

Road Safety Factsheet

March 2020

Inappropriate Speed Factsheet

Inappropriate speed contributes to around 11% of all injury collisions reported to the police, 13% of crashes resulting in a serious injury and 21% of collisions that result in a death¹. This includes both 'excessive speed', when the speed limit is exceeded, but also driving or riding within the speed limit when this is too fast for the conditions at the time (for example, in poor weather, poor visibility or high pedestrian activity).

In 2018, 177 people were killed in crashes involving someone exceeding the speed limit and a further 137 people died when someone was travelling too fast for the conditions¹.

Drivers and riders who are travelling at inappropriate speeds are more likely to crash and their higher speed means that the crash will cause more severe injuries, to themselves and/or to other road users. Inappropriate speed also magnifies other driver errors, such as driving too close or driving when tired or distracted, multiplying the chances of these types of driving causing an accident.

Higher Speeds Cause More Accidents

Higher speeds mean that drivers have less time to identify and react to what is happening around them, and it takes longer for the vehicle to stop. It removes the driver's safety margin and turns near misses into crashes.

Around two-thirds of crashes in which people are killed or injured occur on roads with a speed limit of 30 mph or less. At 30mph, vehicles are travelling at 44 feet (about 3 car lengths) each second. One blink and the driver may fail to see the early warning brake lights; a short glance away and the movement of a child behind a parked car will be missed. Even in good conditions, the difference in stopping distance between 30 mph and 35 mph is an extra 21 feet or 6.4 metres, more than 2 car lengths.

If average speeds reduced by 1 mph, the accident rate would fall by approximately 5%^{2,3}. This varies slightly according to road type, so that a 1 mph reduction in average speed would reduce accident frequency by about:

- 6% on urban main roads and residential roads with low average speeds
- 4% on medium speed urban roads and lower speed rural main roads
- 3% on the higher speed urban roads and rural single carriageway main roads.

If an individual drives more than 10 - 15% above the average speed of the traffic around them, they are much more likely to be involved in an accident.

Drivers who speed are more likely to be involved in collisions. They are also more likely to commit other driving violations, such as red-light running and driving too close.

Higher Speeds Cause More Serious Injuries ⁴

Car Drivers

The risk of injury in any collision is influenced by many factors, including the vehicle's speed, its design, strength and occupant protection systems, whether the occupants were wearing seat belts, the nature of the other vehicle(s) or object(s) struck, and the medical care received by the victims.

However, car drivers are much more likely to be injured in collisions at higher speeds. On average, in frontal impacts, belted drivers have a 17% risk of being fatally injured in impacts at 40 mph and a 60% risk at 50 mph. Having said that, half of drivers who were fatally injured were in an impact of 34 mph or less.

Side Impacts

When cars are hit from the side, drivers are at a much greater risk: in a collision at 40 mph, the risk of a belted driver being killed is 85%.

Pedestrians

Multiple studies (see Table 1 below) have shown that pedestrians are more likely to be severely or fatally injured when hit by cars at higher speeds, and particularly when the car is travelling more than 30 mph.

An analysis of vehicle speed in pedestrian fatalities in Great Britain⁴, found that 85% of pedestrians killed when struck by cars or car-derived vans, died in collision that occurred at impact speeds below 40mph, 45% at less than 30 mph and 5% at speeds below 20 mph.

The risk of a pedestrian who is hit by a car being killed increases slowly until impact speeds of around 30 mph. Above this speed, the risk increases rapidly, so that a pedestrian who is hit by a car travelling at between 30 mph and 40 mph is between 3.5 and 5.5 times more likely to be killed than if hit by a car travelling at below 30 mph. However, about half of pedestrian fatalities occur at impact speeds of 30 mph or below. Elderly pedestrians have a much greater risk of suffering fatal injuries than other age groups.

Table 1: Pedestrian Fatality Risk ⁴

Country	Date	Number of injuries examined	Risk of fatal injury at 30mph	Increased risk of fatal injury between 30mph and 40mph
UK	1970s	358	~9%	5.5 times more likely
Germany	1999-2007	490 (excludes children under 15)	7%	3.5 times more likely
UK	2000-2009	197	7%	4.5 times more likely

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Who Speeds? ⁵

- On 20mph roads, 87% of car drivers exceed the speed limit and 55% exceed this limit by 5mph or more.
- On 30mph roads in built-up areas, 52% of car drivers exceed the speed limit and 18% exceed this limit by 5 mph or more.
- On single carriageway 60 mph roads in non-built-up areas, 10% of drivers speed but only 1% speed at 70 mph or more.
- On motorways in non-built-up areas with 70 mph limits, almost half (46%) of car drivers exceed the speed limit, with 11% speeding at 80 mph or more.

Research⁶ suggests there are three types of drivers:

- Compliant drivers who usually observe speed limits (52% of drivers)
- Moderate speeders who occasionally exceed speed limits (33% of drivers)
- Excessive speeders who routinely exceed speed limits (14% of drivers)

However, even the moderate speeders exceed 30 mph limits regularly. Excessive speeders normally ignore the 30 mph limit, and often by a wide margin.

Types of Speed-related Crashes⁷:

- Most collisions involved loss of control of the vehicle, usually on a bend. Other reasons included vehicles travelling around blind bends, or following other vehicles too closely.
- Collisions were more likely on unclassified rural roads, with excess speed being more likely on 30 mph roads, and inappropriate speed on 60 mph rural roads.
- Male drivers under 30 years old, and especially under 21 years old, were more likely to be involved in speed-related collisions.
- Car drivers and motorcyclists were more likely to be involved in speed-related collisions than drivers of other vehicles.
- Drivers who crashed while exceeding the speed limit were more likely to be assigned contributory factors such as 'aggressive driving', 'careless, reckless or in a hurry', 'impaired by alcohol' or in a 'stolen vehicle'.
- Drivers who crashed while travelling at inappropriate speed were more likely to be assigned factors such as 'careless, reckless or in a hurry', 'vision affected by road layout', 'vision affected by rain, sleet, snow or fog' and 'slippery road (due to weather)'.

How Can Speed Related Accidents Be Reduced?

Driver Education

Education is vital in trying to change attitudes towards speeding. Those who drink and drive are seen as behaving in a dangerous, anti-social and selfish manner with little regard for the safety of other people. However, those who speed are often not regarded in this way unless they grossly exceed the speed limit. Therefore, it is essential that the dangers caused by driving at inappropriate speeds are clearly explained and demonstrated (in the way that has been done for drink driving) to work towards a general acceptance and ownership of the problem of illegal and inappropriate speed.

It will be far easier to persuade people to drive at safer speeds if they understand and accept that driving too fast significantly increases the chances of being involved in an accident, and significantly increases the chances of that accident being serious or fatal.

RoSPA strongly support road safety publicity campaigns such as the DfT 'Think Country Roads' Campaign and Road Safety Scotland's 'In Town Slow Down Campaign', both of which highlight the dangers of inappropriate speed.

Motor manufacturers, national press, TV and advertisers should not glamourise speed as exciting and exhilarating nor as 'normal' behaviour. The Advertising Standards Authority (ASA) has taken action on a number of occasions against car advertisements that promote speed, and this is very welcome. The ASA and other broadcast regulatory bodies could usefully review and strengthen their guidance in this respect.

Driver Training

Speeding is a symptom of a more general poor attitude towards driving. One of the weaknesses of the UK's driver licensing system is that once the driving test has been passed, the driver is licensed, virtually for life, with no requirement and very little incentive to develop his/her driving skills any further. Drivers can voluntarily take further training, such as Pass Plus or courses offered by driver training providers such as RoSPA, but there is little incentive for individual drivers to do so. Only 3% of drivers take any further driving instruction after passing their test.⁸

The DfT introduced driver rectification courses as an alternative prosecution for minor motor vehicle offences. One example of this is the National Speed Awareness Course, which is a short driver offender retraining scheme that drivers can choose to attend rather than receiving a fine and penalty points on their driving licence. A study carried out by Brainbox Research in 2011 examined the attitudes of drivers who had attended speed awareness courses. Respondents described changes in their behaviour after attending the course, such as being more aware of the speed limit, driving more slowly and concentrating on the way they drive and the environment⁹.

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A recent evaluation of the effects of the National Speed Awareness Course on re-offending rates that participation in the course was more effective at reducing speed reoffending than a fine and penalty points over a period of 3 years. Between 12% and 23% of drivers who attended a National Speed Awareness Course were less likely to reoffend within six months of committing their first offence. This fell to 9-17% within 12 months, 9-11% within the first two-years, and 6-13% within three years.¹⁰

RoSPA's report, "[Refresher Driver Training](#)"¹¹, examines the low awareness of post-test training options and motivations and deterrents for taking such training. A leaflet, "[Get More from Your Driving](#)"¹² is also available to promote refresher training.

The Driving Test

Over the last 15 years or so, the driver training regime and the Driving Test in Britain has been enhanced in a number of ways, including introducing the Theory Test, the Hazard Perception Test, Pass Plus and independent driving (where candidates have to drive to a destination without step-by-step directions) in the test.

In December 2017, changes were made to the driving test. These changes included increasing the independent driving section of the test from 10 to 20 minutes, asking candidates to follow directions from a sat nav during the independent driving section of the test and some modifications to manoeuvres performed in tests to ensure that they are undertaken during the natural course of the test, rather than in a traditionally staged way.

As of June 4, 2018, learner car drivers will also be able to take driving lessons on motorways in England, Scotland and Wales, if they are accompanied by an approved driving instructor driving a vehicle fitted with dual controls.

Post-Test

Graduated Driver Licensing (GDL) also offers opportunities to provide phased driving experience for new drivers during the period when they are most at risk of being in an accident, and of reducing their exposure to the factors that are most dangerous to them. Research^{13, 14} has found that fatal collisions among young drivers reduced by 9% to 60%, and overall casualties by 5% to 32% in countries that introduced GDL schemes.

It has been estimated that a GDL system in Great Britain would result in 81 to 114 fewer deaths and 538 to 872 fewer serious injuries annually (depending on the extent of night-time and passenger restrictions applied).¹⁵ Another analysis of the effects if the system only applied to 17 to 19-year-old drivers concluded that in an average year, it could save 4,478 casualties, including 433 deaths and serious injuries and deliver social and economic benefits valued at £200.1 million.¹⁶

Highway Design and Engineering

Drivers' choice of speed is partly dependent on the characteristics of the road on which they are driving, and drivers' perception of what is a safe speed on a particular road will often differ to that of other road users,

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such as pedestrians, pedal cyclists and horse riders. Therefore, it is important that road design gives drivers the right messages about the maximum safe speed.

RoSPA supports the 'Safe System' approach, which is advocated by the World Health Organisation and is part of the 'Vision Zero' philosophy. This approach is based on the understanding that injury is caused by an exchange of energy in quantities higher than human tolerance. Preventing or minimising this exchange of energy can therefore prevent injuries. This approach recognises that people make mistakes, and designs roads and vehicles so that these mistakes are not likely to result in death or serious injury. This can involve separating vulnerable road users from motor traffic on high speed roads, and where this is not possible, designing roads to reduce traffic speed.

Advice on how to avoid inadvertently exceeding the speed limit is provided in RoSPA's "[Top Ten Tips To Stay Within the Limit](#)".¹⁷

20 mph Zones and 20 mph Limits

The measures that are most effective in reducing vehicle speeds and thereby reducing road death and injury are area-wide traffic calming schemes and 20 mph zones.

RoSPA strongly supports the use of 20 mph zones, as they are an effective means of reducing road crashes and casualties. They are very effective at protecting our most vulnerable road users, including children, pedestrians and cyclists, and significantly decrease the risk of being injured in a collision. RoSPA encourages their greater use, especially in residential areas.

RoSPA supports and encourages the wider use of 20mph limits. They have been shown to reduce traffic speed, although not as much as 20mph zones with traffic calming. However, they are considerably less expensive to implement, which means that wider areas can be covered. They also provide additional benefits, such as encouraging more physical activity, such as walking and cycling. They can also greatly improve the character of a residential area and quality of life of the residents.

The evidence about 20 mph Zones and Limits is summarised in RoSPA's "[20mph Zones and Limits](#)" factsheet.¹⁸

Speed management is central to road safety. A number of local authorities have already introduced comprehensive speed management strategies that have been successful in reducing casualties and average speeds. A wide range of good practice guidelines have been published by the Department for Transport, the Institute of Highways and Transportation (IHT) and RoSPA.

Enforcement

Roads policing is a fundamental and irreplaceable activity, which plays a key role in saving lives and minimising injury on the road. In order to do this effectively, roads policing must be given its rightful priority by the government and the Police Service, and be adequately resourced. The Police have many priorities, including tackling many forms of violent crime, all of which are extremely important. They must, therefore, allocate and prioritise their limited resources to the best possible effect. The level of death and injury caused by poor, and often illegal, behaviour on the road far exceeds the number of people killed through any other form of crime.

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Accordingly, roads policing must be one of the top priorities. However, there has been a 23% reduction in the number of full-time equivalent traffic police officers from 5,635 in 2010 to 4,356 in 2014¹⁹

Safety Cameras

Cameras are an effective way of persuading drivers not to speed, and thereby reducing the number of people killed and seriously injured. An independent review²⁰ of more than 4,000 safety cameras over a four-year period showed that cameras significantly reduced speeding and collisions, and cut deaths and serious injuries at camera sites by 42%.

A review of the evidence of the effectiveness of speed cameras in 2010²¹ examined data from the above four-year study plus many other UK and international studies along with data on traffic speeds, collisions and casualties. Taking into account other factors that might reduce speeds, and speed-related crashes and casualties, such as the downward national trend in casualty numbers, regression to mean (as many cameras were installed at sites with untypically high numbers of casualties, casualties might have fallen back towards the average level anyway) and drivers diverting to avoid cameras, concluded that in the year ending March 2004, cameras at more than 4,000 sites across Great Britain prevented some 3,600 personal injury collisions, saving around 1,000 people from being killed or seriously injured (KSI).

The report also concluded that if safety cameras were decommissioned about 800 extra people across Great Britain could be being killed or seriously injured each year.

A later report by the same author, using data released in 2011 as part of a government move to make speed camera operations more transparent to the public, showed a smaller, but still sizable, benefit from the use of speed cameras in the areas where data were analysed. Analysis of data for 551 fixed speed cameras in nine different areas shows that, on average, the number of fatal and serious collisions in their vicinity fell by 22% after their installation. There was also an average reduction of 14% in personal injury collisions in the vicinity of the 551 cameras. However, the research also highlighted 21 camera sites where collisions appear to have risen and should be investigated further.²²

Further research studies analysing the effects of safety cameras can be found in the Road Safety Observatory "[Safety Cameras](#)" review.²³

Vehicle Engineering

Vehicle technology is changing rapidly, as crash avoidance systems and autonomous technology are developed. Modern cars provide a smooth, quiet drive, even at very high speeds, and therefore drivers are often insulated from any real sensation of the speed at which they are travelling. The vehicle's power means that it is very easy to creep above the speed limit. Indeed, drivers often cite this as a reason for speeding.

Speed Warning technology

Speed warning technology gives the driver a visual and/or audible warning if s/he exceeds a pre-set speed. Some systems also inform the driver of the speed limit of the road they are using, and/or of safety camera

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sites ahead. They are often, but not always, incorporated into Sat Navs, but some vehicles have built-in technology.

It can help to keep drivers aware of their speed and encourage them not to exceed speed limits, but drivers should take care not to use the technology to 'get away' with speeding by relying on it warning them when they are approaching safety cameras.

They should also choose their pre-set speed according to the type of road on which they will mostly be driving. If mainly driving on 30mph roads, the warning should be set at 30mph; if driving on motorways, setting it at 70mph makes more sense. The pre-set speed should be set before the start of a journey.

Intelligent Speed Adaptation

Technology that can prevent drivers from exceeding the speed limit on any particular road is being introduced in some vehicles.

Depending on how the technology is implemented, over the 60 year period from 2010 to 2070, it would be expected to reduce fatal accidents by between 10% (approximately 15,400 fatal accidents) and 26% (approximately 43,300 fatal accidents), serious injury accidents by between 6% (96,000 accidents) and 21% (330,000 accidents), and slight injury accidents by between 3% (336,000 accidents) and 12% (1.3 million accidents).

One of the requirements for the widespread implementation of this technology is a digital map showing the speed limit on every road in the country, which can easily and regularly be updated, including taking account of speed limit changes due to road works. Ultimately, this will make it possible to display the speed limit of every road within the car, so that a driver can constantly be aware of the limit.

Some Satellite Navigation devices can also advise drivers of the speed limit of the road, although drivers should still primarily rely on the legal road signs, in case the device is not up to date or there is a temporary limit in place.

Employers

Driving is the most dangerous work activity that most people do. Around 150 people are killed or seriously injured every week in crashes involving someone who was driving, riding or otherwise using the road for work purposes.

HSE Guidelines, "Driving at Work"²⁴, state that "health and safety law applies to on-the-road work activities as to all work activities and the risks should be effectively managed within a health and safety system".

RoSPA has produced a Guide, "[Driving for Work: Safer Speed Policy](#)"²⁵, to help employers and line managers to ensure that their staff are not tempted or pressurised into driving at inappropriate speed. It includes a sample 'Safer Speed Policy' that can be adopted as written or adapted to suit an organisation's needs.

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RoSPA's '[Young Drivers at Work Workshop](#)' is designed to help young at-work drivers to understand the risks involved in driving for work, reflect on their own at-work driving experiences, and develop coping strategies.

Conclusion

There is no doubt that inappropriate speed is one of the most serious road safety problems on Britain's roads, and causes death and injury to thousands of people each year. Unfortunately, the public has not yet accepted the danger caused by speeding drivers in the same way as the danger caused by drink-drivers.

A co-ordinated speed management strategy must include education, training and publicity, highway engineering and design, vehicle engineering and enforcement measures. Employers have a powerful role to play in influencing employee driver attitudes and behaviour. Ultimately, all drivers and riders need to be persuaded that driving at inappropriate speeds is not a minor, technical offence that everyone commits, but a serious, dangerous and anti-social activity.

For more information read [RoSPA's Top Ten Tips to Stay within the Limit](#), [Speed Cameras](#) and [20mph Zones and Limits Factsheets](#).

References

- ¹ Department for Transport (2019) 'Table RAS50001: Contributory factors in reported accidents by severity, Great Britain, 2018'
<https://www.gov.uk/government/statistical-data-sets/ras50-contributory-factors> Date Accessed: 31/03/2020
- ² Finch et al (1994) 'TRL Project Report 58: Speed, Speed Limits and Accidents'
URL: <https://trl.co.uk/reports/PR58>
- ³ Taylor et al (2002) 'TRL Report 421: The Effects of Drivers Speed on the Frequency of Road Accidents'
URL: <https://trl.co.uk/reports/TRL421>
- ⁴ Richards, D. C. (2010) 'Road Safety Web Publication No. 16: Relationship between Speed and Risk of Fatal Injury: Pedestrians and Car Occupants'
http://nacto.org/docs/usdg/relationship_between_speed_risk_fatal_injury_pedestrians_and_car_occupants_richards.pdf
- ⁵ Department for Transport (2019) 'Table SPE0111: Free flow vehicle speeds by road type and vehicle type in Great Britain, 2018'
URL: <https://www.gov.uk/government/statistical-data-sets/spe01-vehicle-speeds> Date Accessed: 31/03/2020.
- ⁶ Stradling, S. et al (2008) 'Road Safety Research Report 93: Understanding Inappropriate High Speed: A Quantitative Analysis'
<http://webarchive.nationalarchives.gov.uk/20090417002224/http://www.dft.gov.uk/pgr/roadsafety/research/rsrr/theme2/safety93.pdf>
- ⁷ Richards et al (2010) 'Road Safety Research Report 117: The Characteristics of Speed Related Collisions'
URL: <http://webarchive.nationalarchives.gov.uk/20120606181145/http://assets.dft.gov.uk/publications/the-characteristics-of-speed-related-collisions/rsrr117.pdf>
- ⁸ West, R. (1998) 'TRL Report 293: Accident Rates and Behavioural Characteristics of Novice Drivers in the TRL Cohort Study' <https://trl.co.uk/reports/TRL293>
- ⁹ Brainbox Research (2011) 'Evaluation of the National Speed Awareness Course'
- ¹⁰ DFT (2018) Impact Evaluation of the National Speed Awareness Course,
<https://www.gov.uk/government/publications/national-speed-awareness-course-impact-evaluation>
- ¹¹ RoSPA (2005) 'Refresher Driver Training'
- ¹² RoSPA (2015) 'Get More From Your Driving'

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¹³ Hartling et al. (2011) 'Graduated driver licensing for reducing motor vehicle crashes among young drivers', Cochrane Database of Systematic Reviews.

¹⁴ Kinnear et al. (2013) *Novice Drivers: Evidence Review and Evaluation*. Crowthorne: TRL.

¹⁵ Jones et al. (2013) 'Reducing Young Driver Crash Casualties in Great Britain: Use of Routine Police Crash Data to Investigate the Benefits of Graduated driver Licensing', *International Journal of Injury Control and Safety Promotion*, 20(4): 321-330.

¹⁶ Kinnear et al (2014) 'Graduated Driver Licensing: A Regional Analysis of Potential Casualty Savings in Great Britain'

http://www.racfoundation.org/assets/rac_foundation/content/downloadables/graduated_driver_licensing_regional_analysis_trl_270514.pdf

¹⁷ RoSPA (2016) 'Top Ten Tips to Stay Within the Limit'

¹⁸ RoSPA (2016) '20mph Zones and Limits'

¹⁹ Amos et al (2015) 'Road Safety Since 2010'

http://www.racfoundation.org/assets/rac_foundation/content/downloadables/Road_Safety_Since_2010_Amos_Davies_Fosdick_PACTS_RAC_Foundation_final_report_September_2015.pdf Date Accessed: 20/02/2017.

²⁰ University College London and PA Consulting (2005) 'The National Safety Camera Programme: Four-year Evaluation Report'

²¹ Allsop, R. (2010) 'The Effectiveness of Speed Cameras: A Review of Evidence' RAC Foundation.

²² Allsop, R. (2013) 'Guidance on Use of Speed Camera Transparency Data'

www.racfoundation.org/assets/rac_foundation/content/downloadables/speed_camera_data_revised-allsop-nov2013.pdf

²³ Road Safety Observatory (2016) 'Safety Cameras Review'

URL: <http://www.roadsafetyobservatory.com/Review/compliance-and-law/safety-cameras>

²⁴ HSE & DfT (2014) 'Driving at Work: Managing Work Related Road Safety'

²⁵ RoSPA (2011) 'Driving for Work: Safer Speeds'

<http://www.rospa.com/rospaweb/docs/advice-services/road-safety/employers/work-safer-speed.pdf>