



URBAN TRANSPORT GROUP

Working Paper

The Case for Active Travel

How walking and cycling can support more vibrant urban economies

October 2016

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Executive Summary

Cycling and walking are sustainable, high capacity modes of transport that currently attract a great deal of research and policy attention in the UK. Despite this, aggregate investment in cycling and walking is still modest and participation levels have lagged behind other European countries.

Investment in active travel is relatively cheap but has traditionally been low compared to other modes of transport. In 2013, £5 per head was invested in active travel, which was 2% off overall transport spending outside of London.

With the reduction in ring fenced national funding for active travel, there is going to be an increased focus on local funding pots to meet government targets. For active travel to compete it is important to be able to make the economic case for investment, making active travel stack up against other forms of transport. By bringing the evidence together, the report acts as a repository, making it easier to make the case for active travel.

Whilst there are some gaps in the evidence, and many of the benefits of active travel are outside of traditional transport benefits appraisals,

It is important that we broaden our thinking to consider what types of cities we want to live in and how we get to the end goal. With cities facing increasing pressure to move ever more people and goods, it is important that we value high capacity, low impact modes of transport such as cycling and walking to deliver the results we want. Many of the benefits of active travel are outside of traditional transport appraisals, meaning that we do not assess their full benefits.

Alongside other transport interventions, active travel can help support greater levels of accessibility, increase capacity and open up key areas of our cities. Here are some of the prizes to be won

- Health – It is estimated that physical inactivity had a direct cost to the NHS of £1.06 billion per year.
- Safety - In 2011, there were 151,474 injury accidents on the roads in Great Britain, with WebTAG estimating the economic loss at £10.9 billion in 2011 prices.
- Economy - Ten billion annual journeys are undertaken in England every year by bicycle and on foot. We estimate the combined economic value of these trips to be £14 billion.
- Urban realm – enhanced city centre environments have been associated with as much as a 40% uplift in retail takings.
- Social inclusion - In England, 48% of households in the lowest income quintile do not have access to a car.
- Manufacturing, retail and tourism - A recent study by the London School of Economics, estimated that cycling contributed circa £3bn to the British economy in 2010.

The Cycling and Walking Investment Strategy (draft released in 2016, with the final document expected to be released in 2017) has set an ambitious aim of doubling the level of cycling and halting the decline in walking by 2025. Whilst setting out an ambitious target, there is no new funding attached to the strategy meaning that there will need to be an increasing reliance on local funding.



1. Introduction

- 1.1. Cycling and walking are sustainable, high capacity modes of transport, which can also be pursued as leisure activities in their own right. We refer to cycling and walking as active travel modes¹, both to emphasize their transport function and to distinguish them from motorised means of transport.
- 1.2. The past ten years have seen cycling and walking becoming increasingly central in UK transport policy, culminating in the legislative requirement for the English Department for Transport to produce a Cycling and Walking Investment Strategy. Despite this policy focus, investment in cycling and walking is still modest compared to other modes of transport and participation rates have lagged behind other European countries.
- 1.3. Many of the benefits from higher levels of cycling and walking fall outside traditional transport appraisal, and it is often felt that this leads to these types of intervention being given lower priority in public spending decisions. A key purpose of this report is to highlight some of this evidence base, which may not be familiar to transport practitioners and decision makers.
- 1.4. But the case for investment in active travel is about more than the value for money of a given scheme. When planning transport investment we need to consider what type of city we want to live in. With increases in population placing strain on both transport systems, the environment and the public purse, we also need to think strategically how we can move more and more people around using less and less space.
- 1.5. We also need to consider what types of cities we want to live in, work in and visit. Active travel also offers a way of delivering features that we want to see in cities:
 - Better connected;
 - More attractive places to visit, live, work and invest in;
 - Healthier, greener and cleaner;
 - More inclusive; and
 - More prosperous.
- 1.6. This report tries to bring together all these arguments for greater investment in active travel modes.

Walking and cycling defined

- 1.7. Walking and cycling are very different modes of transport, being used for different purposes and having different infrastructure requirements. However, looked at in another way, they are both able to address problems of congestion, the dominance of the car in urban areas, poor health and low quality urban realm. They are also capable of opening up opportunities for

¹ There are other modes of transport that require a significant amount of physical effort and which could be classed as active travel. These include, for example, horse riding, scooting or roller-blading. We do not refer to these modes of transport in the rest of this report, mainly in the interest of brevity. However, most of what we write with reference to walking and cycling would apply equally to other forms of active travel.



people with limited access to other transport modes, and can make urban areas safer, more attractive places to be.

Structure of the report

- 1.8. To set out the evidence base for active travel, the rest of the report has been grouped into a number of thematic chapters.
- 1.9. Chapters two and three provide further background information on the context and the facts and figures behind active travel. This is an important part of making the case as it provides an understanding of where we have come from and where we are currently.
- 1.10. Following these chapters, there are a number of thematic chapters, which explore the following issues
 - Transport in the context of policies aimed at increasing physical activity – what role can active travel play in overcoming the increasing problems of physical inactivity and broader health issues.
 - Safety – how can investment in active travel improve safety on our roads and reduce the cost of accidents.
 - Conventional transport benefits – how can cycling and walking move more people, faster and at a lower cost than other forms of transport.
 - Urban realm – what benefits can cycling and walking deliver to our urban realm and what are the potential benefits of this.
 - Social inclusion and access to opportunity – how can affordable and accessible modes of transport help connect people to opportunities and develop a more inclusive society.
 - Manufacturing, retail and tourism – what is the contribution of cycling and walking to our manufacturing, retail and tourism industries.



2. Policy Context

- 2.1. Walking and cycling have attracted significant policy attention for a number of years. However, investment has traditionally been low when compared to other forms of transport (Tolley, 2008).
 - 2.2. In 2013, Urban Transport Group (then known as *pteg*) found that public spending on cycling in England was only £5 per head of population and the Department for Transport (DfT) spending on walking was around £0.40 through the Local Sustainable Transport Fund². In comparison, Highways maintenance (excluding the cost of new infrastructure), received average spending of £56 per head of population. For context, the total expenditure on transport in the North and Midlands was £236 per head of population in 2013, meaning that cycling accounted for only around 2% of total transport spending.
 - 2.3. With increasing concerns around congestion, health and environmental sustainability, UK policy makers' attitude towards cycling began to change in the early 1990s, with a recognition that alternatives to the car would need to grow for our cities to succeed (Golbuff and Aldred, 2011).
 - 2.4. The first major government strategy aimed at increasing cycling and walking, the National Cycling Strategy, was launched in 1996. Ever since, there has been a range of national strategies, as well as work travel plans, safe routes to school and traffic management programmes that have acted to raise the profile of walking and cycling.
 - 2.5. Key policy documents include A New Deal for Transport (1998), National Walking Strategy (1998), Smarter Choices: Changing the Way we Travel (2004), Walking and Cycling: an Action Plan (2004) and Active Travel Strategy (2010) and most recently the Cycling and Walking Investment Strategy (drafted in 2016).
 - 2.6. Despite the focus on fiscal austerity since 2010, the policy interest in walking and cycling has continued, no doubt partly in recognition of the positive economic impact of increases in walking and cycling through improved health and improved access to opportunities at a relatively low cost to the public purse.
 - 2.7. Since 2010, there has also been a peak in interest from the health community, with the potential of active travel to reduce the serious, and growing, cost of physical inactivity, obesity and other related illnesses that currently are estimated to cost the British economy £1.06 billion per year (Davies et al., 2011).
 - 2.8. In 2013, the All Party Parliamentary Cycling Group (APPCG) argued that a *'fundamental cultural shift'* is required that would allow the aim of increasing cycling to be delivered by making it a *'core issue when planning our streets, roads, buildings and communities'* (APPCG 2013, p.3).
 - 2.9. In 2014, the DfT published a Cycling Delivery Plan (DfT, 2014a), stating the ambition to double public spending from its 2013 levels to £10 per person. The 2015 Infrastructure Act subsequently legislated that the Secretary of State for Transport must set a national Cycling and Walking Investment Strategy, to be reviewed every five years.
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What is a Cycling and Walking Investment Strategy?

In 2015, it became a legal requirement for a Cycling and Walking Investment Strategy (CWIS) to be set by the central government. The strategy must set out:

- *“Objectives to be achieved during the period to which it relates, and*
- *The financial resources to be made available by the Secretary of State for the purpose of achieving those objectives.”³*

The strategy must be set at least every five years, with regular updates on progress given to parliament. The draft of the CWIS was published in 2016 and it is expected to be finally published in early 2017

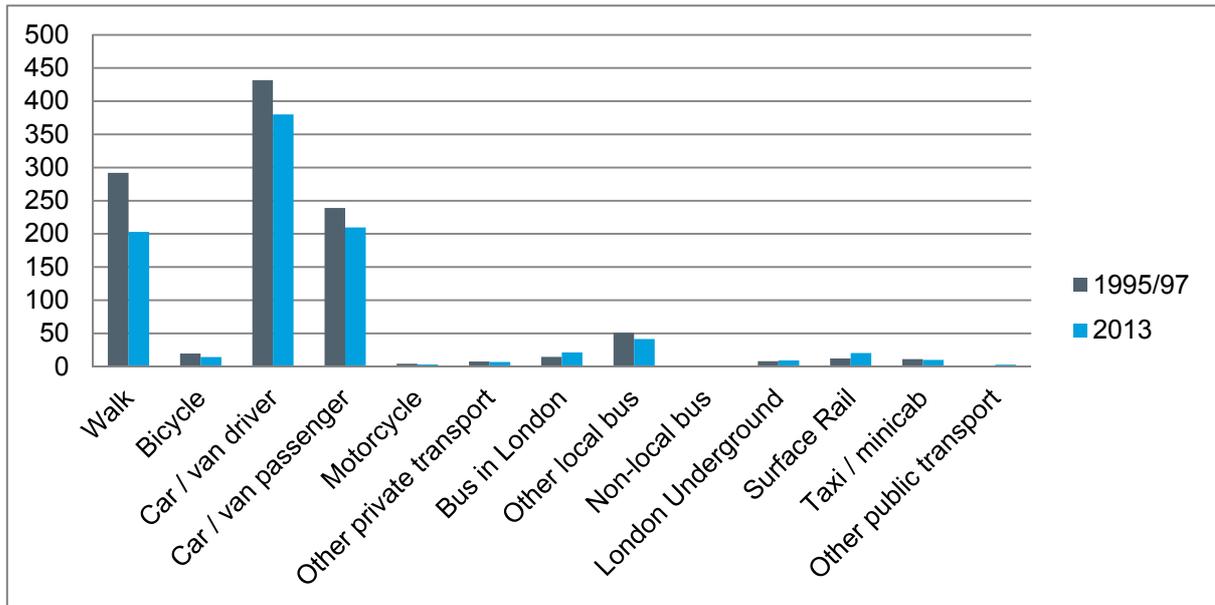
- 2.10. The first draft of the CWIS sets out an ambition to double the level of cycling by 2025 and halt the decline in walking. Whilst funding announced under the previous government will roll into the first years of the CWIS there was no new ring fenced funding announced, changing the mechanisms through which cycling and walking are to be funded.
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3. Facts and figures

3.1. According to National Travel Survey figures from 2013, each person in England made, on average, 217 walking and cycling trips per year, accounting for 24% of all trips. Only the private car was chosen for a greater proportion of trips. It should be noted, however, that the vast majority of these 217 trips were on foot (203 trips per person) rather than by bike (14 trips per person).

Figure 1. Average number of trips by mode over time⁴

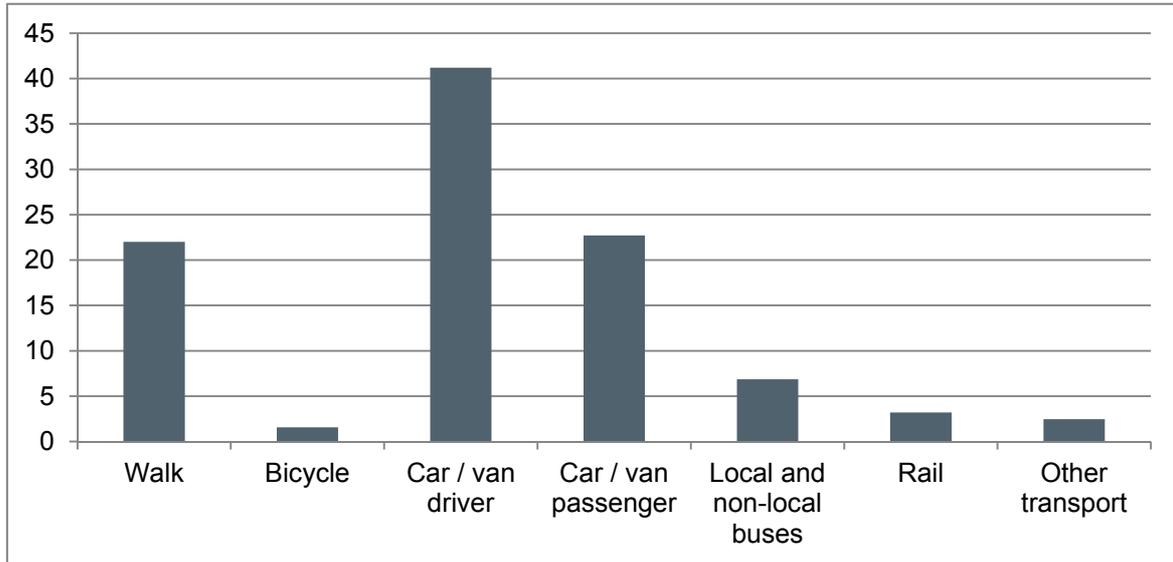


3.2. However, this figure represents a reduction in walking trips of 43% since 1995/97 (National Travel Survey, 2014). Hass-Klau (2015) finds that walking trips have been in decline across a wide range of countries.

⁴ National Travel Survey table NTS0101



Figure 2. Percentage of total trips by main mode, 2013⁵

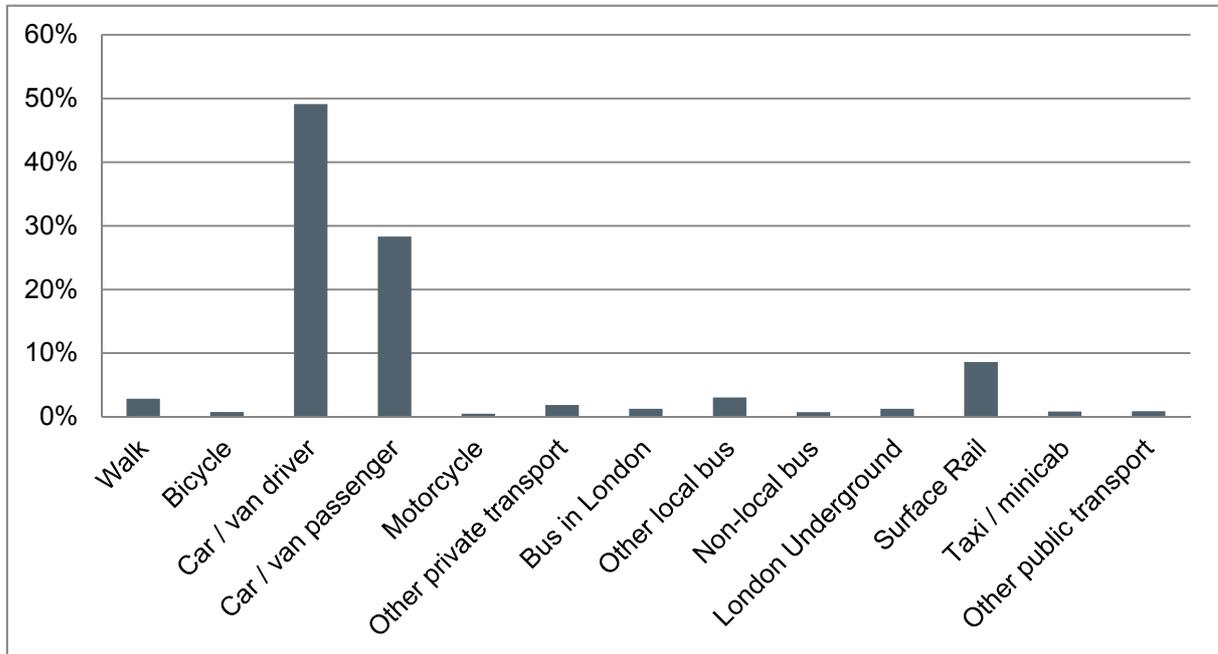


- 3.3. Whilst the level of walking in the UK is comparable to most counties in North Western Europe, the number of cycling trips is considerably lower. Pucher and Buehler (2008) found that cycling's share of trips in the UK (2%) compared to 10% in Germany, 18% in Denmark and 25% in the Netherlands.
- 3.4. When exploring the percentage of total distance travelled by mode in the England, the percentage of distance covered by walking and cycling is much lower than the percentage of trips.

⁵ National Travel Survey table NTS0101

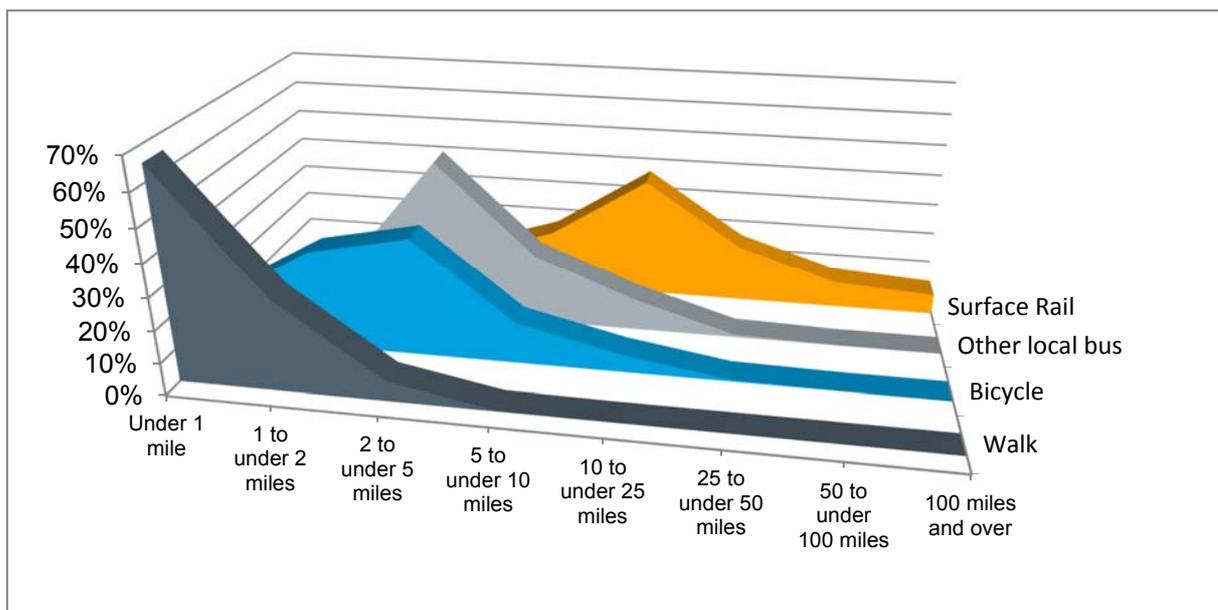


Figure 3. Percentage of total distance travelled by mode⁶



3.5. Trips made by active travel make up only 4% of the total distance travelled. This relates to the function that active travel plays and the nature of trips that people can make. Whilst short in nature, many of these trips are concentrated in dense urban areas, so are vital in keeping our cities moving and relieving pressure on other transport systems.

Figure 4. Trip length distribution by mode⁷



⁶ National Travel Survey table NTS0101

⁷ National Travel Survey table NTS0307

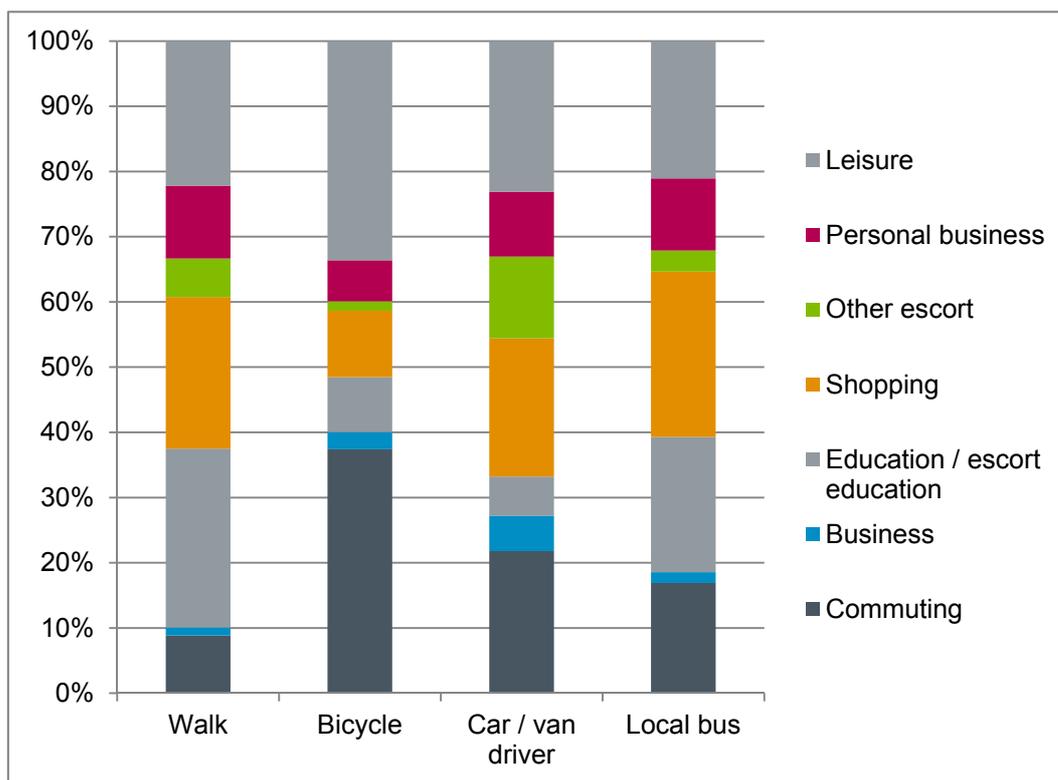


- 3.6. Figure 4 highlights that cycling and walking both consist of high levels of short journeys, with the majority of walking trips being shorter than two miles and cycling trips being shorter than five miles.
- 3.7. Yet, research by Pucher and Buehler (2008) suggests that there is significant scope for walking and cycling to play an even greater role in short trip distances. In England, only 1% of trips shorter than 2.5 km were made by bike, which compares to 37% in the Netherlands, 27% in Denmark and 14% in Germany. In England, 30% of trips made in cities are shorter than 2.5km, showing the potential scope for an increase in the level of cycling.
- 3.8. Whilst active travel cannot address all problems, it could be particularly important in dense urban areas, where a high volume of people undertake a large number of short trips.

Trip Purpose by mode

- 3.9. Figure five compares the journey purpose split of walking and cycling⁸ with those of car/van drivers and bus users.

Figure 5. Trip purpose by mode⁹



- 3.10. The three dominant journey purposes of walking trips are education, shopping and leisure, which together account for over 70% of all trips. The number of walking trips for education and shopping are above the average for all modes. Commuting also accounts for roughly 9% of walking trips.

⁹ National Travel Survey table NTS0401

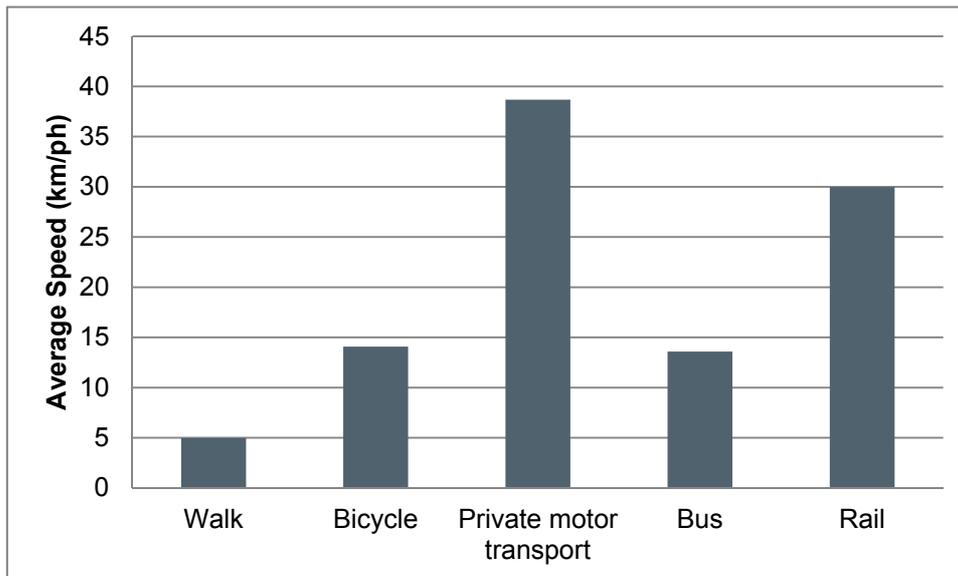


3.11. Commuting and leisure make up over 50% of all cycling trips. Commuting makes up a considerably higher proportion of cycling trips than for other modes (35% compared to the all mode average of around 15%).

Average speed by mode of transport

3.12. Looking at the average speed of transport modes can help to understand how far can reasonably be travelled by each mode and hence the likely nature of trips.

Figure 6. Average speed of travel by mode¹⁰



3.13. Figure 6 highlights the limitations of active travel, particularly walking, which is slow when compared to other methods of transport, meaning that they are limited in terms of distance. Interestingly, cycling trips have a slightly higher average speed than bus trips. In this sense, it is not the speed but likely the level of exertion that will limit the length of cycling trips.

3.14. However, it is also worth noting that in urban environments, the penetrability and convenience achieved by walking and cycling help to compensate for the lower average speed. We say more on this in chapter six, which looks at the conventional transport benefits of active travel modes.

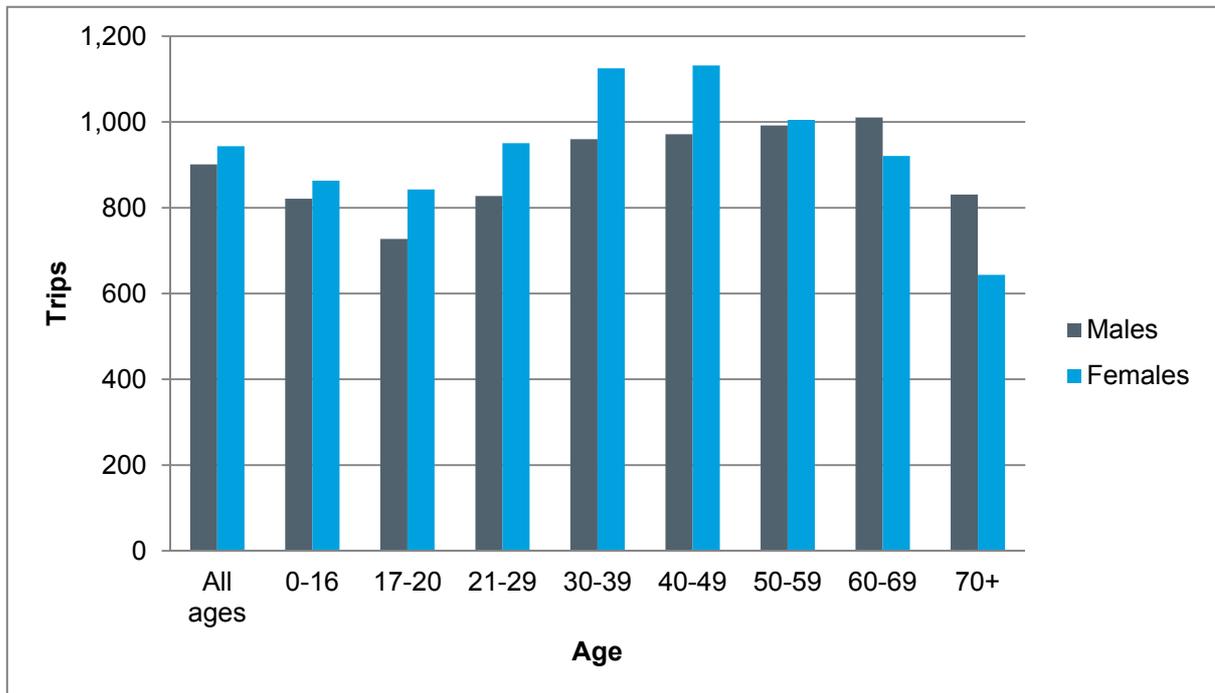
Age and gender

3.15. Travel requirements often vary according to age and gender, reflected in differing trips rates and mode usage. In the UK, females have a slightly higher trip rate than males, making 944 trips per year in 2013, compared to 901 trips per year by males.

¹⁰ National Travel Survey table NTS0101



Figure 7. Total trips by age group and gender¹¹



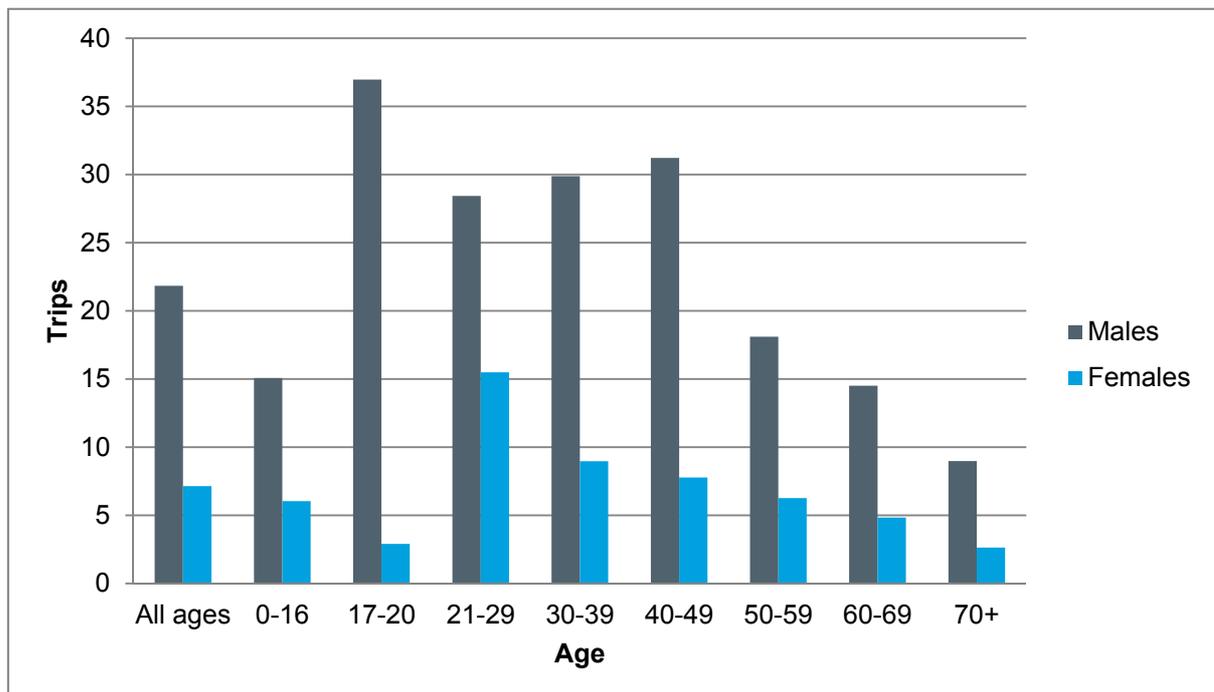
3.16. The highest trip rates are in the 30-69 age categories, peaking in the 40-49 age group.

3.17. Looking first at cycling (figure eight), males make three times more cycle trips than females. This gap is particularly pronounced in the 17-20 age group, where males take ten times more cycling trips per year. There is not a single age group where females make a comparable number of trips to males.

¹¹ National Travel Survey table NTS0601



Figure 8. Cycling trips by age group and gender¹²

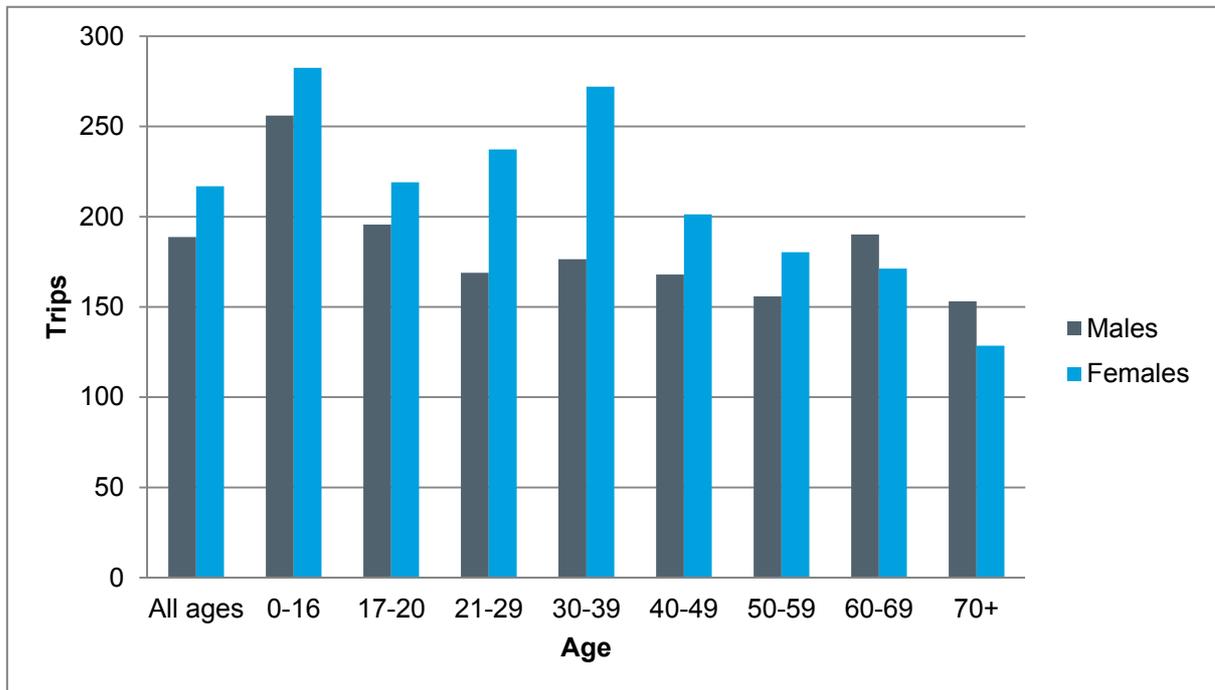


- 3.18. Cycling trip rates drop off from the 50-59 age category, with significantly less trips made by older groups.
- 3.19. Analysing data from London's cycle hire scheme, Beecham and Wood (2013), found a significant difference in the times and purpose behind cycle trips made by males and females¹³. Male cycling was heavily characterised by commuting trips at weekday peak times, whilst female cycling were more closely linked to leisure, often at weekends and around parkland. On average, female users of the scheme were found to make comparatively less trips than male users, with women comprising 25% of scheme members but only making 17% of the total trips.
- 3.20. Focusing on walking, it is apparent that women make more trips than men across nearly all age categories.

¹² National Travel Survey table NTS0601



Figure 9. Walking trips by age group and gender¹⁴



3.21. It is noticeable that woman make 15% more walking trips than males, with this trend only being reversed in the 60+ age groups.

3.22. For males and females, the number of walking trips peaks in the 0-16 age bracket and then falls. This potentially reflects the lower number of travel options open to people of this age, as well as the more local nature of trips made.

¹⁴ National Travel Survey table NTS0601



4. Transport in the wider context of policies aimed at increasing physical activity

- 4.1. It has long been understood that undertaking regular physical activity is vital for our health, our outputs within the economy and our quality of life (Killoran et al., 1994).
- 4.2. Yet in the UK, levels of physical activity have remained below standard guidelines (Scholes and Mindell 2012a), a problem that has been associated with increased obesity and increasing levels of related illnesses, such as diabetes and heart disease.
- 4.3. Active travel provides a cheap form of exercise that can be incorporated into everyday routines, either as part of daily commutes or leisure activities. The promotion of active travel can help people to achieve suggested amounts of exercise, meaning that it can have benefits outside of standard transport appraisals.
- 4.4. Transport appraisals traditionally focus on travel cost and time savings (which are covered in chapter six) meaning that the often larger health benefits of active travel can be overlooked.
- 4.5. This chapter will explore the cost of physical inactivity and the potential benefits that an increase in cycling and walking could achieve.

What is physical inactivity?

- 4.6. The Department of Health recommends that adults aged 19-64 should achieve at least 150 minutes of moderate activity or 75 minutes of vigorous activity (or a combination of the two) each week, in bouts of ten minutes or longer (Scholes and Mindell 2012a). This is considered to be a sufficient level of physical activity to remain in good general health. Physical inactivity is simply a failure to regularly meet the recommended level of activity.
- 4.7. The Chief Medical Officers provide recommendations that vary by age group: for older people, there is more emphasis on tailoring exercise to individuals' mobility; and for younger people more exercise should be taken than the guideline average (Davies, 2011).

Why is physical inactivity a problem?

- 4.8. Physical inactivity is thought to be responsible for one in every six deaths in the UK (Lee et al. 2012), making it as dangerous as smoking (Wen and Wu 2012).
- 4.9. In a review of evidence, Davies et al. (2011) found that there is '*strong*' evidence for '*a clear inverse relationship*' between physical activity and all-cause mortality, cardiorespiratory health, type 2 diabetes and metabolic syndrome, and an inverse association with a range of other chronic conditions (p.11-12).
- 4.10. The UK population is increasingly leading more sedentary lifestyles, with 19% of men and 26% of women now being classed as 'physically inactive' (Scholes and Mindell 2012a, p.10).
- 4.11. This is also a problem in younger age groups, with only 21% of girls and 16% of boys aged 5-15 meeting the current guidelines for a healthy level of physical activity (Scholes and Mindell 2012b, p.1). This means that:

'We are 24% less active than in 1961. If current trends continue, we will be 35% less active by 2030' (Public Health England 2014, p. 12).



4.12. Part of the challenge of raising physical activity levels is that jobs are increasingly sedentary (Stamatakis et al., 2007).

'Sedentary behaviour is independently associated with all-cause mortality, type 2 diabetes, some types of cancer and metabolic dysfunction' (Sedentary Behaviour and Obesity Expert Working Group 2010; Davies et al. 2011, p.13).

4.13. The good news is there is a significant 'dose-response curve'. i.e. the more physical activity engaged in, the greater the health benefits (Davies et al. 2011, p.17), so any increase in physical activity by individuals will immediately begin to create better health outcomes.

4.14. As Public Health England (2014) advise:

'Physical activity does not need to be strenuous to be effective. Thirty minutes a day of moderate aerobic activity can mean a brisk walk, a swim, or gardening. Each ten-minute bout that gets the heart rate up has a health benefit. Although sport is part of the picture, fitness does not have to be a 'regime'. Dancing can be as beneficial as going to the gym, and walking or cycling to the shops or work can be a great way to get the heart pumping as part of doing the everyday chores.' (p.12.)

4.15. The Chief Medical Officers' report on physical activity (Davies et al. 2011) recognises that active travel can play a major role in helping to overcome the developing problem. It suggests that:

- Concerted action is required to create environments that promote physical activity. (p.46.)
- *'Fear of traffic or strangers can often dissuade parents from allowing children to walk to school or play outdoors.'* (p.47.)
- *'Promoting physical activity is as much the role of the transport planner and the town planner' as it is for those providing facilities for people to be active'*. (p.47.)
- Cycling infrastructure is very important. Cycling should be at the heart of local authority transport plans. (p.47.)

What are the economic opportunities of increasing physical activity?

4.16. Investing in active travel has a cost, so it is important to understand the size of the problem that it could help to tackle and the potential savings that investment could generate.

Quantifying NHS costs

4.17. Physical inactivity impacts heavily on the NHS, with increased levels of associated illnesses affecting the cost of healthcare provision. A number of studies have attempted to calculate the cost of physical inactivity to the NHS.

4.18. Using figures from 2002, Allender et al. (2007), estimated that physical inactivity had a direct cost to the NHS of £1.06 billion per year. This calculation was based upon five conditions linked to inactivity - coronary heart disease, stroke, diabetes, colorectal cancer and breast cancer. The figure is thought to be a conservative estimate, since it excludes the costs of other conditions that can potentially be caused by physical inactivity for example, osteoporosis and falls.

4.19. More recently, Scarborough et al. (2011 p.530) produced an updated estimate, which places direct costs to the NHS at £0.9 billion per year. This downward revision was based on how



different diseases were costed by the NHS. From the literature available, both of these figures are still commonly used, and provide broadly consistent estimates, suggesting that the cost to the NHS is in the region of £1 billion per year.

- 4.20. Aldred (2014) showed that, if Danish levels of cycling were achieved in the UK, the NHS could save around £17bn over 20 years.
- 4.21. Rabl and Nazelle (2012), have undertaken research to understand what the health benefits of switching car journeys to active travel are to the individual. They found that undertaking a 5km journey by bicycle twice a day, five days a week, would have health benefits to the individual worth around 1,300 Euros per year. There was also an associated area quality benefit of around 30 Euros per year to wider society, which balanced against a negative impact of 20 Euros due to exposure to pollution to the new cyclist. There was also a potential negative due to the safety aspect of cycling which is discussed in chapter five.

Quantifying wider costs

- 4.22. Physical inactivity also creates wider costs to the economy through reduced productivity, increased levels of sickness and absenteeism and higher numbers of premature deaths.
- 4.23. In England, the cost of lost productivity has been estimated at £5.5 billion per year from sickness absence and £1 billion per year from the premature death of people of working age (Davies et al. 2011, p.14; Ossa and Hutton, 2002).
- 4.24. The above figures must be taken with some caution as there is no demonstration of workings and they are now over a decade old. They do, however, give a sense of the scale of the opportunities increasing physical activity can bring.

Absenteeism

- 4.25. '*Reductions in absenteeism can play an important part in economic growth terms through a reduction in costs incurred by businesses*' (Davis 2014, p.22-23).
- 4.26. Davis and Jones (2007, p.23) found that '*an increase in physical activity of more than one hour per week, easily achieved by walking or cycling to work, would be expected to lead to a measurable reduction in levels of absenteeism*'.

Cyclists are less likely to have time-off work – Evidence from the Netherlands

A study in the Netherlands found that, on average, cyclists missed fewer work days each year (7.4) when compared to non-cyclists (8.7). It was found that the further someone cycled to work the less sick days they had per year. If these findings can be applied to other countries, there are large productivity benefits to be gained by investing in cycling.

Source: Hendriksen et al. 2010

- 4.27. In the UK, the average absence per employee is 5.3 days per year, of which 90% is accounted for by short-term sick leave (CBI, 2013). The World Health Organisation (2003) found that undertaking 30 minutes of physical activity per day can reduce short-term sick leave by between 6 and 32%. Therefore, for each employee who takes up physical exercise for 30 minutes a day for five days a week as a result of a walking or cycling intervention, the annual benefit to employers is likely to be (on average) at least 0.4 days gross salary costs. (DfT, 2014b, p.13)



- 4.28. Based on an adjustment to Hendriksen et al.'s (2010) findings on the relationship between cycling and absenteeism in the Netherlands, the UK's frequent cyclists could be generating economic benefits of £193m per year through reduced absenteeism (Grous, 2011, p.18-19). An increase in regular cycle commuting would generate benefits of the order of tens of millions of pounds; a step change in cycling levels would generate benefits one order of magnitude higher.

Mental health

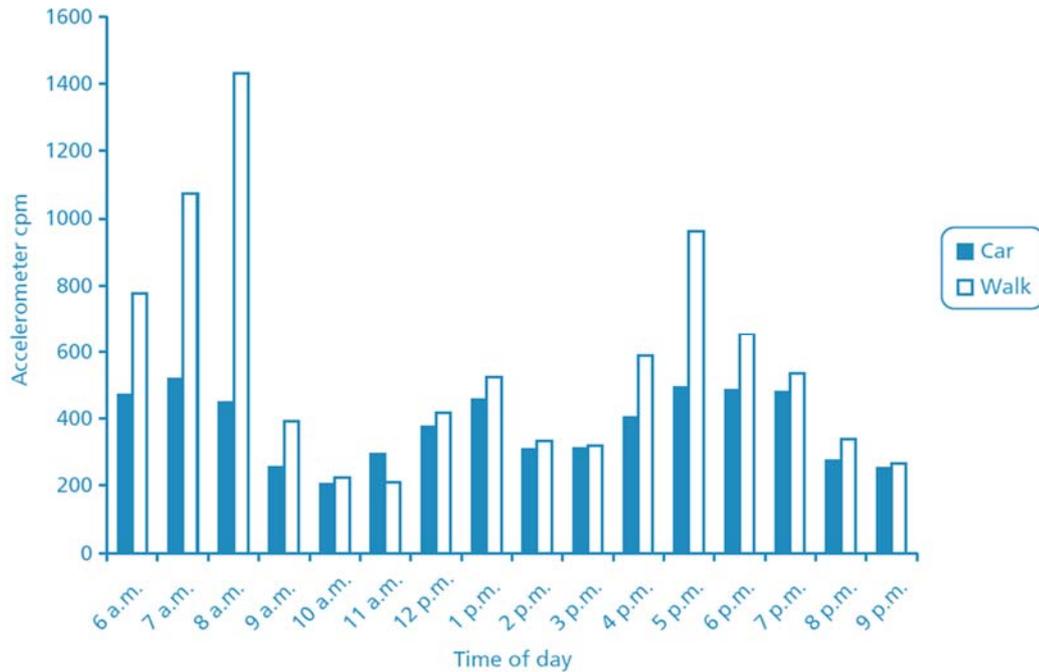
- 4.29. Poor mental health is an increasing problem, with 17.6% of the population now meeting criteria for at least one common mental disorder (according to the latest figures from 2007), up from 15.5% in 1993 (Bebbington et al. 2009, p. 12).
- 4.30. In England alone, mental health problems were estimated to cost the economy £105bn per year in 2009/10 (Centre for Mental Health 2010), with stress and anxiety being the leading causes of long-term absence from work (CBI, 2013).
- 4.31. A common cause of stress is the commute to work, with stress levels exacerbated in private motor cars (Guell et al. 2012). Conversely, active travel methods are associated with reduced levels of stress, and in some recent studies, have been found to be good for mental as well as physical health (Hansen and Nielsen 2014).
- 4.32. Traditionally, transport economics has treated travelling time as lost time, however people can enjoy travelling (Jain and Lyon 2008). Respondents in one study described cycle commuting as '*me time*' and '*winding down*', saying that '*it clears your mind*' (Aldred and Jungnickel 2012, p.18).
- 4.33. Not surprisingly, Martin et al. (2014) found switching from car commuting to active commuting improves psychological well-being. For example, car commuters were at least 13% more likely to report being constantly under strain or unable to concentrate, compared to those using active travel (Martin et al., 2014).
- 4.34. The list of psychological benefits of physical activity include enhanced mood, higher self-esteem and better cognitive functioning, compared to more sedentary behaviours (Sustrans, 2005). Physical activity may be particularly effective for the treatment of depression, anxiety and other mood states (Cramer et al. 1991; Byrne and Byrne 1993).
- 4.35. But the benefits can be counteracted by hostile environments and traffic (Bonham and Koth 2010), while high quality nature and green space '*enhances the mood benefits of physical activity*', placing an importance on the infrastructure that we create and the urban realm (Barton and Pretty 2010; Mitchell 2013). This is explored further in conventional economic terms in chapter six, when considering journey ambience benefits.

How active travel can create positive health outcomes

- 4.36. Walking and cycling for utility purposes can help counter the trend towards lower levels of physical activity due to sedentary work patterns and lifestyle choices.
- 4.37. A study of seventeen workplaces in Bristol that actively encouraged walking to work used accelerometers to measure the amount of physical activity undertaken by car users and walkers during working days (Audrey et al. 2015). Figure 10 shows that walkers were much more active than car users during usual commuting times and engaged in similar levels of physical activity during the working day.



Figure 10. Mean hourly physical activity by mode of travel to/from work on weekdays



Source: Audrey et al. (2015, p.29)

4.38. Cavill and Davis’s (2007) report for Cycling England provides more examples that demonstrate how increasing cycling can positively affect health outcomes (p.25-29):

- A study in Copenhagen, randomly selected participants (13,375 women and 17,265 men) aged 20-93 from a population of 90,000 and followed them over time. It found that even after adjustment for other risk factors, those that did not cycle to work experienced a 39% higher mortality rate than those who did (Anderson et al. 2000).
- Two studies from Finland on an intervention that involved volunteers at a workplace who swapped car or bus commuting for cycling, recorded positive health changes, including improved aerobic fitness, decreased cardiovascular load and increased use of fats for energy (Oja et al. 1991; Vuori et al. 1994).
- Other studies researching health benefits of increased cycling show increased fat loss and feelings of wellbeing (Department of Environment, Transport and the Regions 1999), reductions in coronary heart disease (Morris et al. 1990), and reductions in the risk of cancer (Steindorf et al. 2003; Hou et al. 2004).

4.39. Walking at a moderate speed of 3mph meets the definition of moderate intensity physical activity, as recommended by the Chief Medical Officers’ report (Davies et al. 2011, p.18). Despite this, there have been few studies that have measured the contribution of walking to meeting overall physical activity targets (Audrey et al. 2015, p. 1), and therefore the health outcomes of walking as a specific form of active travel.



- 4.40. Two Swedish studies found that neighbourhood walkability (both objective and perceived) contributes to increased walking rates, and therefore levels of moderate to vigorous physical activity undertaken (Arvidsson et al. 2012; Sundquist et al. 2011).
- 4.41. A cross-sectional study, performed as part of a larger study into coronary artery risk development in young adults in the United States, found active commuting to be *'positively associated with fitness in men and women and inversely associated with BMI, obesity, triglyceride levels, blood pressure, and insulin level in men'* (Gordon-Larsen et al. 2009).
- 4.42. All of the studies above highlight the fact that active travel can play an important role in achieving health benefits. With the average level of activity through work and leisure falling, being able to undertake exercise whilst travelling could become a valuable part of people daily routines.

How do we measure the health benefits of walking and cycling

- 4.43. The DfT has adopted the World Health Organisations "Health Economic Assessment (HEAT)" tool. The tool is "Designed to help you conduct an economic assessment of the health benefits of walking or cycling by estimating the value of reduced mortality that results from specified amounts of walking or cycling" (World Health Organisation, 2014).
- 4.44. The HEAT tool is intended to be used as part of a cost-benefit analysis of transport interventions or infrastructure projects. It can help to determine the relevant health benefits of particular schemes with a given level of cycling.
- 4.45. This is important when planning a new piece of cycling or walking infrastructure as it is able to model the different levels of walking and cycling that are expected before and after a scheme, providing the additional health benefits of a scheme.
- 4.46. The value is provided in monetary terms that relate to the mortality benefits of increasing cycling and walking levels (World Health Organisation, Undated).

Summary

- 4.47. This chapter has set out the potential economic prize that could be achieved in health benefits if investment is made in cycling and walking with a view to increasing levels of physical activity.
- 4.48. Physical inactivity currently presents a significant cost to the economy, with a lack of activity being closely linked with reduced physical and mental wellbeing.
- 4.49. Walking and cycling have a key role to play in tackling this problem, offering affordable, readily available forms of exercise that can easily be built into everyday activities, such as getting to work, or going to the shops.
- 4.50. Investment in cycling and walking can be very cost effective, requiring minimal levels of infrastructure compared to other transport options, whilst also delivering wider benefits and savings in the form of improved health.
- 4.51. With physical inactivity costing the economy around £1bn per years, there are significant benefits that can be achieved through investment. And there is scope to significantly increase our levels of walking and cycling. Focusing on UK trips in urban areas, 30% of trips are less than 2.5 km yet only 1% of these are made using active travel (Pucher and Buehler,



2008). Demonstrating the significant scope for growth, increasing active travel could have a real impact on people's health as well as providing wider benefits to our urban areas.

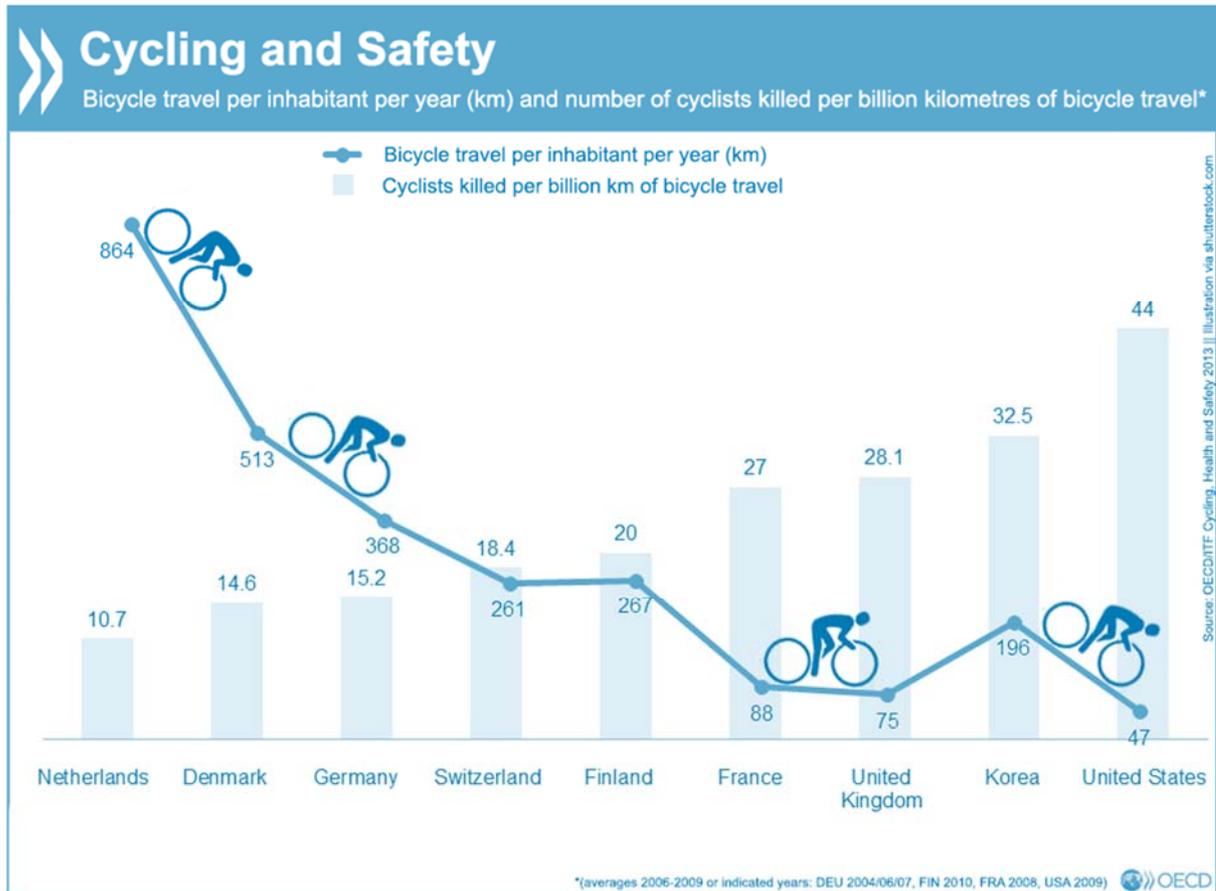


5. Safety

- 5.1. Statistics suggest walking and cycling are more dangerous activities than most other forms of transport. The latest statistics (DfT, 2013 - RAS53001) show that per billion passenger kilometres, 3,860 cyclists and 1,281 pedestrians are killed or injured, compared with 172 people travelling in cars and 121 on bus or coach. Only motorcycles, at 4,011, are higher.
- 5.2. However, walking and cycling are not intrinsically dangerous activities, rather most of the danger involved in these activities arise from conflicts with motorised traffic (Jacobsen and Rutter 2012: 142-144), and a range of studies have shown that 90 percent of cyclist deaths involve motorists (Nicaj et al. 2009; Rowe et al. 1995; McCarthy and Gilbert 1996; Spence et al. 1993; Jacobsen and Rutter 2012, p.143).
- 5.3. Jacobsen and Rutter (2012, p.148) identify a series of studies (Austroads 2010; AVV 2006; Dutch Bicycle Council 2006; Lindsay et al. 2010; Stipdonk and Reurings 2010) looking at the effects of increased active travel, which demonstrate the health benefits gained far outweigh any increase in injuries that may arise as a result.
- 5.4. Moreover, it is becoming widely accepted that there is a non-linear relationship between active travel rates and accidents: as active travel rates increase, the safety risks of active travel decrease, because walkers and cyclists find safety in numbers.
- 5.5. In analysing data from multiple countries, Jacobsen (2003) found that the number of motorists colliding with people walking or bicycling will increase at roughly 0.4 power of the number of people walking or cycling.
- 5.6. This means that whilst the number of accidents does increase with the overall level of walking and cycling, the risk to each individual cyclist and walker reduces and proportionally less accidents take place (Jacobsen 2003, p.208). This is illustrated in figure 12.
- 5.7. The DfT has incorporated Jacobsen's findings into its Transport Analysis Guidance (TAG) for active travel modes, which is used to assess the ratio of benefits and costs for transport schemes (DfT, 2014b, p7-8).



Figure 12. The number of cyclist killed by billion km against the average level of cycling by country



Source OECD, 2013

Perceived versus real danger

- 5.8. However, it is not just real danger that needs to be addressed, policy also needs to consider perceived danger which currently presents a real barrier to increasing participation. If this is to be overcome, it is not about looking at any single aspect in isolation, but about addressing the urban environment, infrastructure and perceptions of cycling and walking together.

The typical year for a cyclist

In research focussing on the number of near misses in cycling, Aldred and Crossweller (2015) found that the person commuting to work on bike cycled 2,500 miles per years (8.3 miles per day if commuting 300 days per year). In this time they would, on average, experience 450 near misses and 60 very scary incidents. They were also likely to be harassed by other road users 20 times. Deaths were extremely rare, with the average cyclist having to cycle for 8,000 years before being killed on their bike.

- 5.9. As Horton notes (2007, p.133), numerous studies have shown that fear of safety holds people back from taking up cycling (British Medical Association 1992, Davies et al. 1997; CTC et al. 1997; Gardner and Ryley 1997; Gardner and TRL 1998; Pearce et al. 1998; Gardner 2002; Ryley 2004).



- 5.10. Transport for London's (2014a) survey of attitudes towards cycling show that safety fears can also mean that existing cyclists cycle less often. Of those cycling less than they used to, 39% do so because they believe it to be too dangerous. The most common reasons given for this are; traffic is too busy (66%), the fear of collisions (28%), and a lack of cycle lanes (19%).
- 5.11. These findings are backed up by Pooley et al. (2013), in a series of ethnographic studies. They found that people are frequently deterred from cycling on urban roads because of fear of traffic and their perception of the risk of injury, and even those who do cycle had developed strategies to cope with their own concerns (p.162).
- 5.12. They found, for example, that some cyclists took to riding on pavements to help overcome their safety fears on sections of road. But pavement riding, whether illegal or officially sanctioned, can have a knock-on effect of making walking less comfortable (Pooley et al. 2013, p.120).
- 5.13. Example quotes from interviews carried out as part of the same study include:
- *"I did have a bicycle... but I'm not comfortable with cycling...I'm scared of the traffic around me"* (Molly, Leicester, p.147);
 - *"I just think the majority [of motorists] don't really appreciate what it's like to be on a bike...and how much room you should give. And you get the very occasional ones who get irritated"* (Rhys, Worcester, p.147);
 - *"My bugbear is cyclists on the pavement, that really gets me going, because I think it's dangerous, and some of them go too fast"* (Kirsty, Lancaster, p.120).
- 5.14. Whilst there isn't clear evidence that safety concerns associated with walking necessarily prevent people from doing so, there is a clear sense of inconvenience and fear in some circumstances. This most commonly restrict people's movements after dark and on people-empty streets, and more heavily impacts on women and those living in more economically deprived areas (Pooley et al. 2013, p.117-118).

Valuing safety improvements

Investment in transport infrastructure can change the risk of individuals being killed or injured as a result of accidents. This is particularly relevant to the appraisal of active travel schemes, as both cyclists and walkers currently have above average risk of death or serious injury compared to the average transport user. This means that active travel schemes which can reduce the risk of death and injury can score highly in appraisal. But it also means that schemes which increase cycling and walking levels, but are assumed to leave exposure to death and injury unchanged, generate safety dis-benefits.

DfT's WebTAG guidance has traditionally been used to value potential safety improvements through transport investment. The economic evaluation is based on valuing the following impacts:

For casualties (DfT, 2011, p.6)

- Loss of output due to injury. This is calculated as the present value of the expected loss of earnings, plus non-wage payments made by employers.
- Ambulance costs and the costs of hospital treatment.
- The human costs of casualties. These are based on willingness to pay to avoid pain, grief and suffering to the casualty, relatives and friends, as well as intrinsic loss of enjoyment of life in the case of fatalities.

For accidents

- Costs of damage to vehicles and property.



- Police costs and administrative costs of accident insurance.

Since 1993, the valuation of injuries and deaths has been based on a Willingness to Pay (WTP) approach, which explores the human and economic aspects of a valuation.

In this sense, preventing casualties through investment has a positive economic impact due to a reduction in lost economic output and human suffering as well as a saving in healthcare costs.

The following table provides a value for the different type of outcomes from accidents

Injury Severity	Cost per casualty (£)	Cost per accident (£)
Fatal	1,575,421	1,877,583
Serious	189,519	216,203
Slight	14,611	23,136
Average for all severities	50,024	71,885
Damage only	-	2,027

(Department for Transport, 2011 – all costs presented in £ 2011)

In 2011, there were 151,474 injury accidents on the roads in Great Britain, with WebTAG estimating the economic loss at £10.9 billion in 2011 prices. Due to the higher risk of walking and cycling compared to some road methods, the economic value of preventing one accident or injury is higher than for some other modes.

Summary

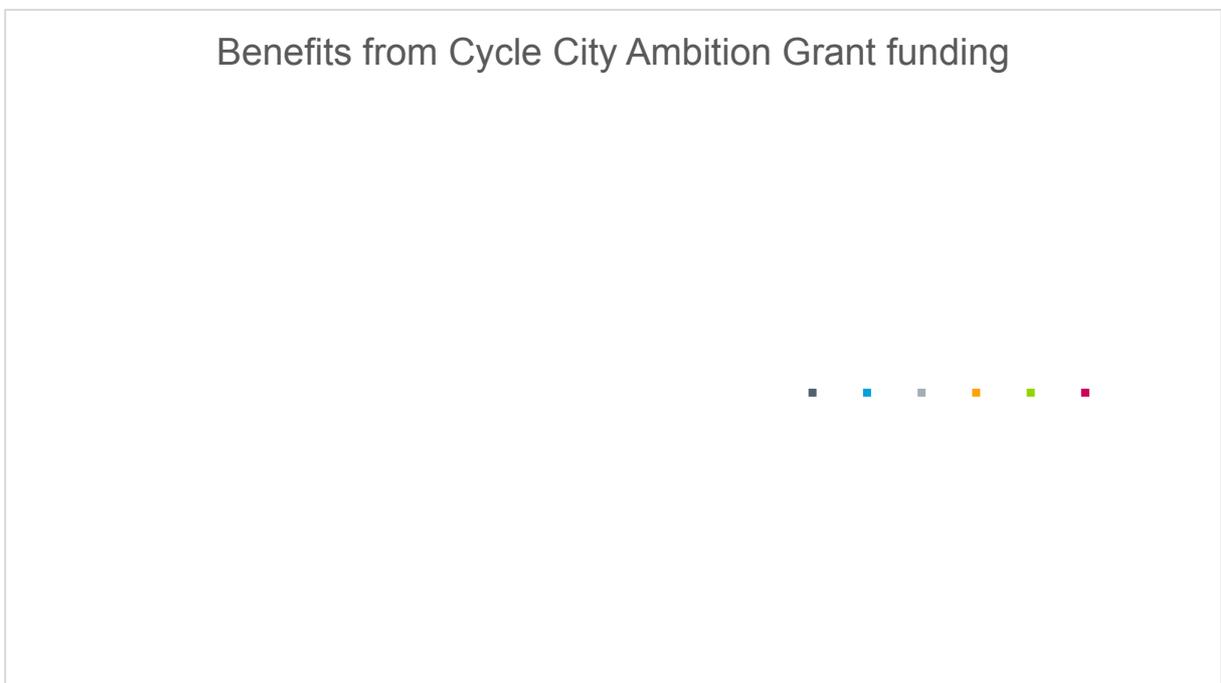
- 5.15. The level of accidents is currently proportionally higher for cyclists and walkers than for some other modes of transport, such as the car. There is currently a cost to society of changing journeys from car to active travel due to the increased safety risk (Rabl and Nazelle, 2012). This risk is, however, far out weighted by the benefits to health, air quality and quality of life that the person would gain.
- 5.16. Both real and perceived safety problems present a real barrier to the take up of active travel methods and can prevent the realisation of many benefits in urban areas. Infrastructure design needs to recognise this if this problem is to be overcome.
- 5.17. It is important to recognise the safety fears of existing and potential walkers and cyclists, not only because these fears represent genuine challenges that need to be addressed, but also because they can hold back growth in active travel that could reduce underlying risk levels.
- 5.18. This needs to incorporate both real safety problems and also perceived safety problems. People's perceptions are central in making travel choices. Cycling and walking will only become mainstream methods if people perceive that they are safe, convenient, healthy and affordable options for undertaking journeys.
- 5.19. A growing cycling population would strengthen the case for further investment in cycle-friendly environment, while reductions in motor traffic and urban realm improvements could make walking more pleasant and reduce conflicts between motor traffic, cyclists and pedestrians.



6. Conventional transport benefits – how walking and cycling can move more people, faster and at lower cost

- 6.1. As we have seen in chapter Four, health impacts provide a strong rationale for policies aimed at increasing the take-up of active travel. Figure 13 shows the split of quantified benefits from the set of projects funded by the Department for Transport's Cycle City Ambition Grant. As expected, health improvements account for close to two-thirds of benefits but note that more traditional transport benefits, such as congestion relief and journey ambience¹⁵, are still important accounting for over a third of total benefits.
- 6.2. This reflects the fact that walking and cycling offer an efficient means of transport in their own right. They are affordable, can move large numbers of people in a small amount of space, rely on cheap infrastructure; and, in the right conditions, offer very competitive journey times.
- 6.3. Active modes can therefore play a key accessibility role in dense urban areas, by linking workers and households to a wider range of jobs and other opportunities; by allowing firms to cluster more densely together; and by cutting the time and money cost of moving people and goods around.
- 6.4. By enabling urban areas to grow in a more sustainable way, higher levels of walking and cycling can also help make them more attractive and pleasant places to live in, in turn generating further growth. We look at urban realm benefits in more detail in chapter seven; here, we concentrate on the users of the transport network and how better quality walking and cycling infrastructure helps them, and other transport users, get around.

Figure 13. Split of total benefits from Cycle City Ambition Grant funding



(Data from: Department for Transport, 2014)



Efficiency, journey quality and congestion

- 6.5. The majority of the UK population live in and around large towns and cities, and therefore can find a wide array of opportunities within easy reach of their homes. As a result, many people continue to travel relatively short distances, for which walking and cycling can offer quick, cheap and flexible means of transport.
- 6.6. The National Travel Survey shows that 83% of journeys in England are under 10 miles in length¹⁶, which explains why walking and cycling make up almost one in four (main mode) journeys in England (22% walking; 1.6% cycling). For distances under one mile, walking and cycling clearly dominate, making up almost four in five of all journeys.
- 6.7. The importance of active travel modes over short distances is easy to understand, as they provide direct, cheap and reliable means of door-to-door transport. As travel distance increases, and a larger proportion of journeys begins to take place outside congested urban streets, the speed advantage of motorised modes of transport begins to show. At the same time, the physical constraints of the human body also start to take effect.
- 6.8. But for short trips in dense and congested areas, walking is the ultimate high speed, high capacity mode, offering reliable journey times while using only a small amount of infrastructure. For walks lasting longer than 15 minutes (around 1km), bicycles start to take over.
- 6.9. Analysis of the National Travel Survey (NTS) suggests that it is quicker to travel by bicycle than by bus for a typical door to door journey in England. A typical rail journey (including using the London Underground) is only about twice as fast, door to door, than travelling by bicycle. And the average door to door speed on a typical car journey is only about three times the average cycling speed (see figure 6).
- 6.10. The other important feature of active travel modes is that they are largely free at the point of use. By choosing to walk or cycle, people make an instant saving in fuel, parts and maintenance, or public transport fares. Newman and Kenworthy (1989) showed, nearly three decades ago, that dense cycling and walking friendly cities have considerably lower fuel consumption per capita than more sprawling car-oriented urban areas.
- 6.11. In the case of cycling, however, there can be a substantial initial outlay on a bicycle and there is some evidence to suggest that schemes (such as Cycle to Work) which subsidise bicycle purchase can represent good value for money for the tax-payer (Clarke et al, 2014), by helping to overcome that initial barrier:

“Impact of [the cycle to work] scheme on propensity to cycle:

*The scheme substantially increases the cycling levels of its users. **96% of respondents start cycling weekly as a result of using the scheme**, 84% start cycling to work at least twice a week. The scheme attracts many people who did no regular cycling beforehand (53% of all users in the sample).*

The scheme increases cycling levels for a range of non-commuting trip purposes, with the biggest increases occurring for shopping, personal business, accessing



leisure activities or visiting friends or family. Around half of respondents use their bike for these trip purposes after using the scheme.

The number of respondents cycling for business travel almost doubles to approximately 28% of all respondents. Respondents giving up their car, parking space, travel pass or other item associated with their previous commute mode is further evidence that the scheme changes propensity to cycle”

Source: Clarke et al, 2014, p. 16

How much are walking and cycling trips worth to the economy?

- 6.12. According to the NTS (2013), each person in England makes 217 journeys every year where either walking (203 journeys) or cycling (14 journeys) are the main mode of transport. This amounts to close to 10 billion journeys a year. The total would be higher still if cycling and walking components of other trips (e.g. using a bicycle to access a station) were to be included.
- 6.13. People walk and cycle to get to the shops, to visit family and friends, to reach education and work opportunities, or to meet clients and suppliers. Not all these activities result in direct financial gain but all of them hold some economic and social value. By enabling these activities to take place, active travel modes support the wider functioning of the economy.
- 6.14. One approach to quantifying user benefits is to put a monetary value on the time spent travelling. DfT appraisal guidance puts the value of time for walking and cycling undertaken in the course of work at 20p/minute and the value of time for other purposes at 6p/minute (source: WebTAG; 2010 prices). Based on the National Travel Survey, the average journey times for walking and cycling trips are 18 and 24 minutes, respectively¹⁷. If we multiply these parameter values by the ten billion annual journeys undertaken in England every year (taking into account the mode and journey purpose split) then we come to a total economic value of around **£14 billion per year**.

What could make more people walk and cycle?

- 6.15. A key question for policy makers, planners and engineers is how available resources should be best used to get more people to walk and cycle, and to get those who already do to enjoy the experience more.
 - 6.16. There is evidence to suggest that time spent walking and cycling is considered to be more onerous than time spent using motorised modes of transport (Abrantes and Wardman, 2010). In part, this is to be expected as these are more effortful activities than sitting in a car or on a bus. But the magnitude of the difference in perceptions and the fact that it varies from place to place suggest that this could have something to do with the quality of infrastructure and cultural attitudes to active travel modes (chapters two and three provide additional empirical evidence exploring attitudes to active travel modes). Research undertaken in Sweden (Borjesson and Eliasson), suggests that individuals would trade off 1 minute spent cycling for 2 minutes in their preferred alternative mode of transport. And research undertaken in the UK (Wardman et al, 2007) found the ratio to be 3:1.
-



- 6.17. This evidence would explain why cycling, in particular, attracts a relatively low proportion of trips in the UK even though it can offer an affordable, and often the quickest, alternative for many short distance journeys.
- 6.18. The good news, from a policy perspective, is that this perception can be changed. Evidence shows that improved cycling conditions are highly valued by current and potential cyclists. Wardman et al (2007) found that time spent cycling on segregated and non-segregated cycle lane is considered to be less onerous than time spent cycling on a similar road without any cycling facilities by, respectively, two thirds and one half. This result is broadly consistent with work by Borjesson and Eliasson (2010) in Sweden, and Brick et al (2012) in Ireland. Both these studies found that cyclists and non-cyclists alike have a preference for direct routes, segregated from other traffic, and with as few junctions as possible, although the magnitude of this preference varies by cycling ability¹⁸.
- 6.19. In relation to walking, there is also evidence that attitudes are influenced by the quality of the surroundings, including the empirical research which underpins Transport for London's Urban Design Toolkit (see Sheldon et al, 2007) and the DfT-funded research on Valuing Townscape (ITS Leeds, 2011). This is covered in the urban realm section of this report.

Predicting the number of new walking and cycling trips

- 6.20. Some of the research quoted above (e.g., Wardman, 2007) is now reflected in WebTAG guidance and the overall treatment of conventional economic benefits relating to active travel modes has developed considerably in recent years¹⁹. However, there is still some ambiguity in the choice of parameters that should be applied to individual schemes, compared to other transport modes, and this remains an active area of research. Congestion and wider economic benefits
- 6.21. Active modes are considerably more space-efficient than private modes of transport. As we show in chapter seven on urban realm, it is possible to move, on average, seven times more pedestrians and cyclists than car users along a given urban road (see figure 15).
- 6.22. By choosing to walk and cycle, people are freeing up scarce and expensive road capacity. This reduces congestion thereby lowering transport-related costs for road users; bringing firms and workers closer together; and in turn generating productivity improvements through greater agglomeration economies²⁰. Therefore, choosing to walk and cycle generates economic value not just for the individuals but also for the rest of society and the economy.
- 6.23. By reducing the demand for expensive transport infrastructure, walking and cycling also help reduce the burden on the tax-payer and on infrastructure providers. For example, Transport
-



for London²¹ has suggested that investment in its network of cycle superhighways will help defer or reduce spending on more expensive infrastructure projects, especially where existing networks are already operating close to capacity and expansion is likely to be problematic.

- 6.24. In addition, less need for road capacity can also improve the quality of the urban realm and make space available for more productive uses. This enables growth to take place in the most dense and productive urban areas without compromising quality of life, in turn further contributing to agglomeration economies and an overall more productive national economy.
- 6.25. Hook (1994) establishes a link between Japan's economic success in the preceding decades and the extensive use of walking and cycling for commuting purposes. He explains that this enabled the country to use available land more intensively while spending comparatively less on transport infrastructure than competing countries, helping to hold down the cost of its manufactured goods. Hook highlights the particular role of bicycles to access suburban rail stations and points out that at the time the article was written, between 15% and 45% of rail station access was by bike. This, he argues, was one of the key enablers of the huge but orderly growth of Japan's largest metropolitan areas.

Quantifying decongestion

The magnitude of the decongestion effect of walking and cycling trips hinges on two key factors:

- The **diversion factor** to car: this expresses the proportion of walking and cycling trips that would be made by car if the current alternative was no longer available. Conversely, this can be used to estimate the number of cars trips which would be taken off the road as the result of measures which drove up cycling and walking patronage.
- The **marginal external cost** (MEC) of car travel: this largely represents the economic cost, expressed in monetary terms, of the additional congestion caused on existing road users due to a car using a given type of road, at a given time of day.

Unlike in the case of public transport modes, there is relatively limited evidence on diversion factors for walking and cycling. Recent work by Borjesson and Eliasson (2012), in Sweden, is one of the best available sources for cycling trips. **They suggest a diversion factor of 17% - in other words, 17 out of every 100 cycling trips currently made would transfer to car if cycling was no longer an option.** This is broadly in line with evidence from the Sustainable Travel Towns (STTs) evaluation, which measured the effect of a wide package of measures (from improved infrastructure to smarter choices programmes) on choice of destination and travel mode (Sloman et al, 2010).

One interesting finding from the STTs project was that some longer distance car journeys were replaced with shorter distance walking, cycling and public transport journeys (Sloman et al, 2010). This means that the default assumption that trip lengths remain static could, in some cases, significantly under-estimate the decongestion effect of walking and cycling.



DfT guidance provides estimates of MECs, expressed in pence per car-km, by area type, road type and level of congestion. Figures vary widely, from just a few pence for the least congested local roads, to in excess of £2.50 per car-km on the most congested roads. Interestingly, the highest MECs are estimated to occur on local roads (i.e., not A-roads or motorways) in large urban areas. This would suggest at least some walking and cycling trips are responsible for large reductions in external costs by removing car journeys from the most congested urban roads. Unfortunately, official guidance does not provide a detailed mapping of walking and cycling trips by road type and level of congestion, therefore estimating these effects requires a degree of judgement on the part of practitioners.

Summary

- 6.26. Active travel modes provide fast, cheap and reliable means of transport for short distance journeys.
- 6.27. Ten billion annual journeys are undertaken in England every year by bicycle and on foot. We estimate the combined economic value of these trips to be £14 billion.
- 6.28. Time spent walking and cycling is normally considered to be more onerous than time spent using motorised modes of transport. This explains the relatively small proportion of people who choose to cycle even when this is the most competitive mode of transport.
- 6.29. But research shows that the perception of cycling and walking can be altered considerably through investment in segregated infrastructure and higher quality urban realm. When effective infrastructure is developed in our urban areas, cycling and walking can become much more attractive travel options, which can lead to large increases in uptake.
- 6.30. Encouraging active travel modes can be important in our dense urban areas as they are considerably more space-efficient than private motorised modes of transport. By increasing the proportion of people who choose to walk and cycle, congestion experienced by other road users is reduced and governments can reduce the amount of public funding spent on more expensive road infrastructure.



7. Urban Realm

- 7.1. Quality urban realm is becoming increasingly important for the success of our cities, especially as the continued expansion of urban areas puts greater pressure on available land.

“When Ericsson tries to attract people to Stockholm, what do these individuals do? They look at the city, as well as the workplace. They look at... the whole life picture. Cities and employers have come to accept that all these ingredients do make a difference... Otherwise, it’s not going to be a competitive city.” Jacob Wallenberg, Chairman of Investor AB²²

- 7.2. Urban realm defines the quality of an area, determining how enjoyable and healthy a space is. This is increasingly being recognised an important tool of urban policy, with a focus on making the most out of available land and trying to develop positive perceptions of our cities.
- 7.3. Transport influences the amount of accessible land available for development and the spatial distribution of economic activity. In turn, this has an impact on land prices, housing affordability, business costs, productivity and, ultimately, economic performance.
- 7.4. At a finer level, transport has an impact on the urban environment and the quality of urban realm with the way that we move in cities shaping how space is allocated and what it is used for.
- 7.5. In dense urban areas, high usage of private motorised transport can lead to inefficiencies, taking up large amounts of space for the number of people that they are able to transport.
- 7.6. Higher levels of walking and cycling can bring a number of identifiable benefits to the urban realm, much of which is not included in conventional transport benefits or transport scheme appraisal. This chapter focuses on the following areas:
- How cycling and walking can increase the productive use of space, delivering better urban realm and generating economic value
 - How cycling and walking can boost town and city centre trade through the development of more attractive places that are appealing to people
 - How the characteristics of the urban realm can in turn act to increase the level of cycling and walking

How does the quality of the urban realm impact on accessibility?

- 7.7. The way that we design urban realm can shape our travel horizons and our favoured mode of transport.
- 7.8. Research into the value of public space, found that:

“85 per cent of people surveyed felt that the quality of public space and the built environment has a direct impact on their lives and on the way they feel. But having access to public space is not all that matters – just as important are the planning, design and management of that space” (Stuart Lipton, cited in CABE 2003, p.3).



7.9. Work for Living Streets also found that:

“The aesthetic quality of a place is the most consistently important factor in relationships between the public realm and walking, health and well-being”. (Sinnott et al, 2011, p.35)

7.10. Policy and practice in the UK increasingly recognises that, to reinvigorate urban areas, the traditional view of street space as being designed around the needs of the motor car needs to change.

7.11. For example, in its response to the Roads Commission (2013, p.1), TfL stated that:

“Being ‘pro roads’ has been seen as being exclusively ‘pro motorist’. In fact, the majority of London’s road users are bus passengers, pedestrians, taxi users and cyclists. It is time we recognise that our roads and streets support the economic function of the capital, have the potential to unlock new housing and jobs, and support growth. They deserve a level of investment and strategy to match their importance.” (Transport for London, 2013)

7.12. Research on ‘Attitudes to Walking’ by TfL (2015, p.5), found that the urban realm was important in encouraging people to make more walking trips. The top factors identified were:

- *“Knowing that walking was as quick as the bus or Tube for short distances and having improved walking routes that gave greater priority to pedestrians”*
- *“Creating new and improved walks for pleasure, better information on walks and places of interest in the local area”*
- *“Improved safety and security (e.g. better lighting, safer crossings)”*
- *“Cleaner pavements and streets and streets which are easy to cross”*

(Transport for London, 2015)

7.13. Work by Sinnott et al. (2011, p.31) reinforces these findings, stating that areas of high aesthetic quality are *“associated with between 25 and 100% greater levels of likelihood of walking”*.

7.14. A study using 6,600 questionnaires found that the three biggest problems that deter walking are *“too much traffic, traffic too fast and crossing the road in that order”* (Hass-Klau, 2015, p.281).

Small changes can make big differences – Wanstead High Street, London

“The short cut that was available to the tube station has been improved by building a new footpath and made safer by installing street lights. This has resulted in an increase in the number of pedestrians during the day by 75% and during the night by 122%” (Hass-Klau, 2015, p.121)

7.15. In a movement towards streets being seen as a place to be, TfL now views roads as performing six functions, only one of which relates to their traditional role of movement (see figure 14).



Figure 14. The six functions of roads and public spaces (TfL, 2013)

Functions roads/ public spaces	Exemplified by:
 Moving	Eg helping people get from A to B, providing for efficient and reliable movement by different transport modes and supporting access to jobs and services
 Living	Eg providing good places that support vital economic, cultural and social activity, bustling high streets, successful neighbourhoods, thriving town centres and world-class destinations
 Unlocking	Eg increasing accessibility and connectivity of growth areas to unlock the development potential that will create the homes, jobs, and new economic sectors that London needs as it grows
 Functioning	Eg ensuring essential access to premises for deliveries and servicing, effective use of kerb space to support activities in town centres and upgrading utilities under the roads
 Protecting	Eg reducing collisions, particularly for vulnerable users, and helping to ensure that streets are places where people feel secure
 Sustaining	Eg reducing emissions on the road network, supporting greener, cleaner, quieter streets and a healthier, more active city

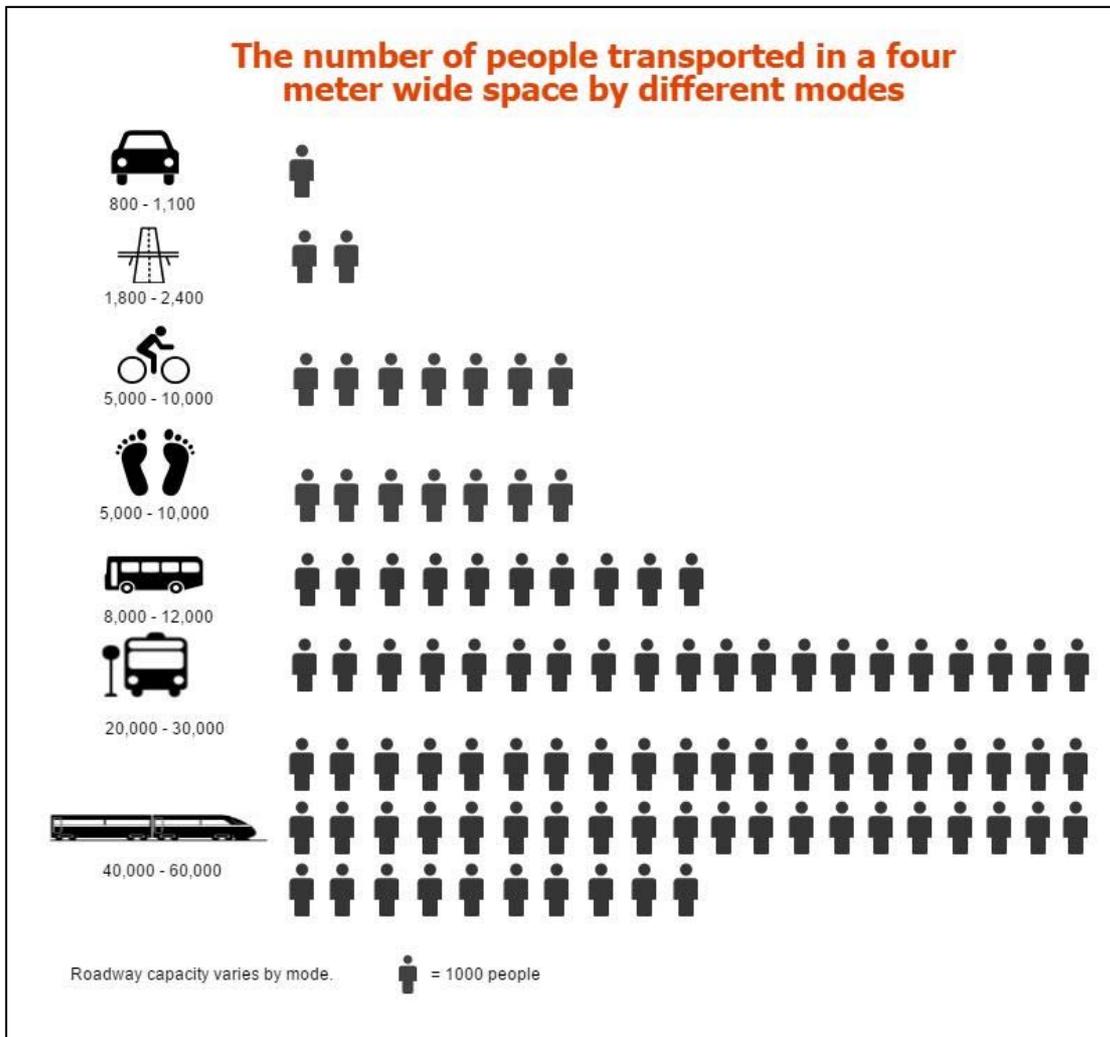
- 7.16. Undertaking research in Dublin, Brick et al. (2011), found that people would be most encouraged to cycle when passing traffic speed was lower, and when cycle routes were off-road. The infrastructure and the environment that we create with it, will determine how the infrastructure is used and who it is likely to attract.
- 7.17. Community severance is an additional dimension to the impact of the urban realm on travel and accessibility. This occurs where transport infrastructure or traffic create barriers within a community and impacts on the wellbeing of the people in those communities (Anciaes, Jones and Mindell, 2015) and this can impact walking and cycling levels²³.

How do walking and cycling enable more productive use of space?

- 7.18. Walking and cycling can efficiently transport high volumes of people, requiring significantly less space to move the same number of people when compared to the private motor car.
- 7.19. Figure 15, below, illustrates the number of people that can be transported by a four meter lane per hour by different modes.



Figure 15. The number of people transported in a four meter wide space by different modes



Source: Litman, 2015

7.20. As cities grow, pressure on land continues to increase meaning that we must continually create ways of facilitating new growth and making greater use of land.

“As they grow, modern cities need to constantly rethink their use of street space to ensure that they are maximising the economic, environmental and social benefits they provide. In some situations this means rethinking how people move; in other places it is about rethinking how space is allocated to different uses to improve the quality of life for both communities and road users.” (TfL, 2013, p.32)

7.21. The ability of cycling and walking to transport high volumes of people in a relatively small amount of space and without spending on big infrastructure, means that they can play a growing role in allowing for cities to expand and continue to function efficiently.

“Yet, in many communities only a small portion of short trips are made by walking and cycling, due in part to planning decisions that result in inadequate sidewalks, crosswalks, paths and bike parking, and development policies that result in sprawled land use patterns.” (Litman 2010, p.1)



- 7.22. Over successive generations, cities have been modified to provide additional capacity for motor traffic whilst paying less attention to the requirements of pedestrians and cyclists (Hass-Klau, 2015). However, by continually providing increased road capacity in a bid to overcome congestion, policy has ultimately led to congestion on a greater scale, further incentivising the allocation of urban space to motor vehicles (Litman, 2015). This predict and provide approach (Noland and Lem, 2002), is costly and can also act as a barrier to active travel.
- 7.23. Attempts to boost city centre footfall have often focussed on providing more free parking rather than improving the urban environment (Shoup 1997). However, this takes valuable land away from other activities, providing little value in return and can reinforce the original problem.

The Cycle City Ambition Grant (CCAG) – a cycling, walking and urban realm project

The CCAG project awarded £107 million to successful bidders. Leeds, one of the leading successful cities, sought to implement a “cycle super highway” across the city. Whilst the main focus was on increasing cycling rates through areas of poor health and into the city centre, there was also focus on improving walking conditions and the urban realm around the project – making the infrastructure as safe and attractive as possible within the existing constraints. To achieve this, a design guide was launched, highlighting best practice for the implementation of the cycle route and how it was to improve the urban realm in specific situations.

Measures included:

Secure cycle parking at key destinations

- 20 mph zones along the entire route (despite full segregation)
- Improvements to the walking environment around the scheme in the city centre – connecting more sites

This project is a recognition that we need to do more than simply provide infrastructure – we need to make sure that it is an attractive, safe and direct option.

Source: City Connect website, <http://cyclecityconnect.co.uk/>

- 7.24. Active travel can play a major role in freeing up valuable space to be used for activities which people attach more value to. Where space has been reallocated cities have seen large benefits, with increased footfall, economic activity and land values.

What is the evidence of the economic benefits of urban realm improvements aimed at promoting active travel?

- 7.25. The full economic benefits of improving urban realm to make it more amiable to active travel are not always accounted for in standard transport appraisal, meaning that the benefits of schemes can be undervalued (ITS Leeds, 2011).
- 7.26. Behavioural biases can also affect the perceptions of business and households. A study in Graz, Austria, showed that business owners overestimated the importance of private car access to retail (Socialdata, 1991, cited in Sustrans, 2006: p. 1). The findings were upheld in a similar survey conducted by Sustrans (2006) in Bristol. It found that businesses assumed



41% of customers arrived by car, whereas only 22% had done so – an overestimation of nearly 100% (Sustrans, 2006, p. 2).

- 7.27. Lawlor (2014) cites a wealth of evidence to show that the creation of good quality pedestrian environments can increase footfall and shop trading significantly. This includes a review by Whitehead et al. (2006, p. 16) of studies by Newby (1992), Hass-Klau (1993), Saretzki and Wöhler (1995), and the European Federation for Transport and Environment (2002), which estimated that urban quality improvements increased retail turnover by an average of 17%.
- 7.28. Another measure of economic development following urban realm improvements is changes to nearby residential and commercial property values. Whitehead et al. (2006, p. 4) estimated that urban realm improvements could on average generate a 21.7% increase in retail rents and evidence suggests a 24.2% increase in office rents (ECOTEC Research and Consulting Ltd, 1996; Frederick and Goo, 1996; Nicholson 1997; Wood and Handley, 1999; Lerner and Poole, 1999).
- 7.29. TfL (2012) has developed an ‘urban realm toolkit’ to value and evaluate urban realm elements of transport interventions. Schemes that encourage a shift to active modes and public transport were found to have a positive impact on land values, creating benefits beyond the physical scheme.
- 7.30. This principle has been applied to the recent Crossrail project in London with 190,000 square metres of space outside stations turned into shared spaces, improving the environment and creating 1,335 new bike parking spaces. Reducing the dominance of the car, Crossrail enabled the development of a modern urban realm and will generate an estimated 10% uplift in property values, adding £5.5bn to real estate by 2021 (Crossrail, 2015).
- 7.31. TfL has calculated the values of different types of urban realm interventions that they use when developing business cases. The below tables summarise some of the most valuable walking and cycling interventions:

Figure 16. Values ascribed by TfL to walking interventions (TfL, 2014b. p.165)

Intervention	Value (pence)
Direct green man crossing	5.61
Crossing using pedestrian crossing, taking about the same time as crossing by subway	4.95
Maps of the local area, information boards and signs to public transport and major attractions	17.97
Seating areas at well-chosen locations	7.89

- 7.32. Many of the higher valued walking interventions relate to the directness of the journey, its safety and its amenity.
- 7.33. Cycling priorities, whilst slightly different due to the nature of journeys, also favoured making journeys easier, safer and more enjoyable:



Figure 17. Values ascribed by TfL to cycling interventions (TfL, 2014b, p.165)

Intervention	Value (pence)
Cycle parking provided	20.22
Dedicated surveillance cameras covering the cycle parking	6.03
Good, bright, even lighting after dark	9.12
Even and smooth cycle surface and ride	7.07

7.34. Attaching value to types of intervention is helping TfL to generate better urban realm that is more amenable to both cycling and walking.

Summary

7.35. The characteristics of the urban realm can act to either encourage or discourage different ways of moving, creating a strong link between transport and the quality of urban space.

7.36. Developing urban realm that facilitates cycling and walking can deliver a number of social and economic benefits, increasing travel horizons, raising property values and increasing town/city centre trading.

7.37. Cycling and walking can do all of this in an environmentally friendly way, whilst releasing space for more efficient use.



8. Social inclusion and access to opportunity

- 8.1. Whilst it might be easy to take transport for granted, for many in society getting from A to B can be a struggle. Where this is the case, access to services, opportunities and employment can be limited, which can potentially impact on the quality of peoples' lives.

Inclusive growth and access to opportunity

- 8.2. Walking and cycling provide cost effective ways of increasing mobility, and are easily available to a wide cross-section of society. Opening up access to other forms of transportation, or acting as modes of transport in their own right, active travel provides a cost effective way of increasing the travel horizons of all people.
- 8.3. Research by Lucas et al. (2001), found that people from more disadvantaged groups make considerably fewer trips than those from more affluent social groups. However, this was not found to be caused by reduced travel requirements, but rather barriers preventing trips from being made.
- 8.4. Despite the potential savings that can be made by cycling as opposed to using other forms of transport, those on lower incomes are less likely to cycle than those on higher incomes. As a survey of cycling in London found, only 20% of those that frequently cycle are on wages or salaries equivalent to £20,000 a year or less (average London wage = £35k, in 2014).
- 8.5. This is particularly problematic in a society that relies on motorised transport. In England, 48% of households in the lowest income quintile do not have access to a car (DfT National Travel Survey, 2013).
- 8.6. With the low level of car ownership amongst the lowest earners in the country, the least well off in society have the most to gain from an overall increase in cycling and walking levels. Therefore, an improvement in conditions could have the greatest impact on mobility in the poorest households (Aldred 2014, p.11).
- 8.7. Making walking and cycling an attractive and practical option would not only make the lives of those without a car easier, but also improve the lives of those with access to a car by allowing them greater access to the wider economy.

How do we encourage more inclusive walking and cycling growth?

- 8.8. Whilst the physical bike is the greatest factor in enabling this, the provision of cycling, and walking infrastructure should improve access to services for all, with research suggesting that "it may be especially significant for the socially disadvantaged living in areas on the periphery of cities and where there may be fewer local amenities or essential services" (Farla et al, 2016: 27). As the mode share of cycling increases and it becomes more normalised, it is likely that usage will spread to a wider demographic.
- 8.9. Evidence suggests that as cycling numbers increase the diversity of people using this mode increases (Pucher and Buehler, 2012). If we are able to achieve this cycling can contribute to increasing access to services for all and can help to create more inclusive cities.
- 8.10. Walking is usually an even cheaper option than cycling as a travel choice, with very little equipment needed. Indeed, those on the lowest incomes are more likely to walk as their main mode of travel than use public transport (DfT, National Travel Survey, 2014, NTS0705).



- 8.11. For some, walking is a positive choice selected because of various benefits, not least the opportunity to exercise and improve mental wellbeing, but for others it is often the only affordable option (Pooley et al. 2013, p.101-103). Policies aimed at increasing walking can therefore benefit all income groups, but crucially allow the most economically marginalised greater access to work, social opportunities, and greater health.
- 8.12. A number of factors can combine to prevent people from deprived areas of a city from walking, which include fear of crime, poor environment and poor connections to other modes of transport.
- 8.13. Walking infrastructure has a role to play here as it can help to create an environment which encourages people to walk to areas of opportunity or to public transport links here.
- 8.14. Increases in active travel can also impact on crime levels, with an increase in the number of people walking and cycling helping to lower actual crime and the fear of it. This can create a positive feedback loop, with increasing cycling levels helping to encourage more people to participate and feel safe (Department of Health and Department for Transport, 2011).

Somerset County Council – the importance of active travel

“For those people who do not own a car, cycling and walking can be an important method of gaining access to services either as a direct journey or as a way of accessing the public transport network. Poor walking or cycling conditions or lack of travel information can act as a barrier to people accessing services and can lead to social exclusion...In addition, encouraging active travel, in particular cycling and through linkage with the public transport network, can help to broaden journey horizons and therefore potentially provide access to a wider variety of services”.

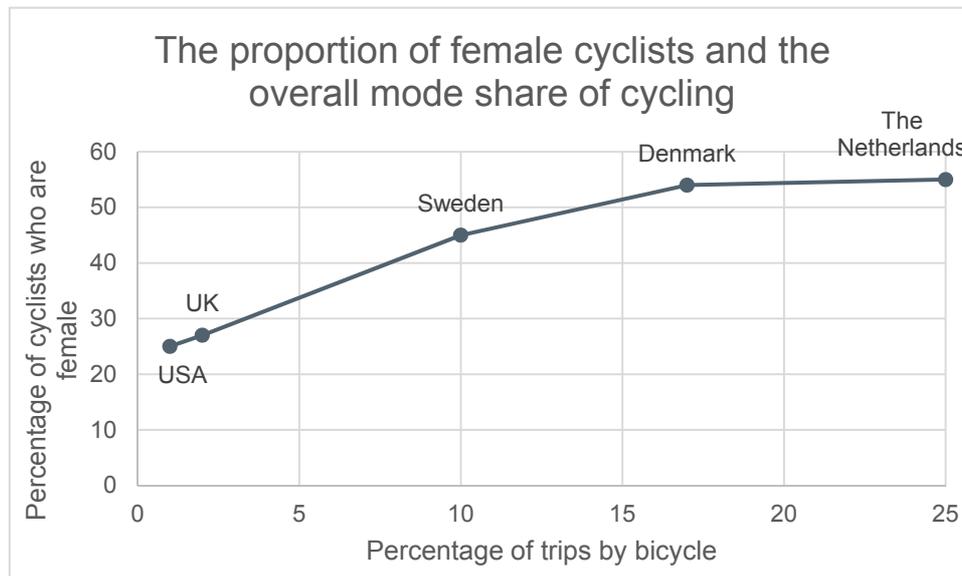
Source: Somerset County Council, 2012: 12

Gender

- 8.15. Since women are less likely to meet current physical activity guidelines than men (28% of women and 40% of men meet current guidelines in England, for example; Davis et al. 2011, p.13), they have more to gain individually from increased use of active travel modes, while benefits accruing to the economy in terms of reduced health spending and absenteeism, can be all the greater.
- 8.16. According to the National Travel Survey (DfT 2014, NTS0601), on average men make over three times as many trips by bicycle as women, and cycle four times the distance (NTS0605). Men are also more likely to cycle to work than women. According to latest census data, 1.6% of women, against 3.9% of men cycle to work (Office for National Statistics 2014, p.1).
- 8.17. However, there is evidence from around the world that suggests that where policy actively seeks to increase cycling's mode share the gender imbalance is removed (Pucher and Buehler, 2012). Through the provision of cycling infrastructure and supportive policies, it is possible to broaden the appeal of cycling to typically under-represented groups. If this can happen, increased levels of cycling is likely to have a positive impact on access to services and opportunities, playing a role in the inclusive growth agenda.



Figure 18. The proportion of female cyclists compared to the percentage of all trips that are made by bicycle



Source: Pucher and Buehler, 2012)

8.18. Active travel is especially important for women, because it is one of the best ways of achieving physical activity targets:

“When physical activity is a ‘nonathletic’, habitual part of everyday life that does not require additional exercise time, women are more likely to achieve physical activity parity with men. In the Netherlands, where men and women cycle for transportation at comparable levels, cycling is the activity that contributes most to the total time spent by adults on moderate-to-vigorous physical activity (van Kempen et al. 2010)’.

(Garrard et al. 2012, p.214)

8.19. In addition, because women are more likely to perform escorted trips such as picking children up from school, improvements in conditions to allow children to travel independently via active travel modes can reduce household responsibilities for women (Garrard et al. 2012, p.213), creating free time for economic and social activities.

Summary

8.20. Transport can be a struggle for some groups in society who potentially lack the resources or means to use motorised forms of transport regularly. Where this is the case, travel horizons can be limited and people can be excluded from services and employment, potentially leading or contributing to the development of social exclusion.

8.21. Increased provision for walking and cycling can help to overcome this, providing affordable modes of transport that can increase the travel horizons of all people.

8.22. Active travel can play an important role in helping to overcome social exclusion, providing affordable modes of transport that can effectively link people with opportunities and services whilst also improving their quality of life.



- 8.23. With the majority of journeys made being under five miles (NTS, 2013), walking and cycling have the potential to help overcome transport barriers and broaden peoples access to jobs and services.
- 8.24. Central to achieving this for walking and cycling is a supportive policy framework and the development of infrastructure for the masses rather than the few. Whilst there is a certain percentage of people that will cycle or walk no matter what the infrastructure, new approaches and infrastructure can help to broaden this scope.



9. Manufacturing, Retail and Tourism – Direct Economic Impacts

- 9.1. Investment aimed at increasing participation in active travel can have additional direct economic impacts on the economy, resulting largely from additional spending by people taking part in these activities.
- 9.2. Walking and cycling both require levels of equipment for people to participate, be this shoes, a bike or associated safety equipment. They are also major tourism activities. All of this helps to create new jobs and support existing jobs in valuable sectors.
- 9.3. A recent study by the London School of Economics, estimated that cycling contributed circa £3bn to the British economy in 2010 (CTC, 2015).
- 9.4. When we consider the scale of walking, it is likely that the combined economic benefits from active travel are significantly greater. If investment was to increase participation levels, we would expect that the direct contribution to the economy would continue to grow, delivering benefits to a range of different sectors.
- 9.5. This chapter will focus on the benefits to three key sectors of the economy:
 - Manufacturing/supply side
 - Retail
 - Tourism

Manufacturing/supply side

- 9.6. Walking and cycling both involve the use of equipment, which must be manufactured, assembled, distributed and sold. This means that they can have a direct economic impact.
- 9.7. Manufacturing is a major sector in the UK, contributing 10% of national GVA and 35% of national exports (Department for Business, Innovation and Skills, 2012). Whilst cycling and walking are both small manufacturing sectors in the UK, increased participation could provide the opportunity for existing companies to expand and for new entrants into the market.
- 9.8. In 2010, UK cycle production stood at around 23,000 units and almost doubled to 40,000 in 2012 (CTC, 2015). Whilst many UK manufacturers, such as Raleigh, have moved production abroad, this still generates a significant, and expanding, number of high value added jobs in an expanding sector.
- 9.9. 23,000 people are employed directly in the British cycling economy, which generates
 - over £500 million in wages
 - around £100 million in taxes (Comley and Mackintosh, 2012, p.60)



Brompton Bikes – a story of growth

Brompton Bicycles are one of only two bike manufacturers left in the UK. However, they have achieved large growth and are an expanding company. Analysing figures from 2009 to 2014, turnover has increased from £8.4 million to £27.2 million, up 220%. The number of employees has also increased more than 100%, from 94 to 200.

Whilst Brompton are just a small proportion of the people employed in the bicycle industry in the UK, the manufacturing and assembly jobs that they create deliver an important economic contribution in a high value-added field.

Source: Corporate accounts source through the FAME database

- 9.10. A range of smaller outdoor activity companies are also manufacturing in the UK, largely in walking, camping and climbing. A prime example is Buffalo in Sheffield, a manufacturer of high quality outdoor clothing and sleeping bags. Whilst relatively small scale, companies such as this provide high value added jobs to the British economy.
- 9.11. Additionally, the logistics industry is vital in transporting goods around the country, creating further economic contributions. Goods must be transported between the location of manufacture and their retail destination. If the level of manufacturing increases, more jobs will be supported in secondary sectors such as logistics, extending the benefits that increased production could bring.

How does cycling and walking boost retail?

- 9.12. Cycling and walking require varying levels of equipment and clothing for people to participate, for example a bicycle, trainers, walking boots etc. The purchase of such goods creates a direct economic impact and boosts retail sales.
- 9.13. It is logical to suggest that an increase in participation in active travel could lead to the purchase of an increased volume of goods, further extending the current benefits that active travel brings. These benefits occur over and above the indirect benefits discussed in previous chapters, such as increased footfall in town and city centres.
- 9.14. CTC (2015) claim that cyclists contributed a “gross cycling product” of circa £3 billion to the British economy in 2010. This figure is comprised of spend by cyclists on cycling equipment and goods. Around 3.6 million bikes are sold in Great Britain every year, making up a significant proportion of this figure. If participation is increased from the current low levels, it would be possible that sales of bikes and associated products would rise, increasing the economic contribution.
- 9.15. This spend is a large boost to retailers, either specialist bike shops or outdoor/sports shops with bike sales, creating jobs and keeping people in employment. If the number of people walking and cycling increases, it is likely that this would trickle through into retail and provide further boosts.
- 9.16. Comley and Mackintosh, 2012 (p.55) reported that experts Profile Outdoors estimated the UK outdoor market retail of clothing, footwear and equipment to be worth £1.4 billion at point of sale in 2013.



Figure 19: UK wholesale market share estimation according to item based on 2012 State of Trade Survey by European Outdoor Group (Source: European Outdoor Group)

Item	Share of sales? (%)
Apparel	58.7
Footwear	17.9
Backpacks and luggage	5.5
Tents	7.5
Climbing equipment	1.5
Sleeping bags and mattresses	2.0
Outdoor accessories	6.9

9.17. The numbers shown in Figure 19 provide a breakdown of the outdoor gear sold in the UK. Whilst apparel makes up the majority of current sales, it is clear that the outdoor market is diverse. Whilst cycling and particularly walking can be undertaken with minimal equipment, it is likely that any increase in participation levels will have knock on benefits for associated industries.

Go Outdoors – the growth of the British outdoor retail market

Go Outdoors is a retailer of outdoor clothing and equipment, with a major part of their market consisting of cycling and walking equipment.

The chain has expanded rapidly from its single store in Sheffield to having close to 50 stores nationwide. In 2005, the company employed 83 people compared to the 1,800 employed in 2014. The growth in the outdoor sector has aided this expansion, with walking and cycling amongst their major ranges.

Source: Corporate accounts sourced from the FAME database

9.18. Outdoor retail is currently big business in the UK, with cycling and walking being two of the most dominant markets. The growth seen by shops such as GoOutdoors is a positive sign for the economy, and something that could be increased as the number of people cycling and walking regularly does.

9.19. On average, CTC estimate that each cyclist is valued at around £230 per annum to the economy. If we can achieve targets to get 10% of people cycling regularly, this could imply an annual spend of £1.4 billion per year.

Tourism

9.20. The tourism sector is a major contributor to the UK economy, valued at £126.9 billion per year in 2013 (Visit Britain, 2015). This was 9% of the total GDP, and is a figure that is predicted to grow over the coming years.

9.21. Outdoor tourism is a large market in the UK and across the EU, with large numbers of people making either day trips or having longer holidays focused around walking and cycling.



- 9.22. In the UK, 56,566 are employed in cycling in the UK, with over half of these working in cycle tourism (35,788 full time equivalents) and another third in bicycle retail and repair (European Cyclists' Federation, 2014).
- 9.23. A study by the ECF calculated that around 655,000 people in the EU worked in the cycling sector, with the majority of them in cycle tourism (European Cyclists' Federation, 2014).
- 9.24. It is estimated that the UK hosted 149 million day trips and 1.23 million overnight cycle trips per year, contributing £2.2 billion to the economy (Weston et al., 2012).
- 9.25. An annual survey by EnjoyEngland, explores the activities undertaken by domestic overnight visitors. The 2014 survey found that walking and cycling were some of the most commonly undertaken activities, featuring much higher than traditional holiday activities such as visiting museums or historic sits and castles, or churches and cathedrals (EnjoyEngland, 2014).

Figure 20. The percentage of tourists undertaking particular activities.

Activity	Percentage of people undertaking activity
Sightseeing on foot	28
Short walk (up to 1 hour or 2 miles)	21
Long Walk (more than 1 hour or 2 miles)	12
Visit a museum	6
Visit a church/cathedral	6
Visit a castle/other historic site	6
Visit an art gallery	3
Cycling (on a road)	2
Mountain biking	1

- 9.26. Indeed, it is immediately obvious how important the walking and cycling environment is to tourists, with many tourists exploring urban areas on foot.
- 9.27. So whilst walking as a tourism activity might not directly bring additional spend into urban areas, it might act to increase the number of tourists and also the range of attractions that they can access, boosting the local economy.
- 9.28. Looking at walking tourism, Comley and Mackintosh (2012) estimated that walking tourism contributed between £1.47 and £2.76 billion to the UK economy.
- 9.29. Combined, this would create an estimate walking and cycling tourisms contribution to the economy of £3.7-£5 billion per years. This is between 3-4% of all UK tourism.
- 9.30. Walking tourism alone was estimated to support between 180,500 - 245,500 full time equivalent jobs in the UK (Cromley and Mackintosh, 2012).

The value of cycle tourism in Scotland

- 9.31. Cycle tourism is a key growth area in Scotland. This has been boosted by the development of new cycle networks as well as off road cycling such as the off-road witches trail on the Nevis range in Fort William. The promotion of cycling sits within a wider outdoor activities



push, with particular focus on the Scottish Highlands, which has been branded as the outdoor capital of the UK.

- 9.32. Combined with GVA benefits, the total value of cycle tourism in Scotland is estimated to be between £241 million and £362 million per year (Zovko 2013).
- 9.33. The Scottish Government states that the total value of tourism to Scotland in 2014 was 9.7 billion (The Scottish Government, 2014). So Cycle tourism represents 3-4% of total tourism benefits
- 9.34. A summary of where these benefits accrue is detailed below:

Figure 21. The value of cycle tourism in Scotland by area

Economic Values	(£ millions)/year
Health benefits	4.0
Leisure cycle events	5.6
Leisure cycle-related infrastructure	1.5
Expenditure by leisure cyclists	106.2-228.2
Total economic contribution	117.4-239.3

(Source, Zovko, 2013: 4)

- 9.35. Currently only 3% of cycle tourists visiting Scotland come from abroad (Zovko, 2013: 14).
- 9.36. With the number of visitors for walking purposes being significantly higher, it is expected that the combined economic contribution of walking and cycling would be significantly above the figures presented. Tourism Intelligence Scotland (undated), estimated that walking was a major part of 22% of all tourism trips in Scotland.

The value of tourism to the Lake District

- 9.37. The Lake District National Park attracts over 16 million visitors per year, contributing £1,146 million a year to the local economy (Lake District National Park Partnership, 2016). A Cumbria Visitor Survey in 2009 found people entered the park for the following purposes:

Figure 22. Percentage of tourists undertaking particular activities

Activity	Percentage
Visiting the countryside	51
Short Walks	39
Long Walks	37
Cycling	5
Mountain biking	4

(Source: Lake District National Park Partnership, 2016)

- 9.38. In 2010, tourism in Cumbria was valued at £2.1 billion, making it a major part of the economy and a major source of employment (Cumbria Tourism, 2012). The tourism economy is diverse, with spending across accommodation, food, drink, leisure and shopping, with additional benefits rippling through local supply chains.



- 9.39. Tourism supports 32,573 FTEs (in reality 56,011 actual jobs) estimated at 19% of all employment in the county (Cumbria Tourism, 2012).
- 9.40. Even if tourism from walking and cycling only represented 37% of total tourism spending (a likely conservative estimate based on the number of visitors entering the national park for long distance walks), the sector would be worth £777 million per year to the Lake District economy and would support over 10,000 jobs (UTG calculations).

Summary

- 9.41. Cycling and walking make direct contributions to the economy in three key ways.
- 9.42. First, they both use equipment that has to be manufactured and distributed, creating high value added jobs.
- 9.43. Second, through the sale of retail goods they are direct employers. With the outdoor sector in the UK growing, the number of people employed in this sector has increased, widening the direct benefit
- 9.44. Third, they have a considerable tourist market, with a high number of single and multi-day trips being made in the UK for cycling and walking purposes. This adds money into local economies, generating new and supporting existing employment.
- 9.45. If participation in cycling is increased, it is likely that there would be knock-on benefits for manufacturing, retail and tourism, delivering further direct economic benefits.



10. Conclusion

- 10.1. This report has brought together much of the high level evidence base on the benefits of walking and cycling into a single document. This is a vast area, and one in constant change, with new empirical evidence regularly being produced by both practitioners, policy makers and researchers. We therefore see this as work in progress and we will continue to update this report as more evidence comes to our attention.
- 10.2. Whilst the role of transport is to keep our cities moving, there is a growing agenda of considering what types of cities we want to live, work and invest in. Transport has a considerable effect on our cities, determining the amount of space required to transport people and goods, the environment and the quality of space.
- 10.3. Modes of transport have require different amounts of space to transport a set number of people and have differing effects on the environment around them. In general, cycling and walking are both high capacity modes that require only a small amount of space and also have very little impact on the surrounding environment.
- 10.4. When we think of what characteristics we want from our cities, it is likely that, amongst others, we will want them to have the following features:
 - Well connected,
 - Attractive places to live in, work in, invest in and visit,
 - Healthier,
 - Greener and Cleaner,
 - More inclusive.
- 10.5. Active travel has an important role to play in delivering the above as it is capable of moving people in a space effective, affordable and environmentally friendly way. With our cities attracting ever more residents and jobs, the focus on moving people in a space efficient way will increase. Cycling and walking require relatively low cost investment and the increased capacity can lead to much more expensive projects, such as changes to road or rail infrastructure, being avoided.
- 10.6. The Cycling and Walking Investment Strategy highlights the growing awareness of the role of active travel, setting out an ambitious target to double the level of cycling by 2025 and halt the decline in walking. If this is to be achieved there will be a large focus on urban areas.
- 10.7. With a movement away from central government ring fenced funding towards more local sources of funding, it is important that are we able to effectively make the case for active travel, both highlighting the evidence of the economic benefits, but also how it is able to deliver the end goal of cities that people want to live in.
- 10.8. Although investment in active travel might not attract anything like the attention of larger infrastructure schemes, it is capable of delivering large benefits in a cost effective way. And these benefits go much wider than traditional transport appraisals and the functional movement of people.
- 10.9. In the current context of spending reductions and budget control, we feel that it is important to make the case for cycling and walking together, strengthening the strong arguments that already exist and highlighting what active travel can deliver.



- 10.10. Crucially, the report sets out the key areas in which active transport can deliver benefits in our urban areas. Not only does active travel support the functional movement of people around or dense urban areas, but it does so in a way that can improve health, air quality, shop trading, urban realm, tourism and social inclusion.
- 10.11. Active travel is well placed to deliver benefits through firstly addressing costs to society, such as poor health, lack of access to the jobs market and poor safety in urban areas. And it is also able to deliver benefits, such as improving urban realm and adding value to retail and property values.
- 10.12. Overall, investment in active travel offers exceptional value for money through the wide range of overlapping social, economic and environmental factors. Where investment has been made, both in Europe and in the UK, there has been strong growth in the take up of active travel leading to large economic, social and environmental benefits.
- 10.13. In the UK, walking and cycling levels are currently low, meaning that there is large scope for this to increase and a big prize if this can be achieved.



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