Department for Transport

Factors affecting reported road casualties

About this article

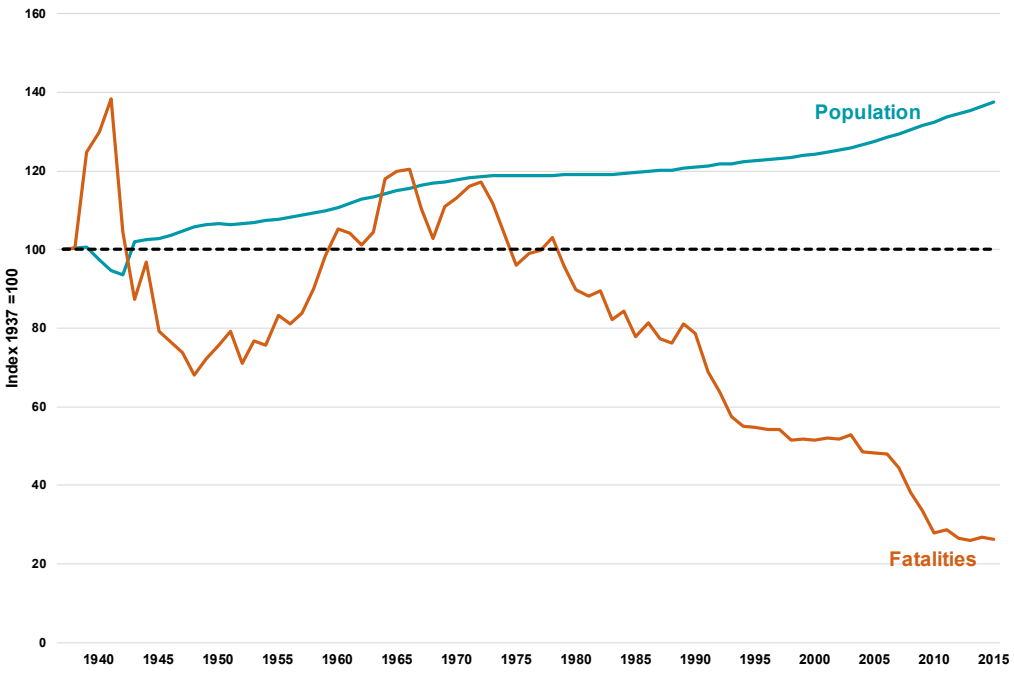
This article provides an investigation into some of the factors that could affect reported road casualty figures.

We will look at population, driving licence numbers, fuel prices, driving tests and vehicle availability.

In this article

In the last 30 years Great Britain's population has grown by 15 per cent (8.1 million people). Despite this growth in population, road fatalities have fallen by 68 per cent (3,655 deaths).

Reported road fatalities and population over time, Indexed 1937=100, Great Britain: 1937 to 2015



- Young drivers are **statistically over-represented in reported road accidents.** In 2015, the death per million population rate was at **49 road deaths for every million people aged 17 -24** compared with 27 deaths for every million people for the whole population.

- Over the last 25 years the **price of premium unleaded petrol in real terms has increased by 52 per cent**. Despite fuel becoming more expensive, vehicle miles for Great Britain increased by 24 per cent over the same period.

- Reported road fatalities have fallen considerably over the last 30 years – in 1976 6,570 people were killed on Great Britain's roads when only 19.4 million full car driving licences were held - **in 2015, 1,730 people were killed with 37.3 million licence holders.**

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Background on reported road casualties

There were 186 thousand **reported road casualties** in 2015, a decrease of 42 per cent compared with 321 thousand thirty years ago. Since 1926 (where our series begins) the number of **fatalities** has decreased by 65 per cent - that is 3,156 fewer deaths. In recent years the number of fatalities have been stable, ranging from 1,713 to 1,901 between 2011 and 2015.

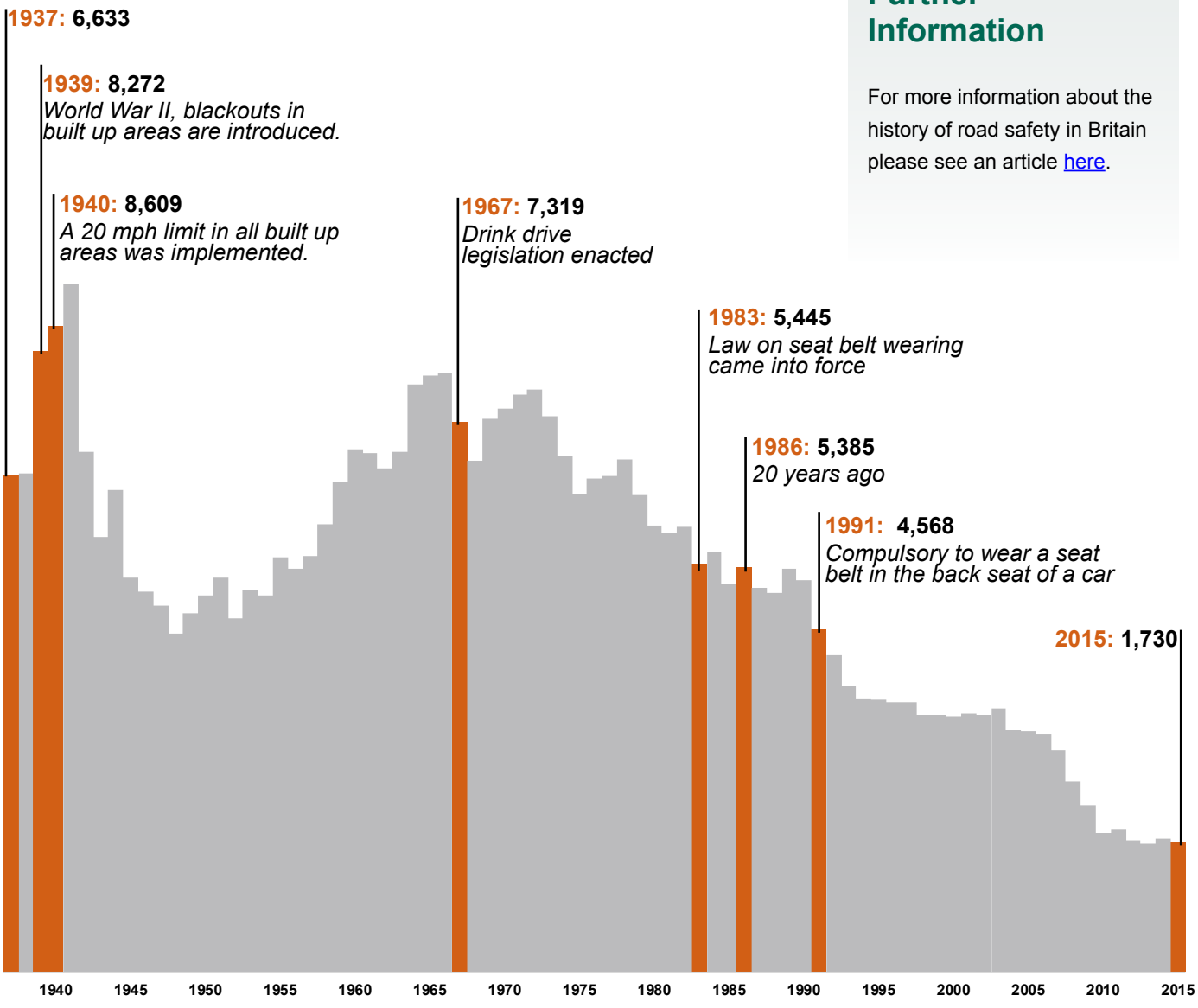
Further Information

For more information about reported road casualties please see the main results: 2015 report.

There could be **many reasons for the long-term decreases** recorded such as:

- Economic recessions
- Proportion of drivers exceeding the speed limit have fallen
- Technological and engineering improvements to vehicles and roads
- Improved education

Chart 1: Reported road fatalities, Great Britain: 1937 to 2015



Further Information

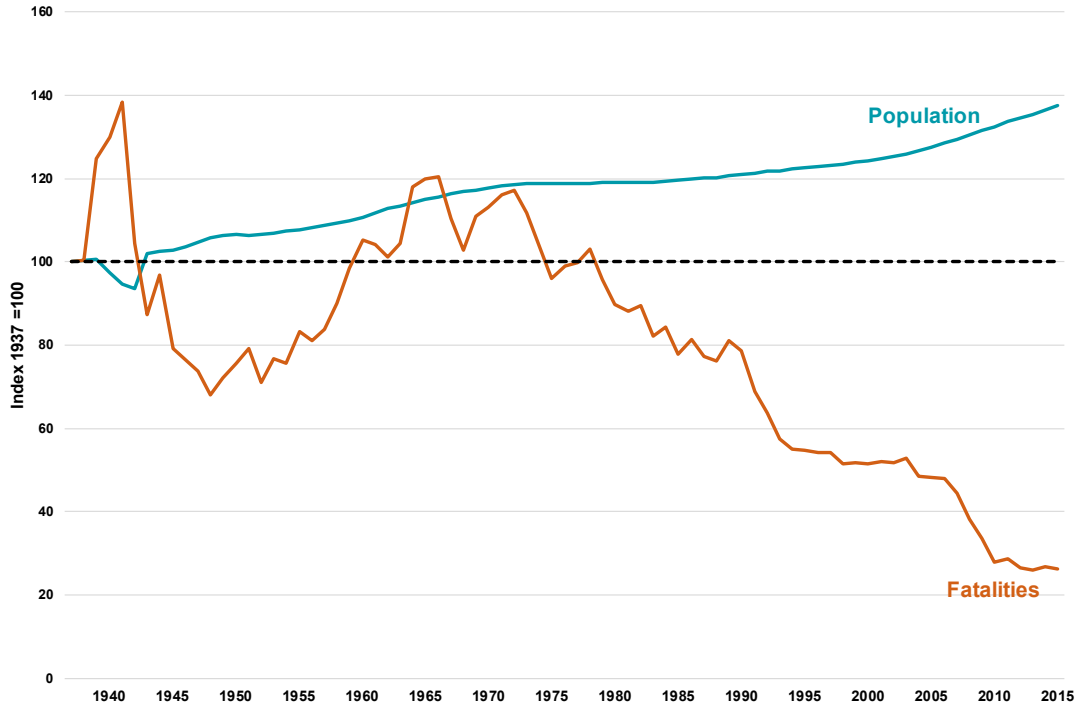
For more information about the history of road safety in Britain please see an article here.

In the last 30 years **Great Britain's population** has grown by 15 per cent (8.1 million people). Despite this growth in population, **fatalities** have fallen by 68 per cent (3,655 deaths).

Further Information

For more information about population estimates please see the ONS population section.

Chart 2: Reported road fatalities and population over time, Indexed 1937=100, Great Britain: 1937 to 2015

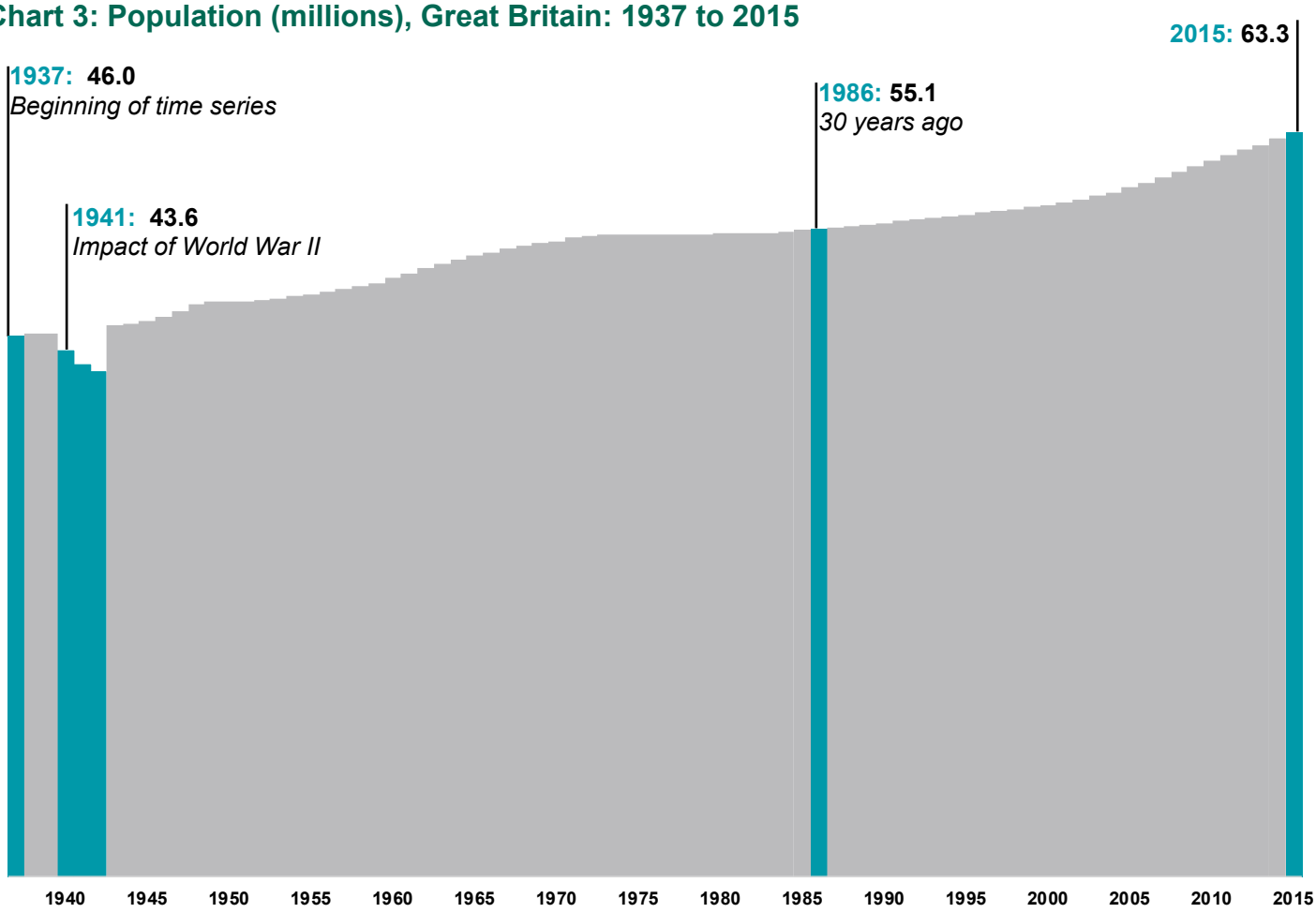


Since 1937 the **GB population** has grown on average around 0.4 per cent per year. More recently the population of Great Britain has increased by 7 per cent over the last 10 years, with the estimate for 2015 being approximately 63.3 million people. Over the last decade population growth for Great Britain has been similar to other countries in the EU with large populations (Germany, Turkey and France). Many studies allude to the increase in population being due to the higher standard of living which has led to people living longer as well as other factors.

Further Information

For more information about population ageing, please see a UN report from the Department of Economic and Social Affairs: World Population Ageing: 1950 to 2050

Chart 3: Population (millions), Great Britain: 1937 to 2015



Casualties per million population

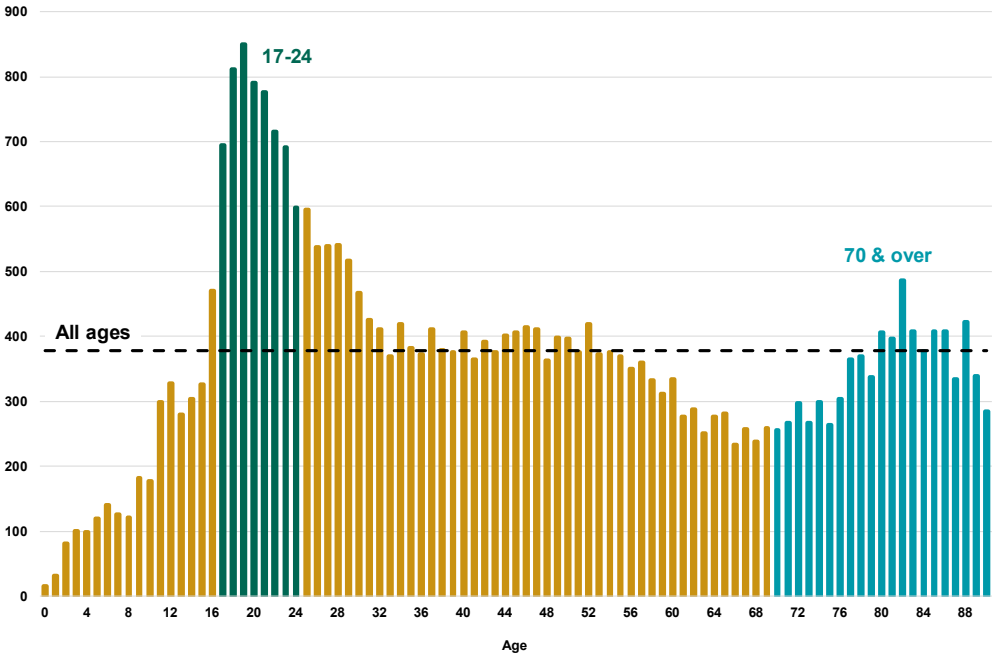
Thirty years ago the **casualty rate per million population** was at 5,834. By 2015 this had halved to 2,943 casualties per million population.

In 2015, the **death per million population rate** was at 27 road deaths for every 1 million Great Britain residents. This represents a 72 per cent decrease on three decades ago. This indicates that there are a number of factors that have combined to reduce the number of fatalities such as **improvements in emergency response and vehicle technology**. However it is important to note that even if the number of deaths each year had stayed the same the deaths per million population would have decreased due to the growth in Great Britain's population.

Great Britain has one of the lowest number of road deaths per million population of all the European Union countries, after Sweden. Norway and Malta also had a lower rate in 2015, however they have a very small number of accidents per year; for instance Malta had only 11 road deaths in 2015.

Certain age groups have a significantly higher number of killed or seriously injured casualties (KSI) per million population than others. These age groups are **young people (aged between 17 and 24)** and **older people (aged 70 or over)**. As well as looking at all ages in more detail, we focus specifically on these two age groups in this article. These two age groups stand out in chart 4 below.

Chart 4: Number of KSIs per million population by age, Great Britain: 2015



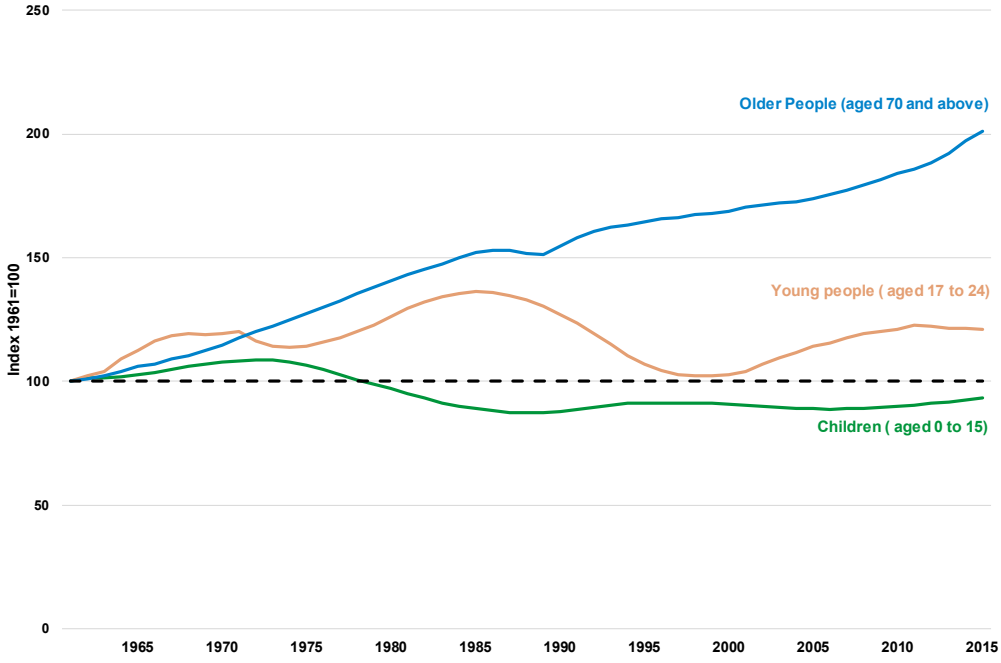
Population: Age groups

Even though Great Britain's overall population has generally grown year on year, separate age groups have different stories.

The number of **children (aged 0 to 15)** in Britain grew from 1961 until the late 70s and it is apparent this had an affect about ten years later when this cohort became young adults.

The number of **older people (70 and over)** has increased by 88 per cent in the last 50 years while the number of children has decreased by 10 per cent. There is evidence, however, that over time more of these children survived to the next age group. This has helped to increase the population aged 17 to 24, despite lower birth rates.

Chart 5: Population by age group, indexed 1961=100, Great Britain: 2015



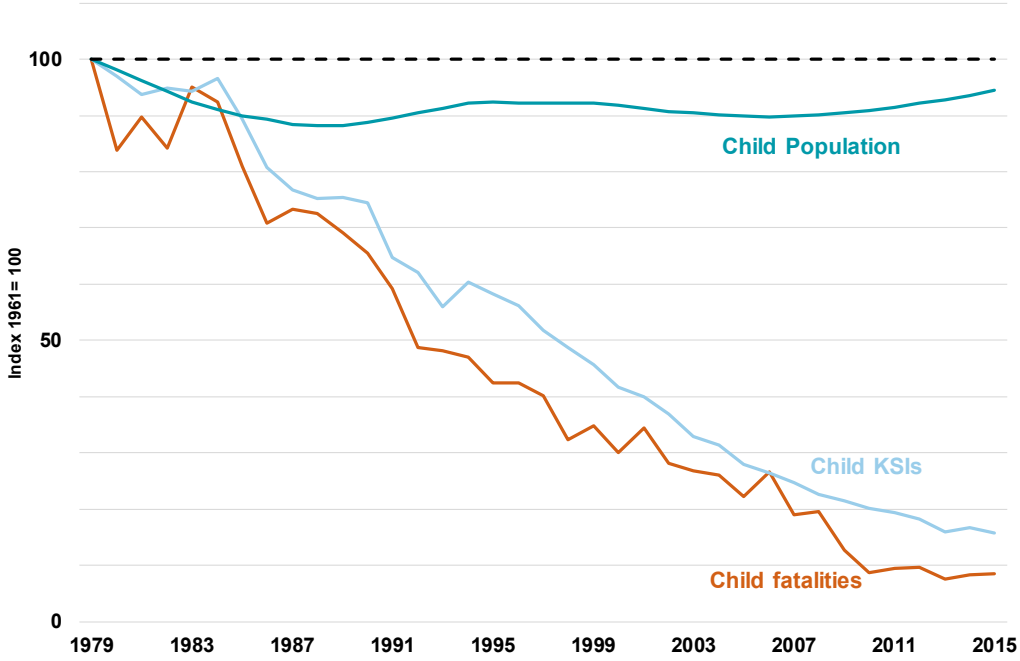
Population: Children (aged 0 to 15 years)

Child fatalities in reported road accidents have decreased by 88 per cent in the last 30 years from 450 deaths in 1986. In 2015 there were 54 fatalities of children aged 15 and under.

Child KSIs have followed a similar trend. In 2015 figures had fallen by 80 per cent when compared with 10,071 KSIs that occurred in 1986.

Even though both population and child casualties have fallen the number of child casualties has dropped more rapidly than the size of the population. This is shown in chart 6 with a significant gap opening between the child population and casualty levels.

Chart 6: Child population, fatalities and KSIs, Indexed 1979=100, Great Britain: 1979 to 2015

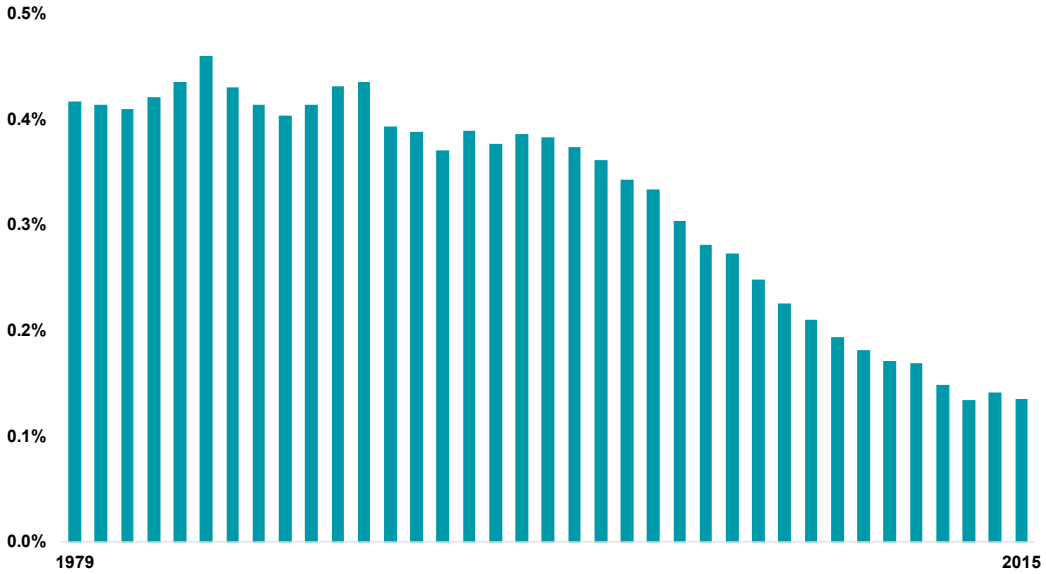


On average over the last 30 years, 0.3 per cent of the child population sustained a road injury each year. This compares with an average of 0.15 per cent for the most recent five years (2011-2015).

In 2015 there were **5 road deaths for every 1 million children living in Great Britain**. This rate has fallen by 89 per cent in the last 30 years.

These trends therefore indicate that there have been genuine improvements in child road safety that are above and beyond changes in the child population size.

Chart 7: Proportion of the child (aged 0-15) population that sustained a road injury, Great Britain: 1979 to 2015



Children predominantly travel on our roads by walking, cycling or as a passenger in a car.

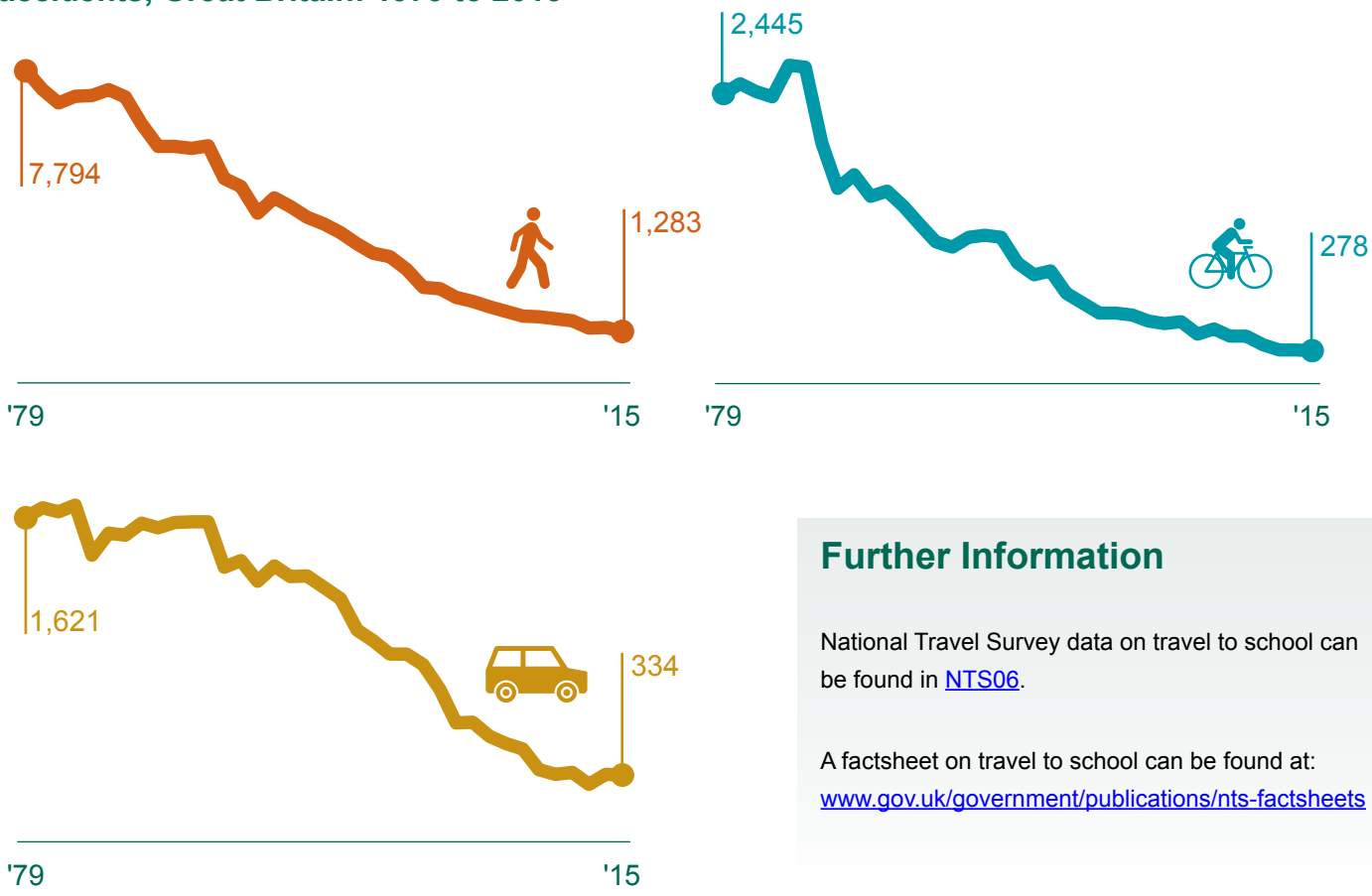
National Travel Survey data suggests that the **proportion of children travelling to school by walking** has fallen. In 2015, 44 per cent of children aged 5 to 10 years travelled to school by walking, down from 56 per cent in 1998/00. The proportion travelling to school by car is up from 37 per cent to 48 per cent over the same period.

Chart 8 shows that the number of child pedestrian and pedal cyclists killed or seriously injured (KSIs) have fallen more rapidly than car occupant KSIs. Since 1979 there has been an 84 and 89 per cent decrease respectively in child pedestrian KSIs and child pedal cyclist KSIs in comparison with a 79 per cent decrease in child car occupant KSIs. In contrast, adult (aged 18 and over) car occupant KSIs have fallen by 75 per cent over the same period, outstripping the 67 per cent fall in pedestrian KSis and 28 per cent rise in pedal cyclist KSIs.

These facts imply children's exposure to roads is decreasing, but particularly in relation to walking and cycling. This might be as a result of spending less time outside (either owing to a tendency to indoor activities or safety fears for being out of the home) and being less likely to walk to school. Some studies[1] have alluded to children's time watching TV or using devices such as laptops and mobile phones doubling over the last 20 years.

1 Connected Kids report, compiled by market researcher Childwise. http://www.bbc.co.uk/news/technology-32067158

Chart 8: child (aged 0-15) pedestrian, pedal cyclist and car occupant KSIs in reported road accidents, Great Britain: 1979 to 2015



Further Information

National Travel Survey data on travel to school can be found in NTS06.

A factsheet on travel to school can be found at: www.gov.uk/government/publications/nts-factsheets

Population: Young people (aged 17 to 24 years)

In 2015 there were 314 deaths where the **fatality was aged 17 to 24**, a 79 per cent decrease on the number of deaths in 1986 (30 years ago). Of the 314 deaths, 63 per cent were motor vehicle drivers.

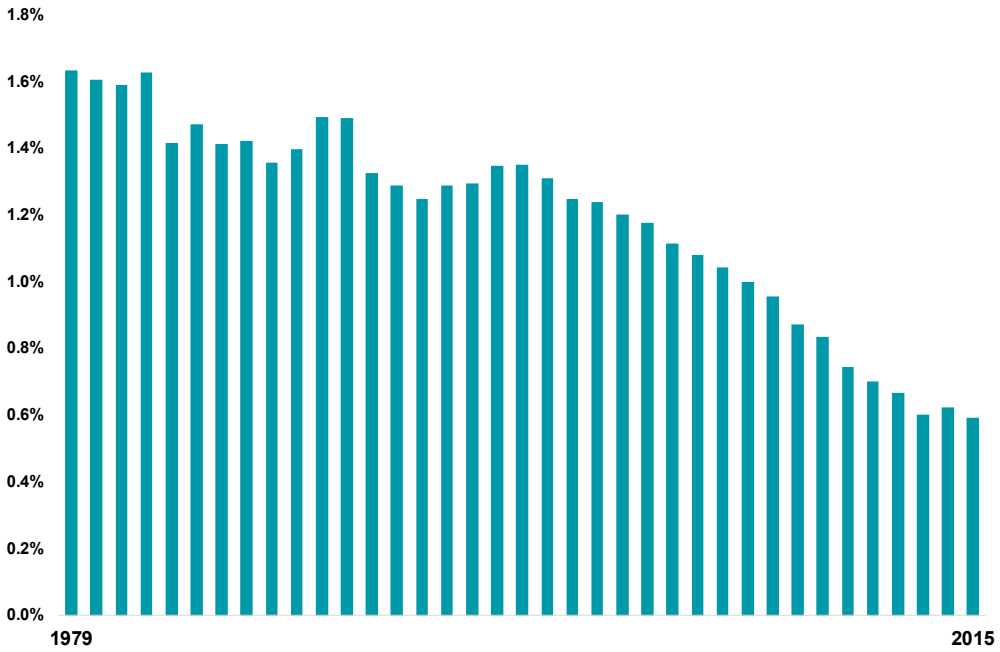
Young car drivers are statistically over-represented in reported road accidents in comparison with older car drivers aged 25 and above.

Over the last thirty years the **proportion of 17-24 year olds on average sustaining a road injury** per year is 1.1 per cent. In contrast, the average for the most recent five years (2011 - 2015) is 0.6 per cent.

In 2015 there were **49 road deaths for every million people aged 17 to 24**. In 1986 the rate was at 204 road deaths per million population aged 17-24.

The overall population of this age group is fairly small (6.4 million) when compared with the child age group (11.9 million). Even though the population of 17-24 year olds is smaller than the child population there are more road deaths. This is due to the fact that young people are more likely to be exposed to road traffic, for instance being a young car driver or cycling on busier roads than a child might.

Chart 9: Proportion of the young person (aged 17-24) population that sustained a road injury, Great Britain: 1979 to 2015



Population: Older people (aged 70 and above)

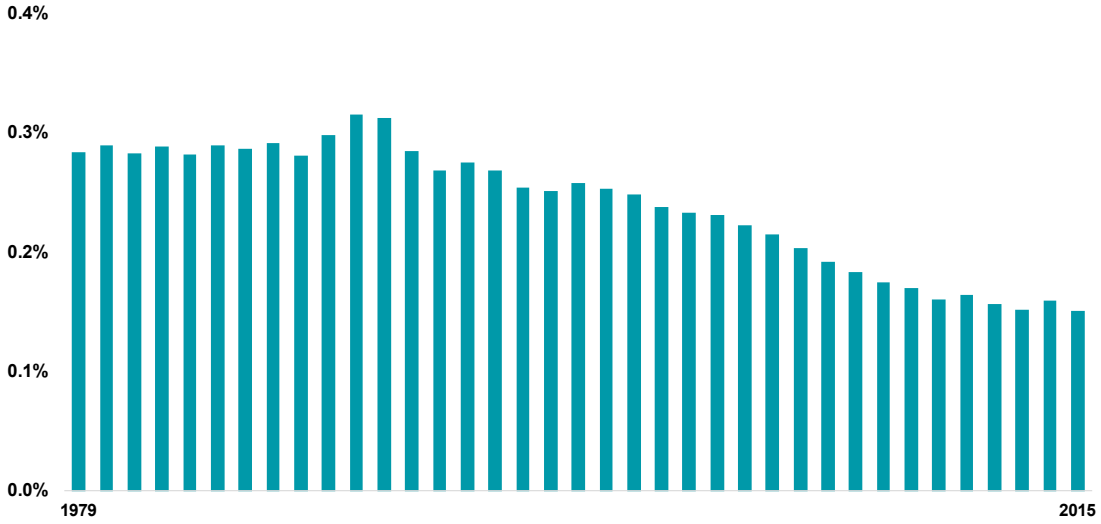
Older motor vehicle drivers (aged 70 and above) were involved in 12 thousand reported road accidents in 2015. In comparison, young motor vehicle drivers (aged 17 to 24) were involved in three times as many accidents (35 thousand). Given this, we would expect many more young driver deaths than older driver deaths. Yet in 2015, there were 144 older motor vehicle driver deaths compared with 199 younger motor vehicle driver deaths; a narrower gap than might have been expected This could suggest that older people are more likely to die if they are in a road accident. A possible explanation for this is the medical vulnerability of older people and lower abilities to recover from injuries.

The number of older people in Great Britain has increased at the fastest rate of all the age groups we are focusing on, with 1.9 million more people aged 70 or over now than thirty years ago. Despite this increase, overall KSIs for this age group have declined. In 2015 there were 2,579 killed or seriously injured casualties aged 70 or over in reported road accidents. This is a decrease of 55 per cent compared with the levels thirty years ago.

However, the **proportion of those aged 70 or over on average sustaining a road injury** per year has remained approximately the same over the last ten years while other age groups have had a decline. The rapidly increasing population and increased likelihood of this age group to drive and be more active than they were previously may be leading to the slower decline in the casualty figures for this age group compared with the others.

In 2015 there were **45 road deaths for every million people aged 70 and above**. This rate has fallen considerably over the last 30 years, with the rate in 1986 at 170 road deaths per million population.

Chart 10: Proportion of the older person (aged 70 and over) population that sustained a road injury, Great Britain: 1979 to 2015



Driving licences

Estimates from the National Travel Survey suggest that there were 24.3 million **full car driving licence holders in Great Britain** in 1986. Since then licence holders have increased by 54 per cent with 37.3 million drivers holding a valid driving licence in Great Britain in 2015.

Young people aged between 17 and 24, account for around 8 per cent of all full car driving licence holders in Great Britain.

National Travel Survey licence figures for 2015 show that a total of just under 3 million **young people aged 17-24 years** in Great Britain hold a full car driving licence, this is around 46 per cent of all 17-24 year olds. This rate is lower than the 74 per cent of all those aged 17 and over that hold a full car driving licence as younger people are less likely to drive.

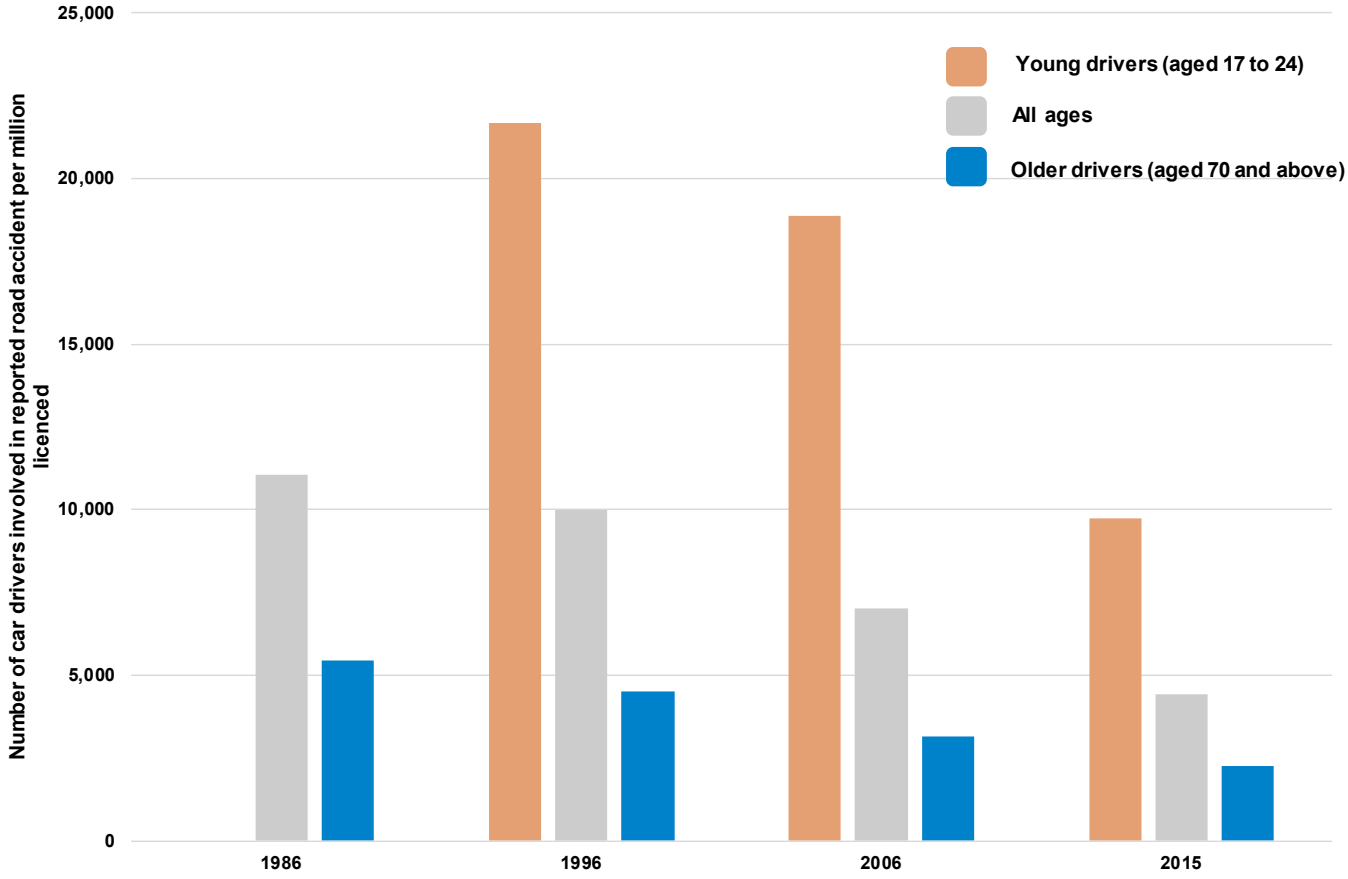
Further Information

National Travel Survey data on driving licence holding and vehicle availability can be found in NTS02 tables.

In 2015 there were 9.7 thousand **young car drivers** involved in reported road accidents per million young driver licence holders. This is over double the rate for all Great Britain car drivers (4.4 thousand car drivers involved per million driver licence holders). In 2015 a young car driver drove an average of 2,050 miles per year, 37 per cent lower than the average for all car drivers (3,267 miles). This is further evidence that young drivers are statistically over-represented in reported road accidents.

The number of **fatalities aged 70 and above** has decreased by 65 per cent when compared with levels 30 years ago. In contrast the number of **drivers aged 70 and above** with a full car driving licence has more than tripled over the same period. In 2015 there were 2.3 thousand older car drivers involved in reported road accidents per million older driver licence holders. The National Travel Survey found that a car driver aged 70 or over drove on average 2,197 miles per year. This is 33 per cent lower than the average for all car drivers (3,267 miles).

Chart 11: Car drivers involved in reported road accidents per million full car driver licence holders by age group, Great Britain

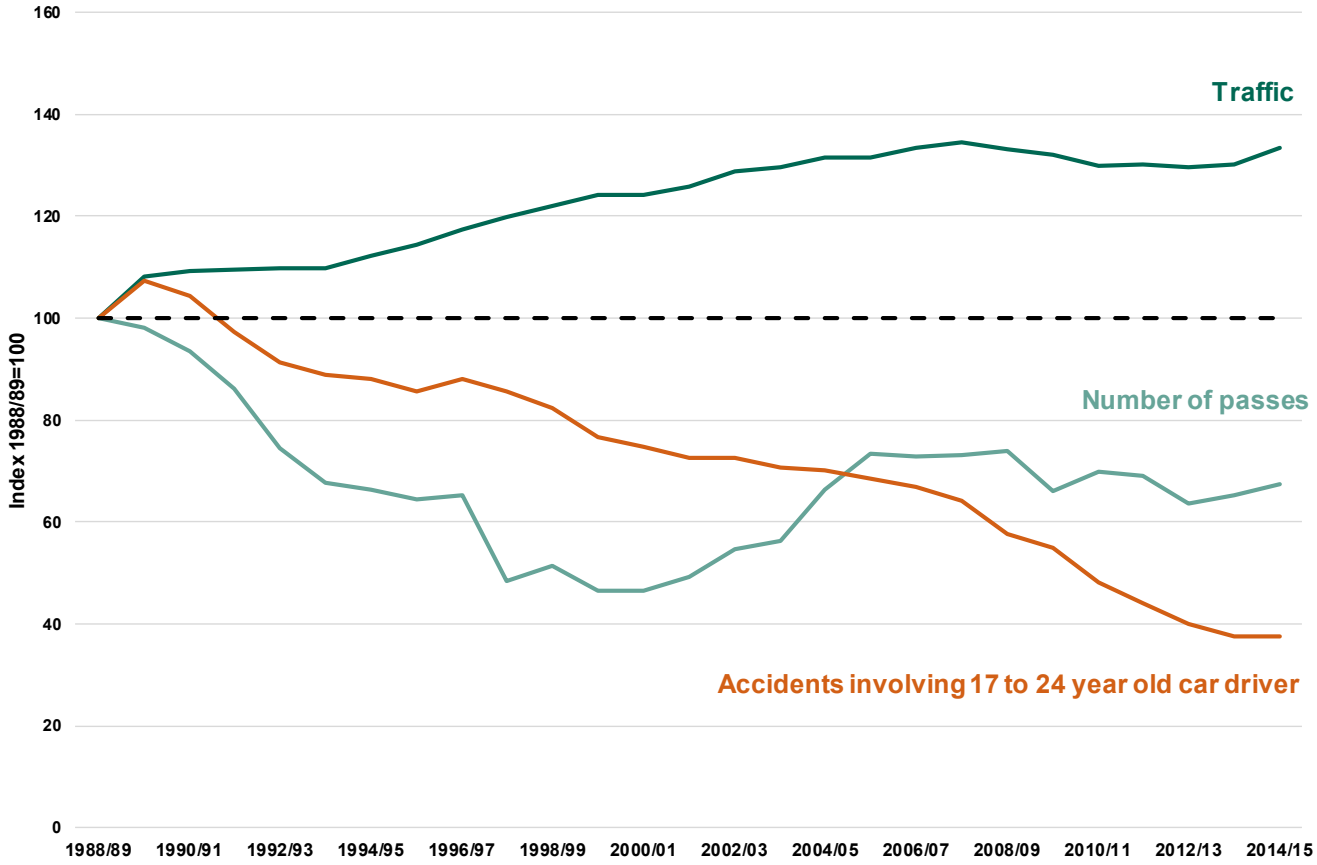


Driving tests and car availability

Despite the fact that **road traffic volumes** and the **percentage of households that own at least one car** have increased, road casualties have generally decreased. Over the last 10 years, approximately 24 to 25 per cent of households did not own a car. Thirty years ago this proportion was 38 per cent and looking back even further to 1961 (when the National Travel Survey was carried out once a decade), 69 per cent of households did not own a car. Despite the fact that the majority of households did not own a car and vehicle miles were around a quarter what they are today in 2015, there were 6,908 road deaths in 1961.

The number of people passing their **practical car driving test** decreased from 1988/89 until the early 2000s. A total of 496 thousand drivers passed their practical driving test in 2000/01, 53 per cent lower than the number in 1988/89. During the same period the volume of traffic increased by 24 per cent with the number of accidents involving 17 to 24 year old car drivers decreasing by 25 per cent. Recently the number of people passing their practical car driving test has remained relatively unchanged with the number of passes ranging from 677 thousand (2012/13) to 744 thousand (2010/11) over the last five years. Drivers aged 17 to 24 accounted for 68 per cent of car practical test passes in 2014/15. Over 2010/11 to 2014/15, accidents involving at least one car driver aged 17 to 24 have decreased by 22 per cent to 27,913.

Chart 12: Traffic volume (vehicle miles), the number of car practical driving test passes and road accidents in which at least one 17 to 24 year old car driver was involved, Great Britain

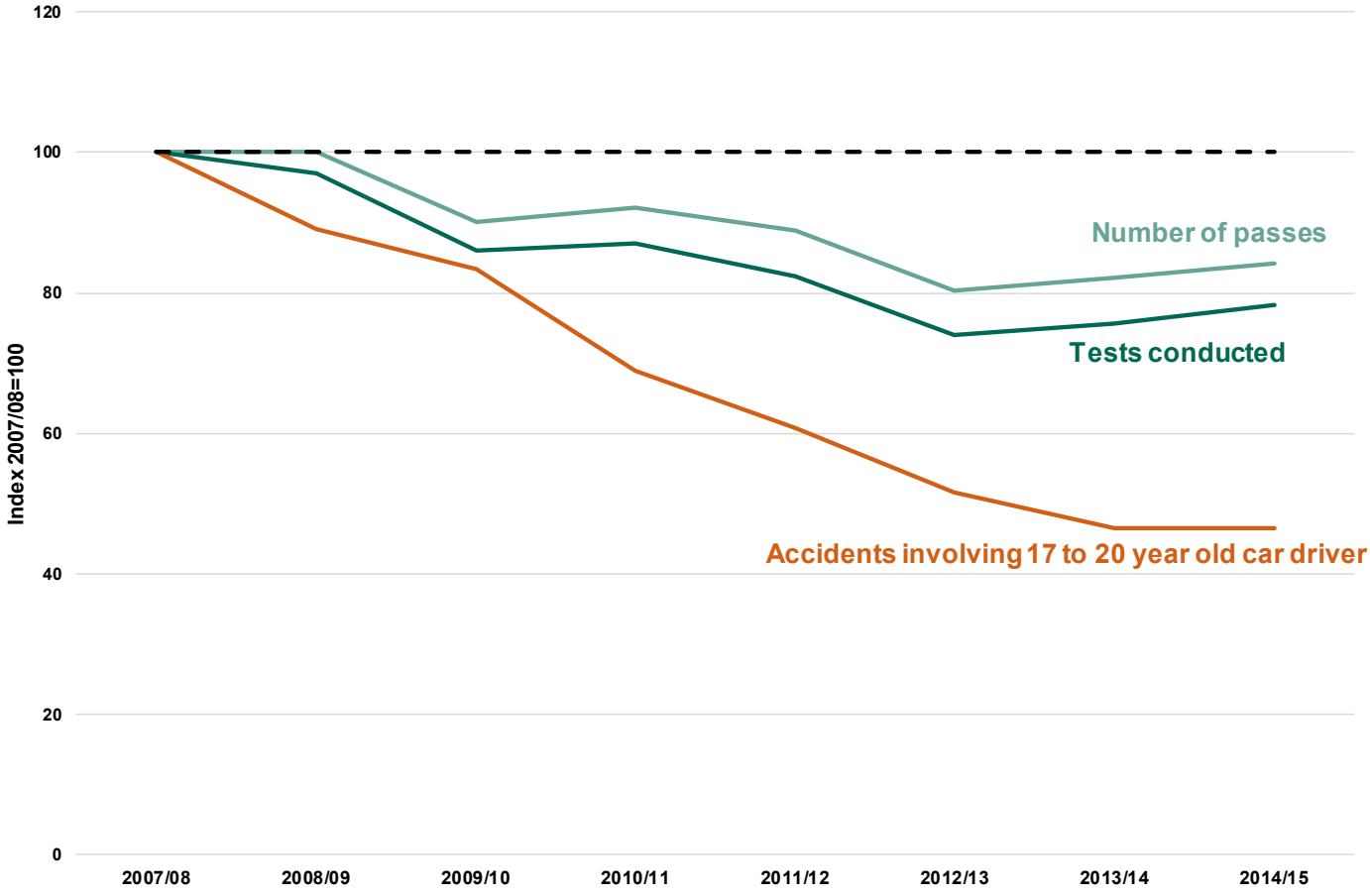


In 2014/15 there were 708 thousand **practical car driving tests undertaken by 17 to 20 year olds**, of which 365 thousand (52 per cent) resulted in a pass. Since 2007/08 the number of tests conducted and passes for 17 to 20 year olds have fallen by 22 and 16 per cent respectively. Over the same period the number of reported road accidents involving a car driver aged 17 to 20 has fallen by 53 per cent to 12,252 in 2014/15. However, the number of this age group taking their test has started to rise very slowly over the past three years (chart 13).

Further Information

Statistics on the number of driving and riding theory and practical tests undertaken in Great Britain: www.gov.uk/government/collections/driving-tests-and-instructors-statistics

Chart 13: Car practical driving tests conducted and passes for 17 to 20 year olds and road accidents in which at least one 17 to 20 year old car driver was involved, Great Britain



GDP and fuel prices

As a country's **economic development** increases, in general, so does its **traffic volume**. Greater traffic volumes can lead to more incidents owing to more vehicle exposure. The main results publication released in June contained some discussion of the impact that economic activity has on road casualties.

Further Information

An OECD report looking at the relationship between economic activity and road casualties can be found at: http://www.itf-oecd.org/why-does-road-safety-improve-when-economic-times-are-hard

Over the last 25 years the **price of premium unleaded petrol** in real terms has increased by 52 per cent (chart 14). National Travel Survey data shows that the average number of trips per person and the average distance travelled per person have fallen in recent years. In 2015, the average number of trips was 13 per cent lower than in 2002 with the average distance travelled 7 per cent lower than in 2002 (chart 15). A possible explanation for this may be the real term increase in the price of premium unleaded petrol which could be causing people to make fewer trips and travel less distance. However, **vehicle miles** for Great Britain increased in most years throughout the last 25 years though falls were seen in the periods of recession. For instance, between 2007 and 2010, motor vehicle traffic fell for three consecutive years.

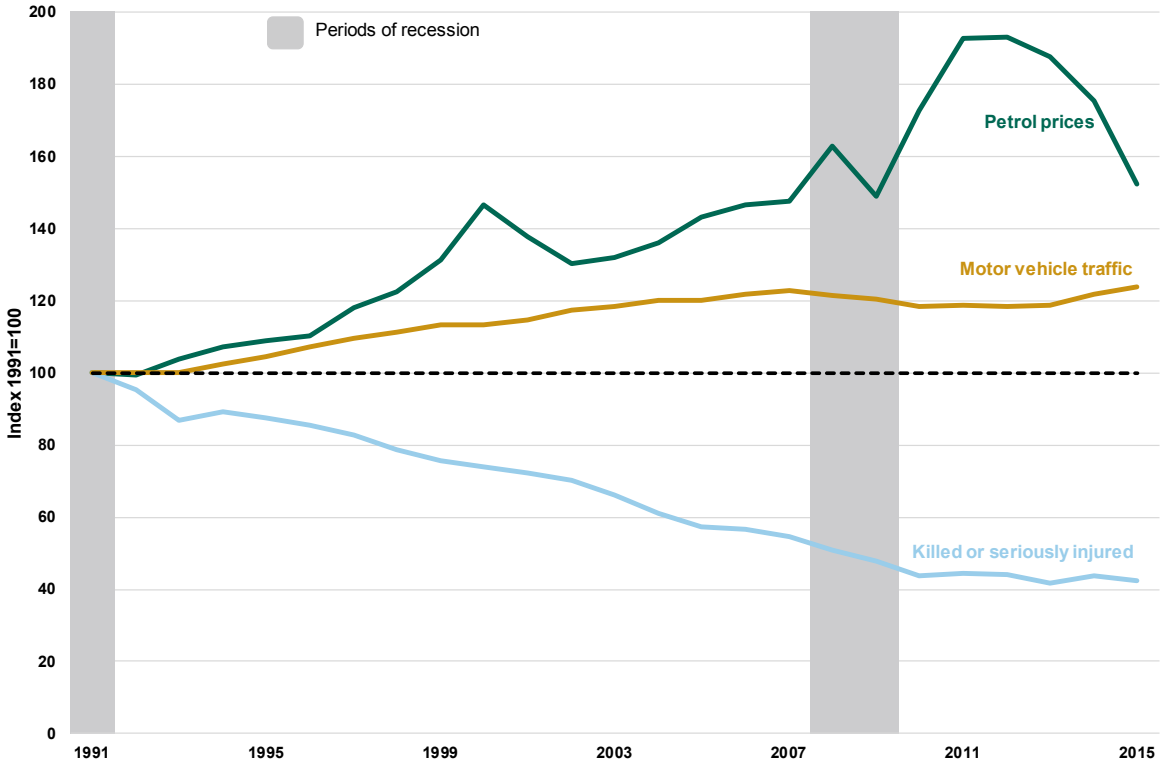
Despite fuel prices potentially reducing trips and distance travelled at an individual level, traffic volumes may still be increasing due to the growth in population and driving licence holding. Therefore fuel prices do not seem to have had a significant effect on traffic volumes outside periods of economic depression. However, this analysis does not look at whether traffic growth has been suppressed by rising fuel prices.

Further Information

National Travel Survey, 2015: www.gov.uk/government/statistics/national-travel-survey-2015

Data on the average number of trips made and distance travelled can be found in NTS01 tables.

Chart 14: Petrol prices[1], motor vehicle traffic and road accidents (Index 1991=100), Great Britain: 1991-2015

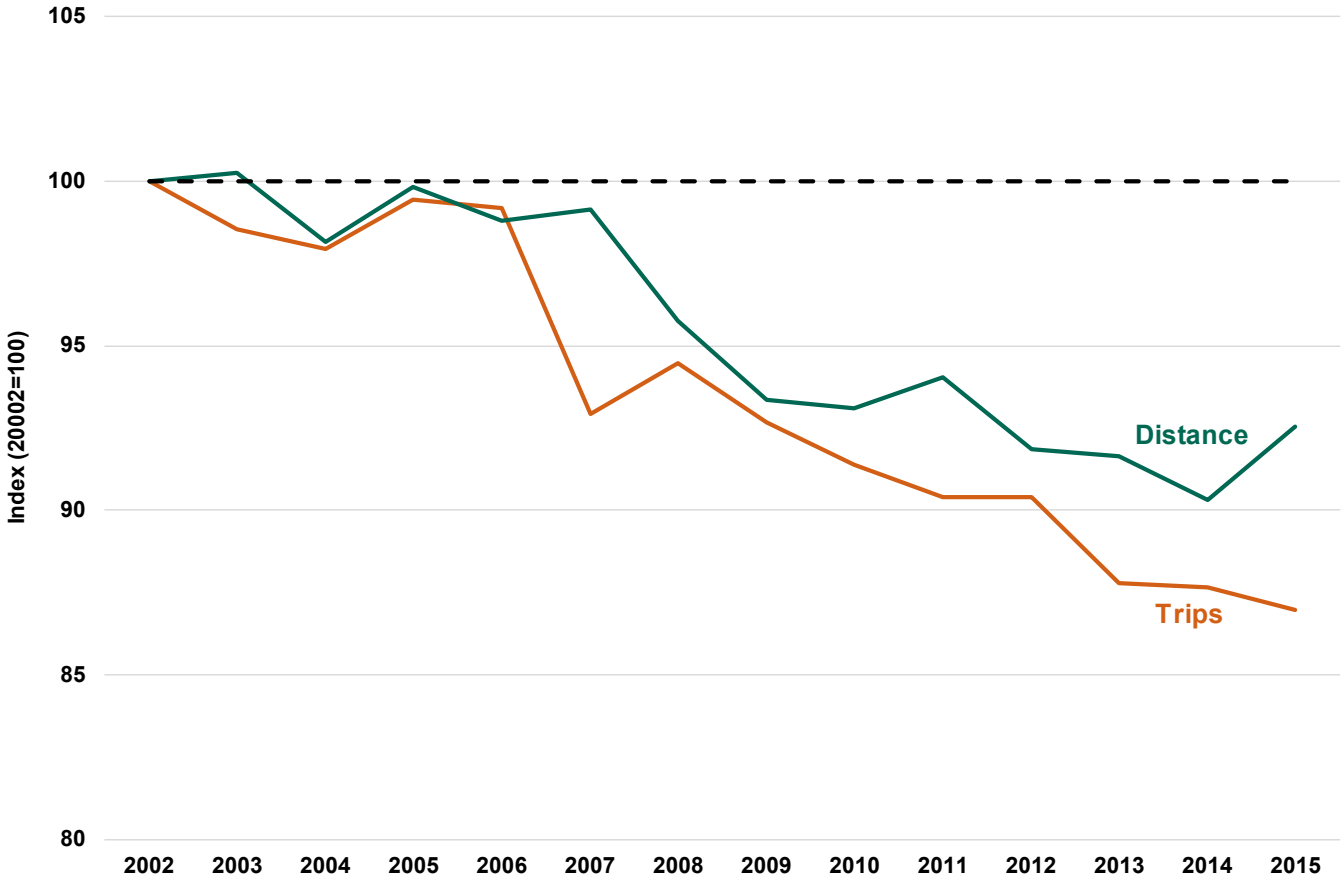


Further Information

Data on monthly and annual prices of road fuels can be found at: www.gov.uk/government/statistical-data-sets/oil-and-petroleum-products-monthly-statistics

1 Average annual retail price of premium unleaded fuel at 1991 prices. These real prices have been produced using GDP deflator price index.

Chart 15: distance and trips, England: 2002 to 2015



Conclusion

Despite the fact that population, car availability, traffic levels, driving licence numbers and fuel prices have all increased, **reported road casualties have continued to decrease**. This indicates that there are a **number of factors influencing road casualties**, such as better education and improvements to vehicles, that have combined together to improve some aspects of safety on Britain's road. However this does not mean that population, vehicle availability etc have had no effect on casualty numbers. If there had been no road safety interventions it is likely that increases in traffic and population would have led to increases in reported road casualties.

In recent years the number of fatalities on Britain's roads have been stable and **most of the changes relate to random variation**. One interpretation of this could be that the year on year increases in traffic and other factors are masking any recent improvements in road safety.

There is still more work that could be done on all these factors, plus others. The Department for Transport is restricted in the depth of analysis we can carry out owing to availability of resources and access to academic literature. However, if authors of other research on the topic provide links, we will be happy to direct users to the research.