

Seat Belts:

The Forgotten Road Safety Priority



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Parliamentary Advisory Council for Transport Safety, in
association with Direct Line Group

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Responsibility for the report's contents and conclusions lies with PACTS and the authors. The report does not necessarily reflect the views of the advisory panel or others who contributed to the research.

About PACTS

The Parliamentary Advisory Council for Transport Safety – better known as PACTS – promotes evidence-based solutions to achieve safe transport for all. Established in 1981, its founder members were responsible for the legislation which made front seat-belt wearing in cars compulsory in Britain.

The unique features of PACTS are that it is a multi-modal transport safety body and focuses on working with UK parliamentarians, government, professionals and other key stakeholders. It is independent and has no financial or sectoral interests. PACTS provides the secretariat to the All-Party Parliamentary Group for Transport Safety and to the Transport Safety Commission.

PACTS is a charity with over 100 member organisations which provide PACTS with a vital source of income, advice and technical collaboration. If you would like information about PACTS membership for your organisation, please visit <http://www.pacts.org.uk/about/>

Executive Summary

The first legal requirement to wear a seat belt in the front seats of vehicles came into effect in the UK in 1983. By 1991, seat belt wearing was a legal requirement in all seating positions and wearing rates were higher than 90%. Amongst the road safety community there was a feeling this constituted a 'job well done.' However, since 2013, data has been published on the percentage of people who were not wearing a seat belt when they died in cars on UK roads. In 2017, 27% of those who died in cars were not wearing a seat belt (in cases where seat belt status was known). This report by PACTS shows who these people are, their reasons for not wearing seat belts, and the effectiveness of potential interventions at increasing seat belt wearing and reducing road deaths.

To better understand seat belt non-wearing, an extensive literature review and in-depth interviews with road safety experts were conducted and detailed analysis of Stats19 data (information on road traffic collisions collected by police) has been completed.

Seat belt non-wearing is not a behaviour unique to one socio-demographic group or one situation. A small minority continue to not wear their seat belts, across all road conditions. However, seat belt non-wearing is more prevalent amongst some socio-demographic groups and in certain conditions. Stats19 data shows that seat belt non-wearing is more prevalent amongst men and young people, namely those aged 16-35. Seat belt non-wearing is also more common amongst those who live in the UK's most deprived areas, those that travel in the passenger seats, and those that drive older cars. While seat belt non-wearing is comparatively more common in deaths and serious injuries which occur on minor roads and those with a 30mph speed limit, more people die while not wearing a seat belt on "A" roads and those with a 60mph speed limit. Non-wearing is also associated with drink and drug driving, aggressive driving and driving at night.

There is evidence that there are a multitude of often interrelated-influences on seat belt non-wearing including: a lack of a seat belt habit; feeling safe without a seat belt; believing that seat belts are dangerous; discomfort when wearing a seat belt; peer pressure; sensation seeking; libertarian instincts and a perceived lack of enforcement.

To increase seat belt wearing, PACTS recommends that not wearing a seat belt be made an endorsable offence with a penalty of 3 penalty points, in addition to the current £100 fine. This would offer a more effective disincentive for seat belt non-wearing and there is strong evidence of the effectiveness of making not wearing a seat belt an endorsable offence. PACTS also recommends significantly enhancing enforcement of the seat belt law through targeted, intelligence-led measures including new camera technology. Efforts should also be made to increase the public perception of enforcement as the evidence shows that this has a significant impact on seat belt wearing.

Current road safety education activities should be reviewed to see if seat belt wearing is given due prominence. Well researched campaigns should be undertaken to reinforce social norms of seat belt wearing while building support for increased enforcement and penalties. Technological developments can also have a significant impact on seat belt wearing and Euro NCAP and others should continue to encourage manufacturers to develop safety features which increase seat belt wearing and improve the effectiveness of seat belts.

This report has also established a need for both further research and improvements to data collection to better understand the issue of seat belt non-wearing. Police Forensic Collision Investigators should routinely review the Stats19 records of the collisions they investigate. Furthermore, a covariate analysis of Stats19 data on seat belt non-use should be conducted.

Foreword by Barry Sheerman MP

Some 1.3 million people die on the world's roads each year. Millions more are seriously injured. Road casualties have become one of the biggest epidemics of our time. As traffic levels grow, in many countries the death toll is rising too.

It is convenient for us in Europe to assume that this is mainly a problem for newly industrialising countries but that would be simplistic. In Europe, there has been very limited progress in casualty reduction since the recession ended around 2010 and in the USA the casualty count has been growing.

Yet road deaths are preventable. We have shown in the UK that good research, good engineering, and good laws properly enforced can deliver substantial casualty reductions.

I became a Member of Parliament almost exactly 40 years ago and road safety was one of my greatest passions. At that time, close to 7,000 people died on the roads in the UK each year. A group of determined parliamentarians made it mandatory to wear a seat belt in the front seats of cars and wearing rates increased dramatically. We then set up PACTS, the Parliamentary Advisory Council for Transport Safety.

Twenty years later, however, the world was shocked by the death of Diana, Princess of Wales, in a car crash in Paris. I recall not only the terrible tragedy but also that she would have almost certainly survived the crash if she had worn a seat belt.

Today, despite so much progress, I have lost none of my passion for road safety. Over 1,800 people die needlessly on the roads in the UK each year. It was a shock to me to learn that about a quarter of those who die in cars each year are not wearing a seat belt. I thought this was one road safety issue that we had cracked. Evidently not. It feels fitting that PACTS should be highlighting this fact and proposing solutions. It has been made possible thanks to the support and encouragement of Direct Line Group, a company that has done a great deal to help reduce casualties on our roads.

This is an important issue and an important report. I will pursue it in Parliament and I am optimistic that the Government will act on its recommendations.



A handwritten signature in black ink, reading 'Barry Sheerman'.

Barry Sheerman MP

Chair of the Parliamentary Advisory Council for Transport Safety and of the Global Forum for Road Safety Legislators

Foreword by PACTS and Direct Line Group

Over the past thirty years or so, road safety in Great Britain has improved immeasurably. As a result, most of us travel each day without injury or incident and the UK has one of the lowest rates of road casualties in the world.

And yet, each year, road casualties are officially estimated to amount to £35 billion in social and economic costs. This is the measure of the human suffering, lost production, and burden to the health and emergency services that results from those rare but catastrophic events. As well as the human costs, this adds to the insurance premium of every motorist in the UK.

Anything that can reduce this toll benefits us all. The simple seat belt has proved to be one of the most effective road safety devices. It may not prevent collisions, but it can and does prevent death and serious injury.

We know that the vast majority of drivers and passengers wear a seat belt. It therefore came as a shock to find that so many people – over 200 each year – die in cars while not wearing a seat belt. A further 1,000 are seriously injured. Unlike other motor offences, contravening the seat belt law does not carry penalty points in England, Scotland and Wales.

PACTS and Direct Line Group strongly believe in practical policies based on sound research, backed by good evidence. Over the years we have collaborated on a number of projects. We believe this one on seat belts may be among the most important.

It shines a spotlight on an area that seems to have been recently overlooked and it makes specific and practical recommendations as to how this could be tackled. We are grateful for the support of Department for Transport officials throughout the project and we are hopeful the Government and other key partners will now act.

David Davies, Executive Director, PACTS

Gus Park, Managing Director of Motor Insurance, Direct Line Group

1 Introduction

Seat belt wearing in the front seats of vehicles was first made mandatory in the UK by the Transport Act 1981. It came into effect in 1983 and was extended to all seats in 1991. These legal changes resulted in large rises in seat belt wearing rates and, by 2017, 98.6% of car drivers, 96.6% of front seat passengers and 92.7% of rear seat passengers (97% of children and 78.9% of adults) were observed to be wearing seat belts.¹ Amongst road safety experts and politicians there was a feeling of ‘job done’.

However, it has become apparent that the failure of a minority to wear a seat belt consistently is associated with a disproportionately high number of deaths and serious injuries. In 2017, 27% of those who died in cars in road traffic collisions where seat belt status was recorded were not wearing seat belts.² This suggests that in 2017 alone, around 212 people died in road traffic collisions while not wearing a seat belt.

This report aims to establish the characteristics of those who do not wear a seat belt and the reasons for this; to identify the features of collisions which result in killed or seriously injured casualties (KSIs) when unbelted; and to review interventions which might increase wearing and reduce unbelted KSIs.

These questions have been addressed through an extensive literature review of published and unpublished sources on behaviour change, both generally and in transport, and of motivations for seat belt non-wearing and risky behaviours more generally. In addition, we analysed data from seat belt wearing surveys and police road traffic collision and casualty reports with assistance from project partners. We also obtained primary data from Police Forensic Collision Units.

Failure to wear a seat belt does not cause a collision. However, in the event of a collision, wearing a seat belt is the single most important safety factor. Seat belt wearing therefore remains a vitally important issue for UK road safety, with reductions in failure to wear having the potential to substantially reduce the number of people killed or seriously injured on UK roads.

This report does not address the issue of car seats for children. While there are some elements common to seat belts, it is a distinct issue, requiring analysis of other factors and work is underway elsewhere.

¹ Department for Transport. (2019). Seatbelt and mobile phone use surveys: Great Britain, 2017. DfT

² Stats19 Data

2 Research method

2.1 Literature review

Searches were conducted of the academic literature on seat belt wearing and non-wearing, the effectiveness of seat belts and behaviour change, in the field of transport and more broadly. This involved using Google Scholar, ProQuest and Web of Science searches and the citations and bibliographies of relevant documents (see Appendix 3 for details). Searches were also conducted of key government and parliamentary documents on seat belts at a UK, European and global level. This includes Department for Transport (DfT) consultations on fixed penalty notices, European Union (EU) and United Nations (UN) guidance on seatbelt legislation and parliamentary records of debates on seat belt wearing.

2.2 Interviews and information requests

In-depth semi-structured interviews were conducted with a variety of road safety and behaviour change experts (see Appendix 2 for details). Interviews were conducted with 10 road safety professionals, individually or in groups. These interviews were conducted in person or over the phone by two members of PACTS' staff, and lasted between 30 and 90 minutes. Interviews were recorded and detailed notes made. They were followed up with email requests for further information when necessary. Information requests on seat belt campaigns, interventions and research were sent to all council road safety teams listed by Road Safety GB.

2.3 Data

Data was obtained from a number of sources. Firstly, Stats19 data was used as a primary source, both from the published *Reported Road Casualties Great Britain* annual report³ and from further analysis of underlying data. Stats19 data is recorded by police forces, either from having visited the scene or from reports from the public. Analysis was conducted by PACTS and, on request, by the Department for Transport and Road Safety Analysis Ltd. PACTS has also obtained data on fixed penalty notices (FPNs) issued from *Police Powers and Procedures, England and Wales*;⁴ *Recorded Crime in Scotland*;⁵ and Police Service of Northern Ireland *Recorded Crime Statistics*.⁶ Information on wearing rates was collected from GB⁷ and NI⁸ seat belt observational surveys, respectively. Finally, data requests were sent to police forensic crash investigators via the National Police Chiefs Council (NPCC).

2.4 Advisory panel

PACTS set up an advisory panel which provided input throughout the project. The panel consisted of over 20 experts from the fields of roads policing, behaviour change and road safety generally. Panel members were asked to share their expertise, recommend key documents and other sources for research, and provide feedback on PACTS' project plans, findings and report drafts.

³ Department for Transport (2018). Reported road casualties in Great Britain: 2017 annual report. DfT

⁴ Home Office. (2018). Police Powers and Procedures England and Wales, year ending 31 March 2018.

⁵ Scottish Government. (2018) Recorded crime in Scotland 2017-2018

⁶ Police Service of Northern Ireland. (No date). Police Recorded Crime Statistics.

⁷ Department for Transport. (2019). Seatbelt and mobile phone use surveys: Great Britain, 2017. DfT

⁸ Department for Infrastructure. (2014). Northern Ireland Survey of Seat Belt Wearing 2014. DfI

3 The history of seat belts

3.1 Technical development

The seat belt was invented in the late 19th century by Sir George Carley for use by glider pilots. The first patent for a safety belt however, was issued in 1885, primarily aimed at tourists in New York taxis. Seat belts were first offered as an option on new cars in the late 1940s and early 1950s. In 1958, the Saab GT 750 became the first car to have seat belts fitted as standard.⁹

In 1951, 3-point seat belts were patented by Roger Griswold and Hugh De Haven. However, the key development in seat belt technology occurred in 1958 when Nils Bohlin, Volvo's first safety engineer, developed the 3-point safety belt using one continuous belt. Crucially, Volvo decided the innovation was so important for safety that it placed the belt design under an open patent, allowing other manufacturers to use it.¹⁰

Inertia reel systems which lock the seatbelt only when the user is thrown forward were introduced in the 1960s, increasing both comfort and safety.¹¹ Manufacturers began using polyester rather than nylon for seat belts in the early 1970s. Polyester was lighter, more flexible, and stronger and was woven into two-inch wide belts that were significantly more comfortable.

The early 1970s also saw the introduction of seat belt reminder systems (SBRs) where vehicles produce an audible or visual warning if the seat belt is not fastened.

In the USA, seat belt interlocks, which prevented cars from starting unless their occupants were buckled up, were introduced in the 1970s. However, consumer opposition ended this development. In 2014 the National Highway Traffic Safety Administration began looking into this technology again and General Motors offered it as an option on some models.¹² Seat belt interlocks were the result of US regulations which required the fitting of airbags or devices which ensured that seat belts were worn. This legislation also produced another short lived innovation, the automatic seat belt. This single shoulder belt would remain permanently 'clicked in' but was attached to the bottom of the door and would rise up when the door was closed. Unfortunately, as this system consisted of a shoulder belt only, it was less secure than a 3-point belt. It was also prone to malfunction and was quickly dropped as a design.

Seat belt pretensioners, where the car detects an imminent collision and tensions the belt, were first developed for the 1981 Mercedes S-Class. These are now standard in the front seats of nearly all cars.¹³

In 2001 Ford demonstrated its inflatable safety belt. In this design shoulder belts contain an air bag which inflates upon collision, reducing the impact of the belt across the shoulder and chest of the user.¹⁴

In the 21st century, SBRs are becoming common in high-end models and in 2014 were made mandatory for the driver's seat of all cars in the EU.¹⁵ Changes to United Nations Economic Commission for Europe (UNECE) regulations and the subsequent adoption of these regulations in EU law mean that advanced

⁹ O'Grady, S. (2009). 'The man who saved a million lives.' *The Independent*.

¹⁰ O'Grady, S. (2009). 'The man who saved a million lives.' *The Independent*.

¹¹ O'Grady, S. (2009). 'The man who saved a million lives.' *The Independent*.

¹² Eisenstein, P. (2014) 'GM May Revive a Much Hated Seat Belt Technology'. *CNBC*.

¹³ O'Grady, S. (2009). 'The man who saved a million lives.' *The Independent*.

¹⁴ Ford. (No date). Rear Inflatable Seat Belt.

¹⁵ ETSC (2018). 'Seat belt reminders on every new car seat from 2019.' ETSC.

seat belt reminders will be a standard feature of all newly launched car models in Europe from September 2019 and in all new cars by 2021.¹⁶



Image 1: An automatic seat belt

Seat belt and restraint system technology continues to develop. Today, load limiters – which greatly reduce diagonal belt forces on the shoulder and chest – are standard. The tuning of seat-belts to work with airbags is continuously refined, for example to work with knee bolster airbags as well as those mounted on the steering-wheel. Even the timing of pretensioners' deployment is adapted to minimise the risk of injury in a collision for those who choose to wear their seat-belt.¹⁷ The contribution of seat-belts to protection in side and rear impacts has also developed over the last decade.

More recently, the European New Car Assessment Programme (Euro NCAP) has started testing with a 5th percentile female dummy in the rear seating position, which has dramatically increased the provision of pretensioners and load limiters – and the safety benefits they bring – in rear outboard seating positions.¹⁸ However, the 5th percentile female dummy is still not used in all tests (including those for ECE R16 safety-belt approval) and is used only in passenger positions in other tests (e.g. for ECE R94 and R139 frontal collision protection). Moreover, the 5th percentile female dummy is a scaled down version of the standard 50th percentile male dummy, with no anthropometric differences, and a 50th percentile female dummy is not used in crash tests. A study of injuries sustained by belted occupants in 2011 found that female drivers were 47% more likely to receive sustain a serious or worse injury than a male driver in an equivalent crash. Women are also twice as likely as men to suffer whiplash when belted in an equivalent crash. It has been suggested in several studies that more representative crash testing could further increase the effectiveness of seat belts.^{19,20}

In brief, technological changes have vastly improved the effectiveness of seat belts in the 20th century. Innovation has slowed in recent years, though this may be because, for many road users, 3-point seat belts in their current form balance convenience, comfort and safety.

¹⁶ European Commission. (2019). Commission Regulation (EU) 2019/543.

¹⁷ Pers.Comms. Hynd, D.

¹⁸ Pers.Comms. Hynd, D.

¹⁹ Linder, A., and Svedberg, W. (2019). 'Review of average sized male and female occupant models in European regulatory safety assessment tests and European laws: Gaps and bridging suggestions.' *Accident Analysis and Prevention*. 127(1), 156-162

²⁰ Bose, D., Segui-Gomez, M., and Crandall, J. (2011). 'Vulnerability of Female Drivers Involved in Motor Vehicle Crashes: An Analysis of US Population at Risk.' *The American Journal of Public Health*, 101(12), 2368-2372.

3.2 UK seat belt legislation

The political history of seat belts in the UK is long and its first two decades were marked by frequent disputes over principles and evidence. The journey from the first legal requirement relating to seat belts (in 1965) to all car users being required to wear seat belts (in 1991) required more than twenty bills and amendments, over a hundred hours of parliamentary debate and the continued perseverance and political acumen of parliamentarians such as Baron Nugent of Guildford, David Ennals MP and Barry Sheerman MP.

The first legal requirement relating to seat belts in the UK came into force when the Motor Vehicles (Construction and Use) Regulations 1966 were passed, requiring anchorage points to be included in all new vehicles.²¹ This was followed by amendments to the regulations which required the fitting of 3-point belts in 1967 and the retrofitting of 3-point belts in post-1965 cars in 1968.²²

Consideration was given to the idea of making seat belt wearing compulsory in the late 1960s. However, no other country had introduced such a law and the government decided to rely instead on public education and advertising.²³

The 1970s would prove to be a decade of frustration for seat belt campaigners with repeated setbacks. 1973 saw an amendment to the Road Traffic Bill being proposed by Lord Montagu and approved in votes at its first stage before Parliament was dissolved for the first of the 1974 elections and consequently a second vote could not take place.²⁴ This bill, like the others debated in the 1970s, would have made seat belt wearing mandatory for all drivers and front seat passengers. These bills proposed to make the penalty for not wearing a seat belt a maximum £50 fine, the same as not wearing a helmet for motorcyclists.²⁵ A similar amendment to a new Road Traffic Bill was proposed in 1974 but removed in the Lords. Its reinstatement in the Commons was defeated on Government advice that it might jeopardise the bill's passage. A Private Members Bill proposed in 1974 did not complete its Second Reading in the Commons owing to a lack of parliamentary time.²⁶ In 1976 Labour's Minister of Transport John Gilbert introduced the Road Traffic (Seat Belts) Bill.²⁷ Despite support from the press (with articles of support from *The Times*, *The Sunday Times*, *The Guardian*, the *Daily Mirror*, *The Sunday Telegraph* and the *Daily Express*) and a majority of 110 votes at First Reading, the Bill was withdrawn at a later stage as too few Members were present in the House. A similar bill was then defeated in the Lords by 2 votes.²⁸ As with many back bench legislative attempts at Westminster, parliamentary timing continued to be problematic for proponents of a seat belt law.

John Gilbert MP, then Minister of Transport, 1976

"If belt-wearing made no difference, we could expect to find one belted person killed or injured for every two unbelted persons killed or injured, since this is the proportion in which they are exposed to the risk of accident. But we know from police reports whether people killed or injured in the front seats of cars were or were not wearing belts, and we find that serious injuries among belted people are only about half the number which this reasoning would lead us to expect, and deaths are a little less than half. I do not, of course, expect 100 per cent success from the passage of the Bill. I should be happy with a wearing rate of 80 per cent and I should expect to see a wearing rate in this country of something over 90 per cent. With so much at stake, we should have to pause very long before deciding not to accept that as an acceptable level of enforcement for legislation of this sort."

²¹ Department for Transport (2013). Thirty years of seat belt safety. DfT

²² Department for Transport (2013). Thirty years of seat belt safety. DfT

²³ Hansard, HoC Debate, (15th November 1967), Vol. 754

²⁴ Hansard, HoC Debate, (1st March 1975,) Vol. 906.

²⁵ Hansard, HoC Debate, (1st March 1975,) Vol. 906.

²⁶ Hansard, HoC Debate, (1st March 1975,) Vol. 906.

²⁸ Hansard, HoC Debate, (1st March 1975,) Vol. 906.

In 1978, William Rodgers MP introduced a seat belt bill which passed its First and Second Readings with a majority of almost a hundred (244-147) before Labour lost the 1979 General Election and the Bill's progress ended.²⁹

In 1980 Barry Sheerman proposed an amendment in the Commons at the Committee Stage of what would become the 1981 Transport Act (the act which also introduced penalty points for a range of traffic offences). This amendment would have given the Secretary of State the power to make seat belt wearing mandatory. In the Lords, Lord Nugent of Guildford proposed a similar amendment, and the amended bill was passed. Having passed in both Houses, Lord Nugent's amendment became the key section (Section 27) which established the law on seat belt wearing and allowed regulations to be passed to make seat belt wearing mandatory for an initial period of 3 years.³⁰ In 1982, the relevant Statutory Instrument (the Motor Vehicles (Wearing of Seat Belts) Regulations 1982) was passed comfortably by both Houses, with votes of 181-59 and 95-13 respectively.³¹

John Adams and risk compensation

One of the most influential arguments against making seat belt wearing mandatory came from John Adams. A geographer at UCL, Adams argued that road users have a risk 'budget' and that they will consume imposed safety benefits as performance benefits, such as later braking or faster cornering. He contended that this would result in risk homeostasis, with no change in driver casualties, but would have potentially negative consequences for other road users, especially for vulnerable road users.

Adams, J. (1982). 'The Efficacy of Seat Belt Legislation.' *SAE Transactions*, 2824-2838

Making not wearing a seat belt an endorsable offence was debated by some MPs, including Barry Sheerman, David Ennals and Roger Moate, but this was not officially suggested or accepted, and the penalty was made equivalent to that of motorcycle helmet non-wearing, a maximum fine of £50. In a debate on the Transport Bill, Lord Monson proposed an amendment to prevent penalty points ever being applied to seat belt non-wearing but Lord Bellwin, then a minister in the Department for the Environment, prevented its passage. Lord Nugent's amendment was passed by 223 to 148 and it came into effect in 1983.

1986 saw the end of the three year trial period of mandatory seat belt wearing. Making the law permanent was supported by the then Minister for Transport, with research from the Transport and Road Research Laboratory (TRRL) and the London School of Economics (LSE) demonstrating a 95% wearing rate after the legislation with an annual saving of 200 deaths. The motion was passed convincingly, by 219-28 in the Commons and on a vocal vote with only one opposing voice in the Lords.^{32 33}

Three years later, in 1988, a group of MPs including Barry Sheerman, Stephen Day and David Knox presented a bill to make seat belt wearing mandatory for children in the rear seats of cars. This was later consolidated into the 1988 Road Traffic Bill. The passing of this bill meant future seat belt laws could be brought in by regulation under powers of the 1988 Traffic Act. Using this mechanism, in 1989 the Motor Vehicles (Wearing of Seat Belts by Children in Rear Seats) Regulations came into law.

The next and, to date, final legislative event of note for seat belts came in 1991. In November 1990, Christopher Chope MP, the then Minister for Roads and Traffic, announced a consultation on extending rear seat belt legislation to adults.³⁴ This would be introduced by regulation under existing

²⁹ Hansard, HoC Debate, (22nd March 1979), Vol. 964

³⁰ Hansard, HoC Debate, (28th July 1981), vol. 9.

³¹ Hansard, HoC Debate, (22nd July 1982), Vol. 28; Hansard, HoL Debate, (30th July 1982), Vol. 434

³² Hansard, HoC Debate, (13th January 1986), vol. 89.

³³ Hansard, HoL Debate, (2nd Jan 1986), vol. 470.

³⁴ Hansard, HoC Debate, (19th November 1990), vol. 180.

powers in the 1988 Road Traffic Act. A Gallup poll commissioned by PACTS had found that 82% of people now favoured compulsory wearing of seat belts in all positions. The subsequent regulation was supported by both the Government and Opposition and passed through Parliament.³⁵ This meant that, with a few exceptions, all people were legally obliged to wear seat belts in cars at all times.

These exemptions had been part of the 1981 Act. They include:

- drivers who are reversing, or supervising a learner who is reversing;
- those in a vehicle being used by the police, fire and rescue services;
- a passenger in a trade vehicle who is investigating a fault;
- a driver of goods vehicle making deliveries who is travelling no more than 50 metres between stops;
- licensed taxi drivers who are ‘plying for hire’ or carrying passengers and licensed private hire drivers who are carrying passengers; and
- those who are medically exempt and carry a ‘Certificate of Exemption from Compulsory Seat Belt Wearing’.³⁶

3.3 Penalties for non-wearing

Following the 1991 Act, seat belts declined in importance as an issue in British politics, with little debate and few efforts to change the law. Amongst seat belt road safety campaigners there was a feeling of ‘job done’ with seat belt wearing being mandatory for almost all of the population and wearing rates up to and above 90%.³⁷ The only significant changes relating to seat belt law have been to the fine for not wearing a seat belt which has changed in parallel with other Fixed Penalty Notices. Although, not wearing a seat belt is a not an endorsable offence under UK law, the fine level is equivalent to that for endorsable traffic offences. It is the only non-endorsable offence with a fine set at this level. In 1992 the fine for all endorsable offences and seat belt non-wearing was changed to £40³⁸ – a £10 *reduction* for seat belts – before rising to £60 in 2003³⁹ and then £100 in 2013.⁴⁰ These changes were made to keep the fines for traffic offences at an equivalent level to those for non-driving offences such as disorder and to adjust them in line with inflation.⁴¹

Date	Fine
1981 ⁴²	£50
1992 ⁴³	£40
2003 ⁴⁴	£60
2013 ⁴⁵	£100

Table 1: The level of fines for not wearing a seat belt

Since October 2012, remedial training in the form of an online course has been offered to some offenders as an alternative to a Fixed Penalty Notice. This change did not require legislative changes, though the course (the National Driver Offender Retraining Scheme (NDORS) ‘Your Belt, Your Life’ course) needed Home Office approval.

³⁵ Hansard, HoL Debate, (23rd May 1991), vol. 529.

³⁶ Department for Transport. (No date). Seat Belts: the law. DfT

³⁷ Pers. Comms. Sheerman, B., and Breen, J.

³⁸ Statutory Instrument 1992, No. 346, The Fixed Penalty Order 1992.

³⁹ Statutory Instrument 2000, No. 2792, The Fixed Penalty Order 2000.

⁴⁰ Explanatory Memorandum to The Fixed Penalty (Amendment) Order 2013. No. 1569

⁴¹ DfT (2013). *Impact Assessment: Increasing Fine Levels for Certain Fixed Penalty Notices Motoring Offences*. DfT

⁴² Transport Act 1981

⁴³ Statutory Instrument 1992, No. 346, The Fixed Penalty Order 1992.

⁴⁴ Statutory Instrument 2000, No. 2792, The Fixed Penalty Order 2000.

⁴⁵ Explanatory Memorandum to The Fixed Penalty (Amendment) Order 2013. No. 1569

3.4 Seat belt wearing rates over time

Prior to 1983, when it became a legal requirement, around 40% of drivers and front seat passengers were wearing seat belts. Shortly after the introduction of the law, seat belt wearing rates for drivers were observed to have increased to around 95%.⁴⁶

In the case of rear seat passengers, following the legal changes in 1991, there was “an immediate increase from around 10% to 40% in observed wearing rates”.⁴⁷

The situation now shows that on most trips seat belt wearing has become the norm in the UK for the vast majority of drivers and passengers.

In fact, since modern observational surveys began in 1999, seat belt wearing rates for drivers, front seat passengers and child rear seat passengers have remained above 90%, and have increased only very marginally over the years. Adult rear seat belt wearing however, has seen the most improvement, having started at a much lower 54% in 1999.

As can be seen in Figure 1, the most significant increase has been in the adult *rear* seat belt wearing rates, which has increased from 54% in England in 1999 to 78.9% in England and Wales in 2017.

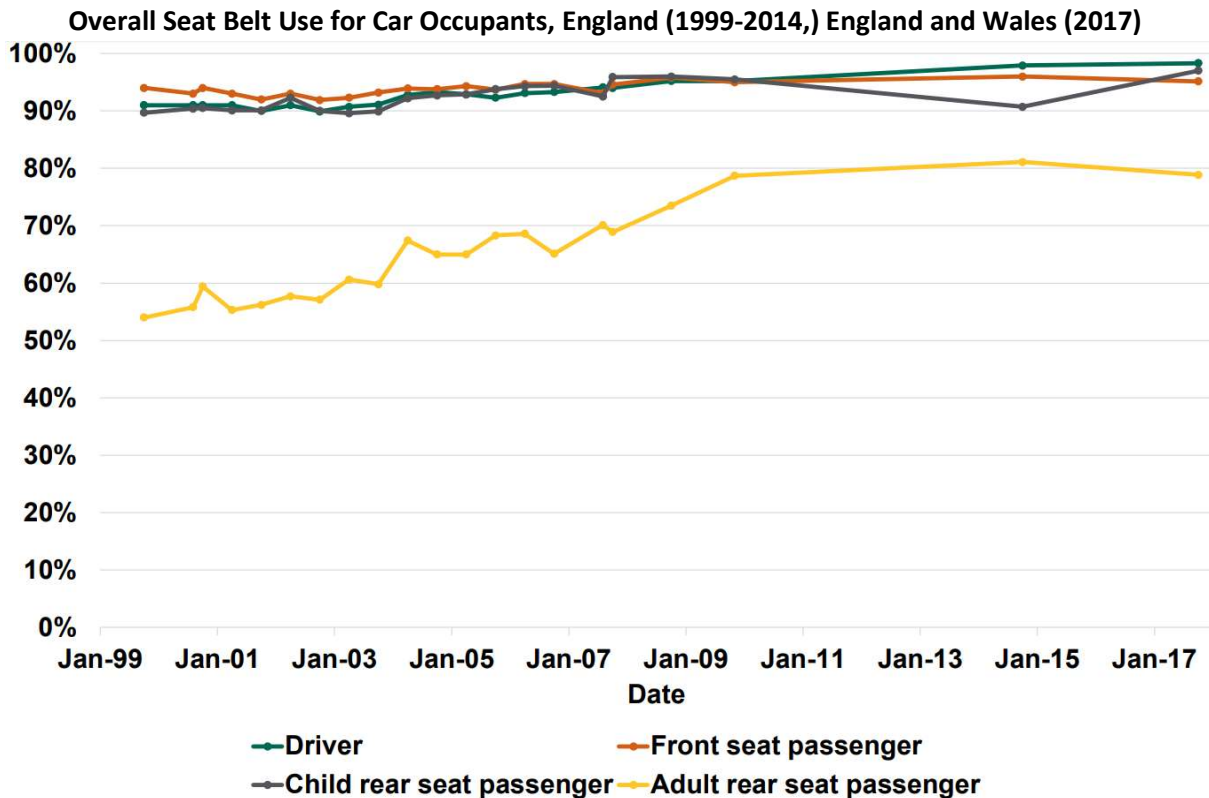


Figure 1: Seat belt wearing rates over time

The latest observational figures in Great Britain from 2017 suggest that 98.6% of car drivers wear seat belts, 96.6% of front seat passengers, 97% of children in the rear seats and 78.9% of adult passengers in the rear seats.⁴⁸

⁴⁶ Scott, P., and Willis, P. (1985). *Road Casualties in Great Britain During the First Year With Seat-Belt Legislation*. TRL

⁴⁷ Department for Transport (2013). *Thirty years of seat belt safety*. DfT

⁴⁸ Department for Transport. (2019). *Seatbelt and mobile phone use surveys: Great Britain, 2017*. DfT

3.5 Seat belt educational campaigns in the UK

The UK has a long history of campaigns aiming to encourage seat belt wearing, going back to the 1960s and continuing into the 21st century.

At the national level, campaigns have utilised television, radio and the print media to reinforce the wearing habit and persuade non-wearers to change. These campaigns have generally relied upon graphic imagery of crashes showing the impact of non-wearing. Advertisements range from general messages about the importance of seat belt wearing to ones targeting specific groups, such as people in the rear seats. Various techniques have been used, including celebrity involvement, catchphrases and interactive tools (Table 2). In recent years, DfT budget cutbacks have meant that national advertising campaigns have been greatly reduced and there has been no specific national campaign about seat belt wearing since 2011. This campaign and the effectiveness of such campaigns in general is discussed in Section 9.4.

High Profile Seat Belt Cases

Seat belts received a great deal of public and media attention following the death of Princess Diana, who died in a car collision in 1997 while not wearing a seat belt. An inquest and pathologists have since suggested that her death could have been avoided if she had been wearing a seat belt.

Swaine, J. (2008). 'Diana death shows danger of not wearing seatbelt, says minister'. *The Telegraph*.

A wide range of local campaigns have also been promoted by local authorities and others. Local campaigns may include safety education in schools and targeted leafleting.

Campaigns have been run by local road safety officers, as well as police forces and fire and rescue services. These campaigns have employed a diverse range of tools including seat belt sleds, miniature 'bean bag families' which simulate unbelted and belted crashes, advertisements and prompting on buses and overhead signs, talks in schools and community centres, joint enforcement where the police offer advice to unbelted drivers, and publicising seat belt enforcement campaigns.⁴⁹ Local councils have also conducted their own research and surveys of seat belt non-wearing. However, with a few exceptions (such as Kent County Council) budget restraints have meant that these surveys are no longer undertaken. Similarly, in recent years, there has been limited funding for seat belt campaigns at a local level.⁵⁰ This means many councils have been unable to target their campaigns specifically or have decided to rely on the community safety initiatives of the fire service.⁵¹

Seat belt wearing may be promoted as part of a wider set of safety messages, e.g. the Fatal Four. It's prominence within these messages and interventions varies. For example, Safe Drive Stay Alive – a theatre programme in which professionals from the emergency services and those who have suffered as a result of car collisions give presentations on road safety to 16 and 17 year olds alongside often graphic videos – has a limited focus on seat belts.



Image 2: Imagery from a Fatal Four campaign

⁴⁹ Pers. Comms. Local Authorities. See Appendix 6 for list.

⁵⁰ Pers. Comms. Local Authorities. See Appendix 6 for list.

⁵¹ Pers. Comms. Local Authorities. See Appendix 6 for list.

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Date	Campaign	Medium	Content
1963	You Know it Makes Sense	TV	Highlighted the need to ‘snap into that seat belt habit’ targeting those who feel ‘it can’t happen to me.’
1970	Your Seatbelt is Their Security	TV	Fronted by Denis Norden, the advert suggested one reason for belting up is for the sake of your children.
1971	Clunk Click Every Trip	TV	Adverts highlighted the dangers of being thrown through the windscreen in a collision with the tagline ‘how would you like our face smashed in?’
Late 70s – Early 80s	The Clunkers	TV	Tells the story of a young couple being thrown through the windscreen in a collision, labelling them ‘the clunkers’
1981	Clunk Click Even on the Shortest Trips	TV	Highlighted the dangers of not wearing a seat belt on all journeys
1983	The Blunders	TV	These adverts featured a clumsy family of poor drivers causing collisions in which other drivers and passengers were seriously injured as a result of not wearing seat belts
1983	Don’t Do it	TV	‘Don’t do it’ showed a man contemplating jumping off the roof of a building before he turns to camera and explains that not wearing a seatbelt can be just as dangerous as the forces applied can be the same
1993	Elephant	TV, cinema	This advert showed a man in the backseat of a car transforming into an elephant to demonstrate the impact of an unrestrained rear seat passenger
1996	Peter Pan and Doctor	Radio	Radio adverts in which surgeons described the facial injuries teenagers could sustain when unrestrained
1998	Belt up in the Back	TV	The ‘Julie’ TV advert which shows a mother, Julie, being killed by her unrestrained son
2003	THINK! Wear a Seatbelt	TV, online	A TV advert and interactive online crash simulator highlighting the consequences of not belting up with a focus on low speeds in urban areas
2004	Child Car Seats	TV, online, radio	The campaign urged parents not to stop using car seats or boosters until children are at least 11 years old or 150cm tall
2006	Child Car Seats	TV, online	A THINK! campaign which highlighted major changes to the law on child seat requirements
2006	THINK! Reverse Advert	TV, online	An advert which showed the consequences of not wearing a belt opposed with an alternate situation where seat belts were worn
2007	‘Julie’ re-aired	TV	
2008	Three Strikes	TV, online, radio, cinema, posters	Highlighted the three strikes in collisions, between two vehicles, between the driver and the car interior and between the driver’s internal organs and their rib cage.
2010	Embrace life	TV, cinema, online	Produced by the Sussex Safer Roads Partnership, the advert featured a man ‘driving’ while in a chair in a living room. When ‘crashing’, his wife and daughter embrace him in the shape of a seatbelt and protect him.
2010	‘Three Strikes’ Re-aired		
2011	Richard Didn’t Want to Die	TV, cinema, online	A THINK! Campaign with graphic portrayals of the consequences of not wearing seat belts ⁵²

Table 2: National seat belt campaigns

⁵² THINK! (No Date). *Story of THINK! THINK!*; Road Safety GB. (2018). Seatbelt advertising: a journey through the last 50 years. Road Safety GB.

4 The current situation

4.1 Seat belt wearing rates

The following figures are based on results of the seat belt and mobile phone use observational surveys commissioned by the DfT and carried out by the Transport Research Laboratory (TRL). These studies, which are carried out at stationary traffic sites across Great Britain, involve observers recording the basic characteristics of vehicle users, namely their age, gender, seating position and seat belt status.⁵³

In 2017, 96.5% of all drivers and 98.6% of car drivers in Great Britain were observed to be wearing a seat belt. This is higher or very similar to the 95.3% of all drivers and 98.2% of car drivers recorded in England and Scotland in 2014.⁵⁴

In the case of other car occupants, in Great Britain in 2017 96.6% of all front seat passengers and 92.7% of all rear seat passengers were observed to be wearing a seat belt. This is higher than or very similar to the 96.7% of all car front seat passengers and 90.6% of all car rear seat passengers in England and Scotland in 2014.⁵⁴

Within the 92.7% for rear seat wearing rates overall, the low rate of 78.9% for adults is partly masked by a high wearing rate of 97% for children. It is in these rear seating positions that wearing rates have improved the most over the last two decades.

As can be observed in Figure 1, since 1999, wearing rates for drivers and front seat passengers have risen slowly, but from an already relatively high rate. For all rear seat passengers, however, wearing rates have risen more quickly, driven primarily by a continued increase in adult rear seat passenger wearing rates.

4.1.1 Age, gender and seating position

Most recent surveys suggest that on the whole, there is very little difference between the seat belt wearing rates of male and female car drivers. However, this has not always been the case.

In 2009, wearing rates for male drivers in England and Scotland were 5% lower than for female drivers, at 93% and 98% respectively.⁵⁵ In Great Britain in 2017, this difference was 0.2%, with wearing rates for car drivers of 98.5% and 98.7% for men and women respectively.⁵⁶

For specific age groups, the wider literature suggests that younger car drivers are less likely to wear a seat belt than others. This is confirmed in the wearing rate survey, although differences are not large. In 2017, car drivers aged 17-29 had the lowest wearing rates at 97.2%, compared with 98.7% for drivers aged 30-59 and 99.3% for drivers aged 60 or over.

Disaggregating the data by gender, male drivers within the 17-29 age group had the lowest wearing rates of all car drivers in Great Britain, at 97.1%. However, this was by only a very small margin. The wearing rate of female car drivers aged 17-29 was recorded as 97.3% in the same 2017 observational survey.

In the case of other seating positions, there is a slightly more discernible difference between wearing rates for male and females in different age groups.

⁵³ DfT (2019). Seat belt and mobile phone use surveys: 2017. DfT

⁵⁴ DfT (2019). Seat belt and mobile phone use surveys: 2017. DfT

⁵⁵ Walter, L. (2010). Seatbelt and mobile phone usage surveys: England and Scotland 2009. DfT

⁵⁶ DfT (2019). Seat belt and mobile phone use surveys: 2017. DfT

In the front passenger seating position, the lowest wearing rates were recorded as 90% and 94.3% respectively for males and females aged 14-29.

In the rear passenger seating positions, comparisons between genders within age groups was not possible owing to a lack of data. However, overall, in 2017 the wearing rate of rear seat passengers was 90.7% for males, and 92.2% for females.

In regards to age, car rear seat belt wearing rates were higher amongst younger passengers in Great Britain. The lowest wearing rates observed were of rear seat passengers aged 60 and over, at 81.7% (74.7% in England and Wales). This is compared to rear seat passengers aged 0-4, 5-9 and 10-13 whose seat belt wearing rates were 100.0%, 97.8% and 92.2% respectively.⁵⁷

4.1.2 Road type

Whilst the observational seat belt use survey did record differences in wearing rates on major, minor, rural and urban roads, there very little difference in wearing rates between these road types.

The wearing rates recorded in the 2017 observational survey ranged from 98.4% to 98.7% across the listed road types.

⁵⁷ DfT (2019). Seat belt and mobile phone use surveys: 2017. DfT

4.2 Fatal and seriously injured casualties

Despite results from observational surveys that suggest that the vast majority of individuals wear a seat belt, a large number of individuals killed or seriously injured (KSIs) in vehicles in 2017 were found not to be wearing seat belts.

In 2017, 27% of reported car occupant fatalities were not wearing a seat belt (henceforth referred to as 'unbelted' fatalities). In the case of KSIs, in 2017, of the cases where seat belt wearing was recorded, 11.3% of all those who were killed or seriously injured were reported not to have been wearing a seat belt (unbelted KSIs).

In the following section, Stats19 data has been analysed to give a clearer picture of the characteristics of these non-wearers, such as their age and gender. The analysis also looks at other factors with which non-wearing could possibly have been associated, such as road type, road speed limit and time of day.

To maximise reliability, accuracy and precision, the findings listed in the following sections have been informed by KSI data from 2013 to 2017, and are based only on incidents where the seat belt status was known. This analysis has not controlled for different reporting rates between fatalities and serious injuries and between years.

4.3 The danger of not wearing a seat belt

Injuries which occur when seat belt status is recorded as 'not worn' are disproportionately likely to be serious or fatal compared with those where a seat belt was worn. Between 2013 and 2017, 22% of those who died were not wearing a seat belt (where seat belt status was known). This compares to 10% of those who were seriously injured and 4% of those who were slightly injured.⁵⁸

There are three possible explanations for this:

- Firstly, seat belts are very effective safety measures. Therefore, in an equivalent collision, those who do not wear a seatbelt will receive worse injuries.
- Secondly, seat belt non-wearing may be under-recorded in serious and slight collisions. Injured vehicle users may not tell a police officer that they were not wearing a belt and it may not be clear, especially with slight injuries. This may lead to seat belt status being incorrectly recorded as unknown, or worn, or not recorded at all.
- Thirdly, those who do not wear a seat belt may crash in more dangerous ways than those who do. This could be the result of associations between seat belt non-wearing and drink and drug driving, for example. All three reasons are likely to contribute to the comparatively severe outcomes of collisions in which a seat belt was not worn.

⁵⁸ Stats19 data

Seat belts were worn in 95.6% cases of injuries to those in cars in collision which occurred between 2013 and 2017 and where seat belt status is known. This compares with 89.8% in cases of KSIs and 77.9% of fatalities. The lower wearing rates for serious injuries and fatalities again demonstrate the comparative danger of collisions in which a seat belt was not worn.⁵⁹

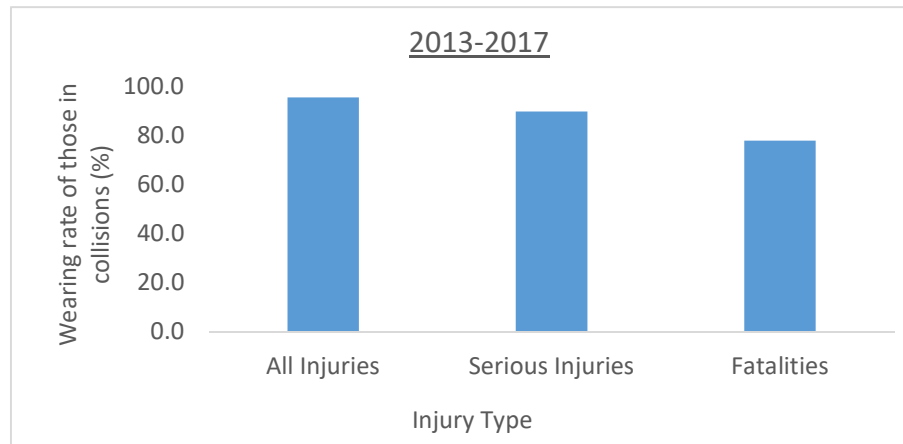


Figure 2: Injury type, 2013-2017

4.4 Effectiveness of seat belts

Seat belts are one of the most effective ways of reducing death and serious injuries in vehicle collisions. The most recent and comprehensive study of the effectiveness of seat belts found that they reduce both fatal and non-fatal injuries by 60% amongst front seat occupants and by 44% among rear seat passengers. Furthermore, seat belt use by those in the rear halves the fatality risk among belted front seat occupants compared with when those in the rear are unbelted.⁶⁰

As well as the safety benefits provided by the belt itself, safety systems such as air bags and crumple zones are designed to work with occupants wearing a seat belt and are significantly less effective if the occupant is unbelted.⁶¹

4.5 Reporting rates

In 2017, seat belt status was recorded as known in 52% of car occupant fatalities recorded by police. Seat belt status was also recorded as known in 40% of serious injuries and 32% of slight injuries. The percentage of injuries in which seat belt status was recorded as known has increased each year since 2011. Seat belt status was recorded as known for 43% of car occupant fatalities and for 35% of serious injuries since 2013.⁶² Whilst it is possible that selection bias (from different recording rates in different police forces and some police forces not recording seat belt status at all) may affect the data, this is unlikely to have distorted the broad picture given by the STATS19 data as a whole. It should also be noted that data from the scene of a collision may not necessarily be collected by officers who are trained in accident investigation.

⁵⁹ Stats19 Data

⁶⁰ Hoyer, A. (2016). 'How would increasing seat belt use affect the number of killed or seriously injured light vehicle occupants?' *Accident Analysis and Prevention*, 88(1), 175-186.

⁶¹ Road Safety Observatory. Seat Belts – how effective.

⁶² Stats19 Data

4.5.1 Numbers and proportions

To gain a broader understanding of the issue of seat belt non-wearing, the numbers of both fatalities and KSIs recorded as unbelted, as well as these figures as a proportion of total fatalities and KSIs, have been presented and discussed in this analysis.

This was done for two main reasons. Primarily, to understand how many people have died or been seriously injured in collisions whilst not wearing a seat belt, the basic characteristics of those people and other associated factors, such as the speed limit of the road they were travelling on. By doing this, analysis would point out areas which could possibly, if targeted with interventions, result in the largest casualty reductions.

This was also done to provide an appropriate measure of risk. Including the number of individuals that were killed or seriously injured whilst not wearing a seat belt, as a proportion of the number of people that were killed or seriously injured, highlights specific individual characteristics or associated factors where there may be issues with non-wearing. By doing this, analysis would point out areas which could possibly, if targeted, not necessarily result in the largest casualty reductions, but produce the largest reduction of risk to the affected people.

4.5.2 Gender and age

Fatalities

As can be seen from the graph below, more than three times as many car occupants recorded as dying while not wearing a seat belt between the years 2013 to 2017 were male than female. In addition to this, as a percentage of total fatalities where seat belt status was known, 25.8% of all males that died were not wearing a seat belt, compared to 14.8% of women.

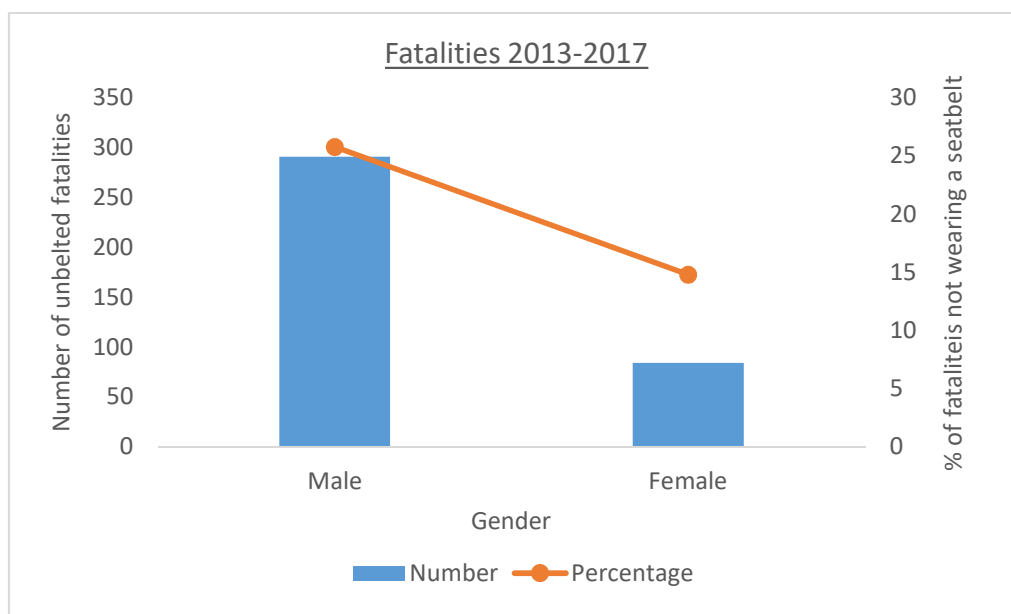


Figure 3: Fatalities 2013-2017 by gender

Concerning age in 10-year groups from 16 to 75, 16-25 year olds were the most highly represented of all of the age groups within the fatality statistics. Both more men and more women in this age group – 106 and 32 respectively – died whilst not wearing a seat belt. As a proportion of total fatalities within the age groups, however, the 30.6% of 26-35 year olds who were reported to have died not wearing a seat belt, was similar to the 30.4% of 16-25 year olds.

The results for males and females suggest the highest proportions do not necessarily lie within the same age groups for both genders. As a percentage of total fatalities, 34.5% of 26-35 year old males were reported to have died while not wearing a seat belt, whereas the figure for females in this age group was only half as great at 17.2%. In the 16-25 age group, this figure for females at 26.7%, was not far short of the 31.7% for males.

By number alone, in 2013 to 2017, significantly more men than women in all age groups were recorded as dying whilst not wearing a seat belt.

This data can be seen in Figure 4 and additionally in table form in Appendix 7, Tables 1 and 2.

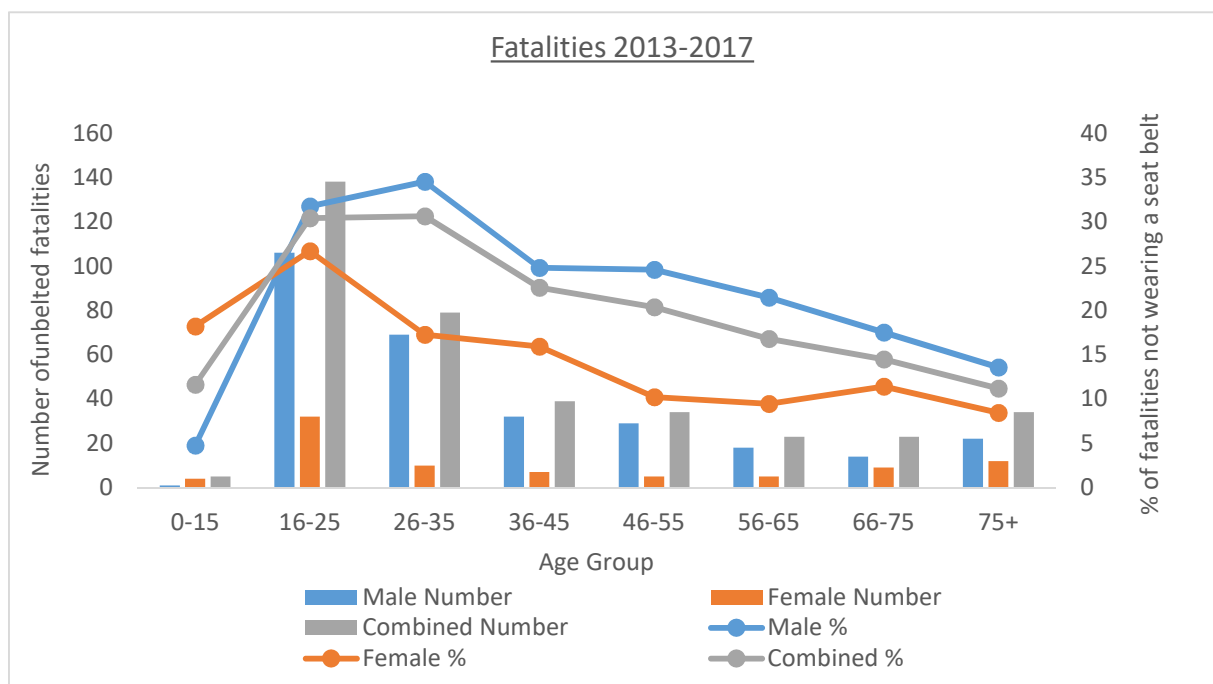


Figure 4: Fatalities 2013-2017 by age group and gender

KSIs

The graph below shows that the more than twice as many car occupants who were killed or seriously injured while not wearing a seat belt in the years 2013 to 2017 were male. In addition to this, 15% of all men who were killed or seriously injured were not wearing a seat belt, compared with 7.2% of women.

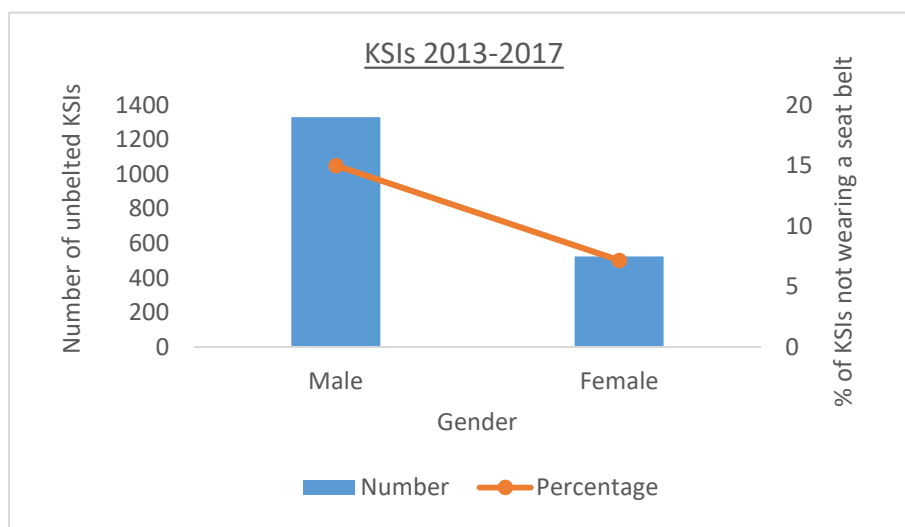


Figure 5: KSIs 2013-2017 by gender

As can be seen in Figure 6, 16-25 year olds were the most highly represented of all the age groups within KSI statistics. A higher proportion (16.4%) of men and women in this age group who were killed or seriously injured were reported not to have been wearing a seat belt than in any other.

However, the results for males and females once again suggest that the risks do not necessarily lie within the same age groups for both genders. 21.7% of 26-35 year old males killed or seriously injured were reported not have been wearing a seat belt, whereas the figure for females in this age group was 7.5%. In the 16-25 age group, the figure for females was 11.6%, and 19.5% for males. This would suggest overall that non-wearing may be a problem particularly for women aged 16-25 and men aged 16-35.

This data can be seen in Figure 6 and additionally in table form in Appendix 7, Tables 1 and 2.

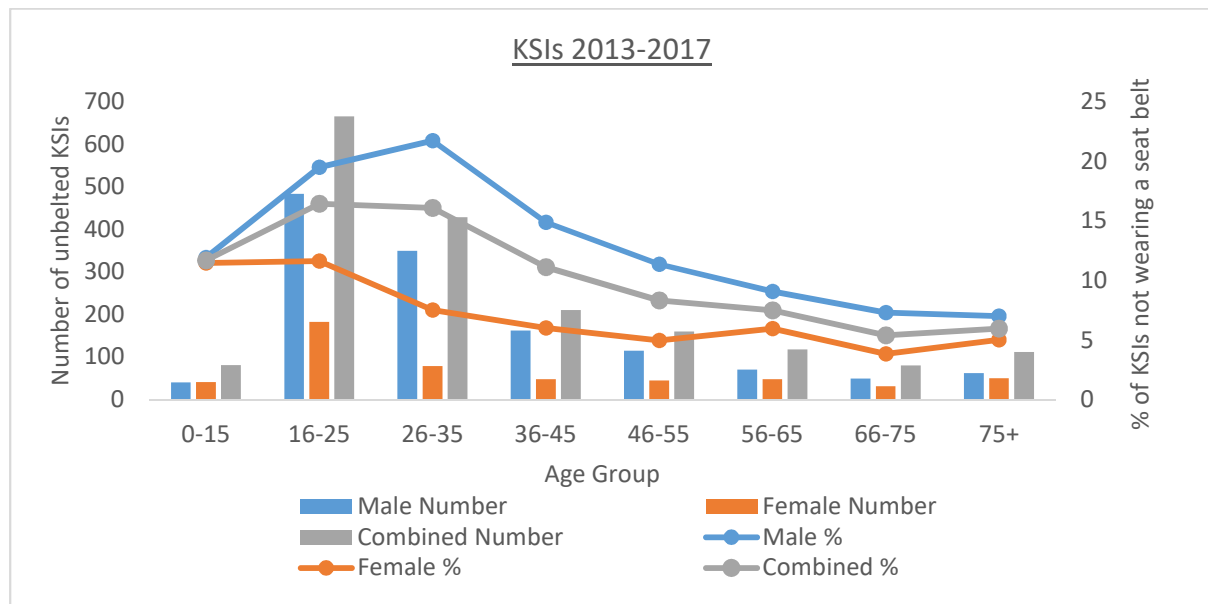


Figure 6: KSIs 2013-2017 by age group and gender

4.5.3 Seating position

Fatalities

As would be expected, given that all cars have drivers, but not necessarily passengers, significantly more people overall were recorded as dying not wearing a seat belt in the drivers' seat than the passenger seats. As a proportion of fatalities, around the same proportion of those that died travelling in the drivers' seat and passenger seats were not wearing a seat belt between 2013 and 2017 (22.2% and 21.9% in the drivers' seat and passenger seats respectively).

However, as can be seen in Figure 7, this not the case for women. Between 2013 and 2017, more women died whilst not wearing a seat belt in the passenger seats than the drivers' seat. Additionally, a higher proportion of women that died travelling in the passenger seats were not wearing a seat belt, than women travelling in the drivers' seat.

A summary table of the results can be found in Appendix 7, Tables 3 and 4.

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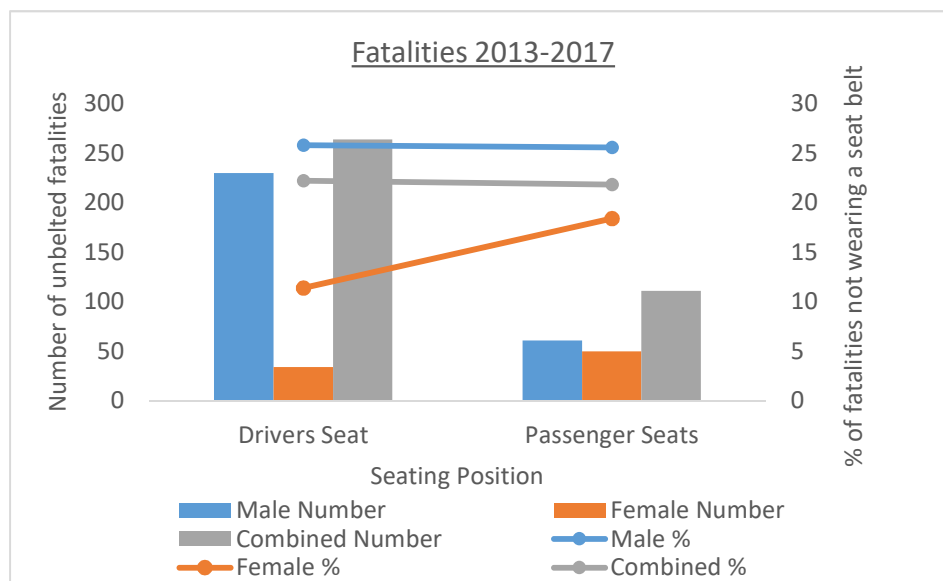


Figure 7: Fatalities 2013-2017 by gender and seating position

KSIs

Once again, when observing KSIs, it appears as though significantly more people were killed or seriously injured whilst not wearing a seat belt in the drivers' seat than passenger seats. Again, this is the case only for men. As can be seen in Figure 8, more women were killed or seriously injured in the passenger seats than the drivers' seat when not wearing a seat belt.

As a proportion, however, a higher percentage of both men and women travelling in the passenger seats were killed or seriously injured whilst not wearing a seat belt than males and females travelling in the drivers' seat. 10.5% of women that were killed or seriously injured travelling in the passenger seats were not wearing seat belts, compared to 4.5% of those in the drivers' seat. In the case of men, 19.8% of men that were killed or seriously injured travelling in the passenger seats were not wearing seat belts, compared to 13.5% of those in the drivers' seat.

More people were killed or seriously injured in the rear seats of cars than the front seat (406 to 328). 9% of KSIs in the front seat were not wearing a seat belt compared to 23% of KSIs in the rear seat.

A summary table of the results can be found in Appendix 7, Tables 3 and 4.

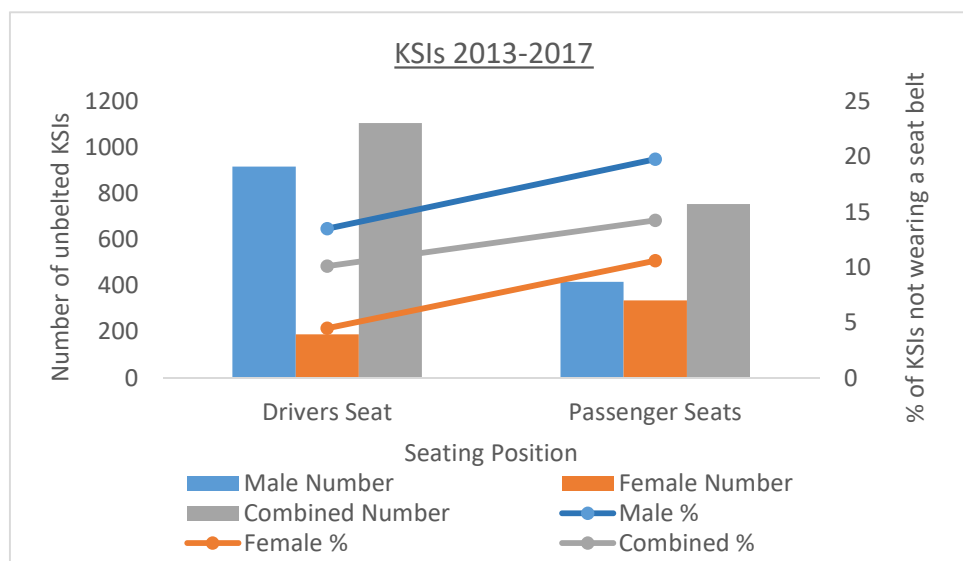


Figure 8: KSIs 2013-2017 by gender and seating position

4.5.4 IMD decile

The Index of Multiple Deprivation (IMD) is the official measure of relative deprivation for small areas in England. On this scale, people are divided into 10 equal groups (deciles). These range from the most to the least deprived 10% of areas.⁶³

Fatalities

When fatalities were broken down by IMD decile there was no clear trend. This may be due to small size. See Appendix 7, Table 5 for a table of the results.

KSIs

As can be observed in Figure 9, in the years 2013 to 2017, both the percentage of unbelted KSIs as a proportion of each decile and the total number of unbelted KSIs tended to be higher at higher levels of deprivation and lower at lower levels with a factor of about two across the range of ten levels. In particular, both proportions and numbers were highest amongst those whose home post codes were registered to be in the most deprived ten percent of areas. The least deprived ten percent of areas had the second lowest percentage of unbelted KSIs as a proportion of that decile and the fewest total number of unbelted KSIs out of all of the IMD groups.

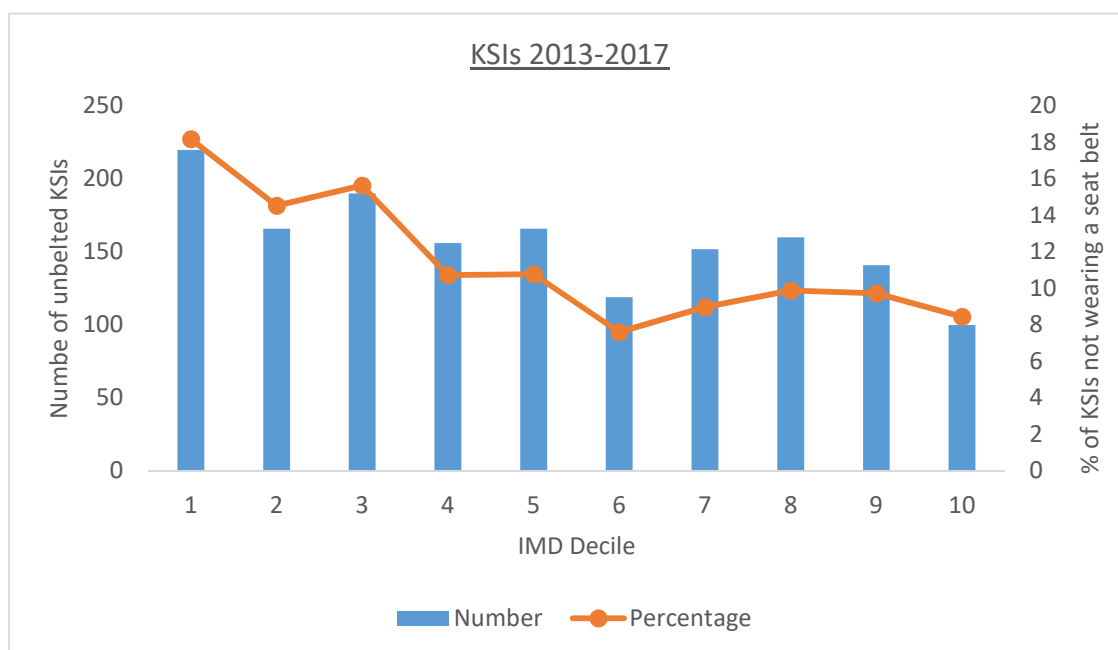


Figure 9: KSIs 2013-2017 IMD decile

In interpreting these results, it is important to recognise the limitations of IMD analyses. IMD is a measure of relative deprivation based on quantifying income, employment, education, health, crime, housing and environment. It does not provide any detail about the lifestyle or personality of individuals.

Whilst this data shows, for example, that the total rate and number of unbelted KSIs was highest amongst those whose home post codes were registered to be in the ten percent most deprived areas, it does not necessarily provide any indication as to any individual's level of deprivation.

A summary table of the results can be found in Appendix 7, Table 5.

⁶³ Department for Communities and Local Government. (no date). The English Index of Multiple Deprivation (IMD) 2015 – Guidance.

4.5.5 Mosaic

Mosaic is a socio-demographic classification for the United Kingdom. It categorises citizens and their needs in terms of demographics, lifestyle, culture and behaviour.⁶⁴

In Mosaic, the population is broken down into 15 groups, represented as group A to O. Examples include ‘Transient Renters’, who are described as single people privately renting low cost homes for the short term. See Appendix 8 for definitions of all groups.

Using MAST (The Market Analysis and Segmentation Tools Project), which contains STATS19 data for Great Britain, road collision and casualty data can be linked to Mosaic using the home post codes of the vehicle occupants. This makes it possible to identify the socio-demographic profiles of the communities where they live.

It was not possible to complete Mosaic analysis using fatality data alone, due to small underlying numbers. Results, therefore, are based on KSIs.

KSIs

As can be seen in Figure 10, group M is distinctly identifiable as being the group with the highest percentage of unbelted KSIs. This group, which is defined as ‘Family Basics’ includes families with “limited resources who have to budget to make ends meet”, and makes up 8.74% of the UK population.⁶⁵

Group I, on the other hand, does not contain the highest percentage of unbelted KSIs which occurred. However, it does stand out when comparing the percentage of unbelted KSIs with the overall number of households in a specific group. Group I, which is defined as ‘Urban Cohesion’ includes “residents of settled urban communities with a strong sense of identity”, and makes up 5.37% of the UK population.⁶⁶

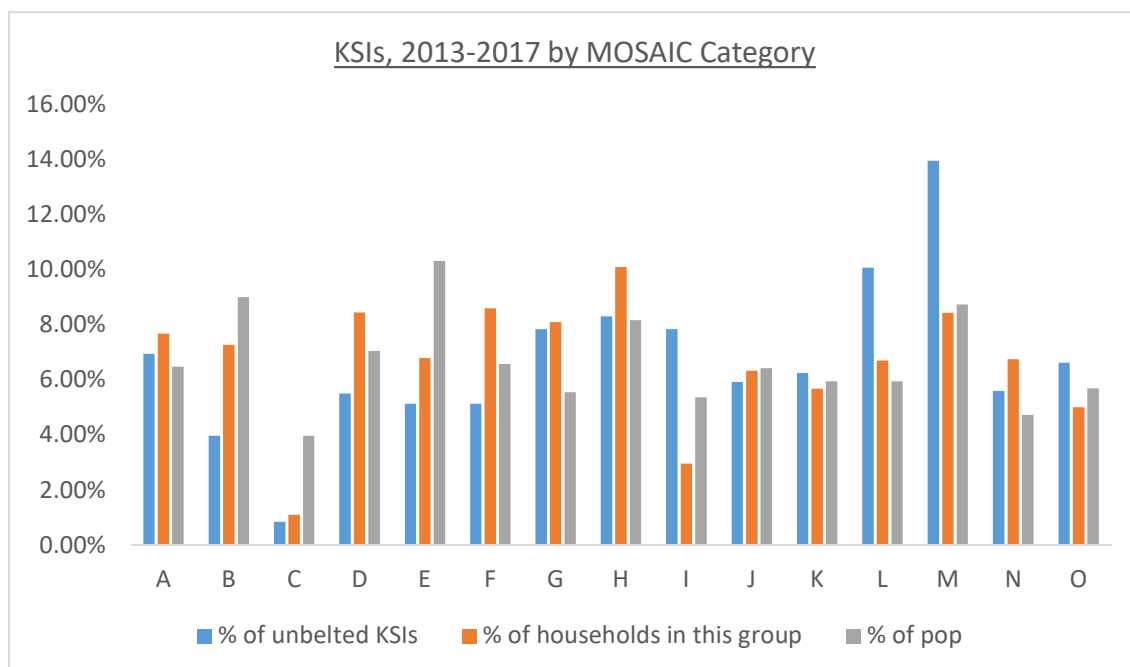


Figure 10: KSIs 2013-2017 by Mosaic category

⁶⁴ RSA, (2014). *Mosaic 2014 Groups*.

⁶⁵ RSA, (2014). *Mosaic 2014 Groups*.

⁶⁶ RSA, (2014). *Mosaic 2014 Groups*.

A summary table of the results can be found in Appendix 7, Table 6.

It is important to recognise the limitation of using Mosaic analysis. Much like IMD, Mosaic is a geographical abstraction based on residency and attempts to categorise what certain groups of people are like, based on demographics and lifestyles. It cannot provide an accurate reflection of every single person that lives in a specific area. It is also primarily a marketing tool, which can of course be useful in that it provides an idea of how to empathise with communities, however in order to do so, the information it provides is very generalised.

As such, and whilst this analysis does appear to suggest seat belt non-wearing may be more associated with groups of people that possess certain characteristics, results should be treated with caution, especially given the limited size of the sample used in this analysis.

4.6 Other factors associated with non-use

4.6.1 Time of day

Fatalities

As can be seen in Figure 11, the highest number of unbelted fatalities occurred during night. Namely between 22:00-23:00 and 00:00-01:00, more unbelted fatalities occurred between the hours of 19:00-07:00 than 07:00-19:00.

In terms of proportions of unbelted fatalities, a higher percentage of those who died travelling during the night were not wearing a seat belt, than those travelling during the day. The single worst hours were between 00:00-01:00 and 02:00-03:00 where 46% and 45.9% of those that died travelling during these hours were recorded to not have been wearing seat belts.

A summary table of the results can be found in Appendix 7, Tables 7 and 8.

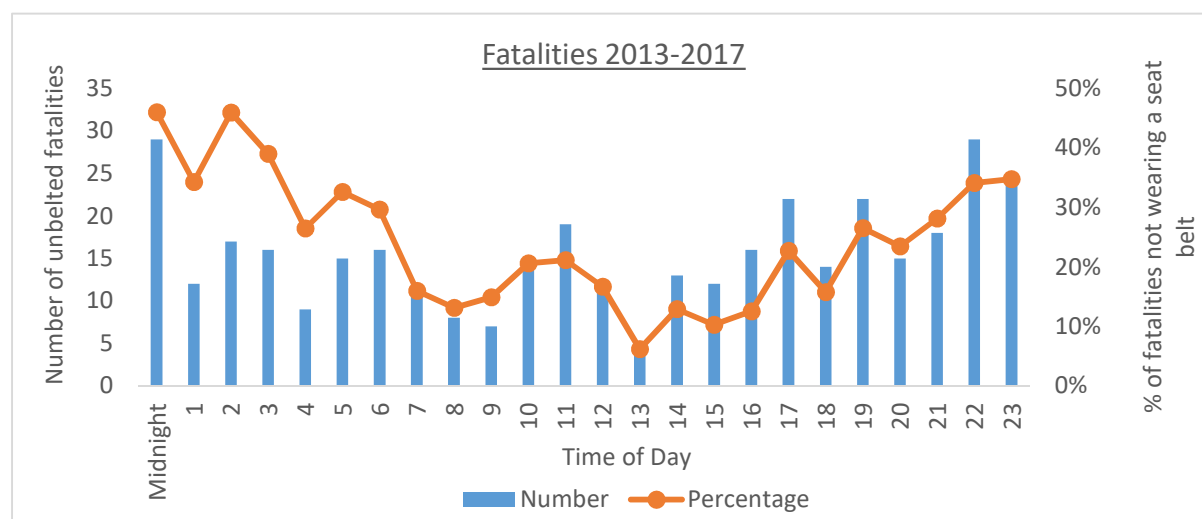


Figure 11: Fatalities 2013-2017 by time of day

KSIs

Similarly in the case of KSIs, as can be seen in Figure 12, the highest number of unbelted KSIs occurred during the hours of 19:00-07:00. The worst hours being between 22:00-23:00 and 23:00-00:00, where 123 and 124 people respectively were killed or seriously injured whilst not wearing a seat belt.

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In terms of proportions of unbelted KSIs, a higher percentage of those who were killed or seriously injured travelling during the hours of the night were not wearing a seat belt, than those travelling during daylight hours. The single worst hours were between 02:00-03:00 and 03:00-04:00 where 31.3% and 30.8% of those who were killed or seriously injured travelling during these hours were found to not have been wearing seat belts.

A summary table of the results can be found in Appendix 7, Tables 7 and 8.

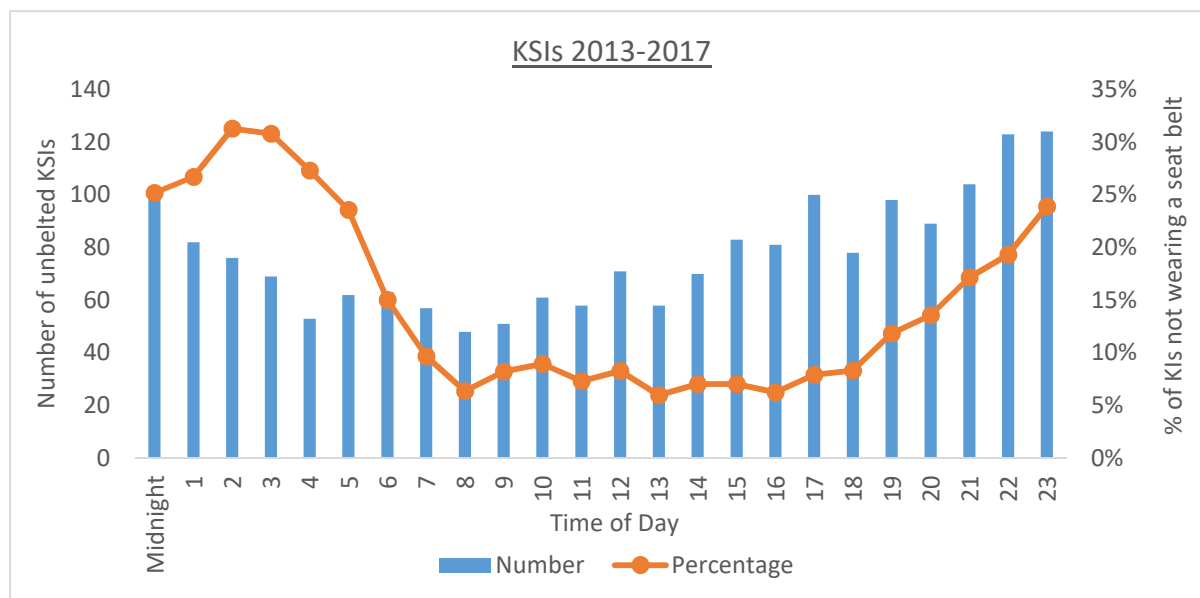


Figure 12: KSIs 2013-2017 by time of day

4.6.2 Road type

Fatalities

As can be seen in Figure 13, more people were recorded as dying whilst not wearing a seatbelt when travelling on 'A' roads than any other type of roads. However, by proportion, 31.6% of those that died on 'Unclassified' roads were not wearing a seat belt, compared to 30.1% on motorways and 17.4% on 'A' roads.

A summary table of the results can be found in Appendix 7, Tables 9 and 10.

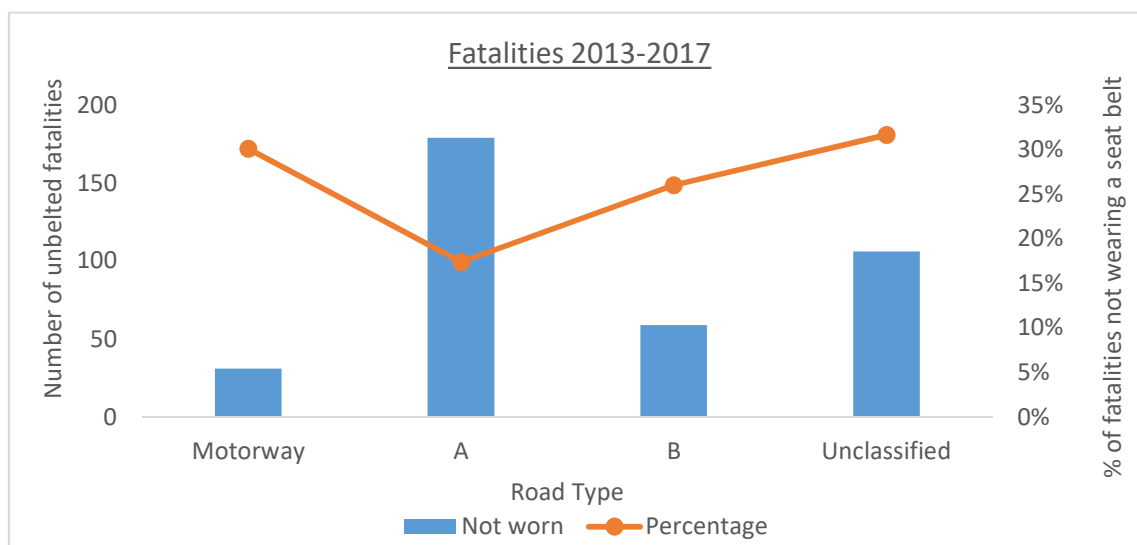


Figure 13: Fatalities 2013-2017 by road type

KSIs

As can be seen in Figure 14, the majority of people that were killed or seriously injured whilst not wearing a seat belt were travelling on either 'A' or 'Unclassified' roads. However, by proportion, whilst 17% those that were killed or seriously injured on 'Unclassified' roads were not wearing a seat belt, 9.1% of those that were killed or seriously injured on 'A' roads were not wearing a seat belt, despite this being the road type on which most unbelted KSIs occurred.

A summary table of the results can be found in Appendix 7, Tables 9 and 10.

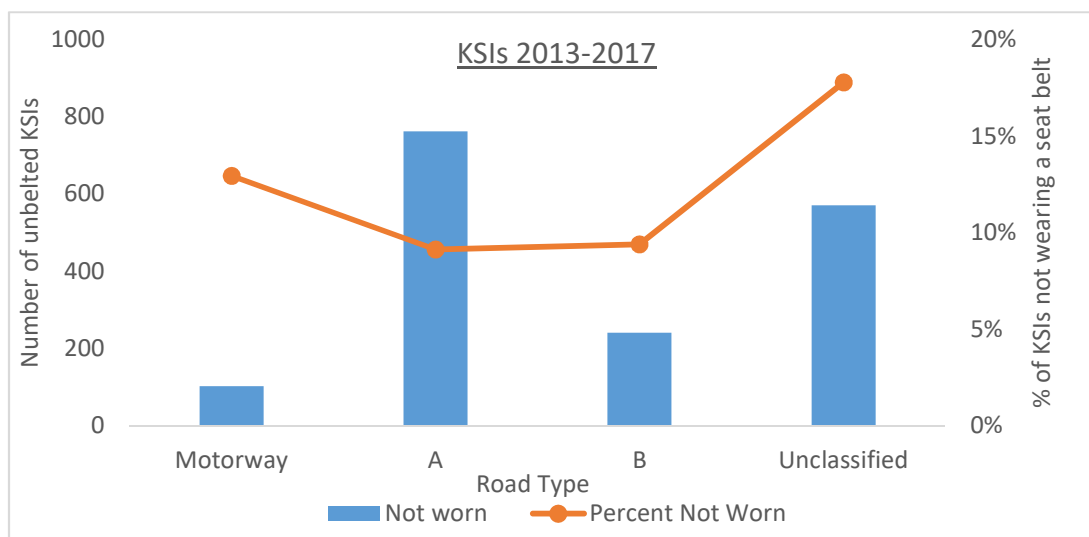


Figure 14: KSIs 2013-2017 by road type

4.6.3 Permanent speed limit

Fatalities

As can be seen in Figure 15, significantly more people were recorded as dying whilst not wearing a seatbelt when travelling on roads with a permanent speed limit of 60mph than any other times. However, by proportion, 39.1% of those that died on roads with a permanent speed limit of 30mph were not wearing a seat belt, compared to 18.9% on roads with a permanent speed limit of 60mph, where the most unbelted fatalities occurred.⁶⁷

A summary table of the results can be found in Appendix 7, Tables 11 and 12.

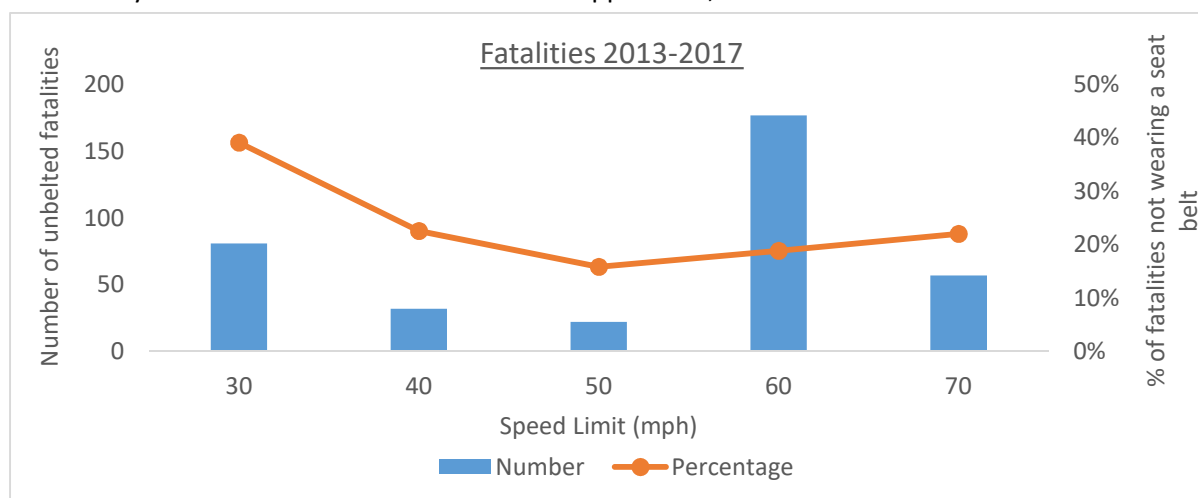


Figure 15: Fatalities 2013-2017 by speed limit

⁶⁷ Results for roads with a permanent speed limit of 20mph were not included due to small underlying numbers.

KSIs

As can be seen in Figure 16, the majority of people that were killed or seriously injured whilst not wearing a seat belt were travelling on roads with a permanent speed limit of 60mph or 30mph. However, by proportion, whilst 16.5% of those that were killed or seriously injured on roads with a permanent speed limit of 30mph were not wearing a seat belt, just 9.3% of those that were killed or seriously injured on 60mph roads were not wearing a seat belt, despite these being the roads on which most unbelted KSIs occurred.

A summary table of the results can be found in Appendix 7, Tables 11 and 12.

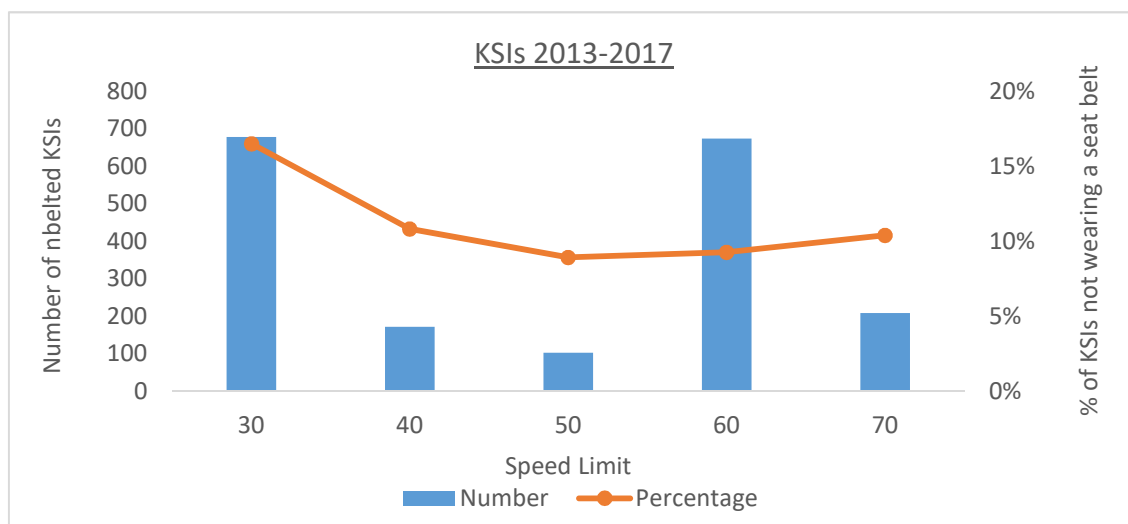


Figure 16: KSIs 2013-2017 by speed limit

4.6.4 Vehicle age

It was not possible to complete reliable analysis for vehicle age using fatality data alone, due to small underlying numbers. Results, therefore, are based on KSIs.

KSIs

As can be seen in Figure 17, more people that were travelling in 11, 12, 13 and 14-year old vehicles were killed or seriously injured whilst not wearing a seat belt than those travelling in vehicles of any other age. This would suggest that more people that were travelling in older cars were killed or seriously injured whilst not wearing a seat belt than those travelling in newer cars. Less unbelted KSIs occurred in vehicles over the age of 15. In each year of age some vehicles are no longer on the road in the next year, this contributes increasingly strongly to the decreasing numbers of KSIs in vehicles of these ages.

By proportion, a higher percentage of those that were killed or seriously injured travelling in cars that were 16 or 17 year old were not wearing a seat belt than those that were killed or seriously injured travelling in vehicles of any other age.

A summary table of the results can be found in Appendix 7, Table 13.

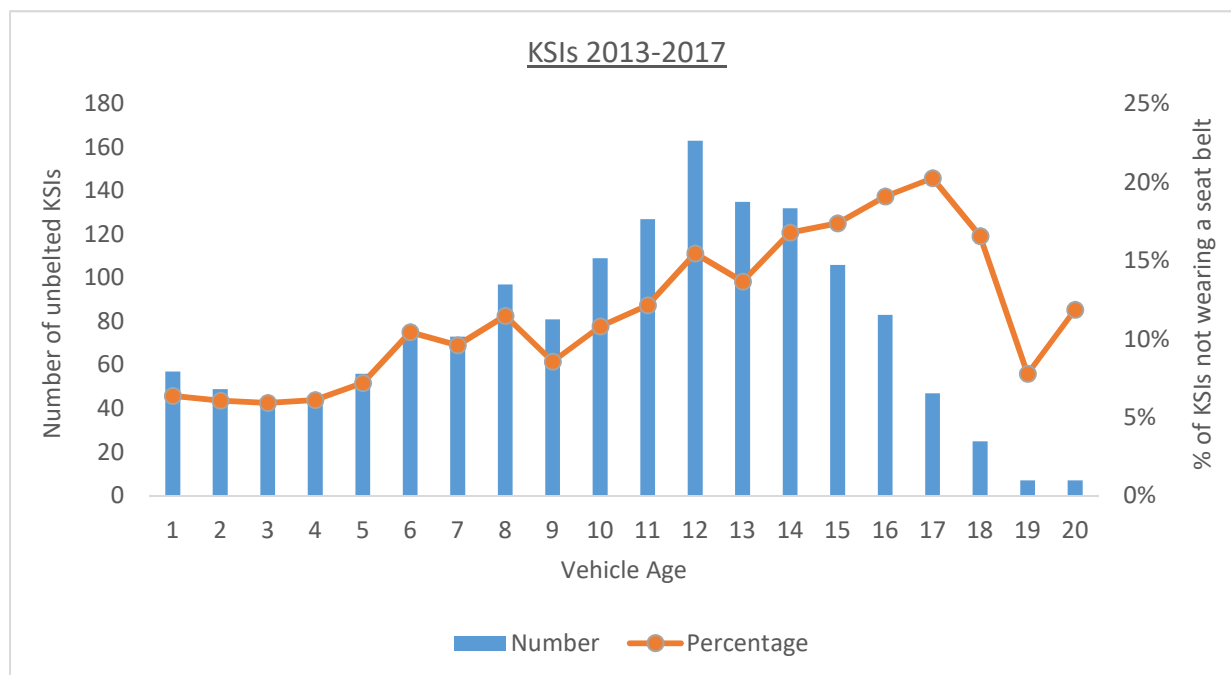


Figure 17: KSIs 2013-2017 by vehicle age

4.7 Combined variables

Having studied the relationship between unbelted fatalities, unbelted KSIs and single variables in isolation, such as road type, certain variables were combined in an attempt to build a stronger picture of non-wearing. Due to the large number of variables included in these results and therefore the potential for random fluctuation, they should be viewed with caution.

Age and Time of Day

These variables were combined in attempt to identify whether there were specific times at which certain age groups were more likely to be killed or seriously injured whilst not wearing a seat belt.

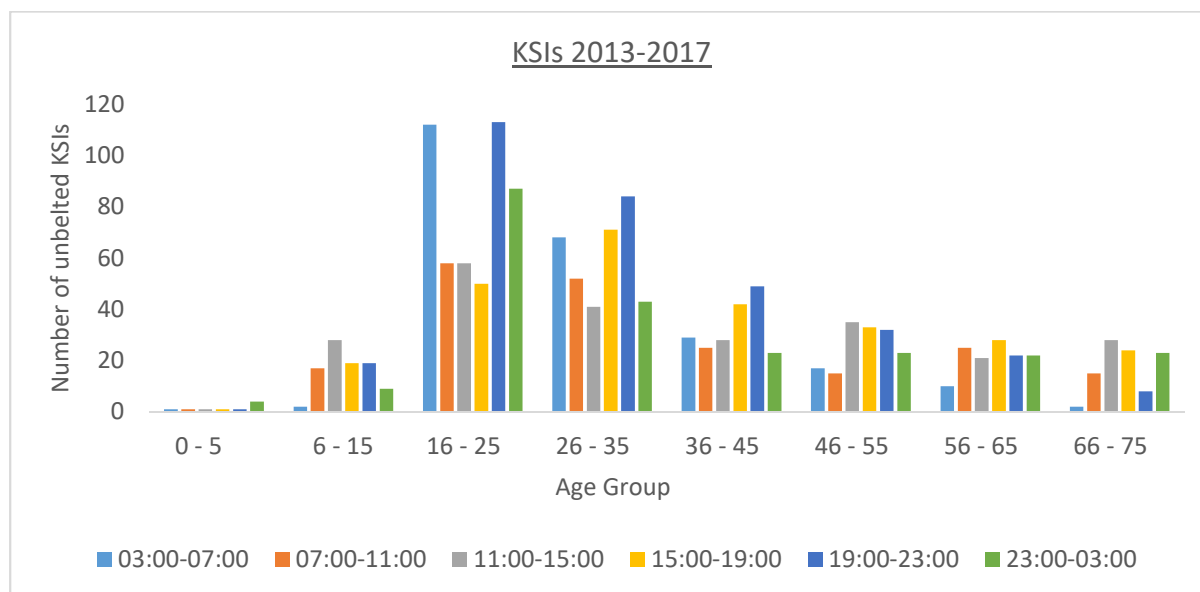


Figure 18: KSIs 2013-2017 by age group and time of day

Initially, results of this analysis suggest that all age groups are more likely to be killed or seriously injured not wearing a seat belt between 19:00-07:00.

As can be seen in Figure 18, young people, namely those aged 16-25 are more likely than any other age group to be killed or seriously injured not wearing a seat belt, and particularly between the times of 19:00-07:00.⁶⁸

A summary table of the results can be found in Appendix 7, Table 14.

Mosaic and Time of Day

These variables were combined in attempt to identify whether there were specific times at which certain Mosaic groups were more likely to be killed or seriously injured whilst not wearing a seat belt.

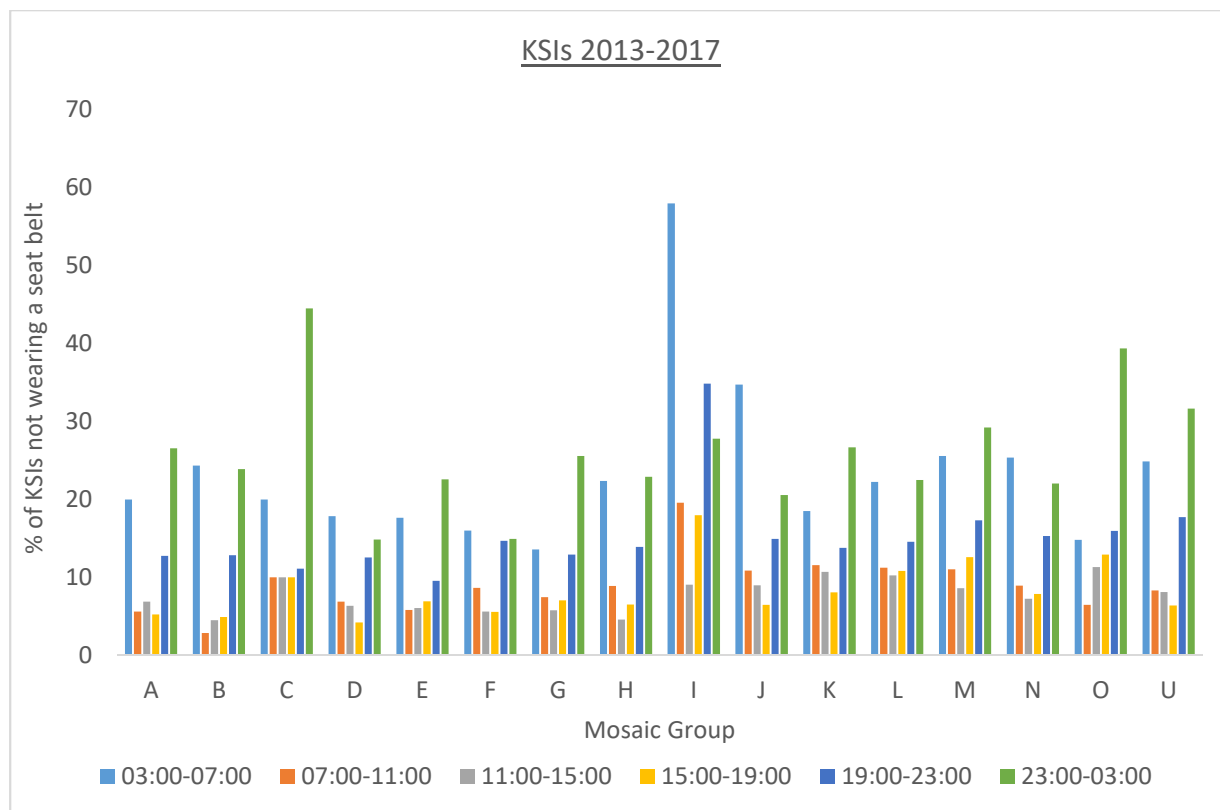


Figure 19: KSIs 2013-2017 by Mosaic category and time of day

As can be seen in Figure 19, Group I (defined as 'Urban Cohesion', see Appendix 8) particularly stand out as a group that is more highly represented during some hours of the night. As can be seen in Figure 19, 57.9% of those who were killed or seriously injured in Group I between the hours of 03:00 and 07:00 were not wearing a seat belt, and 34.8% between 19:00-23:00. Group C, however, (defined as 'City Prosperity', see Appendix 8) seems most highly represented during the hours of 23:00-03:00. As can be seen in Figure 19, 44.4% of those who were killed or seriously injured in group C between the hours of 23:00 and 03:00 were not wearing a seat belt. A table of these results is available in Appendix 7, Table 15.

⁶⁸ The age group '75+' was excluded from this analysis due to small underlying numbers.

Mosaic and Permanent Speed Limit

These variables were combined in attempt to identify whether certain Mosaic groups were more likely to be killed or seriously injured whilst not wearing a seat belt on roads with specific permanent speed limits.

The analysis showed no dramatic difference between different Mosaic groups at different permanent speed limits beyond that which would be expected based on their underlying seat belt use, which has been discussed previously in section 4.5.5 and 4.6.3.

The results of this analysis can be found in Appendix 7, Table 16.

Age and Permanent Speed Limit

These variables were combined in attempt to identify whether people in certain age groups were more likely to be killed or seriously injured whilst not wearing a seat belt on roads with specific permanent speed limits.

The analysis showed that on the whole, those aged 16-25 were more likely to be killed or seriously injured on roads with a permanent speed limit of 30 and 60. However, this result simply replicates the findings of previous isolated variable analysis, which suggests that on the whole, more unbelted KSIs occur on roads with a permanent speed limit of 30 or 60, and that on the whole, those aged 16-25 are more likely to be killed or seriously injured whilst not wearing a seat belt.

The results of this analysis can be found in Appendix 7, Table 17.

4.7.1 Contributory factors

Failure to wear a seat belt does not cause collisions and it is very likely that many drivers who do not wear a seat belt will also engage in other risk-taking driving behaviour.

Contributory factors (CFs) provide some insight into why and how road accidents occur. They are designed to reveal the key actions and failures that led directly to an actual impact, in order to aid investigation of how accidents might be prevented. When police officers attend the scene of an accident, they are able to select up to six factors they believe contributed to it. This is six factors for each vehicle involved as contributory factors relate to the collision, rather than the injuries themselves. CFs not assign blame for the accident to any specific road user, but simply gives an indication of which factors the attending officer thought contributed to the accident.

Officers do not need to carry out a full investigation of an incident before allocating contributory factors; they usually use professional judgement about what they can see at the scene. Not all accidents are included in the contributory factor data. Only accidents where the police attended the scene and reported at least one contributory factor are included. A total of 72% of accidents reported to the police in 2017 met these criteria.

These figures relate only to contributory factors associated with the vehicle in which the injured person was in. They do not relate to any other vehicles involved in the accident. The analysis explores whether contributory factors noted in collisions where an unbelted KSI was recorded differ from the contributory factors noted in collisions where KSIs were recorded as belted.

The most prevalent contributory factors (CF) applied to vehicles in which an occupant suffered a KSI when not wearing a seat belt: 'loss of control' (579); 'driver/rider impaired by alcohol' (405); 'driver/rider careless, reckless or in a hurry' (384); 'exceeding speed limit' (303); and 'travelling too fast for conditions' (264). For those KSIs where a contributory factor was noted, all of these factors

were recorded more frequently than in cases where a seat belt was not worn than in cases where a seat belt was worn.⁶⁹

‘Driver/rider impaired by alcohol’ was noted for 23% of KSIs where seat belts were not worn and a contributory factor was noted, compared with 6% of KSIs where seat belts were worn and independently confirmed.⁷⁰

Of KSIs in which ‘driver/rider impaired by drugs’ was noted, 33.8% were unbelted (126 KSIs).⁷¹

The equivalent figure is 32.1% for ‘driver/rider impaired by alcohol.’ It is 25.7% for ‘exceeding speed limit’ and 28.1% for ‘aggressive driving’.⁷²

When a KSI was recorded in a ‘stolen vehicle’, the seat belt was not worn 43% of the time (37 cases). When a ‘vehicle in course of a crime’ was recorded, the casualty was not wearing a belt in 51.2% of cases (21 cases).⁷³

Table 2 shows the over or underrepresentation of the most commonly noted contributory factors to unbelted KSIs. It shows that ‘driver/rider impaired by alcohol or drugs’ is more than three times as likely to be noted in a collision where the seat belt was not used as in a collision where the seat belt status was ‘worn and independently confirmed.’ The overrepresentation factor is calculated, for all KSIs in which contributory factor X was noted, by dividing the percentage of cases in which a seat belt was not worn, by the percentage in which a seat belt was worn.

Contributory factor reported in accident	Over representation factor in KSIs where seat belt was not worn
Driver/Rider impaired by alcohol	3.59
Driver/Rider impaired by drugs (illicit or medicinal)	3.26
Aggressive driving	2.58
Exceeding speed limit	2.42
Driver/Rider careless, reckless or in a hurry	1.96
Travelling too fast for conditions	1.63
Loss of control	1.42
Learner or inexperienced driver/rider	1.38
Distraction in vehicle	1.28
Sudden braking	1.26
Poor turn or manoeuvre	1.16
Swerved	1.13
Driver/Rider failed to look properly	0.86
Slippery road (due to weather)	0.81
Driver/Rider illness or disability, mental or physical	0.79
Fatigue	0.67
Driver/Rider failed to judge other person’s path or speed	0.63

Table 2: Contributory factors and overrepresentation factor

Findings from contributory factors regarding aggressive driving and speeding concurs with evidence from UDrive, a naturalistic driving study conducted by Leeds University, which found that seat belt non-wearing was associated with aggressive driving.⁷⁴

⁶⁹ Stats19

⁷⁰ Stats19

⁷¹ Stats19

⁷² Stats19

⁷³ Stats19

⁷⁴ Dotzauer, M. et al. (2017). *Risk factors, crash causation and everyday driving*. Deliverable 42.1

The evidence from Stats19 suggests strong links between seat belt non-wearing and drink and drug driving, as well as more generally with, driving quickly and aggressively and with criminality. This supports evidence given to PACTS in interviews with senior roads policing officers and through discussions with the Advisory Panel.

Taxis and Private Hire Vehicles

It is questionable whether there is any longer a valid reason to exempt Taxi and Private Hire drivers from the requirement to wear a seat belt in certain circumstances. However, there were only 10 fatalities in a Taxi or Private Hire vehicle in 2017 (3 of which were unbelted) and we are unable to draw firm conclusions from the limited dataset.

5 Reasons for non-wearing

The overwhelming majority of UK car users wear seat belts. They do this partly as a result of habit – they would feel uncomfortable without them, because of the safety benefits of seat belts, fear of penalties for non-wearing and social norms.⁷⁵

However, a small minority do not wear seat belts, at least some of the time, and this minority is greatly overrepresented in KSI data and even more so amongst fatalities. A wide range of reasons have been put forward for seat belt non-wearing. This includes information from surveys and questionnaires, as well as information from roads police. Broadly, these explanations can be split into habit failure, perceived reasons not to wear a seat belt and a perceived lack of compelling reasons to do so.⁷⁶ Musselwhite et al. found that reasons given by those who don't wear a seat belt include:

- Only driving on a very short journey (41% of respondents);
- Feeling seat belts are uncomfortable (14%);
- Feeling they should not have to (8%);
- Being very careful anyway (5%);
- Feeling they crease clothes (5%).⁷⁷

Christmas, Young and Cuerden found those who do not wear seat belts include both consistent non-wearers and inconsistent wearers. The literature suggests that inconsistent wearers make up a higher proportion of non-wearers than those who never wear seat belts. Inconsistent wearers are less likely to wear seat belts on certain journey types, such as short, local journeys, or when in certain seating positions such as the back seat.⁷⁸ Another key divide is between those who forget to wear a seat belt and those who actively choose not to wear one.⁷⁹ These groups may be overlapping, with those who forget more likely to be inconsistent but this is not always the case.

5.1 Lack of habit or forgetting

One of the most common reason people give for not wearing seat belts, especially when pulled over, is that they have forgotten. A review of evidence on transport behaviours showed that some aspects of travel are habitual and not a consequence of rational choice.⁸⁰ People will instinctively take a certain route or transport mode, or behave in a certain, even dangerous, way without evaluating their options.⁸¹ Consequently, people may stick to an existing behaviour, even when a change is beneficial.⁸² The habitual nature of behaviour also means that those who do not have an ingrained seat belt habit, or who are in the habit of not wearing a seat belt, will be likely to continue to forget or not wear belts. The habitual nature of seat belt wearing may explain why wearing rates remain persistently high, even with significant variation in enforcement, education and publicity campaigns. It also explains why many regular seat belt wearers feel uncomfortable when not belted up.

⁷⁵ Christmas, S., Young, D., Cuerden, R. (2008). *Strapping Yarns: Why People Do and Do Not Wear Seat Belts*. Road Safety Research Report 98, DfT.

⁷⁶ Christmas, S., Young, D., Cuerden, R. (2008). *Strapping Yarns: Why People Do and Do Not Wear Seat Belts*. Road Safety Research Report 98, DfT.

⁷⁷ Musselwhite, C., Avineri, E., Fulcher, E., and Susilo, Y. (2010). *Understanding Public Attitudes to Road-User Safety – Literature Review*. Road Safety Research Report No. 112, DfT. 24% of answers were unspecified.

These results are the product of a study of 250 members of the public recruited from four locations around the UK. Potential participants were screened to recruit a mix of people and subdivided into key group identified in the literature (such as young drivers). Participants then took part in three workshops ranging from 1.5 hours to 7 hours.

⁷⁸ Christmas, S., Young, D., Cuerden, R. (2008). *Strapping Yarns: Why People Do and Do Not Wear Seat Belts*. Road Safety Research Report 98, DfT.

This study conducted workshops with 50 members of the public recruited on the basis on demographic characteristics, driving habits and attitudes towards seat belts.

⁷⁹ 'Department for Transport' in No Author. (2018). *Why are people still not wearing seat belts?* BBC News.

⁸⁰ Anable, J., Lane, B., and Kelay, T. (2006). *An Evidence Base Review of Public Attitudes to Climate Change and Transport Behaviour*. DfT

⁸¹ Musselwhite, C., Avineri, E., Susilo, Y., Fulcher, E., Bhattachary, D., Hunter A., and Stockley, R. (2010). *Road Safety Research Report No. 111 Understanding Public Attitudes to Road User Safety*. DfT

⁸² Bonsall, P., Conner, M., Darnton, A. (2009). *Thinkpiece 1: Influencing Individual Citizens, and) Final Report from the Institute for Transport Studies*. University of Leeds in partial fulfilment of DfT Contract PPRO04/06/33

5.1.1 Habit formation

Habit formation, or loss, can occur at any point in a person's life.⁸³ Estimates from research on behaviour change for the time taken for habits to form – not specifically for seatbelts – range from 14 days to 3 months or longer, though missing occasional days does not appear to affect the habit forming process. The literature suggests that the commitment needed for habit formation and behaviour change means that a genuine personal commitment to change is needed in which people feel positive about their behaviour change. Significant periods of change in an individual's life can often coincide with habit formation and habit change, such as leaving home, getting married and having children.⁸⁴

5.1.2 The seat belt habit

A large range of studies have found a habitual component in seat belt wearing. Most car users are not making a conscious choice to wear or not wear their belt. Rather, it is part (or indeed not part) of their journey or driving process. The habitual nature of seat belt wearing offers both challenges and benefits for those seeking to increase it. If interventions can increase wearing consistently in the short to medium term, habits are more likely to form.

However, the habitual nature of non-wearing means it can be very hard to change this behaviour. Studies have demonstrated that frequency of seat belt wearing is more influenced by previous frequency of seat belt wearing than by intention.⁸⁵ Across all behaviours, individuals will maintain habits even when change appears to be beneficial.⁸⁶ Interventions may raise awareness of risks or even change intentions but fail to change behaviour.

The seat belt habit is well established in the UK with more than 95% of people wearing seat belts.⁸⁷ Amongst non-wearers there is a section of the population who do not have a seat belt habit but are not actively anti-wearing. These non-wearers are likely to forget to belt up or think to belt up only in certain circumstances, such as on motorways. The lack of habit or habit failure is therefore a significant influence in their non-wearing. There are, however, hard-core non-wearers who are actively anti-seat belt for reasons such as libertarianism.⁸⁸ Their seat belt non-wearing cannot be usefully described or approached as habit failure.

5.2 Feeling safe without a seat belt

One influence on seat belt non-wearing is that some car users feel safe without wearing a seat belt. These individuals lack perceived reasons to wear a seat belt and therefore do not do so.⁸⁹ While not conclusively proven, it is reasonable to assume that it is possible that those who do not wear a seat belt because they feel safe without one are also motivated to some extent by other factors.

One reason why drivers may feel safe without a seat belt is that they feel they will not crash. Most drivers feel they are in control of their own vehicle and therefore their own safety. Most drivers also believe that they are better than average drivers.⁹⁰ Car users can tend to feel that crashes won't happen to them, leading to a belief seat belts are unnecessary and to a combination of risk taking behaviours including seat belt non-wearing.⁹¹

The impact on seat belt wearing of feeling safe can be seen in the journey types on which people do or do not wear seatbelts. In a survey of those who occasionally wear seat belts, 80% stated that their

⁸³ Christmas, S., Young, D., Skates, A., Millward, L., Duman, M., Dawe, I. K. (2009). *Nine Big Questions about Behaviour Change*. DfT

⁸⁴ Christmas, S., Young, D., Skates, A., Millward, L., Duman, M., Dawe, I. K. (2009). *Nine Big Questions about Behaviour Change*. DfT

⁸⁵ Sutton, S. and Eiser, J. (1990). 'The decision to wear a seat belt: The role of cognitive factors fear and prior behaviour.' *Psychology and Health*, 4(2), 112-123.

⁸⁶ Department for Transport. *Enabling Behaviour Change Information Pack*. DfT.

⁸⁷ Department for Transport. (2019). *Seatbelt and mobile phone use surveys: Great Britain, 2017*. DfT

⁸⁸ Christmas, S., Young, D., Skates, A., Millward, L., Duman, M., Dawe, I. K. (2009). *Nine Big Questions about Behaviour Change*. DfT

⁸⁹ Christmas, S., Young, D., Skates, A., Millward, L., Duman, M., Dawe, I. K. (2009). *Nine Big Questions about Behaviour Change*. DfT

⁹⁰ Avineri, E., and Goodwin, P. (Eds) (2009). *Individual Behaviour Change: Evidence in transport and public health*. UWE Centre for Transport & Society. Thinkpiece for DfT

⁹¹ Dr Graham Hole in No Author (2014). *Who, what, why: Why do so many drivers shun seatbelts?* BBC News.

seat belt behaviour changed based on journey type.⁹² Part time seat belt wearers are less likely to be belted on familiar and local journeys, at low speed, late at night and early in the morning (where fewer cars are on the road, and there may also be fewer police).⁹³ ⁹⁴They are more likely to wear belts on longer, unfamiliar journeys and on motorways, journeys typically perceived to be more dangerous.⁹⁵ This suggests that when part time wearers are not wearing their seat belts, they feel safe without them, but on journeys that feel more dangerous they do not and belt up.

A similar effect can be seen for those travelling in the back seat of cars, where seat belt wearing rates are lower. While a number of potential influences have been suggested, including feeling excluded from the social space of the front seat or feeling more relaxed in the rear, feeling safer in the back seat is that most commonly stated by seat belt non-wearers.⁹⁶

If car users perceive themselves as being safe without a seat belt they believe there are less compelling reasons to wear a belt. The perceived negative impacts of wearing belts – such as discomfort – may then outweigh the perceived benefits leading to non-wearing.⁹⁷ It is also possible that feeling safe without a belt may contribute to resentment felt by those with libertarian instincts as they will feel that the legal requirement is unnecessary.

5.2.1 Airbags and other safety features

Commentary from Europe and the USA suggests that the introduction and increasing standardisation of cars fitted with air bags, automatic braking and the like appears to have contributed to users feeling safe without seat belts, though it has not been conclusively proved.⁹⁸ Users feel ‘cocooned’ and that seat belts are unnecessary as other safety features will protect them.⁹⁹ It is possible that a similar effect may contribute to non-wearing in vans, heavy goods vehicles (HGVs) and large 4x4s where drivers and passengers feel safer because of the size of their vehicles.

5.3 Belief that seatbelts can be dangerous

A small percentage of the population holds the belief that seat belts are dangerous (i.e. they increase risks in certain circumstances). Survey and questionnaire data suggests that these fears are often based on anecdotes or personal experiences.¹⁰⁰ Typical answers take the form of statements such as ‘doctors told my friend he wouldn’t have survived if he was wearing a seat belt’ or ‘I’ve heard of people trapped in a burning car’.¹⁰¹ The most commonly expressed reason for people believing that seat belts can be dangerous is the fear of becoming trapped in vehicles after crashes.¹⁰²

Some fears may also relate to the possibility of seatbelts injuring the chest or neck, including whiplash. It is possible that the fear of being injured as a result of wearing seat belts contributes to car users not wearing seat belts for entire journeys, or on certain journeys (such as at low speeds) where they feel the risk of being unrestrained in a crash is less than the risk of injuries which may occur from wearing a seat belt in a crash.

⁹² Jermakian, J., and Weast, R. (2018). ‘Passenger use of and attitudes toward rear seat belts.’ *Journal of Safety Research*, 64, 113-119.

⁹³ Hirsch, L., Waters, G., Scott, R., Mackie, H. and de Pont, J. (2017). *Vehicle occupants not wearing a seat belt: An analysis of fatalities and traffic offences in New Zealand*. AA Research Foundation.

⁹⁴ Musselwhite, C., Avineri, E., Fulcher, E., and Susilo, Y. (2010). *Understanding Public Attitudes to Road-User Safety – Literature Review*. Road Safety Research Report No. 112, DfT.

⁹⁵ Hirsch, L., Waters, G., Scott, R., Mackie, H. and de Pont, J. (2017). *Vehicle occupants not wearing a seat belt: An analysis of fatalities and traffic offences in New Zealand*. AA Research Foundation.

⁹⁶ Jermakian, J., and Weast, R. (2018). ‘Passenger use of and attitudes toward rear seat belts.’ *Journal of Safety Research*, 64, 113-119.

⁹⁷ Begg and Langley 2000 in Christmas, S., Young, D., Cuerden, R. (2008). *Strapping Yarns: Why People Do and Do Not Wear Seat Belts*. Road Safety Research Report 98, DfT.

⁹⁸ SWPIA (2015). *Top 10 Excused for Not Wearing Your Seatbelt*; (2012). Luckhurst, J. (2012). 6 common excuses for not wearing a seatbelt. GEM Motoring Assist

⁹⁹ ‘Department for Transport’ in No Author. (2018). *Why are people still not wearing seat belts?* BBC News.

¹⁰⁰ Safer By Choice. (2009). 7 Reasons Why People Don’t Wear Seatbelts.

¹⁰¹ SWPIA (2015). *Top 10 Excuses for Not Wearing Your Seatbelt*

¹⁰² Christmas, S., Young, D., Cuerden, R. (2008). *Strapping Yarns: Why People Do and Do Not Wear Seat Belts*. Road Safety Research Report 98, DfT.

5.3.1 Pregnancy

Some car users said they may not wear seat belts when pregnant because of fears than seat belts can be dangerous to their unborn child. In fact, seat belts (worn properly) are not dangerous to foetuses.¹⁰³ Seat belt wearing reduces both the mortality and injury severity of pregnant vehicle occupants.¹⁰⁴ Seat belts reduce abdominal pressure in crashes and prevent contact with the car's interior.¹⁰⁵

5.4 Discomfort

General discomfort from wearing a seatbelt has also been cited consistently as one of the main reasons for non-wearing.¹⁰⁶

Evidenced from a variety of questionnaires, the following is a list of more specific discomfort related reasons that contribute towards non-compliance;

- Some people, particularly in high temperatures, remove their seat belts to avoid sweating.
- Other people state that wearing a seat belt inhibits their ability to sleep comfortably in cars.
- Some do not wear seat belts because they argue that seat belts crease their clothes.
- Some claim that seat belts irritate their skin or can transfer stains onto their clothes.¹⁰⁷

5.5 Peer pressure

Particularly amongst younger passengers and drivers, peer pressure has been cited as one of the reasons for non-wearing. According to some research, around 5% of 17-21 year old male drivers do not wear a seat belt when driving with friends.¹⁰⁸

A driving simulator study experimentally tested the effects of peer influence on the driving risk behaviour (i.e., risky driving behaviour and inattention to hazards) of male teenagers. It found that male teenage drivers who were accompanied by a risk-accepting confederate peer passenger who applied peer influence increased simulated risky driving behaviour.¹⁰⁹

It has also been suggested that in some cases, seat belt non-wearing amongst adolescents is related to perceptions of non-wearing amongst peers.¹¹⁰ That is to say, some adolescents do not wear their seat belts because they believe their peers aren't wearing them.

Interestingly though, some research has demonstrated this to be a misperception, and has instead found that students perceive that others engage in less seat belt wearing than they actually do.¹¹¹

5.6 Sensation seeking

Sensation seeking – defined as a personality trait involving the degree to which one desires novel and intense stimuli – is another factor that has been noted as having a major role in influencing driver behaviour.¹¹²

Seat belt non-wearing has been associated with sensation seeking.¹¹³ Active sensation seekers are assumed to engage in reckless driving behaviour (e.g. not wearing a seat belt) to provide the type of

¹⁰³ Royal College of Midwives. <https://www.rcm.org.uk/news-views-and-analysis/news/research-reveals-risk-of-incorrect-seat-belt-use>

¹⁰⁴ Motozawa, Y., Hitosugi, M., Abe, T., and Tokudome S. (2010). Effects of seat belts worn by pregnant drivers during low-impact collisions. *American Journal of Obstetrics and Gynecology*, 203(1), 62-68.

¹⁰⁵ Motozawa, Y., Hitosugi, M., Abe, T., and Tokudome S. (2010). Effects of seat belts worn by pregnant drivers during low-impact collisions. *American Journal of Obstetrics and Gynecology*, 203(1), 62-68.

¹⁰⁶ Jermakian, J., and Weast, R. (2018). Passenger use of and attitudes toward rear seat belts. *Journal of Safety Research*, 64, 113-119

¹⁰⁷ Jermakian, J., and Weast, R. (2018). Passenger use of and attitudes toward rear seat belts. *Journal of Safety Research*, 64, 113-119

¹⁰⁸ Bingham, R. et al. (2016). Peer passenger norms and pressure: Experimental effects on simulated driving among teenage males. *Transportation Research Part F: Traffic Psychology and Behaviour*, 41(1), 124-137.

¹⁰⁹ Bingham, R. et al. (2016). Peer passenger norms and pressure: Experimental effects on simulated driving among teenage males. *Transportation Research Part F: Traffic Psychology and Behaviour*, 41(1), 124-137.

¹¹⁰ Dunlop, S., and Romer, D. (2010). Adolescent and young adult crash risk: sensation seeking, substance use propensity and substance use behaviors. *Journal of Adolescent Health*, 46(1), 90-92.

¹¹¹ Litt, D., Lewis, M., Linkenback, J., Lande, G., and Neighbors, C. (2014). Normative Misperceptions of Peer Seat Belt Use Among High School Students and Their Relationship to Personal Seat Belt Use. *Traffic Injury Prevention*, 15(7), 748-752.

¹¹² Zuckerman, M., 1990. The psychophysiology of sensation seeking. *J. Personal.* 58, 313–345.

¹¹³ Arnett, J., 1994. Sensation seeking: a new conceptualization and a new scale. *Personal. Individ. Differ.* 16, 289–296.

stimulation that they find pleasurable.¹¹⁴ That said, there is limited evidence about the scale of sensation seeking and the effect it has on wearing rates.

5.7 Rebellion/libertarian Instincts

Amongst routine non-wearers, dislike of being told what to do is common.¹¹⁵ There are some individuals who hold extreme libertarian views and believe it is their given right not to wear a seat belt, and that the state should not have the authority to instruct car users to belt up.¹¹⁶

Whilst it is difficult to identify exactly how many people hold these views, one study found that of the participants who stated they either sometimes or never wore their seat belts, 8% of them chose not to do so specifically because they feel they should not have to.¹¹⁷

5.8 Perceived lack of enforcement

For some, the likelihood of getting caught is also a key element involved in the decision whether to wear a seat belt.¹¹⁸ The perceived absence of enforcement would therefore seem to be a significant factor in relation to non-wearing.

It is not known exactly how many individuals factor the likelihood of being caught into their decision not to wear a seat belt. It has been suggested that a decline in roads policing over the last decade may have encouraged individuals to feel they can get away with non-wearing.¹¹⁹ Drivers are aware of the decline in roads policing. The recent RAC Report on Motoring 2018 found that 28% (up from 24% in 2017) of drivers believe they are unlikely to get caught if they break motoring laws.¹²⁰

Moreover, there is evidence of a reduction in enforcement of seat belt laws. According to Home Office statistics, the number of fixed penalty notices issued per year for seat belt offences has fallen dramatically from 226,158 in 2006 to 18,525 in 2017. In percentage terms, this is a 91.81% reduction.¹²¹

5.9 Conclusion

Given the state of the evidence it is not possible to say how significant an influence each reason is on non-wearing. Furthermore, many stated reasons for non-wearing, especially when given to police, are likely to be excuses and post-rationalisations of behaviour. Nevertheless, given the weight and variety of evidence presented, it is reasonable to assume that the main influences on seat belt non-wearing are those outlined above. For many individuals, it is likely that a combination of influences causes them not to wear seat belts. For example, there is no logical reason why a perceived lack of enforcement on its own would cause someone not to wear a seat belt. However, if they felt uncomfortable in a seat belt, a perceived lack of enforcement might contribute to their decision not to do so. From the available evidence it is not possible to identify which societal groups are influenced by which reasons, or indeed, if there are differences between societal groups. A cultural analysis of the influences on seat belt non-wearing may be able to fill this gap and enable more effective targeting of interventions.

¹¹⁴ Dahlen, Eric & P. White, Roy. (2006). The Big Five factors, sensation seeking, and driving anger in the prediction of unsafe driving. *Personality and Individual Differences*. 41. 903-915.

¹¹⁵ Leblanc, J. (no date). The Top 10 Excuses For Not Wearing a Seatbelt.

¹¹⁶ Bentley, J. J., R. Kurrus, and N. Beuse. 2003. Qualitative Research Regarding Attitudes Towards Four Technologies Aimed at Increasing Safety Belt Use. Report 2003-01. Equals Three Communications, Inc., Bethesda, Md., June.

¹¹⁷ Musselwhite, C., Avineri, E., Fulcher, E., and Susilo, Y. Road Safety Research Report No. 112 Understanding Public Attitudes to Road-User Safety – Literature Review: Final Report. DfT

¹¹⁸ S. Christmas SHM D. Young Future Featuring Ltd R. Cuerden Transport Research Laboratory November 2008 Department for Transport: London

¹¹⁹ Williams, P. in BBC News (2018). Why are people still not wearing seat belts?

¹²⁰ RAC. (2018). RAC Report on Motoring 2018.

¹²¹ Home Office (2018). *Police powers and procedures, England and Wales, year ending 31 March 2018*. Home Office

6 Interventions to increase seat belt wearing

Identifying possible reasons for non-wearing can enable interventions to be better designed and more precisely targeted. A range of interventions have been suggested or employed to increase seat belt wearing.

In this report, the following interventions are assessed:

- introducing penalty points for seat belt non-wearing;
- increasing fines for seat belt non-wearing;
- increasing or enhancing enforcement;
- educational campaigns;
- technological interventions; and
- insurance changes.

We have considered evidence regarding the effectiveness of these interventions

- in general, for a range of offences and unsafe behaviours, and
- on seat belt wearing in particular, where available.

These interventions aim to both increase seat belt wearing rates and to reduce the number of people who die when unbelted. The relationship between these two variables may seem clear but given the seemingly very high wearing rates and high proportion of people dying while unbelted it is worth exploring.

Even with very high wearing rates, a large number of kilometres are being driven unbelted. The wearing rate for GB drivers (including vans and taxis) was 96.5% in 2017 when 670 billion person-kilometres were travelled in cars, vans and taxis.¹²² A conservative estimate where all vehicle occupants are assumed to be drivers – given lower passenger wearing rates, the true figure is likely higher – would therefore be that 23.5 billion kilometres are travelled unbelted in the UK each year.

- A distance greater than 30,000 round trips to the moon is being travelled unbelted in GB each year.
- A 0.1% increase in the seat belt wearing rate would be equivalent to 871 trips to the moon being driven belted.

6.1 New and increased penalties

One possible intervention to increase seat belt wearing is to increase the penalties for non-wearing. This could include introducing penalty points for not wearing a seat belt or increasing the fine. The necessary legislative changes would probably take the form of regulatory changes for increased fines (as was the case with the regulatory changes which increased FPN fines previously – see Section 3.2 – or an amendment to Schedule 2 of the Road Traffic Act 1991 for penalty points (which itself amended Schedule 2 of the Road Traffic Offenders Act 1988). This legislation would change the law in England, Scotland and Wales, Northern Ireland has a separate system where penalty points are already applied for not wearing a seat belt.

¹²² Department for Transport. (2018). National Travel Survey. DfT

6.1.1 Penalty points

Not wearing a seat belt is not currently an endorsable offence. This means those who do not wear a seat belt do not receive penalty points on their driving licences. Currently, penalty points can be issued for various offences including speeding, using a vehicle with defective tyres, brakes or steering or unlawful pillion riding. Penalty points are intended to act as a disincentive to car users to offend because of the threat of point accumulation and loss of licence.

Penalty point systems (PPS) require enforcement to be effective. This can be camera based (such as in speeding) or officer based. As highlighted in Section 8.8 on enforcement, for any punishment, including penalty points, to be an effective disincentive people must believe there is a sufficiently high risk of being caught by police if they commit a road traffic offence.¹²³ Communication is also important to publicise both the level of enforcement and of the penalty.¹²⁴

Examples and evaluation

Penalty points were introduced for not wearing a seat belt in Northern Ireland in 2007. Drivers may receive points for not wearing a seat belt or for carrying an unbelted passenger who is under the age of 14. Passengers can be awarded two penalty points for not wearing a seat belt.¹²⁵ Penalty points were introduced as police in Northern Ireland felt that the fine did not offer a sufficient disincentive. The changes also were approved in Westminster and by the Northern Irish Environment Committee at Stormont with no concerns being raised. While no direct impact assessment of this change has been made, there is evidence of its effectiveness. Penalty points were introduced at a time of rising seat belt wearing rates in Northern Ireland and the introduction of points was supported by extensive public information campaigns to raise awareness of the new legislation and by high levels of enforcement. From 2007 to 2014 when seat belt surveys stopped, Northern Ireland had higher wearing rates in all positions in cars than England and Scotland.¹²⁶ While causation cannot be asserted, Northern Ireland has seen a rise in rear seat wearing rates from 75% in 2003 and 85% in 2006 to the second best rate in the world (95%) by 2011, while introducing penalty points, maintaining high levels of enforcement and running high profile education campaigns.¹²⁷

The Northern Irish government also stated that education and enforcement backed up by penalties, has played a role in increasing wearing rates in Northern Ireland.¹²⁸ However, the while enforcement rate was high at the start of the campaigns, it has remained the same as or lower than the English and Welsh rate since 2008, and Northern Irish education campaigns do not differ dramatically from those elsewhere in the UK. It therefore seems reasonable to assume that the introduction of penalty points was a key part of the package of measures introduced.

There is also evidence from the Republic of Ireland on the effectiveness of PPS. Ireland introduced a points system in 2003, which included not wearing a seat belt as an endorsable offence. The introduction of penalty points in Ireland was followed by immediate and significant reductions in road traffic accidents, road deaths (an 11% reduction in the first year),¹²⁹ non-fatal injuries (a 20% reduction in the first year)¹³⁰ and an increase in wearing rates. Reductions were also seen in injuries associated with seat belt non-wearing. For example, head and thoracic injuries halved in hospital trauma departments in the 12 months after the penalty points system was introduced.¹³¹ Evidence with a

¹²³ Van Schagen, I. and Machata, K. (2012). *The BestPoint Handbook: Getting the best out of a Demerit Point System*. BestPoint Project.

¹²⁴ Van Schagen, I. and Machata, K. (2012). *The BestPoint Handbook: Getting the best out of a Demerit Point System*. BestPoint Project.

¹²⁵ Northern Ireland Direct Government Services. (No date). Child car seats, restraints and seat belts. NI Government.

¹²⁶ Department for Infrastructure. Northern Ireland Survey of Seat Belt Wearing 2014 annual report. DfI

¹²⁷ Department for Infrastructure. Northern Ireland Survey of Seat Belt Wearing 2014 annual report. DfI

¹²⁸ Letter from the Environment Minister of Northern Ireland, July 2008.

¹²⁹ An Garda Síochána (No date). Archived Road Collision Statistics 1961 to 2007. An Garda Síochána.

¹³⁰ Zambon, F., Fedeli, U., Milan, G., Brocco, S., Marchesan, M., Cinquetti, S., and Spalaore, P. (2008). 'Sustainability of the effects of the demerit points system on seat belt use: A region-wide before-and-after observational study in Italy.' *Accident Analysis and Prevention*, 40(1), 231-237

¹³¹ Donnelly, M., Cleary, S., and Murray, P. (2005). 'Changes in trauma service workload since the introduction of the penalty points system'. *Irish Medical Journal*, 98(2), 53-54.

longer timescale suggests that the penalty point system continued to reduce death and serious injury in the Republic of Ireland. Between 2003, when the penalty point system was introduced, and 2007, the proportion of road traffic accident-related ocular injuries (heavily associated with seat belt non-wearing) dropped significantly, from 6.7% to 2.4%.¹³² Interestingly, an increasing proportion of these injuries were to persons from EU accession states.¹³³ Finally, analysis published in 2018 showed that in 2015/16, injuries associated with seat belt non-wearing, namely head injury and facial fracture remained significantly lower than pre-PPS ($p=0.014$), while other injuries such as upper limb and pelvic injuries had remained broadly stable.¹³⁴ The researchers conclude that this is evidence that the introduction of a penalty points system reduced injuries resulting from seat belt non-wearing.¹³⁵

A similar penalty points system was introduced in Italy in 2003, also making not wearing a seat belt an endorsable offence. While causation cannot be asserted conclusively, in the three month period after the introduction of PPS, wearing rates rose from 54% to 83% for drivers and from 53% to 76% for front seat passengers, with slight rises continuing over the next 15 months.¹³⁶ A study of the scheme found that 'a substantial increase in seat belt use was reached and sustained with the demerit points system'.¹³⁷ Road traffic fatalities were also reduced by 20% and injuries by 19% in the first 12 months following the introduction of the penalty points system. It is important to note that wearing rates were extremely low when this scheme was introduced in Italy. Therefore it does not necessarily follow that the same effect would be seen in the UK where rates are comparatively high. Spain introduced a penalty points system in 2006, with non-wearing of seat belts becoming an endorsable offence. Following this there was a significant reduction in fatalities, both in the short and long term.¹³⁸ The example of Italy and Spain, along with Ireland appears to show the potential benefit of introducing penalty points systems.

There are caveats to these examples. Firstly, the Republic of Ireland, Italy and Spain involved the creation of entirely new points systems rather than just adding not wearing a seat belt to an existing system. The interventions also included significant media campaigns and enforcement. It is therefore possible that some of the increased seat belt wearing is a consequence of other changes. For example, Austria introduced a penalty points system without making seat belts an endorsable offence. However, wearing rates still rose significantly after the points system was introduced.

Nevertheless, the examples of, Spain, Italy and particularly of Northern Ireland and the Republic of Ireland demonstrate how interventions which utilise penalty points can increase seat belt wearing and reduce both death and serious injury in contexts similar to Great Britain.

As well as the specific examples given above, a broad range of evidence on the effectiveness of penalty point systems (PPS) exists in the literature. A large meta-analysis of the effects of PPS found that there is a strong initial impact with reductions of 15-20% in collisions, injuries and fatalities. These will then reduce in the absence of complementary enforcement.¹³⁹ Research finds that the initial fear created by the possibility of drivers losing their licence tends to fade as the PPS receives less media coverage, when the public stop talking about it and when police visibility is low.¹⁴⁰ Consequently, to maximise the effectiveness of PPS, both enforcement and communications should be maintained.¹⁴¹ Prolonged

¹³² Saeed, A., Khan, I., Dunne, O., Stack, J., and Beatty, S. (2010). 'Ocular injury requiring hospitalisation in the South East of Ireland: 2001-2007. *Injury*, 41(1), 86-91.

¹³³ Saeed, A., Khan, I., Dunne, O., Stack, J., and Beatty, S. (2010). 'Ocular injury requiring hospitalisation in the South East of Ireland: 2001-2007. *Injury*, 41(1), 86-91.

¹³⁴ Downey, C., Donnelly, M. (2018). 'The penalty points system in Ireland – does it remain effective 14 years on?' *The Surgeon*, 16(3), 141-145.

¹³⁵ Downey, C., Donnelly, M. (2018). 'The penalty points system in Ireland – does it remain effective 14 years on?' *The Surgeon*, 16(3), 141-145.

¹³⁶ BESTPOINT. (2010). *European Demerit Point Systems: Overview of their main features and expert opinions*. European Commission.

¹³⁷ Zambon, F., Fedeli, U., Milan, G., Brocco, S., Marchesan, M., Cinquetti, S., and Spalaore, P. (2008). 'Sustainability of the effects of the demerit points system on seat belt use: A region-wide before-and-after observational study in Italy.' *Accident Analysis and Prevention*, 40(1), 231-237

¹³⁸ Izquierdo, F., Ramirez, B., McWilliams, J., and Ayuso, J. (2011). 'The endurance of the effects of the penalty point system in Spain three years after. Main influencing factors'. *Accident Analysis & Prevention*, 43(3), 911-922.

¹³⁹ Castillo-Manzano, J., and Castro-Nuno, M. (2012). 'Driving licences based on points systems: Efficient road safety strategy or latest fashion in global transport policy? A worldwide meta-analysis.' *Transport Policy*, 21, 191-201.

¹⁴⁰ Van Schagen, I. and Machata, K. (2012). *The BestPoint Handbook: Getting the best out of a Demerit Point System*. BestPoint Project.

¹⁴¹ Van Schagen, I. and Machata, K. (2012). *The BestPoint Handbook: Getting the best out of a Demerit Point System*. BestPoint Project.

enforcement and communications will also help to entrench the seat belt habit in those who previously did not have it. Several studies find that the threat of licence revocation has consistent and significant deterrent effects,^{142 143} with one meta-analysis finding that the threat of suspension leads to reductions of 17% in the number of accidents. The strength of deterrent provided by penalty points increases as a driver accumulates points and the risk of disqualification grows.^{144 145} This may be positive for seat belt compliance as it means the biggest disincentive will be felt by those who frequently do not wear seat belts and therefore receive points and by drivers who are generally more likely to commit road traffic offences and are more reckless and aggressive (who we know to be less likely to belt up). PPS will also offer a stronger disincentive to young drivers, as they may be required to undergo retesting if they accumulate six points within two years of passing their driving test.¹⁴⁶ This is arguably advantageous for a seat belt policy as wearing rates are lowest amongst young people, and the young disproportionately die when unbelted (Appendix 7, Table 1 and 2). It would also help to establish a habit of seat belt wearing at the start of their driving career. Making seat belt non-wearing an endorsable offence would also make it visible to insurance companies. The current fine does not stay on a car user's record and therefore cannot be taken into account when calculating premiums. Penalty points on the other hand are visible to insurers who can then adjust their premiums to reward likely good behaviour. There is strong evidence that well designed PPS, supported by effective enforcement and publicity, can both increase wearing rates and reduce road injuries and deaths.

Mobile phone example

Evidence of the effectiveness of penalty points systems also comes from the introduction and doubling of penalty points for mobile phone usage in the UK. Penalty points for mobile phone use were first introduced in 2007. Previously the penalty had been a £30 fine. This was increased to a £60 fine and three penalty points. Following the introduction of points and a higher fine, there was a drop in the proportion of drivers using mobiles, from 2.5% of car drivers in 2006 to 1.4% (0.4% was hands free) in 2007¹⁴⁷. DfT states that it is 'reasonable to assume that this [penalty points] was a significant factor' in this change.¹⁴⁸

Contrastingly, after the increase in FPN fines for seat belt offences from £60 to £100 in 2013 there was no significant change in the number of drivers observed using a mobile phone.¹⁴⁹ In a consultation in 2016 on increasing penalty points for mobile phone use a range of organisations including Police Scotland and the NPCC supported increased penalty points because of the greater deterrent effect it would have and because it may lead to behaviour change and reduce risk.¹⁵⁰

Following the subsequent 2017 law changes, which doubled the number of penalty points a driver would receive for mobile phone use, there were reductions in the percentage of drivers observed using a mobile phone from 1.6% to 1.1% in Great Britain and from 1.5% to 0.6% in England between 2013 and 2017.¹⁵¹ The *RAC Report on Motoring* also found increased self-reported compliance.¹⁵² The increases in penalty points were also supported by media publicity and enhanced enforcement. The

¹⁴² Avineri, E., and Goodwin, P. (Eds) (2009). *Individual Behaviour Change: Evidence in transport and public health*. UWE Centre for Transport & Society, DfT.

¹⁴³ Lee, J., Park, B., and Lee, C. (2018). Deterrent effects of demerit points and license sanctions on drivers' traffic law violations using a proportional hazard model.' *Accident Analysis & Prevention*, 113, 279-286.

¹⁴⁴ Corbett, C., Delmonte, E., Quimby, A. and Grayson, G. (2008). 'The deterrent effect of penalty points on speeding drivers.' *Proceedings of the Behavioural Research in Road Safety, Eighteenth Seminar*.

¹⁴⁵ Sagberg, F., and Ingebrigtsen, R. (2018). 'Effects of a penalty point system on traffic violations.' *Accident Analysis & Prevention*, 110, 71-77.

¹⁴⁶ UK Government. (No date). *Penalty points (endorsements)*. UK Government

¹⁴⁷ European Commission. (2015). *Cell Phone Use While Driving*

¹⁴⁸ DfT Impact Assessment (2016). *Increasing Mobile Phone FPN and Penalty Points for the offence of using a Mobile Phone whilst driving*

¹⁴⁹ DfT. (2016). *A consultation on changes to the Fixed Penalty Notice and penalty points for the use of a hand-held mobile phone whilst driving*. DfT

¹⁵⁰ DfT. (2016). *Response to Consultation. A consultation on changes to the Fixed Penalty Notice and penalty points for the use of a hand-held mobile phone whilst driving*. DfT

¹⁵¹ Department for Transport. (2019). *Seatbelt and mobile phone use surveys: Great Britain, 2017*. DfT

¹⁵² RAC (2018). *RAC Report on Motoring 2018*. RAC

evidence from mobile phone interventions shows that PPS can achieve reductions in dangerous driving behaviour – particularly in the short term and when supported by enforcement and publicity.

Overall Mobile Phone Use for Car Occupants, England (1999-2014,) England and Wales (2017)

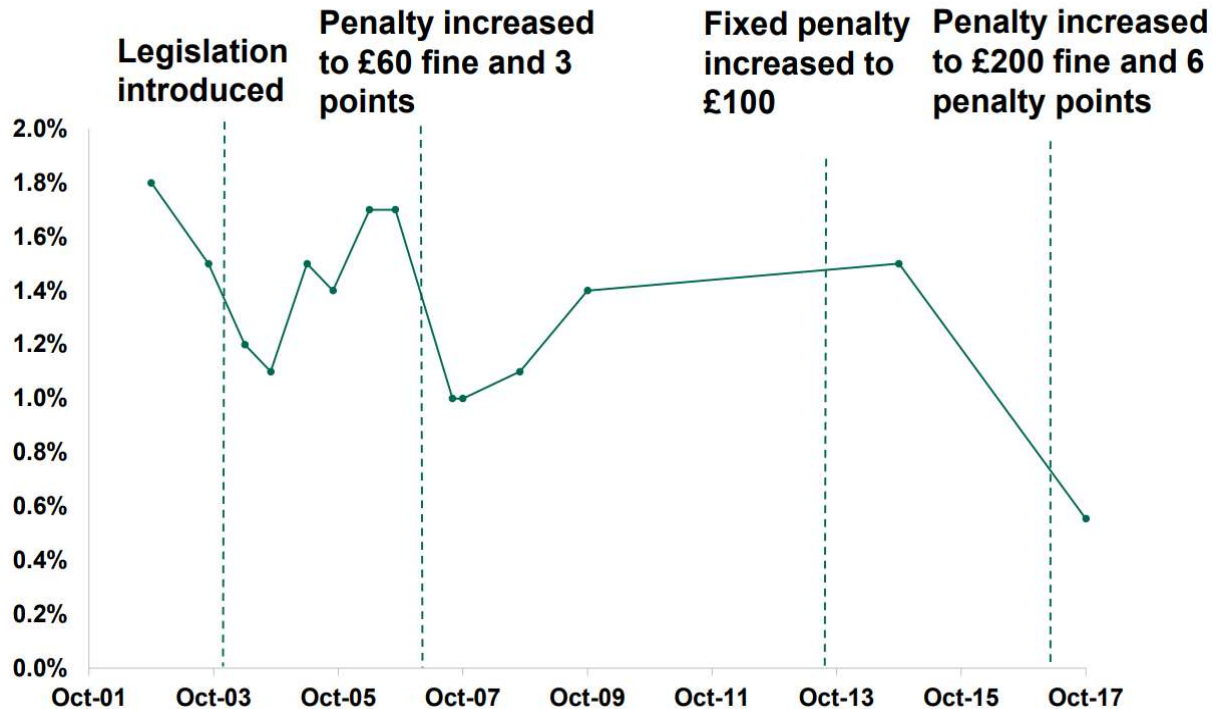


Figure 20: Hand held mobile phone use by drivers over time

Acceptability

Points systems tend to receive the support of the general public as it is considered to be fair that drivers who repeatedly misbehave are punished more severely than drivers who do so occasionally.¹⁵³ Point systems can also avoid some of the criticisms that increased fines face (such as not disincentivising seat belt non-wearing for the rich, or the risk that the potential cost to the public may lead to police reluctance to issue fines) as points do not involve taking larger sums of motorists' money.

Currently, drivers are responsible for their own seat belt wearing and that of any passenger who is under the age of 14. Drivers could have penalty points issued for their own seat belt non-wearing or for carrying an unbelted passenger who is under the age of 14. Passengers aged over 14 could theoretically receive points for their own non-wearing on their own licence or, if they do not hold one, on a 'shadow licence'. For other types of offences, those not driving a vehicle can currently receive penalty points. For example, passengers on motorcycles can receive three points for unlawful pillion riding, which, like seat belts, is an offence which primarily put the passenger in danger. Penalty points can also be issued for some cycling offences and for attempted car theft.¹⁵⁴ Precedent also exists in the law on smoking in cars with a child under the age of 18. Under this law both a smoking passenger and a driver can receive a fine if a passenger is smoking while an under 18 is present.¹⁵⁵

¹⁵³ Van Schagen, I. and Machata, K. (2012). *The BestPoint Handbook: Getting the best out of a Demerit Point System*. BestPoint Project.

¹⁵⁴ Schedule 3, 'Fixed Penalty Notices.' Road Traffic Offenders Act 1988.

¹⁵⁵ Department of Health and Social Care. (2015). *Smoking in Vehicles*.

Scope and target

Introducing penalty points would not be a targeted intervention. Rather, it would affect the entire car-using population.

Conclusion

There is strong evidence that the introduction of penalty points, in combination with sufficient enforcement, has changed driver behaviour and increased wearing rates. This includes academic studies which have asserted causation in the cases of the Republic of Ireland, Italy and Spain. Penalty points offer a strong disincentive to all groups of potential non-wearers. They are also generally perceived by the public to be fair. The introduction of penalty points would also signal both to police forces and the public the importance of seat belt usage to road safety.

Level of penalty points

PACTS recommends that the penalty level for not wearing a seat belt should be set at three penalty points. Three points would bring not wearing a seat belt into line with minor speeding offences, unlawful pillion riding, failure to comply with double white lines, or refusing to submit to an eyesight test. Three points, if sufficiently enforced, are likely to offer a significant disincentive to non-wearers. A penalty of six points has been considered, in line with offences such as mobile phone use. However, three points is the standard and six might be deemed excessive for an offence that, generally speaking, does not endanger other road users.

Summary of Pros and Cons

Penalty Points	
Pros	Cons
If enforced, offer an effective disincentive for seat belt non-wearing	Requires enforcement to be effective in the medium/long term
Evidence of effectiveness, both on its own and as a joint intervention	
May increase police focus on seat belts as being endorsable, which signals importance	
Would probably increase number of people attending seat belt courses	
Would make risky drivers more visible to insurance companies (see 6.5.1)	

Not wearing a seat belt should be made an endorsable offence, with three penalty points issued for not wearing a seat belt.

6.1.2 Fines

Another possible intervention to increase wearing rates is to increase fines beyond the current £100 level. There is limited available evidence on the impact of increasing fines for not wearing a seat belt and, more generally, for traffic offences, especially from the UK.

There is some evidence that low fines offer little deterrence to seat belt non-wearing. For example, in the USA, Wisconsin has fines of just \$10 and a wearing rate of just 79% – equivalent to that in secondary enforcement states (where police can issue tickets for not wearing a seat belt only if a driver has been pulled over for another offence). Wisconsin is a primary enforcement state, where tickets

can be issued for not wearing a seat belt alone.¹⁵⁶ A similar study conducted by North Dakota State University found that drivers were 20% less likely to wear a seat belt when fines were under \$20.¹⁵⁷ A separate US study has also found that seat belt wearing rates are correlated with fine levels across US states.¹⁵⁸ Unfortunately, little academic evidence on the relationship between the level of fines and the level of seat belt wearing or on the impact of increasing fines on wearing rates is available from outside the USA.

However, there are other information sources available which question the effectiveness of high fines in the UK. A senior roads policing officer advising this project said that some officers, particularly young or inexperienced ones, may be reluctant to issue heavy fines because of the financial impact on some motorists. This would suggest that raising the fine level may in fact reduce the likelihood of motorists being fined, especially if it was not part of a combined strategy (though the risk of a fine may still act as a disincentive, even if the likelihood of receiving it decreases). Moreover, it is possible that, unless fines were increased very substantially, they may still not offer a genuine disincentive to all motorists. Wealthier car users may remain comparatively unaffected by increasing fines, while poorer car-users will be comparatively more affected. Any increase may be seen to be disproportionately harsh for poorer motorists and police may be more reluctant to impose it.

UK fine increases

Evidence of the impact of changing only the fine level for offences comes from a Department for Transport impact assessment of changes to the fine level for all FPNs in 2013. DfT consulted on changing the penalty for all endorsable FPNs and seatbelt offences in 2012, proposing raising the fine level to £90 in line with inflation and other penalty notices of 'similar severity' such as disorder. The change was also intended to increase the number of people taking up remedial training courses as, post-change, they would offer a cheaper alternative to the fine.¹⁵⁹ Several respondents to this consultation felt that the increase would not act as a deterrent and that, instead, additional penalty points or education efforts would be more effective.¹⁶⁰ The increased fine did result in the expansion of training courses.¹⁶¹ Furthermore, an analysis of the change in 2016 as part of a DfT consultation on mobile phone use found that the fine change (doubled to £200) had no statistically significant impact on the number of drivers observed using a mobile phone and suggested that the penalty did not act as enough of a deterrent to stop offenders.¹⁶² Similarly, no changes in seat belt wearing rates beyond background trends were detected in England after the increase in fines. This contrasts with the changes in mobile phone usage seen after the introduction of penalty points (alongside enforcement and education) in 2007 – i.e. immediate significant drops in mobile phone use (from 2.5% of car drivers in 2006 to 1.4%, 0.4% of which was hands free, in 2007),¹⁶³ a change for which DfT states it is 'reasonable to assume that this [penalty points] was a significant factor'.¹⁶⁴

Scope and target

Increased fines would not be a targeted intervention. Rather it would affect all of the car using population.

¹⁵⁶ McGehee, D. (2014) A comparative policy analysis of seat belt laws. The University of Iowa.

¹⁵⁷ Vachal, K., Malchouse, D., Benson, L. (2011). Using Laws, Enforcement, and Sanctions to Increase Seat Belt Use on Rural Roads. North Dakota State University.

¹⁵⁸ McGehee, D. (2014) A comparative policy analysis of seat belt laws. The University of Iowa.

¹⁵⁹ DfT. (2016). A consultation on changes to the Fixed Penalty Notice and penalty points for the use of a hand-held mobile phone whilst driving. DfT

¹⁶⁰ Department for Transport. (2013). Government response to consultation on the treatment of careless driving penalties and other motoring fixed penalties. DfT

¹⁶¹ Department for Transport. (2013). Increasing Fine Levels for Certain Fixed Penalty Notices Motoring Offences. Impact Assessment Report. DfT

¹⁶² DfT. (2016). A consultation on changes to the Fixed Penalty Notice and penalty points for the use of a hand-held mobile phone whilst driving. DfT

¹⁶³ European Commission. (2015). Cell Phone Use While Driving

¹⁶⁴ DfT Impact Assessment (2016). Increasing Mobile Phone FPN and Penalty Points for the offence of using a Mobile Phone whilst driving

Evaluation

Packages of measures which include fines can change motorists' behaviour, as was the case with increased penalties for handheld mobile phone use. However, in the UK there is not clear evidence of the impact of increasing fines solely for traffic offences. Evidence from the USA suggests that low fines can be ineffective, but current fines in the UK are significantly higher than what are classed as 'low fines' in some studies (around \$20). There is also the possibility that higher fines may lead to greater police reluctance to issue fines for not wearing a seat belt. Fines may be unpopular: 59% of public respondents to the 2012 DfT consultation on increasing FPN fines for all offences disagreed with the proposal, feeling that it would be a 'tax on the motorist' that would affect those on low incomes most.¹⁶⁵ Moreover, it is possible that increased fines may not significantly disincentivise not wearing a seat belt for richer motorists and would disproportionately affect poorer ones. Overall, there does not appear to be a strong case for increased the current £100 fines for not wearing a seat belt.

Summary of Pros and Cons

Fine Changes	
Pros	Cons
Can signal the importance of an offence which results in a large number of deaths and serious injuries each year	Possibility that higher fines may result in police reluctance to issue them
A greater fine may further disincentivise seat belt non-wearing	Little evidence of effectiveness of increased fines in isolation
Can be effective in combination with other interventions	May be publicly unpopular – seen as disproportionate or a tax

¹⁶⁵Department for Transport. (2013). Government response to consultation on the treatment of careless driving penalties and other motoring fixed penalties. DfT

6.2 Increased and enhanced enforcement

If any penalty for an offence is to be effective, regardless of the level, there must be a perception that people are likely to be caught and that the penalty will be applied.¹⁶⁶

This is the role of enforcement. Enforcement interventions typically involve supplemental, high visibility enforcement alongside publicity about the penalty. However, to ensure the effectiveness of these interventions, routine enforcement must offer a legitimate disincentive. Enforcement campaigns can be long or short term, ranging from a week to several months of heightened enforcement. When most effective, they create the perception of routine, high level enforcement. Indeed, consistent enforcement activities that are well explained and publicised also have a long-lasting effect on driver behaviour.¹⁶⁷ Increased enforcement can involve increasing the number of officers on patrol, seat belt checkpoints, encouraging officers to increase their use of FPNs, increased camera enforcement and combinations of these.¹⁶⁸

These interventions aim to increase the perceived risk of receiving a penalty and thus increase seatbelt wearing.¹⁶⁹ Research demonstrates that both individuals and groups who have a higher perceived risk of receiving penalties report higher seat belt usage as a result of enforcement.^{170 171} This is the case amongst groups with both high and low self-reported seat belt wearing.¹⁷² Both the level of publicity and the visibility of enforcement can influence risk perception and therefore the behaviour of motorists.¹⁷³ Efficient enforcement strategies are not about increasing the number of fines, but about increasing car users' perception of the chance of being caught. This perception is based both on the objective chance and on what motorists see in the media or hear from friends or colleagues.¹⁷⁴ For enforcement to be effective, behaviour required by the legislation should be clear, easily monitored, and visibly and regularly policed and enforced.¹⁷⁵

In the UK, the number of seat belt FPNs issued fell by 70% between 2011 and 2017 from 171,737 to just 51,555.¹⁷⁶ Home Office figures for seat belt FPN offences do not include those who attend a seat belt course.¹⁷⁷ This is because the current Home Office system cannot record course offers for non-endorsable offences (see 'Data Improvements,' Section 8). While this does not dramatically change trends, this report uses a figure which combines the Home Office data with those from course suppliers in order to show more accurately how many members of the public are issued with a penalty for not wearing a seat belt. There are national differences within the UK, with Scotland's fall in enforcement beginning in 2013, Wales and England's in 2008 and Northern Ireland's in 2004. Because of differences in penalties between Northern Ireland and the rest of the UK, the most direct comparison can be made between Scotland and England and Wales. Scotland had a significantly higher offence rate between 2008 and 2014. In this time, Scotland also saw greater increases in seat belt wearing rates than England, particularly amongst rear seat passengers (a rise from 88% to 99% in Scotland between 2009 and 2014 and a fall from 89% to 87% in England in the same period). Falling levels of roads policing have coincided with a rising belief among the public that they can get away with illegal driving behaviour.¹⁷⁸ The *RAC Report on Motoring* in 2018 found that 68% of motorists feel

¹⁶⁶ McGehee, D., Reyes, M., Marshall, D., Skinner, E., Lundell, J., Peek-Asa, C. (2014). A comparative policy analysis of seat belt laws. The University of Iowa.

¹⁶⁷ ETSC. (2015). *Enforcement in the EU – Vision 2020*. ETSC.

¹⁶⁸ Dinh-Zarr, T., et al (2011). 'Reviews of Evidence Regarding Interventions to Increase the Use of Safety Belts.' *American Journal Preventative Medicine*; 21(4), 48-65.

¹⁶⁹ McGehee, D., Reyes, M., Marshall, D., Skinner, E., Lundell, J., Peek-Asa, C. (2014). A comparative policy analysis of seat belt laws. The University of Iowa.

¹⁷⁰ Avineri, E., and Goodwin, P. (Eds) (2009). *Individual Behaviour Change: Evidence in transport and public health*. UWE Centre for Transport & Society, DfT

¹⁷¹ Chaudhary, N., Solomon, M., and Cosgrove, L. (2004). 'The relationship between perceived risk of being ticketed and self-reported seat belt use.' *Journal of Safety Research*, 35(4), 383-390.

¹⁷² Chaudhary, N., Solomon, M., and Cosgrove, L. (2004). 'The relationship between perceived risk of being ticketed and self-reported seat belt use.' *Journal of Safety Research*, 35(4), 383-390.

¹⁷³ Dinh-Zarr, T., et al (2011). 'Reviews of Evidence Regarding Interventions to Increase the Use of Safety Belts.' *American Journal Preventative Medicine*; 21(4), 48-65.

¹⁷⁴ Adinaite, D., Jost, G., Stipdonk, H., and Ward, H. (2016). *How traffic law enforcement can contribute to safer roads*. PIN Flash Report 31. ETSC.

¹⁷⁵ Avineri, E., and Goodwin, P. (Eds) (2009). *Individual Behaviour Change: Evidence in transport and public health*. UWE Centre for Transport & Society, DfT

¹⁷⁶ Home Office. (2018). *Police Powers and Procedures England and Wales*, year ending 31 March 2018; Scottish Government. (2018) *Recorded crime in Scotland 2017-2018*; Police Service of Northern Ireland. (No date). *Police Recorded Crime Statistics*.

¹⁷⁷ Pers. Comms. NDORS, Moore, J.

¹⁷⁸ RAC Foundation in No Author. (2018). *Why are people still not wearing seat belts?* BBC News.

there are not enough police on the road to enforce driving laws and that 28% feel they can get away with breaking traffic laws.¹⁷⁹ Despite differences in penalties post 2007, useful comparisons can also be made between Northern Ireland and England, particularly given the comparatively higher enforcement rates in Northern Ireland when it's wearing rates rose and overtook those in the rest of the UK. Northern Ireland had significantly higher enforcement rates than England during its period of rapid wearing rate improvement, before wearing rate rises slowed and enforcement fell around 2008. This suggests that strong enforcement may have played a key role in raising wearing rates in Northern Ireland.¹⁸⁰ It also suggests that enforcement can play a role where wearing rates are already comparatively high.

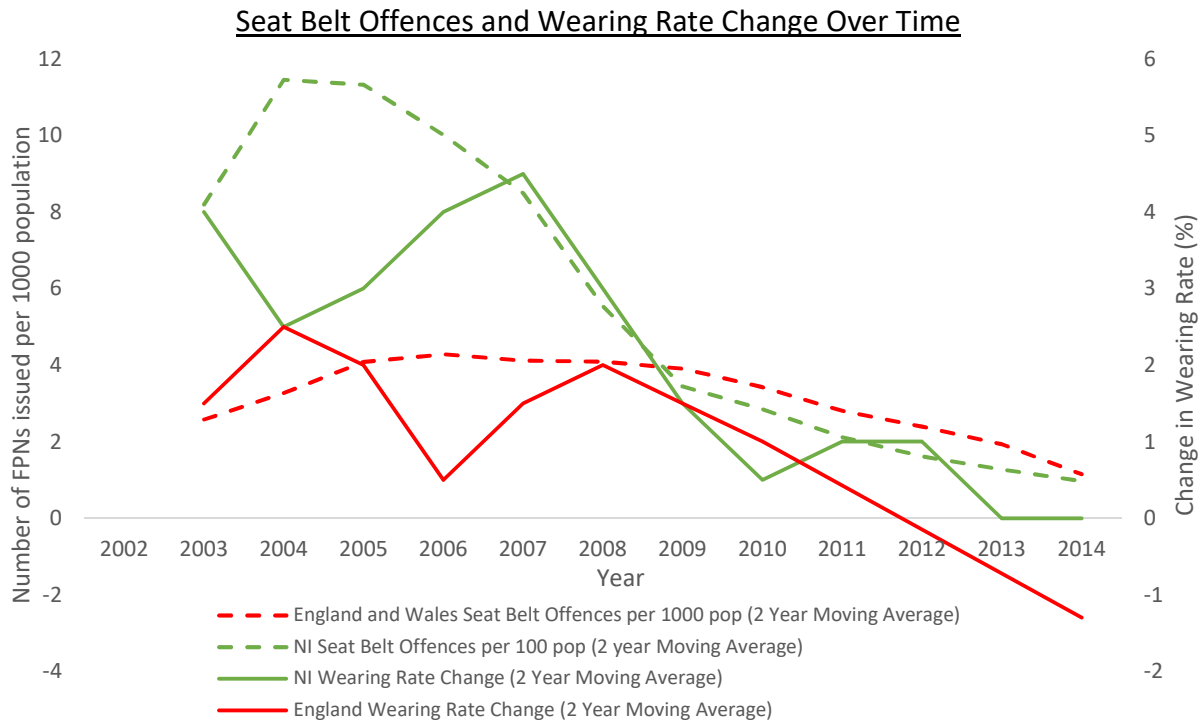


Figure 21: Seat belt offences and wearing rate change over time

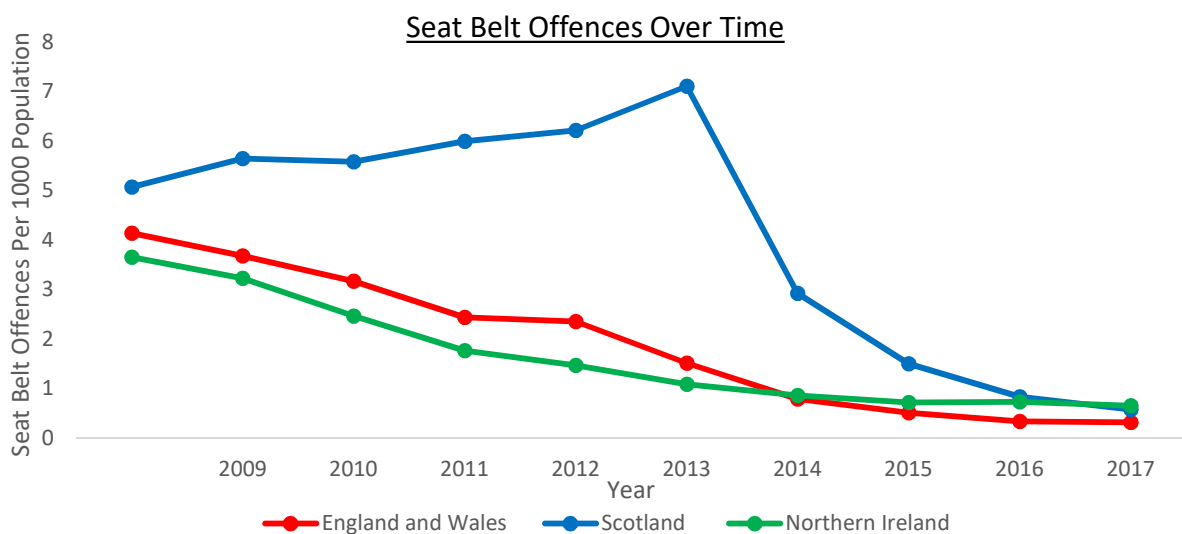


Figure 22: Seat belt offences over time

¹⁷⁹ RAC Report on Motoring 2018

¹⁸⁰ Letter from Environment Minister in Northern Ireland (July 2008)

There is a wide range of research on the effectiveness of seat belt enforcement at local and national levels as well as from meta-analyses. The evidence shows that enforcement can be extremely effective at increasing wearing rates in both the long and short term, whether it is the only intervention or part of a joint programme.^{181 182 183 184} The most extensive meta-analysis of studies has found that enforcement increases seat belt wearing by 21% during the enforcement period (error bar range 16%-27%) and by 15% afterwards (error bar range 10%-20%). This study had a global focus, with evidence primarily, but not exclusively, from northern Europe.¹⁸⁵

A similar study found a median change of +16% in seat belt wearing rates during enhanced enforcement and +9% in seat belt wearing rates after enhanced enforcement periods.¹⁸⁶ This study also found both targeted and supplemental patrols to be effective, and enhanced enforcement to be effective at a city, regional and national level.¹⁸⁷ Research has also shown that seat belt wearing is related both to the ratio of officers to residents and to seat belt 'citations' to residents.¹⁸⁸ Seat belt wearing has been shown to increase with perceived risk of being 'ticketed'.¹⁸⁹ Differences in US law – where in some states there is primary enforcement (where motorists can receive tickets for not wearing a seat belt at any time) and in others there is secondary enforcement (where motorists can receive tickets for not wearing a seat belt only if they are receiving tickets for other offences) – can also show the effect of differing levels of enforcement. Primary enforcement is associated with a 14% higher seat belt wearing rate,¹⁹⁰ again suggesting that greater levels of enforcement lead to higher levels of wearing.

There are also studies on specific enhanced enforcement programmes, particularly from North America. While contextual differences may reduce the applicability of these studies, they further contribute to the weight of evidence that enhanced enforcement can encourage seat belt usage. Many US states have followed the example of successful Canadian enhanced enforcement programmes in the 1980s which significantly increased wearing rates. These campaigns were characterised by sustained enforcement, police leadership and publicity.¹⁹¹ Enforcement programmes targeting non-wearing have been assessed in Washington,¹⁹² Pennsylvania, Indiana and New Mexico¹⁹³ where they increased seat belt wearing by 2%,¹⁹⁴ 6%, 5% and 6% respectively.¹⁹⁵

¹⁸¹ Uthman, O. A., Sinclair, M., Willems, B., Young, T. (2014). 'Interventions to promote the use of seat belts.' *Cochrane Database of Systematic Reviews*, 7. Art. No.: CD011218. DOI: 10.1002/14651858.CD011218.

¹⁸² Johnston, J., and Hendricks, S., and Fike, J. (1994). 'Effectiveness of behavioural safety belt interventions.' *Accident & Analysis Prevention*, 26(3), 315-323.

¹⁸³ Dinh-Zarr, T., et al (2011). 'Reviews of Evidence Regarding Interventions to Increase the Use of Safety Belts.' *American Journal Preventative Medicine*; 21(4), 48-65.

¹⁸⁴ Fell, J., Baker, T., McKnight, A., Brainard, K., Langston, E., Rider, R., Levy, D., Grube, J. (2005). Increasing Teen Safety Belt Use: A Program and Literature Review. NHTSA.

¹⁸⁵ Elvik, R. et al. (2009). *The Handbook of Road Safety Measures*. Emerald Group Publishing Limited.

¹⁸⁶ Dinh-Zarr, T., et al (2011). 'Reviews of Evidence Regarding Interventions to Increase the Use of Safety Belts.' *American Journal Preventative Medicine*; 21(4), 48-65.

¹⁸⁷ Dinh-Zarr, T., et al (2011). 'Reviews of Evidence Regarding Interventions to Increase the Use of Safety Belts.' *American Journal Preventative Medicine*; 21(4), 48-65.

¹⁸⁸ Dinh-Zarr, T., et al (2011). 'Reviews of Evidence Regarding Interventions to Increase the Use of Safety Belts.' *American Journal Preventative Medicine*; 21(4), 48-65.

¹⁸⁹ Chaudhary, N., Solomon, M., and Cosgrove, L. (2004). 'The relationship between perceived risk of being ticketed and self-reported seat belt use.' *Journal of Safety Research*, 35(4), 383-390.

¹⁹⁰ Vachal, K., Malchore, D., Benson, L. (2011). Using Laws, Enforcement, and Sanctions to Increase Seat Belt Use on Rural Roads. North Dakota State University.

¹⁹¹ Williams, A., and Wells, J. (2004). 'The role of enforcement programs in increasing seat belt use.' *Journal of Safety Research*, 35(2), 175-180.

¹⁹² National Highway Traffic Safety Administration. (2010). *Year 1 of the Washington Nighttime Seat Belt Enforcement Program*. US Department of Transportation, Traffic Technology no. 396.

¹⁹³ National Highway Traffic Safety Administration. (No Date). *Nighttime Seat Belt Enforcement Strategies*. NHTSA.

¹⁹⁴ National Highway Traffic Safety Administration. (2010). *Year 1 of the Washington Nighttime Seat Belt Enforcement Program*. US Department of Transportation, Traffic Technology no. 396.

¹⁹⁵ National Highway Traffic Safety Administration. (No Date). *Nighttime Seat Belt Enforcement Strategies*. NHTSA.

A cross-European attitudinal study of university students between 1990 and 2000 found that there were marked increases in seat belt wearing in countries with changes in legislation or enforcement from 1990 to 2000, with 24% to 64% more respondents reporting seat belt wearing in 2000. Both seat belt wearing and changes during this period correlated with findings from national surveys.¹⁹⁶ There is also evidence that motorists believe enforcement changes their behaviour. Christmas et al found that 'driving where there are police around' was the statement second most likely to encourage seat-belt wearing amongst all car users and amongst drivers who occasionally wear seat belts; the statement most likely to encourage seat belt wearing amongst those who wear a seatbelt 'when they need to'; and the statement third most likely to encourage seat belt wearing amongst discriminating passengers (those who wear a seat belt in certain circumstances) (Figure 23).¹⁹⁷ Similarly, a study of attitudes in Iowa found that Iowan motorists believe enforcement would be the most effective intervention aimed at changing their seat belt behaviour.¹⁹⁸

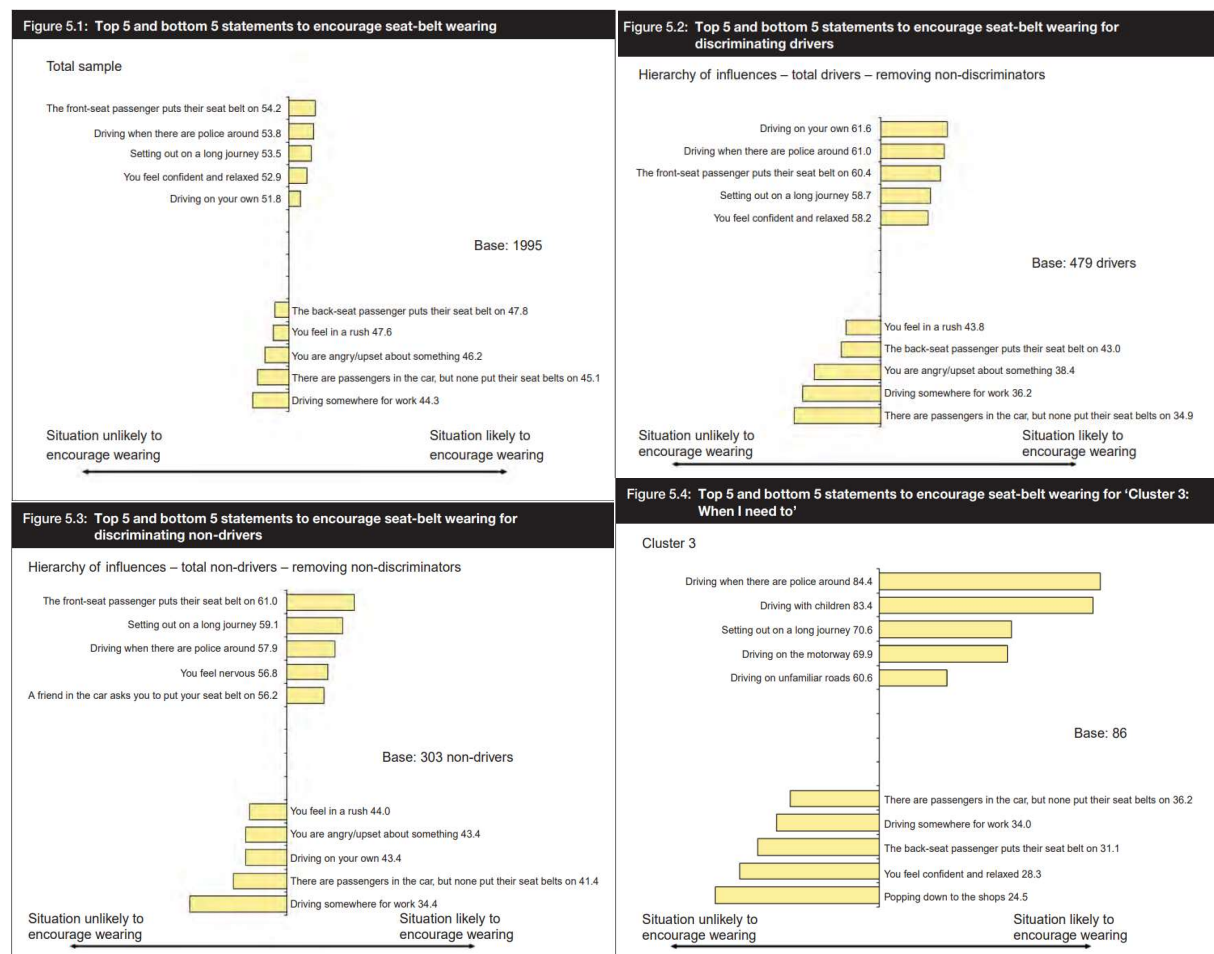


Figure 23: Reasons most and least likely to encourage seat belt wearing

Individual police forces and local authorities often run innovative enforcement programmes. Several local authorities use social media alongside police enforcement campaigns (either as part of NPCC calendar events or of their own accord). Road Safety Wales deploys cameras to key sites during seat belt campaigns. South Wales police offer 'Options', as an alternative to a FPN, in which motorists watch a 15 minute video which emphasises the consequences of non-wearing. The Safer Essex Roads Partnership organises 'Surround-a-Town' enforcement where officers set up around a town for one day, with drivers being stopped if they are committing traffic offences. Seat belt offences are generally

¹⁹⁶ Steptoe, A., Wardle, J., Fuller, R., Davidsdottir, S., Davou, B., Justo, J. (2002). 'Seatbelt use, attitudes, and changes in legislation: An international study.' *American Journal of Preventive Medicine*, 23(4), 254-359

¹⁹⁷ Christmas, S., Young, D., and Cuerden, R. (2008). *Strapping Yarns: Why People Do and Do Not Wear Seat Belts*. Road Safety Research Report 98, DfT.

¹⁹⁸ McGehee, D., Reyes, M., Marshall, D., Skinner, E., Lundell, J., Peek-Asa, C. (2014). A comparative policy analysis of seat belt laws. The University of Iowa.

the most common or second most common offence detected (after speeding). For example in an event around Halstead in March 2019, 59 people were stopped for seat belt offences, compared to 7 for speeding and 6 for mobile phone use.¹⁹⁹ Finally, West Midlands Police have run 'Operation Top Deck', where officers equipped with video cameras use the vantage point of the top decks of buses to target mobile phone use. This initiative could easily be adapted for seat belt wearing and through high levels of media coverage it may have increased perceptions of enforcement in the West Midlands.²⁰⁰

Scope and target

Increased enforcement can be targeted and catch all. General increases in enforcement or the use of new methods can increase the perception of enforcement across the car-using population. Enforcement also has the benefit of being able to be targeted at specific demographic groups, on specific road types or at times of day that the data shows are particularly problematic.

Evaluation

There is clear evidence that enhanced enforcement can increase wearing rates. Reduced or low enforcement may also lead to lower wearing rates (or at least to no increase). Furthermore, given low enforcement levels in the UK currently, there is clearly space for increased enforcement. To be most effective, enforcement should involve high levels of publicity and should be a continuing effort. Continued publicity of enforcement outside high intensity enforcement periods can also be used to maintain public perceptions of a high likelihood of being caught. Ideally, this would consist both of publicity regarding the level of enforcement and punishment and of educational campaigns highlighting the need to belt up as this would increase public acceptance. In the current climate of limited police resources and budgets cuts, it is arguably unrealistic to suggest large scale increases in officer-led enforcement. However, changes and improvements could still be made. Within the context of roads policing, seat belt wearing could receive more focus. UK police forces will run only one national seat belt campaign in 2019, having previously run two each year. Seat belt offences are also not seen as a priority in roads policing circles. Increasing the publicity for enforcement activities which do take place, through the local press or by displaying 'seat belt checks in progress' messages, may increase the perceived level of enforcement. Furthermore, innovative enforcement strategies, such as 'Surround-a-Town' events, Operation Top Deck or employing camera technology may be able to increase the public's perception of enforcement at comparatively low cost. As outlined in the Section 6.1, changes in the law could help increase enforcement, and strong punishment would further disincentivise seat belt non-wearing.

Enforcement of seat belt laws should be significantly enhanced through intelligence led, targeted measures. The profile of enforcement and the perceived likelihood of being caught should be raised.

6.2.1 Improved camera technology

16 police forces in the UK routinely use mobile safety cameras to prosecute drivers for not wearing seat belts or using a handheld mobile phone. Another four do so occasionally. However, issues still need to be resolved around Home Office type approval and image quality required for successful prosecution.²⁰¹ In some areas, in the UK²⁰² and overseas,²⁰³ fixed cameras are used to detect seat belt non-wearing. Camera technology can also have a significant impact on the public perception of the level of enforcement. News stories on new camera technology, or prosecutions which result, can increase people's awareness of enforcement. Clarity on the standards of evidence required for

¹⁹⁹ Pers. Comms. Local Authorities (see Appendix 6 for details)

²⁰⁰ Road Safety GB, (2018). *West Midlands Police 'pioneer scheme to catch distracted drivers*. RSGB

²⁰¹ IAM RoadSmart (2018). *Wider use of mobile safety cameras is good news for road safety says IAM RoadSmart*.

²⁰² Kent Police. (No date). *Speed Camera Offences*.

²⁰³ Alghnam, S. et al (2018). 'The effectiveness of introducing detection cameras on compliance with mobile phone and seat belt laws.' *Injury Epidemiology*, 5(31).

prosecution and a wider roll out of intelligent camera technology would allow a high level enforcement to continue while reducing both expenditure and police time.

Camera technology has great potential for enforcement. It should be developed further and its use expanded. Clarity should be offered to all police forces on image quality needed for prosecutions.

Summary of Pros and Cons

Enforcement	
Pros	Cons
Offers a strong signal of the importance of seat belt wearing and is a strong disincentive to non-wearing	Requires police time; new equipment requires and investment at a time of restricted budgets
There is strong evidence of the effectiveness of enforcement in increasing wearing rates	May not be effective without a penalty which the public feel is a disincentive
Research on part-time and routine non-wearers suggests greater police presence would increase their wearing rates	
Improved camera technology may be able to reduce the costs and police time required for enforcement	

6.3 Education

Education initiatives have been one of the most commonly used interventions aimed at increasing seat belt wearing in the UK. These have included mass media campaigns, education in schools and remedial training. Some behaviour change experts state that education initiatives should aim to have educational outcomes. Changes to attitudes is a more realistic objective and standard through which to assess interventions rather than direct changes in behaviour or casualty numbers.

Education may aim to change attitudes and, in turn, behaviour in several ways.

- Some have the objective of changing an individual's understanding of the cost and benefits of behaviours, therefore making the desired behaviour seem more advantageous.²⁰⁴ These campaigns aim to give reasons to wear or to weaken reasons not to wear. For example, THINK! campaigns have sought to raise awareness of the injury consequences of driving unbelted.
- Secondly, education can attempt to change the social meaning of a behaviour or a person's conception of self in relation to the behaviour.²⁰⁵ These interventions aim to make individuals conceive of behaviours as more 'me'. For example, an intervention may attempt to make seat belt wearing seem like the act of a responsible citizen, or change its social meaning amongst young people to reduce peer pressure. Perhaps the best example of this type of education is the UK drink driving campaigns which contributed to making drink driving less socially acceptable.
- Finally, education can attempt to make a behaviour seem more do-able, by changing an individual's understanding of how hard the behaviour is or of their own capacity to do it. This type of campaign is unlikely to be used for seat belts given the ease of the behaviour.²⁰⁶

Evidence for the ways in which behaviour can be changed is extremely complex. There is no conclusive evidence for any one strategy, and a wide variety of strategies exist. The most common and high profile type of education campaign aimed at encouraging seat belt wearing has been mass media advertising, consequently they will be the main focus of this section.

6.3.1 National campaigns

The DfT's THINK! 'Three Strikes' campaign, launched in 2008 and re-aired in 2010 is the most systematically assessed THINK! campaign.²⁰⁷ The campaign targeted inconsistent seat belt wearers by challenging the belief that there are low risk situations where it is safe not to wear a belt. The campaign used TV, cinema, online, radio, poster, petrol pump and car park barrier adverts.²⁰⁸ It highlighted the 'three strikes' in an unbelted collision, first the car striking another object, secondly the car user striking the inside of the car and thirdly the car users internal organs striking their ribcage. The campaign sought particularly to reach those aged 17-34.²⁰⁹ However, even this assessment is limited, taking place before the campaign had fully finished and consisting of just a before and after survey of 1,956 individuals.

The evaluation for the DfT found that 80% of the population recognised the advert when prompted and 79% of the population had seen or heard campaign materials about wearing seat belts. The campaign may have brought about positive shifts in attitudes with the acceptability of not wearing a

²⁰⁴ Christmas, S., Young, D., Skates, A., Millward, L., Duman, M., Dawe, I. K. (2009). Nine Big Questions about Behaviour Change. DfT

²⁰⁵ Christmas, S., Young, D., Skates, A., Millward, L., Duman, M., Dawe, I. K. (2009). Nine Big Questions about Behaviour Change. DfT

²⁰⁶ Christmas, S., Young, D., Skates, A., Millward, L., Duman, M., Dawe, I. K. (2009). Nine Big Questions about Behaviour Change. DfT

²⁰⁷ BRMB Social Research. (2009). *Post Evaluation of the 'Three Strikes' THINK! Seat Belts Campaign*. DfT

²⁰⁸ BRMB Social Research. (2009). *Post Evaluation of the 'Three Strikes' THINK! Seat Belts Campaign*. DfT

²⁰⁹ BRMB Social Research. (2009). *Post Evaluation of the 'Three Strikes' THINK! Seat Belts Campaign*. DfT

seat belt in different driving situations decreasing. However, the evaluation found that more people stated that they did *not* always wear a seat belt after the campaign had been carried out.²¹⁰

The THINK! 'Three Strikes' campaign demonstrates that it can be extremely difficult for educational and advertising campaigns to change behaviour directly, even when they achieve high recognition or change intentions. Similarly, the 'Clunk Click' campaigns of the 1970s and early 1980s achieved high recognition, and are still remembered today but had achieved only 37% compliance by 1982. Only when the legislation came into effect in 1983 did observed compliance increase significantly to 93%.²¹¹

Similarly, a range of education interventions in different regions of the UK in the 1970s raised wearing rates up to around 25% before it later returned to the national averages after the campaign.²¹² A wide range of studies, as well as meta-analyses, have found no or very weak effects of educational and prompting campaigns on seat belt wearing, including when specifically aimed at front or rear seat belt wearing or the wearing of seat belts by children.^{213,214} More broadly, studies of educational campaigns in road safety behaviour have found that fear arousal (the most commonly used technique in seat belt advertising) is not effective at changing behaviour.²¹⁵

THINK!'s current three-year campaigns plan focuses on young drivers, particularly males. It does not include any specific message on seat belts. THINK! is not currently impacting the seat belt wearing challenge.

THINK!'s current Road Whisperer campaign focuses on offering clear and simple advice to young drivers in situations in which they are nervous and on other issues, such as ensuring tyres have correct tread levels. Wearing a seat belt is one of the easiest steps that a driver or passenger can take to reduce their chances of dying or being seriously injured in a road collision. As a first step, it would seem sensible to include this message in the campaign.

Existing road safety education activities should be reviewed to see if seat belt wearing is given due prominence.

Education campaigns, combined with high levels of enforcement and the introduction of penalty points have played a role in increasing seat belt wearing rates in Northern Ireland. Northern Ireland ran extensive education campaigns on the risks of not wearing a seat belt, including specifically for back seat passengers. In an assessment of one campaign, 86% of respondents stated that they had been influenced by the campaign. The then Northern Irish Minister of the Environment stated in 2014 that 'education and enforcement together lead to changing attitudes and subsequently, changing behaviour; in this case, increasing the levels of seatbelt-wearing.' Northern Irish education campaigns were also able to shape the climate of opinion and build support for enforcement.

Seat belt education campaigns were run jointly between the Road Safety Authority in the Republic of Ireland and the Department of the Environment in Northern Ireland. Both governments had identified higher seat belt compliance as a major objective of their road safety strategies. The campaigns in the early 2000s were designed after an analysis of five years of road traffic casualty statistics aimed at finding which groups were overrepresented in unbelted KSIs (16-34 year olds and those in the rear; further analysis in 2006 added primary school children to this list).²¹⁶ The campaigns objectives included achieving high levels of awareness, improving attitudes, increasing wearing rates and

²¹⁰ BRMB Social Research. (2009). *Post Evaluation of the 'Three Strikes' THINK! Seat Belts Campaign*. DfT

²¹¹ Christmas, S., Young, D., Skates, A., Millward, L., Duman, M., Dawe, I. K. (2009). Nine Big Questions about Behaviour Change. DfT

²¹² Hansard, HoC Debate, (5th March 1972), Volume 836-837

²¹³ Morrison, D., Petticrew, M., Thomson, H. (2003). 'What are the most effective ways of improving population health through transport interventions? Evidence from systematic reviews.' *Journal of Epidemiological Community Health*, 57, 327-333.

²¹⁴ Geller, S., Casali, J., and Johnson, R. (1980). 'Seat Belt Usage: A Potential Target For Applied Behavior Analysis.' *Journal of Applied Behavior Analysis*, 13(4), 669-675.

²¹⁵ Bonsall, P., Conner, M., Darnton, A. (2009). *Thinkpiece 1: Influencing Individual Citizens*. Institute for Transport Studies, University of Leeds, PPR004/06/33.

²¹⁶ Eagle et al. (2014). *Marketing Communications*. Routledge.

reducing KSIs. The campaigns themselves were also data led, with over 28,000 research interviews conducted. This research identified two key motivations for seatbelt non-wearing: firstly that the audience felt the decision not to wear a seat belt was an act of personal freedom and – secondly – that wearing a seat belt in the rear contributed towards physical and social exclusion from the social centre of the car – the front seats. Moreover, enforcement of the rear seat belt in particular was perceived as weak and inconsistent, helping the target audience rationalise back seat belt wearing as unnecessary and a personal choice.²¹⁷

Based on this research, four different advertisements were produced between 2001 and 2006, ‘No Seat Belt – No Excuse’, ‘Damage’, ‘Get it On’ and ‘Selfish’. They aimed to enforce social norms around wearing and position non-wearing as morally inexcusable.²¹⁸ ‘Selfish’ – which was aimed at parents – was designed to demonstrate the ‘immoral selfishness’ of not ensuring that children are properly restrained.²¹⁹

Subsequent evaluations of the campaigns found extremely high levels of awareness and ‘influenced me a lot’ scores five times higher than the norm for TV advertising. Amongst 16-34 year olds, strong disagreement with the statement ‘to wear a seatbelt or not is a personal choice because it does not affect other people’ increased by 54%, signalling attitudinal changes.²²⁰ Wearing rates also increased significantly after and during the campaigns, especially in the rear, and KSIs without seat belts fell by 29% in Northern Ireland and 46% in the Republic of Ireland, though causation cannot be asserted. A study has used public perception of the most influential factors in saving lives to calculate the proportion of benefits which can be attributed to different factors. Whilst this methodology is not the most robust, it did identify road safety TV advertisements as the most important factor.²²¹ The Irish seat belt campaigns demonstrate how thoroughly researched campaigns, with ongoing assessment, can contribute to driver behaviour change. These campaigns, along with the high levels of enforcement and introduction of penalty points systems in both countries appear to have contributed to higher wearing rates.

The joint Irish and Northern Irish campaigns demonstrate the efficacy of strategies which combine education with other interventions. However, for number of reasons, education campaigns on their own may not be effective at increasing wearing rates.

- The first is that, as stated by some behaviour change experts, education campaigns generally have educational outcomes, rather than behavioural ones.
- Secondly, education is often aimed at giving the public reasons to wear seat belts or removing reasons not to wear that the public give. This is problematic because it is very hard to know if reasons given by non-wearers in surveys or to the police are real motivating reasons or post-rationalisations of non-wearing behaviour.²²²
- Thirdly, there are many reasons why fear arousal is not an effective technique: there is strong evidence that behaviour is not product of emotion or even intention but rather of habit and other factors. Using fear as a motivator may also trigger resentment, suspicion or even be seen to be a challenge, particularly amongst young men (the group with highest non-wearing rates).²²³

²¹⁷ Baillie, B. (No date). *Public Services and Social Welfare: The Longer Term Effects of Seatbelt Advertising 2001-2007*.

²¹⁸ Eagle et al. (2014). *Marketing Communications*. Routledge.

²¹⁹ Baillie, B. (No date). *Public Services and Social Welfare: The Longer Term Effects of Seatbelt Advertising 2001-2007*.

²²⁰ Baillie, B. (No date). *Public Services and Social Welfare: The Longer Term Effects of Seatbelt Advertising 2001-2007*.

²²¹ Eagle et al. (2014). *Marketing Communications*. Routledge.

²²² Christmas, S., Young, D., Cuerden, R. (2008). *Strapping Yarns: Why People Do and Do Not Wear Seat Belts*. Road Safety Research Report 98, DfT.

²²³ Bonsall, P., Conner, M., Darnton, A. (2009). *Thinkpiece 1: Influencing Individual Citizens*. Institute for Transport Studies, University of Leeds, PPRO04/06/33.

- Finally, education is often aimed at increasing awareness of the safety benefits of seat belts and this is not sufficient to motivate all of the population to wear them.²²⁴ This may be because drivers separate themselves from the risks of driving i.e. they feel that they are a safe or good driver, will not crash, and messages on seat belt safety therefore do not apply to them.

6.3.2 Remedial training

Remedial training for seat belt offences as an alternative to fixed penalty notices has been offered since October 2012.²²⁵ When a driver or passenger is stopped for not wearing a seat belt they may be offered the option of paying to attend seat belt course in place of a FPN. Since 2012, 181,880 Your Belt Your Life courses have been delivered under the National Driver Offender Retraining Scheme (NDORS).²²⁶ Repeat offenders cannot attend a second course within three years. This means that most of the 181,880 will be different individuals.²²⁷ It has been suggested that take up of this course is low because penalty points cannot be issued for seat belt offences (in 2018 69% of those offered the course did complete it). Although the cost of attending a seat belt course is around £36,²²⁸ considerably less than the £100 FPN, for some the inconvenience of completing the course may make this unattractive. The incentive to opt for a course is greater from endorsable offences (such as speeding) as the driver avoids having points added to their licence.

Currently, in practice, 15, 16 and 17 year olds will often not receive penalties or attend courses, including drivers. Anyone over 14 is responsible for their own seat belt. However, Home Office guidance is that 15 to 17 year olds should not be given fixed penalty notices. Therefore to receive a penalty for non-wearing they would need to be summonsed. However, Home Office procedure is that, in seat belt cases, 15-17 year olds are not summonsed but cautioned. Cautions cannot be diverted to a course, and stay on an individual's permanent record. To avoid permanently placing a caution for not wearing a seat belt on a 15 to 17 year olds record, most police forces and officers will not prosecute them. This is particularly problematic as 15 to 17 year olds have low observed wearing rates, are at a key habit forming stage, and are the age group most liable to peer pressure. Reforms which allow 15 to 17 year olds to attend seat belt courses when they were not wearing a seat belt are needed. Penalty points could also be applied to the 'shadow licence' of young people who do not yet hold a licence.

The effectiveness of seat belt courses has not been assessed. There may be parallels with other courses and evidence from other driver behaviour courses such as the National Speed Awareness Course (NSAC), may be useful. NSAC aims to influence the attitudes and behaviour of drivers by challenging attitudes towards speed. An impact evaluation of NSAC conducted for the Department for Transport was published in 2018. The evaluation indicated that participation in the NSAC was more effective at reducing speeding reoffending than a FPN with three penalty points over a period of 3 years following the initial offer to attend (the data available did not allow an assessment beyond 3 years).

This evidence does not show that remedial courses for seat belt wearing would necessarily be effective, or more effective than penalty points. NSAC involves drivers only, whereas seat belt wearing is an issue for passengers too. However, the assessment does demonstrate that driver education courses, backed by the alternative of penalty points, can influence driver behaviour.

²²⁴ McGehee, D., Reyes, M., Marshall, D., Skinner, E., Lundell, J., Peek-Asa, C. (2014). *A comparative policy analysis of seat belt laws*. The University of Iowa.

²²⁵ DfT (2013). *Increasing Fine Levels for Certain Fixed Penalty Notices Motoring Offences. Impact Assessment Report*. DfT

²²⁶ NDORS. (No date). *Trends and Statistics*.

²²⁷ Pers. Comms. Jerry Moore, Chief Executive UKROEd.

²²⁸ Safer Essex Roads Partnership. (No date). *Your Belt/Your Life*.

Assessments have been conducted of other UK driver and rider education courses such as Rider Interventions Developing Experience (for motorcyclist)²²⁹ and the National Driver Alertness Course (for those who were driving without due care and attention).²³⁰ These assessments have found that the courses change attitudes. However, they did not assess behaviour change, rely on self-reported attitudes soon after taking the course and have smaller sample sizes.^{231, 232} Overall the evidence does suggest, though it does not prove, that well designed seat belt courses for offenders could increase wearing rates in the UK.

Seat belt courses for offenders, especially with reforms which would allow 15 to 17 year olds to attend, could play a role in increasing seat belt wearing. However, detailed assessment of the effects of courses such as 'Your Belt Your Life' and the new online courses of Spring 2019 should be undertaken.

6.3.3 Local authorities and education

The majority of local authorities which responded to PACTS research enquires run no or reduced interventions aimed to increase seat belt wearing. This was blamed on local budget constraints. Nevertheless, a range of interventions are still run. These often take place in schools and involve presentations, plays and demonstrations using seat belt sleds. Many are part of general primary school road safety interventions. Detailed studies have not been done of these interventions, though several before and after surveys (including up to 4 months after) have found positive effects on attitudes towards seat belt wearing. Interventions in primary schools include seat belt sleds (sleds which mimic a slow crash) and miniature sleds in which model families can be belted or unbelted to show the effects of seat belt wearing. There is very little evidence from Stats19 data of not wearing a seat belt being a problem for young children. There is also no evidence of exposure to limited road safety interventions when a young child having a lifelong effect. Therefore, these interventions do not seem to be targeted in such a way as to have the greatest effect on seat belt wearing.

Interventions also take place in secondary schools including interactive workshops, films and theatre tours. Some councils offer 'wear a seat belt' freebies to school children and carry out car safety checks, often in supermarket car parks. In Shropshire, interventions are targeted at specific psychological development states. Certain councils, such as Wigan, place an emphasis on social responsibility and seat belt wearing as well as on the dangers of non-wearing.

Some local authorities also conduct their own research to help target interventions and better understand seat belt non-wearing. Kent County Council, for example, conduct annual seat belt surveys. The Safer Essex Roads Partnership has conducted in depth analysis of who is overrepresented in casualty and seat belt offence statistics within Essex. Several local authorities have conducted research into the effectiveness of their interventions. Research such as seat belt surveys or analysis of Stats19 data can allow local authorities to more accurately target interventions and better understand the extent of the non-wearing problem in their jurisdictions. However, given current budget restraints, local authorities felt it is unlikely that many of their road safety teams would be able to fund this. Regular seat belt surveys by DfT, say every two years, and more detailed analysis of casualties not wearing a seat belt would assist local authorities in targeting their interventions more effectively.

Safe Drive Stay Alive (SDSA) was introduced in 2006 and has been seen by over 220,000 people.²³³ Some SDSA presentations discuss seat belts though this is often limited. SDSA largely focuses on young

²²⁹ Broughton, P., Burgess, C., Fylan, F., and Stradling, S. (2019). *Evaluation of the National RIDE Scheme*. Leeds Metropolitan University

²³⁰ Fylan, F., and Stadling, S. (2010). *Comparison of Driver Alertness and the National Driver Improvement Scheme*. ACPO

²³¹ Fylan, F., and Stadling, S. (2010). *Comparison of Driver Alertness and the National Driver Improvement Scheme*. ACPO

²³² Broughton, P., Burgess, C., Fylan, F., and Stradling, S. (2019). *Evaluation of the National RIDE Scheme*. Leeds Metropolitan University

²³³ Safe Drive Stay Alive. (No date). Safe Drive.

drivers, rather than passengers, and on crash causation. It also offers little advice on coping mechanisms. Analysis of SDSA finds no statistically significant effect of the programme on willingness not to wear a seat belt.²³⁴ Indeed, while some studies have found that SDSA changes attitudes towards some aspects of driving behaviour, others have found no change and there is no evidence that SDSA is effective at reducing collision risk.²³⁵ There is also a wide range of evidence that ‘blood and guts’ style campaigns, such as SDSA, do not change driver behaviour and can even encourage risk taking amongst some of the population particularly young men (half of SDSA’s audience).²³⁶ SDSA, or a similar intervention, would require significant changes to become effective in increasing seat belt wearing.

As recommended above in Section 6.3.1, there is a need to review the extent to which current road safety education initiatives give seat belt wearing due prominence.

Scope and target

Increased education could be targeted, catch all or both. Separate campaigns would be required but these could be complementary. National campaigns can attempt to affect all car users, whereas more targeted educational campaigns can attempt to change specific attitudes or to target particular groups or particular driving circumstances where seat belt non-wearing is known to be more of an issue.

Conclusion

This evidence suggests that education campaigns alone may not increase seat belt wearing rates. However, education can be important, particularly in combination with other interventions.²³⁷ Education can help create acceptance of enforcement or legislation changes and increase awareness of these interventions. When working in combination with other initiatives education can also help to change attitudes and encourage certain behaviours while legislative, technological or enforcement changes contribute a further ‘nudge’ to change and entrench habits.²³⁸

Well researched and planned education campaigns should be undertaken to reinforce the social norms of seat belt wearing while building public support for increased enforcement and penalties. Education methods must be based on sound principles of behaviour change and care should be taken with use of shock tactics. These campaigns need to target high risk groups whilst recognising that seat belt non-wearing continues throughout the whole UK population.

Summary of Pros and Cons

Education	
Pros	Consultation
Can help create public support for enforcement and other initiatives	It is unclear what has made certain education initiatives more successful
Some evidence of education increasing seat belt wearing, especially when in combination with other interventions	Little conclusive evidence of the effectiveness of previous THINK! campaigns or ‘Safe Drive Stay Alive’-style ‘blood and guts’ education
Driver education courses can be effective (though assessment is needed of seat belt courses)	

²³⁴ RSA, (2018). Safe Drive Stay Alive Evaluation. RSA

²³⁵ Dale, H., Scott, C., and Ozakinci, G. (2017). Safe Drive Stay Alive: exploring effectiveness of a real-world driving intervention for predrivers and the utility of the health action process approach. *Injury Prevention*, 23(2), 109-112

²³⁶ Bonsall, P., Conner, M., Darnton, A. (2009). *Thinkpiece 1: Influencing Individual Citizens*. Institute for Transport Studies, University of Leeds, PPRO04/06/33.

²³⁷ Uthman, A., Sinclair, M., Willems, B., Young, T. (2014). ‘Interventions to promote the use of seat belts.’ *Cochrane Database of Systematic Reviews*, 7. Art. No.: CD011218. DOI: 10.1002/14651858.CD011218.

²³⁸ DfT. (2012). *Government response to consultation on the treatment of careless driving penalties and other fixed motoring penalties*. DfT

6.4 Technology

6.4.1 Seat belt reminders

Seat belt reminders (SBRs) are devices that can detect the presence of a vehicle occupant and the status of the belt (whether it is or is not fastened). If an occupant is detected but the belt is not buckled in, the SBR usually gives an audible and/or visual reminder that the seat belt has not been fastened.²³⁹

In the UK, as a result of EU legislation, fitment of SBRs for the drivers' seats of all new cars has been compulsory since 2014. Seat belt reminders in other seating positions are not currently compulsory. However, this will change under the General Safety Regulation now approved by the EU, and that has become set to adopt updated UNECE regulations on seat belts in September 2019.

Since 2009 Euro NCAP has encouraged fitment of SBRs and has awarded vehicles with SBRs in all seating positions.

6.4.2 Effectiveness of seat belt reminders

Some of the first studies into the effectiveness of SBRs were carried out between 2000 and 2007 in the United States. Whilst small in scale, these gave evidence that enhanced SBRs could improve wearing rates of drivers by up to 6%.^{240 241 242} Since then, more comprehensive EU studies have concluded that fitment of SBRs can improve seat belt wearing rates by 8-10% and bring overall compliance up to 99% for drivers.²⁴³

In the case of seat belt reminder systems in the front and rear seating positions – which are not currently compulsory but are set to be – work has been done to assess the potential benefits of legislating for their fitment.

In 2014, TRL produced an impact assessment for the European Commission which made the case for the fitment of SBRs to all seating positions. The report found that with mandatory fitment of both front and rear seat belt reminders, UK wearing rates could reach 99% in the front passenger seat and 95.5% in the rear passenger seats by 2024.²⁴⁴

Similarly, TRL produced an in depth cost-effectiveness analysis of measures such as fitment of rear SBR's in 2017 for the EU Commission. As a conclusion to that report, TRL recommended the compulsory fitment of SBRs to all rear passenger seats.²⁴⁵

The EU is now set to adopt updated UNECE regulations on seatbelts in September 2019. These changes will mean new cars will have to be fitted with systems able to detect a passenger sitting on a seat, and give an audible warning at the start of the journey if the belt is not attached. Crucially however, these requirements will be for the front seats only. It will inevitably take some years before the majority of vehicles on the roads are fitted with these systems.

The requirements for rear seats, whilst welcome, are considerably weaker in that the proposed system will be a simpler form of reminder which does not use occupancy detection.

Instead, the driver will be given a visual warning if a seat belt is not fastened in the rear seats (for vehicles that have occupancy detection in the rear seats, the warning will not need to indicate

²³⁹ Institute for Road Safety, SVOW. (2014). SWOV Fact Sheet: Seat belt reminders.

²⁴⁰ Williams, A., Wells, K. & Farmer, C., 2002. Effectiveness of Ford's belt reminder system in increasing seat belt use. *Injury Prevention*, pp. 293-296.

²⁴¹ Ferguson, S., Wells, K. & Kirley, B., 2007. Effectiveness and Driver Acceptance of the Honda Belt Reminder Systems. *Traffic Injury Prevention*, pp. 123-129.

²⁴² Farmer, C., and Wells, J. (2010). Effect of enhanced seat belt reminders on driver fatality risk. *Journal of Safety Research*, 41(1), 53-57.

²⁴³ Lie, A., Krafft, M., Kullgren, A., and Tingvall, C. (2008). Intelligent Seat Belt Reminders—Do They Change Driver Seat Belt Use in Europe? *Traffic Injury Prevention*, 9(5), 446-449.

²⁴⁴ McCarthy, M., and Seidl, M. (2014). Client Project Report CPR1818: Benefit assessment for fitment of Seat Belt Reminder (SBR) systems to M1 passenger seat positions and to other vehicle types. TRL.

²⁴⁵ Hynd, D. et al (2015), *In depth cost-effectiveness analysis of the identified measures and features regarding the way forward for EU vehicle safety*. European Commission

unfastened seat belts in seating positions that are not occupied) and will be given an audible warning only if a rear seat belt is unbuckled whilst the vehicle is in operation.²⁴⁶

Whilst these changes in standards, – even without occupancy detection – will, according to TRL, undoubtedly have a positive effect on seat belt wearing, the lack of occupancy detection could be considered inhibiting.

Because of lack of more audible warnings and occupancy detection, how much motivation the system will provide for rear seat passengers to buckle up prior to beginning a journey is not clear. That said, and as highlighted by TRL, the changes will be superior to a scenario in which nothing is changed.

Overall however, given the lack of a standard to fit occupancy detection to all seats, it would seem as though there are still opportunities for improvement and that EURO NCAP should continue to incentivise manufacturers to develop vehicles with the most effective and comprehensive seat belt reminder systems.

6.4.3 Gearlocks and interlocks

Seat belt interlocks, which could be considered to be a more ‘intrusive’ type of seat belt reminder system, were introduced into the US in the 1970’s.

Interlocks were connected to both front seats so that the vehicle’s engine would not start unless all front seat occupants had their seat belts fastened. However, many consumers opposed the interlock because they believed that it infringed their personal freedom and reported difficulties experienced with the system (e.g. in emergency situations).²⁴⁷

In 1974 the US Congress withdrew the standard. As a consequence of this experience, recent seat belt reminder systems have tended to be less aggressive.²⁴⁸

A US research project in 2008 concluded that radio interlocks – that would prevent the car radio from working unless the seat belt was fastened – could be a highly effective means of improving seat belt wearing amongst young people. However, this type of interlock has never been mandated.

The Ford MyKey, which is technology that allows parental controls to be voluntarily added to vehicles, does however include such a feature. The ‘Belt-Minder’ feature, as well as providing a more persistent reminder chime, mutes the audio system until the vehicle’s front occupants fasten their safety belts, and displays guidance through the message centre informing occupants to “Buckle Up to Unmute Radio”.

6.4.4 Cheat devices

Even where SBR systems are capable of occupancy detection, evidence suggests serial non-wearers are capable of ‘overriding’ or ‘cheating’ the systems.

In interviews with senior police forensic collision investigators, it was explained that in some cases they find evidence of cheat devices being used. That is, they find the car occupant has either chosen to sit on their ‘buckled in’ seat belt, or that they have simply inserted a seat belt tongue (see the picture below) into the buckle to prevent the alarm sounding.²⁴⁹

²⁴⁶ Regulation No 16 of the Economic Commission for Europe of the United Nations (UNECE)

²⁴⁷ Janitzek, T., and Achterberg, F. (2006). *Seat Belt Reminders*. ETSC

²⁴⁸ Janitzek, T., and Achterberg, F. (2006). *Seat Belt Reminders*. ETSC

²⁴⁹ Pers.Coms. Police Forensic Collision Investigators

PACTS was not able to obtain data on the extent to which these devices are used. However, senior police forensic collision investigators suggested that from their experiences, the problem was “not uncommon”.²⁵⁰

6.4.5 Conclusion

Whilst seat belt reminders can help part-time users to develop habits of belt use, they are likely to have little effect on hardcore non-wearers who actively choose not to buckle up.²⁵¹

On balance, it therefore seems clear that whilst technology offers solutions when interventions to improve seat belt wearing are considered, it should not be exclusively relied upon given its potentially limited capacity to change the behaviour of all vehicle users.

Instead, it is likely that technological interventions will be wholly successful only if they are used in conjunction with a package of other actions that not only support large scale improvement in seat belt wearing, but also target the individuals that are unlikely to respond to technological changes alone.

Furthermore, Euro NCAP and others should continue to encourage manufacturers to develop additional voluntary safety features for new vehicles that could encourage seat belt wearing and improve the effectiveness of seat belts.

6.4.6 Opportunities from other innovations

In addition to the possible interventions discussed in previous sections, the design of the seat belt itself has also been considered as an area that has opportunities for development.

Though it is unlikely that improvements to the physical seat belt itself would improve wearing rates, there are existing innovations that have been proposed as a means of improving the effectiveness of seat belts.

The SENIORS (Safety-Enhancing Innovations for Older Road users) project, in which TRL was a partner, proposed and tested a four-point and split buckle belt (for details on split buckle belts see Appendix 5). Whilst findings of the tests suggested the belt could considerably reduce chest injury risk, there were concerns over its use and uptake.

UN Regulation 16 requires that a seat belt “... shall be capable of being released by the wearer with a single simple movement of one hand in one direction; in addition, [and with exceptions...] it shall also be capable of being engaged by the wearer with a simple movement of one hand in one direction.”²⁵²

This is not an issue with the split-buckle design, which would be used in the same way as a standard 3-point seat belt. Indeed the wearer may be unaware that the belt was of an improved design unless they were involved in a collision.

That said, further work may be required to establish a legal basis – and user acceptance – of the 4-point seat belt. There is a concern that complex seat belt systems which can increase seat belt effectiveness may reduce wearing rates by many occupants if they are not associated with clear benefits for the wearer and are not able to be fitted and removed easily.

Inflatable seat belts have also been developed in the past. In 2011, Ford introduced a model which had inflatable seat belts in the rear passenger seats, which would inflate in the event of an impact

²⁵⁰ Pers.Coms. Police Forensic Collision Investigators

²⁵¹ Janitzek, T., and Achterberg, F. (2006). *Seat Belt Reminders*. ETSC

²⁵² UN. (2018). *Agreement Concerning the Adoption of Harmonized Technical United Nations Regulations for Wheeled Vehicles, Equipment and Parts which can be Fitted and/or be Used on Wheeled Vehicles and the Conditions for Reciprocal Recognition of Approvals Granted on the Basis of these United Nations Regulations. Addendum 15: UN Regulation No. 16 Revision 9*

(Image 2). Ford claimed that this technology was designed to reduce the likelihood of injury by reducing pressure on the chest and better controlling head and neck movement.²⁵³



Image 2: Ford's Inflatable Seat Belt

These technological innovations if they were further developed and implemented, however, could only potentially offer improvements in seat belt efficacy, and not necessarily in the improvement of wearing rates.

Summary of Pros and Cons

Technology	
Pros	Cons
Strong evidence of the effectiveness of SBRs in increasing wearing rates	Intrusive interventions may create resentment and be overcome
Far reaching intervention which affects all new vehicles	Tech interventions may be countered with 'cheat devices' by committed non-users
Does not require ongoing public sector efforts or investments	Changes will take time to penetrate the vehicle fleet
Is partially effective without other interventions	

²⁵³ Ford (no date). Rear Inflatable Seatbelt

6.5 Driver insurance

Insurance companies may be able to support efforts to increase seat belt wearing. Possible actions and their potential effectiveness are discussed below.

6.5.1 Better information for insurers to identify risky drivers

As well as the increased risk of injury or death, it is known that drivers who do not wear a seat belt are more likely to engage in other risk-taking behaviours. 'Occupants who display risk-taking or illegal behaviour seem less likely to wear a seat belt'.²⁵⁴

Identification of risky driving behaviour is a factor for insurers when pricing their policies, as well as a public policy justification for a more robust criminal justice approach to seat belt wearing.

At present insurers look to identify a customer's risk profile in part through questions asked before an insurance policy is taken out or renewed. These include questions about convictions or offences committed, and vary between insurers with not all asking about fixed penalties. Whether the specific sanction is identified by the insurer depends on the wording of questions asked, and the honesty of the customers in replying.

Consequently, insurers are less likely find out if a customer has been sanctioned by the police for not wearing a seat belt, receiving a fine or attending an NDORS seat belt course. As such, it might not be recorded and the indication of risk taking behaviour would be missed.

Work is ongoing between the Driver & Vehicle Licensing Agency (DVLA) and the Motor Insurers Bureau (MIB) to support the better sharing of conviction and penalty point data with insurers through the MyLicence scheme.²⁵⁵ However, this is voluntary and wouldn't pick up FPNs which would be the standard sanction for not wearing a seatbelt at present.

If not wearing a seat belt became an endorsable offence, this would help insurers identify riskier drivers when policies are taken out or renewed, and charge them premiums that reflect that risk. This, together with the more severe legal sanction, could potentially help deter such behaviour in future.

6.5.2 Information to customers

Insurers already undertake a range of information and media activities to encourage safe driving. The importance of seat belt wearing could be given greater prominence.

Whilst not directly linked to increasing insurance costs, an additional point concerns the impact on a personal injury claim. In not at fault accidents, where the driver or adult passengers fail to wear a seat belt and this either causes their injuries, or injuries would have been significantly reduced as a result of wearing a seat belt, courts can reduce the compensation individuals would otherwise have received, sometimes by up to 25%.

Overall, it seems unlikely that, on its own, this would have much effect on seat belt wearing, but it might be a useful additional argument in a broader set of messages.

²⁵⁴ Christmas, S., Young, D., Cuerden, R. (2008). *Strapping Yarns: Why People Do and Do Not Wear Seat Belts*. Road Safety Research Report 98, DfT

²⁵⁵ MyLicence. (no date). Driving Licence Number/MyLicence Number

6.5.3 Telematics and cameras

A small but slowly increasing number of insurance policies, mainly but not exclusively for young and novice drivers, include the use of telematics which monitors key attributes of the driver's behaviour, such as speed, and provides a score and feedback to the policy holder. There is, in theory, the capacity to link the more sophisticated telematics systems which connect to the vehicle monitoring systems to detectors of seat belt non-use, at least for the driver.

In practice, it may be difficult due to the different car systems and it would not be feasible for mobile phone-based telematics. It works only in newer vehicles and would not benefit drivers of older vehicles. As such, the application and potential benefits appear limited.

Some insurance policies now use dash cams as well as telematics. Dash cams which include in-ward facing cameras may be able to more accurately detect seat belt wearing in a range of vehicles. These might be unattractive to the private motorist but may be more viable for fleet insurance.

7 Increasing wearing rates and reducing casualties

The most recent and comprehensive study of the effectiveness of seat belts found that they reduce both fatal and non-fatal injuries by 60% amongst front seat passengers and by 44% among rear seat passengers. Seat belt wearing by those in the rear also halves the fatality risk among belted front seat occupants compared with when those in the rear are unbelted.²⁵⁶

Published in 2016, a paper by Hoyer predicts the effect on KSIs of increasing wearing rates in Norway. Norway has a front seat wearing rate of 96.6% in light vehicles, slightly higher than Great Britain's. The rate is not known for rear seats in Norway. 21.4% of drivers who died in Norway are unbelted, the equivalent figure for drivers in the UK is 25.1%. Hoyer predicts that if seat belt wearing rates reached 100% in Norway, KSIs would be reduced by 20%. She also makes a calculation based on unbelted driver fatalities being 25% (the same percentage as the UK).²⁵⁷ This calculation predicts a 24% reduction in front seat KSIs. Predictions of reductions in KSIs at various wearing rates can be seen in Figure 24 (the different lines show the differing effect of differentiated crash risk being accounted for – 'diff. crash risk' vs 'same crash risk' – and the differing effect if the percentage of drivers who died when not wearing a seat belt is 21.4% – 'crash risk 1' – or, as in the UK, 25% – 'crash risk 2'). The rate of KSI reduction increasing when seat belt wearing increases is because Hoyer accounts for differentiated crash risk. This accounts for associations between seat belt non-wearing, drink and drug driving, more aggressive driving generally etc. which leads to a relatively greater likelihood of non-belted drivers being involved in both crashes and more dangerous crashes. Accounting for crash risk increases the rate at which KSIs are reduced as seat belt wearing increases. This is because the relative crash risk for unbelted drivers increases at increasing levels of seat belt wearing (essentially those who continue not wear to as overall wearing increases are increasingly dangerous drivers compared to those who are wearing).^{258 259}

There is a clear link between seat belt wearing rates and KSIs. It is therefore reasonable to assume that interventions which increase the wearing rate would reduce KSIs if all non-seat belt related influences on KSIs stayed the same.

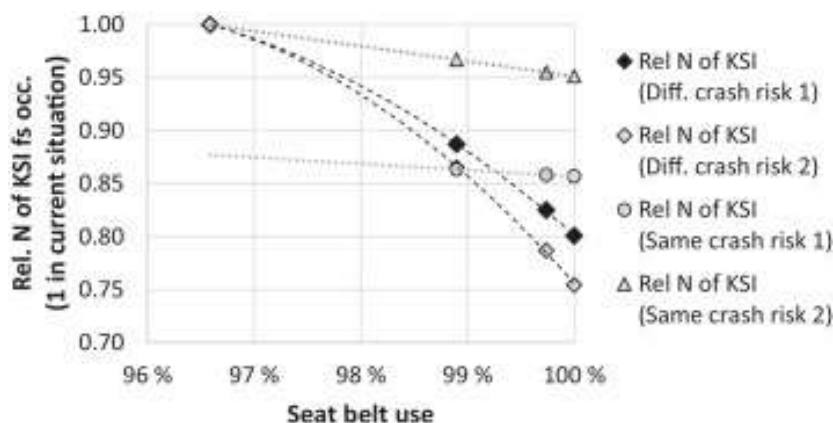


Figure 24: Effect of increasing wearing rates on casualties

²⁵⁶ Hoyer, A. (2016). 'How would increasing seat belt use affect the number of killed or seriously injured light vehicle occupants?' *Accident Analysis and Prevention*, 88(1), 175-186.

²⁵⁷ This calculation is made to account for the possibility of underreporting of seat belt non-use

²⁵⁸ This may also explain why the 27% figure (27% of those who died in car collisions in 2017 were not wearing a seat belt) is seemingly so high

²⁵⁹ Hoyer, A. (2016). 'How would increasing seat belt use affect the number of killed or seriously injured light vehicle occupants?' *Accident Analysis and Prevention*, 88(1), 175-186.

8 Data improvements and further research

Stats19 and casualty data

Stats19 reports for KSI collisions provide key insights into a significant influence in the number of people who are killed and seriously injured on UK roads. It can also help guide policy by identifying an area where interventions may be able to make a significant impact on KSI numbers. The DfT should continue to require the collection of seat belt status data for all KSIs.

It is possible that data from slight injuries is less likely to be reliable and accurate because of the comparatively high uncertainty of whether the seat belt was worn. This is because in slight injuries there may be little or no physical evidence of seat belt wearing or non-wearing. Police officers at the scene may therefore have to rely on the testimonies of those who were injured, which is unlikely to be accurate, or record seat belt status as unknown in a large number of cases. There may be some uncertainty with the less severe serious injuries, so a (lesser) percentage of casualties having seat belt status recorded as unknown is to be expected. However, if seat belt status can in fact be recorded with a reasonable degree of accuracy and for a reasonable number of cases it should be included. DfT should also offer clarity, both to police officers and those working with the data on the definition of 'worn but not independently confirmed' and the evidence needed to classify seat belt status as 'worn but not independently confirmed' rather than as 'unknown.' These issues should also be addressed in the current review by Standing Committee on Road Safety Statistics – the 'SCRAS review'.

It is clear that Police Forensic Collision Investigators have, potentially, a major role to play in understanding the factors involved in fatal and very serious casualties. They have detailed and reliable data on road deaths and are a resource the wider road safety community should utilise more. For example, the Staffordshire and West Midlands Serious Collision Investigation Unit investigated 114 fatalities in 2017, and seat belt wearing was known in 107 cases, 94% of the total. By contrast seat belt status was recorded in 52% of Stats19 records nationally. It is possible that the RAC Foundation/DfT Road Collision Investigation Project may address this. However, in the short term, a key improvement would be for Police Forensic Collision Investigators (PFCIs) to check the information in the Stats19 for cases they investigate. PFCIs investigate almost every fatality and many of the most serious injury accidents. They are able to tell with near certainty in most cases of fatalities and serious injuries whether a seat belt was worn. However, with a few exceptions, PFCIs are generally not consulted on Stats19. Stats19 forms are generally filled out by the officer who first attends the collision scene, without specific training. Consequently, the detailed and accurate data collected by PFCIs goes unused and often remains only in the police forces files. It is possible that the new CRASH app for Forensic Collision Investigators could include a function to allow PFCIs to feed into STATS19 or at the least provide a resource for collecting and pooling data on a single system. Allowing PFCIs to feed their information into Stats19 would produce more reliable and detailed data, beyond seat belts, reducing uncertainty and the number of records where seat belt status is unknown. This could be applied to other entries on the Stats19 form where the specialist knowledge of the PFCIs would improve data accuracy.

Police forces should be required to collect information on seatbelt wearing for all KSIs. DfT should continue to collate data on seat belt wearing in KSI collisions. Police Forensic Collision Investigators should be encouraged and enabled to feed their knowledge into Stats19. This principle could be applied more widely beyond seat belts.

It is also possible that data for seat belt status will be more readily available following the requirement of event data recorders (EDRs) in revised EU Vehicle General Safety Regulations. While the precise regulation is yet to be written, EDRs will record the seat belt status of car occupants.

Analysis of casualty data

Research should strive to understand what influences non-wearing and who is not wearing and where. **Further analysis should be undertaken into the profile of non-wearers and into collisions in which those who were killed and seriously injured were not wearing a seat belt. This should be a covariate analysis which controls for the effects of other influences** (such as variation in road user profiles when analysing time of day of collisions).

Currently the annual DfT publication *Reported Road Casualties Great Britain* contains only one line on seat-belt wearing and KSIs (the percentage of car occupant fatalities not wearing a seat belt). DfT should undertake and publish a more detailed breakdown of seatbelt non-wearing in KSIs. In particular, publication of figures for unbelted KSIs broken down by age group, road speed limit and IMD decile would provide useful information for road safety analysts and those designing interventions.

Detailed data on seat belt misuse (including the wearing of seat belt cheat devices and incorrectly worn seat belts) is available on a limited number of cases through the Road Accident In-Depth Study (RAIDS) project, though PACTS was unable to obtain this. The number of cases is limited because of RAIDS' scope. However, techniques are available to give a nationally representative figure. In depth analysis of information on seat belt misuse available in RAIDS should be conducted to give a better picture of the extent to which cheat devices and misuse is a problem. RAIDS could also provide researchers with an alternative figure for the percentage of fatalities in which seat belts are not worn to help assess the validity and reliability of the figure published in *Reported Road Casualties Great Britain*. However, as with other crime intelligence it may not be advisable to publish it.

Care should be taken in all publications to stress the positive, and to emphasise that seat belt wearing is the social norm, that non-wearing is highly unusual and that it may have serious consequences.

Fixed penalty notice recording

Proposed reforms to Home Office data systems to record FPNs better would be beneficial. Currently, those who attend the Your Belt Your Life course, and therefore do not receive a fine, are not recorded in *Police Powers and Procedures England and Wales* statistics. This is because the Home Office PentiP system cannot process non-endorsable course offers. When someone is offered a course the FPN is 'suspended' and then 'cancelled' if the training is completed. In practice, this means the Home Office has been under recording 'Seat belt offences resulting in FPNs, driver retraining or court action' by 30,000-40,000 offences per year since 2012. The PentiP system is being enhanced in May 2019 to process these course offers properly.²⁶⁰ Ideally the data would be retrospectively amended, or if this is not possible, the change should be made clear in Home Office statistics.

Seat belt surveys and survey techniques

The current ad hoc nature and frequency of seat belt surveys may miss potentially important changes in wearing rates. PACTS recommended in its 2018 report on road safety indicators, that seat belt surveys take place at least every two years.²⁶¹ **DfT should continue to commission observational seat**

²⁶⁰ Pers.Comms NDORS, Moore, J., Cole, S.

²⁶¹ Etika, A. (2018). *Developing safe system road safety indicators for the UK*. PACTS.

belt wearing surveys, at least every two years, and look at ways to improve their methodology, particularly using new technology.

Observational seat belt surveys using camera technology may be comparatively cost effective and produce more accurate results. The results may be more accurate for a number of reasons. Firstly, vehicles could be surveyed when moving whereas only stationary cars can currently be surveyed. Secondly, current techniques where surveyors stand at the side of the road in high vis-clothing may lead to car users seeing the observer and putting a seat belt on for fear of receiving a penalty.

While changes to the methodology of such a long running survey may be problematic because of loss of comparability, the value of increased accuracy, comprehensiveness, etc. might be greater. If changes to legislation which governs seat belt wearing are made, there will be an even greater need for continued, regular seat belt wearing surveys to assess the impact of changes.

As well as conventional behavioural surveying, surveys of driver attitudes towards seat belt wearing should be undertaken, such as the Scottish Road Safety Tracking Survey (RITS) or the Kent seat belt survey. This type of survey may be able to give more detailed demographic information than the current physical seat belt survey. DfT plans to include questions on attitudes towards seat belt in the National Travel Survey and the Crime Survey for England and Wales. Both of these would be positive steps. However, a new survey which was specific to transport users' attitudes, such as RITS, would allow for a more nuanced understanding of seat belt wearing (and much else besides) and provide more useful information to help increase seat belt wearing.

DfT should undertake regular surveys of driver attitudes towards seat belt wearing, ideally as part of a broader survey of car-user attitudes towards road safety.

Reasons for not wearing

From the available evidence on reasons for seat belt non-wearing it is not possible to suggest which societal groups are influenced by which reasons or, indeed, if there are differences across societal groups. A cultural analysis of the influences on seat belt non-wearing may be able to fill this gap and enable more effective targeting of interventions.

Intervention assessment

All new seat belt interventions should be continually assessed to enable the wider road safety community to identify which are effective and could be employed further, to avoid continuing to fund ineffective interventions and to avoid wasting opportunities for learning. NDORS should evaluate the 'Your Belt Your Life' course and its successor to understand the effectiveness of remedial courses for seat belt non-wearing.

Police forces should be required to continue to collect information on seatbelt wearing for all KSIs in Stats19 reports. Where a police forensic collision investigation has been undertaken, the investigators review the Stats19 data. This principle could be applied more widely beyond seat belts.

9 Recommendations

Seat belt wearing is the norm for the vast majority of vehicle occupants in the UK. However, the evidence in this report shows that the failure of a small percentage of vehicle occupants to wear a seat belt is linked to a high and disproportionate number of casualties.

It is evident that promoting seat belt wearing has not had sufficient attention in recent years. It needs to be given a higher priority in road safety activity once again. Practical and effective interventions are available but greater understanding is needed of how best to make use of them.

Increasing seat belt wearing would not reduce the number of collisions which occur. However, it would likely lead to a significant reduction of both fatalities and serious injuries.

To increase seat belt wearing and to reduce the associated casualties, PACTS recommends the following:

General

- Strong steps should be taken to increase seat belt wearing. This should take the form of a cohesive campaign which combines amplified, better designed education; stronger, disincentivising penalties; increased, targeted enforcement and effective technological interventions.
- The road safety profession needs to be more aware of the importance of seat belt wearing and the significant impact increased wearing rates could have on KSIs. A focus on avoiding collisions can distract from the importance of preventing serious injury.

Penalties

- Not wearing a seat belt should be made an endorsable offence, with three penalty points issued for not wearing a seat belt.

Enforcement

- Enforcement of the seat belt law should be significantly enhanced through intelligence led, targeted measures. The profile of enforcement and the perceived likelihood of being caught should be raised.
- Camera technology has great enforcement potential. It should be developed further and its use expanded. Clarity should be offered to all police forces on image quality needed for prosecutions.

Education

- Existing road safety education activities should be reviewed to see if seat belt wearing is given due prominence.
- Well researched and planned education campaigns should be undertaken to reinforce the social norms of seat belt wearing while building public support for increased enforcement and penalties. Education methods must be based on sound principles of behaviour change and care should be taken with use of shock tactics. These campaigns need to target high risk groups whilst recognising that seat belt non-wearing continues throughout the whole UK population.

Technology

- Euro NCAP and others should continue to encourage manufacturers to develop additional voluntary safety features for new vehicles that could encourage seat belt wearing and improve the effectiveness of seat belts.

Data and research

- Police forces should be required to continue to collect information on seat belt wearing for all KSIs in Stats19 reports. Where a police forensic collision investigation has been undertaken, the investigators review the Stats19 data. This principle should apply to seat belt wearing and could be applied more widely.
- DfT should continue to commission observational seat belt wearing surveys, at least every two years, and look at ways to improve the methodology, particularly using new technology.
- DfT should undertake regular surveys of driver attitudes towards seat belt wearing, ideally as part of a broader survey of car-user attitudes towards road safety.
- Further analysis should be undertaken of the profile of non-wearers and of collisions in which those who were killed and seriously injured were not wearing a seat belt. This should include covariate analysis which controls for the effects of other influences while recognising the limitations imposed by limited recording of wearing or otherwise of seat belts.

Glossary

3-Point Seat Belt – A ‘conventional’ seat belt which is anchored to the vehicle in three places

4-Point Seat Belt – A seat belt of various forms which is anchored to the vehicle in four places

Contributory Factors (CF) – Noted by police officers on Stats19 forms, contributory factors provide some insight into why and how road accidents occur. They are designed to give the key actions and failures that led directly to the actual impact to aid investigation of how accidents might be prevented. When police officers attend the scene of an accident, they are able to select up to six factors they believe contributed to the accident (for each vehicle involved).

Differentiated Crash Risk – The concept that certain groups of the population (such as seat belt non-wearers) have a different likelihood of crashing and different likelihood of different severity crashes than the other groups of the population

Electronic Data Recorder (EDR) – A system which record information about a vehicle such as speed and seat belt status in the lead up to and event of a crash

Endorsable Offence – A road traffic offence for which penalty points can be issued

Fixed Penalty Notice (FPN) – A type of penalty which allows police officers and certain public officials to issue a set penalty charge for certain offences. Accepting an FPN discharges the recipient’s liability for that offence.

Index of Multiple Deprivation (IMD) – The official measure of relative deprivation of small areas in England where every small areas is ranked from 1 (most deprived area) to 32844 (least deprived area)

Interlock (including passive) – A vehicle feature which prevents the vehicle from starting unless seat belts are buckled. Passive interlocks prevent other vehicle functions from occurring unless seat belts are buckled, such as stopping the radio from being turned on.

Killed and Seriously Injured (KSI) – Killed or seriously injured casualties - a shorthand for those who die within 30 days of a collision, as a result of that collision, and those who are seriously injured. A serious injury is defined by the Department for Transport as “an injury for which a person is detained in hospital as an ‘in-patient’, or any of the following injuries whether or not they are detained in hospital: fractures, concussion, internal injuries, crushings, burns (excluding friction burns), severe cuts, severe general shock requiring medical treatment and injuries causing death 30 or more days after the accident. An injured casualty is recorded as seriously or slightly injured by the police on the basis of information available within a short time of the accident. This generally will not reflect the results of a medical examination, but may be influenced according to whether the casualty is hospitalised or not. Hospitalisation procedures will vary regionally.”

Load Limiter – a device which releases a length of belt fabric when a large amount of force is being applied to the belt, reducing the force applied to the occupant

Mosaic – A socio-demographic classification tool for the United Kingdom. It categorises citizens and their needs in terms of demographics, lifestyle, culture and behaviour. In Mosaic, the population is broken down into 15 groups, represented as group A to O. Examples include Group L: ‘Transient Renters’, who are described as single people privately renting low cost homes for the short term. See Appendix 8 for definitions of all groups.

Occupancy Detection – An in-car system which detects if a weight is present on a seat to determine whether or not it is being occupied.

Penalty Points System (PPS) – A system where members of the public can have points either placed on or removed from their driving licence if they break motoring law. Having a defined number of points on their licence may result in disqualification.

Police Forensic Collision Investigators – Specially trained police officers who investigate most fatal collisions and the most serious non-fatal collisions

Pretensioner – A device which, when a collision has been detected, retracts the seat belt fabric to remove slack from the belt and hold users securely in space.

Road Accident In-Depth Study (RAIDS) – A project, now conducted by TRL, which collects detailed information at the scene of road collisions and gathers data from retrospective investigations of accidents.

RITS – The Road Safety Information Tracking Study which is run annually by Transport Scotland. It is a survey of the public's attitudes towards various aspects of road safety, including seat belt wearing

Seat Belt Reminder (SBR) – A system which emits a warning – typically noise, light or both – when a seat belt is not 'clicked in' and the car is turned on

Split Buckle Seat Belt – A type of seat belt where the belt is only 'clicked in' to one belt, but in the event of the crash the shoulder belt moves reducing the forces applied to a wearer's lower chest

Stats19 – The system by which police officers record and report information about a collision

Appendix 1: Advisory panel and consultees

David Hynd (TRL), Dean Hatton (NPCC), Deirdre O'Reilly (Highways England), Delphine Robineau (DfT), Catherine Mottram (DfT), Pippa Brown (DfT), Darren Freezor (DfT), Jim Hand (DfT), Pauline Reeves (DfT), William Sherlock (Direct Line Group), Bertrand Deiss (Transport Scotland), Natalie Grohmann (Welsh Government), Liz Loughran (Department for Infrastructure, Northern Ireland), Richard Auty (Metropolitan Police), Jolyon Carroll (TRL), Emma Cava (Direct Line Group), Andrew Ford (Oxfordshire Fire and Rescue), Anthony Christie (Transport Scotland), John Saunders (Direct Line Group), Claire Corbett (Brunel University), Pete Thomas (Loughborough University), Frances Senior (NPCC), Joe Stordy (TfL), Helen Wells (Keele University), Rachel Talbot (Loughborough University), Russell Whitehouse (FirstCar), Becky Thomas (DVSA), Richard Storrs (FirstCar), Nick Kell (Direct Line Group), Dave Jones (NPCC), and Adam Barrow (TRL).

Appendix 2: Interviewees

- Barry Sheerman MP
- Jeanne Breen OBE
- Deirdre O'Reilly
- Heather Ward
- Richard Auty
- Group of Police Forensic Collision Investigators

Appendix 3: Search terms

Searches were made for 'seat belt interventions' (12,631 expanded results), 'behavioural determinants of seat belt use' (4,392 results), 'seat belt use' (87,723 results), 'demographics of seat belt' (9,026 results), 'seat belt wearing' (32,784 results), 'seat belt penalty point' (7,889 results), 'effect of education road safety' (367,222 expanded results), and 'seat belt enforcement' (16,404 results). Number of results returned is from ProQuest. Other more specific searches were made throughout the research process.

Appendix 4: Evidence prioritisation

Evidence has been prioritised based on relevance to the current situation regarding seat belt wearing in the UK. The most recent research was given highest priority. This is because the context in which older evidence (often from earlier seat belt debates in the 1970s and 1980s) was collected may have been different with seat belt technology subsequently having developed and wearing rates having significantly increased. Evidence has been primarily drawn from the UK and other countries with similar seat belt laws and seat belt wearing rates (in practice those in northern and central Europe, plus Australia and New Zealand). This is because evidence from similar contexts is likely to be more applicable to the UK. Where wearing rates or seat belt laws are different, it is likely that different groups will not be wearing seat belts and the effectiveness of interventions in increasing wearing rates may differ.

Appendix 5: Split buckle seat belts

A split buckle system consists of one buckle which splits in a crash. A seat belt wearer 'clicks in' in the same way as with a conventional 3-points belt, and both the lap and diagonal belt are pretensioned by moving the buckle downwards. In a crash, the lower point of the diagonal belt moves forward, while the lap belt remains at the initial location. Moving the diagonal belt forward reduces load on the lower part of the chest and chest deflection is also reduced.²⁶²

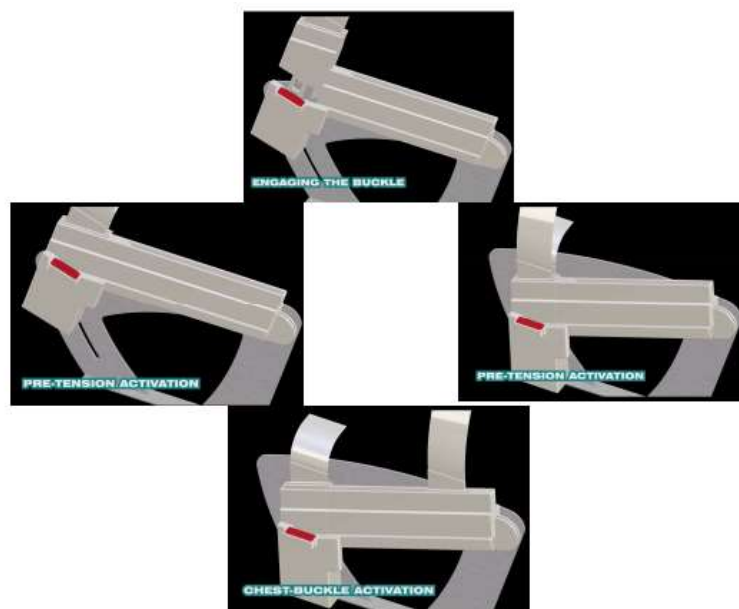


Figure 25: Split Buckle Activation

Appendix 6: Local authorities contacted

The following local authorities and partners responded to PACTS inquiries on seat belt campaigns, interventions and research conducted within the authority: Northamptonshire County Council; Mid and West Wales Fire and Rescue Service; Buckinghamshire County Council; Norfolk County Council; Shropshire Council; Essex Safer Roads Partnership; Road Safety Wales; South Wales Police; Blaenau-Gwent Council; Conwy Council; ROSPA Wales; Medway Council; Wigan Council; Hampshire County Council; Hartlepool Council; Walsall Council; Birmingham City Council; Lancashire County Council; West Dunbarton Council; Bristol Council; East Riding Council; Kent County Council; Cumbria Road Safety Partnership; Newcastle City Council; Peterborough Council; Coventry Council; Edinburgh City Council; Suffolk Highways; Cumbria Council; Argyle and Bute Council; Brighton and Hove Council; Oxfordshire County Council; and Transport for Greater Manchester.

²⁶² Pipkorn, B. et al (2016). 'Assessment of an innovative seat belt with independent control of the shoulder and lap portions using THOR tests, the THUMS model, and PMHS tests.' *Traffic Injury Prevention*, 17:sup1, 124-130. Pipkorn et al (No Date). *Innovative Seat Belt System for Reduced Chest Deflection*. NHTSA.

Appendix 7: Data tables

Data from Stats19 unless otherwise noted.

Unbelted KSIs by Gender and Age Group						
Age Band	Male KSIs	Female KSIs	Combined KSIs	% of Male KSIs who were not wearing a seat belt	% of Female KSIs who were not wearing a seat belt	% of KSIs who were not wearing a seat belt
0-15	40	41	81	11.90	11.45	11.67
16-25	483	182	665	19.47	11.60	16.42
26-35	349	79	428	21.70	7.49	16.07
36-45	162	48	210	14.84	6	11.10
46-55	115	45	160	11.33	4.95	8.31
56-65	70	48	118	9.05	5.955	7.47
66-75	49	31	80	7.28	3.81	5.38
75+	62	50	112	7.01	5.01	5.95
Total	1330	524	1854	15.02	7.17	11.5

Unbelted Fatalities by Gender and Age Group						
Age Band	Male fatalities	Female fatalities	Combined fatalities	% of Male fatalities who were not wearing a seat belt	% of Female fatalities who were not wearing a seat belt	% of fatalities who were not wearing a seat belt
0-15	1	4	5	4.76	18.18	11.62
16-25	106	32	138	31.73	26.66	30.39
26-35	69	10	79	34.5	17.24	30.62
36-45	32	7	39	24.80	15.90	22.54
46-55	29	5	34	24.57	10.20	20.35
56-65	18	5	23	21.42	9.43	16.78
66-75	14	9	23	17.5	11.39	14.46
75+	22	12	34	13.58	8.45	11.18
Total	291	84	375	25.80	14.81	22.1

Table 1 and 2: Gender and Age Group

Unbelted Fatalities by Seating Position and Gender						
Seating Position	Male fatalities	Female fatalities	Combined fatalities	% of Male fatalities who were not wearing a seat belt	% of Female fatalities who were not wearing a seat belt	% of fatalities who were not wearing a seat belt
Drivers Seat	230	34	264	25.8	11.4	22.24
Passenger Seats	61	50	111	25.6	18.4	21.85

Unbelted KSIs by Seating Position and Gender						
Seating Position	Male KSIs	Female KSIs	Combined KSIs	% of Male KSIs who were not wearing a seat belt	% of Female KSIs who were not wearing a seat belt	% of KSIs who were not wearing a seat belt
Drivers Seat	918	189	1107	13.5	4.5	10.11
Passenger Seats	418	337	755	19.8	10.6	14.26

Table 3 and 4: Gender and Seating Position

Unbelted KSIs by IMD Decile		
IMD Decile	Unbelted KSIs	% of KSIs who were not wearing a seat belt
1	220	18.19
2	166	14.54
3	190	15.65
4	156	10.73
5	166	10.77
6	119	7.60
7	152	8.98
8	160	9.88
9	141	9.72
10	100	8.45

Table 5: IMD Decile

Seat Belts: The Forgotten Road Safety Priority

Unbelted KSIs by Mosaic Group			
Mosaic Group	Unbelted KSIs	% of total unbelted KSIs in this group	% of total households in this group
A	147	9.44%	7.68%
B	71	4.56%	7.27%
C	14	0.90%	1.10%
D	80	5.14%	8.45%
E	73	4.69%	6.80%
F	91	5.84%	8.60%
G	180	11.56%	8.10%
H	135	8.67%	10.10%
I	99	6.36%	2.96%
J	78	5.01%	6.34%
K	94	6.04%	5.68%
L	118	7.58%	6.71%
M	188	12.07%	8.44%
N	91	5.84%	6.75%
O	98	6.29%	5.01%

Table 6: Mosaic Group

Unbelted Fatalities by Time of Day			Unbelted KSIs by Time of Day		
Hour of crash	Unbelted fatalities	% of fatalities who were not wearing a seat belt	Hour of crash	Unbelted KSIs	% of KSIs who were not wearing a seat belt
Midnight	29	46.0%	Midnight	103	25.2%
1	12	34.3%	1	82	26.7%
2	17	45.9%	2	76	31.3%
3	16	39.0%	3	69	30.8%
4	9	26.5%	4	53	27.3%
5	15	32.6%	5	62	23.6%
6	16	29.6%	6	63	15.0%
7	11	15.9%	7	57	9.7%
8	8	13.1%	8	48	6.4%
9	7	14.9%	9	51	8.2%
10	14	20.6%	10	61	8.9%
11	19	21.1%	11	58	7.3%
12	12	16.7%	12	71	8.3%
13	5	6.2%	13	58	6.0%
14	13	12.9%	14	70	7.0%
15	12	10.3%	15	83	7.0%
16	16	12.5%	16	81	6.3%
17	22	22.7%	17	100	7.9%
18	14	15.7%	18	78	8.3%
19	22	26.5%	19	98	11.8%
20	15	23.4%	20	89	13.6%
21	18	28.1%	21	104	17.2%
22	29	34.1%	22	123	19.3%
23	24	34.8%	23	124	23.9%
Grand Total	375	22.1%	Grand Total	1862	11.5%

Table 7 and 8: Time of Day

Seat Belts: The Forgotten Road Safety Priority

Unbelted Fatalities by Road Type		
Road Type	Unbelted fatalities	% of fatalities who were not wearing a seat belt
Motorway	31	30.1%
A	179	17.4%
B	59	26.0%
Unclassified	106	31.6%
Grand Total	375	22.1%

Unbelted KSIs by Road Type		
Road Type	Unbelted KSIs	% of KSIs who were not wearing a seat belt
Motorway	102	12.9%
A	771	9.1%
B	240	9.4%
Unclassified	749	17%
Grand Total	1862	11.5%

Table 9 and 10: Road Type

Unbelted Fatalities by Road Speed Limit		
Road Speed Limit	Unbelted fatalities	% of fatalities who were not wearing a seat belt
20	6	60.0%
30	81	39.1%
40	32	22.5%
50	22	15.8%
60	177	18.9%
70	57	22.0%
Grand Total	375	22.1%

Unbelted KSIs by Road Speed Limit		
Road Speed Limit	Unbelted KSIs	% of KSIs who were not wearing a seat belt
20	28	23.0%
30	678	16.5%
40	172	10.8%
50	102	8.9%
60	674	9.3%
70	208	10.4%
Grand Total	1862	11.5%

Table 11 and 12: Speed Limit

Seat Belts: The Forgotten Road Safety Priority

Unbelted KSIs by Vehicle Age		
Vehicle Age	Unbelted KSIs	% of KSIs who were not wearing a seat belt
1	57	6.4%
2	49	6.1%
3	44	5.9%
4	44	6.1%
5	56	7.2%
6	74	10.4%
7	73	9.6%
8	97	11.5%
9	81	8.6%
10	109	10.8%
11	127	12.2%
12	163	15.5%
13	135	13.7%
14	132	16.8%
15	106	17.4%
16	83	19.1%
17	47	20.3%
18	25	16.6%
19	7	7.8%
20	7	11.9%

Table 13: Vehicle Age

Unbelted KSIs by Age and Time of Day									
Time of Day	Age Group								
	0 - 5	6 - 15	16 - 25	26 - 35	36 - 45	46 - 55	56 - 65	66 - 75	Over 75
03:00-07:00	2	9	296	208	129	98	72	23	8
07:00-11:00	7	228	478	398	320	387	258	229	259
11:00-15:00	7	260	494	366	324	374	381	497	746
15:00-19:00	16	164	428	602	534	564	519	494	618
19:00-23:00	12	71	508	423	268	259	189	133	121
23:00-03:00	4	24	312	374	305	369	303	305	409
Total	48	756	2516	2371	1880	2051	1722	1681	2161

Table 14: Age and Time of Day

% of KSIs who were not wearing a seat belt by Mosaic Group and Time of Day																
Time of Day	Mosaic Group															
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	U
03:00-07:00	20.0	24.3	20.0	17.9	17.6	16.0	13.6	22.3	57.9	34.7	18.5	22.2	25.6	25.4	14.8	24.9
07:00-11:00	5.6	2.9	10.0	6.9	5.8	8.6	7.5	8.9	19.6	10.9	11.6	11.3	11.1	8.9	6.5	8.4
11:00-15:00	6.9	4.5	10.0	6.4	6.1	5.6	5.8	4.6	9.1	9.0	10.7	10.3	8.6	7.3	11.3	8.1
15:00-19:00	5.3	4.9	10.0	4.2	6.9	5.6	7.1	6.5	18.0	6.5	8.1	10.8	12.6	7.9	12.9	6.4
19:00-23:00	12.8	12.9	11.1	12.6	9.6	14.7	12.9	13.9	34.8	15.0	13.8	14.6	17.3	15.3	16.0	17.7
23:00-03:00	26.5	23.9	44.4	14.9	22.6	14.9	25.6	22.9	27.8	20.5	26.7	22.5	29.2	22.0	39.3	31.6

Table 15: Mosaic Group and Time of Day

% of KSIs who were not wearing a seat belt by Mosaic and Road Speed Limit																
Road Speed Limit	Mosaic Group															
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	U
20	17%	20%	50%	0%	11%	20%	0%	23%	0%	25%	10%	56%	31%	22%	25%	27%
30	13%	9%	16%	10%	12%	11%	14%	18%	38%	19%	17%	18%	19%	17%	21%	20%
40	13%	7%	17%	3%	6%	8%	13%	11%	27%	11%	10%	11%	14%	11%	13%	12%
50	8%	4%	0%	6%	8%	4%	8%	7%	23%	8%	12%	11%	16%	9%	10%	11%
60	8%	7%	9%	9%	6%	8%	8%	7%	18%	11%	11%	11%	13%	7%	15%	11%
70	2%	10%	17%	9%	10%	7%	11%	7%	21%	13%	11%	12%	13%	10%	13%	11%

Table 16: Mosaic Group and Road Speed Limit

Seat Belts: The Forgotten Road Safety Priority

Unbelted KSIs by Age Group and Road Speed Limit											
Speed Limit	Age Group										
	0 - 5	6 - 10	11 - 15	16 - 20	21 - 25	26 - 35	36 - 45	46 - 55	56 - 65	66 - 75	Over 75
20		1	1	12	11	17	6	10	9	9	18
30	35	45	62	354	400	513	348	383	334	336	597
40	28	13	15	166	179	230	153	139	149	146	192
50	11	17	17	115	113	135	149	123	122	120	117
60	92	99	99	857	815	987	771	870	669	644	676
70	28	25	26	160	201	352	254	239	178	150	170

Table 17: Age Group and Road Speed Limit

Appendix 8: Mosaic groups and their descriptions

MOSAIC GROUPS AND DESCRIPTIONS		
Group	Title	Description
A	Country Living	Well-off owners in rural locations enjoying the benefits of country life
B	Prestige Positions	Established families in large detached homes living upmarket lifestyles
C	City Prosperity	High status city dwellers living in central locations and pursuing careers with high rewards
D	Domestic Success	Thriving families who are busy bringing up children and following careers
E	Suburban Stability	Mature suburban owners living settled lives in mid-range housing
F	Senior Security	Elderly people with assets who are enjoying a comfortable retirement
G	Rural Reality	Householders living in inexpensive homes in village communities
H	Aspiring Homemakers	Younger households settling down in housing priced within their means
I	Urban Cohesion	Residents of settled urban communities with a strong sense of identity
J	Rental Hubs	Educated young people privately renting in urban neighbourhoods
K	Modest Traditions	Mature homeowners of value homes enjoying stable lifestyles
L	Transient Renters	Single people privately renting low cost homes for the short term
M	Family Basics	Families with limited resources who have to budget to make ends meet
N	Vintage Value	Elderly people reliant on support to meet financial or practical needs
O	Municipal Challenge	Urban renters of social housing facing an array of challenges
Source: http://mast.roadsafetyanalysis.org/wiki/index.php?title=Mosaic_2014_Groups		



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