

PACTS submission to the Transport Committee's *Active Travel* inquiry.

About PACTS

The Parliamentary Advisory Council for Transport Safety (PACTS) was formed in 1982 by parliamentarians and experts from a range of disciplines who had amended what became the Transport Act 1981 to make seat belt wearing compulsory.

Today, PACTS is the only NGO which:

- addresses transport safety (road, rail and air) across the UK;
- focuses on parliament, government and key stakeholders;
- has a wide membership base across the modes and the public, private and third sectors;
- has no commercial or sectional interests.

It provides the secretariat to the All-Party Parliamentary Group for Transport Safety.

PACTS' remit and active travel

PACTS is a registered charity and its objective is "To protect human life through the promotion of transport safety for the public benefit". As such, PACTS promotes "safe transport for all". We support evidence-based policies that will move the UK much faster towards zero transport deaths and serious injuries. PACTS supports the safe system approach to road safety which acknowledges the inevitability of human error and targets danger reduction.

PACTS' focus and expertise are in transport safety. We believe, with evidence, that transport safety should be an objective in its own right.¹ It should be delivered in ways that support other policy objectives, such as improving public health, the environment, the economy and quality of life. This includes active travel.

Alignment of policies may seem obvious but cannot be taken for granted. Safety is too often seen as a hygiene factor, to be retrofitted once other decisions have been made. At the same time, mainstream road safety has tended to operate in a car-centric paradigm and has been isolated from wider issues and strategies.²

Active travel and the wider context

PACTS very much welcomes the [Transport Committee's Active Travel inquiry](#). We see promotion of active travel and reducing road casualties as intertwined.

Without wishing to sound alarmist, the range and scale of public policy problems facing the UK and beyond are as challenging now as in any recent time. These include:

- climate change - 12 years to avert global warming above 1.5 degrees³
- obesity and associated ill-health – £6bn cost pa to NHS; £27bn cost to wider society⁴

¹ For example, the DfT estimates the social cost of reported road accidents in Great Britain to be £36 bn pa. Transport Focus has found that safety is one of the key attributes that road users expect from the Strategic Road Network.

² For example, [Safety Cube Decision Support System](#), funded by the European Commission, reviews 1,250 scientific studies of road safety measures. However, it does not address the road safety impacts of topics such as transport policy, land use patterns, taxes and charges, etc.

³ [IPCC report October 2018](#)

⁴ <https://www.gov.uk/government/publications/health-matters-obesity-and-the-food-environment/health-matters-obesity-and-the-food-environment--2>

- mental health – affecting 1 in 4 people⁵
- economic challenges, including Brexit, poverty, town centres/High Streets etc.
- pressure on public services
- housing shortages – 240,000-340,000 new homes needed in England each year⁶
- no progress being made in reducing road deaths since 2010.

Active travel alone cannot solve these problems but its potential contribution should not be underestimated. This requires vision and joined-up policy-making – approaches which have been urged before but which are still sorely needed.

The Committee's lines of inquiry

1. The benefits and risks of active travel, and the extent to which they are properly understood by the public and Government.

Benefits

The benefits of active travel, both to the individual and society, can be substantial. These are reasonably well researched and documented in a number of areas, including:

- sustainable travel – almost zero emissions of GHGs or pollutants, minimal resource use; integral to the viability of public transport and the operation of cities
- benign – little danger to other road users
- health and wellbeing benefits – particularly cardio-vascular and mental health
- local economy and community benefits – use of local shops and facilities
- wider-economic benefits – healthier, more productive workforce, fewer demands on public services
- more efficient higher density land use than car-based development.

Benefit: cost ratios for active travel can be very high, much higher than for major transport infrastructure projects. Of course, these benefits are only realised to the extent that active travel actually occurs and, in particular, when it replaces trips currently made by car or by individuals who are insufficiently active.

Risk

The conventional measures of risk for active travel are casualty numbers and casualty rates (per head, per mile travelled, per trip, etc.), often compared with other modes.⁷ These are compiled on basis of police “STATS19” casualty reports, combined with traffic and travel surveys. The results are published in the annual *Reported Road Casualties Great Britain* (RRCGB).⁸

Rather than repeat the data, we focus here on the limitations of this approach as it has a bearing on how well government understands these risks and on policy.

⁵ <http://researchbriefings.files.parliament.uk/documents/CBP-7547/CBP-7547.pdf>

⁶ <http://researchbriefings.files.parliament.uk/documents/CBP-7671/CBP-7671.pdf>

⁷ See, for example, Table RAS30070: Relative risk of different forms of transport, Great Britain, 2017 in [Reported Road Casualties Great Britain: 2017](#)

⁸ <https://www.gov.uk/government/statistics/reported-road-casualties-great-britain-annual-report-2017>

RRCGB is a detailed (400 page) statistical publication, which qualifies as National Statistics. DfT statisticians have improved its content and presentation considerably over recent years, for example, by adding statistical significance testing, checking the Stats19 data against other casualty data sets, assessing the impact of weather on casualty numbers and introducing new graphics and factsheets.

However, in relation to understanding the risks and benefits of active travel, RRCGB still has significant limitations:

- It does not distinguish benign modes from dangerous ones, i.e. those modes sustaining the casualties and those inflicting them.
- It assesses at length, with graphs, rates and commentary, the “vulnerability” of different road users, mainly of active travel modes. We have reproduced two such graphs below.
- It does not present the other side of the equation, i.e. danger and casualties suffered by other road users in collisions with motorised modes – the number or rate of third party casualties associated with cars, buses and HGVs. Using the same RRCGB data, PACTS has done a preliminary analysis which shows an alternative picture of the risks by mode. (See graphs below.)
- It does not clearly convey that, for the vast majority of UK road users, they are much more likely to be killed in a car, or by car, than any other mode.
- It compares user fatality rates per distance travelled, concluding that walking and cycling are “high risk” modes whilst cars, buses and HGVs are low risk. This implies the trips are similar and interchangeable which, generally, they are not. The average person travels over 5,000 miles by car/van per year. By comparison, the average person walks and cycles fewer than 300 miles per year.⁹ Even under the most optimistic CWIS scenario, there is no prospect that these trips or miles would be substituted on a like for like basis.
- STATS19 omits a range of casualties involving roads and motor vehicles, including pedestrian falls, suicides and injuries caused deliberately by use of a vehicle. Whilst it may be reasonable to say these are not “road safety” they are part of the risk associated with motor vehicle use.
- People who alight safely from vehicles and are subsequently injured are classified as pedestrian casualties.¹⁰ In 2017, 44 pedestrian fatalities were recorded on the Strategic Road Network in England. According to Highways England, a number of these casualties were drivers who had alighted from a vehicle while others were suspected suicides. In relation to understanding the risks of active travel, it seems unhelpful that these deaths should be counted as “pedestrians”, thereby inflating the pedestrian casualty statistics.
- Casualty numbers and risks are often measured in terms of those Killed and Seriously Injured (KSI). However, as there are approximately 13 reported serious injuries for every one fatality, KSI is really a measure of serious injuries. In addition, the UK definition of Serious Injury used in STATS19 is very broad. It ranges from cuts and minor fractures to dying more than 30 days after the collision. Whilst this may be a reasonable definition for road safety purposes, it makes KSIs a very crude assessment of risk. This has a bearing on assessing the risks of active travel. Cyclists have a much higher ratio of reported serious injuries to fatalities (36:1 in 2017) than car occupants (11:1) and the percentage of clinically serious (MAIS3+) injuries for cyclists admitted to hospital was lower (9%) than for any other

⁹ National Travel Survey 2017

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/729521/national-travel-survey-2017.pdf

¹⁰ RRCGB - see Definitions

road user group.¹¹ In other words, cyclists may be involved in more KSIs but they are predominantly minor “serious injuries”.

Conventional presentation of road user risk, highlighting vulnerable (mostly active travel) modes

Chart 6: Casualty rate per billion passenger miles by road user type:

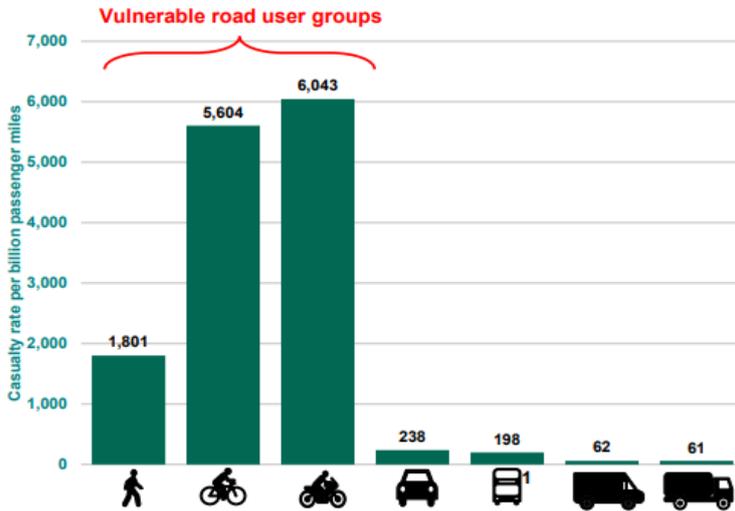
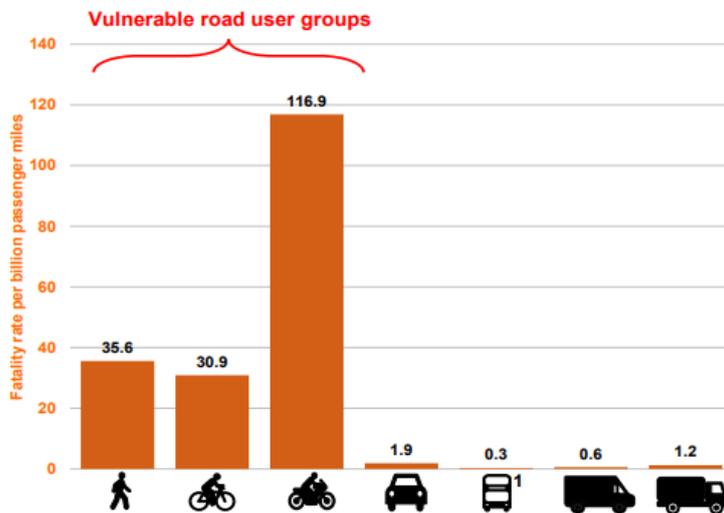


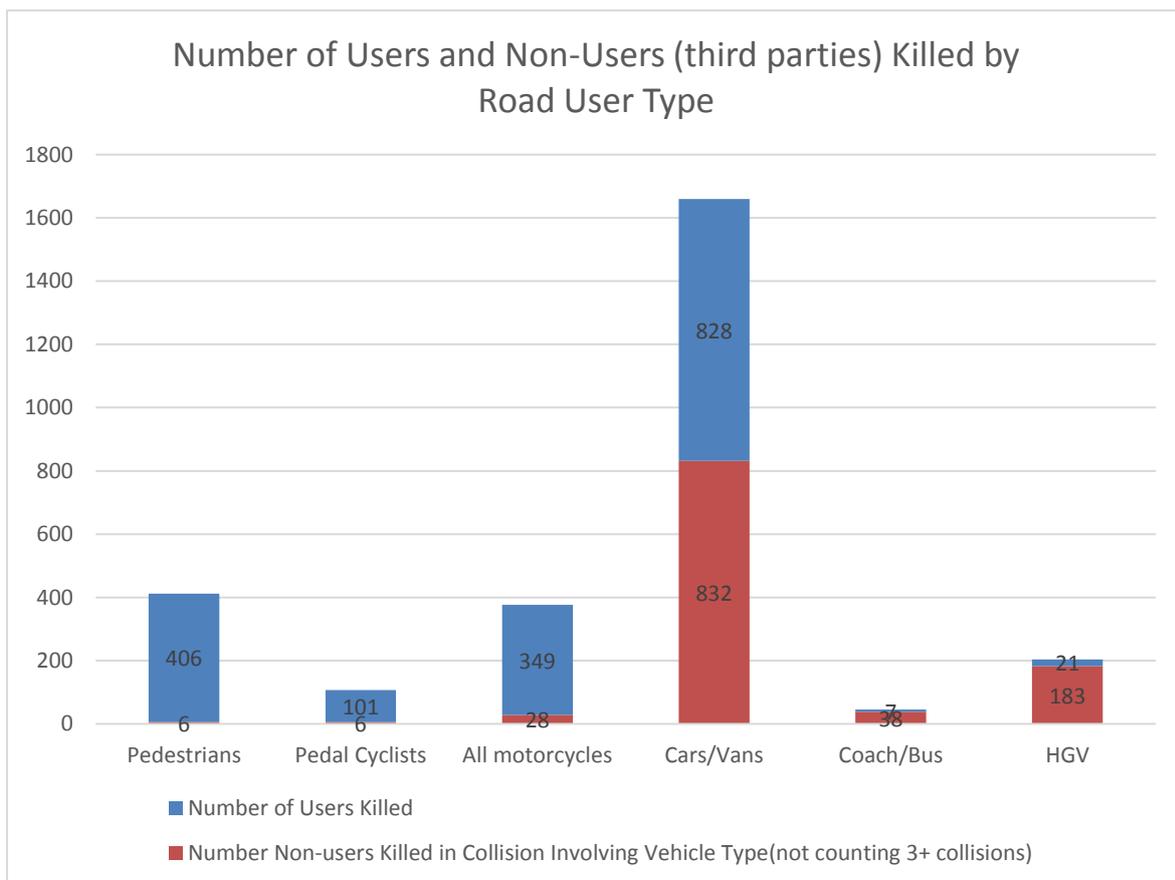
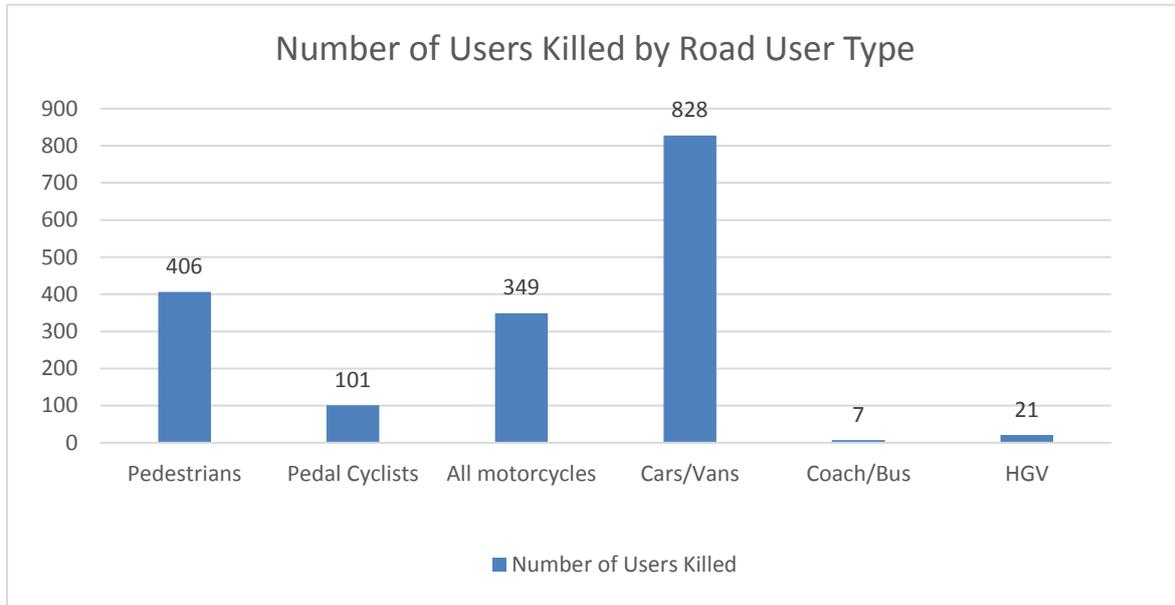
Chart 7: Fatality rate per billion passenger miles by road user type: GB, 2017

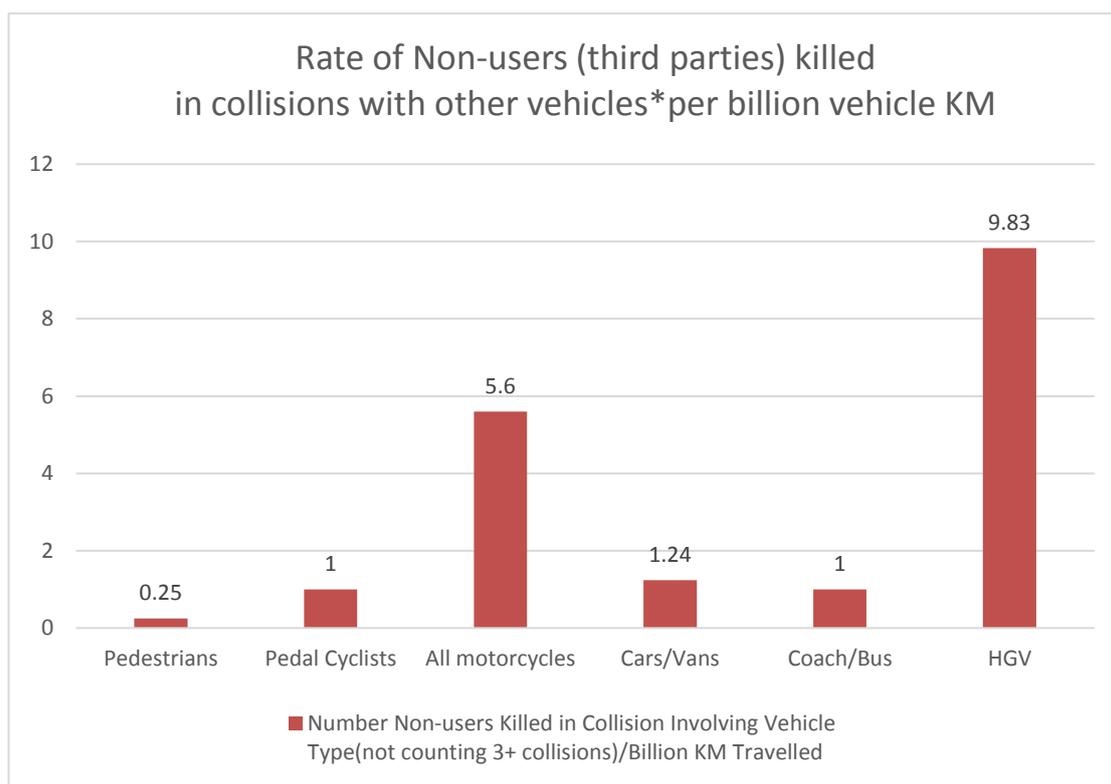


Source: [DfT, RRCGB 2017](#).

¹¹ A new definition of serious injury has been agreed for EU member states. This is much higher level of injury – (clinically seriously injured) and defined as MAIS3+ on the Maximum Abbreviated Injury Scale. The DfT is now reporting these data. A breakdown by road user group is provided here. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/556648/rrcgb2015-03.pdf

Alternative analysis of road user risk by PACTS, highlighting dangers to other road users





*excluding vehicle collisions involving three or more vehicles, which account for some 15% of reported road deaths.

Source: [Reported Road Casualties Great Britain: 2017 Annual Report](#), [Transport Statistics Great Britain 2017](#), and [Domestic Road Freight Statistics Great Britain 2017](#).

Some authorities and analysts have taken a different approach to analysis and presentation, which is more helpful to active travel. For example:

- The Mayor of London’s Transport Strategy aims to substantially increase active travel while reducing private car use. The mayor has adopted a Vision Zero road safety policy and TfL is implementing it through a strategy of road danger reduction. In order to support this approach, TfL has analysed road safety statistics in a way that shows danger, rather than vulnerability.¹²
- The OECD International Transport Forum assesses (where data are available) the third party risk imposed on third parties in different world cities.¹³

It would be helpful if the DfT would expand its analysis in this way. The data are there, in most cases.¹⁴ It just needs a different analysis. We would like to see these matters considered by the DfT, probably within its current SCRAS review of road safety statistics

¹² TfL <http://content.tfl.gov.uk/road-risk-and-vulnerable-road-user-working-paper.pdf>

¹³ International Transport Forum, OECD, Safer City Streets: Global Benchmarking for urban road safety (see Figure 8)

¹⁴ See Table RAS40004, RRCGB.

Properly understood by the public and government?

There are risks and benefits associated with doing anything – work, leisure, DIY, gardening, driving, etc. – walking and cycling also involve risk. The conclusion of public health experts is that the most harmful option is to remain inactive.

It is probably unrealistic to expect the public to “properly understand” the benefits and risks of active travel. This is *not* because the public are stupid or disinterested. Rather:

- The data are complicated, dispersed and hard to interpret;
- The calculations of risks and benefits are usually at a very high (aggregate) level. This may not be relevant to the individual or their circumstances. A child walking or cycling on a fast, unlit country road after dark is very different risk to an adult walking or cycling on a quiet residential road in daylight. And whilst motorways are often cited as our “safest roads”, they would not be safe for pedestrians or cyclists. Older drivers often avoid motorways as they are intimidated by the high speeds, multiple lanes and HGVs. These fears are not irrational;
- In all areas of life, personal experience tends to trump statistics. It is not much use telling people that something (cycling, flying, using motorways etc.) is “safe” or “unsafe” based on aggregate casualty statistics when their experiences may be quite different. This applies to the public *and* to experts.¹⁵

It is probably more important to provide clear, accessible integrated information to government and public policy makers and to warn of pitfalls in misinterpretation.

Safety experts often quote casualty rates:

- These can be helpful in relation to tracking the safety of a particular mode over time, and in different locations, speed limits, road types etc. For example, has cycling become safer or less safe over time?
- However, comparisons between modes need to avoid comparing “apples and pears”. There will be little interchangeability in many cases, such as between walking and driving an HGV.
- The denominators also need to be considered for relevance and comparability. For example, the USA Space Shuttle is the mode with the *lowest* rate of deaths per billion miles travelled; but it is also the mode with the *highest* rate of deaths per trip.¹⁶

For public policy making in relation to travel and transport (not just active travel) ideally there would be a composite measure of risk to the user, the risk to third parties and the health benefits/disbenefits of each mode. As far as we are aware, such figures are not readily available to those in road safety, active travel promotion, public health or elsewhere, in the way that casualty data are.

¹⁵ David Spiegelhalter, Professor for the Public Understanding of Statistics, provides examples from transport and other sectors in his book with Michael Blastland, *The Norm Chronicles*, 2013

¹⁶ 1 death per 35 million shuttle miles flown; 1 death per 10 shuttle trips. Based on 14 deaths, 500 million miles flown, 135 missions. <https://www.space.com/12376-nasa-space-shuttle-program-facts-statistics.html> (This example is provided by way of illustration. PACTS accepts these figures can be interpreted slightly differently.)

2. Recent trends in walking and cycling and factors contributing to these trends.

Trends

The National Travel Survey¹⁷ shows that, over the past fifteen years, the extent to which most people walk or cycle has remained broadly stable.

The average distance walked per person per year was 206 miles, unchanged between 2002 and 2017. The 2017 survey reported an increase in walking trips (stages) and in distance on recent years but there are questions about the validity of this finding.

Of children travelling to school, the NTS says

“The proportion of primary school children walking to school has been broadly similar since 2002. In fact, the level in 2017 (51%) was the same as in 2002. The proportion of secondary school children walking to school is lower at 35%, a decrease from 45% in 2002. The lower rate in part reflects the longer distances secondary school children travel to school: 3.5 miles compared to 1.6 for primary school children.”

With respect to promoting active travel, it is a relief to see that, apart from secondary school pupils, walk trips and distances have not declined. However, this can hardly be seen as a public policy success.

Cycling trends give a slightly different picture. The average distance cycled per person per year increased by 54% to 60 miles between 2002 and 2017. However, this was due to longer trips, not more trips. The average number of cycle trips declined slightly from 18 to 17. Cycling activity is still concentrated among a small percentage of the population: 14% of people cycle at least once per week (some every day), while 66% of people cycle less than once per year or never.

There has been much talk of a “cycling boom” in recent years.¹⁸ However, in so far as there has been a boom, it appears to be largely centred on

- London (mainly commuters) and to a lesser extent in some other cities, due to congestion, a cultural shift and support from the local authorities;
- Sport/leisure cycling – the rise of the MAMIL and cycling clubs, stimulated by the success of UK riders in the Olympics, Tour de France and other high-profile events.

Whilst the bicycle has become a symbol of sporting success, sustainable transport and all things “green”, the majority of the population outside London remain wedded to their cars.^{19 20}

Contributory factors

The role of policy, public promotion and infrastructure provision are important. It is also important to understand its role and limitations and to learn from previous UK initiatives (successful or otherwise).

¹⁷

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/729521/national-travel-survey-2017.pdf

¹⁸ For an analysis of “bicycle booms” and the factors that have fuelled them in Europe and North America, see Carlton Reid, *Bicycle Boom - the unexpected resurgence of cycling*, 2017, Island Press

¹⁹ <https://www.bbc.co.uk/news/uk-wales-44604025>

²⁰ For an analysis of “bicycle booms” and the factors that have fuelled them in Europe and North America, see Carlton Reid, *Bicycle Boom - the unexpected resurgence of cycling*, 2017, Island Press

The 1996 National Cycling Strategy²¹ set a target of quadrupling cycle journeys by 2012, largely by detailed measures to promote cycling and to provide a more cycle-friendly infrastructure. Despite much support, levels of cycle use fell and the target was abandoned in 2004.²²

London mayors since Ken Livingstone have promoted cycling, adopted targets and invested in infrastructure over several decades. Other parts of the UK, including Scotland and many local authorities in England, have also adopted targets for cycle growth (and sometimes for walking). London has seen cycling increase substantially; most other places have not.

Policy can have a positive effect but exogenous factors will dominate. The broadly flat trends in levels of walking and cycling reflect the lack of any significant positive underlying change in land use, transport planning or pricing in relation to active travel across most of the country. The National Travel Survey²³ shows that car ownership, car use, trip lengths, etc. rose substantially between the mid-1970s and the late 1990s, after which there was a decline in trips and miles travelled. 2015-2017 saw increases in trips and miles travelled.

3. The effectiveness of the Department for Transport in setting the strategic objectives for active travel and in working with other departments that have relevant responsibilities.

One strategic objective that the DfT should spell out much more clearly is the overwhelming importance of promoting walking. Cycling tends to grab the headlines and ministers and media focus on it.²⁴ Yet walking is infinitely more accessible, more widely undertaken and more important in so many ways. There is synergy between promoting walking and cycling but walking is easily overlooked and requires specific focus.

There has never been a dedicated national walking strategy. Even under the comprehensive integrated transport planning of the John Prescott era, when there were many “daughter” strategies, walking was omitted.²⁵ While there have been design manuals aimed at improving the pedestrian environment, these do not provide evidence-based strategies to increase walking. This has been a serious mistake.

The DfT is not a powerful department in Whitehall. PACTS has seen how difficult it is for DfT to get significant collaboration on road safety issues. This was highlighted in the recently published Road Safety Management Capacity Review commissioned by the DfT.²⁶

Active travel is now so important (or should be) that it should not be left to the DfT to set strategic objectives or to attempt to cajole other government departments to cooperate. Much stronger leadership and engagement is required across Whitehall. The benefits of more active travel will

²¹ DfT, *National Cycling Strategy*, 1996

²² DfT, *National Cycling Strategy: a review*, 2010

²³

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/729521/national-travel-survey-2017.pdf

²⁴ For example, [the press notice](#) for the DfT’s recent consultation on the CWIS Safety Review was titled, *Government publishes call for evidence on cycle safety*. It focused on cycling, ignoring the fact that four times as many pedestrians are killed on the roads as cyclists.

²⁵ DETR, *A new deal for transport: better for everyone*, White Paper, 1997

<http://webarchive.nationalarchives.gov.uk/20100304074821/http://www.dft.gov.uk/about/strategy/whitepapers/previous/anewdealfortransportbetterfo5695?page=1#a1000>

²⁶ Systra, *Road Safety Management Capacity Review*, 2018

<https://www.gov.uk/government/publications/road-safety-management-capacity-review>

accrue principally to the DoH, DoE, DHCLG, DCMS and Treasury. The DfT should be the delivery arm, working on behalf of these client departments.

Increasing active travel needs to be a prominent and integral strategic objective in:

- health policy (public health and NHS)
- land use planning
- road investment strategy
- schools policy
- housing policy
- air quality strategy
- low carbon transport
- the development of CAVs
- taxes and charges on motoring
- supporting town centres and high streets

PACTS would like to see bodies such as Public Health England and local Wellbeing Boards taking a much more active, critical stance in relation to promoting active travel and reducing dangers for pedestrians and cyclists.

The CWIS has statutory backing and substantial associated funding. This is progress on previous cycling strategies. However, so long as active travel is seen as something that can be delivered by a single discrete plan, such as the CWIS, only marginal change will be delivered at best.

4. The balance of responsibilities for active transport between central Government and local bodies and whether the current arrangements achieve an appropriate balance.

Local government is still suffering from heavy demands on services and severe budget constraints. It is inevitably concentrating on statutory services such as adult social care. Active travel cannot be delivered by a quick fix: it requires consistent and integrated planning, investment and management, with long-term funding.

This compares with national projects, such as the Road and Rail Investment Strategy (both with dedicated delivery bodies and substantial five-year funding settlements). HS2 is another such project and the DfT is now planning an expanded Major Road Network.

Perhaps if active travel is to be taken seriously, it should have its own dedicated delivery arm, to work alongside local government.

5. Implementation of the Cycling and Walking Investment Strategy (CWIS) so far, including in relation to the Cycling Ambition Cities.

PACTS has no specific information here.

6. The adequacy of funding associated with CWIS and any concerns around a lack of ringfencing.

The CWIS headline figure of £1.2bn may sound a lot but it pales into insignificance in relation to the challenge and in comparison to the ring-fenced sums allocated to HS2 Ltd, Highways England, Network Rail, etc. Given the benefits of active travel, and the savings that could accrue to public services, there must be a case for greater and more secure investment.

7. Whether the current mix of initiatives to support active travel is appropriate, particularly with respect to safety.

The DfT has recently published its 50-point two-year action plan in response to the CWIS safety review.²⁷ This contains a number of useful measures, including revision to the Highway Code and support for improved European vehicles safety standards, including TfL's direct vision standards for HGVs and the fitment of emergency braking that detects pedestrians and cyclists, and intelligent speed assistance.

However, it says very little about vehicle speeds, despite achieving safe speeds being fundamental to the safety and perceptions of safety for pedestrians and cyclists. Safe speeds are also one of the five key elements of the Safe System approach to road safety which the DfT has espoused.

The main reference to speed is to summarise the findings of the Atkins *20mph Research Study*²⁸ which "present a mixed picture". The DfT says it has written to local authorities to remind them of their powers regarding lower speed zones. The action plan also links 20mph limits to areas around schools. In PACTS view, this is wholly inadequate. Wide area 20mph limits are increasingly seen as the foundation of danger reduction, promotion of active travel and more. However, to achieve these objectives the schemes need to have impact. PACTS has called on the DfT to take a hard look at how these objectives can be delivered and to revise its guideline to local authorities on Setting Local Speed Limits.²⁹ Further research may be needed.

8. What can be learnt from international approaches in supporting active travel?

International approaches can be helpful and give pointers to successful strategies for the UK.

Jeff Speck shows how levels of walking in cities in USA and Europe are determined by "ten steps of walkability".³⁰ These are predominantly about transport, land use and urban design policy. Foremost among the ten steps is "Put cars in their place". Only one of the ten is about pedestrian road safety and he is critical of conventional highway design standards and pedestrian levels of service criteria.

Cycling historian Carlton Reid analyses "bicycle booms" over many years in a number of North American and European cities.³¹ He is clear that the three necessary conditions are

- measures or conditions that make private car use less attractive (congestion, limited parking, restricted access, charges, etc.);
- a cycling-friendly culture;
- a cycle-friendly infrastructure – one which is convenient and makes cyclists feel safe.

The first two are essential; infrastructure alone is not. He cites examples such as Stevenage and Milton Keynes which have the infrastructure but not the other two conditions and consequently have few cyclists.

²⁷ DfT, November 2018 <http://www.pacts.org.uk/2018/11/cwis-safety-review-pacts-response/>

²⁸ <https://www.gov.uk/government/publications/20-mph-speed-limits-on-roads>

²⁹ DfT Circular 01/2013, *Setting Local Speed Limits*

³⁰ Jeff Speck, *Walkable City*, 2012

³¹ Carlton Reid, *Bicycle Boom - the unexpected resurgence of cycling*, 2017, Island Press

9. Whether there are fundamental planning issues which need to be addressed as part of any approach to active mode travel.

Yes, absolutely. Enabling and encouraging active travel will require much more than CWIS. Increasing active travel needs to be a prominent and integral strategic objective in a number of fundamental plans and strategies some of which we list in response to Question 3 above.

10. The issue of poorly maintained local authority roads and the impact that this has on cyclists.

Potholes and inadequate road maintenance are perennial issue but in 2018 the level of concern from road users, businesses and local authorities has been exceptional. After Brexit, it has been the main agenda item at the DfT's Motorists Forum. The Transport Committee's recent [Local roads funding and governance](#) inquiry heard evidence from road user organisations, including those representing cyclists and pedestrians.

One aspect often overlooked, of particular concern to PACTS, is footway maintenance and pedestrian falls. Evidence to your Committee has shed light on the issue. For example:

- Matthew Lugg, CIHT, explained that standardised footway condition surveys are no longer undertaken so the DfT cannot know the condition or trends.
- Mark Stevens, Suffolk County Council, also representing ADEPT, stated that his council has enough funding to resurface footways "every 449 years".³²

Local authorities, health services, organisations representing older people and others are well aware of the problem of pedestrian falls on the footway, because of the frailty of older people, the often serious the consequences. However, there is no systematic reporting of footway falls by the DfT, local authorities or NHS.

Pedestrian falls are not reportable within the STATS19 system. Interestingly, falls involving a motor vehicle *are* reportable, including:

- (a) a person who moves quickly to avoid being involved in an accident, is successful in that, but in doing so incurs an injury (e.g. twists an ankle). Also includes occupant of vehicle which manoeuvres or brakes suddenly to avoid an impact, but in so doing sustains an injury;
- (b) a pedestrian who injures himself on a parked vehicle;
- (c) a person who is injured after falling from a vehicle.³³

Partly because of the lack of data, the serious casualty issue of pedestrian falls is overlooked. If it is not appropriate to include pedestrian falls in STATS19 the government should find some other way to assess the scale of the issue and to monitor trends. This could be through survey questions, such as the National Travel Survey, or through NHS reporting mechanisms.

End

³² <http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/transport-committee/local-roads-funding-and-governance/oral/92874.html>

³³ DfT, Stats20, *Instructions for the Completion of Road Accident Reports*, 2011
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/230596/stats20-2011.pdf