



A collection of evidence for the impact of the economic recession on road fatalities in Great Britain



Louise Lloyd*, Caroline Wallbank, Jeremy Broughton

Transport Research Laboratory, Crowthorne House, Nine Mile Ride, Wokingham, Berkshire RG40 3GA, UK

ARTICLE INFO

Article history:

Received 21 July 2014

Received in revised form 4 February 2015

Accepted 20 March 2015

Available online 5 May 2015

Keywords:

Fatalities

Recession

Exposure data

Analysis

ABSTRACT

There was a considerable reduction in the number of fatalities on British roads between 2007 and 2010. This substantial change led to debate as to the cause of the reduction. Multiple sources of information and evidence have been collated including STATS19 road accident data, population data, socio-demographic data, economic patterns, weather trends and traffic and vehicle data. Summary analyses of these data sources show a reduction in overall traffic, a large reduction in HGV traffic, a reduction in young male drivers, a reduction in speeding, and a reduction in drink driving during the recession period. All of these reductions can be associated with a reduction in fatal accidents and have led to the conclusion that the economic recession changed behaviours in such a way that fewer people were killed on the roads in Britain during this period.

© 2015 TRL Limited. Published by Elsevier Ltd. All rights reserved.

1. Introduction

1.1. Background

The number of fatalities on British roads fell markedly from 2007 to 2010. Fig. 1 presents the logarithm of the annual number to show the year-on-year changes, and it is clear that apart from a reduction from 1990 to 1992 this reduction is far greater than any seen over the previous decades. This is clearly “good news”, but there is little understanding of the reasons for this success. Without this understanding, there can be little confidence that the reductions will not be reversed, at least in part, and data for the most recent years show that this has happened.

One might expect that the number of serious road accident casualties would change broadly in line with the number of fatal casualties, and Fig. 2 shows that this did happen until about 1998. Over the next few years, however, the number of serious casualties continued to fall while the number of fatal casualties changed far less; indeed, it actually rose in 2003. Thus, the rapid reduction in fatal casualties from 2007 has simply caught up with the more sustained reduction in serious casualties. The trend in casualty rates follows a very similar trend over time.

Similar patterns have been identified and investigated in other countries across the world. The main source of road accident data within the European Union is the Community database on

Accidents on the Roads in Europe (CARE) database which contains detailed data on road accidents resulting in death or injury as collected by the member states, as well as other European States such as Switzerland and Norway. Fig. 3 displays the annual number of fatalities and injured people in EU-27 from 2000 to 2010 (the most recent fully available data) from CARE.

The total number of fatalities and injured people in EU-27 has been declining since 2000. The decline in fatalities appears to have accelerated since 2008; whereas injured persons are still declining at much the same rate as before. This matches the trend observed in Great Britain from 2007 and suggests that the factors affecting Great Britain are likely to have had similar effects across the European Union.

Particularly notable reductions have been observed in the Netherlands where the number and rate of road fatalities suddenly dropped in 2004 and further declined from 2005 to 2007, from 2008 to 2010 in the Czech Republic, Slovenia and Finland, and from 2006 following a rise in 2005 in Ireland.

Fatalities in motor vehicle crashes in the United States rose to a peak of 43,510 in 2005 but was then followed by a steep decrease, with the number of road fatalities reducing by 22% from 2005 to 2009.

Research in the United States and the Netherlands into their respective unexplained decrease in fatality trend revealed some particular patterns.

In the US, the biggest reduction in fatality trend since records started (excluding during the Second World War) was observed from 2005 to 2009. Longthorne et al. (2010) found that between 2007 and 2008 child fatalities decreased by about 20% and that

* Corresponding author. Tel.: +44 1344 770145.

E-mail address: lkilloyd@trl.co.uk (L. Lloyd).

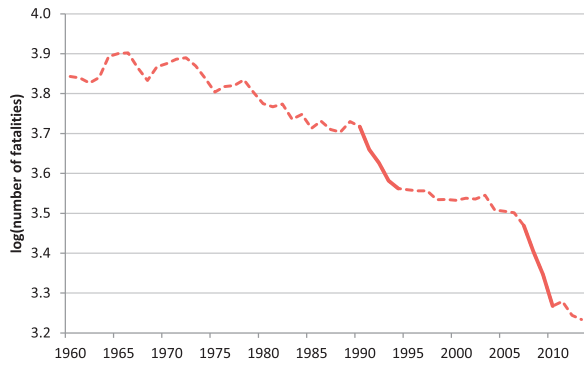


Fig. 1. Fatality trend in Great Britain, 1960–2013.

there was a 17% reduction for fatalities in crashes involving young drivers (16–24) compared with a reduction of around 10% for older drivers.

Sivak and Schoettle (2010) investigated many subsets of collisions and found that from 2005 to 2008, accidents in rush hours reduced more than all time periods, fatal accidents on rural interstates dropped more substantially than all fatal accidents and fatal accidents on roads with a speed limit of 50 mph or more showed a greater reduction than all roads. Front-side impact collisions reduced more than all collisions along with accidents where the vehicles had initial points of impact at 3 o'clock and 9 o'clock. This coincides with their finding that air bag deployment from the side increased dramatically.

Concentrating on the reduction between 2007 and 2008, bigger than the overall average reductions were reported for multi vehicle crashes, crashes involving large trucks (reflecting reduced frequency of these vehicles on the road) and occupant fatalities in vehicles that rolled over. They found that motorcyclists and pedal cyclists fatalities showed an increase in 2008.

Similar declines in fatalities were seen in the early 1980s and 1990s, both of which were periods of economic recession in United States. At both times collisions involving younger drivers declined significantly compared with drivers of other ages, and the decline was followed by period of increase, particularly in younger driver fatalities.

The most recent reduction in road fatalities also coincides with recession and the largest declines were seen in regions with higher increases in rates of unemployment. Higher declines were seen in major populated cities than in the rest of their states.

Sivak and Schoettle (2010) also believed the economic downturn accounted for a number of the reductions that they had found. In particular the recession has meant reduced commuter traffic and reduced freight shipments. They also felt that the economic downturn may have meant that some long-distance leisure driving has been replaced with local leisure

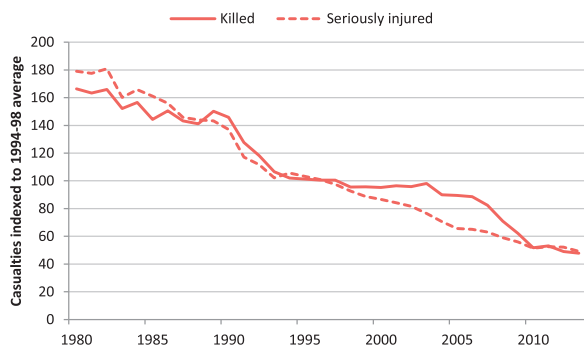


Fig. 2. Fatal and serious casualty trends in Great Britain, 1980–2013.

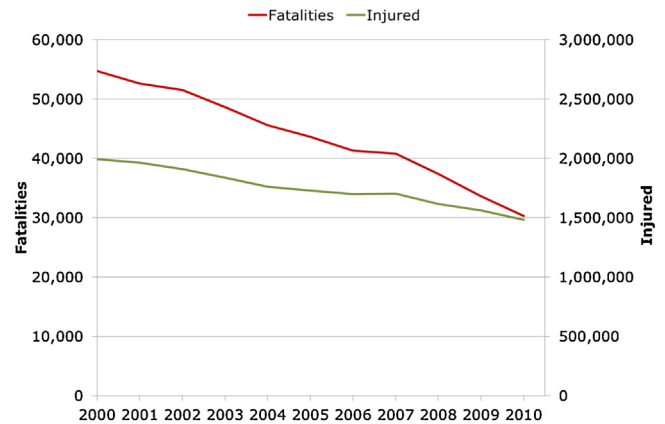


Fig. 3. Annual number of fatalities and injured people in EU-27, 2000–2010.

driving and that some drivers' behaviour has changed in efforts to conserve fuel, possibly including reducing driving speeds. They also noted an increase in the installation of side air bags, higher proportions of vehicles on the road with front air bags and improved front air bags.

Cheung and McCart (2010) suggested that improved health and emergency medical services and trauma care may have contributed to the reduction and that older drivers in particular may be benefiting more from vehicle safety improvements.

Weijermars et al. (2010) reported that in the Netherlands there were particular declines in collisions involving pedestrians, light moped riders and car occupants. Males, 18–24 year olds, 40–49 year olds and drivers in single car crashes are also reported to have declined in the Netherlands since 2004. Weijermars et al. (2008) mention that in 2006 pedestrian and delivery van occupant fatalities rose.

In the Netherlands, moped ownership fell, which at least in part explains the decline in light moped riders, that alcohol use (particularly 18–24 and 40–49 year olds) fell and car ownership by 18–24 year olds was lower after 2004 than before perhaps explaining the declines in these age groups (Weijermars et al., 2010). They also reported that seatbelt usage rose and average speeds on 100 and 120 kmph roads fell between 2003 and 2005 and electronic stability control (ESC) and airbags increased in 2004.

1.2. Aim and hypotheses

The aim of the research reported here was to investigate whether the causes of the major reduction in the number of road accident fatalities in Great Britain between 2007 and 2010 were similar to those found in other areas of the world. Our research hypotheses were driven by results from the international literature, previous research and expert knowledge. We hypothesised that the change in fatal accident trend was due to:

- a change in the amount of traffic;
- developments in vehicle safety;
- weather patterns;
- economic recession.

1.3. Data sources

The main data source used in this research was the STATS19 database which records personal injury road accident data reported to the police in Great Britain. The hierarchical database comprises details of the accident circumstances, together

Download English Version:

<https://daneshyari.com/en/article/6965688>

Download Persian Version:

<https://daneshyari.com/article/6965688>

[Daneshyari.com](https://daneshyari.com)