

# Speed

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An information sheet produced by Brake,  
the road safety charity.



**Brake**  
the road safety charity

## 1. The physics

It sounds obvious, but it is worth remembering at all times that a vehicle on the move is a chunk of metal travelling at a variety of speeds – and that it is this moving metal which causes deaths and injuries in crashes.

Physics tells us that **the faster a vehicle is driven, the less time there is to react to hazards**, and, if a collision takes place with another vehicle, cyclist, pedestrian or inanimate object, the more powerful the impact and the greater the likelihood of deaths and serious injuries.

**Conversely, the slower a vehicle is driven, the more time the driver has to react to a situation that could result in their vehicle causing a death, such as a child tripping and falling off a pavement, or a cyclist out of sight round a left hand bend on a rural road.**

## 2. Responsibilities of drivers and the need to control the speed of vehicles to protect life

All road users, including pedestrians and cyclists (often referred to as 'vulnerable road users'), have a social responsibility to use roads as safely as possible for *their own safety*. This includes cyclists using lights at night, and pedestrians using pedestrian crossings. All children should be taught effectively how to use roads safely.

However, drivers have a far more significant 'duty of care' to *all other road users, and particularly vulnerable road users*. **This is because it is drivers who are in charge of the potentially lethal weapon of a vehicle.**

Given that the likelihood of a death in a crash increases as speed increases (see section 1), driving at cautious speeds that give time to react to hazards and reduce the danger of the vehicle if an impact occurs is essential in order to comply with this duty of care.

A child who chases a ball into the road should be reprimanded and educated, but does not deserve the death penalty. Society must protect children, who will inevitably take risks either wittingly or unwittingly. The same principle applies to vulnerable adults on foot, bicycles and horses. A drunk pedestrian who staggers into the road outside a village pub is foolish but does not deserve the death penalty.

We must control speeds of traffic to take into account this inevitable risk-taking, and enable drivers to stop in time when it happens. This means having posted limits that are set according to risk exposure and requiring drivers to drive within these limits.

## 3. The relationship between speed and vulnerable road user deaths

Research<sup>1</sup> used by the Department for Transport (including by the Prime Minister in his speech announcing the Government's Road Safety Strategy on 1 March 2000) concludes that 85% of pedestrians who are hit at 40mph will die, compared to 45% at 30mph and 5% at 20mph.

A few miles an hour over a 30mph limit could be the difference between life and death. At 35mph a car which hits a pedestrian is twice as likely to result in that pedestrian's death compared with at 30mph.

In 2002, more than a quarter of all deaths on roads were vulnerable road users. 775 people died on foot. 130 people died on bicycles. That's 18 people dying on foot and bicycles every week. Nearly three quarters (71%) of these deaths were on roads in towns and villages.

11% of vulnerable road users who died in 2002 were children on foot and bicycles. The UK has the fourth worst recorded rate of child pedestrian fatalities in Western Europe, with Northern Ireland having the worst. This represents a particularly shameful and horrific loss of young life.

Deaths of children on foot and bicycles peak as children begin to use roads independently without their parents, often when moving on to secondary school. Death on the road is the most common cause of death among 12-16 year olds.

Data on the speed of travel of the vehicles which killed them are not known, and Brake is calling on the Government to record this data. However, using the research outlined at the beginning of this section, victims would have survived if the speeds of the vehicles which killed them had been lower.

## 4. Speed and car occupant and motorbike rider deaths

Just over half (51%) of all deaths on roads are car occupants. The majority of these deaths are on non-built up, often derestricted, roads (not including motorways). Many of these deaths are in single vehicle collisions (for example, failing to get round a bend and hitting a tree or vulnerable road user) or in head-on collisions (for example, when overtaking).

A further 18% of deaths on roads are motorbike riders. A significant proportion of motorbike riders are killed through no fault of their own by drivers who pull out on bikers at junctions and on multi-laned roads. However, a significant proportion are also killed by their own actions, often at high speeds on bendy rural roads. Bikers also kill other vehicle occupants and vulnerable road users.

<sup>1</sup> Ashton SJ and MacKay GM (1979), *Some characteristics of the population who suffer trauma as pedestrians when hit by cars and some resulting implications*, 4th IRCOBI International Conference, Gothenburg

Again, the speed of travel of vehicles involved in fatal collisions that kill vehicle occupants is not known, and Brake is campaigning for the Government to record this data. However, the principle applies as outlined in section 1. The faster drivers drive, the harder they hit other vehicles or trees, road signs, and rocks, killing themselves, their passengers, and people in other vehicles. This includes children – nearly as many children are killed in cars as on foot and bikes.

## 5. What type of drivers cause speed-related deaths?

Fatal crashes are caused by drivers who are criminal in other ways, but also by drivers who only break traffic laws.

It is more than likely that a significant proportion of fatal crashes which have speed as a contributory factor are caused by drivers who are drunk, drugged, unlicensed, uninsured or in stolen vehicles. Data from the Department for Transport shows that around 16% of deaths on the road in 2002 were caused by drunk-drivers, and a proportion of these were doubtless at high speed.

It is also evident, from the case work load of bereaved families supported by Brake, that many fatal crashes which have speed as a contributory factor are caused by 'ordinary' drivers, ranging from newly-qualified drivers to middle-aged company car drivers.

As stated in earlier sections, causation data recorded by Government, including speed of travel of vehicles in crashes, would provide better profiles of the speeds of fatal crashes and the combination of causes of these crashes, and the types of drivers whose speed kills.

## 6. What type of drivers speed?

What is known is that most drivers break posted speed limits. The latest Department for Transport annual survey of speed <sup>2</sup> shows that 59% of drivers break speed limits on 30mph roads and 25% break them by more than 5mph. This means that 59% of drivers have a 45% or more chance of killing a pedestrian if they hit them (see section 3).

This is despite the findings of a survey published by Direct Line and Brake in 2001 which found that 96% of drivers think that speeding outside a school is a very serious crime and 72% agree that speeding in a 30mph zone is very serious. Drivers recognise that speeding is wrong, but they do it nonetheless.

Research has also found that many drivers think it is OK for them to drive fast because their driving ability is better than average, they are in a rush or they have a high-performance vehicle.

A survey by the RAC and Autocar in 2003 found that professional male company car drivers between the ages of 45 and 54 are most likely to speed.

Research by Napier University <sup>3</sup> identified two 'high risk' groups who break speed limits, take other risks, and are more likely to have crashed: young and inexperienced male drivers; and male drivers who drive for work.

## 7. Which roads require the most speed control?

Roads that routinely present unexpected hazards, that require a vehicle to be able to slow down or stop within a short distance to avoid hitting a hazard and risking loss of life, require particular attention to speed control to protect life. As stated above, the faster a vehicle travels, the more likely it is to kill or seriously injure in an impact.

Roads that routinely present unexpected hazards are:

- roads with restricted visibility, which could be due to a range of obstructions, such as parked cars and bends;
- roads used by people on foot, bicycles and horses (referred to by road safety professionals as 'vulnerable road users').

These roads include:

- residential roads in towns and villages;
- shopping and civic areas in the centres of towns and villages;
- key pedestrian access routes such as roads to schools and parks;
- bendy or hilly rural roads (particularly narrow roads without pavements or cycle paths).

As well as preventing collisions, slow speeds in towns and rural communities improve the quality of life of those communities.

Slow speeds:

- encourage people to walk and cycle without fear that they may be hit by fast traffic which cannot stop in time;
- reduce traffic noise.

Roads which do not require the lowest speeds are roads which:

- exclude vulnerable road users;
- have far-reaching visibility;
- have multiple lanes and crash barriers.

Dual carriageways and motorways obviously fall into this category.

Vulnerable road users should be protected through engineering measures, most notably pavements, cycle lanes, barriers and pelican crossings. However, these measures do not replace the need for speed control and do not always protect vulnerable road users. One in 10 people killed while on foot in 2002 were on pedestrian crossings.

## 8. What are appropriate speeds?

There is a Government recognised need for a review of speed limits, stated in the Department for Transport's road safety strategy <sup>4</sup>, based on effective 'audits' and a new 'hierarchy' of limits emerging. One likely result from this would be the reduction of some urban 30mph limits to 20mph or lower. Some local authorities have already implemented 20mph limits - as has happened recently on a quarter of roads in Kingston Upon Hull.

As well as 'quiet lanes', a 'hierarchy' of speeds would be likely to result in some speed limits on derestricted roads being reduced – particularly narrow, bendy and hilly rural roads. Speed limits of 40mph, rather than 60mph (heavy trucks are already restricted to 40mph while buses, coaches and light goods vehicles are restricted to 50mph), with lower limits of 30mph or less posted before dangerous bends or junctions as appropriate, are likely. This is particularly important to protect vehicle occupants, as well as vulnerable road users (see section 4). An explanation of the concept of a new hierarchy of limits is in the Department for Transport's speed policy review.<sup>5</sup>

In addition, speed limits of 20mph or lower are also being piloted on select stretches of narrow rural lanes without pavements where it has been decided to give priority to vulnerable road users for leisure and access reasons (eg. dog walkers, ramblers, horse riders, cyclists). Road safety professionals have branded these 'quiet lanes'.

It should be remembered that speed limits are a cap on maximum speeds to protect other road users, and not a recommendation for drivers to drive at that speed. An appropriate speed may be lower than a posted limit, for example, when school children are walking home.

The argument has been forwarded that when urban roads are emptier, low speed limits are not appropriate - for example, at 2am. This is a spurious argument – at night, visibility is reduced. Any raising of limits at night will make roads at this time more dangerous for cyclists and pedestrians, acting as a curfew on these vulnerable road users, who often include drunk pedestrians. 42% of deaths happen at night despite far fewer people using roads.

<sup>2</sup> Department for Transport (2003) *Vehicle Speeds in GB: 2002*

<sup>3</sup> Stradling, Meadows and Beatty (2002), Napier University, *Characteristics and crash involvement of speeding, violating and thrill-seeking drivers*

<sup>4</sup> Department for Transport (March 2000), *Tomorrow's Roads - Safer for Everyone*

<sup>5</sup> Department of the Environment, Transport and the Regions (1999), *Speed Policy Review*

## 9. Lower average speeds on roads are found to result in less deaths and injuries

Obviously all deaths and injuries on UK roads have speed as a contributory factor, as vehicles have to be in motion to cause harm. Many crashes have multiple causes, for example, a driver travelling too fast on a wet rural road skids and kills a pedestrian on a verge. In this case, if the vehicle had been travelling slower, the wet road would have been less likely to cause the vehicle to skid. Speed is one contributory factor, but is a key factor that caused the crash to occur, and be fatal.

Research by the transport research body, TRL, has analysed the relationship between average speeds of vehicles on particular roads and crash rates on these roads in its Reports 421 and 511. Using data from 300 roads, the TRL found that the faster the average speeds on a road, the more crashes and the more casualties. By studying the speed and crash rates of 10,000 drivers, TRL also found that drivers' crash rates rise the faster they travel. A driver who travels 25% above the average speed is more than six times more likely to crash.

Researchers of speed control through speed camera enforcement have also found a link between lower speeds and reductions in casualties. At speed camera sites operated by 'safety camera partnerships' in the UK, average speeds have fallen by 10% and deaths and serious injuries have fallen by 35%. Pedestrian casualties fell by 56%. The number of vehicles breaking the posted speed limits at those camera sites dropped by 67%<sup>6</sup>.

More data from camera sites will be available from the Department for Transport in spring 2004.

TRL Report 323 is often misquoted by anti-speed camera campaigners. The report analysed an experimental crash reporting form used by some police forces in the 1990s and found that 15% of crashes were recorded by police as involving speed. TRL says that it is incorrect to use findings from this report as an indication of the number of crashes that are caused by excessive or inappropriate speed. It says: "When allowance is made for all of the other speed-dependent factors, the contribution is, we believe much greater."

Anti-camera campaigners also sometimes highlight the fact that overall deaths on roads are not decreasing significantly and use this to argue that cameras don't work. This argument is unreasonable as it does not take into account other causes of road crashes - for example, there has been a decade-long rise in numbers of drink drive casualties, for example, which need tackling through measures other than cameras, including higher levels of traffic policing.

## 10. How to achieve speed control

Speed control can be achieved through the following measures:

- speed enforcement through cameras;
- engineering measures such as humps and chicanes;
- speed limiting vehicles.

Speed control through speed cameras has some obvious advantages. Cameras can:

- be self-funded by fines (although if speed limits are complied with, fines are not raised);
- catch far higher numbers of speeding drivers than traffic police;
- result in repeat speeders being banned from driving.

There are also advantages in limiting the speed of vehicles, by 'capping' their maximum speeds through straightforward vehicle engineering, and by controlling their speeds to within posted speed limits through satellite technology when vehicles enter particular zones. Satellite-controlled speed limiter technology has been developed and is currently being explored by a number of research bodies.

<sup>6</sup> Department for Transport (11 February 2003) *A cost recovery system for speed and red-light cameras - two year pilot evaluation*.

## 11. Speed cameras and Brake's policy points on speed enforcement

### Public support for speed cameras

Speed cameras routinely come under high-profile attack as being 'a revenue-earning unfair tax on motorists'. This is not a reflection of majority public opinion. When drivers are surveyed, the majority - about 75% according to the latest survey by the BBC in November 2003 - are found to support cameras and believe that they are helping to enforce speed limits.

Figures published two years ago (2001) by Direct Line and Brake, the road safety charity, revealed that half of UK drivers would be happy to see more speed cameras on roads. The figures, compiled by MORI, show that 71% thought that cameras are saving lives, and 49% of drivers would welcome plans for extra cameras (a further 7% were undecided).

### Are speed cameras an 'unfair tax on motorists'?

***Drivers who comply with speed laws aren't penalised. As stated in section 8, there needs to be a review of all limits based on risks posed on particular roads and all limits need to be clearly posted.***

### Speed cameras and a decline in traffic police

Speed cameras can catch high numbers of speeding drivers, far more than a police officer could catch without the benefit of this technology. Speed cameras can therefore 'free up' police time to tackle other traffic offences, such as drink-driving or non-compliance with seat belt law. However, there is widespread concern that due to the political importance of tackling 'street crime' such as muggings, and the failure of the Home Office to require police forces to make traffic policing a 'core duty' with clear targets for traffic enforcement work, many officers have been taken off traffic duties and put on street crime duties instead. Alternatively, traffic policing units have been merged with other units, such as Armed Response Units.

***This, it is perceived, is causing a reduction in routine traffic enforcement which Brake believes should be urgently addressed by The Home Office.***

### Speed camera management and locations

The majority of speed cameras are under the control of locally-run 'safety camera partnerships' made up of local Government bodies including the local authority, police authority, and health authority. For more information, visit the website of 'National Safety Camera Liaison', [www.nationalsafetycameras.co.uk](http://www.nationalsafetycameras.co.uk), which also has links to local safety camera partnership websites.

Cameras operated by safety camera partnerships must be at casualty 'black spots'. A much smaller number of cameras that pre-date safety camera partnerships are at locations previously chosen by the police.

***Brake believes that the requirement for casualties to have occurred before a speed camera can be installed is contrary to the police and local authority 'duty of care' to protect citizens from criminals. Following a review of speed limits (see section 8) fixed cameras should be placed with most frequency on roads with lower speed limits where the risk of speed is greatest to vulnerable road users.***

***Cameras should be the modern, digital variety that judge a vehicle's average speed over a distance, rather than at one fixed point. Police should be provided with portable radar guns to survey speeds for concerned communities if it is felt limits are being broken.***

### Rules regarding visibility of fixed cameras

Cameras operated by safety camera partnerships must be bright yellow, under guidelines issued by the Department for Transport in December 2001. Cameras in areas of outstanding natural beauty are sometimes exempt. 'Mobile' camera equipment is often in highly-visible police-marked vans.

**Brake believes there needs to be more signing of speed limits. This should include repeater speed limit signs in urban areas, which are rarely installed.**

**Highly visible cameras carry the risk that law-breaking drivers slow down for cameras and speed up again afterwards. If law-breaking drivers don't know where speed cameras are likely to be placed, they have to slow down everywhere or face the consequence of fines and eventually a ban. As stated above, drivers who comply with speed laws aren't penalised. It is important, therefore, to ensure all limits are a) correct; and b) clearly posted.**

#### **Fine revenue and its expenditure**

All money raised from speed cameras in fines is given to the Treasury. The Treasury then returns funds required by the local safety camera partnerships to operate and publicise speed cameras.

**Brake believes that all monies from speed cameras should be invested in carefully researched and appropriate road safety measures and that the expenditure should be published as part of a detailed annual report by the Department for Transport about its total road safety expenditure. This should include a breakdown by each local authority on local expenditure on road safety measures.**

#### **Educating drivers about speed**

It is vital to support speed control measures with extensive education campaigns, explaining to drivers the danger of speed. Education campaigns by the Department for Transport and local 'speed camera partnerships' have increased in recent years, but are still not enough.

**Brake believes there should be far more money for far more high-profile, peak-time advertising on television and radio about the dangers of speed. In particular, we need specific campaigns on the dangers of different types of speed, including:**

- speeding motorbikers;
- speeding on rural roads;
- speeding and racing by young drivers;
- the dangers speeding drivers poses to cyclists;
- the dangers of speeding at night and in bad weather;
- the dangers of speeding for work.

This publicity, and 'driver improvement' courses, should be as well as penalties for breaking speed limits.

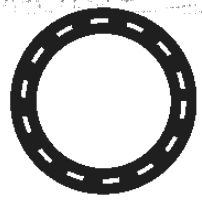
**Police should be required to record the speed of travel of vehicles in fatal and serious injury collisions, so the contribution of speed to serious crashes can be identified and reported to the public.**



#### **Who is Brake?**

Brake is a registered charity working to stop deaths and injuries on roads through education and campaigning, and also providing support services to people bereaved and injured in road crashes. Its work is funded by donations, sponsorship and grants. Registered charity number 1093244

For more information about Brake, log on to [www.brake.org.uk](http://www.brake.org.uk) or call us on 01484 559909.



# fleetsafetyforum

## Advice for drivers on speed control and speed limits

In the light of the recent debate about speed control, Brake, the road safety charity, is issuing a 15-point plan for drivers to aid speed control, road safety, and compliance with limits.

**1. Use your gears** – as you approach a 30mph zone on a flat road from a higher limit road, switch down into third. If you are in a 30mph zone and travelling down hill, switch to a lower gear to prevent you picking up speed unwittingly.

**2. Repeater signs** are not common in 30mph limits, for historical reasons. While some 30mph limits are announced with large warning signs as you enter the zone, other 30mph limit signs are small and may be covered in foliage or mud. **Watch out for new limits.**

**3. Check your speedo regularly.** It only takes a fraction of a second and should be as automatic as checking your mirrors.

**4. Feel your speed.** A good driver has a good idea of their speed of travel. A good driver should be able to feel if their speed is creeping up, and counter it calmly and smoothly without the need for sudden braking.

**5. As you see a lower limit approaching, begin to reduce your speed** so you enter the lower limit at an appropriate speed for the conditions, which is below that legal limit.

**6. In 30mph limits, travel below the limit, not at the limit.** At 20mph a pedestrian who is hit has a 90 per cent survival chance. At 30mph this reduces to about 50 per cent with a rapidly increasing probability of death above 30mph. For this reason, some 30mph limits are being reduced to 20mph limits (for example, a quarter of Hull's roads).

**7.** If you travel below 30mph in a 30mph limit, you increase your reaction times, reduce your stopping distance, and, if you do hit a pedestrian or cyclist, you reduce the severity of the impact. In addition, you reduce the risk of creeping over the limit and getting a fine and points.

**8.** In 30mph limits, take particular care to **drive well within the limit at dangerous times**, such as school opening and closing times, and pub and club kicking out times.

**9.** In 30mph zones, **do not think it is safe to drive above the limit at night** because less people are about – reduced visibility makes this a dangerous time, particularly if drunk pedestrians are about.

**10. On derestricted rural roads, modulate your speed** according to the following factors – bends and brows, side roads (which may be hidden), width of road (narrow roads give less room to manoeuvre around cyclists and pedestrians) and weather conditions (wet and icy roads and reduced visibility). Slow down particularly for left hand bends where it is impossible to know what is round the corner (it could be a slow moving tractor or a horse).

**11. On derestricted rural roads**, many deaths are vehicle occupants in head-on collisions, due to dangerous overtaking or poor lane control at high speed. **Keeping your speed down** increases your reaction times and decreases your stopping distance if a dangerous driver is heading towards you.

**12. Keep your distance. Only a fool forgets the two second rule** – count two seconds between you and the vehicle in front. This is your braking space in a crisis. Double this distance in the wet. If someone else moves into your braking space, drop back again.

**13. Only overtake on a single carriageway road if it is 100% safe** to do so, you can do it within the speed limit, and it is for a sensible reason – for example, overtaking a slow moving tractor on a straight stretch of road. Weigh up the advantages of overtaking – for example, if you are planning to turn off a road fairly soon, and the vehicle you want to overtake is making reasonable progress and only travelling a few miles slower than you want to travel, there may be no point. Hang back.

**14. On dual carriageways and motorways stay in the left hand lane** unless overtaking. Keep your distance and watch out for lower limits, for example, near road works or on exit roads.

**15.** The UK is a densely populated country and therefore **it is not possible to guarantee a clear, open road**, even at 5am on a country road. You can know the shape of a bend, but not what might be on it. There could be an early morning jogger or dog-walker round the corner, or even a sheep or cow.

**16.** The Driving Standards Agency, which administers the driving test, promotes hazard awareness – **imagine all possible hazards and drive as though a hazard could be around every corner** and over every brow. This means slowing down when you can't see what is ahead. This is good defensive driving and protects everyone, as well as yourself and other vehicle occupants. It requires you, the driver, to focus your mind on possible hazards before setting off and throughout the journey and modulate your speed accordingly.

**17. If you enjoy driving at speed, contact your local race track.** Many run race days where you can race your own vehicle or high-performance vehicle, in a safe environment that does not put other road users at risk.



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