Cycling and road safety: Overview

THIS BRIEFING COVERS
Headline messages; CTC view; key facts and arguments; risks and benefits; safety in numbers; tackling the deterrents; cycle training; targets and indicators; policy background; further reading.

HEADLINE MESSAGES
- Cycling is essentially a safe activity, causing little risk either to cyclists themselves or to other road users. Moreover, there is good evidence that cyclists gain from ‘safety in numbers’, with cycling becoming safer as cycle use increases.
- However, fear of road traffic is a major deterrent, despite the health, environmental and other benefits of cycling. In 2011, 61% of people surveyed on their attitudes agreed or strongly agreed that “it is too dangerous for me to cycle on the roads.”
- Actual cycle safety in the UK lags behind many of our continental neighbours, because of poorly designed roads and junctions, traffic volumes and speeds, irresponsible driving, and a legal system that fails to respond adequately to road danger.
- National and local government should therefore aim for ‘more’ as well as ‘safer’ cycling – the two aims can and should go hand in hand.

CTC VIEW
- Road safety strategies, nationally and locally, should recognise that:
  - Cycling is a safe activity, posing little risk either to cyclists themselves or to other road users
  - The health benefits of cycling far outweigh the risks involved
  - Cycling gets safer the more cyclists there are: the ‘safety in numbers’ effect
  - The aim of cycle safety policies and initiatives should be to encourage more as well as safer cycling, in order to maximise its health, environmental and other benefits, and to improve overall safety for all road users
- Encouraging more as well as safer cycling involves tackling factors that deter cycle use. These include high traffic volumes and speeds; irresponsible driver behaviour; the unfriendly design of many roads and junctions; and lorries.
- The provision of cycle training to the ‘Bikeability’ national standard can also help people to cycle more, to ride more safely, and to feel safer and more confident while doing so. It can also help parents feel more confident about allowing their children to cycle.
- Increases in cyclist casualties may still mean cycle safety is improving if cycle use is increasing more steeply than cyclist casualties. Therefore targets and indicators for the effectiveness of road safety strategies should adopt ‘rate-based’ measures for improvements in cycle safety, e.g. cycle casualties (or fatal and serious injuries) per million km cycled, or per million trips. Simple casualty reduction targets should be avoided.
- ‘Perception-based’ indicators, which show whether public perceptions of cycle safety in a given area are getting better, can be used alongside ‘rate-based’ indicators, or as an interim substitute for the latter if necessary.
- Care should be taken to avoid cycle safety awareness campaigns that ‘dangerise’ cycling. These deter people from cycling or allowing their children to cycle and are counter-productive because they erode the ‘safety in numbers’ effect, as well as undermining the activity’s wider health and other benefits.
KEY FACTS AND ARGUMENTS

1) Road safety strategies and cycling: key elements

CTC view: Road safety strategies, nationally and locally, should recognise that:
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Despite the UK’s good record on overall road safety, comparison with other European countries suggests that it is one of the poorer performing countries in terms of cycle safety, and that a similar situation prevails for children and pedestrians. Moreover, the European Transport Safety Council has identified the UK as one of the least improved countries on pedestrian and cycle safety.

a) Risk to other road users
Comparing to motor vehicles, cyclists put others at negligible risk. Cycling is not responsible for emissions that lead to and exacerbate respiratory disease, and cyclists cause very few injuries to other road users:
- In 2010, 99% of killed or seriously injured (KSI) pedestrians in urban areas – i.e. where pedestrians are most likely to be – were the result of a collision with a motor vehicle.
- Out of the 11,716 car/pedal cycles collisions in Britain in 2010, no car occupants died.

For more on the low risks presented by cyclists, see: www.ctc.org.uk/campaigning/views-and-briefings/cyclists-behaviour-and-law

b) Risks v health benefits of cycling
Some people are concerned that the effect of promoting cycling puts people in danger because they believe that cycling is a high-risk pursuit. However:

- Cycling isn’t a particularly high-risk activity:
  - On average, 1 cyclist is killed on Britain’s roads for every 30 million miles travelled by cycle. This equates to about 1 cycle fatality for around every 1200 times cycled round the world.
  - CTC calculates that the general risk of injury from cycling in Great Britain is just 0.057 injuries per 1000 hours of cycling.
  - Amateur league rugby sevens carries vastly greater risks – one academic worked out that there were 283.5 injuries per 1000 hours of playing.
  - According to another paper that looked at sports injuries, tennis is riskier than ‘outdoor cycling’ (5 injuries per 1000 hours for tennis, 3.5 for cycling). ‘Rowing machine exercise’ came in at 6 injuries per 1000 hours.
  - You are more likely to be injured in an hour of gardening than in an hour of cycling.
The benefits of cycling far outweigh the risks:

- People who cycle regularly in mid-adulthood typically enjoy a level of fitness equivalent to someone 10 years younger, and their life expectancy is two years above the average. On this basis, the British Medical Association (BMA) concluded in their 1992 report *Cycling: Towards Health and Safety* that “Even in the current hostile traffic environment, the benefits gained from regular cycling are likely to outweigh the loss of life through cycling accidents for the current population of regular cyclists.” The author, Mayer Hillman, subsequently estimated that the life years gained due to the health and fitness benefits of cycling outweighed the life-years lost through injuries by a factor of around 20:1, a figure now endorsed by the UK Government.

- Dutch researchers weighed up the longevity benefits of cycling against the mortality rates from both pollution and road casualties, for cycling and car travel respectively. They found that cycling’s health benefits outweighed the higher injury and pollution risks by an average of 9 to 1. However, if the pollution risks are excluded, the ratio is 35 to 1.

- A population-wide study in Copenhagen found that, compared with those who cycled regularly to work, people who did not do so had a 39% higher mortality rate, regardless of whether or not they sometimes took part in other physical activities at other times.

- Cycle commuting improves fitness in men and women and is inversely associated with body mass index (BMI), obesity, triglyceride levels, blood pressure, and insulin level in men.

- A 9-year study of male civil servants found that those who cycled for at least an hour a week experienced less than half the non-fatal and fatal coronary heart disease of the others.

- A study predicting the consequence of 100,000 people taking up regular cycle commuting calculated that 50 fewer deaths would result per year (health benefits and reduced road casualties aggregated), the equivalent of 1,660 life years.

A group of public health and transport practitioners says that cycling is not an exceptionally high-risk activity and that it “… has great potential to assist public health programmes and reduce road danger.” THSG. *Health on the Move*. 2011.

For more on health, see [www.ctc.org.uk/campaigning/views-and-briefings/health-and-cycling](http://www.ctc.org.uk/campaigning/views-and-briefings/health-and-cycling)

c) The ‘safety in numbers’ effect – for more see [www.ctc.org.uk/safetyinnnumbers](http://www.ctc.org.uk/safetyinnnumbers)

A growing body of evidence suggests that cyclists gain from ‘safety in numbers’ i.e. as cycle use increases, the risk per km cycled goes down. It is estimated that doubling cycle use would result in only a 25-30% increase in cycle fatalities, representing a 35-40% reduction in risk per cyclist.

The causal mechanism for this has not been established, but it is likely that drivers grow more ‘cycle aware’ when there are more cyclists on the road. It may also be that increased cycle use means that a greater proportion of the driving population will also be cycle users, with a better understanding of how to drive with respect for cyclists’ safety – a phenomenon established by research. The ‘safety in numbers’ effect is even stronger where conditions for cycling have improved, and/or traffic speeds reduced – London, York and Leicester, for example, have increased cycle use and reduced casualties in absolute terms.
2) Tackling the deterents

**CTC view:** Encouraging more as well as safer cycling involves tackling factors that deter cycle use. These include high traffic volumes and speeds; irresponsible driver behaviour; the unfriendly design of many roads and junctions; and lorries.

a) **High traffic volumes and speeds**
High volumes of motor traffic, coupled with drivers going too fast, is a major barrier to promoting cycling on roads. This can be tackled by introducing properly enforced lower speed limits, especially 20 mph for residential and community streets. This contributes to a safer and more attractive environment for everyone, including cyclists. CTC is preparing a briefing on speed limits.

b) **Irresponsible driver behaviour**
Educating drivers about the needs of cyclists, and penalising bad driving offences effectively would help create a safer and more attractive environment for cycling and walking. In particular, the drink/drive limit should be lowered and hands-free mobile phones banned. For more, see [www.ctc.org.uk/campaigning/views-and-briefings/bad-driving-offences](http://www.ctc.org.uk/campaigning/views-and-briefings/bad-driving-offences)

Also, stronger and better resourced traffic police, well designed incident reporting systems and the commitment to investigate all collisions thoroughly, particularly those involving non-motorised users, would help address substandard driving. The Health and Safety Executive and other enforcement agencies with road safety responsibilities should prioritise these more highly and be adequately resourced to do so. For more, see: [www.ctc.org.uk/campaigning/views-and-briefings/traffic-police-and-other-enforcement-agencies](http://www.ctc.org.uk/campaigning/views-and-briefings/traffic-police-and-other-enforcement-agencies)

c) **Unfriendly road design**
Cycling levels are suppressed by poor road and junction layouts that cater primarily for motor traffic and ignore the needs of cyclists. These problems are all too frequently compounded by badly thought out cycle ‘facilities’. Planners and engineers should therefore comply with best practice guidance on cycle-friendly infrastructure and planning. For more, see: [www.ctc.org.uk/campaigning/views-and-briefings/cycle-friendly-design-and-planning-overview](http://www.ctc.org.uk/campaigning/views-and-briefings/cycle-friendly-design-and-planning-overview)

d) **Lorries**
Reducing danger and intimidation from lorries is a key issue for improving cycle safety, especially in urban areas.\(^{25}\) Goods vehicles make up only 5% of traffic in Great Britain,\(^{26}\) but are involved in about 19% of cyclists’ road deaths per year.\(^{27}\) In London over 50% of cyclists’ fatalities are now due to collisions with lorries.\(^{28}\) For cyclists, collisions with lorries are far more likely to prove fatal than collisions with cars. Of all the collisions where a cyclist was killed or seriously injured in 2010, the proportion of fatalities was 2.7% for collisions involving cars, but 17% for those involving lorries.\(^{29}\)

Ways to tackle the problem include: maintaining and enforcing safe driving and vehicle standards; training and information for both cyclists and goods vehicle drivers; cycle-friendly vehicles; and road layout, routing and distribution strategies that minimise conflict. For more, see: [www.ctc.org.uk/campaigning/views-and-briefings/goods-vehicles](http://www.ctc.org.uk/campaigning/views-and-briefings/goods-vehicles)
3) Cycle training

**CTC view:** The provision of cycle training to the ‘Bikeability’ national standard can also help people to cycle more, to ride more safely, and to feel safer and more confident while doing so. It can also help parents feel more confident about allowing their children to cycle.

Unlike its predecessor, the ‘Cycle Proficiency’ programme, Bikeability national standard cycle training progresses through three levels. It starts by teaching basic control skills (typically learnt in the playground), then progresses until learners have the confidence and ability to handle busy traffic and major junctions. It is therefore important to offer cycle training not just for children but also for teenagers as they gain independence and start making longer journeys; and for adults who wish to enjoy the benefits of cycling but need to overcome their fears and/or want to revive their skills. [www.bikeability.org.uk](http://www.bikeability.org.uk) / [www.ctc.org.uk/cycletraining](http://www.ctc.org.uk/cycletraining)

4) Targets and indicators

**CTC view:**
- Increases in cyclist casualties may still mean cycle safety is improving if cycle use is increasing more steeply than cyclist casualties. Therefore targets and indicators for the effectiveness of road safety strategies should adopt ‘rate-based’ measures for improvements in cycle safety, e.g. cycle casualties (or fatal and serious injuries) per million km cycled, or per million trips. Simple casualty reduction targets should be avoided.
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**a) Rate-based targets/indicators**

In the past, road safety professionals largely focused on reducing casualties in absolute terms. This led to a reluctance to encourage cycling on the basis that this could add to the casualty toll and make injury reduction targets difficult to achieve. However, national policy is rightly to encourage *more* as well as *safer* cycling, so it is important to adopt targets and indicators that do not make professionals unwilling to increase cycle use – or, worse, that actually give them an incentive to discourage it.
The solution, now accepted in the Government's Strategic Framework for Road Safety (2011), is to adopt 'rate-based' targets and indicators. They are a better means of judging whether road safety policies are succeeding because they reflect whether a road user’s exposure to risk has increased or decreased. For instance, a target to halve the risk of serious and fatal cyclist and pedestrian casualties per 100,000 km travelled is preferable to an aim simply to reduce casualty numbers in absolute terms. As mentioned above, more and safer cycling can and should go hand in hand. The new rate-based targets should help ensure that this happens.

Rate-based targets, however, will be difficult to monitor at the local level, due to the difficulties of obtaining reliable local data on cycle use. Hence there is still a risk of simple casualty targets being adopted at the local level. CTC therefore urges that pedestrians and cyclists should be excluded from the overall casualty targets, particularly for local target-setting.

b) Perception-based targets/indicators
Another good measure of success is whether the public thinks that cycle safety is improving in a given locality. Fortunately, this is something that the 2011 Strategic Framework for Road Safety has also embraced. Perception-based indicators can serve as a useful complement to rate-based indicators, as they focus local authorities’ attention on tackling the fears that deter people from walking and cycling, rather than on pursuing the sort of scary ‘road safety education’ campaigns that put people, especially children and their parents, off cycling (see below).

Another advantage is that perception-based indicators are easily monitored at the local level, as data can be collected through existing public perception surveys of the safety of public transport travel. Local authorities, who do not have the ability to monitor cycle use at the local level, can still establish perception-based indicators, whilst developing the capacity to adopt rate-based indicators.

5) Cycle safety awareness campaigns

**CTC view:** Care should be taken to avoid cycle safety awareness campaigns that ‘dangerise’ cycling. These deter people from cycling or allowing their children to cycle and are counter-productive because they erode the ‘safety in numbers’ effect, as well as undermining the activity’s wider health and other benefits.

While it is important to ensure that motorists and cyclists are properly informed about how to travel safely, both for their own sake and for that of other road users, making cycling look dangerous not only misrepresents the activity (see 1b) but may also adversely impact on cycle safety. As mentioned above, there is good evidence that the more cycling there is, the safer cycling becomes. Conversely, campaigns that deter cycle use may undermine the ‘safety in numbers’ benefits for those who remain.
POLICY BACKGROUND

Strategic Framework for Road Safety (May 2011)

National action on road safety is outlined in the Government’s road safety strategies, published at intervals. The latest is the Strategic Framework for Road Safety, based on the consultation draft A Safer Way. The Framework covers the whole of Great Britain, though devolution means that there are different approaches to road safety in Wales, Scotland and England. Key points Framework for the whole of Great Britain are:

- **No targets** - despite strong calls from everyone involved in road safety.
- **Indicators**: Instead, the Government will now measure not only the numbers of people killed or seriously injured (KSI) for different transport modes, but also the KSI rates per billion miles travelled. It will also use an indicator for public perceptions of the safety of walking and cycling (see section 4 above).
- **Speed limits/street design**: The Strategy promises a framework to help councils take account of all the relevant factors when setting local speed limits - including health, environmental and the community severance effects of higher speed roads, as well as economic factors. However, it falls a long way short of encouraging local authorities to regard 20 mph as the norm for most urban streets. Moreover, there is very little on encouraging authorities to adopt safer, more pedestrian-and-cyclist friendly street designs.
- **FPNs for careless driving**: The Strategy’s headline proposals are to allow police officers to hand out fixed penalty notices (FPNs) for ‘careless’ driving offences, whilst encouraging the courts to make stronger use of their powers to confiscate and crush vehicles owned by those who persist in driving recklessly. The stated aim is to ‘nudge’ the generally law-abiding but occasionally careless driver into improving their behaviour, while freeing up the courts and police to devote their scarce resources to tackling the really serious offenders.
- **Traffic policing**: The Strategy fails to promise any increased resource for road traffic policing. Instead, the Government wants funding decisions to be taken locally, in response to local priorities and with accountability to local communities. However, it is hard to see how local communities can take those decisions sensibly when the funds are lacking in the first place.
- **Lorries**: The Strategy commits to reducing the risks of lorry drivers failing to see pedestrians and cyclists.

FURTHER READING & WEBSITES

- Strategic Framework for Road Safety, DfT (see above)
- www.roadpeace.org - national charity for road crash victims

FOOTNOTES AND REFERENCES

5 Ibid

7. The National Travel Survey 2010, Table NTS0310, says that on average, people in Great Britain cycle for 5 hours p.a. The GB population of is estimated to be about 60.5 million people (www.ons.gov.uk), which means that there are around 302,500,000 hours cycled in GB p.a. There were 17,185 injuries (all severities) to cyclists in 2010 (Reported Road Casualties, Great Britain, Table RAS30010), = 0.057 injuries per 1000 hours cycled. www.gov.uk/government/organisations/department-for-transport/series/national-travel-survey-statistics


www.theyworkforyou.com/lords/?id=2010-10-13a.513.6&s


17. BMI - a measure of whether someone is a healthy weight for their height.


22. TRL found that: "Whether a respondent cycled or not, not surprisingly, had an important effect on responses and attitudes. Those who were cyclists were in the favourable position of being able to see things from both the cyclist’s and the driver’s point of view […] those drivers who cycled did have greater insight than other drivers did in some aspects. For example, they, not surprisingly, tended to know more about cycling facilities and how they operated. When looking at the scenarios, they could rely more on personal experience and talk about how they had reacted in real life. They could identify with such issues, as they knew that they were more commonplace than other non-cycling drivers thought (such as being ‘cut-up’ by a motor vehicle).” Reid, S et al, TRL. Drivers’ Perceptions of Cyclists. 2003. www.trl.co.uk/online_store/reports_publications/trl_reports/cat_road_user_safety/report_drivers_perceptions_of_cyclists.htm

23. Goods vehicles, as defined by the Department for Transport’s statistical publications, weigh over 3,500 kgs (gross). Light vans are below this weight. Note: the term ‘HGV (heavy goods vehicle) was officially superseded in 2010.


