

PACTS response to:

All-Party Parliamentary Cycling Group

Inquiry – Get Britain Cycling, December 2012

The Parliamentary Advisory Council for Transport Safety (PACTS) is a registered charity and an associate Parliamentary Group. Its charitable objective is "**To protect human life through the promotion of transport safety for the public benefit**". Its aim is to advise and inform members of the House of Commons and of the House of Lords on air, rail and road safety issues.

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Contents

Summary	2
More and Safer Cycling	3
Great Britain Cycling Casualty Statistics	4
Number of casualties	4
Casualty rate	4
Underreporting of cycling casualties	5
Who are the casualties	5
When are casualties occurring	6
Causation	6
Conclusion	6
European Cycling Casualties Comparison	7
Casualties by population size	7
Casualty rate by amount of cycling	8
Casualty reduction trends	9
Comparison to Casualties for Other Modes	9
Moving Forward	10
Perceptions of safety	10
Behaviour	11
Lower vehicle speeds	12
Infrastructure design	12
Vehicle design	12
Shared responsibility	13
Conclusion	13

Summary

We have concentrated our response on safety aspects of cycling. Improved safety is a necessary although not sufficient condition for getting Britain cycling. Cyclist casualty rates and perceived levels of risk will need to be reduced if cycling is to be adopted more widely in the UK.

We recommend:

- Safety improvements to the road infrastructure, concentrating on large junctions and road sections with speeds above 30mph;
- More widespread implementation of lower speed limits, including more 20mph limits, particularly in urban areas;
- Greater emphasis on vulnerable road users in the design of vehicle safety systems;
- An expansion of cycle training programmes with training offered as an alternative to fines;
- Specific measures to reduce the incidence of cyclist-goods vehicle collisions;
- Investigation of the extent to which defective eye-sight is a factor in “failed to see” collisions, and scope to reduce casualties;
- Investigation of the potential benefits of strict liability for drivers towards cyclists and pedestrians, and the barriers to introducing it;
- Establishment of a road deaths investigation board that so that all cyclist deaths are systematically investigated;
- Improved statistics on cycle accidents and cycle use, including under-reporting levels, accidents not involving a motor vehicle and causation factors.

PACTS would be pleased to give oral evidence to the All Party Parliament Cycling Group, if invited.

More and safer cycling

This evidence is submitted to the All-Party Parliamentary Cycling Group's *Get Britain Cycling* inquiry.

PACTS wants to see more people cycling more safely. PACTS' charitable objective is to *protect human life through the promotion of transport safety for the public benefit*. This 'protecting of human life for the public benefit' goes beyond safeguarding life and limb, to encompass the general public's well-being and welfare. The health, environmental and other societal benefits of cycling are therefore important considerations. We would wish to see a reduction in absolute cycling casualty figures, as well as a reduction in rate-based cycling casualties.

The Government has said that it supports sustainable travel choices, in order to create economic growth, cut carbon, contribute improvements in road safety and public health.¹ The award of Local Sustainable Transport Fund grants to cycling projects shows that both local and central government see cycling as an important part of this.

PACTS supports efforts to boost cycling not least because higher levels of cycling, other things remaining equal, tend to reduce the risk to individual cyclists as drivers become more aware of cyclists and greater numbers of cyclists prompt the provision of a more cycle-friendly infrastructure.

*The likelihood that a given person walking or bicycling will be struck by a motorist varies inversely with the amount of walking or bicycling. This pattern is consistent across communities of varying size, from specific intersections to cities and countries, and across time periods.*²

Whilst the safety in numbers phenomenon has been proven to exist, it does not mean however that more cycling *necessarily* leads to safer cycling, ie fewer deaths and injuries per distance travelled. The recent increases in the non-fatal cyclist casualty rate (see below) show that active policy measures are needed to improve safety. PACTS therefore welcomes this inquiry.

¹ Department for Transport, 2011. *Creating Growth, Cutting Carbon: Making Sustainable Transport Happen*

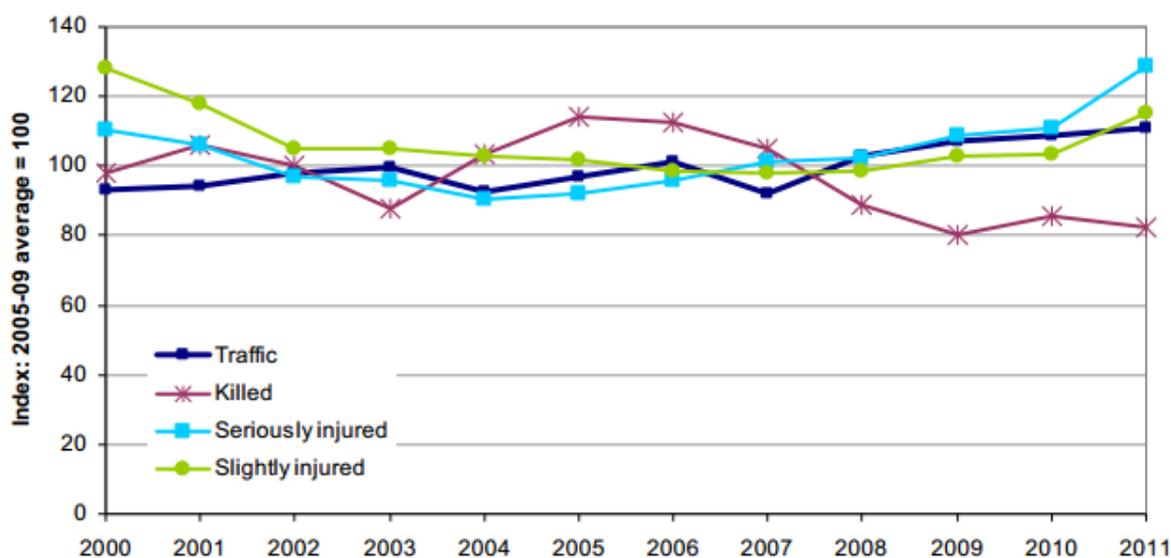
² *Inj Prev* 2003;**9**:205-209 doi:10.1136/ip.9.3.205

² *Inj Prev* 2003;**9**:205-209 doi:10.1136/ip.9.3.205

Great Britain Cycling Casualty Statistics

Figure 1 below illustrates that while levels of cycle traffic have been on a general upward trend over the past 11 years, the number of people killed and injured has fluctuated. Between 2000 and 2005, the cyclist casualty rate (excluding deaths) was declining. Since 2005, the number of cyclists killed on the roads has declined but the number of cyclists injured has increased.

Fig 1: Pedal cycle traffic and reported casualties by severity: GB 2000 - 2011³



Number of casualties⁴

- In 2011 there were 107 cyclist deaths, a **fall of 18%** relative to the 2005-2009 average (the base period for the Government Strategic Framework for Road Safety).
- However, over the same period, the number of **serious injuries continued to rise**, to 3,085 in 2011, a 29% increase on the 2005 – 2009 average. There was a particularly sharp rise (16%) in 2011, from 2,660 in 2010 to 3,085.
- Similarly, **slight injuries have shown a steady increase**, by 11% in 2011, and 15% compared to the 2005 – 2009 average.

Casualty rate

- Pedal cycle **traffic increased** by 2.2% between 2010 and 2011, with an 11% increase on the 2005 – 2009 average.⁵
- The number of pedal cyclists **killed or seriously injured per billion vehicle (pedal cycle) miles has risen** by 15% from the 2005-09 average, and is up by 13% from 2010.⁶

³ [General overview and trends in reported casualties](#), *Road Casualties in Great Britain: 2011 Annual Report*, Department for Transport (DfT).

⁴ Reported casualties by gender, road user type and severity, Great Britain, 2005 – 2009 average, 2004 – 2011 <http://assets.dft.gov.uk/statistics/releases/road-accidents-and-safety-annual-report-2011/rrcgb2011-complete.pdf>

⁵ Road traffic (vehicle miles) by vehicle type in Great Britain, annual from 1949 to 2011. <https://www.gov.uk/government/publications/road-traffic-estimates-2011>

The “safety in numbers” effect⁷ that appeared to be operating during the first half of the decade seems not to have been sufficient over the past five years. This demonstrates the need for more positive safety measures and an understanding of the statistics at a disaggregated level.

Underreporting of cyclist casualties

These figures above, generally cited by the Government, include only casualties that were reported to and recorded by the Police (STATS19). It is recognised that many road traffic accidents, are not reported to the police and not all are recorded in STATS19.⁸ Those involving cyclists are disproportionately underreported

The number of pedal cyclists admitted to hospital is more than three times the number of seriously injured casualties recorded in police data.⁹ For child cyclists the hospital figure is more than nine times larger. The majority of this discrepancy between data sets is attributed to pedal cyclist casualties involving no other vehicles. Cyclist-pedestrians collisions are also under-reported in STATS19. “Off-road” cycling casualties tend not be reported, such as those occurring on cycle paths and tracks which may be serving as alternative routes for on-road cycle trips.

Underreporting is an issue as it implies that there are fewer cyclist casualties than is the case and it is not known whether the underreporting itself is consistent across years,¹⁰ which could distort statistics and analysis.

Recommendation: Better statistics on cycle use and cyclist casualties are required, including regular assessments of the degree and nature of underreporting. Police (STATS19) data should be supplemented by other data sources including the National Travel Survey and hospital data.

Who are the casualties?

- Four in five reported pedal cycle casualties were male, as were three in four pedal cycle fatalities.
- 17% of pedal cycle casualties were children (0-15 years old) although only 6% of pedal cycle fatalities were children.
- 62% of all pedal cycle casualties were 16 – 59 year old men, compared to 54% for pedal cycle fatalities.

While the statistics show the age and gender of casualties, this is of limited usefulness in terms of assessing risk without reliable data for cycling levels broken down by age and gender. The high number of 16 – 59 year old men being injured is probably due to higher levels of cycling amongst this cohort.

⁶ Vehicles involved in reported accidents and involvement rates by vehicle type and severity of accident, Great Britain, 2001 – 2011. <http://assets.dft.gov.uk/statistics/releases/road-accidents-and-safety-annual-report-2011/rrcgb2011-complete.pdf>

⁷ *Injury Prevention Vol 9*, pp205-209, 2003 doi:10.1136/ip.9.3.205

⁸ http://www.nao.org.uk/publications/0809/improving_road_safety_for_ped.aspx

⁹ Hospital admissions data on road casualties in England. <http://assets.dft.gov.uk/statistics/releases/road-accidents-and-safety-annual-report-2011/rrcgb2011-complete.pdf>

¹⁰ House of Commons Transport Committee, 2008. *Ending the Scandal of Complacency: Road Safety beyond 2010*. Page 9.

Data from the National Travel Survey 2011 may help in analysis when it is available. It was due to be published in November 2012.¹¹

When are casualties occurring?

- 57% of pedal cycle casualties occurred during the hours of 7am – 10am and 3pm – 6pm. This proportion was slightly higher for accidents on Monday to Thursday (62%) and lower at the weekend (39 and 40% on Saturday and Sunday respectively), and is likely to be related to school and work travel. The proportions are similar for both child and adult casualties. This is consistent with the NTS which shows that most cycle trips are for work or education, rather than leisure.

Causation

The contributory factors in accidents involving cyclists are many; determining causation can be a complex task. However, three factors stand out:

- HGVs are disproportionately involved in accidents leading to serious or fatal injuries to cyclists;
- High and inappropriate speeds (see later section);
- “Failure to look/see” is a commonly recorded contributory factor. Whilst this may be primarily due to a failure look or a failure of perception, poor eye-sight may be a factor.¹²

Specific measures are required to address each of these issues.

Recommendation: Education, training and publicity – such as the “changing places” sessions should be expanded to alert cyclists and HGV drivers to the dangers; further trials and research should continue into the potential for sensors on HGVs to detect cyclists.

Recommendation: Drivers involved in accidents where “failure to look/see” appears to be a contributory factor should be required to take a simple eye-sight test. This could be the same one used at the start of the practical driving examination.

Conclusion

The upward trend in the cyclist casualty rate since 2005 shows that more positive measures are required. Not enough is known about the details of accidents involving cyclists.

Recommendation: The Government should establish a road deaths investigation board that so that all cyclist deaths are systematically investigated. This could draw on the work of crash investigation units of individual police forces.

¹¹ <https://www.gov.uk/government/organisations/department-for-transport/series/national-travel-survey-statistics>

¹² Deloitte Access Economics, Fit to drive, report for RSA Insurance Group, October 2012
<http://news.rsagroup.com/pressrelease/view/1196>

European Cycling Casualty Comparison

The following graphs show how the cycling statistics for the UK (or GB) compare to other European countries, and are taken from the *Bike Pal: Pedalling Towards Safety* report produced by the European Transport Safety Council.

Casualties by population size

Table 1 shows that UK has one of the lowest levels of cyclist deaths relative to its population size. However, this takes no account of the amount of cycle use, which varies greatly between countries. A country with little or no cycling would tend to appear “safe” by this measure whereas a country where many people cycled (presumably because they felt it was safe to do so) would appear “dangerous” for cyclists.

Table 1: Road mortality (calculated as deaths per million population) for cyclists, per age group and overall figure between 2008 and 2010¹³

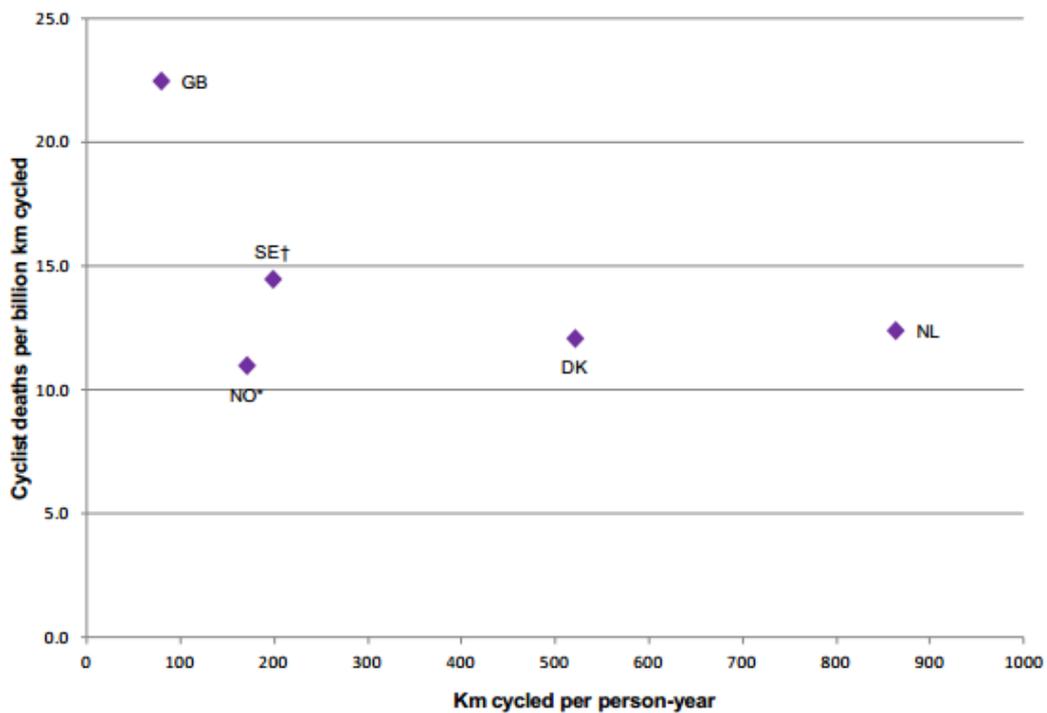
Country	Age group				Overall cycling mortality
	0-14	15-24	25-64	65+	
ES	0.4	1.2	1.4	1.8	1.3
NO	1.5	1.6	1.6	2.4	1.7
EL	1.2	1.9	1.7	2.1	1.8
UK	0.9	2.0	2.0	1.8	1.8
IE	1.1	2.8	1.5	4.1	1.9
LU	3.8	0.0	1.2	4.8	2.0
FR	1.1	2.3	2.1	5.0	2.4
SE	0.4	1.1	2.2	6.7	2.6
PT	0.0	1.7	3.4	6.6	3.3
CY	0.0	5.5	3.8	3.3	3.3
FI	1.1	1.5	2.8	12.7	4.0
IT	1.1	1.9	3.4	12.0	4.7
CH	2.3	4.0	3.9	11.7	5.0
DE	2.0	3.0	3.7	12.9	5.3
AT	1.1	1.3	4.6	14.3	5.3
SK	2.0	2.1	5.9	12.2	5.9
DK	1.7	5.1	5.5	15.6	6.4
LV	2.1	3.9	8.8	11.1	8.0
RO	2.8	2.8	8.5	16.5	8.0
BE*	3.7	9.1	6.7	20.7	8.2
SI*	2.4	5.5	8.8	15.0	8.4
CZ	0.7	2.5	8.7	18.0	9.3
PL	2.9	4.0	8.3	27.3	9.5
HU	1.1	2.6	10.8	20.9	10.1
NL	4.3	8.3	5.5	39.1	10.7
PIN	1.5	2.6	3.8	10.4	4.5
EU	1.5	2.6	3.9	10.6	4.4

¹³ http://www.etsc.eu/documents/BIKE_PAL_Safety_Ranking.pdf Table 3

Casualty rate by amount of cycling

Figure 2 depicts the rate of cyclist deaths (per distance cycled) and the rate of cycling for GB, Norway, Sweden, Denmark and the Netherlands. GB has the highest rate of cyclist deaths and the lowest rate of cycling – approximately twice the casualty rate of the Netherlands. However, the lack of available data for other European countries and the fact that non-fatal casualties are excluded means that only limited conclusions can be drawn. Given the much greater levels of cycling and investment in cycling infrastructure in these other (four) countries, the differences in casualty rates are perhaps not as great as one might have expected.

Fig 2: Number of cyclist deaths per billion km ridden against the rate of cycling per person¹⁴

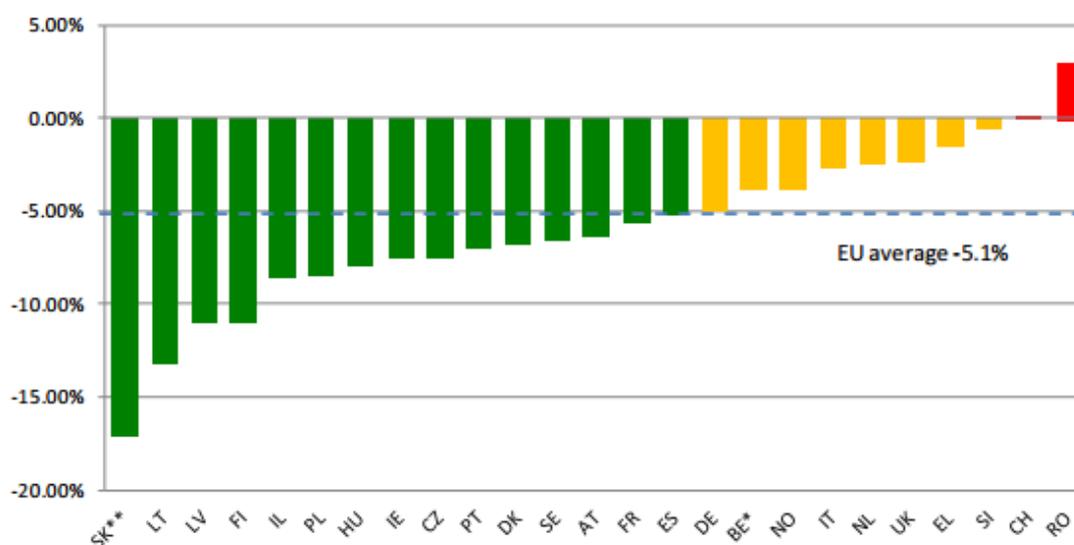


¹⁴ http://www.etsc.eu/documents/BIKE_PAL_Safety_Ranking.pdf Figure 6

Casualty reduction trends

Figure 3 shows that cyclist deaths declined in almost all European countries since 2001. The annual average rate of decline in the UK (2.5%) is similar to that of Norway, Italy and Netherlands, which fell short of the European average (5.1%). However, these rates take no account of changes in levels of cycle use.

Fig 3: Average annual percentage change in the number of cyclist deaths for the 2001-2010 period¹⁵



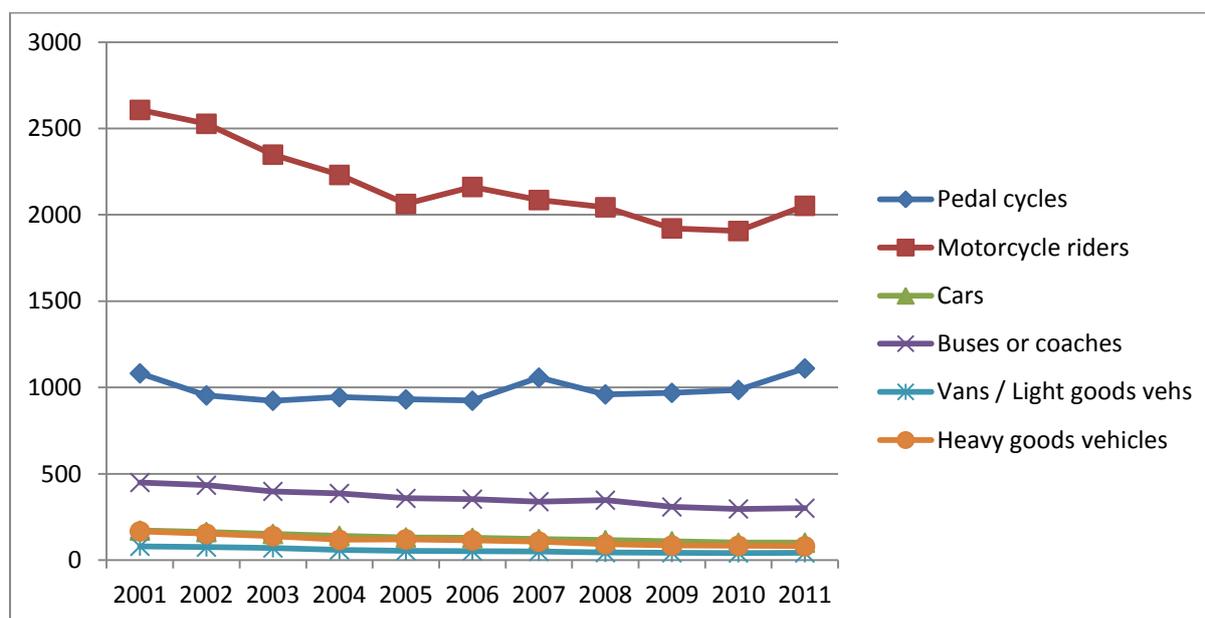
Comparison to Casualties for Other Modes

The following graph (Figure 5) plots accident involvement rates (killed or seriously injured) by distance travelled by mode over the last decade (2001-2011). It illustrates the disparity between modes in absolute levels and trends. Whilst the accident involvement rates have declined for motorised modes, the rate for cyclists has fluctuated and was higher in 2011 than in 2001. The improving safety of vehicle passengers is an achievement and points towards enhancements in vehicle design and primary and secondary safety systems. Pedestrians are not included in this graph as pedestrian miles (walked) are not measured in the same way as other modes.

It is important to note however that comparisons of motorised and non-motorised accident involvement rates by distance travelled can be misleading. Cycle trips tend to be much shorter than motor vehicle trips. Therefore differences in accident involvement rates measured on a per trip basis show less disparity.

¹⁵ http://www.etsc.eu/documents/BIKE_PAL_Safety_Ranking.pdf Figure 2

Fig 5: Accident involvement rates by vehicle type, Great Britain, 2001 – 2011: KSI rate per billion vehicle miles¹⁶



Moving Forward

Perceptions of safety

In order to encourage a wider range of people to cycle, the environment needs to be more inviting: people need to perceive cycling as safe and enjoyable. Perceptions that cycling in traffic is dangerous are a major deterrent to people considering cycling. Qualitative research carried out for the Department for Transport found that while factors such as inconvenience, effort and negative aspects of being out in the open were important, the most prevalent complaint was the behaviour of other road users.

Participants felt that, as cyclists, they were highly exposed to a range of dangerous behaviours, from other road users not noticing them, through ignorance and incompetence, to outright aggression.

Over and above any specific bad behaviours, it was clear that most, if not all, participants experience increased levels of stress when the volume and speed of traffic increased. Previous research has shown this pattern more widely, for instance Vandebona and Kiyota (2001) reviewed the literature and concluded that the speed of traffic and separation distance between traffic and cyclists are the two main determinants of cyclists' perception of risk and danger, while Stone and Gosling (2008) showed that cyclists' feelings of safety go down as roads become busier. It is worth noting that the source of stress here is not the behaviour of individual road users, but the collective properties of traffic.¹⁷

¹⁶ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/9280/rrcgb2011-complete.pdf Table RAS20001 Page 135

¹⁷ Christmas, S. et al, 2010. Cycling, Safety and Sharing the Road: Qualitative Research with Cyclists and Other Road Users. Road Safety Web Publication No. 17. Department for Transport: London.

Perceptions of risk are personal and there can be great variation between different groups, particularly between the experienced and inexperienced cyclists. To encourage more cycling, more attention needs to be given to the perceptions of safety for inexperienced and potential cyclists. However, facilities that are inconvenient to use or do not serve the journey origins and destinations that cyclists need will not attract significant numbers of new cyclists, regardless of safety.

Behaviour

The research referred to above found that in reaction to deterrents such as the behaviour of other road users, and the volume and speed of traffic, cyclists respond with any of the following four basic approaches:

- Complete **avoidance** of traffic
- Keeping out of the way and **guarded**
- Being **assertive** and staying in control of the situation
- Being **opportunistic** and making the most of the bike.¹⁸

Interactions between road users can be problematic due to acts of aggression, failures of attitude, failures of competence/understanding, and failures of expectation. These failures of attitudes can be addressed through education, enforcement and marketing.

Training for cyclists should be more widely available for both children and adults and its availability monitored.¹⁹ The Government has continued to fund Bikeability cycle training, which has raised the standard of cycle training. Those adults who missed out on cycle training at school should be encouraged to take training as they take up or start cycling again. Cycle training provides the means to spread road user skills, independence and safety. The DfT Think! campaign for motorcycles 'Perfect Day' captured this feeling, combined with a strong safety message.

Recommendation: Cycle training programmes should be expanded and monitored; cycle training should be offered as an alternative to fines for cyclists, as speed awareness courses are for drivers.

Shock tactics have only a short term safety impact. Cycle training and safety messages should be constructive and take care not to inadvertently deter cycling. Lessons might be drawn from the motorcycle safety campaign over recent years. The current 'Named Rider' motorcycle safety campaign not only increased awareness of the vulnerability of the motorcycle rider²⁰ but also gave an alternative to the shock tactic sometimes favoured by safety campaigns, which may have an undesired effect of discouraging riding.

Drawing the attention of drivers of cars, LGVs and HGVs, to the risks in interactions between cyclists and motorised vehicles should also happen at a professional level. Driving for Better Business, and

¹⁸ Christmas, S. et al, 2010. Cycling, Safety and Sharing the Road: Qualitative Research with Cyclists and Other Road Users. Road Safety Web Publication No. 17. Department for Transport: London.

¹⁹ House of Commons Transport Committee, 2008. *Ending the Scandal of Complacency: Road Safety beyond 2010*. Para 89

²⁰ <http://assets.dft.gov.uk/publications/think-motorcycle-evaluation-named-rider/think-motorcycle-evaluation.pdf>

schemes such as the Freight Operator Recognition Scheme (FORS)²¹, a membership scheme that aims to improve freight delivery in London, should be encouraged.

Lower vehicle speeds

A TRL literature review commissioned by DfT found that the greatest benefits of all interventions to increase cycle safety come from reducing motor vehicle speeds.²² Such an intervention has wider benefits for other road users as well as greatly reducing risk imposed on cyclists. Lower speeds are particularly beneficial at junctions where most cycle injuries in multi-vehicle collisions take place. Therefore 20mph zones in urban areas and design features to slow vehicles, such as raised side road entry treatments, are desirable. Assuming that encouraging cycling is an objective, it is important that measures make cyclists *feel* safe. Traffic calming measures which increase the perceived or actual risk to cyclists, such as road narrowings, will be counterproductive to increasing cycling.

Recommendation: More widespread implementation of lower speed limits, including more 20mph limits, particularly in urban areas, is likely to be one of the most effective means to reduce cyclist casualties and to improve their perceptions of safety.

Infrastructure design

Kerbed, segregated cycle lanes are not wide-spread in the UK, and the TRL literature review found no evidence in Europe regarding the safety performance of kerbed cycle lanes. Other design features used in some other European countries but not widely used in the UK include cycle lane markings continued across junctions, cycle pre-signals and Trixi mirrors (mounted at traffic lights, giving drivers of heavy vehicles a view of any cyclists to their left), the latter of which are now being trialled in London. Further trials and evidence gathering for these features should be carried out in this country to analyse the extent of any potential benefit to cycle safety.

Although evidence showing the effectiveness of cycle lanes is limited in the UK, it has been found that many people find cycling a bad experience using existing roads, are put off cycling by having to negotiate difficult road junctions, and have a desire for more cycle lanes.²³ Therefore more should be done to ensure cycle infrastructure is well-planned, well-maintained, consistent, and legible to all road users.

Recommendation: In the short to medium term, safety improvements to the road infrastructure should be concentrated on large junctions and road sections with speeds above 30mph which are on routes important to cyclists.

Vehicle design

As well as improving the design of the road environment, vehicles can be made safer for cyclists. Safety technology for motor vehicles is advancing rapidly, including advanced active and passive safety systems which are designed, respectively, to prevent crashes and to reduce injury in the case of a crash. Telematics, Intelligent Transport Systems (ITS), self-driving cars, crash protection for vulnerable road users, external cameras and sensors and other technologies are likely to change the nature of risk and the environment for pedestrians and cyclists greatly in the next 10-20 years. The challenge for car manufactures, safety policy makers and those promoting cycling will be to ensure

²¹ <http://www.tfl.gov.uk/corporate/projectsandschemes/24418.aspx>

²² <http://assets.dft.gov.uk/publications/infrastructure-and-cyclist-safety/infrastructure-and-cyclist-safety.pdf>

²³ http://radar.brookes.ac.uk/radar/items/17bb3ed2-1209-b3e9-5357-614f329af72e/1/Understanding_Walking_&_Cycling_Report_WEB.pdf

that new measures are positive for cyclists (and pedestrians) and that better protection for drivers does not lead them to take less care of vulnerable users – the so called “carcooning”.

Particular measures are needed to improve safety of HGVs. Car bonnets can be made more forgiving for cyclists in the event of a collision, and in-vehicle technologies can detect cyclists and alert drivers to their presence on the road. In vehicle design issues the UK government should be engaging with Europe, and encouraging Euro NCAP to include cyclist protection in their tests for ‘pedestrian protection’.

Cyclists also have responsibilities. The Highway Code advises that cycles should be well maintained and, if used at night, fitted with lights and reflectors.

Recommendation: There needs to be greater emphasis on vulnerable road users in the design of future vehicle safety systems and standards.

Shared responsibility

In the safe systems approach to road safety the aim is to design a road system where inevitable human errors of judgement do not result in death or serious injury. Responsibility for keeping users safe even when they make mistakes is shared amongst the designers, builders and providers of the system. It is also shared between users of the system.

The civil law in some other European countries, such as the Netherlands, places a strict liability on drivers towards vulnerable road users. This may have benefits for cyclist safety in the UK but has been rejected to date. The perception of poor road user behaviour by some cyclists may be one reason.

Recommendation: there should be an investigation of the potential benefits of strict liability for drivers towards cyclists and pedestrians, and the barriers to introducing it.

Conclusion

Measures to promote cycling and cycle safety in Britain are not new²⁴ and the challenges should not be underestimated. However, the recent success of Britain’s Olympic and Paralympic cyclists combined with *The Times’ Cities fit for cyclists* campaign are two factors that have brought cycling to the fore in politics and the public eye. These may sustain worthwhile safety improvements where previous measures have faltered.

The Government has overall responsibility for leading and guiding on encouraging more and safer cycling. Some funding has been provided recently for cycle safety, and for the Local Sustainable Travel Fund. The Government should ensure that this momentum is maintained through a consistent, cross-departmental approach to encouraging more and safer cycling.

²⁴ For example, the *National Cycling Strategy*, launched in 1996.

<http://webarchive.nationalarchives.gov.uk/+http://www.dft.gov.uk/pgr/sustainable/cycling/deliveryofthenationalcycling5738>