



Department for Transport

Reported road casualties in Great Britain: quarterly provisional estimates year ending September 2016

There were 1,810 road deaths in the year ending September 2016, this is not statistically different from the year ending September 2015.

About this release

This publication provides the number of personal-injury road traffic accidents in Great Britain that were reported to the police for the year ending September 2016. It also includes the number of people killed or injured in these accidents and which road user group they were in.

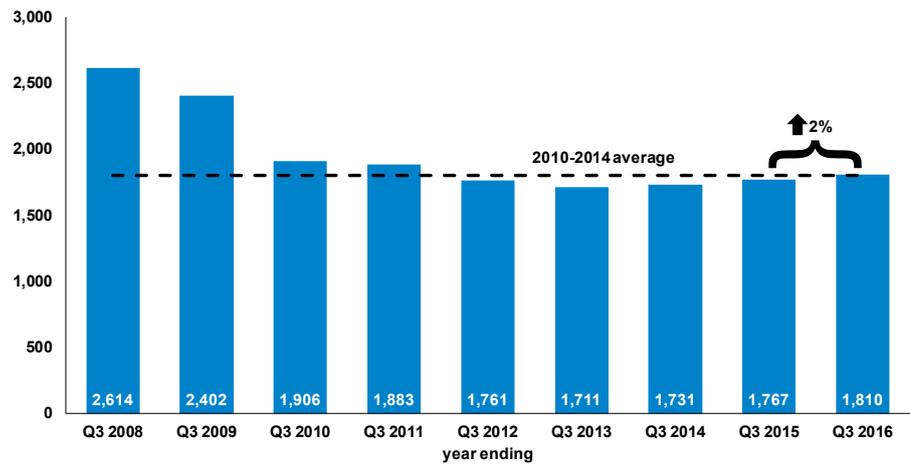
Uncertainty

The figures in this publication are estimates and are subject to revision in future releases. See the [uncertainty section](#).

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Road deaths: GB, rolling years ending September, 2008-2016



- A total of 25,160 people were **killed or seriously injured (KSI casualties)** in the year ending September 2016, **up by 6 per cent** from the previous year.
- There were 182,560 **casualties of all severities** in the year ending September 2016, **down by 4 per cent** from the previous year.
- **Motor traffic levels rose by 1.4 per cent** compared with the year ending September 2015.
- The overall **casualty rate per vehicle mile decreased by 5 per cent** over the same period.

What we can conclude: There has been a statistically significant increase in the number of people killed or seriously injured in road traffic accidents between the years ending September 2015 and 2016. This indicates that there are a number of factors that have combined together to worsen some aspects of safety on Britain's roads. However, there is some uncertainty in this owing to methodological changes. See page 10.

What we cannot conclude: Although the number of people killed in road traffic accidents has increased between years, this change is small enough that it can be explained by the natural variation in deaths over time. Therefore there is not yet enough evidence to say that the number of fatalities is changing between years.

Overall results

Rolling year ending September 2016

- In the year ending September 2016, there were 1,810 **reported road fatalities**, a 2 per cent increase from 1,767 in the previous year. This increase is **not statistically significant**. This means that the increase is probably to do with a combination of factors that have come about by chance, rather than any specific change.
- Killed or seriously injured casualties (KSIs) increased by 6 per cent** to 25,160 compared with the year ending September 2015. This change is **statistically significant** at the 99% confidence level. The number of serious injuries has increased more than fatalities. This suggests that different factors could be affecting each of the types of severities. One partial explanation, though, is likely to be in changes in reporting practices leading to casualties who would have formerly been classified as slightly injured being reclassified to seriously injured (see the section on [CRASH](#)).
- The **total number of casualties decreased by 4 per cent** to 182,560 (see Chart 1). This change is **statistically significant** at the 99% confidence level. On the face of it, this suggests that the decrease is a reflection of genuine changes in road safety rather than natural variation. As described above, though, it could also partly reflect changes in reporting practices.
- Motor vehicle traffic increased by 1.4 per cent over the same period.

[Table RAS45001](#): Reported road casualties by severity, GB: year ending September 2016

	Number/percentage change compared with previous 12 months			
	Oct-14 to Sep-15	Oct-15 to Sep-16 (P)	Percentage change	statistically significant?
ALL CASUALTIES				
Killed	1,767	1,810	↑2%	ns
KSI ¹	23,824	25,160	↑6%	***
Slightly injured	165,427	157,400	↓5%	***
All casualties	189,251	182,560	↓4%	***

P Provisional estimates

¹ Killed or seriously injured

** statistically significant at 0.01 level.

*** statistically significant at 0.001 level.

Definition

Casualty: A person killed or injured in an accident. Casualties are sub-divided into killed, seriously injured and slightly injured.

Rolling year: a period of 12 months that begins and ends on a set day. In this publication the rolling year ending September 2016 represents the 12 months beginning on the 1st October 2015 and ending on the 30th September 2016.

A full list of the definitions used in this release can be found [here](#).

2010-2014 average

The 2010-14 average is used as a comparison time frame in both this publication and the accompanying statistical tables. This average has been updated from the 2005-09 average used recently to reflect the latest trends.

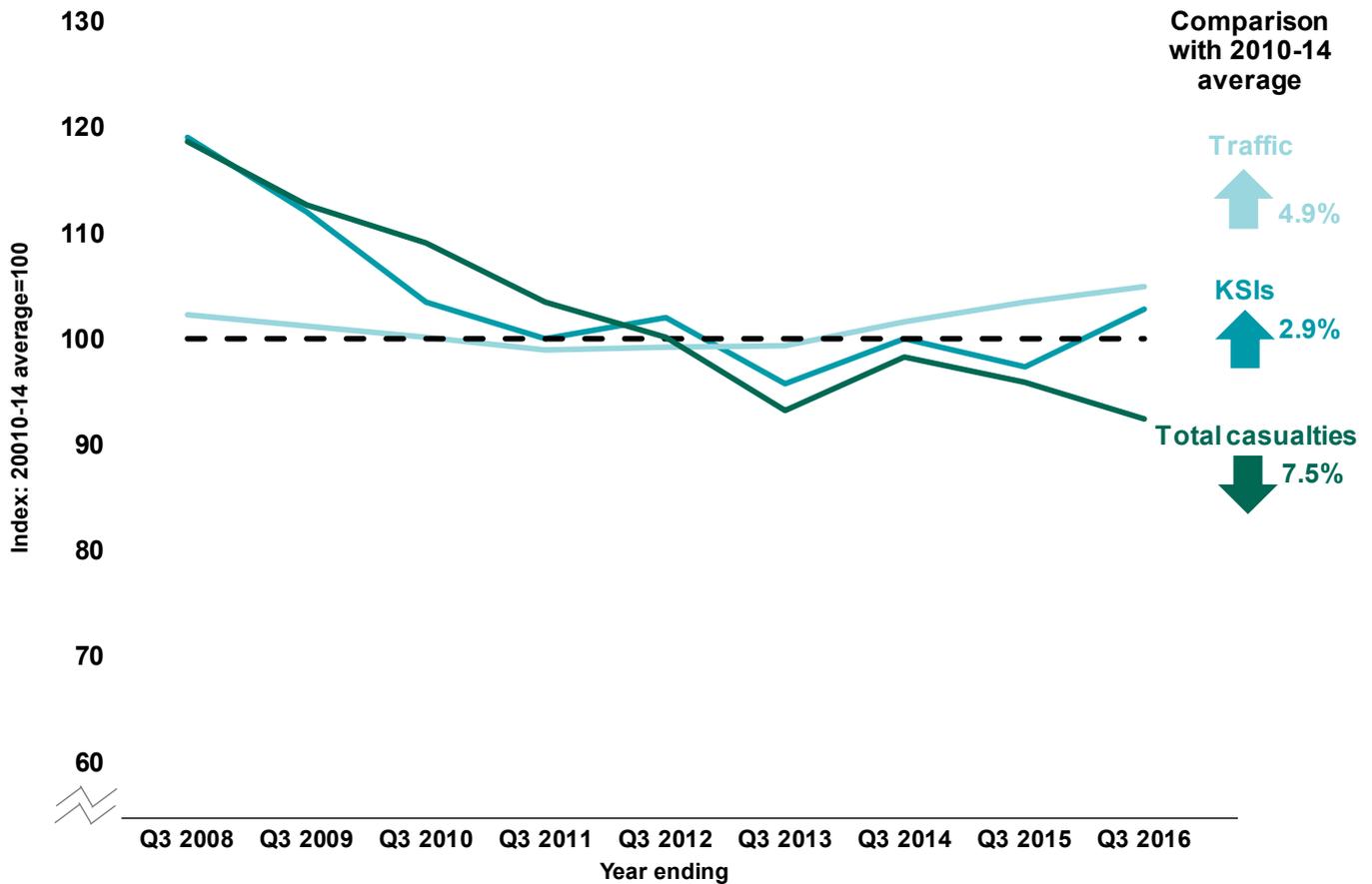
Statistical significance

The number of casualties can fluctuate from year to year and there is interest in knowing the extent to which these fluctuations represent an indication of a real underlying trend as opposed to random year-to-year variation.

A **statistically significant** change is one we can be sure is large enough that it can be considered as an indication of a real underlying trend.

A change that is **not statistically significant** is one that is likely to have come about by chance and therefore represents random year-to-year variation.

Chart 1: Killed or seriously injured, total casualties and traffic compared with the 2010-14 average, GB, years ending September 2008 to 2016



Figures for July to September 2016

- Between July and September 2016, 450 people were killed in reported road accidents. Once rounding is taken into account this is unchanged from the same quarter of 2015. **KSI casualties** increased by 8 per cent to 6,920 over the same period.
- **Casualties of all severities** decreased by 4 per cent to 47,260 in comparison with the same quarter in 2015.
- The decreases in slightly injured and total casualties, and the increase in KSI casualties, **is statistically significant** at the 99% confidence level. However, the decrease in fatalities is **not statistically significant** (see table [RAS45002](#)).
- Motor traffic levels increased by 0.9 per cent over the same period.

Tables

- Reported road casualties by severity (estimates): Great Britain, rolling annual totals, quarterly, table [RAS45001](#).
- Road traffic (vehicle miles) by vehicle type in Great Britain, quarterly from 1993, table [TRA2501](#).
- Reported road casualties by severity (estimates): Great Britain, quarterly and annual, table [RAS45003](#).

Table RAS45002: Reported road casualties by severity: GB, July to September 2016

ALL CASUALTIES	Number/percentage change compared with same quarter last year			
	Q3 2015	Q3 2016 (P)	Percentage change	statistically significant?
Killed	454	450	no change	ns
KSI ¹	6,402	6,920	↑8%	***
Slightly injured	42,964	40,330	↓6%	***
All casualties	49,366	47,260	↓4%	***

P Provisional estimates
 1 Killed or seriously injured
 *** statistically significant at 0.001 level.
 ns not statistically significant at 0.05 level.

*Quarterly casualty figures are prone to fluctuation as they are strongly affected by external factors such as the weather. Therefore the changes in quarterly casualty figures in this release should be interpreted with caution.

Casualty rates

- In the year ending September 2016, fatalities increased by 2 per cent and traffic levels rose by 1.4 per cent compared with the previous year. As a result, the **fatality rate per billion vehicle miles** increased by 1 per cent.
- Total casualties decreased by around 4 per cent over the same period. When combined with the rising traffic volume the overall **casualty rate per billion vehicle miles** decreased by 5 per cent in the year ending September 2016.
- In comparison with the third quarter of 2015, fatalities remained unchanged, KSI casualties increased by 8 per cent and overall casualties decreased by 4 per cent in the period July to September 2016. Over the same period, traffic levels increased by 0.9 per cent. As a result, the **fatality rate per billion vehicle miles** decreased by 2 per cent and the **overall casualty rate fell** by 5 per cent over the same period.

Road user type

Rolling year ending September 2016

- KSI casualties increased for **all road user groups**.
- Car occupant KSI casualties** increased the most, by 10 per cent to 9,480, and **pedestrian KSIs** increased by 3 per cent to 5,480 in the year ending September 2016 (see table [RAS45006](#)).
- Motorcyclist KSI casualties** increased by 5 per cent to 5,650 and **pedal cyclist KSIs** increased by 2 per cent to 3,430 in the year ending September 2016.
- There were 2,070 **child (aged 0-15) KSI casualties** in the year ending September 2016, an increase of 8 per cent from the year ending September 2015. **Child pedestrian KSIs** decreased by 2 per cent to 1,260. **Child casualties of all severities** remained at similar levels as the previous year, at 16,080.

2010-2014 average



Car occupant casualties in the year ending September 2016 compared with the 2010-2014 average:

KSI ↑ 5%
 All casualties ↓ 9%

Table RAS45006: KSI casualties by road user type: GB, year ending September 2016

ROAD USER TYPE	Number/Percentage change compared with previous 12 months		
	Oct-14 to Sep-15	Oct-15 to Sep-16 (P)	Percentage change
 Car	8,637	9,480	↑10%
 Motorcycle	5,380	5,650	↑5%
 Pedal cyclist	3,371	3,430	↑2%
 Pedestrian	5,298	5,480	↑3%
All	23,824	25,160	↑6%

2010-2014 average

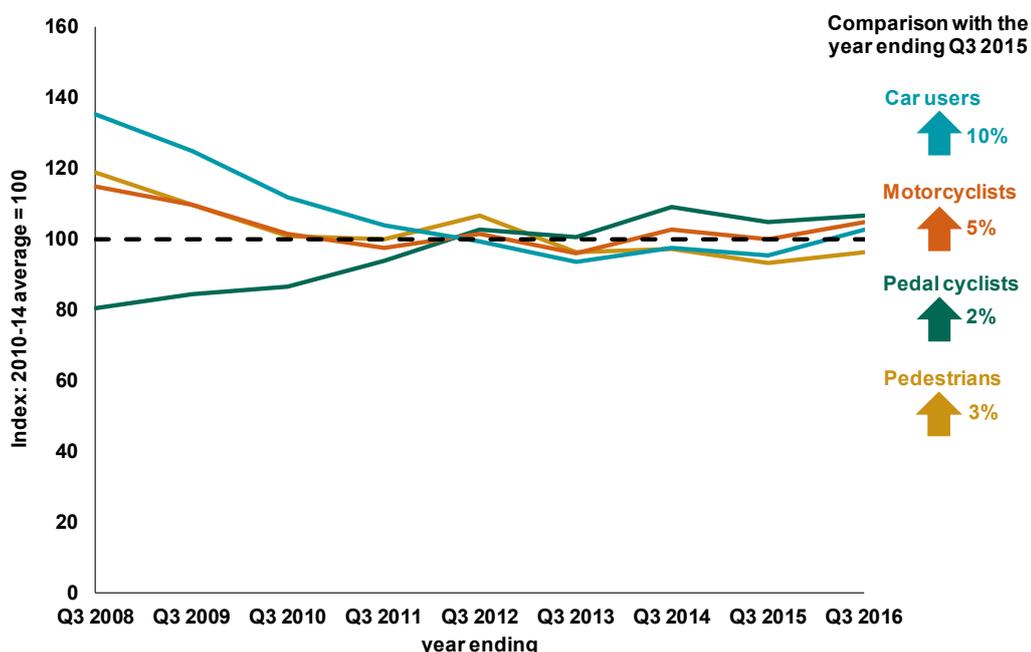


Motorcycle user

casualties in the year ending September 2016 compared to the 2010-2014 average:

KSI  5%
All casualties  1%

Chart 2: Reported killed or seriously injured casualties by road user type, GB: rolling years ending September, 2008 to 2016



2010-2014 average



Pedal cyclist casualties

in the year ending September 2016 compared to the 2010-2014 average:

KSI  7%
All casualties  4%

2010-2014 average



Pedestrian casualties

in the year ending September 2016 compared to the 2010-2014 average:

KSI  4%
All casualties  6%

Figures for July to September 2016

- KSI casualties increased for **all road user groups** in the third quarter of 2016 compared with the same quarter of 2015 (see table [RAS45007](#)).
- **Motorcyclist KSI casualties** increased by 14 per cent to 1,890 in comparison with the same quarter of the previous year. **Pedal cyclist KSIs** increased by 10 per cent to 1,120 and **car occupant KSIs** increased by 7 per cent to 2,380. **Pedestrian KSIs** increased slightly by 1 per cent to 1,250 compared with the same quarter of 2015.
- **Child KSI casualties** increased by 22 per cent to 650 and child casualties of all severities increased by 2 per cent in the third quarter of 2016. **Child pedestrian KSIs** increased by 6 per cent to 350.

2010-2014 average



Child (aged 0-15)

casualties in the year ending September 2016 compared to the 2010-2014 average:

KSI  8%
All casualties  9%

Figure 1: KSI casualties by road user type: GB, July to September 2016, percentage change compared to July to September 2015 ([Table RAS45007](#))



- Quarterly casualty figures are prone to fluctuation as they are strongly affected by external factors such as the weather. Therefore the changes in quarterly casualty figures in this release should be **interpreted with caution** and they **may not be indicative of an ongoing trend**.

Tables

- Reported road casualties by severity and road user type (estimates): Great Britain, rolling annual totals, updated quarterly, table [RAS45006](#).

- Reported road casualties by severity and road user type (estimates): Great Britain, latest available quarter, table [RAS45007](#).

Road type

Rolling year ending September 2016

- Fatal accidents on major roads** (motorways and A roads) increased by 3 per cent to 1,050 in the year ending September 2016. Fatal accidents on **minor roads** (B, C and unclassified roads) increased by 2 per cent to 650 over the same period.
- The total number of **fatal or serious accidents on major roads** increased by 3 per cent to 10,820 in the year ending September 2016. **Fatal or serious accidents on minor roads** increased by 7 per cent to 11,940 between the year ending September 2015 and 2016.
- On roads with a speed limit over 40 mph (**non-built-up roads**) **fatal accidents** increased by 3 per cent to 920, and **fatal or serious accidents** increased by 6 per cent to 7,430 in the 12 months to September 2016. There was a 3 per cent increase in **fatal accidents** on roads with a speed limit of up to and including 40 mph (**built-up roads**) to 780 and a 5 per cent increase in **fatal or serious accidents** to 15,340 over the same period.

Definitions

Built-up roads: Accidents on “built-up roads” are those which occur on roads with speed limits (ignoring temporary limits) of 40 mph or less.

Non built-up roads refer to speed limits over 40 mph.

Major roads: includes motorways and A roads.

Figures for July to September 2016

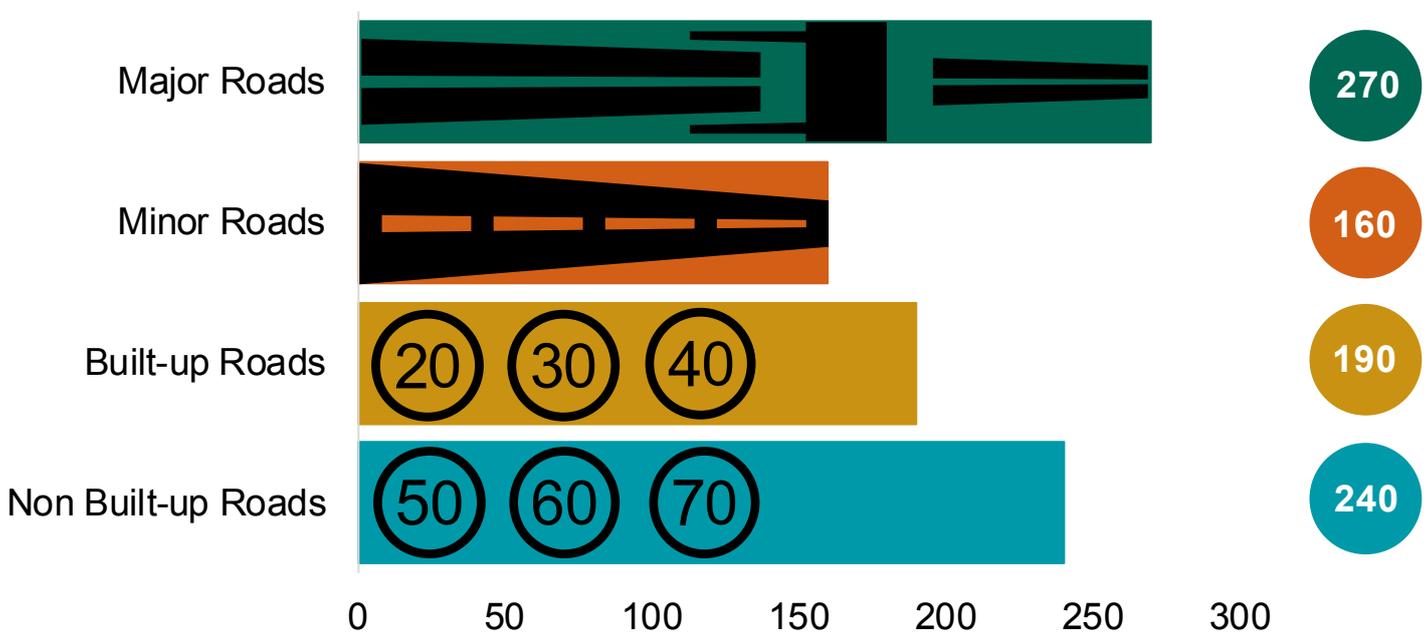
- **Fatal accidents on major roads** increased by 8 per cent to 270 in the third quarter of 2016. However, during the same quarter, **fatal accidents on minor roads** decreased by 8 per cent to 160.
- **Fatal or serious accidents on major roads** increased by 6 per cent to 2,980 in the third quarter of 2016. Furthermore, **fatal or serious accidents on minor roads** increased by 11 per cent to 3,300 over the same period.
- **Total accidents on major roads** decreased by 6 per cent to 17,190 in comparison with the third quarter of 2015. However, the **total number of accidents on minor roads** increased by 1 per cent to 18,270.
- **Fatal accidents on non-built-up roads** increased by 3 per cent to 240 in the third quarter of 2016. In contrast, **fatal accidents on built-up roads** decreased by 1 per cent to 190 over the same period. **Fatal or serious accidents on non-built-up and built-up roads** increased by 6 and 10 per cent respectively compared with the same quarter of 2015.

Tables

• Reported road accidents, by road type (estimates): Great Britain, rolling annual totals, updated quarterly, table [RAS45009](#).

• Reported road accidents by road type (estimates): Great Britain, latest available quarter, table [RAS45010](#).

Chart 3: Reported fatal accidents by road type, GB: July to September 2016



Background to trends

Uncertainty in the provisional estimates

The provisional statistics are based on data supplied by police forces with **some imputation** to account **for months that are either missing entirely or for which more records are expected later** in the year. Data are missing for the whole of July to September for Derbyshire and August to September for Kent. The Metropolitan Police Service (MPS) have not provided any data for August or September. The MPS accounts for a large share of the national road casualties (see [ras30007](#)). Although it is not unusual for some forces to have data missing for part of the year, the relative size of the MPS means that there is **considerable uncertainty associated with these estimates** and it is possible that there could be **large changes when these figures are revised** in future publications.

As is discussed later in this section, there is evidence that police forces using CRASH are recording proportionately **more seriously injured casualties** than non-CRASH forces. This step-change is also adding some **additional uncertainty** to the estimates. As CRASH was adopted towards the end of 2015 but mostly in the early months of 2016, the provisional quarterly estimates have been created by comparing changes between non-CRASH data in one year with CRASH data in the following year. This is likely to **affect the factors used to scale up missing data**. As a result, the end of year final figures **may be further from the provisional estimates than usual**. The problem will not exist in the 2017 estimates as it will compare like with like.

Weather

July and August 2016 were both a little above, but still close to, the long term average (LTA) temperature. September was almost 2 °C warmer than the LTA. In comparison, the average temperatures for the same months in 2015 were between 0.2 and 1 °C colder than the LTA.

In terms of precipitation, July and September 2016 were a little wetter than the LTA and August was little drier than the LTA.

On the whole, the deviations from the long term average for both year ending September 2015 and 2016 are not significant enough to have had much influence on casualty figures. (Though it is probably more accurate to say that

Statistical model

The Department has developed a statistical model to produce weather-adjusted road casualty figures. The weather-adjusted casualty figures should be interpreted as the number of road casualties we would have expected in a given year or quarter had the temperature and precipitation in each month been at the long term average. Further information can be found at:

www.gov.uk/government/uploads/system/uploads/attachment_data/file/463100/weather-on-road-casualties.pdf

www.gov.uk/government/uploads/system/uploads/attachment_data/file/463049/rrcgb2014-03.pdf

Long term average (LTA)

The Met Office use 30 year averages for UK temperature and precipitation to assess changes in the latest temperature and precipitation data. Currently the 1981-2010 average is used for comparison: www.metoffice.gov.uk/climate/uk/summaries/2015/annual.

any deviations in individual months have been balanced out by other months in the year).

As a result, the weather-adjusted casualty figures for quarter 3 2016 were not significantly different from the actual figures (see Table 5). It is therefore **likely that the changes between the third quarter of 2016 and the same quarter of 2015 would have occurred even if conditions in both quarters had been closer to the average.**

Quarter/Year	Fatalities		KSI		Slightly injured		Total casualties	
	Published	Weather-adjusted	Published	Weather-adjusted	Published	Weather-adjusted	Published	Weather-adjusted
Q3 2015	454	452	6,402	6,444	42,964	43,328	49,366	49,772
Q3 2016	450	440	6,920	6,880	40,330	40,050	47,260	46,930
<i>Percentage change between quarters</i>	-0.9%	-2.7%	8.1%	6.8%	-6.1%	-7.6%	-4.3%	-5.7%
Year ending September 2015	1,767	1,759	23,824	23,863	165,427	165,872	189,251	189,735
Year ending September 2016 ¹	1,810	1,810	25,160	24,960	157,400	156,740	182,560	181,700
<i>Percentage change between years</i>	2.4%	2.9%	5.6%	4.6%	-4.9%	-5.5%	-3.5%	-4.2%

Table 5: Published and weather-adjusted casualties by severity, GB

1. All statistical models work within reasonable operating parameters. The model used here is based on long-term trends in temperature and precipitation. It does not take into account events that are considerably more extreme than have been recorded before, and similarly it cannot take into account consequences such as flooding and road closures. As a result we do not believe that the model produces a reliable adjustment of the casualty figures for December 2015. It is impossible to say what the outcome would have been had the weather in December been closer to the long term average. The adjusted December 2015 figures have therefore not been included in the year ending September 2016 weather-adjusted figures.

Potential weather influences for the final three months of 2016

Although we do not have casualty data for the final three months of 2016 we can already look at the weather. This can help us try to predict if the weather may have had any significant affect on casualties during that period.

All three months were considerably drier than the LTA. It was the driest October since 1972, with 60 per cent less precipitation than the LTA. December had a third less precipitation than LTA. In terms of temperature, October was only 0.2 °C warmer than the LTA, which will probably not have had much influence; November was 1.4 °C colder than the LTA (and over 3 °C colder than November 2015); and December was 1.7 °C warmer than the LTA (though still colder than December 2015).

Given the combination of weather factors during these months, we might hypothesise that casualty numbers could be higher than they would have been. The main driver for this will have been the unusual dry weather in the months - especially in comparison with December 2015 which was extremely wet, resulting in flooding in some parts of Britain. These drier conditions could contribute to additional motorcycle, pedal cycle and pedestrian travel. However, as casualty numbers are affected by other factors as well this outcome might not materialise.

Tables

- Reported weather-adjusted road casualties by road user type, Great Britain, annual from 1991, table [RAS30080](#).

CRASH

There is increasing evidence that police forces using CRASH are **more likely to record a casualty as being 'seriously' injured** than they were using their old systems. The early indications are that CRASH forces have had an increase in the number of serious injuries that are **10 to 15 per cent higher than the non-CRASH forces in England.**

Around half of the English police forces (which account for 40 per cent of the casualties in England) are currently using CRASH. Most of these forces adopted the system between January and May 2016. Around 28 per cent of all casualties in the year ending September 2016 have been recorded on CRASH. It is this 28 per cent of records which could have been affected by the change in reporting practices.

The Department is carrying out some research into why casualties being recorded on CRASH are more likely to be recorded as having serious injuries than slight injuries. Initial work has **ruled out** it being caused by officers incorrectly recording whether casualties with slight injuries have been admitted to hospital (this would automatically result in the casualty being upgraded from a slight severity to a serious severity). The most likely reason, therefore, is that **the change has come about through better recording of the injury type.**

In CRASH, the police officer records the types 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, Officers need to know which injury type classifies into each of the two severity types. CRASH, in contrast, automatically converts the injury type to a severity classification taking out the uncertainty of the officer having to make their own judgement. If this hypothesis is demonstrated to be correct then it means that the **new data from CRASH are more accurate than the data from other systems.**

When local authorities have looked at casualty record files in detail in the past they have found that officers are more likely to underestimate severity than overestimate it. **This suggests that the number of casualties seriously injured in the past should be higher than was recorded.** We will also look at data from the Metropolitan Police Service which has started to use a new system for recording data. Although this system is not CRASH it uses the same method of assessing severity - asking officers to record injury types and automatically converting these to severity. If this system also shows an increase in seriously injured casualties then it will indicate that **the change is a result of the methodology used** rather than the application used to record the accident.

The Department intends to publish more detailed analysis of this effect later in 2017. We expect that this will include back-estimates of what the number of seriously injured casualties would have been like if all police forces had been using an injury-defined system rather than a severity-defined system.

Definition

CRASH: Collision Recording and Sharing system. This is a new centralised system used by some police forces to record road traffic collisions.

Conclusions

Although there has been an increase in KSI casualties and fatalities and a fall in slightly injured and total casualties in the year ending September 2016, **these changes should be interpreted with caution**.

First, as discussed above, **the increase in fatalities in the year ending September 2016 is not statistically significant**. Therefore we cannot be sure that there has been a real change in fatalities. Instead this increase is **likely to have come about by chance**. However, the increase in seriously injured casualties **is statistically significant** so we can be sure that there has been a real worsening in KSIs. There is **considerable uncertainty**, however, in identifying whether this increase is **purely resulting from a methodological change** in how severity is reported, **a genuine worsening of road safety** on Britain's roads, or a **combination of both factors**.

The **decreases in slightly injured and total casualties are statistically significant** so this indicates that there has been a real improvement for these severities. Even this cannot be taken for certain, though. An **alternative explanation** could be that police forces are **less likely to attend accidents** which only result in slight injuries. This would lead to a decrease in casualties recorded. There is no definitive evidence for this, but it is one possible interpretation of trends for KSI casualties and slight casualties diverging.

As discussed in the section on uncertainty, there are a number of police forces with data missing for periods of the year. This also creates **considerable uncertainty in these estimates**. Once the missing data from these forces become available later in the year it is possible that there could be large revisions to the July to September 2016 figures.

Although these provisional figures are indicating that 2016 could be worse than 2015 in terms of fatalities and serious injuries, the uncertainties outlined here mean that it is still **too early to draw any definitive conclusions about the trend for 2016**. The final figures for road casualties in 2016 will be published in June 2017.

Further information

A full list of the definitions used in this publication can be found here: www.gov.uk/government/uploads/system/uploads/attachment_data/file/462818/reported-road-casualties-gb-notes-definitions.pdf.

Further information on Reported Road Casualties Great Britain, including information about the variables collected on the STATS19 form, historical publications and factsheets, can be found at: www.gov.uk/government/publications/road-accidents-and-safety-statistics-guidance.

Tables

- Reported road casualties by police force area, rolling annual totals, updated quarterly, table [RAS45011](#).

Next release

The next release of reported road casualty statistics, will be the reported road casualties main report for 2016. This will be published in June 2017.

Strengths and weaknesses of the data

- The quarterly figures are based on estimates. No single quarter's figures should be taken in isolation as an indication of long-term trend, as there are seasonal fluctuations particularly in the smaller categories of road user. The 2016 Q3 results are based on complete (July to September 2016) figures provided by 41 police authorities with partial data for three authorities. Adjustments are made to take account of missing data. [Table RAS45011](#) provides a list of which police authorities are included in these figures. As described above, there is considerable uncertainty in the adjustments.
- Comparison of road accident reports with death registrations shows that very few, if any, road accident fatalities are not reported to the police. However, it has long been known that a considerable proportion of non-fatal casualties are not known to the police, as hospital, survey and compensation claims data all indicate a higher number of casualties than suggested by police accident data.
- The data used as the basis for these statistics are therefore not a complete record of all personal injury road accidents, and this should be kept in mind when using and analysing the figures. However, police data on road accidents (Stats19), whilst not perfect, remain the most detailed, complete and reliable single source of information on road casualties covering the whole of Great Britain, in particular for monitoring trends over time.
- Following requests from users, we have started to include casualty rates in the quarterly release i.e. casualty rates per mile. They are based on provisional casualty and traffic estimates and are subject to revision at the end of the year.
- Provisional traffic estimates do not include pedal cycling estimates. We have attempted to adjust for this in the figures by adding in approximately 1% extra vehicle miles. This ratio is based on the relationship between all motor vehicle traffic and pedal cycle traffic for 2013 to 2015.
- Estimates are based on information reported to the Department for Transport 17 weeks after the end of the third quarter 2016. Figures are based on information available on 24 January 2017.

Background notes

- The Reported Road Casualties Great Britain Quarterly Provisional Estimates web page provides further detail of the key findings presented in this statistical release. The tables are available at: www.gov.uk/government/statistics/reported-road-casualties-in-great-britain-provisional-estimates-april-to-june-2016
- A note on methodology can be found at: www.gov.uk/government/publications/road-accidents-and-safety-statistics-guidance

- National Statistics are produced to high professional standards as set out in the Code of Practice for Official Statistics. They undergo quality assurance reviews to ensure that they meet customer needs. The first assessment report (report number 4) and letter confirming that the statistics have been designated as National Statistics are available at: www.statisticsauthority.gov.uk/assessment/assessment/assessment-reports/index.html. The statistics were reassessed during 2013 and the report, number 258, was published at the link above on the 25th July 2013.
- Details of Ministers and officials who receive pre-release access to these statistics up to 24 hours before release can be found here: www.gov.uk/government/publications/road-accident-and-safety-statistics-pre-release-access-list
- The latest annual road safety publication, Reported road casualties Great Britain, annual report: 2015, is available at: www.gov.uk/government/statistics/reported-road-casualties-great-britain-annual-report-2015. Final 2016 road casualty figures will be published in June 2017.



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