates the number of collisions where at least one vehicle within a collision had a defect which was a contributory factor. As shown previously in Figure 2-3, it is apparent that the economic situation is recovering and hence this section also assesses the corresponding historic trends in vehicle defects.

Figure 4-8 provides a summary of collisions involving vehicle defects, including specific factors and their overall impact on fatal and serious collisions 2016. The trend over time of total collisions and to some extent the fatal and serious collisions indicate that collisions involving defective vehicles are on the decline. Total collisions have decreased by 52.4 per cent to 212 in 2016 compared to the baseline of 445.2. In comparison, overall collisions on the SRN decreased by only 26.8 per cent from the baseline value of 13,871.2 to 10,158 in 2016.

When considering the specific factors classed as vehicle defects, the most common for 2016 is tyres illegal, defective or under inflated, this contributed to 27 (54.0 per cent) of fatal and serious collisions involving a vehicle defect.



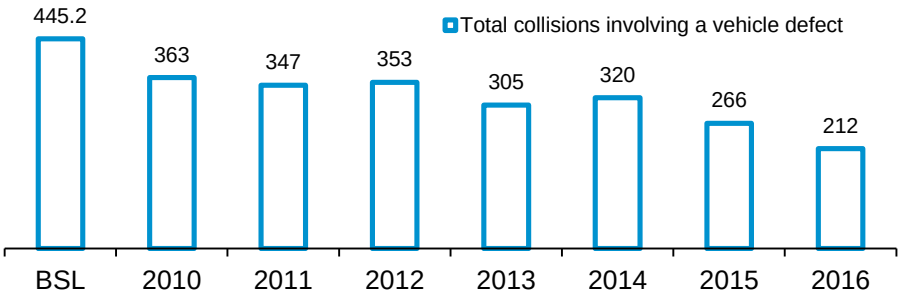
vehicle defect attributed to 212 collisions in 2016



vehicle defect attributed to 24 collisions in July 2016

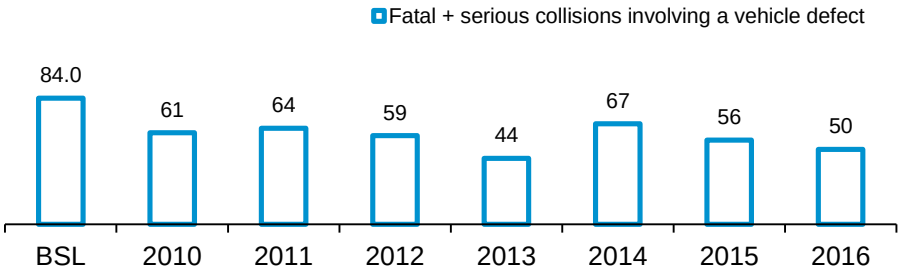
Total collisions

20.3% from 2015

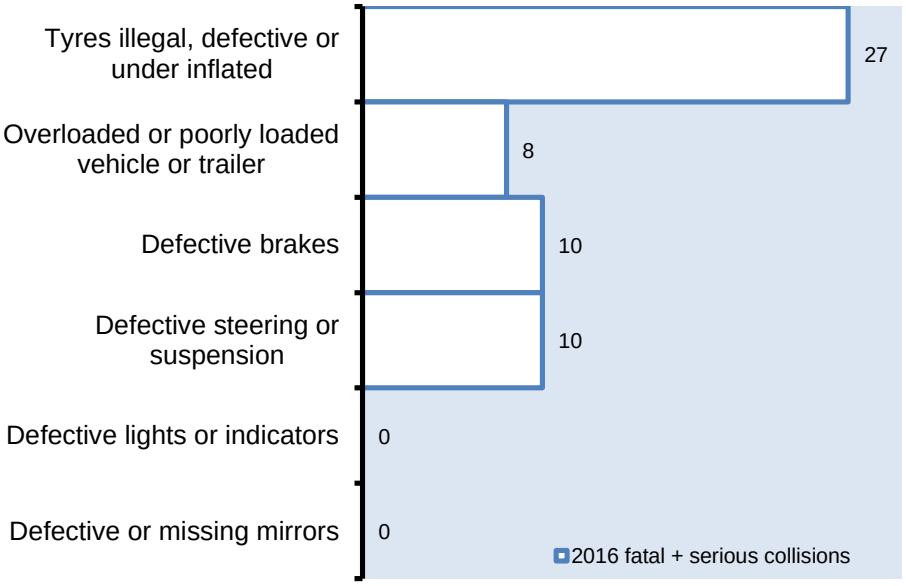


Fatal and serious collisions

10.7% from 2015



54.0% of fatal and serious collisions associated with vehicle defects involved 'Tyres illegal, defective or under inflated'



As more than one contributory factor can be recorded per collision; defects will not sum to 50 fatal and serious collisions

Figure 4-8 Summary of collisions linked to a vehicle defect

4.3. People

An assessment of the collisions on the SRN has been undertaken in this section. This includes analysis of trends, collisions by casualty age groups involved and an assessment of the human factors linked to collisions.

4.3.1. Collision severity trends

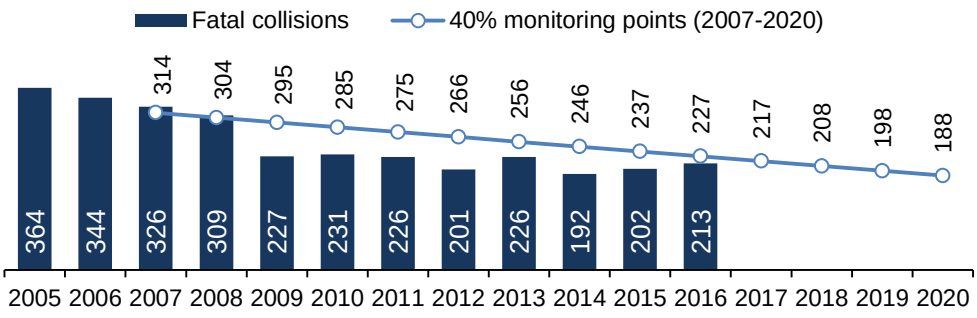
This section identifies underlying trends in the number of collisions occurring each year by severity between 2005 and 2016. As explained in Section 1.2 the reporting of STATS19 via CRASH has had an impact on both seriously injured and slightly injured collision data.

Figure 4-9 provides an outline of collision trends for fatal, serious, fatal and serious, slight and total collisions between 2005 and 2016.

In summary, the largest percentage change between severities since 2015 is the number of serious collisions which increased by 12.3 per cent (from 1,320 to 1,482); compared to the increase of 11.4 per cent for fatal and serious collisions (from 1,522 to 1,695) and 5.4 per cent for fatal collisions (from 202 to 213).

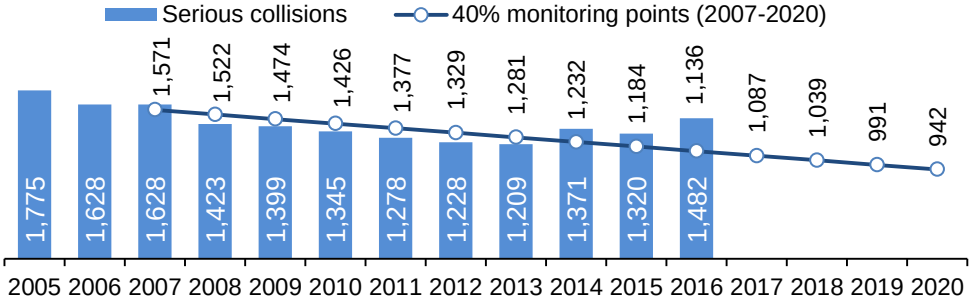
Fatal

5.4 per cent from 2015



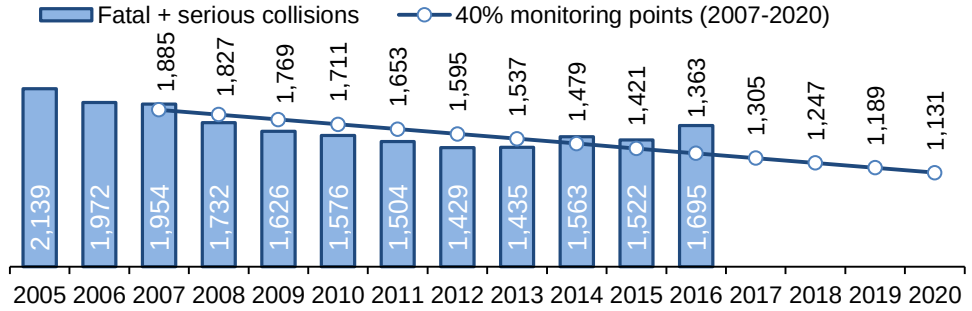
Serious

12.3 per cent from 2015



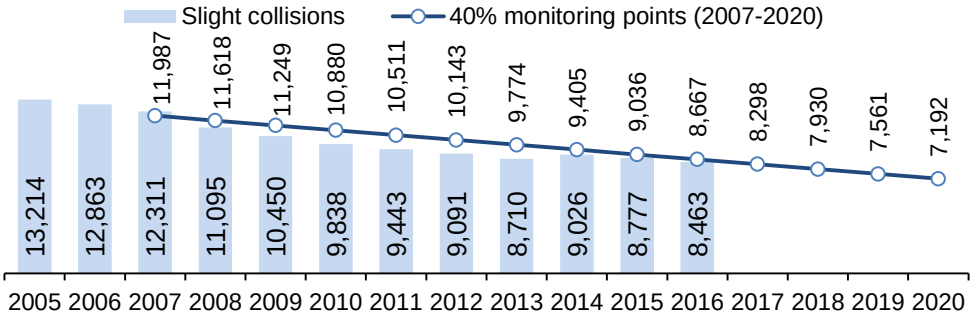
Fatal and serious

11.4 per cent from 2015



Slight

3.6 per cent from 2015



Total collisions

1.4 per cent from 2015

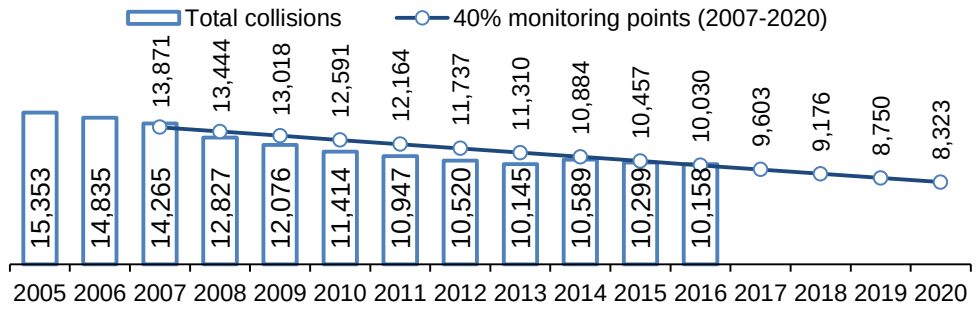
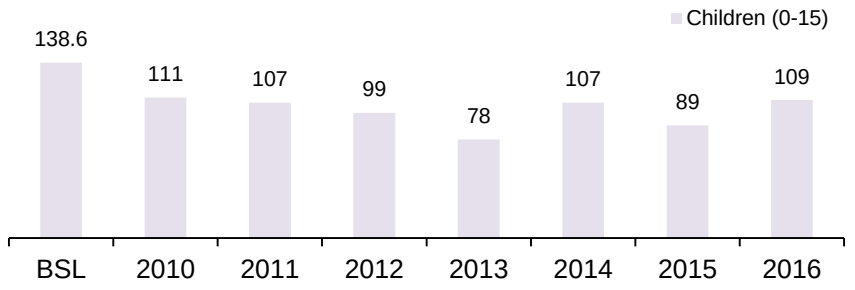


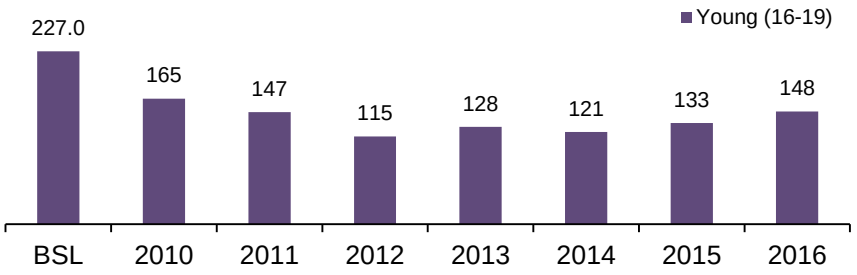
Figure 4-9 Collision trends by severity

4.3.2. Collision by age of casualties involved

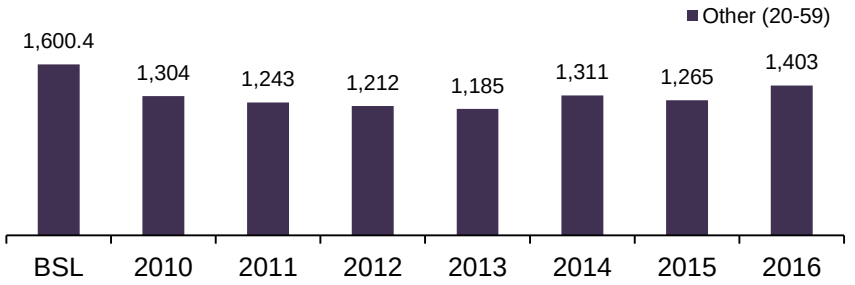
Children (0-15)
109 fatal and serious collisions
22.5 per cent from 89 in 2015



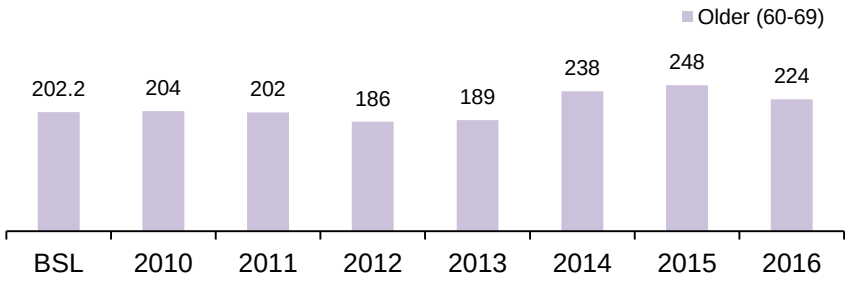
Young (16-19)
148 fatal and serious collisions
11.3 per cent from 133 in 2015



Other (20-59)
1,403 fatal and serious collisions
10.9 per cent from 1,265 in 2015



Older (60-69)
224 fatal and serious collisions
9.7 per cent from 248 in 2015



Elderly (70+)
190 fatal and serious collisions
1.6 per cent from 187 in 2015

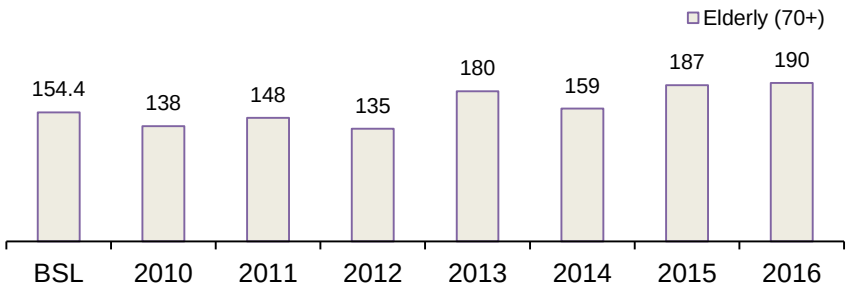


Figure 4-10 Fatal and serious collisions by age group and year

Figure 4-10 shows that fatal and serious collisions in younger age groups have decreased significantly compared to 2005-09 baseline average with Young (16-19) group decreasing by 34.8 per cent. In contrast the elderly groups showed an increase in fatal and serious collisions against the 2005-09 baseline with the largest increase observed in Elderly (70+) group (23.1 per cent). This is followed by the Older (60-69) group with a 10.8 per cent increase from the baseline, however, this group showed a decrease of 9.7 per cent compared to 2015.

4.3.3. Collisions where human factors contributed

Human factors remain the largest single cause of fatal and serious collisions on the SRN. In 2016, there were 1,262 fatal and serious collisions involving at least one human factor representing 74.5 per cent of total fatal and serious collisions.

Figure 4-11 is an assessment of the contributing human factors which result in fatal and serious collisions on the SRN. These human factors broadly fall into four categories of contributory factors:

- Driver/rider error or reaction
- Impairment or distraction
- Injudicious action
- Behaviour or inexperience

The contributory factors within these groupings are provided in the table below[17]

Driver/Rider error or reaction	
Junction overshoot	Failed to judge other person's path or speed
Junction restart (moving off at junction)	Too close to cyclist, horse rider or pedestrian
Poor turn or manoeuvre	Sudden braking
Failed to signal or misleading signal	Swerved
Failed to look properly	Loss of control
Impairment or distraction	
Impaired by alcohol	Not displaying lights at night or in poor visibility
Impaired by drugs (illicit or medicinal)	Rider wearing dark clothing
Fatigue	Driver using mobile phone
Uncorrected, defective eyesight	Distraction in vehicle
Illness or disability, mental or physical	Distraction outside vehicle
Injudicious action	
Disobeyed automatic traffic signal	Exceeding speed limit
Disobeyed 'Give Way' or 'Stop' sign or markings	Travelling too fast for conditions
Disobeyed double white lines	Following too close
Disobeyed pedestrian crossing facility	Vehicle travelling along pavement
Illegal turn or direction of travel	Cyclist entering road from pavement
Behaviour or inexperience	
Aggressive driving	Learner or inexperienced driver/rider
Careless, reckless or in a hurry	Inexperience of driving on the left
Nervous, uncertain or panic	Unfamiliar with model of vehicle
Driving too slow for conditions or slow veh (e.g. tractor)	

[17] Full listing of contributory factors of all groupings is provided in Appendix Table F-1.

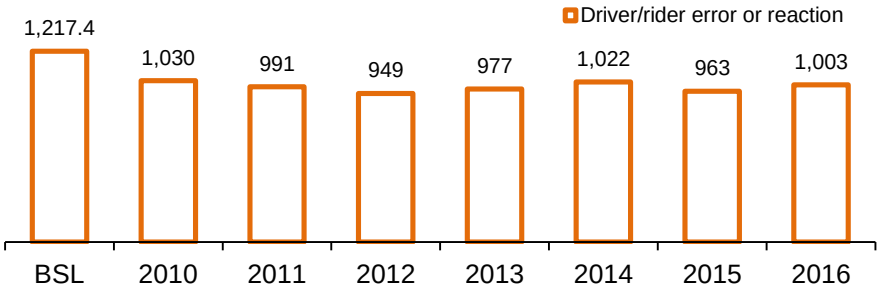
1,262 fatal and serious collisions where human factors were attributed

74.5 per cent of the 1,695 fatal and serious collisions in 2016

Driver/Rider error or reaction

1,003 fatal and serious collisions

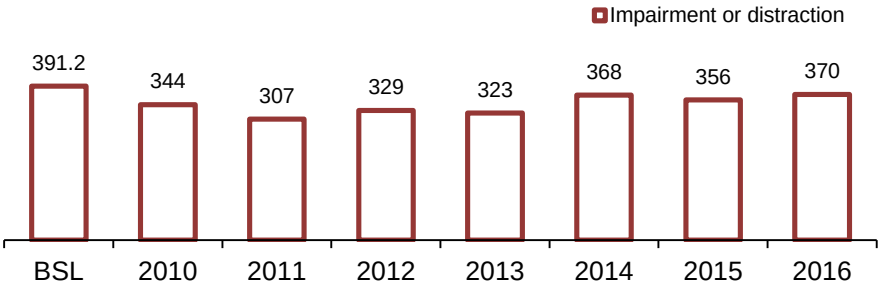
▲ 4.2 per cent from 963 in 2015



Impairment or distraction

370 fatal and serious collisions

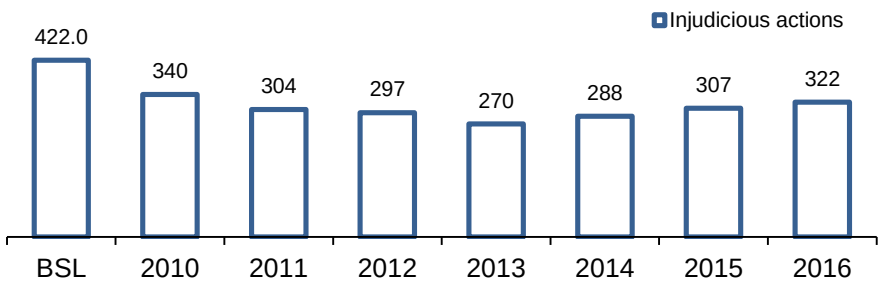
▲ 3.9 per cent from 356 in 2015



Injudicious actions

322 fatal and serious collisions

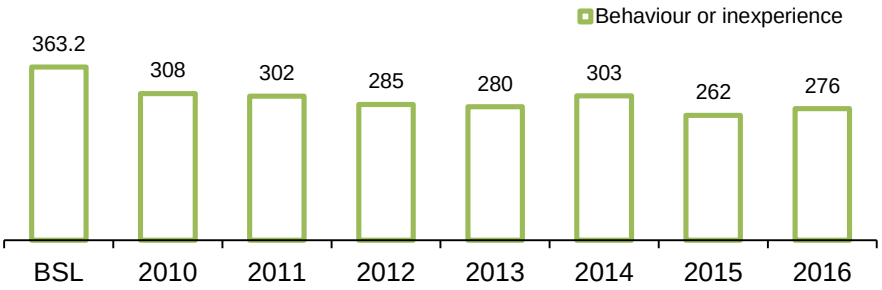
▲ 4.9 per cent from 307 in 2015



Behaviour or inexperience

276 fatal and serious collisions

▲ 5.3 per cent from 262 in 2015



Note:
(a) Figures show the number of fatal and serious collisions involving at least one contributory factor from the relevant group. The listing of each group is provided in previous page.

Figure 4-11 Fatal and serious collisions associated with human contributory factors by group and year

Figure 4-11 shows that fatal and serious collisions where at least one of the aforementioned human factors was attributed have increased, with behaviour or inexperience increasing by 5.3 per cent from 262 in 2015 to 276 in 2016.

Investigating the impairment or distraction human factor category further, Figure 4-12 details the number of fatal and serious collisions involving at least one driver using a mobile phone. The number of fatal and serious collisions has increased by 33.3 per cent from the baseline to 20 in 2016.

Driver using mobile phone
20 fatal and serious collisions
17.6 per cent from 2015

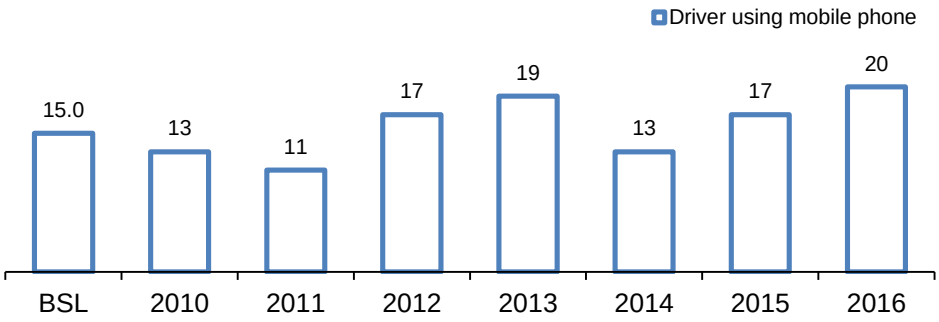


Figure 4-12 Fatal and serious collisions where mobile phone use attributed by year

Table 4-2 highlights the top 20 human contributory factors by severity linked to collisions for 2016 (ranked by fatal and serious collisions). The top three contributory factors involved in fatal and serious collisions were all from the driver/rider error or reaction group. This group features heavily in all collisions.

From the table, it is evident that the impairment or distraction human factor category also remains a major issue. Individual factors such as fatigue; impaired by alcohol, illness or disability, mental or physical, and distraction in vehicle; contributed to 110, 104, 93, and 81 fatal and serious collisions respectively in 2016. This has followed almost the same profile as that for the corresponding casualties apart from few subtle variations in the ranking and contributory factors themselves.

Table 4-2 Top 20 human contributory factors attributed to collisions by severity, 2016

Rank	Contributory Factor		Fatal + serious	Fatal	Serious	Slight	Total
1	405	Failed to look properly	481	46	435	2,475	2,956
2	406	Failed to judge other person's path or speed	340	27	313	2,143	2,483
3	410	Loss of control	292	53	239	914	1,206
4	602	Careless, reckless or in a hurry	182	22	160	720	902
5	403	Poor turn or manoeuvre	180	23	157	747	927
6	307	Travelling too fast for conditions	112	12	100	467	579
7	503	Fatigue	110	19	91	297	407
8	501	Impaired by alcohol	104	14	90	222	326
9	409	Swerved	101	14	87	337	438
10	308	Following too close	97	4	93	961	1,058
11	408	Sudden braking	97	5	92	811	908
12	505	Illness or disability, mental or physical	93	24	69	173	266
13	306	Exceeding speed limit	91	21	70	173	264
14	509	Distraction in vehicle	81	16	65	279	360
15	605	Learner or inexperienced driver/rider	48	3	45	162	210
16	601	Aggressive driving	41	9	32	142	183
17	502	Impaired by drugs (illicit or medicinal)	31	9	22	40	71
18	510	Distraction outside vehicle	28	2	26	91	119
19	404	Failed to signal or misleading signal	23	1	22	72	95
20	401	Junction overshoot	22	1	21	67	89

Key (CF groups):

Driver/Rider error or reaction | Impairment or distraction | Injudicious action | Behaviour or inexperience

Notes:
(a) Table reports number of collisions.
(b) Table ranked by fatal and serious collisions.
(c) As more than one contributory factor can be recorded per collision; columns will not sum to their respective totals.

Table 4-3 is an adaptation of the 'Fatal Four' driving offences:

- Speeding (CFs 306 and 307)
- Improper use of restraints (Casualty code "Seat belt in use – not used")
- Distraction (including use of mobile phone) (CFs 508, 509 and 510)
- Impaired by drink and drugs (CFs 501 and 502)

It can be seen from Table 4-3 that collisions involving drink/drugs increased in four of the five severities in 2016 (slight showed a decrease). Fatal collisions linked to drink/drugs have increased by 5.3 per cent.

Due to the recording of the use of seatbelts not being mandatory this category potentially shows the minimum number of collisions by severity of the collision. In terms of collisions, Table 4-3 does show that in 2016 a minimum of 102 total collisions had recorded 'improper use of or no restraints'; importantly this is a 20.9 per cent reduction from the values recorded in 2015. The number of fatal plus serious collisions showed an increase of 6.1 per cent compared to in 2015, whereas serious and slight decreased. Distractions for all severities showed a decrease or no change in numbers compared to 2015.

Table 4-3 Collisions involving speeding, restraints, distractions and drink/drugs, 2016

Category/ Severity	Speeding	Restraints[(a)]	Distractions	Drink/Drugs
Fatal	**30** 0.0%	**17** -	**19** ↓ 20.8%	**20** ↑ 5.3%
Serious	**162** ↑ 6.6%	**35** ↓ 10.3%	**91** 0.0%	**97** ↑ 24.4%
Fatal + Serious	**192** ↑ 5.5%	**52** ↑ 6.1%	**110** ↓ 4.3%	**117** ↑ 20.6%
Slight	**602** ↓ 22.6%	**50** ↓ 37.5%	**368** ↓ 16.7%	**250** ↓ 2.3%
Total	**794** ↓ 17.3%	**102** ↓ 20.9%	**478** ↓ 14.2%	**367** ↑ 4.0%

Notes:
(a) The recording of seatbelts is only required in STATS19 for fatalities who are occupants of vehicles in which the wearing of a seatbelt is mandatory. However police forces can choose to collect this data for all collision severities-and hence any large variation in 'Restraints' is likely to come from the increase or decrease of the recording by police forces.
(b) Percentages represent the per cent change of 2016 values from 2015 values; percentages are only shown where the base is 15 or more, or remain unchanged.

4.4. Contributory Factors

4.4.1. Overview

Based on STATS20[18] contributory factors should only be recorded in STATS19 data for collisions attended by a police officer. This is due in part because contributory factors are subjective and depend on the police officer's experience and their skill of investigating. For any collision attended by a police officer up to six contributory factors can be recorded, these give an indication as to what may have occurred.

Figure 4-13 shows the number and percentage of collisions on the SRN which were attended by a police officer between 2005 and 2016.

It can be seen that from 2005 to 2015 the percentage of collisions attended by police officers varied between 88.5 per cent and 91.1 per cent. However, the figure shows a significant decrease in the number and percentage of collisions attended by a police officer in 2016. This reduction should be taken into account by the reader when analysing contributory factor tables.

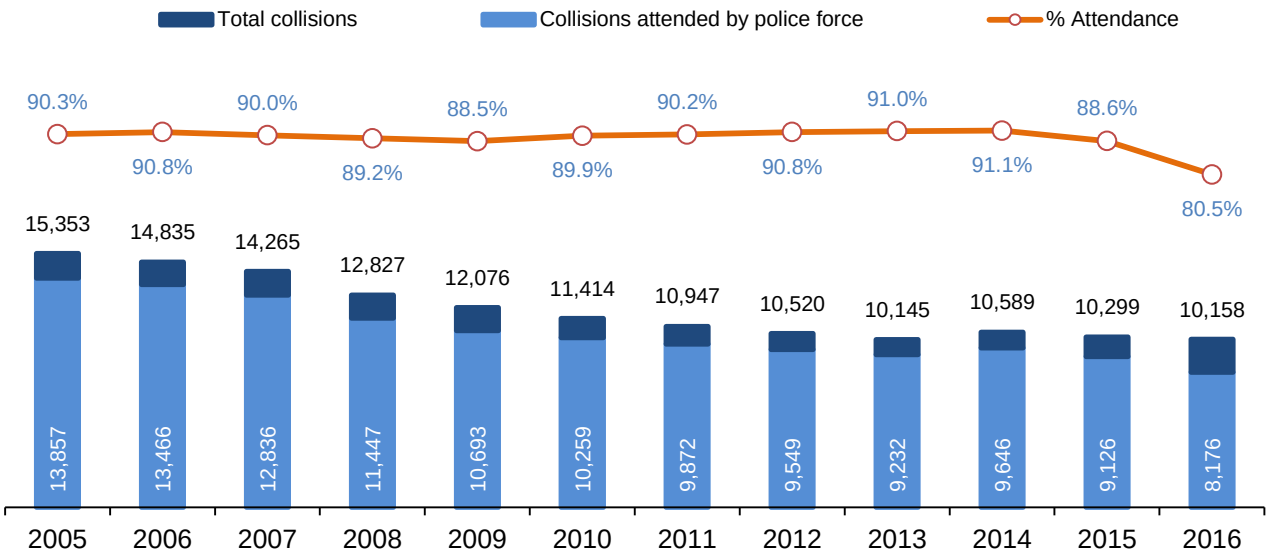


Figure 4-13 Number and percentage of collisions where police attended (2005-2016)

[18] STATS20 "Instructions for the Completion of Road Accident Reports from non-CRASH Sources" Department for Transport, September 2011.

4.4.2. Contributory factors attributed to collisions

Table 4-4 illustrates the top 10 contributory factors related to people, vehicles and roads. It is clear that contributory factors relating to people were attributed to the most collisions compared to vehicle and road related contributory factors. Failed to look properly was attributed to the majority of collisions 29.1 per cent (2,956) in 2016. Slippery road (due to weather) was the most common road contributory factor, being attributed to 6.5 per cent (661) of collisions in 2016. The most common vehicle contributory factor was vehicle blind spot which was attributed to 1.9 per cent (193) of collisions in 2016.

Table 4-4 Top 10 contributory factors attributed to collisions, 2016

	Rank	Contributory Factor		2016	Percentage of collisions, 2016
People	1	405	Failed to look properly	2,956	29.1%
	2	406	Failed to judge other person's path or speed	2,483	24.4%
	3	410	Loss of control	1,206	11.9%
	4	308	Following too close	1,058	10.4%
	5	403	Poor turn or manoeuvre	927	9.1%
	6	408	Sudden braking	908	8.9%
	7	602	Careless, reckless or in a hurry	902	8.9%
	8	307	Travelling too fast for conditions	579	5.7%
	9	409	Swerved	438	4.3%
	10	503	Fatigue	407	4.0%
Vehicles	1	710	Vehicle blind spot	193	1.9%
	2	201	Tyres illegal, defective or under inflated	112	1.1%
	3	203	Defective brakes	41	0.4%
	4	206	Overloaded or poorly loaded vehicle or trailer	30	0.3%
	5	204	Defective steering or suspension	27	0.3%
	6	709	Visor or windscreen dirty, scratched or frosted etc.	10	0.1%
	7	202	Defective lights or indicators	10	0.1%
	8	705	Dazzling headlights	8	0.1%
	9	205	Defective or missing mirrors	3	-
Roads	1	103	Slippery road (due to weather)	661	6.5%
	2	707	Rain, sleet, snow, or fog	176	1.7%
	3	706	Dazzling sun	122	1.2%
	4	109	Animal or object in carriageway	119	1.2%
	5	108	Road layout (eg. bend, hill, narrow carriageway)	72	0.7%
	6	102	Deposit on road (eg. oil, mud, chippings)	62	0.6%
	7	701	Stationary or parked vehicle(s)	55	0.5%
	8	708	Spray from other vehicles	53	0.5%
	9	107	Temporary road layout (eg. contraflow)	52	0.5%
	10	703	Road layout (eg. bend, winding road, hill crest)	33	0.3%

Key (CF groups):

- Driver/Rider error or reaction
- Impairment or distraction
- Injudicious action
- Vision affected by
- Road environment
- Vehicle defect
- Behaviour or inexperience

Note:
(a) In 2016, there were a total of 10,158 collisions.
(b) There are only nine contributory factors associated with vehicles.

4.4.3. Top 10 contributory factors by road classification

Table 4-5 illustrates top 10 contributory factors attributed to collisions by road classification. For more details see Appendix Table F-4, Table F-5, Table F-8 and Table F-9.

Based on the results shown in Table 4-5, “Failed to look properly” was the top contributory factor attributed to collisions across all road classes in 2016. Four out of five contributory factors across all road classes are in relation to “Driver/Rider error or reaction”.

Table 4-5 Top 10 contributory factors attributed to collisions by road classification, 2016

	Rank	Contributory Factor		2016
 **Motorway** (82% of collisions attended by police)	1	405	Failed to look properly	1,344
	2	406	Failed to judge other person's path or speed	1,197
	3	410	Loss of control	614
	4	308	Following too close	570
	5	408	Sudden braking	475
	6	403	Poor turn or manoeuvre	390
	7	602	Careless, reckless or in a hurry	353
	8	103	Slippery road (due to weather)	308
	9	307	Travelling too fast for conditions	290
	10	409	Swerved	240
A-road (79% of collisions attended by police)	1	405	Failed to look properly	1,612
	2	406	Failed to judge other person's path or speed	1,286
	3	410	Loss of control	592
	4	602	Careless, reckless or in a hurry	549
	5	403	Poor turn or manoeuvre	537
	6	308	Following too close	488
	7	408	Sudden braking	433
	8	103	Slippery road (due to weather)	353
	9	307	Travelling too fast for conditions	289
	10	409	Swerved	198
 **A-road dual carriageway** (78% of collisions attended by police)	1	405	Failed to look properly	1,175
	2	406	Failed to judge other person's path or speed	975
	3	410	Loss of control	447
	4	403	Poor turn or manoeuvre	378
	5	602	Careless, reckless or in a hurry	371
	6	308	Following too close	354
	7	408	Sudden braking	333
	8	103	Slippery road (due to weather)	264
	9	307	Travelling too fast for conditions	218
	10	409	Swerved	146
A-road single carriageway (84% of collisions attended by police)	1	405	Failed to look properly	437
	2	406	Failed to judge other person's path or speed	311
	3	602	Careless, reckless or in a hurry	178
	4	403	Poor turn or manoeuvre	159
	5	410	Loss of control	145
	6	308	Following too close	134
	7	408	Sudden braking	100
	8	103	Slippery road (due to weather)	89
	9	307	Travelling too fast for conditions	71
	10	503	Fatigue	62

Key (CF groups):

Driver/Rider error or reaction | Impairment or distraction | Injudicious action

Road environment | Behaviour or inexperience

5. Topics of Interest

The purpose of this section is to provide analysis for a range of topics of interest. The topics are themes that affect the SRN and hence include more detailed analysis than the overall assessment of casualty (and collision) trends in the previous sections.

This section includes the following topics of interest:

- Fatally injured casualties
- Seriously injured casualties
- Killed or seriously injured (KSI) casualties
- Slightly injured casualties
- Young motorists
- Lighting on the SRN
- Weather effects on the SRN
- Roadworks
- Objects hit on and off the carriageway
- Junctions
- Tyres
- Goods vehicles (HGVs and LGVs)
- Motorcycle users
- Hardshoulders and lay-bys
- Collision type
- Hotspot analysis
- Vulnerable and non-motorised users

5.1. Fatally Injured Casualties

This section provides an overview of fatalities on the SRN for 2016 along with comparisons to previous years as required.

In 2016, there were 231 fatalities on the SRN; this is an increase of 7 fatalities from the 2015 value of 224. This is an increase in the number of fatalities by 3.1 per cent from 2015 but remains below the 2016 monitoring point of 258 albeit is now above the 2020 monitoring point of 214 (Figure 5-1). The estimated cost of fatalities on the SRN in 2016 was £386.3m[19].

Figure 5-2 shows that in 2016, November had the most fatalities with 26 in the month. This was closely followed by July, August and September which all had 24 fatalities.

Table 5-1 shows fatalities by casualty type, it can be seen that in 2016:

- 58.9 per cent of fatalities were car occupants (136 of 231)
- 17.3 per cent of fatalities were pedestrians (40 of 231)
- 11.7 per cent of fatalities were motorcycle users (27 of 231)

Table 5-1 also shows the number of pedestrian fatalities increased by 37.9 per cent to 40 in 2016 from 29 in 2015 and motorcycle user fatalities decreased by 6.9 per cent to 27 in 2016 from 29 in 2015.

Table 5-2 provides a breakdown of fatalities by casualty age. There was a reduction in the number of fatalities for the age groups 70+ years and 60-69 years; 16.2 and 9.5 per cent from 2015, respectively, while fatalities in age group 20-59 years have increased by 3.8 per cent.

In 2016, as shown in Figure 5-3, only Motorways have a reduction in number of fatalities. The changes to fatalities by road classification are:

- A-road single carriageway fatalities increased by 10.0 per cent to 55, from 50 in 2015
- A-road dual carriageway fatalities increased by 20.7 per cent to 99, from 82 2015
- A-road fatalities, as a whole, increased by 16.7 per cent to 154, from 132 2015
- Motorway fatalities decreased by 16.3 per cent to 77, from 92 in 2015

Figure 5-4 illustrates that hitting an object off the carriageway was attributed to 64 fatalities, and is 27.7 per cent of all fatalities in 2016. This is a decrease on the 2015 value of 73. Of those fatalities that involved hitting an object off the carriageway in 2016, 20.3 per cent were attributed to hitting a tree and 48.4 per cent were attributed to hitting a barrier of some kind. This is equivalent to 5.6 per cent and 13.4 per cent of all fatalities (231) respectively.

Table 5-3 shows fatalities by junction detail, overall 17.3 per cent of fatalities occurred at junctions in 2016. The total number of fatalities occurring at junctions decreased to 40 in 2016 from 47 in 2015; a decrease of 14.9 per cent.

[19] Based on the average value of prevention per casualty at 2010 prices and 2016 values, DfT WebTAG: Unit A 4.1.1, October 2017.

5.1.1. Fatal casualty infographics

231 fatally injured casualties

↑ 3.1 per cent from 2015

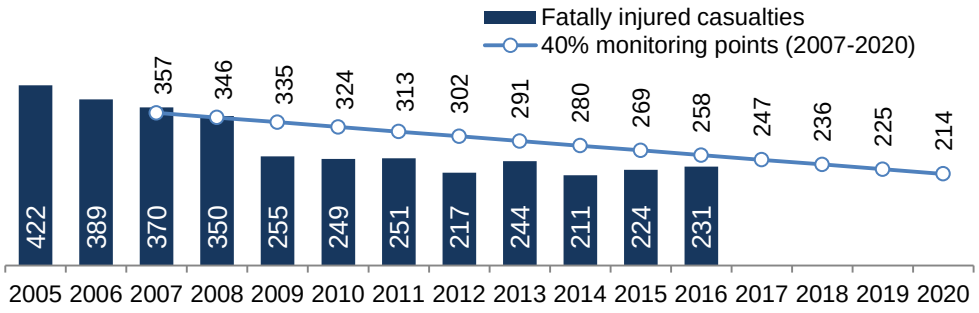


Figure 5-1 Fatally injured casualties by year, SRN

26 fatally injured casualties occurred in November

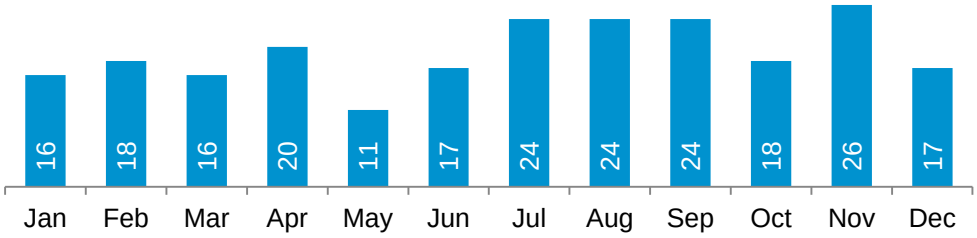


Figure 5-2 Fatally injured casualties by month, 2016

Table 5-1 Fatally injured casualties by type, 2016

Casualty Type	2016	% change from 2015
Car occupants	136	↑1.5%
Motorcycle users	27	↓6.9%
Goods vehicle occupants (equal to or under 3.5 tonnes)	14	-
HGV occupants (over 3.5 tonnes)	10	-
Pedestrians	40	↑37.9%
Pedal cyclists	3	-

58.9 per cent of total fatally injured casualties involved car occupants

Table 5-2 Fatally injured casualties by age group, 2016

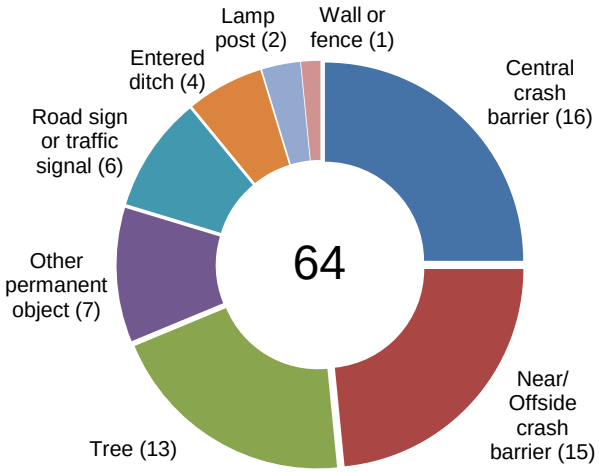
Children (0-15)	Young (16-19)	Other (20-59)	Older (60-69)	Elderly (70+)	? (Unknown)
9	8	163	19	31	1
-	-	↑3.8%	↓9.5%	↓16.2%	-

66.7 per cent of all fatally injured casualties occurred on A-roads

Motorways - the only road class to have a reduction in fatally injured casualties

154 ↑16.7%	99 ↑20.7%
A-road	A-road dual carriageway
77 ↓16.3%	55 ↑10.0%
Motorway	A-road single carriageway

Figure 5-3 Fatally injured casualties by road classification, 2016



64 fatally injured casualties involved hitting an object off the carriageway in 2016

13.4 per cent of all fatally injured casualties (231) invovled hitting a crash barrier of some kind (31)

Figure 5-4 Fatally injured casualties by objects hit off carriageway, 2016

17.3 per cent of fatally injured casualties were at a junction

Table 5-3 Fatally injured casualties by junction detail, 2016

Junction detail	2016	% change from 2015
Slip road	22	↑37.5%
T or staggered	11	↓26.7%
Roundabouts	3	-
Crossroads	2	-
Private drive or entrance	0	-
More than 4 arms (not roundabout)	0	-
Mini-roundabout	0	-
Other	2	-
Not at junction	191	↑7.9%

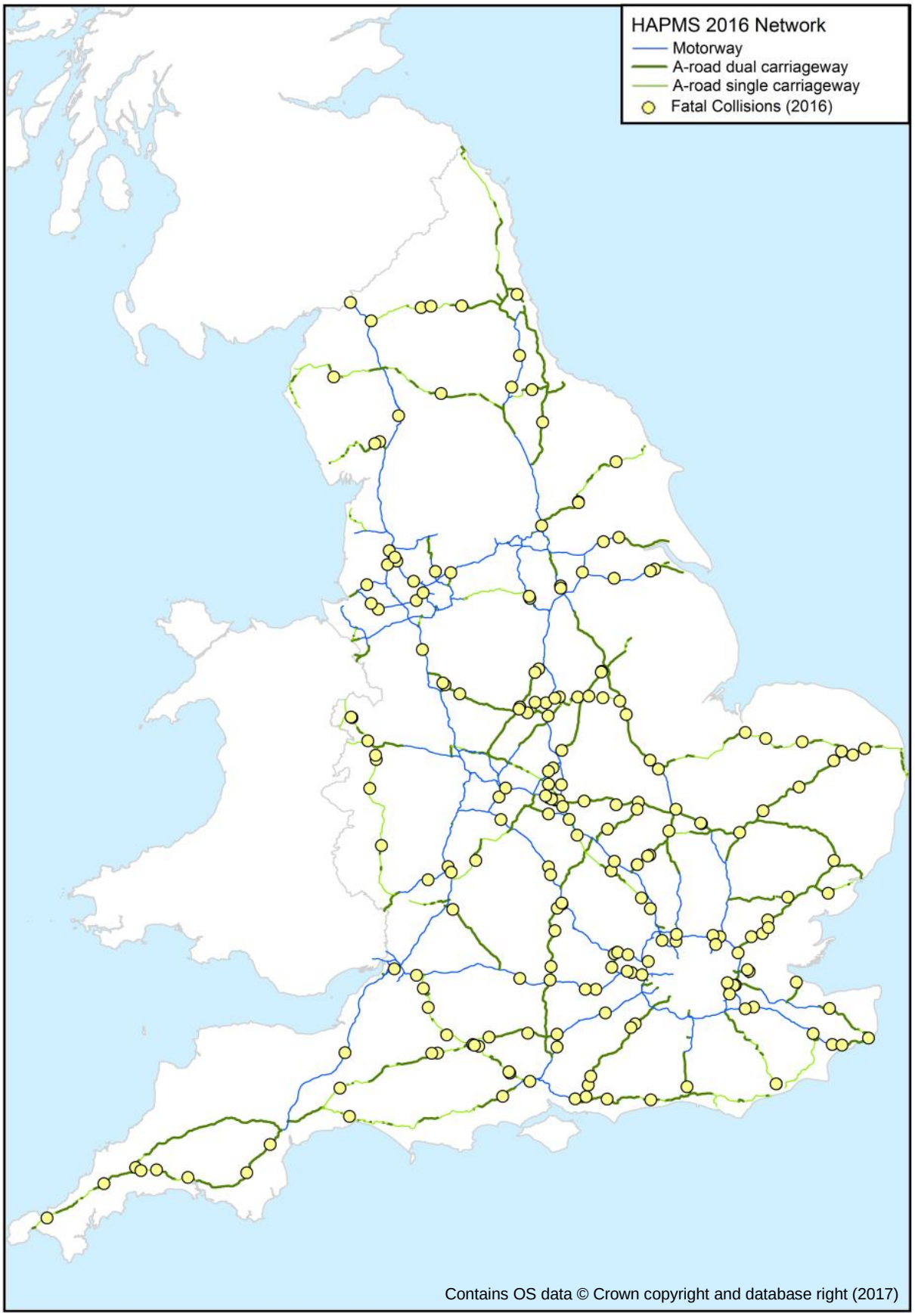


Figure 5-5 Fatal collision locations across the SRN

Due to the number of serious and slight being higher it is not practical to represent them on a map. Therefore there is no HAPMS 2016 Network figure in the corresponding sections for these severities.

5.2. Seriously Injured Casualties

This section provides an overview of seriously injured casualties on the SRN for 2016 along with comparisons to previous years as required. As explained in Section 1.2 the reporting of STATS19 via CRASH has had an impact on both seriously injured and slightly injured collision and casualty data.

In 2016, there were 1,774 seriously injured casualties on the SRN; this is an increase of 214 seriously injured casualties from the 2015 value of 1,560 (Figure 5-6). This means the number of seriously injured casualties remains above the corresponding monitoring point; which is 1,420 in 2016. The estimated cost of seriously injured on the SRN in 2016 was £333.3m[19].

Figure 5-7 shows that in 2016 August had the most seriously injured casualties with 193 in the month. This was followed by May and June with 174 and 165 seriously injured casualties respectively.

Table 5-4 shows seriously injured casualties by type, it can be seen that in 2016:

- 65.7 per cent of seriously injured were car occupants (1,165 of 1,774)
- 19.4 per cent of seriously injured were motorcycle users (345 of 1,774)
- 3.0 per cent of seriously injured were pedestrians (54 of 1,774)

Table 5-4 also shows the number of seriously injured pedestrians increased by 25.6 per cent to 54 in 2016 from 43 in 2015, and number of seriously injured motorcycle users increased by 19.4 per cent over this period.

Table 5-5 shows a breakdown of seriously injured by casualty age. It can be seen that the number of serious injuries increased for most of the age groups, with Children (0-15) having the greatest increase by 89.5 per cent from 2015. The exception was Older (60-69) age group which showed a 14.9 per cent decrease in seriously injured casualties, from 2015.

In 2016, an increase in seriously injured casualties on motorways and A-road dual carriageways was recorded (Figure 5-8). The changes to seriously injured casualties by road classification are:

- A-road single carriageway serious injuries decreased by 2.9 per cent to 330, from 340 in 2015
- A-road dual carriageway serious injuries increased by 22.6 per cent to 715, from 583 in 2015
- A-road serious injuries as a whole increased by 13.2 per cent to 1,045, from 923 in 2015
- Motorway serious injuries increased by 14.4 per cent to 729, from 637 in 2015

In 2016, hitting an object off the carriageway was associated with 463 seriously injured casualties (Figure 5-9), and is 26.1 per cent of all seriously injured casualties in 2016. This is a decrease on the 2015 value of 502. Of those seriously injured casualties that involved hitting an object off the carriageway 46.9 per cent were attributed to hitting a barrier of some kind and 21.4 per cent were attributed to hitting a tree; this is 12.2 per cent and 5.6 per cent of all seriously injured casualties (1,774) respectively.

Table 5-6 shows seriously injured casualties by junction detail, overall 25.8 per cent of serious injuries occurred at junctions in 2016. The total number of seriously injured casualties at junctions increased to 457 in 2016 from 390 in 2015; an increase of 17.2 per cent. The majority of seriously injured casualties at junctions were attributed to T or staggered junctions, roundabouts and slip roads. All have seen an increase on their respective 2015 values, with roundabouts increasing by 40.9 per cent.

5.2.1. Seriously injured casualty infographics

1,774 seriously injured casualties ↑ 13.7 per cent from 2015

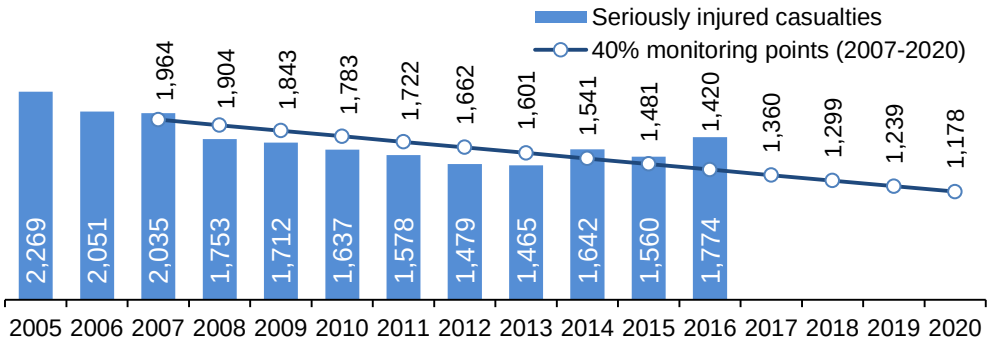


Figure 5-6 Seriously injured casualties by year, SRN

193 seriously injured casualties occurred in August

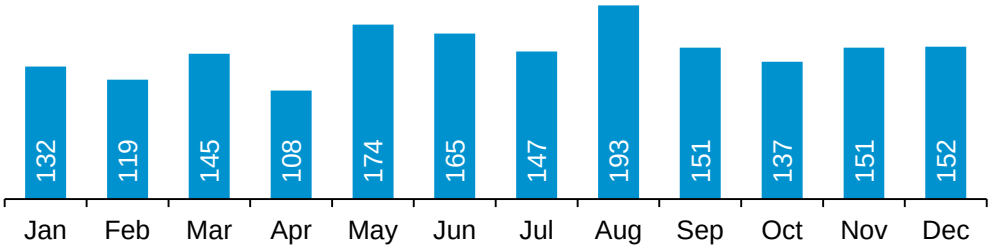


Figure 5-7 Seriously injured casualties by month, 2016

Table 5-4 Seriously injured casualties by type, 2016

Casualty Type	2016	% change from 2015
Car occupants	1,165	↑14.0%
Motorcycle users	345	↑19.4%
Goods vehicle occupants (equal to or under 3.5 tonnes)	87	↑1.2%
HGV occupants (over 3.5 tonnes)	72	↑4.3%
Pedestrians	54	↑25.6%
Pedal cyclists	41	↑20.6%

Pedestrian seriously injured casualties increased by 25.6 per cent

Table 5-5 Seriously injured casualties by age group, 2016

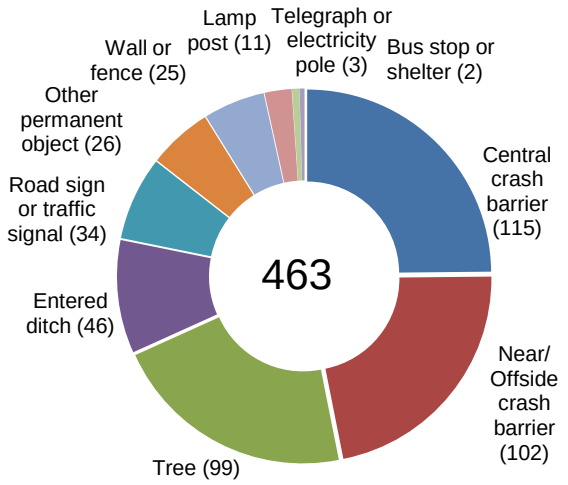
Children (0-15)	Young (16-19)	Other (20-59)	Older (60-69)	Elderly (70+)	? (Unknown)
72	110	1,269	149	162	12
↑89.5%	↑29.4%	↑14.3%	↓14.9%	↑18.2%	↓20.0%

58.9 per cent of all seriously injured casualties on A-roads

A-road single carriageway - the only road class to have a decrease in seriously injured casualties

1,045 ↑13.2%	715 ↑22.6%
A-road	A-road dual carriageway
729 ↑14.4%	330 ↓2.9%
Motorway	A-road single carriageway

Figure 5-8 Seriously injured casualties by road classification, 2016



463 seriously injured casualties involved hitting an object off the carriageway in 2016

12.2 per cent of all seriously injured casualties (1,774) involved in hitting a crash barrier of some kind (217)

Figure 5-9 Seriously injured casualties by objects hit off carriageway, 2016

25.8 per cent of seriously injured casualties were at junctions

Table 5-6 Seriously injured casualties by junction detail, 2016

Junction detail	2016	% change from 2015
Roundabouts	131	↑40.9%
T or staggered	131	↑10.1%
Slip road	119	↑8.2%
Crossroads	28	↑33.3%
Private drive or entrance	15	↓28.6%
More than 4 arms (not roundabout)	4	-
Mini-roundabout	0	-
Other	29	↑61.1%
Not at junction	1,317	↑12.6%

5.3. Killed or Seriously Injured Casualties

This section provides an overview of killed or seriously injured (KSI) casualties on the SRN for 2016 along with comparisons to previous years as required. As explained in Section 1.2 the reporting of STATS19 via CRASH has had an impact on seriously injured collision and casualty data.

In 2016, there were 2,005 KSI casualties on the SRN; an increase of 221 KSI casualties from the 2015 value of 1,784. This means the number of KSI casualties remains above the corresponding monitoring point; which is 1,678 in 2016 (Figure 5-10). The estimated cost of KSI casualties on the SRN in 2016 was £719.6m[19].

Figure 5-11 shows that August, with 217, had the most number of KSI casualties followed by May with 185.

Table 5-7 shows KSI casualties by type, it can be seen that in 2016:

- 64.9 per cent of KSI casualties were car occupants (1,301 of 2,005)
- 18.6 per cent of KSI casualties were motorcycle users (372 of 2,005)
- 4.7 per cent of KSI casualties were pedestrians (94 of 2,005)

Table 5-7 also shows the number of pedestrian KSI casualties increased by 30.6 per cent to 94 in 2016, from 72 in 2015 and that motorcycle user KSI casualties increased by 17.0 per cent to 372 in 2016, from 318 in 2015.

Table 5-8 shows a breakdown of KSI casualties by age. The number of KSI casualties for most of the age groups increased, with Children (0-15) having the greatest rise of 102.5 per cent from 2015. The exception is the Older (60-69) age group where the KSI casualties decreased by 14.3 from 2015.

In 2016, KSI casualties increased on both motorways and A-road dual carriageways (Figure 5-12). The changes to KSI casualties by road classification are:

- A-road single carriageway KSI casualties decreased by 1.3 per cent to 385, from 390 in 2015
- A-road dual carriageway KSI casualties increased by 22.4 per cent to 814, from 665 in 2015
- A-road KSI casualties, as a whole, increased by 13.6 per cent to 1,199, from 1,055 in 2015
- Motorway KSI casualties increased by 10.6 per cent to 806, from 729 in 2015

In 2016, hitting an object off the carriageway was associated with 527 KSI casualties (Figure 5-13), and is 26.1 per cent of all KSI casualties. This is a decrease on the 2015 value of 575. Of those KSI casualties that involved hitting an object off the carriageway 47.1 per cent were attributed to hitting a barrier of some kind and 21.3 per cent attributed to hitting a tree. This is equivalent to 12.4 per cent and 5.6 per cent of all KSI casualties (2,005) respectively.

In 2016, 24.8 per cent of KSI casualties were at junctions, with the total number increasing to 497 from 437 in 2015; an increase of 13.7 per cent. Table 5-9 shows KSI casualties by junction detail. Similar to trends evident in seriously injured casualties, the table shows that roundabouts had the largest increase in KSI casualties of 38.1 per cent from the 2015 value; with the most KSI casualties at T or staggered junctions in 2016.

5.3.1. KSI casualty infographics

2,005 KSI casualties

↑ 12.4 per cent from 2015

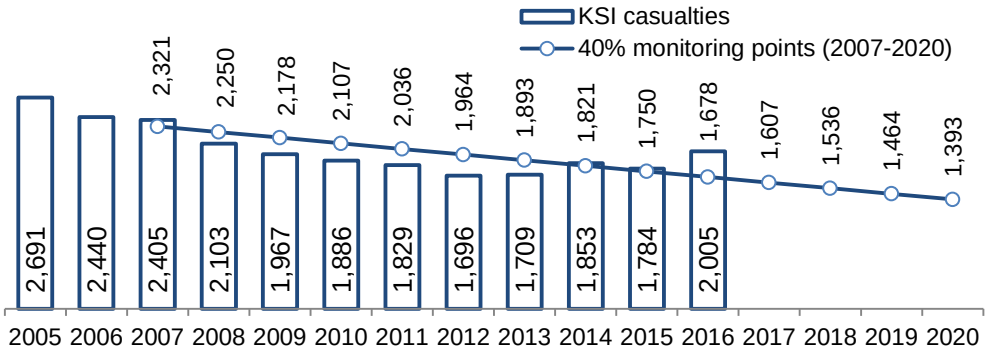


Figure 5-10 KSI casualties by year, SRN

217 KSI casualties in August

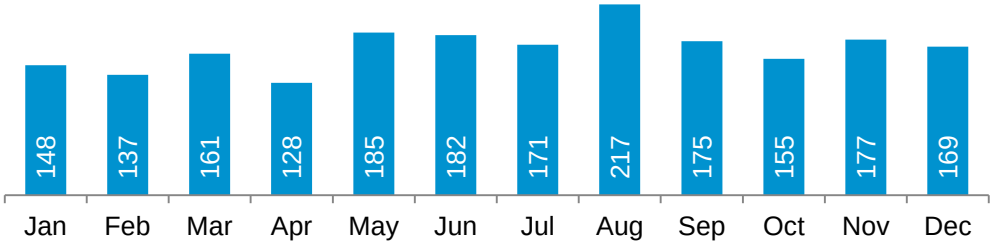


Figure 5-11 KSI casualties by month, 2016

Table 5-7 KSI casualties by type, 2016

Casualty Type	2016	% change from 2015
Car occupants	1,301	↑12.5%
Motorcycle users	372	↑17.0%
Goods vehicle occupants (equal to or under 3.5 tonnes)	101	↑5.2%
HGV occupants (over 3.5 tonnes)	82	↑1.2%
Pedestrians	94	↑30.6%
Pedal cyclists	44	↑10.0%

Pedestrian KSI casualties had the greatest percentage increase (30.6 per cent) of all the casualty types

Table 5-8 KSI casualties by age group, 2016

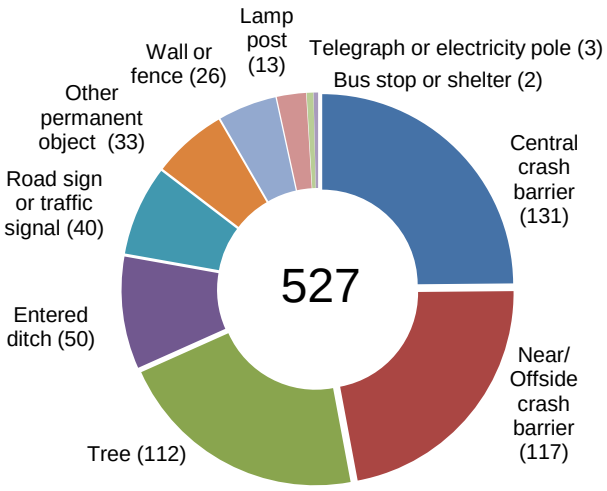
Children (0-15)	Young (16-19)	Other (20-59)	Older (60-69)	Elderly (70+)	? (Unknown)
81	118	1,432	168	193	13
↑102.5%	↑28.3%	↑13.0%	↓14.3%	↑10.9%	↓13.3%

59.8 per cent of all KSI casualties were on A-roads

A-road single carriageway - the only road class to have a decrease in KSI casualties

1,199 ↑13.6%	814 ↑22.4%
A-road	A-road dual carriageway
806 ↑10.6%	385 ↓1.3%
Motorway	A-road single carriageway

Figure 5-12 KSI casualties by road classification, 2016



527 KSI casualties involved hitting an object off the carriageway in 2016

12.4 per cent of all KSI casualties (2,005) involved hitting a barrier of some kind (248)

Figure 5-13 KSI casualties by objects hit off carriageway, 2016

24.8 per cent of KSI casualties were at a junction

Table 5-9 KSI casualties by junction detail, 2016

Junction detail	2016	% change from 2015
T or staggered	142	↑6.0%
Slip road	141	↑11.9%
Roundabouts	134	↑38.1%
Crossroads	30	↑36.4%
Private drive or entrance	15	↓44.4%
More than 4 arms (not roundabout)	4	-
Mini-roundabout	0	-
Other	31	↑40.9%
Not at junction	1,508	↑12.0%

5.4. Slightly Injured Casualties

This section provides an overview of slightly injured casualties on the SRN for 2016 along with comparisons to previous years as required. As explained in Section 1.2 the reporting of STATS19 via CRASH has had an impact on both seriously injured and slightly injured collision and casualty data.

In 2016, there were 14,228 slightly injured casualties on the SRN; a decrease of 359 slightly injured casualties from the 2015 value of 14,587 and now 1.5 per cent above the 2016 monitoring point of 14,014 (Figure 5-14). The total cost of slightly injured casualties on the SRN in 2016 was £206.1m[19].

Figure 5-15 shows that in 2016 August had the most slightly injured casualties with 1,399 whilst March had the fewest with 1,081.

Table 5-10 shows slightly injured casualties by type, it can be calculated that in 2016:

- 86.5 per cent of slightly injured were car occupants (12,303 of 14,228)
- 5.8 per cent of slightly injured were goods vehicle occupants (under 3.5 tonnes or unknown weight) (829 of 14,228)
- 3.5 per cent of slightly injured were motorcycle users (492 of 14,228)

Table 5-11 shows the number of slightly injured in a collision by casualty age in 2016. The number of slightly injured casualties increased in both Elderly (70+) and Children (0-15) by 0.6 and 2.6 per cent respectively, from 2015. All the other age groups show a decrease, with Young (16-19) having the greatest reduction of 7.0 per cent, from 2015.

In 2016, the number of slightly injured casualties decreased across all road classes (Figure 5-16). The changes to slightly injured casualties by road classification are:

- A-road single carriageway slightly injured casualties decreased by 2.9 per cent to 1,840, from 1,895 in 2015
- A-road dual carriageway slightly injured casualties decreased by 0.7 per cent to 5,402, from 5,440 in 2015
- A-road slightly injured casualties, as a whole, decreased by 1.3 per cent to 7,242, from 7,335 in 2015
- Motorway slightly injured casualties decreased by 3.7 per cent to 6,986, from 7,252 in 2015

In 2016, hitting an object off the carriageway was associated with 2,285 slightly injured casualties (Figure 5-17), and is 16.1 per cent of all slightly injured casualties. This is a decrease on the 2015 value of 3,016. Of those slightly injured casualties that involved hitting an object off the carriageway 61.5 per cent were attributed to hitting a barrier of some kind and 10.9 per cent attributed to hitting a tree. This is equivalent to 9.9 per cent and 1.7 per cent of all slightly injured casualties (14,228) respectively.

Table 5-12 shows slightly injured casualties by junction detail, overall 26.2 per cent of slightly injured casualties were at junctions in 2016. The total number of slightly injured casualties at junctions decreased to 3,728 in 2016 from 4,051 in 2015; a decrease of 8.0 per cent. Roundabouts and slip roads both had significantly more slightly injured casualties compared to other junctions in 2016 with 1,363 and 1,173 respectively. However, slightly injured casualties for both junction types decreased from the corresponding 2015 values by 7.2 and 11.0 per cent respectively.

5.4.1. Slightly injured casualty infographics

14,228 slightly injured casualties
↓ 2.5 per cent from 2015

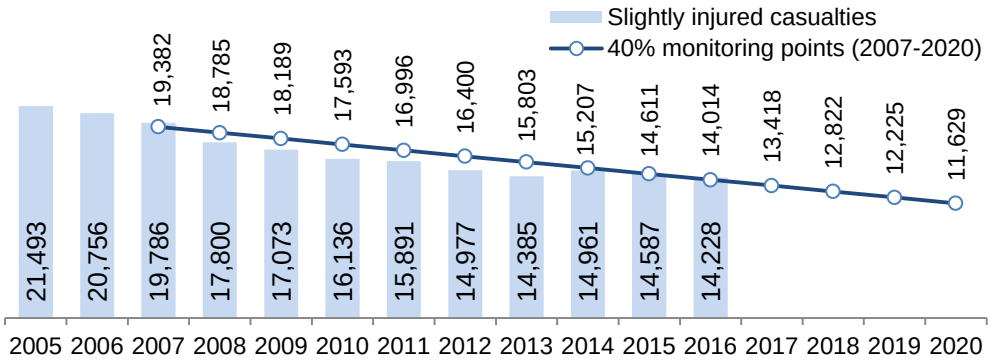


Figure 5-14 Slightly injured casualties by year, SRN

1,399 slightly injured casualties in August

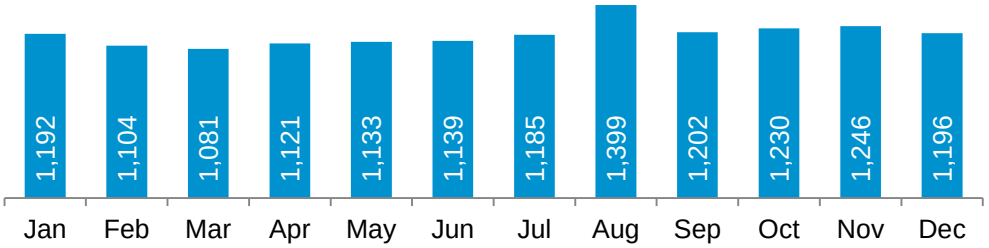


Figure 5-15 Slightly injured casualties by month, 2016

Table 5-10 Slightly injured casualties by type, 2016

Casualty Type	2016	% change from 2015
Car occupants	12,303	↓1.0%
Motorcycle users	492	↓7.3%
Goods vehicle occupants (equal to or under 3.5 tonnes)	829	↓8.0%
HGV occupants (over 3.5 tonnes)	322	↓9.0%
Pedestrians	60	↓28.6%
Pedal cyclists	104	↓8.0%

86.5 per cent of the slightly injured casualties involved car occupants

Table 5-11 Slightly injured casualties by age group, 2016

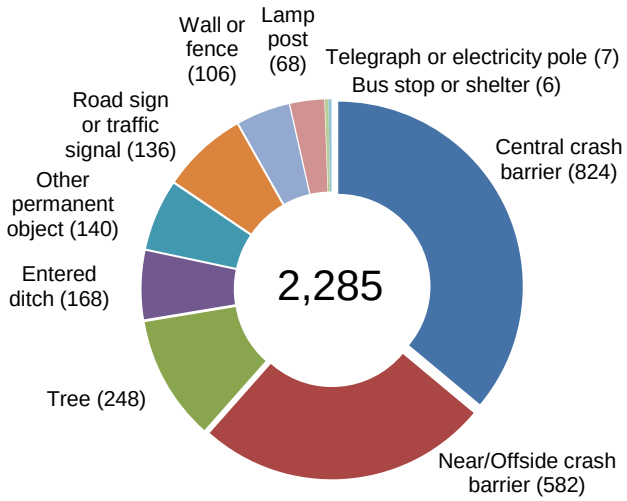
Children (0-15)	Young (16-19)	Other (20-59)	Older (60-69)	Elderly (70+)	? (Unknown)
825	798	10,815	1,006	659	125
↑2.6%	↓7.0%	↓2.8%	↓0.3%	↑0.6%	↓3.1%

50.9 per cent of all slightly injured casualties were on A-roads

All the road classes had a reduction in slightly injured casualties

7,242 ↓1.3%	5,402 ↓0.7%
A-road	A-road dual carriageway
6,986 ↓3.7%	1,840 ↓2.9%
Motorway	A-road single carriageway

Figure 5-16 Slightly injured casualties by road classification, 2016



2,285 slightly injured casualties involved hitting an object off the carriageway in 2016

9.9 per cent of all slightly injured casualties (14,228) involved hitting a barrier of some kind (1,406)

Figure 5-17 Slightly injured casualties by objects hit off carriageway, 2016

26.2 per cent of slightly injured casualties were at a junction

Table 5-12 Slightly injured casualties by junction detail, 2016

Junction detail	2016	% change from 2015
Roundabouts	1,363	↓7.2%
Slip road	1,173	↓11.0%
T or staggered	684	↓13.6%
Crossroads	193	↑4.9%
Private drive or entrance	129	↑7.5%
More than 4 arms (not roundabout)	37	0.0%
Mini-roundabout	2	-
Other	147	↑19.5%
Not at junction	10,500	↓0.3%

5.5. Young Motorist

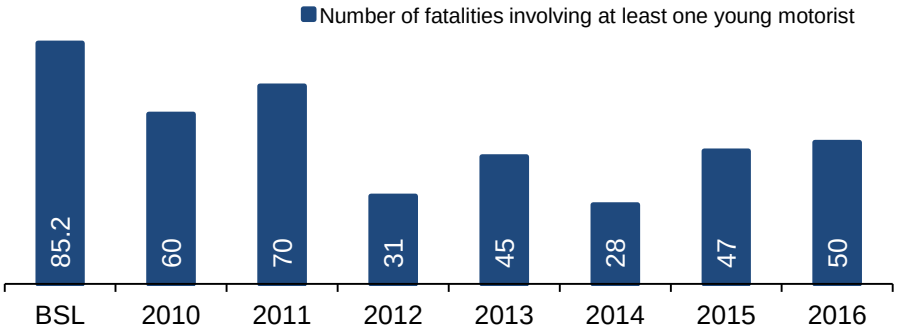
This section investigates casualty trends where a collision involved at least one young motorist aged between 17 and 24 years. The number of casualties involving a young motorist still remains at approximately one quarter of total casualties (4,481 out of 16,233).

5.5.1. Casualties involving young motorists by severity

The historic number of casualties by severity between 2010 and 2016 together with the baseline average are shown in Figure 5-18 and Figure 5-19. As shown in Figure 5-18 the number of young motorists involved in fatalities increased in 2016 (50) from 2015 (47); is an increase of 6.4 per cent. However, the number of KSI casualties (Figure 5-18) and total casualties (Figure 5-19) decreased by 1.6 and 5.4 per cent respectively.

50 fatalities involving young motorists

↑ 6.4 per cent from 2015 (47)



420 KSI casualties involving young motorists

↓ 1.6 per cent from 2015 (427)

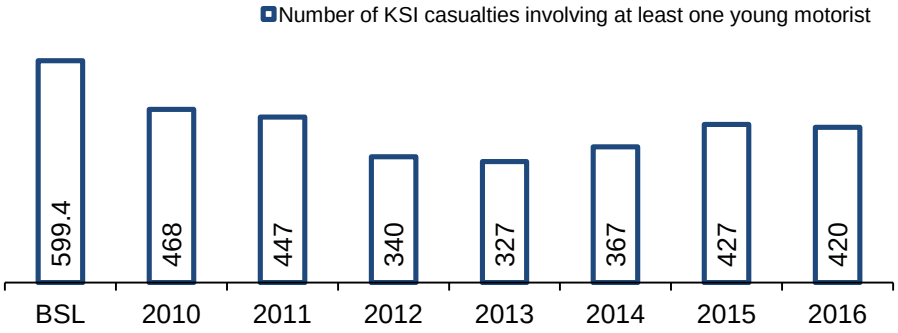


Figure 5-18 Fatalities and KSI casualties involving young motorists

4,481 casualties involving young motorists

↓ 5.4 per cent from 2015 (4,738)

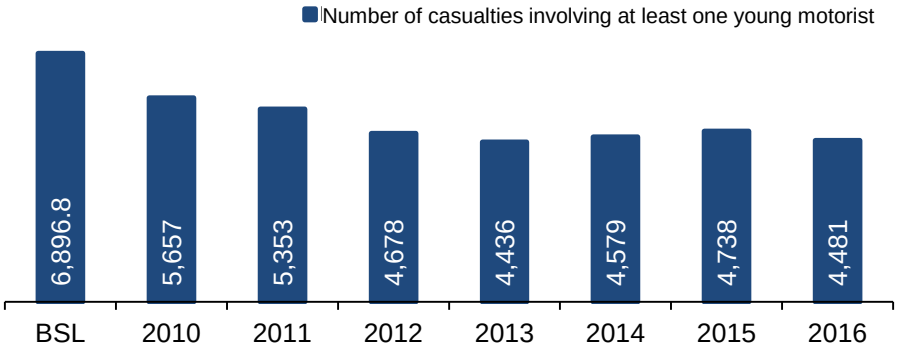


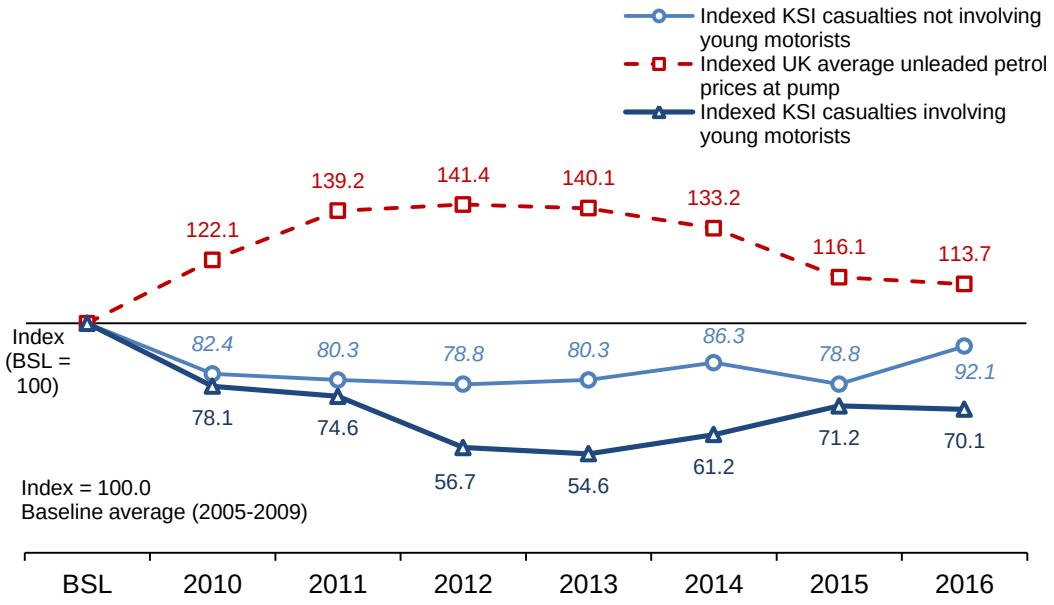
Figure 5-19 Casualties involving young motorists

5.5.2. Cost of motoring effect on casualties involving young motorists

Figure 5-20 compares the change of UK average petrol prices and KSI casualties involving young motorists, indexed to their respective baseline averages (2005-2009). It can be observed that the two parameters potentially correlate, with an increase in petrol prices typically corresponding with a decrease in KSI casualties involving young motorists.

Figure 5-20 also shows that KSI casualties involving young motorists have decreased by 1.1 index points from 2015; which is a change from the increase shown in both 2014 and 2015. However, the KSI casualties not involving young motorists increased by 13.3 index points over the same period (2015 to 2016) and its trajectory is not as closely correlated to fuel prices.

Average UK cost of petrol at pump
108.9 pence
13.7 per cent since the BSL



Notes:
(a) KSI casualties not involving young motorists represent the number of KSI casualties where no young motorists were involved.
(b) Data sourced from gov.uk, Department of Energy & Climate Change[20].

Figure 5-20 Index of changes in UK average petrol price and KSI casualties involving/not involving young motorists

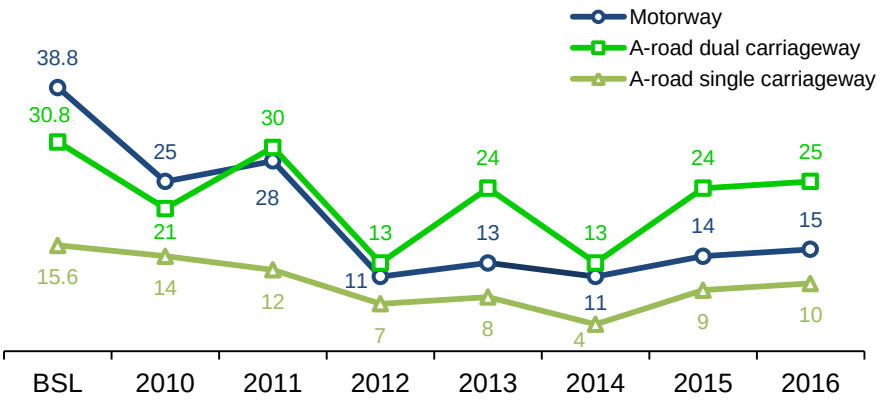
[20] UK fuel prices sourced from Table 4.1.2 Average annual retail prices of petroleum products and a crude oil price index UK

5.5.3. Casualties involving young motorists by road classification

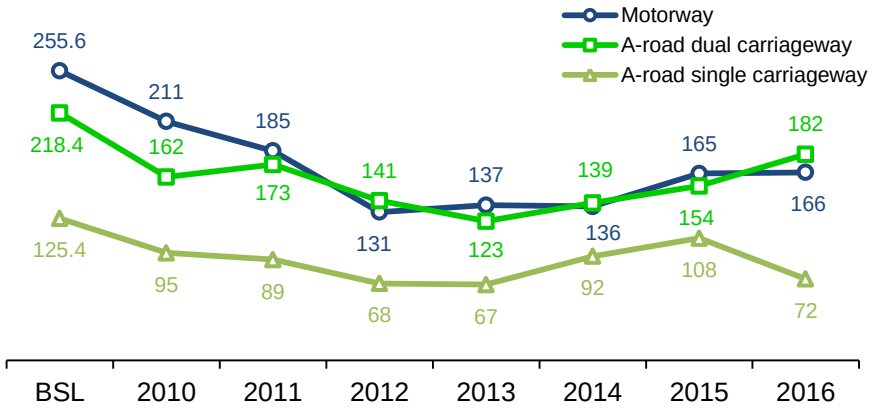
Appendix Table K-3 provides the number of casualties involving young motorists by road classification and severity. The trend over time of the number of casualties, tabulated in Appendix Table K-3, is presented in Figure 5-21 by road classification and severity.

Figure 5-21 shows that there was an increase of 1 fatality, 28 KSI casualties and 11 total casualties involving young motorist on A-road dual carriageways in 2016, compared to 2015. The figure also shows that the number of KSI casualties involving young motorists on A-road single carriageways decreased by 36, to 72 from 108, between 2015 and 2016.

Fatalities involving young motorist



KSI casualties involving young motorist



Casualties involving young motorist

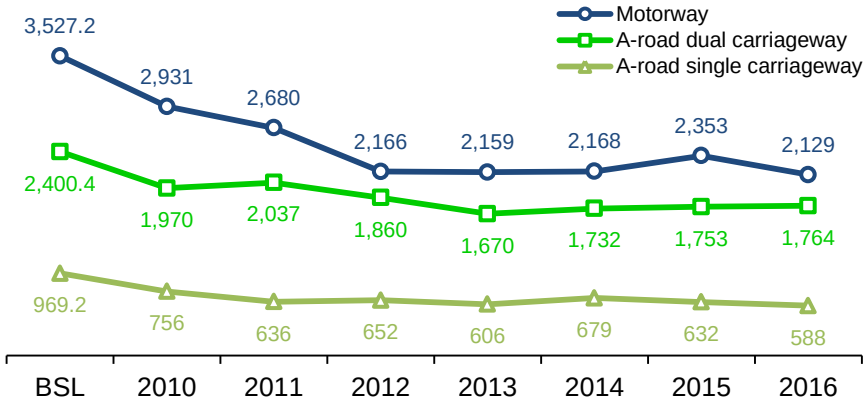


Figure 5-21 Casualties involving young motorists by severity and road class

5.5.4. Contributory factors associated with young motorists

The number of KSI casualties involving young motorists for the top 10 contributory factors are highlighted in Table 5-13. The top 10 contributory factors are grouped under “injudicious action”, “driver/rider error or reaction”, “impairment or distraction”, “behaviour or inexperience” and “road environment” groupings.

The two contributory factors related to the highest number of KSI casualties involving young motorists were “failed to look properly” and “loss of control”; which contributed to 76 and 75 KSI casualties respectively.

Of note, eight of the top 10 contributory factors listed in Table 5-13 also appear in the top 10 contributory factors attributed to all KSI casualties in 2016 (Appendix Table I-5); the exception being “learner or inexperienced driver/rider” and “exceeding speed limit”.

Table 5-13 Top 10 contributory factors for KSI casualties involving young motorists, 2016

Rank	Contributory Factor		2016	Percentage of KSI casualties
1	405	Failed to look properly	76	18.1%
2	410	Loss of control	75	17.9%
3	406	Failed to judge other person’s path or speed	60	14.3%
4	602	Careless, reckless or in a hurry	45	10.7%
5	307	Travelling too fast for conditions	32	7.6%
6	306	Exceeding speed limit	32	7.6%
7	605	Learner or inexperienced driver/rider	32	7.6%
8	501	Impaired by alcohol	29	6.9%
9	403	Poor turn or manoeuvre	28	6.7%
10	103	Slippery road (due to weather)	27	6.4%

Key (CF groups):
Driver/Rider error or reaction; Injudicious action; Behaviour or inexperience; Impairment or distraction; Road environment

Notes:
(a) Table reports the number of KSI casualties involving at least one young motorist where the specified contributory factor was recorded at least once.
(b) In 2016, there was a total of 420 KSI casualties involving young motorists.

Contributory factors attributed to collisions with young motorists are provided in Appendix Table K-12. Of note; the factors listed in the appendix table are the total number of collisions where at least one of the factors was present in the collision and are not necessarily attributed directly to the young motorist. The top five factors recorded at least once in a collision involving a young motorist are:

- Failed to look properly
- Failed to judge other person’s path or speed
- Following too close
- Loss of control
- Sudden braking

5.6. Lighting

This topic of interest provides data for monitoring the effect of lighting on road safety. Since 2010[21], parts of the SRN (generally excluding junctions) which previously were designed with lighting are now operating without lights during the hours of darkness.

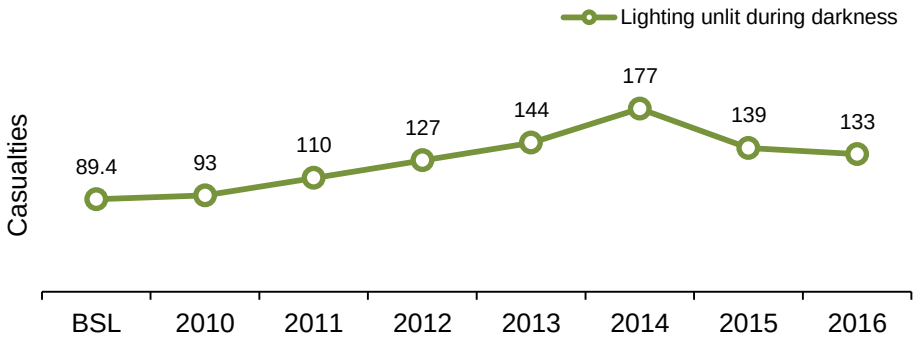
Appendix Table L-1 to Table L-8 provides an overview of historic trends against lighting levels. These trends include; collisions and casualties by lighting condition, road name, road classification, contributory factors and severity.

5.6.1. Comparison between number of casualties and lighting levels

The proportion of casualties in 2016 (Figure 5-22) associated with lighting unlit sections of the SRN during darkness was relatively low. In total, there were 133 casualties reported on lighting unlit sections during darkness out of the total 16,233 casualties. In comparison, the number of casualties in lit sections during darkness was over 16 times greater at 2,190.

Figure 5-22 shows that casualties on lit sections during darkness follow a similar trend to those in Figure 3-11 for total casualties. However, between 2010 and 2014, the number of casualties on unlit sections during darkness increased by 90.3 per cent (from 93 to 177 casualties); although in 2016 this value reduced to 133.

Lighting unlit during darkness
43.0 per cent from 2010



Lighting lit during darkness
9.6 per cent from 2010

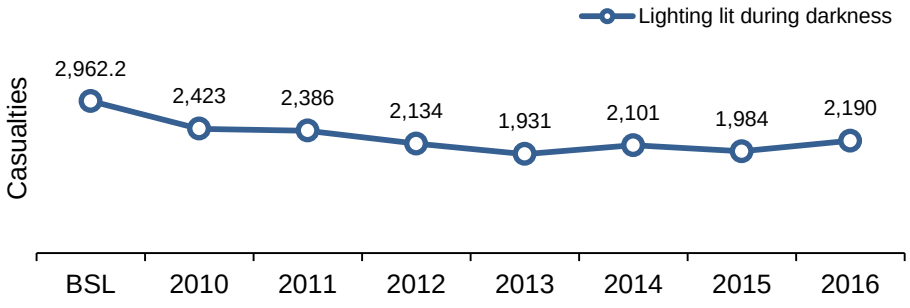


Figure 5-22 Casualties by lighting conditions between 2010 and 2016

[21] Midnight Switch-Off for Motorway Lighting, Highways Agency (now Highways England), Accessed via http://webarchive.nationalarchives.gov.uk/20120810121037/http://www.highways.gov.uk/knowledge/30236.aspx

5.6.2. Casualties on specific roads during darkness

An extract of the number of casualties in all categories of darkness, (including sections of road that are lit and unlit) on specific roads are shown in Table 5-14. The expanded list (top 20) is provided in Appendix Table L-5.

It can be seen from Table 5-14 that six out of the top 10 roads had fewer casualties occurring during darkness in 2016 than 2015. Of the four roads that had an increase in casualties the M40 had the largest percentage change of 37.9 per cent with the M25 having the second largest at 35.7 per cent.

Table 5-14 Casualties during darkness by top 10 road names

Rank	Road name	BSL	2010	2011	2012	2013	2014	2015	2016	2016 per cent change from 2015
1	M25	464.8	354	367	371	305	306	322	437	35.7
2	M6	434.0	340	362	253	297	330	309	343	11.0
3	M1	569.6	427	356	363	326	321	344	318	7.6
4	M4	233.4	184	202	182	192	176	176	170	3.4
5	A1	274.4	219	146	160	190	128	155	149	3.9
6	M5	187.0	149	118	122	124	94	105	139	32.4
7	M40	161.8	161	157	167	125	117	95	131	37.9
8	A1(M)	123.6	116	119	114	143	109	125	118	5.6
9	A38	138.6	116	104	125	121	152	124	116	6.5
10	A5	131.0	112	119	141	135	128	143	115	19.6

5.7. Weather

This topic of interest analyses the effects of weather on the SRN. Weather events (rain, snow and fog or mist) recorded along with the casualties, in 2016, equalled 2,251 and was equivalent to 13.9 per cent of the total 16,233 casualties on the SRN; fine weather conditions were recorded in 83.7 per cent of casualties.

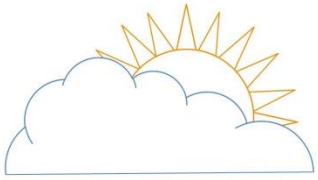
Appendix Table M-1 to Table M-12 provide additional breakdowns of collisions and casualties by weather group, road classification, contributory factors, severity, vehicle type and skidding.

5.7.1. Casualties by weather type

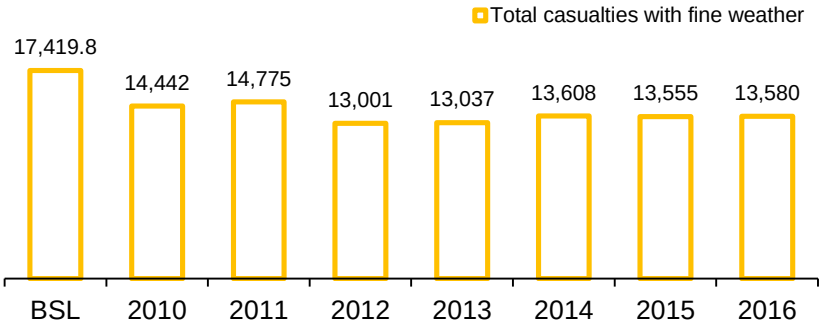
Figure 5-23 shows the number of total casualties by weather group for the years 2010 to 2016. Between 2015 and 2016, the following changes occurred in total casualty numbers during weather events:

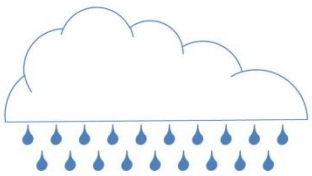
- The number of casualties during snow decreased by 21.1 per cent (to 90 from 114)
- The number of casualties during rain decreased by 7.7 per cent (to 2,051 from 2,222)
- The number of casualties during fog or mist decreased by 36.8 per cent (to 110 from 174)

Appendix Table M-1 shows a further breakdown by severity.

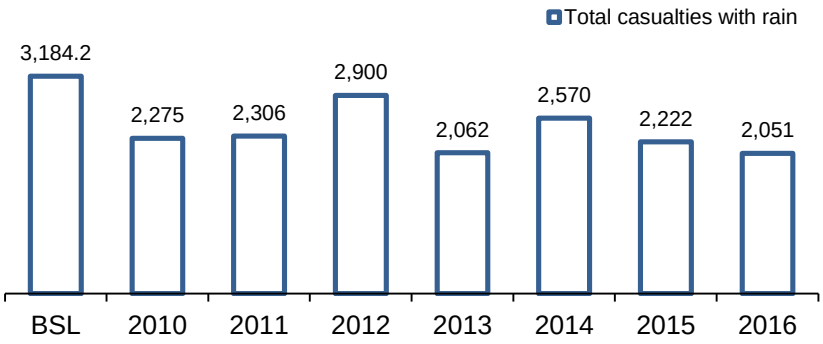


Fine

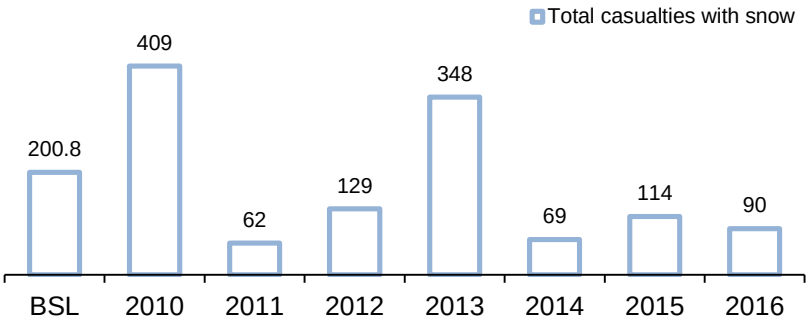


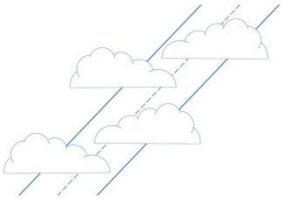


Rain



Snow





Fog or mist

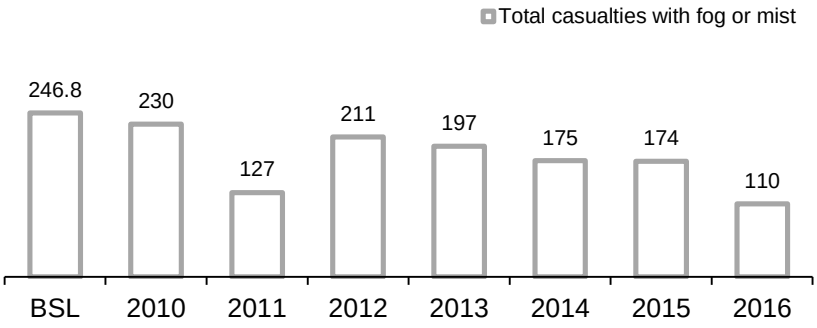


Figure 5-23 Casualties by weather group and year

5.7.2. Casualties against measured temperature and rainfall

The distribution of casualties during rainfall by month in 2016 is shown in Figure 5-25. It can be seen that January has the highest number of casualties with 288, followed by November with 242 casualties.

Although the highest mean monthly rainfall and highest casualties during rainfall both occurred in January it can be seen from Figure 5-25 and Figure 5-27 that there is not a strong correlation between the two values.

The casualty data along with measured air temperature and rainfall for 2016 are provided in Figure 5-24, Figure 5-26 and Figure 5-27. From the figures it can be observed that in 2016:

- **Quarter 1 (Jan to Mar)** – casualty values were at their lowest annually (*average of* 1,274 per month) corresponding with low temperatures (5^{o}C to 6^{o}C) and high rainfall
- **Quarter 2 (Apr to Jun)** – casualty values remained low (*average of* 1,296 per month) through increasing air temperature and low rainfall
- **Quarter 3 (Jul to Sep)** – casualty values were at their highest (*average of* 1,450 per month) corresponding with high temperatures (16^{o}C to 17^{o}C) and moderate rainfall; this period corresponds with the school summer holiday
- **Quarter 4 (Oct to Dec)** – casualty values remain high (*average of* 1,391 per month) following Quarter 3 corresponding with declining temperatures and low/moderate rainfall.

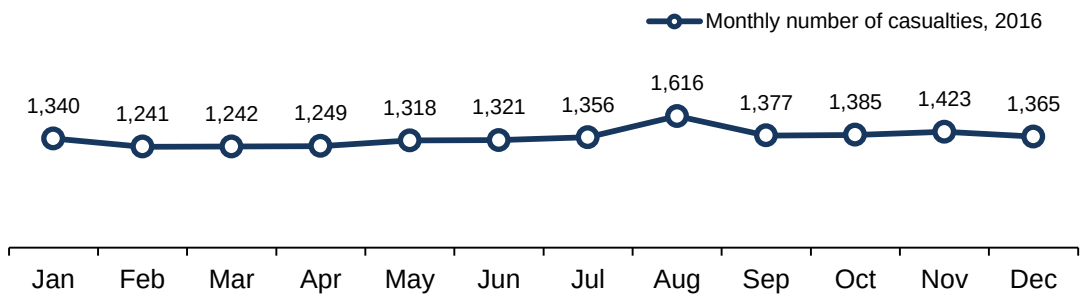


Figure 5-24 Number of total casualties by month, 2016

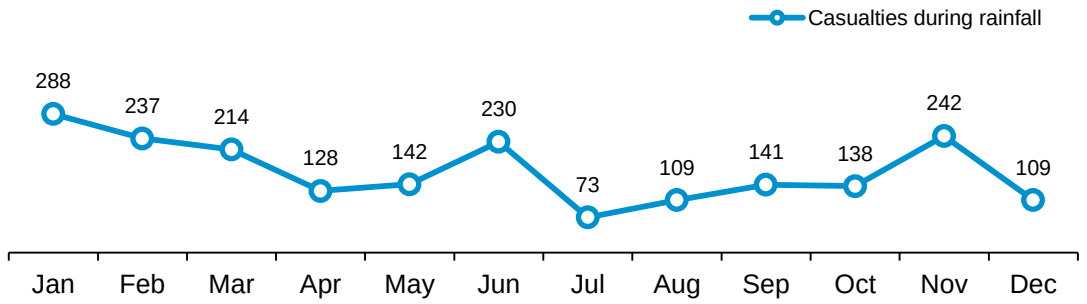


Figure 5-25 Total number of casualties during rainfall by month, 2016

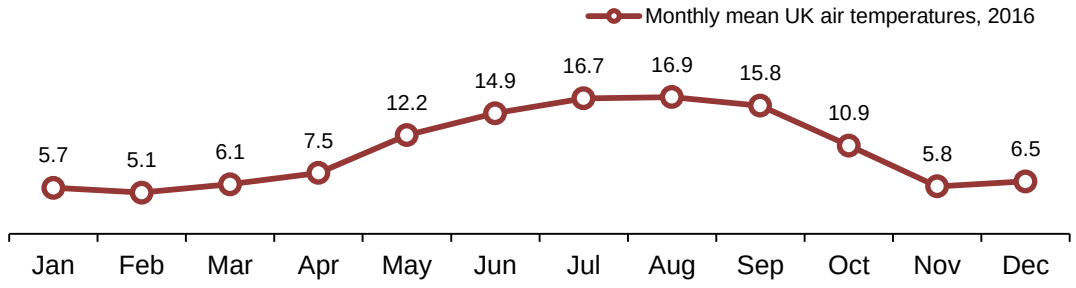


Figure 5-26 Mean UK air temperatures (degrees Celsius) by month, 2016

Notes:
(a) Temperature data sourced from DECC Energy Weather: Digest of United Kingdom energy statistics (DUKES).
(b) Accessed from https://www.gov.uk/government/statistics/weather-digest-of-united-kingdom-energy-statistics-dukes

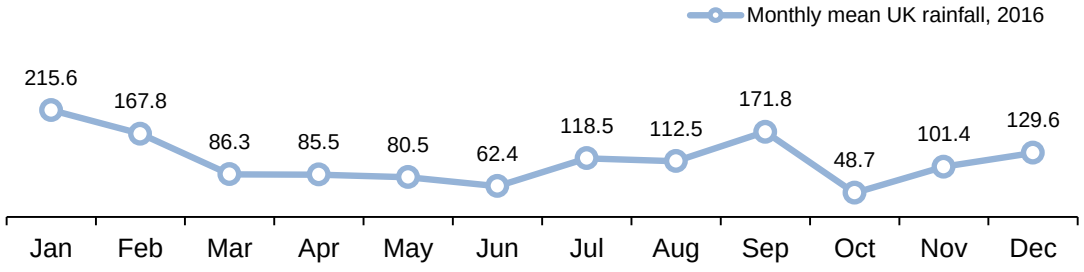


Figure 5-27 Mean UK rainfall (millimetres) by month, 2016

Notes:
(a) Rainfall data sourced from DECC Energy Trends Statistics.
(b) Accessed from https://www.gov.uk/government/statistics/energy-trends-section-7-weather

5.7.3. Collisions by weather related contributory factors

Table 5-15 shows the number of collisions during specific weather related contributory factors. It shows that the number of collisions during specific weather related contributory factors have all decreased from 2015 to 2016. 'Travelling too fast for conditions' showed the largest decrease compared to 2015 with a 20.8 per cent reduction.

Table 5-15 Number of collisions involving specific weather related contributory factors, 2015 and 2016

Contributory Factor		2015	2016	2016 per cent change from 2015
103	Slippery road (due to weather)	693	661	↓ 4.6
307	Travelling too fast for conditions	731	579	↓ 20.8
706	Dazzling sun	130	122	↓ 6.2
707	Rain, sleet, snow, or fog	182	176	↓ 3.3
708	Spray from other vehicles	59	53	↓ 10.2

Appendix Table M-9 and Table M-10 provide further breakdown of the number of casualties and collisions attributed to the weather related contributory factors.

5.8. Roadworks

This topic of interest provides a summary of changes to the number of casualties at roadworks. Further details of collisions and casualties at roadworks by road classification, junction detail, vehicle type, driver age, pedestrian involvement, contributory factors, severity and severity ratios is provided in Appendix Table N-1 to Table N-20.

Roadworks are essential to the SRN as they ensure roads are safe and serviceable during their lifetime, as well as increase capacity through additional lanes or easing of bottlenecks.

In the past decade, Highways England has sought methods to keep road users and road workers safe within roadworks. One example is the introduction of average speed cameras to facilitate compliance with a safe speed limit through works to protect road users and road workers.

5.8.1. Trends in casualties at roadworks

The trends of the number of casualties within roadworks on the SRN between 2005 and 2010 had levels typically around 900 casualties per year (2005-09 baseline average of 869.0). However, as seen in Figure 5-28, the number of casualties at roadworks in 2016 was 588, a 32.3 per cent reduction on the baseline.

Casualties at roadworks
↓ 20.6 per cent from 2015 (741 to 588)

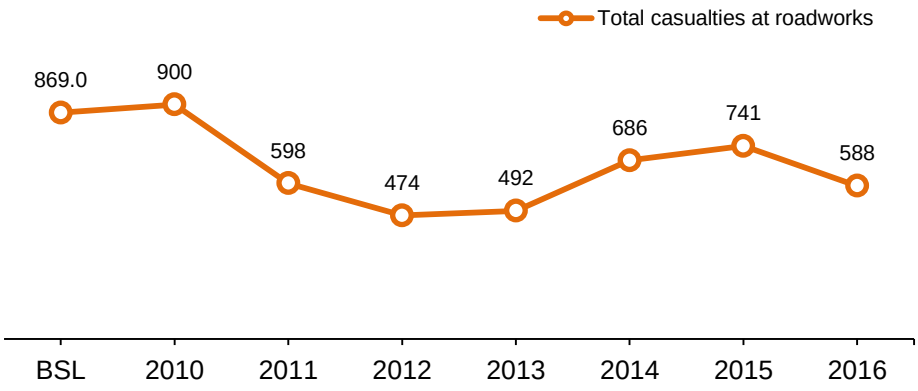


Figure 5-28 Trend in casualties at roadworks

5.8.2. Comparison of casualties at roadworks against roads spending

A comparison between casualties occurring at roadworks against capital and current expenditure on national roads[22] is highlighted in Figure 5-29 for May 2006 to April 2016[23].

From the figure it can be seen that since May 2009, the number of casualties at roadworks follows the amount of capital and current expenditure on national roads. It is anticipated the spending profile on construction activities will continue to increase over the coming years as a number of smart motorway schemes and other major projects are planned.

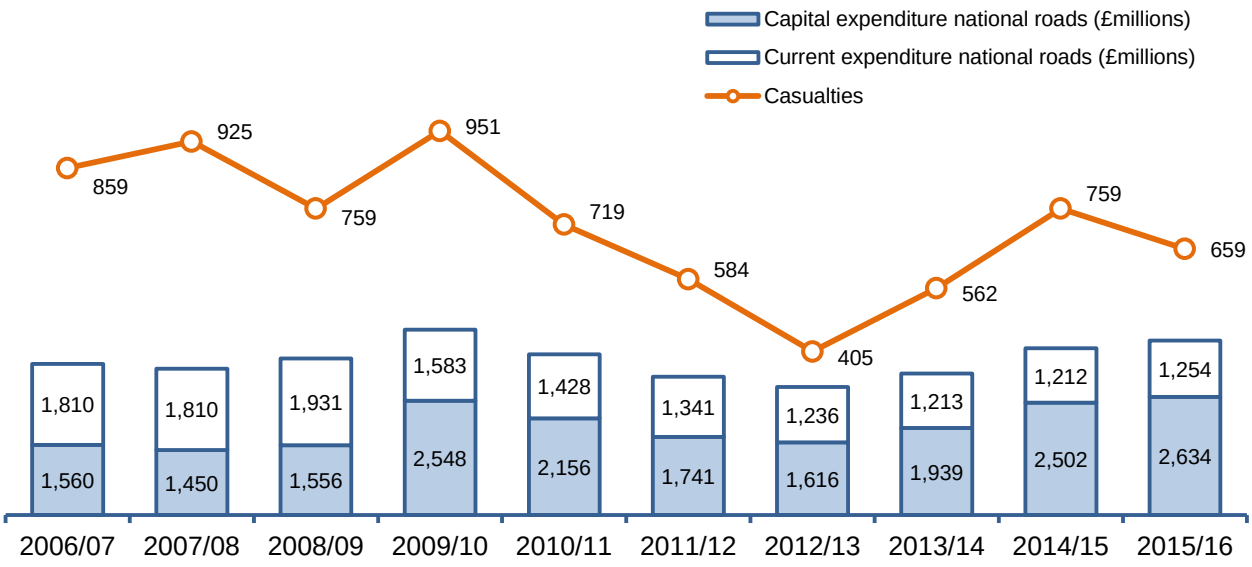


Figure 5-29 Casualties at roadworks against expenditure on national roads (£millions) between 2006/07 to 2015/16

5.8.3. Contributory factors in collisions at roadworks

The top 10 contributory factors attributed to collisions in roadworks during 2016 are listed in Table 5-16. The table indicates the number of collisions where a specific factor is reported at least once. In 2016, the most reported factor was 'Failed to look properly', which was attributed to 124 collisions.

Out of the top 10 contributory factors attributed to collisions at roadworks, only three were not listed in the top 10 contributory factors reported for overall collisions on the SRN. One was 'Temporary road layout (e.g. contraflow)' which has an obvious linkage to roadworks and was attributed to 10.5 per cent of these collisions in 2016.

[22] For this report, annual values of capital and current expenditure on "national roads" are used as an approximation of overall national roadworks activity on major routes of which the SRN is assumed to constitute the vast majority. Values obtained from Table TSGB1303 "UK Public Expenditure on Transport by function", sourced from DfT, 2016.
[23] Casualty numbers adjusted to match the May to April timeline.

Table 5-16 Top 10 contributory factors for collisions at roadworks, 2016

Rank.	Contributory Factor		2016	Percentage of collisions at roadworks, 2016
1	405	Failed to look properly	124	35.1%
2	406	Failed to judge other person's path or speed	93	26.3%
3	308	Following too close	44	12.5%
4	107	Temporary road layout (e.g. contraflow)	37	10.5%
5	408	Sudden braking	35	9.9%
6	403	Poor turn or manoeuvre	34	9.6%
7	602	Careless, reckless or in a hurry	29	8.2%
8	410	Loss of control	17	4.8%
9	501	Impaired by alcohol	16	4.5%
10	503	Fatigue	15	4.2%

Key (CF groups):
Driver/Rider error or reaction; Injudicious action; Impairment or distraction; Road environment; Behaviour or inexperience

Notes:
(a) Table reports the number of collisions at roadworks where the specified contributory factor was recorded at least once.
(b) In 2016, there was a total of 353 collisions at roadworks.

Figure 5-30 displays the number of collisions involving either excess speed or tailgating. These contributory factors are more specifically reported as "Exceeding speed limit", "Travelling too fast for conditions" and "Following too close". The figure shows that values post 2010 are fewer than the baseline and 2010 values. From the figure it can be seen that there were 44 collisions involving Following too close; 13 collisions involving Travelling too fast for conditions; and eight collisions involving Exceeding speed limit at roadworks in 2016. All of these values are below their corresponding 2015 values.

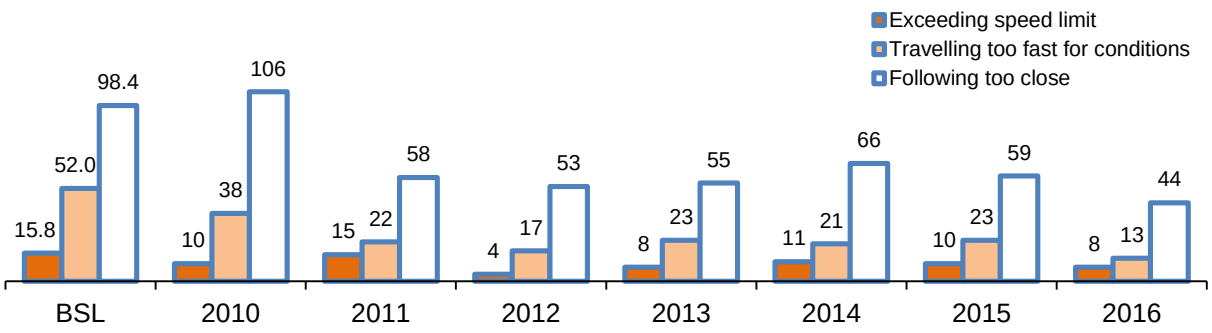


Figure 5-30 Collisions at roadworks involving excess speed and tailgating by year

5.9. Objects Hit

An assessment of collisions and casualties resulting from hitting objects on and off the carriageway is included in this section. Appendix Table O-1 to Table O-12 provide further breakdowns of collisions and casualties involving objects hit on and off carriageways by objects hit, road classification, contributory factors and severity.

Object hit on carriageway
125 KSI casualties from objects hit on carriageway
0.8 per cent from 2015 (126)

Object hit off carriageway
527 KSI casualties from objects hit off carriageway
8.3 per cent from 2015 (575)

5.9.1. Casualties resulting from hitting objects on carriageway

Figure 5-31 highlights the number of KSI casualties resulting from hitting objects on the carriageway by road classification. As shown in the figure, the number of KSI casualties has decreased on A-road dual and single carriageways. However, the number of KSI casualties on motorways in 2016 has increased by 32.6 per cent from 43 in 2015 to 57 in 2016.

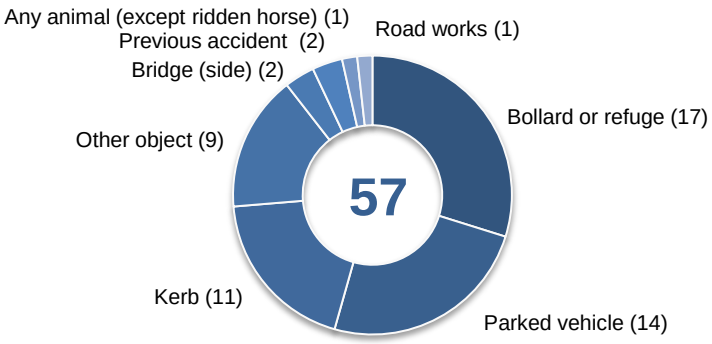
Data showing the top 20 contributory factors attributed to casualties and collisions including past years and BSL are provided in Appendix Table O-9 and Table O-10 respectively.

Assessing the contributory factors attributed to casualties where vehicles have hit objects on the carriageway shows that the top 5 factors by number of casualties in 2016 are:

- Failed to look properly
- Loss of control
- Poor turn or manoeuvre
- Failed to judge the other person's path or speed
- Careless, reckless or in a hurry

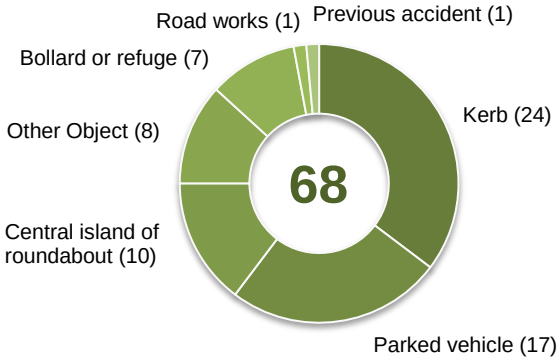
Motorway

57 KSI casualties from objects hit on carriageway
32.6 per cent from 2015 (43)



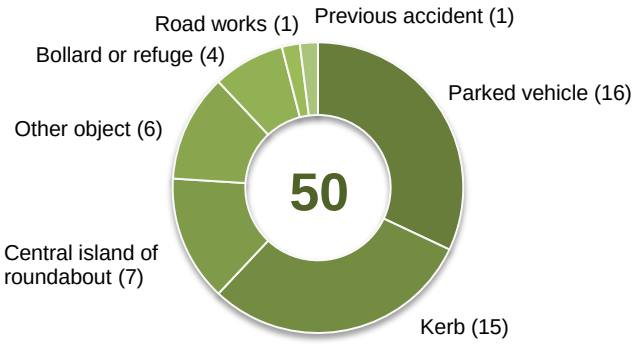
A-road

68 KSI casualties from objects hit on carriageway
18.1 per cent from 2015 (83)



A-road dual carriageway

50 KSI casualties from objects hit on carriageway
18.0 per cent from 2015 (61)



A-road single carriageway

18 KSI casualties from objects hit on carriageway
18.2 per cent from 2015 (22)

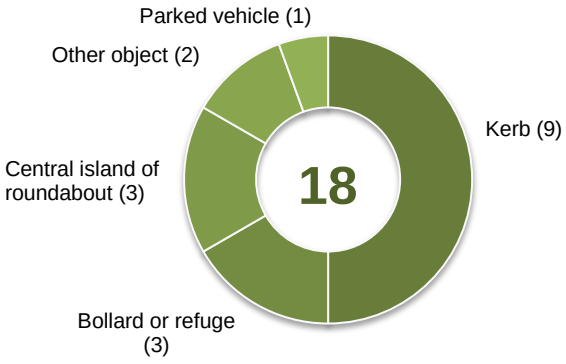


Figure 5-31 KSI casualties resulting from hitting objects on the carriageway by road class, 2016

5.9.2. Casualties resulting from hitting objects off carriageway

Figure 5-32 highlights the number of KSI casualties resulting from hitting objects off the carriageway, and the majority of these involve safety barriers. In 2016, the number of KSI casualties resulting from hitting objects off the carriageway was 527; which is 26.3 per cent of the total KSI casualties (2,005).

Data listing the top 20 contributory factors attributed to casualties and collisions including past years and BSL are available in Appendix Table O-11 and Table O-12 respectively.

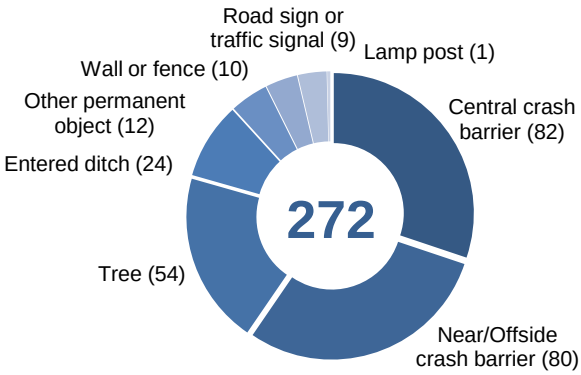
Assessing the contributory factors attributed to casualties where vehicles have hit objects off the carriageway shows that the top 5 factors by number of casualties in 2016 are:

- Loss of control
- Failed to look properly
- Failed to judge other person's path or speed
- Slippery road (due to weather)
- Poor turn or manoeuvre

Motorway

272 KSI casualties from objects hit off carriageway

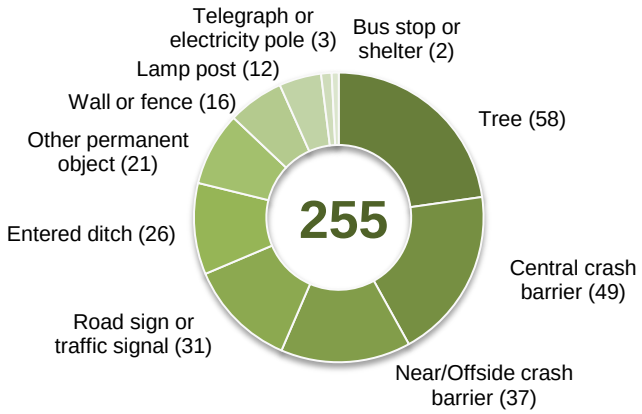
1.5 per cent from 2015 (268)



A-road

255 KSI casualties from objects hit off carriageway

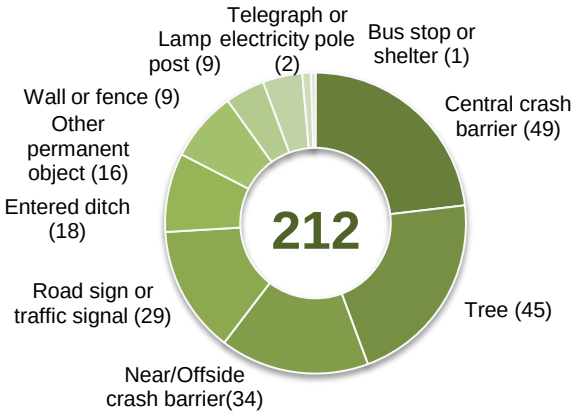
16.9 per cent from 2015 (307)



A-road dual carriageway

212 KSI casualties from objects hit off carriageway

7.8 per cent from 2015 (230)



A-road single carriageway

43 KSI casualties from objects hit off carriageway

44.2 per cent from 2015 (77)

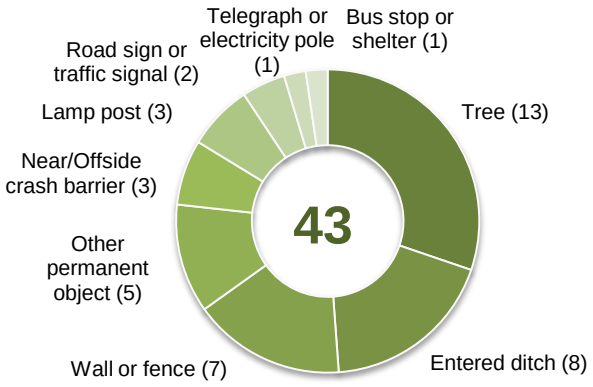


Figure 5-32 KSI casualties resulting from hitting objects off the carriageway by road class, 2016

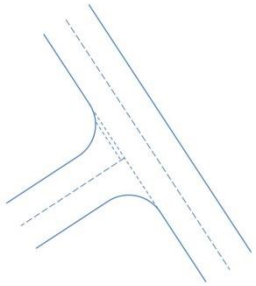
5.10. Junctions

This topic of interest focuses on collisions and casualties occurring at or in the proximity of junctions. For additional statistics on junctions refer to Appendix Table P-1 to Table P-14 which provide breakdowns of collisions and casualties by junction detail, junction control, road name, vehicle type, driver age, contributory factors and severity.

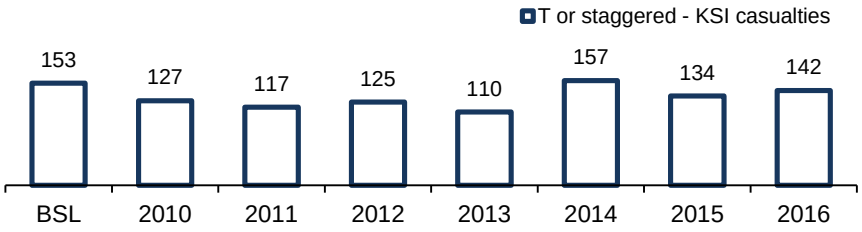
5.10.1. Junction summary

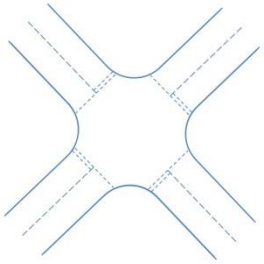
Figure 5-33 shows a breakdown of KSI casualties by junction type and year. It can be seen that the only junction type to decrease in 2016 from 2015 was private drive (to 15 from 27). Roundabouts had the largest increase (38.1 per cent) of KSI casualties to 134 in 2016 from 97 in 2015.

Figure 5-34 gives a summary of casualties reported at junctions. It can be seen that 4,225 casualties were recorded at junctions in 2016. Of the 497 KSI casualties at junctions 142 were recorded at T or staggered junctions, and 141 at slip roads.

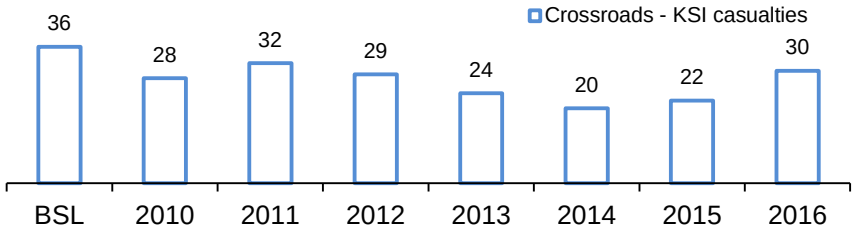


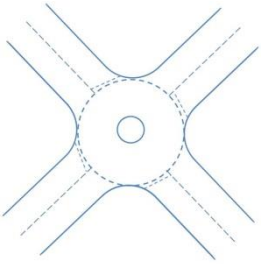
T or staggered



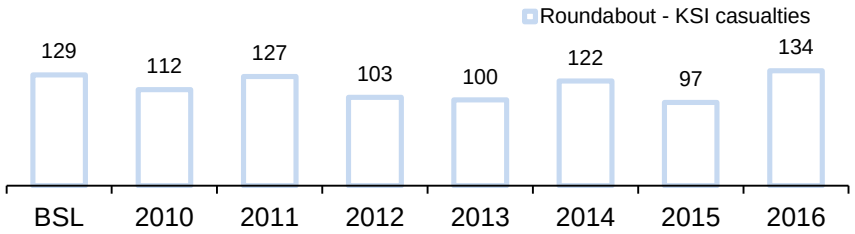


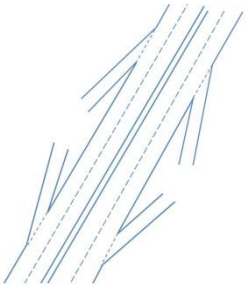
Crossroads



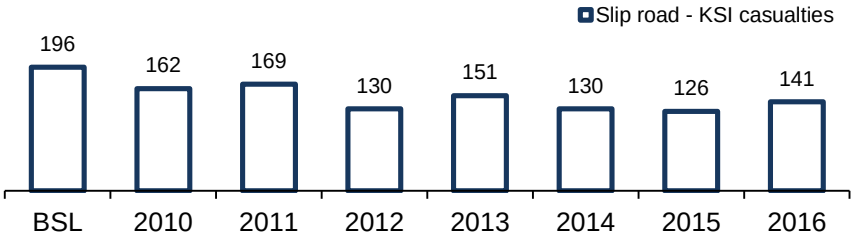


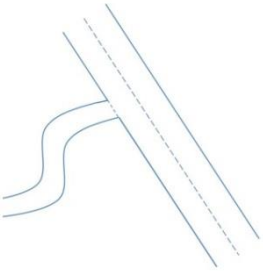
Roundabouts





Slip roads





Private drive

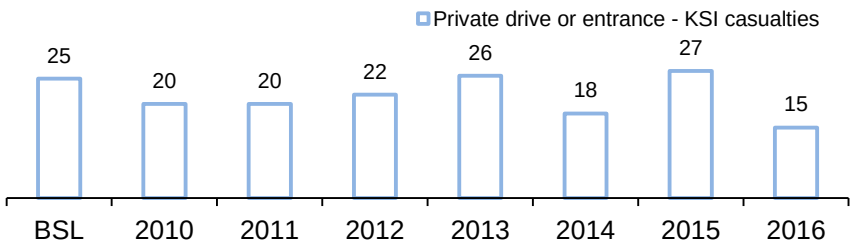
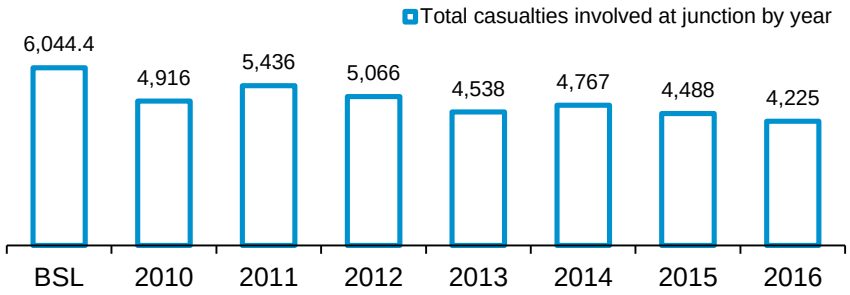


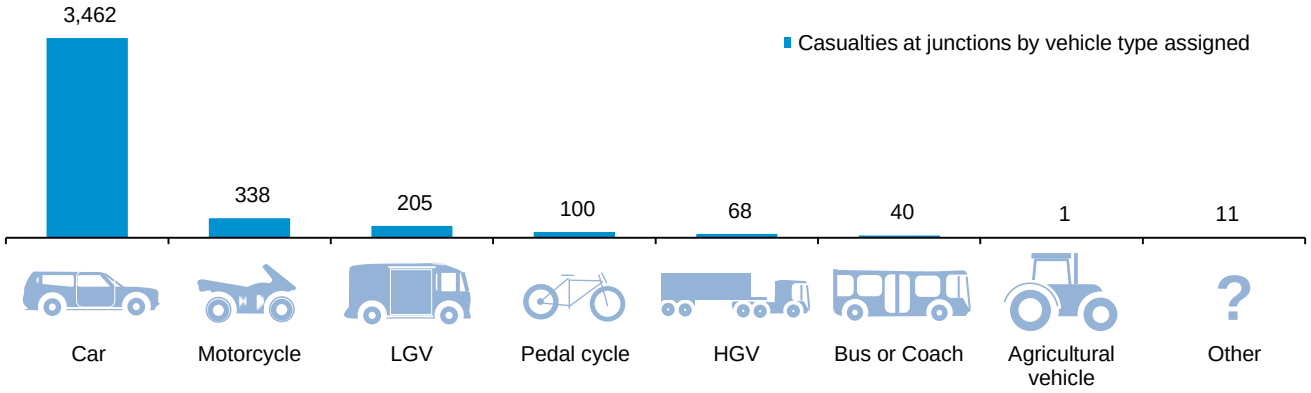
Figure 5-33 KSI casualties by junction detail and year

4,225 casualties recorded at junctions in 2016

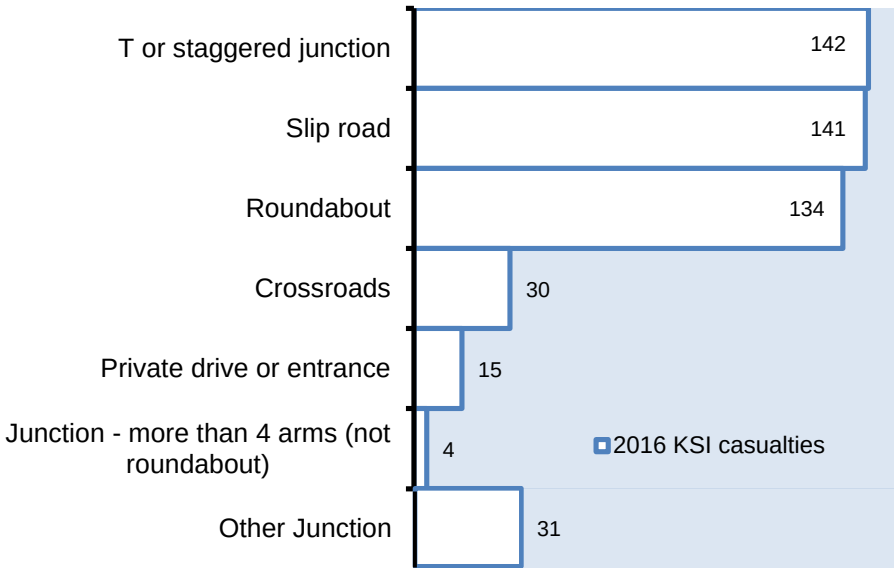
Total casualties
5.9% from 2015



3,462 of the 4,225 casualties at junctions in 2016 assigned to cars



497 KSI casualties recorded at junctions in 2016



KSI casualties	Young motorist (17-24)	Other motorist (25-59)	Older motorist (60-69)	Elderly motorist (70+)	Young rider (16-19)	Other rider (20-59)	Older rider (60-69)	Elderly rider (70+)
	40	208	21	59	11	116	11	-
	↓2.4%	↑42.5%	↓34.4%	↑5.4%	-	↑17.2%	↓56.0%	-

Figure 5-34 Summary of casualties reported at junctions

5.11. Tyres

This topic of interest examines collisions and casualties where 'Tyre illegal, defective or under inflated' is listed as at least one of the contributory factors (also referred to as tyres in this section for brevity). This indicates a lack of preparation or carelessness on the part of the driver or rider to ensure the roadworthiness of their vehicle, and therefore casualties associated with it as the main factor can be considered as preventable.

Appendix Table Q-1 to Table Q-10 provide additional breakdowns of collisions and casualties involving illegal, defective or under inflated tyres by road name, weather condition, casualty type, contributory factors and severity.

5.11.1. Casualties resulting from illegal, defective or under-inflated tyres

The number of total casualties resulting from illegal, defective or under inflated tyres by year is reported in Figure 5-35. The number of reported casualties related to illegal, defective or under inflated tyres has generally reduced since the baseline period; with a reduction of 56.1 per cent in 2016 to 182.

Figure 5-36 shows the number of KSI casualties related to illegal, defective or under inflated tyres has fluctuated since the baseline period; the 2016 and 2015 values were similar at 32 and 33 respectively.

182 casualties involving illegal, defective or under inflated tyres
15.3 per cent from 2015 (215)

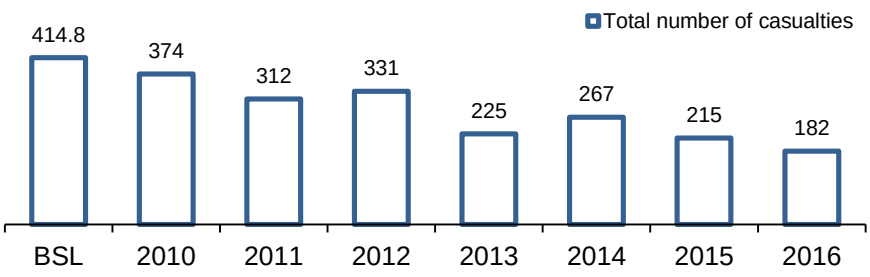


Figure 5-35 Casualties involving illegal, defective or under-inflated tyres by year

32 KSI casualties involving illegal, defective or under inflated tyres
3.0 per cent from 2015 (33)

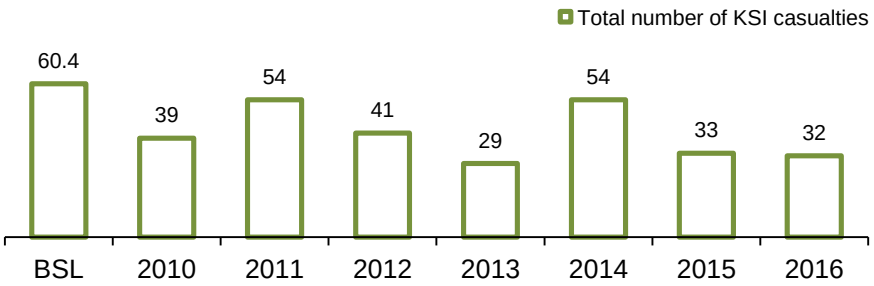


Figure 5-36 KSI casualties involving illegal, defective or under-inflated tyres by year

5.12. Goods Vehicles

This section considers the traffic and casualty statistics associated with goods vehicles. Heavy Goods Vehicles (HGVs) and Other Goods Vehicles (Other GVs or LGVs) rely heavily on the SRN to deliver goods to businesses in the UK and for export and import goods to and from foreign markets.

HGVs are classified and generally reported as goods vehicles where the vehicle gross weight is greater than 3.5 tonnes, whereas LGVs are those with the gross weight equal to or less than 3.5 tonnes. For the purpose of this report, goods vehicles with unclassified gross weight are also classed under LGVs (or Other GVs).

Appendix Table R-1 to Table R-18 provides additional breakdowns of collisions and casualties involving HGVs and LGVs by road name, casualty age, contributory factors and severity.

5.12.1. Changes in HGV and LGV traffic levels

Figure 5-37 outlines the change in traffic levels of HGVs and LGVs by year. The table shows that in 2016, the amount of HGV traffic (98.01 HMVM) was significantly less than LGVs (136.60 HMVM). The difference between HGV and LGV traffic levels has nearly tripled from 13.66 HMVM in 2010 to 38.59 HMVM in 2016.

LGV

Estimated traffic (HMVM)

↑ 5.7 per cent from 2015 (129.22 to 136.60)

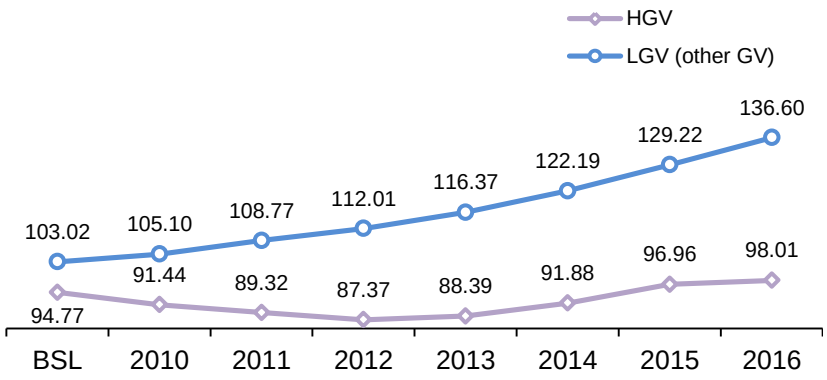
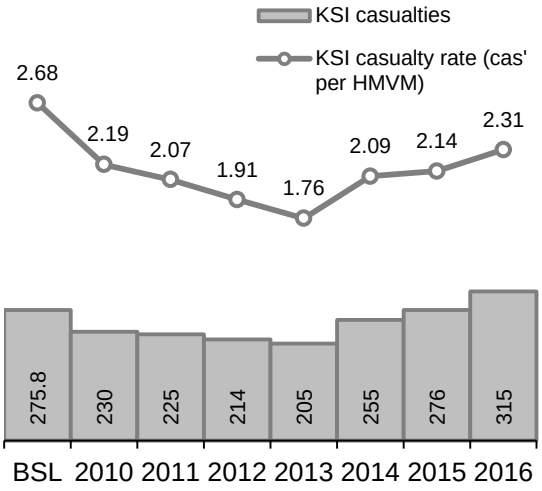


Figure 5-37 Estimated traffic levels for HGV and LGV (Other GV) on the SRN

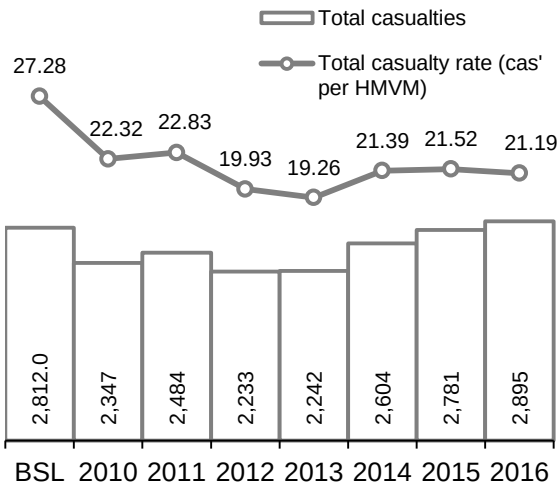
5.12.2. Comparison of casualties and casualty rates involving goods vehicles

Comparison of casualties and casualty rates involving either LGVs or HGVs is provided in Figure 5-38 and Figure 5-39 respectively. As shown by the figures, the likelihood of KSI or total casualties involving a HGV is greater than that for LGV. Comparing KSI casualty rates for 2016 shows that the KSI casualty rate for HGVs (4.17 KSI casualties per HMVM) is approximately two times that of the value for LGVs (2.31 KSI casualties per HMVM).

It can be seen from Figure 5-38 that KSI casualty rates involving LGVs increased for the third time (2014 – 2016), whereas the total casualty rate decreased over the same period; and the corresponding KSI casualties and total casualties increased.



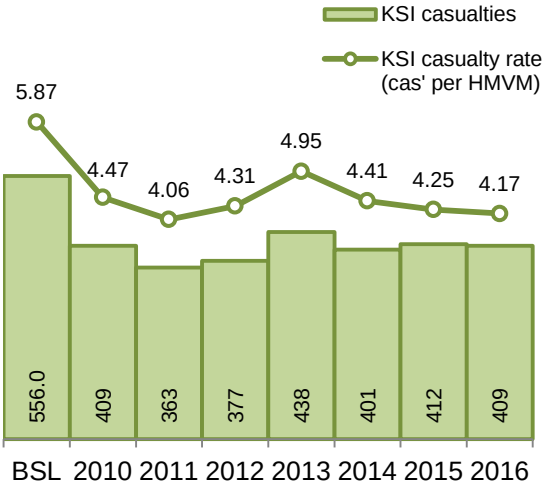
(a) KSI casualties and KSI rate involving LGVs



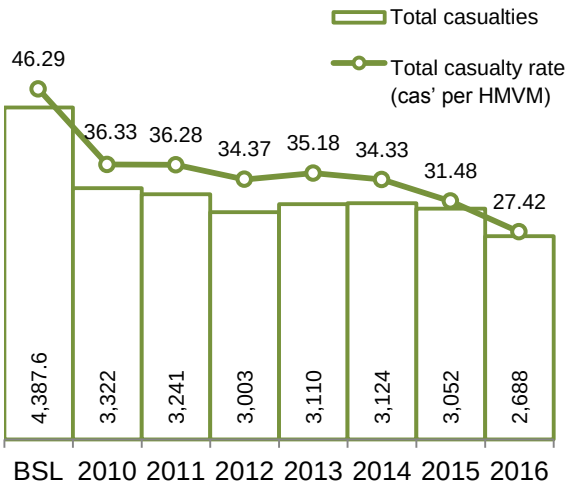
(b) Total casualties and total rate involving LGVs

Notes:
(a) Figure reports number of KSI and total casualties involving at least one LGV in a collision.
(b) Casualty rates based on traffic values provided in Figure 5-37.

Figure 5-38 Number of KSI and total casualties involving at least one LGV



(a) KSI casualties and KSI rate involving HGVs



(b) Total casualties and total rate involving HGVs

Notes:
(a) Figure reports number of KSI and total casualties involving at least one HGV in a collision.
(b) Casualty rates based on traffic values provided in Figure 5-37.

Figure 5-39 Number of KSI and total casualties involving at least one HGV

5.12.3. HGV and LGV casualties by road classification and name

As seen in Figure 5-40 the number of KSI casualties involving at least one LGV increased over motorways and A-road dual carriageways for the third year in 2016. The number of KSI casualties on A-road single carriageways has been increasing since 2010; however, in 2016 A-road single carriageway showed a significant decrease in the number of KSI casualties involving at least one LGV (from 70 to 48).

As seen in Figure 5-41, the number of KSI casualties involving at least one HGV on A-road dual carriageways increased from 116 in 2015 to 170 in 2016 (a 46.6 per cent increase). However, the number of KSI casualties on motorways has decreased (by 18.1 per cent) for the first time in four years, from 226 in 2015 to 185 in 2016.

129 KSI casualties involving LGVs on A-road dual carriageways
↑ 34.4 per cent from 2015 (96)

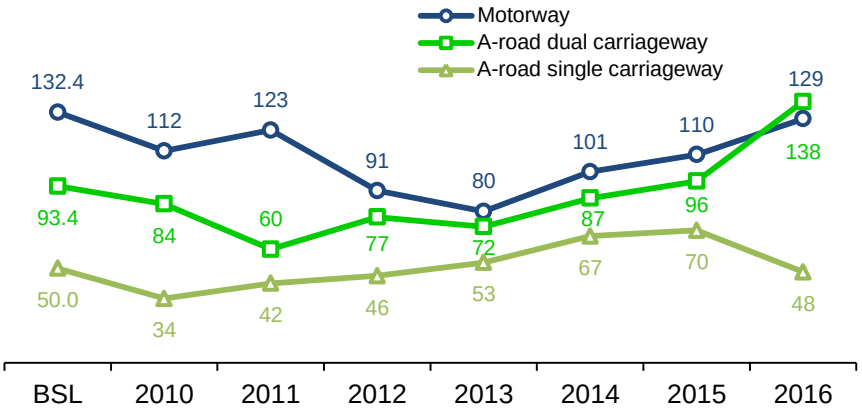


Figure 5-40 Number of KSI casualties involving at least one LGV

185 KSI casualties involving HGVs on Motorways
↓ 18.1 per cent from 2015 (226)

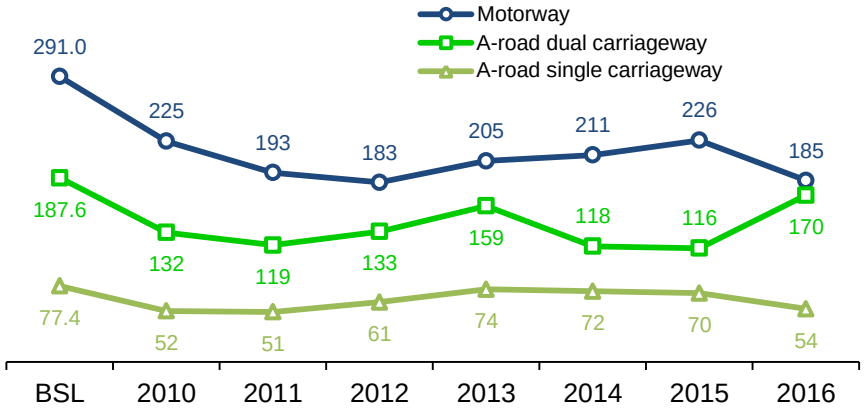


Figure 5-41 Number of KSI casualties involving at least one HGV

Table 5-17 shows the number of casualties involving LGVs by top 10 roads; the M25 had the most casualties involving LGVs in 2016 (294), an increase of 34.2 per cent from 219 in 2015. In addition there were notable rises in casualties involving LGVs between 2015 and 2016 on the M1 (28.8 per cent), A1(M) (71.2 per cent), A14 (55.9 per cent), A3 (70.5 per cent) and M3 (42.0 per cent).

Casualties involving LGVs by top 20 road names are provided in Appendix Table R-3.

Similarly Table 5-18 shows the number of casualties involving HGVs by top 10 roads. It can be seen that considerably more casualties involving HGVs happened on the M25, M1 and the M6 than any other road on the SRN. However, all three of these roads had a decrease in casualties in 2016.

Casualties involving HGVs by top 20 road names are provided in Appendix Table R-5.

Table 5-17 Casualties involving LGVs by top 10 roads

Rank	Road Name	BSL (2005-2009)	2010	2011	2012	2013	2014	2015	2016	2016 change from BSL (2005-2009)	2016 change from 2014	2016 change from 2015
1	M25	192.2	155	202	185	143	180	219	294	53.0%	63.3%	34.2%
2	M1	275.4	183	192	216	169	171	163	210	-23.7%	22.8%	28.8%
3	M6	244.4	190	216	162	157	232	237	200	-18.2%	-13.8%	-15.6%
4	A1	149.8	101	107	79	90	106	118	117	-21.9%	10.4%	-0.8%
5	M4	87.0	84	94	73	92	86	100	106	21.8%	23.3%	6.0%
6	A1(M)	66.4	76	57	62	71	57	59	101	52.1%	77.2%	71.2%
7	A14	78.6	65	49	67	49	39	59	92	17.0%	135.9%	55.9%
8	A5	49.6	53	71	52	63	64	80	75	51.2%	17.2%	-6.3%
9	A3	37.2	48	34	53	40	46	44	75	101.6%	63.0%	70.5%
10	M3	49.6	51	41	55	39	48	50	71	43.1%	47.9%	42.0%

Notes:
(a) Table reports the number of casualties involving at least one LGV.
(b) Ranked by 2016.
(c) Values may be skewed by amount of LGV traffic on a road.

Table 5-18 Casualties involving HGVs by top 10 roads

Rank	Road Name	BSL (2005-2009)	2010	2011	2012	2013	2014	2015	2016	2016 change from BSL (2005-2009)	2016 change from 2014	2016 change from 2015
1	M25	522.4	351	377	331	376	322	315	259	-50.4%	-19.6%	-17.8%
2	M1	494.8	358	292	315	292	333	336	254	-48.7%	-23.7%	-24.4%
3	M6	468.6	382	323	321	334	337	314	233	-50.3%	-30.9%	-25.8%
4	A1	205.0	146	151	118	152	112	130	107	-47.8%	-4.5%	-17.7%
5	M62	151.2	170	110	117	103	112	128	103	-31.9%	-8.0%	-19.5%
6	A14	174.6	144	118	98	86	98	104	103	-41.0%	5.1%	-1.0%
7	M5	136.8	89	151	124	57	62	69	88	-35.7%	41.9%	27.5%
8	M4	119.4	112	94	100	85	101	73	79	-33.8%	-21.8%	8.2%
9	A5	70.2	61	56	64	56	76	52	73	4.0%	-3.9%	40.4%
10	A1(M)	90.0	78	71	67	66	75	87	70	-22.2%	-6.7%	-19.5%

Notes:
(a) Table reports the number of casualties involving at least one HGV.
(b) Ranked by 2016.
(c) Values may be skewed by amount of HGV traffic on a road.

5.12.4. Contributory factors

Table 5-19 shows that the most common contributory factor assigned to LGV drivers (in terms of the resulting casualties) was “Failed to look properly”. Of note, for the 2,895 casualties involving a LGV driver, 7.8 per cent of the LGV drivers were recorded as “Following too close”.

As shown in Table 5-20, the contributory factor “Vehicle blind spot” which is in the “Vision affected by” group was in the top four contributory factors assigned to HGV drivers (in terms of the resulting casualties) in 2016. “Failed to look properly” was assigned to 25.6 per cent of HGV drivers in 2016.

Table 5-19 Top 10 contributory factors assigned to LGV drivers by casualty, 2016

Rank	Contributory Factor		2016	Percentage of casualties involving LGVs, 2016
1	405	Failed to look properly	563	19.4%
2	406	Failed to judge other person’s path or speed	495	17.1%
3	308	Following too close	227	7.8%
4	602	Careless, reckless or in a hurry	171	5.9%
5	408	Sudden braking	148	5.1%
6	403	Poor turn or manoeuvre	142	4.9%
7	410	Loss of control	77	2.7%
8	307	Travelling too fast for conditions	76	2.6%
9	503	Fatigue	71	2.5%
10	103	Slippery road (due to weather)	68	2.3%

Key (CF groups):

Driver/Rider error or reaction	Impairment or distraction	Injudicious action
Behaviour or inexperience	Road environment	

Notes:
(a) Table reports the number of casualties where the specified contributory factor was recorded against at least one LGV driver.
(b) In 2016, there was a total of 2,895 casualties involving at least one LGV.

Table 5-20 Top 10 contributory factors assigned to HGV drivers by casualty, 2016

Rank	Contributory Factor		2016	Percentage of casualties involving HGVs, 2016
1	405	Failed to look properly	687	25.6%
2	406	Failed to judge other person’s path or speed	418	15.6%
3	403	Poor turn or manoeuvre	194	7.2%
4	710	Vehicle blind spot	180	6.7%
5	308	Following too close	176	6.5%
6	602	Careless, reckless or in a hurry	149	5.5%
7	408	Sudden braking	113	4.2%
8	307	Travelling too fast for conditions	62	2.3%
9	410	Loss of control	62	2.3%
10	509	Distraction in vehicle	59	2.2%

Key (CF groups):

Driver/Rider error or reaction	Vision effected by	Injudicious action
Behaviour or inexperience	Impairment or distraction	

Notes:
(a) Table reports the number of casualties where the specified contributory factor was recorded against at least one HGV driver.
(b) In 2016, there was a total of 2,688 casualties involving at least one HGV.

5.13. Motorcycle Users

This topic of interest analyses the number of motorcycle rider and/or passenger (motorcycle user) casualties occurring on the SRN. Additional data on this topic is provided in Appendix Table S-1 to Table S-10.

In 2016, motorcycle users accounted for 11.7 per cent of fatalities (27 of 231) and 18.6 per cent of KSI casualties (372 of 2,005) on the SRN.

5.13.1. Motorcycle user casualties by severity

Figure 5-42 highlights the changes in motorcycle user fatalities and KSI casualties since 2010. From the figure it can be seen that the number of fatalities and KSI casualties have decreased in 2016 relative to the baseline. The change from 2015 is:

- 6.9 per cent decrease in fatalities to 27 in 2016, from 29 in 2015
- 17.0 per cent increase in KSI casualties to 372 in 2016, from 318 in 2015

Assessing the trends in the figure below indicates that the number of motorcycle user KSI casualties has been fluctuating since the baseline.

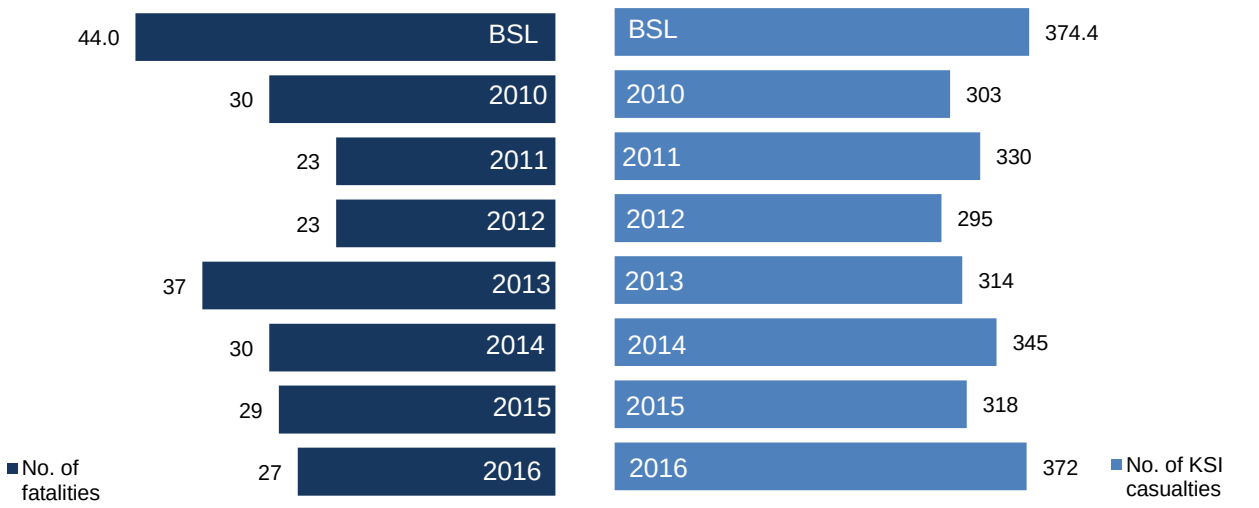
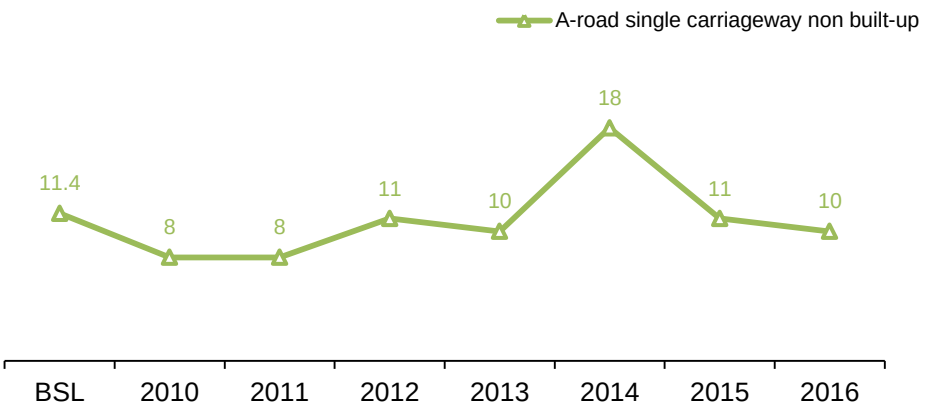


Figure 5-42 Number of motorcycle user fatalities and KSI casualties by year

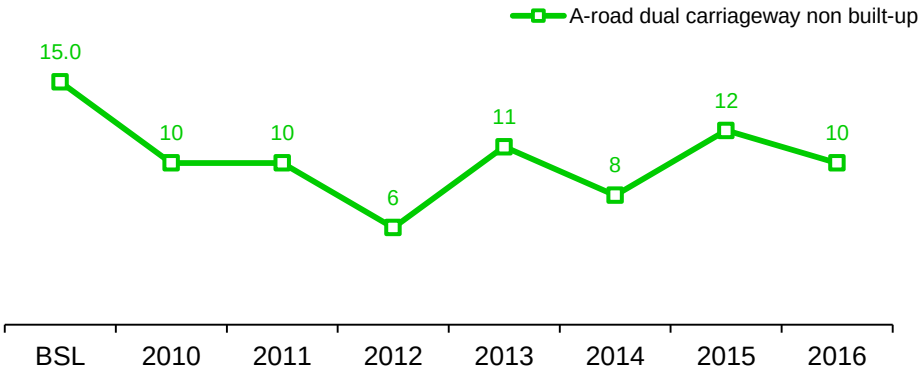
5.13.2. Casualties involving motorcycles by road classification and name

The trends for the number of fatalities involving motorcycle users on non-built-up (NBU) A-road single carriageways and non-built-up A-road dual carriageways are shown in Figure 5-43. The figure shows that the number of fatalities involving motorcycle users on NBU A-road single carriageways decreased by 9.1 per cent to 10 fatalities in 2016 from 11 in 2015. The number of fatalities involving motorcycle users on NBU A-road dual carriageways decreased by 16.7 per cent to 10 in 2016 from 12 in 2015. The trend indicates that the number of fatalities for this road type is fluctuating around an average of 10 since 2010.

Fatalities involving motorcycle users on NBU A-road single carriageways
10 fatalities
1 from 2015 (11)



Fatalities involving motorcycle users on NBU A-road dual carriageways
10 fatalities
2 from 2015 (12)



Note: There were five fatalities involving motorcycle users on motorways and there were three on built up A-roads.

Figure 5-43 Fatalities involving motorcycle users on non-built-up A-road single and dual carriageways by year

Figure 5-44 shows the number of KSI casualties involving motorcycle users by road classification. Each road type had an increase in the number of KSI casualties from 2013 to 2014 followed by a decrease to 2015 and an increase in 2016. From the figure it can be calculated that 379 KSI casualties involved a motorcycle. When this value is compared to that in Figure 5-42 (372) it can be seen that the majority of KSI casualties involving a motorcycle are actually motorcycle users.

185 KSI casualties involving motorcycle users on A-road dual carriageways

↑ 20.9 per cent from 2015 (153)

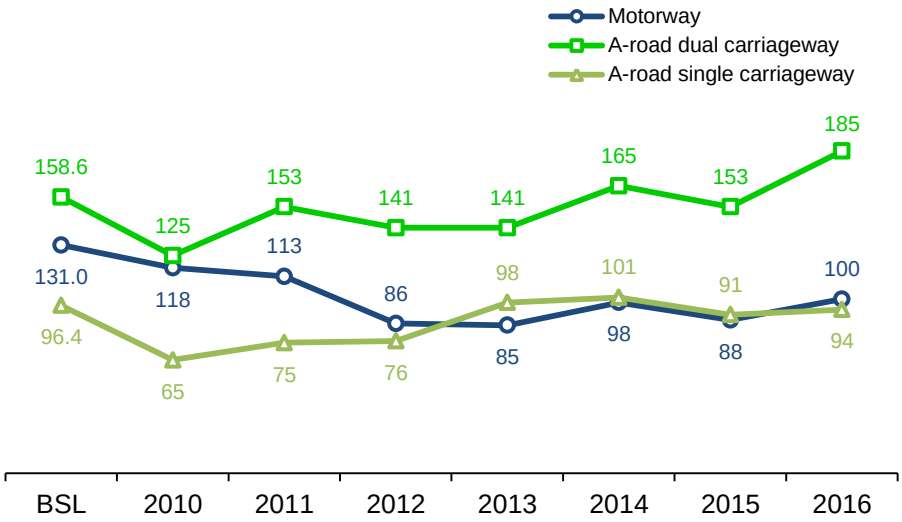


Figure 5-44 KSI casualties involving motorcycle users by road class and year

Table 5-21 lists casualties involving motorcycle users by top 10 roads. It can be seen that although the A27, which has less than half the motorcycle traffic of the M25, has 14 more casualties than M25.

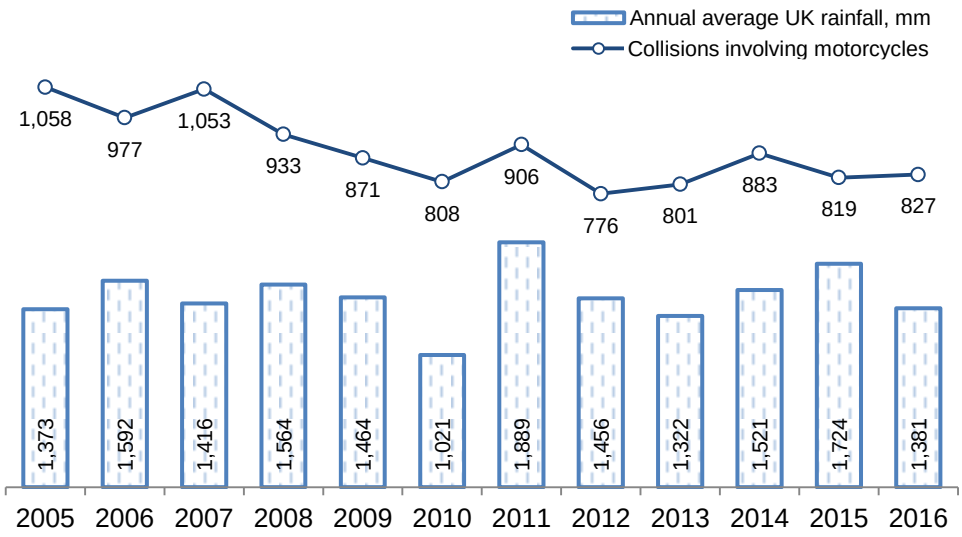
Table 5-21 Casualties involving motorcycle users by top 10 roads

Rank	Road Name	BSL (2005-2009)	2010	2011	2012	2013	2014	2015	2016	2016 change from BSL (2005-2009)	2016 change from 2014	2016 change from 2015
1	A27	44.0	38	46	28	51	54	62	51	15.9	-5.6	-17.7
2	A5	57.2	53	63	44	54	60	67	47	-17.8	-21.7	-29.9
3	A38	33.6	27	35	45	30	38	33	44	31.0	15.8	33.3
4	M25	68.6	62	73	45	35	52	44	37	-46.1	-28.8	-15.9
5	A46	31.4	22	21	24	18	24	37	34	8.3	41.7	-8.1
6	M4	36.8	27	36	27	27	23	21	30	-18.5	30.4	42.9
7	A3	19.0	18	27	15	27	23	35	27	42.1	17.4	-22.9
8	A52	22.2	19	26	15	16	23	14	26	17.1	13.0	-
9	A14	19.2	19	20	16	18	22	16	25	30.2	13.6	56.3
10	A1	42.2	29	29	27	28	30	16	24	-43.1	-20.0	50.0

Note:
(a) Values in the table report the number of casualties where at least one motorcycle user was recorded as being involved.

5.13.3. Motorcycle collisions involving rainfall

Figure 5-45 illustrates the collisions involving motorcycles during rainfall against annual average UK rainfall, in mm, between 2005 and 2016. The figure shows there is partial correlation between the two parameters and is most evident between 2010 and 2014. Figure 5-46 shows the collisions involving motorcycles during rainfall against monthly average UK rainfall, in mm, during 2016. It can be seen that the majority of collisions occur during the summer months, with August having a peak of 104 collisions in contrast with January which is the month with the lowest number of collisions (30). However, there is no obvious meaningful correlation shown for these two parameters.



Annual average rainfall sourced from DECC Energy Trends Statistics. Accessed from https://www.gov.uk/government/statistics/energy-trends-section-7-weather

Figure 5-45 Collisions involving motorcycles against annual average UK rainfall between 2005 and 2016

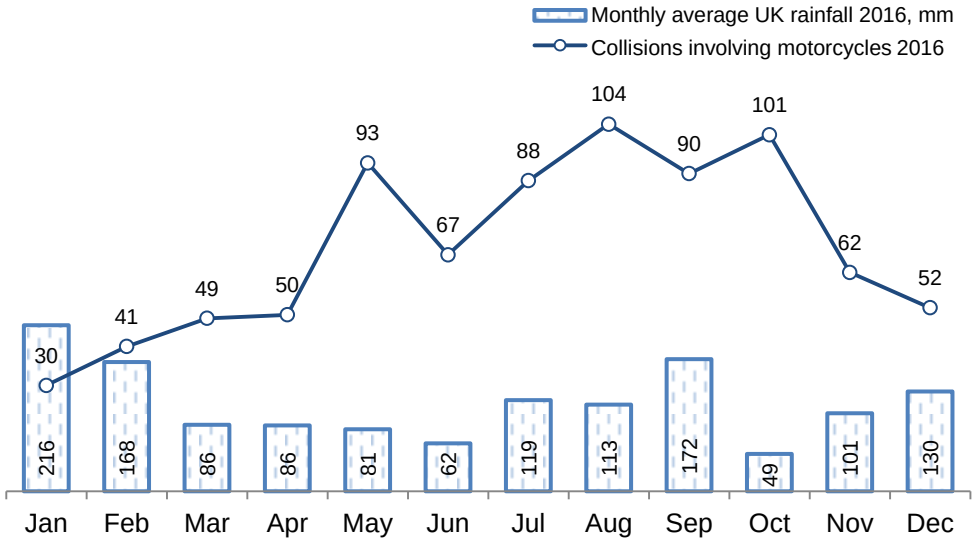


Figure 5-46 Collisions involving motorcycles against monthly average UK rainfall during 2016

5.14. Hardshoulders

This section provides collision and resulting casualty information involving motorway hardshoulders and A-road lay-bys.

Appendix Table T-1 to Table T-14 provide further statistics relating to collisions and casualties involving hardshoulders and lay-bys by road name, road classification, vehicle location, casualty age, contributory factors and severity.

5.14.1. Comparison between hardshoulders and lay-bys

Figure 5-47 shows the total number of casualties directly located on either motorway hardshoulders or A-road lay-bys at point of impact by road classification and year.

In 2016, 84 casualties occurred on motorways and 123 casualties occurred on A-roads; 107 of which were on A-road dual carriageways.

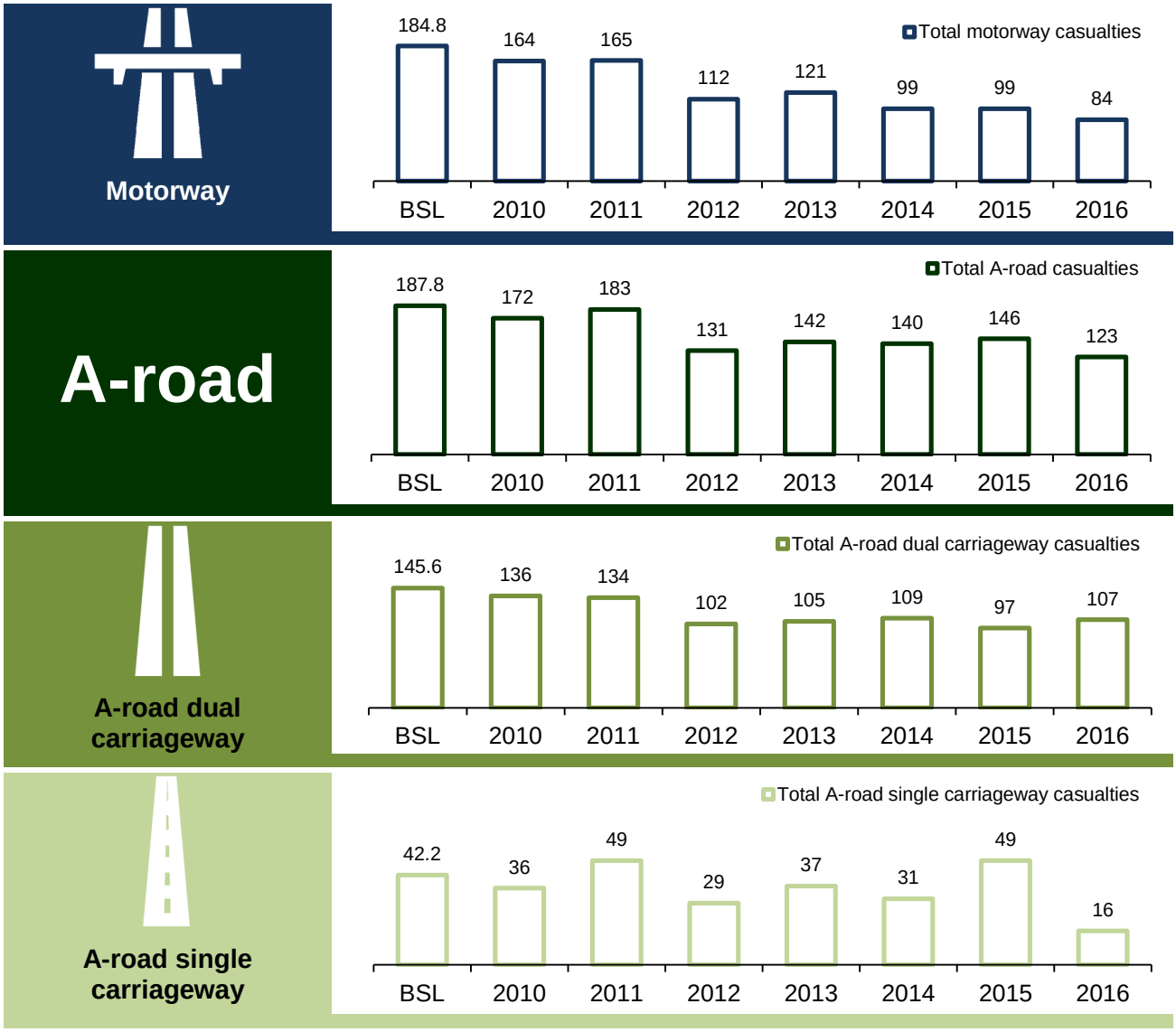


Figure 5-47 Casualties involving either a hardshoulder or lay-by by road classification and year

5.14.2. Hardshoulder and lay-by casualties resulting from fatigue or distraction

The top 20 contributory factors ranked by 2016 total casualties involving hardshoulders and lay-bys are provided in Appendix Table T-13.

Figure 5-48 focuses specifically on the number of casualties involving hardshoulders and lay-bys linked to distraction inside the vehicle and fatigue. In the Appendix table, these factors are ranked ninth and twelfth respectively. These factors are potentially attributed to the driver of the vehicle inadvertently drifting into the hardshoulder or lay-by and colliding with a stationary vehicle.

Figure 5-48 shows that the number of casualties involving hardshoulders or lay-bys resulting from fatigue has decreased to 10 in 2016 from 16 in 2015, a reduction of 37.5 per cent.

The number of casualties where distraction was involved has also decreased, by 50.0 per cent, to 11 in 2016 from 22 in 2015.

Fatigue
80.0 per cent from BSL (50.0)

Distraction in vehicle
30.4 per cent from BSL (15.8)

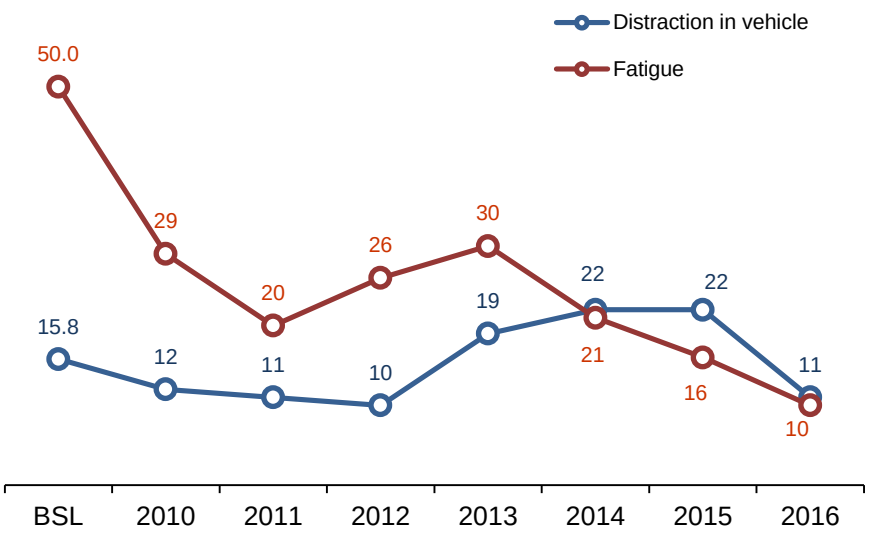


Figure 5-48 Casualties involving either a hardshoulder or lay-by resulting from fatigue or distraction inside the vehicle by year

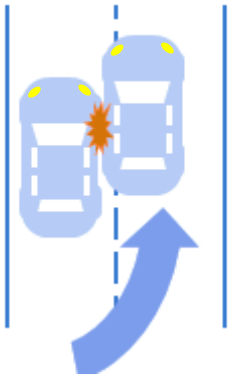
5.15. Collisions Type

This topic of interest analyses the number of collisions occurring on the SRN by collision type. Additional statistics on this are provided in Appendix Table U-1 to Table U-26.

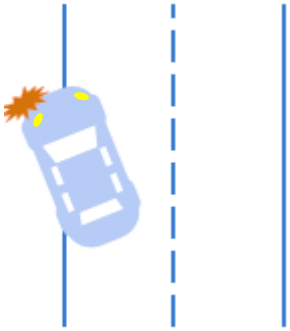
The four most common types of collision are:

- Shunt
- Single vehicle run off
- Overtake
- Head on

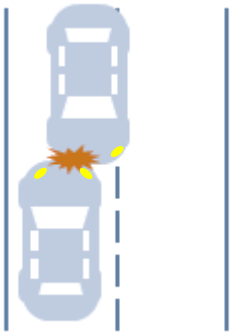
A brief description of each of the four most common types of collision can be found in Figure 5-49.



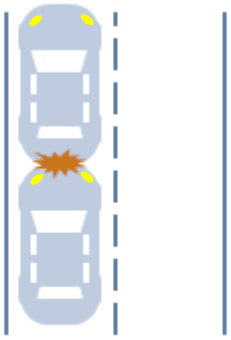
Overtake:
A collision involving at least one vehicle recorded as overtaking another vehicle.



Single vehicle run off:
A collision involving a single vehicle (excludes collisions involving pedestrians).



Head on:
A collision involving at least two vehicles moving in opposite directions at point of impact, where both vehicles first point of impact was recorded as “Front”. Vehicles that were parked, or where the vehicle movement was unknown are not included.



Shunt:
A collision involving at least two vehicles moving in the same direction at point of impact, where one vehicle’s first point of impact was recorded as “Front” and the other vehicle’s as “Back”. Vehicles that were parked, or where the vehicle movement was unknown are not included.

Figure 5-49 Diagrams of collision types

5.15.1. Casualties by collision type and severity

Table 5-22 provides a breakdown of the number of casualties by severity and collision type. When considering fatalities, associated with the four collision types, only overtake showed a decrease from 2015 to 2016; a 25.0 per cent decrease. Furthermore it is the only collision type that decreased across all severities.

The figure shows that the majority of casualties are involved in shunt collisions. However, when considering the severity ratio (i.e. percentage of casualty severity to total casualty ratio) shunt collisions have the least KSI severity ratio (7.0 per cent), whilst head on collisions have the highest (36.5 per cent), which could indicate this is the more severe collision type when they occur.

Table 5-22 Casualties by collision type, 2016

Severity/ Collision type	Killed	Seriously injured	KSI	Slightly injured	Total
Head on	**39** ↑ 39.3%	**107** ↓ 5.3%	**146** ↑ 3.5%	**254** ↓2.3%	**400** ↓0.2%
Shunt	**45** ↑ 32.4%	**494** ↑ 19.0%	**539** ↑ 20.0%	**7,146** ↓ 0.5%	**7,685** ↑ 0.7%
Overtake	**12** ↓ 25.0%	**104** ↓ 3.7%	**116** ↓ 6.5%	**528** ↓ 11.3%	**644** ↓ 10.4%
Single vehicle run off	**39** ↑ 8.3%	**352** ↑ 9.7%	**391** ↑ 9.5%	**1,417** ↓ 12.6%	**1,808** ↓ 8.6%

Notes:
(a) Percentages represent the per cent change of 2016 values from 2015 values.
(b) Casualties may fall within more than one collision type and hence may be counted more than once.
(c) See Figure 5-51 for definitions of collisions types.

5.15.2. KSI casualties by collision type and road classification

A breakdown of KSI casualties by collision type and road classification can be found in Table 5-23. It can be seen that A-road dual carriageway and motorway have a similar number of KSI casualties involved in shunt collisions, 240 and 264 respectively, with A-road single carriageway having only 35 in 2016.

Table 5-23 KSI casualties by road class and collision type, 2016

Road classification/ Collision type	Motorway	A-road	A-road dual carriageway	A-road single carriageway
Head on	**14** –	**132** ↓ 1.5%	**23** ↑ 43.8%	**109** ↓ 7.6%
Shunt	**264** ↑ 3.9%	**275** ↑ 41.0%	**240** ↑ 61.1%	**35** ↓ 23.9%
Overtake	**27** ↓ 25.0%	**89** ↑ 1.1%	**45** ↑ 4.7%	**44** ↓ 2.2%
Single vehicle run off	**204** ↑ 21.4%	**187** ↓ 1.1%	**152** ↓ 1.3%	**35** 0.0%

Notes:
(a) Percentages represent the per cent change of 2016 values from 2015 values.
(b) Casualties may fall within more than one collision type and hence may be counted more than once.
(c) See Figure 5-51 for definitions of collisions types.

5.16. Hotspot Analysis

This section provides a summary of hotspot analyses[24] carried out on collisions between 2014 and 2016. Figure 5-50 along with Table 5-24 shows the locations of the top 20 hotspots by road class. Appendix Table V-2 to Table V-4 provide more detailed maps of each hotspot.

Figure 5-50 shows that the majority of motorway hotspots are located in the South East region whereas hotspots for both A-road dual carriageway and single carriageway are distributed more evenly across the SRN. The information in the Appendix also shows that the majority of hotspots are located in the proximity of junctions.

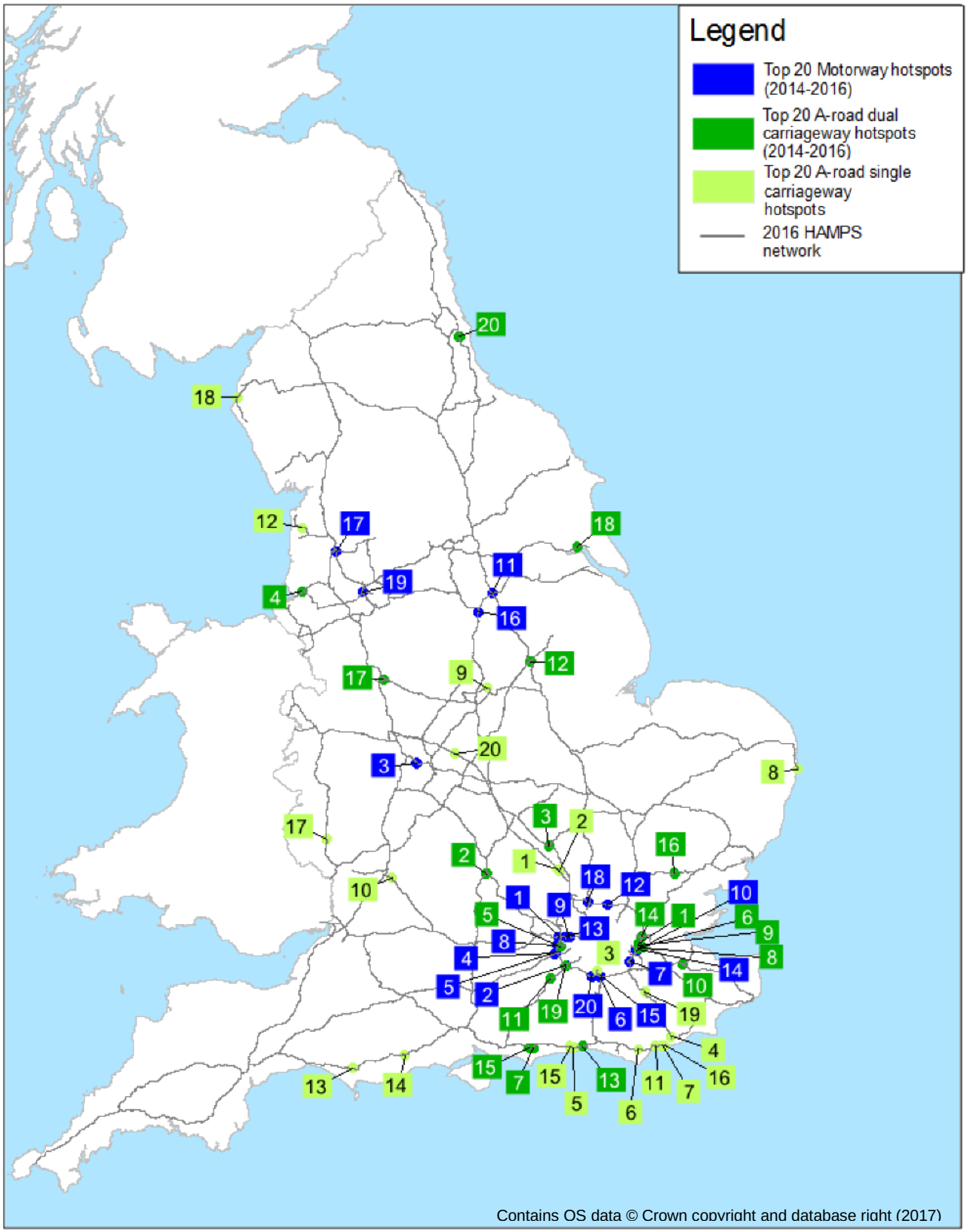
The basic principles behind the hotspot analysis are provided in the notes section of the hotspot Appendix (Table V-1). Evaluation of the method shows that hotspots are more likely to be identified in areas of the network where the road layout contains multiple converging and diverging routes.

Table 5-24 Top 20 hotspots for collisions between 2014 and 2016 by road class

	Road class		
No.	Motorway	A-road dual carriageway	A-road single carriageway
1	M4 East of J5	A282 Junction 1A	A5 Dunstable (North)
2	M25 J10	A34 Wendlebury Interchange	A5 Dunstable (South)
3	M6 J6	A421 Ridgmont	A23 Hooley
4	M3 West of J2	A5036 Switch Island	A21 Kent Street
5	M25 J12	A30 Stains-upon-Thames	A27 Broadwater
6	M23 South of J8	A2 Darenth	A27 Polegate
7	M25 J4	A27 Chichester Bypass	A259 Bexhill
8	M25 J13	A2 Bean Interchange	A12 Lowestoft
9	M4 J3	A282 Princes Rd Interchange	A52 Nottingham
10	M25 South of J2	A249 Maidstone Road	A417 Crickley Hill
11	A1M J35	A3 Guildford	A259 Barnhorn Road
12	M25 J25	A46 Winthorpe	A585 Garstang New Road
13	M4 J4	A27 Adur Interchange	A35 Poundbury
14	M25 South of J2	A13 Mar Dyke Interchange	A31 Wimborne Bypass
15	M25 J7	A27 Fishbourne Roundabout	A27 High Salvington
16	M1 J31	A120 Braintree Bypass	A259 Bexhill
17	M61 J9	A50 Britannia Link Road	A49 Hereford
18	M25 J23	A63 Mytongate	A595 Parton
19	M60 J12	A3 Portsmouth Road	A21 Pembury Road
20	M25 South of J8	A19 Sunderland	A5 Mancetter

Note:
(a) Locations of hotspots can be seen in Figure 5-50

[24] Hotspot analysis finds the locations with the highest amount of collisions within a 0.5km radius.



Location descriptions for hotspots can be found in Table 5-24

Figure 5-50 Top 20 hotspots for collisions between 2014 and 2016 by road class

Table 5-25 shows the top 10 contributory factors for motorway collision hotspots between 2014 and 2016. It can be seen from Table 5-25 that "Failed to look properly" was the top contributory factor in 2016 for casualties within the top 10 motorway hotspots.

Table 5-25 Top 10 contributory factors for casualties involved in collisions within the top 10 motorway hotspots

Rank	Contributory Factor		2014	2015	2016	Percentage of casualties in top 10 hotspots, 2016
1	405	Failed to look properly	193	162	184	39.7%
2	406	Failed to judge other person's path or speed	200	144	164	35.3%
3	308	Following too close	97	77	62	13.4%
4	403	Poor turn or manoeuvre	56	54	58	12.5%
5	408	Sudden braking	100	61	55	11.9%
6	602	Careless, reckless or in a hurry	46	43	41	8.8%
7	410	Loss of control	49	29	28	6.0%
8	307	Travelling too fast for conditions	46	30	22	4.7%
9	103	Slippery road (due to weather)	35	13	22	4.7%
10	509	Distraction in vehicle	25	26	17	3.7%

Key (CF groups):
Driver/Rider error or reaction; Injudicious action; Impairment or distraction; Behaviour or inexperience; Road environment

Notes:
(a) Table reports the number of casualties involved in collisions on the top 10 motorway hotspots where the specified contributory factor was recorded at least once.
(b) In 2016, there was a total of 464 casualties involved in collisions within the top 10 motorway hotspots.

Table 5-26 shows the top 10 contributory factors for A-road dual carriageway collision hotspots between 2014 and 2016. "Failed to look properly" is the most common contributory factor and was attributed to 38.0 per cent of casualties involved in collisions within the top 10 A-road dual carriageway hotspots.

Table 5-26 Top 10 contributory factors for casualties involved in collisions within the top 10 A-road dual carriageway hotspots

Rank	Contributory Factor		2014	2015	2016	Percentage of casualties in top 10 hotspots, 2016
1	405	Failed to look properly	168	152	158	38.0%
2	406	Failed to judge other person's path or speed	148	115	102	24.5%
3	403	Poor turn or manoeuvre	58	38	44	10.6%
4	308	Following too close	52	66	38	9.1%
5	602	Careless, reckless or in a hurry	56	43	35	8.4%
6	408	Sudden braking	38	27	25	6.0%
7	410	Loss of control	11	22	21	5.0%
8	301	Disobeyed automatic traffic signal	22	21	20	4.8%
9	103	Slippery road (due to weather)	21	17	18	4.3%
10	307	Travelling too fast for conditions	37	14	18	4.3%

Key (CF groups):
Driver/Rider error or reaction; Injudicious action; Road environment; Behaviour or inexperience

Notes:
(a) Table reports the number of casualties involved in collisions on the top 10 A-road dual carriageway hotspots where the specified contributory factor was recorded at least once.
(b) In 2016, there was a total of 416 casualties involved in collisions within the top 10 A-road dual carriageway hotspots.

Table 5-27 shows the top 10 contributory factors for A-road single carriageway collision hotspots between 2014 and 2016. The top two contributory factors were the same for all three road classifications. However, the third most common contributory factor for A-road single carriageway is "Careless reckless or in a hurry" which was attributed to 20.6 per cent of casualties.

Table 5-27 Top 10 contributory factors for casualties involved in collisions within the top 10 A-road single carriageway hotspots

Rank	Contributory Factor		2014	2015	2016	Percentage of casualties in top 10 hotspots, 2016
1	405	Failed to look properly	43	92	62	37.6%
2	406	Failed to judge other person's path or speed	44	62	56	33.9%
3	602	Careless, reckless or in a hurry	25	23	34	20.6%
4	410	Loss of control	21	9	17	10.3%
5	403	Poor turn or manoeuvre	25	13	15	9.1%
6	503	Fatigue	15	11	12	7.3%
7	308	Following too close	17	17	10	6.1%
8	509	Distraction in vehicle	8	4	6	3.6%
9	505	Illness or disability, mental or physical	5	8	5	3.0%
10	706	Dazzling sun	5	6	5	3.0%

Key (CF groups):

	Driver/Rider error or reaction		Injudicious action		Impairment or distraction
	Behaviour or inexperience		Vision affected by		

Notes:
(a) Table reports the number of casualties involved in collisions on the top 10 A-road single carriageway hotspots where the specified contributory factor was recorded at least once.
(b) In 2016, there were a total of 165 casualties involved in collisions within the top 10 A-road single carriageway hotspots.

5.17. Vulnerable and Non-motorised Users

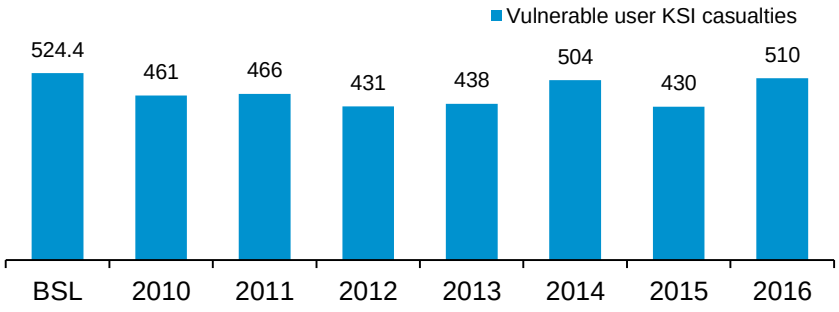
This section provides KSI casualty information involving vulnerable[25] and non-motorised[26] users including contributory factors associated with the individual user groups.

5.17.1. Vulnerable and non-motorised KSI casualties by year

Figure 5-51 shows the distribution of vulnerable and non-motorised user KSI casualties by year including the baseline. It can be seen that vulnerable user KSI casualties increased by 18.6 per cent to 510 in 2016, from 430 in 2015; however, this is 2.7 per cent below the baseline. It can also be seen that non-motorised user KSI casualties increased by 23.2 per cent to 138 in 2016, from 112 in 2015; however, this is 8.0 per cent below the baseline.

Vulnerable users

18.6% from 2015



Non-motorised user

23.2% from 2015

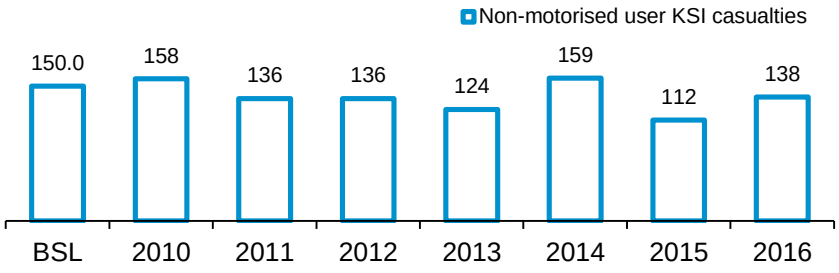


Figure 5-51 Vulnerable and non-motorised user KSI casualties by year

[25] Vulnerable users include pedestrians, pedal cyclists and motorcycle users.
[26] Non-motorised users include pedestrians and pedal cyclists.

Figure 5-52 shows the distribution of KSI casualties across the vulnerable and non-motorised user categories. It can be seen that out of the vulnerable user categories motorcycle users make up the largest proportion with 372 KSI casualties in 2016; this is 72.9 per cent of all vulnerable user KSI casualties in 2016. From Figure 5-52 it can also be seen that the number of pedal cyclist KSI casualties have fluctuated from the baseline period, with 44 in 2016.

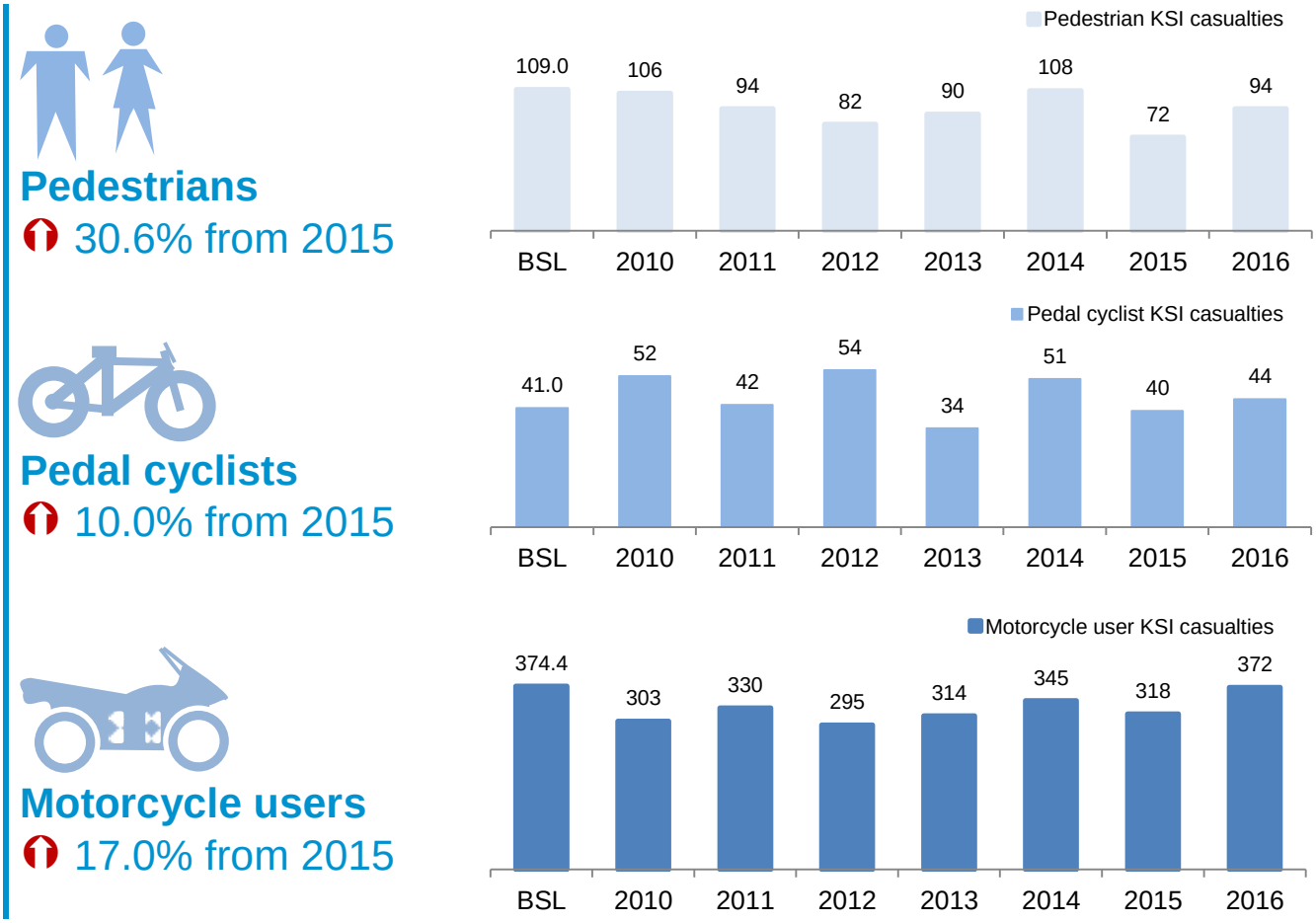


Figure 5-52 Vulnerable and non-motorised user KSI casualties by subordinate categories by year

5.17.2. Vulnerable and non-motorised KSI casualties by road type

Figure 5-53 shows the distribution of the 2016 vulnerable and non-motorised user KSI casualties along with their subordinate categories by road classification. It can be seen that the majority of both vulnerable and non-motorised user KSI casualties occurred on A-roads in 2016; with 73.5 per cent of vulnerable and 73.9 per cent of non-motorised user KSI casualties occurring on A-roads in 2016. It can also be seen from Figure 5-53 that there was an increase in vulnerable and non-motorised user KSI casualties across all road classes in 2016.

2016 KSI casualties (% change from 2015)	Motorway	A-road	A-road dual carriageway	A-road single carriageway
Vulnerable users	135 ↑ 19.5%	375 ↑ 18.3%	250 ↑ 22.5%	125 ↑ 10.6%
Non-motorised users	36 ↑ 44.0%	102 ↑ 17.2%	69 ↑ 21.1%	33 ↑ 10.0%
Pedestrians	35 ↑ 45.8%	59 ↑ 22.9%	40 ↑ 37.9%	19 0.0%
Pedal cyclists	1 –	43 ↑ 10.3%	29 ↑ 3.6%	14 –
Motorcycle users	99 ↑ 12.5%	273 ↑ 18.7%	181 ↑ 23.1%	92 ↑ 10.8%

Figure 5-53 Vulnerable and non-motorised user KSI casualties by road classification

5.17.3. Contributory factors

Table 5-28 provides the top 10 contributory factors assigned to pedestrian casualties. The values represent the number of KSI casualties where the specified contributory factor was recorded against at least one pedestrian casualty. Table 5-29 and Table 5-30 provide the same information but for where the record is against at least one pedal cyclist and motorcycle user respectively.

Table 5-28 Top 10 contributory factors assigned to pedestrian casualties by KSI casualties involved

Rank	Contributory Factor		2014	2015	2016
1	802	Failed to look properly	36	18	21
2	805	Dangerous action in carriageway (eg. playing)	26	12	19
3	809	Pedestrian wearing dark clothing at night	18	11	17
4	806	Impaired by alcohol	17	13	15
5	810	Disability or illness, mental or physical	10	9	13
6	803	Failed to judge vehicle's path or speed	20	7	13
7	808	Careless, reckless or in a hurry	9	9	9
8	999	Other – Please specify below	6	2	7
9	807	Impaired by drugs (illicit or medicinal)	7	5	6
10	804	Wrong use of pedestrian crossing facility	4	2	3

Key (CF groups):
Pedestrian

Notes:
(a) Table reports the number of KSI casualties where the specified contributory factor was recorded against at least one pedestrian casualty.
(b) Table sorted by 2016 values.

Table 5-29 Top 10 contributory factors assigned to pedal cyclists by KSI casualties involved

Rank	Contributory Factor		2014	2015	2016
1	406	Failed to judge other person's path or speed	3	4	8
2	310	Cyclist entering road from pavement	3	3	6
3	405	Failed to look properly	8	7	3
4	507	Rider wearing dark clothing	6	4	2
5	410	Loss of control	3	2	2
6	403	Poor turn or manoeuvre	2	2	2
7	501	Impaired by alcohol	2	1	2
8	506	Not displaying lights at night or in poor visibility	1	1	2
9	404	Failed to signal or misleading signal	0	0	1
10	409	Swerved	0	0	1

Key (CF groups):
Driver/Rider error or reaction Impairment or distraction Injudicious action

Notes:
(a) Table reports the number of KSI casualties where the specified contributory factor was recorded against at least one pedal cyclist.
(b) Table sorted by 2016 values.

Table 5-30 Top 10 contributory factors assigned to motorcycle users by KSI casualties involved

Rank	Contributory Factor		2014	2015	2016
1	405	Failed to look properly	65	53	62
2	406	Failed to judge other person's path or speed	63	56	61
3	410	Loss of control	70	52	61
4	403	Poor turn or manoeuvre	30	41	29
5	602	Careless, reckless or in a hurry	32	34	26
6	306	Exceeding speed limit	26	19	23
7	307	Travelling too fast for conditions	26	24	20
8	308	Following too close	15	18	20
9	605	Learner or inexperienced driver/rider	18	13	19
10	408	Sudden braking	33	21	16

Key (CF groups):
Driver/Rider error or reaction | Behaviour or inexperience | Injudicious action

Notes:
(a) Table reports the number of KSI casualties where the specified contributory factor was recorded against at least one motorcycle users.
(b) Table sorted by 2016 values.

Table 5-31 provides the top 10 contributory factors for KSI casualties where the collision involved at least one pedestrian casualty. Table 5-32 and Table 5-33 provide the same information but for where the collision involved at least one pedal cyclist and motorcycle user respectively.

"Failed to look properly" was the top contributory factor(s) for KSI casualties across all three vulnerable user categories. The majority (8 of 10) of the top 10 contributory factors involving pedestrian casualties were in the pedestrian contributory factor group. Driver/Rider error or reaction is the common grouping across all three user categories and make up half the top 10 contributory factors involving pedal cyclists and motorcycle users. This is followed by injudicious action grouping for motorcycle users and pedal cyclists.

Table 5-31 Top 10 contributory factors for KSI casualties involving pedestrian casualties

Rank	Contributory Factor		2014	2015	2016
1	802	Failed to look properly	36	20	21
2	805	Dangerous action in carriageway (eg. playing)	26	12	19
3	809	Pedestrian wearing dark clothing at night	18	11	17
4	806	Impaired by alcohol	17	13	15
5	810	Disability or illness, mental or physical	10	9	13
6	803	Failed to judge vehicle's path or speed	20	8	13
7	405	Failed to look properly	14	15	11
8	999	Other – Please specify below	12	10	10
9	808	Careless, reckless or in a hurry	9	9	9
10	807	Impaired by drugs (illicit or medicinal)	7	5	6

Key (CF groups):
Driver/Rider error or reaction | Pedestrian

Notes:
(a) Table reports the number of KSI casualties involving at least one pedestrian casualty where at least one of the specified contributory factors was recorded.
(b) Table sorted by 2016 values.

Table 5-32 Top 10 contributory factors for KSI casualties involving pedal cyclists

Rank	Contributory Factor		2014	2015	2016
1	405	Failed to look properly	24	22	12
2	406	Failed to judge other person's path or speed	10	9	12
3	310	Cyclist entering road from pavement	3	3	7
4	407	Too close to cyclist, horse rider or pedestrian	11	7	4
5	602	Careless, reckless or in a hurry	9	6	3
6	306	Exceeding speed limit	1	0	3
7	403	Poor turn or manoeuvre	4	4	2
8	501	Impaired by alcohol	2	3	2
9	410	Loss of control	4	2	2
10	301	Disobeyed automatic traffic signal	1	2	2

Key (CF groups):
Driver/Rider error or reaction; Impairment or distraction; Injudicious action; Behaviour or inexperience

Notes:
(a) Table reports the number of KSI casualties involving at least one pedal cyclist where at least one of the specified contributory factors was recorded.
(b) Table sorted by 2016 values.

Table 5-33 Top 10 contributory factors for KSI casualties involving motorcycle users

Rank	Contributory Factor		2014	2015	2016
1	405	Failed to look properly	134	127	149
2	406	Failed to judge other person's path or speed	93	86	100
3	410	Loss of control	74	54	61
4	403	Poor turn or manoeuvre	54	71	49
5	602	Careless, reckless or in a hurry	58	53	44
6	306	Exceeding speed limit	28	22	25
7	605	Learner or inexperienced driver/rider	21	15	24
8	308	Following too close	19	22	23
9	408	Sudden braking	40	30	20
10	307	Travelling too fast for conditions	26	28	20

Key (CF groups)
Driver/Rider error or reaction; Behaviour or inexperience; Injudicious action

Notes:
(a) Table reports the number of KSI casualties involving at least one motorcycle user where at least one of the specified contributory factors was recorded.
(b) Table sorted by 2016 values.

5.18. Journey Purpose

This topic of interest provides a summary of journey purpose. For this section casualties are assigned their journey purpose based upon the vehicle they are associated with. This section excludes pedestrians from the analysis as the journey purpose for these casualties is unclear.

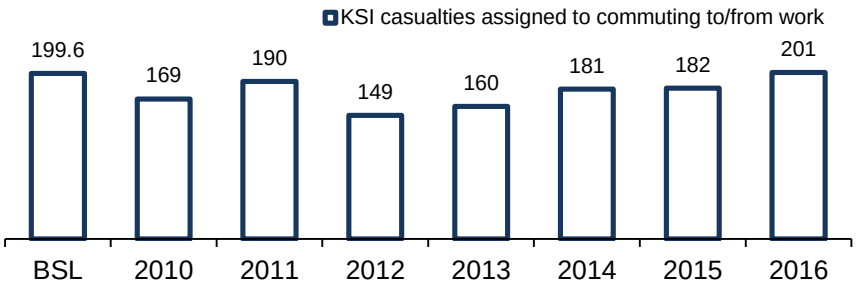
5.18.1. Journey purpose summary

The trends from Figure 5-54 show that the majority of KSI casualties are recorded with either the journey purpose missing or with a journey purpose other than those listed within STATS19. Of the categories within STATS19, journey as part of work accounted for 254 KSI casualties in 2016; commuting to/from work had a similar value of 201 KSI casualties. These two categories combined (455 KSI casualties) account for almost 23 per cent of all KSI casualties (2,005) in 2016.

Commuting to/from work

201 KSI casualties

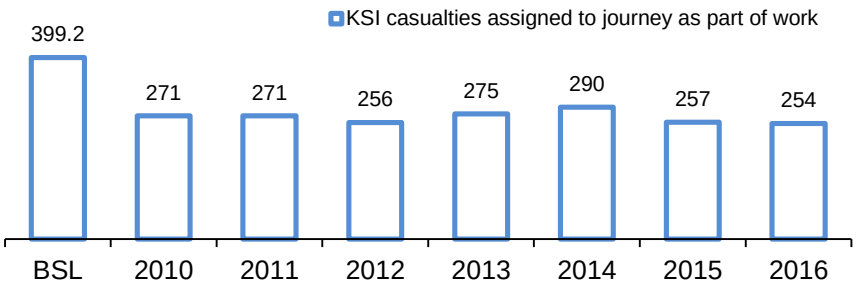
10.4 per cent from 182 in 2015



Journey as part of work

254 KSI casualties

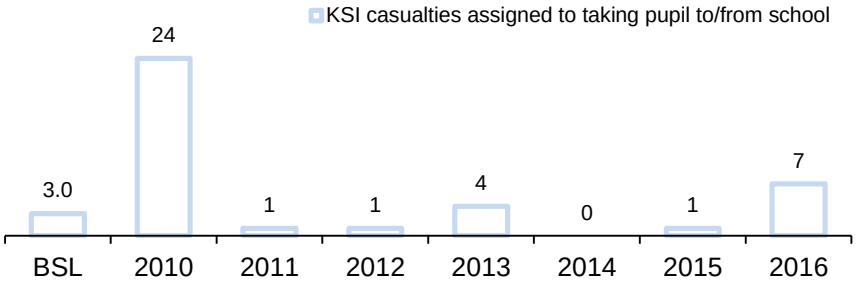
1.2 per cent from 257 in 2015



Taking pupil to/from school

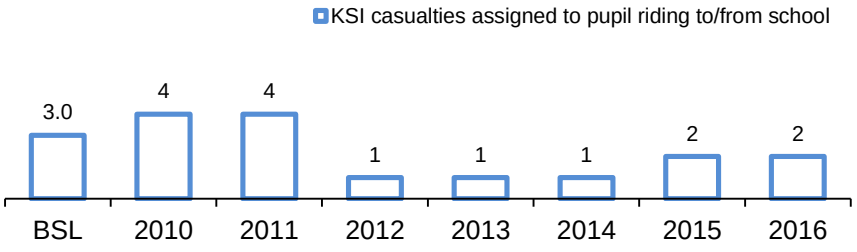
7 KSI casualties

6 KSIs from 1 in 2015



Pupil riding to/from school

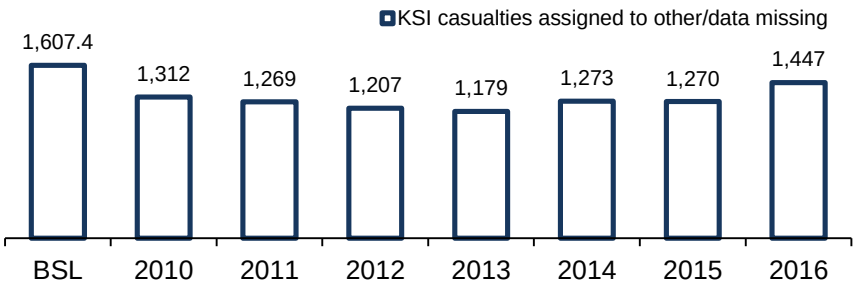
2 KSI casualties in 2016



Other or data missing

1,447 KSI casualties

13.9 per cent from 1,270 in 2015



Note: Analysis excludes pedestrians due to journey purpose of pedestrians being unclear. However, there were 94 pedestrian KSI casualties in 2016

Figure 5-54 KSI casualties by journey purpose and year

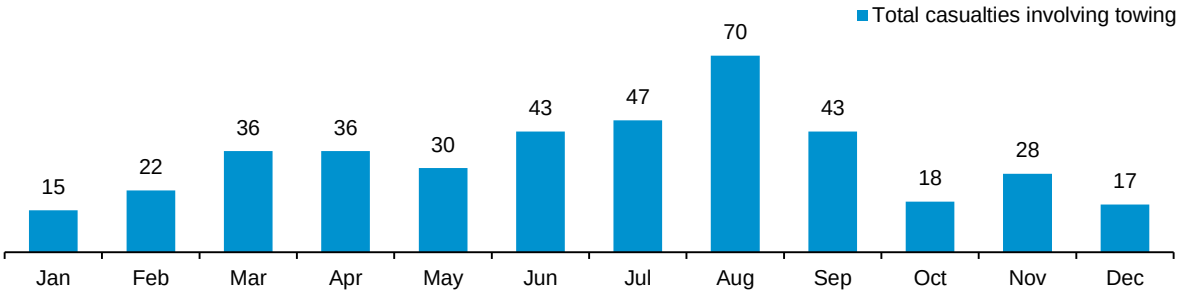
5.19. Towing

This topic of interest focuses on casualties involving at least one vehicle towing. This section excludes articulated vehicles from the towing category although it does give a summary of the number of KSI casualties that involved at least one articulated vehicle in 2016.

5.19.1. Towing summary

Figure 5-55 gives a summary of casualties involving at least one vehicle towing. It can be seen that in 2016 405 casualties involved at least one vehicle towing, which is an increase of 6.6 per cent on the 2015 value (380). Of these casualties 70 occurred in August, the most of any month. Similarly August had the most KSI casualties in 2016, with 15 of the 66 that occurred.

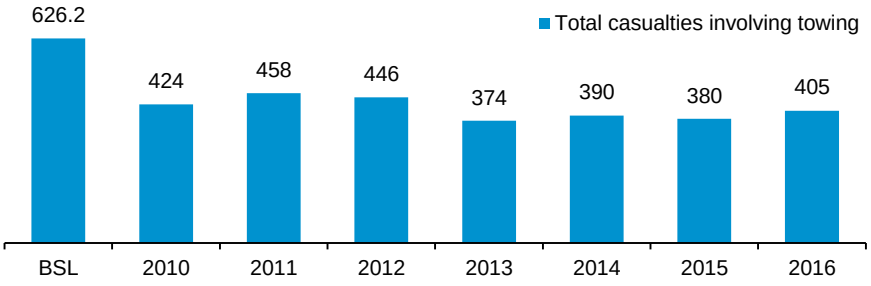
405 casualties involved a vehicle towing in 2016



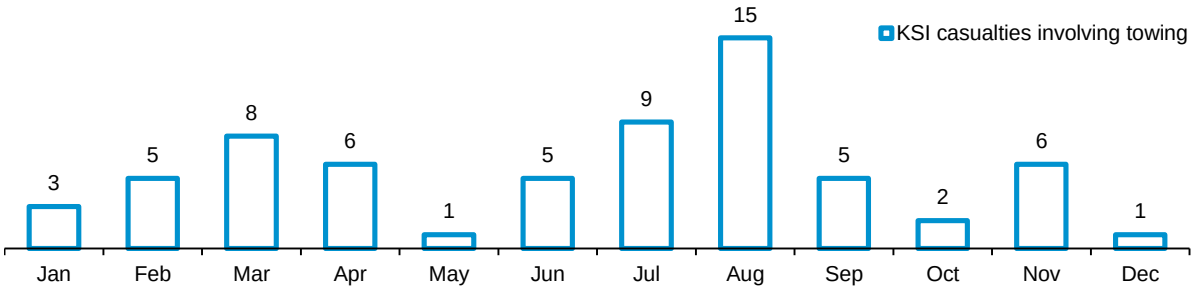
Note: Excludes articulated and data missing

Total casualties

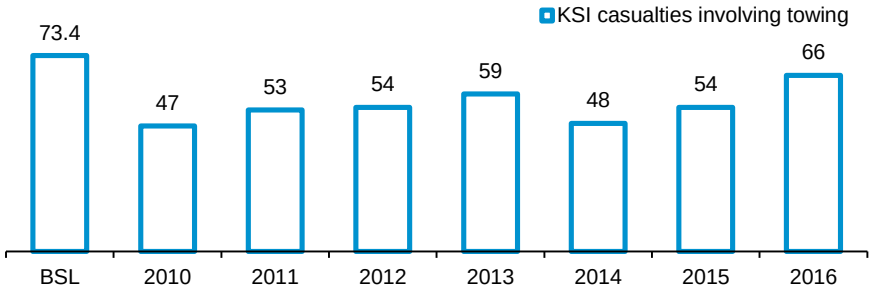
6.6% from 2015



Note: Excludes articulated and data missing



Note: Excludes articulated and data missing



KSI casualties

22.2% from 2015

Note: Excludes articulated and data missing

295 KSI casualties involved at least one articulated vehicle in 2016

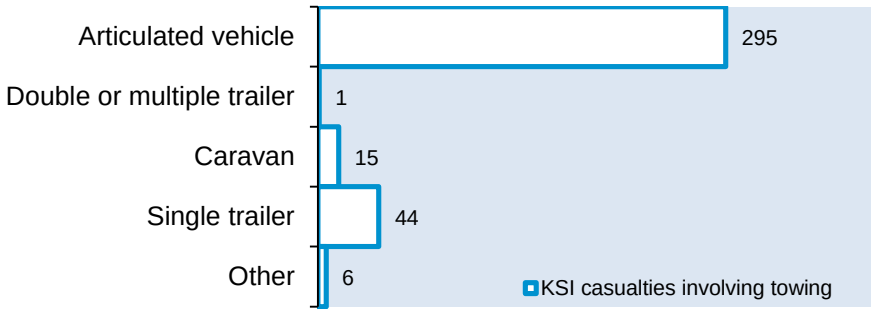


Figure 5-55 Summary of casualties involving towing