



Sustainable
Development Commission



Fairness in a Car-dependent Society

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Foreword

Freedom, fairness, and responsibility – the aims of the Coalition’s programme for government. Powerful words, but what do they mean in the context of the UK transport system?

In this report we explore the issue of fairness in particular. We look at who benefits from our current patterns of travel, who does not, and how well the system serves the most vulnerable groups in society such as the young, the old and the poor. The picture which emerges is one of significant inequalities. Not only do vulnerable groups travel less than other people, they carry a greater burden of the costs of other people’s travel. In other words they are both ‘less travelled’ and ‘travelled-upon’. The impacts they experience can be severe: chronic air pollution and noise, traffic danger, higher rates of injury and crime.

Road traffic is responsible for the great majority of these impacts. The UK is one of the most car-dependent countries in Europe. The distance travelled on our roads has increased tenfold since 1950. Many services are now based on the assumption that users will access them by car. People who do not drive or cannot afford to drive find themselves increasingly trapped in a car-dependent world, unable to participate in the benefits, but forced to endure its costs.

Yet, paradoxically, road travel has widened the choice of jobs and opportunities available to many people, liberating them from the constraints of the past. We do not seek here to condemn cars, even less motorists. We simply explore what costs are associated with our car dependency, and who bears them. Many of the lessons apply equally to rail and air.

It is not utopian to imagine a transport system that works better for everyone, without damaging the health of our communities or leaving a legacy of environmental damage for our children. Anyone travelling to the Netherlands will catch a glimpse of how things can be different, with almost 30 per cent of all journeys made by bicycle compared with one or two per cent in this country. Worsening congestion,

rising fuel costs and continuing concerns about climate change and quality of life all suggest there must be a better way.

We believe the solution lies in the application of a simple hierarchy in transport policy which turns current thinking on its head in two respects. Firstly, it recognises the importance of behaviour change. The key opportunity for policy makers over the next period will be to reduce the demand for road travel through innovative use of ICT, modal shift to active travel and public transport.

Secondly, it challenges the view that transport is purely an issue for travellers. From a fairness perspective this view is inexcusably blinkered, as illustrated by the reaction to the proposed route for HS2 (high speed rail). Future investments in transport must put the quality of life of people they affect at the heart of the design process and actively seek to redress the wrongs of the past. An important test of the localism agenda will be whether it gives greater voice to communities that have for years sought action on issues such as noise from trunk roads or air quality concerns – and of course how the relevant transport bodies respond.

In this respect we note the publication of *Creating Growth, Cutting Carbon*, the UK Government’s vision for a sustainable local transport system which encourages local authorities to prioritise quality of life, safety and the environment alongside economic development in their transport planning. In future we would like to see this kind of integrated thinking developed further, and extended to national transport strategies.

In the meantime, we hope this report will offer inspiration to transport planners across the UK wishing to forge a more equitable transport system.

Tess Gill
SDC Commissioner for Work and Skills

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Executive summary

In examining fairness in transport policy, it is first necessary to understand where we are starting from in terms of existing transport patterns. The average British person travelled over three times as far in 2007 as their equivalent in 1952, and this excludes international air travel. Almost all of this increase has been due to the growth of road transport and, in particular, car journeys.

The widespread availability and affordability of car travel has brought many benefits for people. Cars offer the freedom to travel to almost any destination, at whatever time, with passengers and luggage and minimal need to plan ahead. They have made it easier to keep in touch with friends and family and to reach a wider range of job opportunities. As they have become more affordable, they have dramatically expanded the travel possibilities available to ordinary families.

But these freedoms have been obtained at a substantial price, and one that falls most heavily on the poorest and most vulnerable in society. The negative impacts of our expanding travel horizons include deaths, injuries, and the threat of accidents that restrict others' freedoms; air and noise pollution; congestion; community severance and the loss of social cohesion. These and other impacts, in particular climate change, which are associated with increased travel, will place a heavy burden upon future generations.

Our right to freedom of movement must be exercised without unduly compromising the rights of others to live free from the negative impacts that travel imposes. The challenge for Government is to create a framework and introduce policies, which achieve a better balance between potentially conflicting rights and freedoms in a way that is equitable for both this and future generations and, which respects environmental limits.

Current UK transport patterns are dominated by road transport and car use – the UK has been described by the Commission on Integrated Transport as the most car-dependent country in Europe. Over the past decade, the costs of public transport alternatives have risen in real terms while the cost of motoring has fallen. More car journeys have created congestion and produced a more hostile road environment. Walking and cycling in particular have become more dangerous and unpleasant as the number of vehicles on the roads has increased. Over time, land use patterns have changed to reflect car use. Shops and services have moved to car-accessible locations. Journey patterns have become more diffuse and journeys

have become longer. Our society is becoming hard-wired to increasing levels of car dependency.

The costs to society are substantial. In late 2009, the Cabinet Office, working with the Department for Transport, estimated the costs to English urban areas at £38-49 billion. This was based on excess delays, accidents, poor air quality, physical inactivity, greenhouse gas emissions and some of the impacts of noise. Scaling these figures up gives an estimate of £43-£56 billion for the whole of the UK. Yet their report acknowledges that there are important omissions from this figure, mentioning for instance an additional £4-5 billion for noise impacts on health and productivity. The report makes no attempt to quantify the external costs of negative social impacts, despite referring to reduced social cohesion and interaction as a result of traffic. Yet research from the Institute of Transport Economics in Oslo suggests that the cost of community severance (the 'barrier effect' due to transport infrastructure such as busy roads) is greater than the estimated cost of noise and almost equal to the cost of air pollution. When the typical annual expenditure on roads of about £8-9 billion is added to this, it is clear that the total cost of our level of car dependency significantly exceeds the £48 billion per annum in taxes and charges on UK road users.

These positive and negative impacts are unevenly distributed. Seven key groups have been examined: low income; children; older people; the disabled; black; Asian and minority ethnic groups; rural communities; and future generations. The review of evidence underpinning this report revealed a number of key findings:

- 1 Whilst over 80% of households have a car, one in five men and one in three women do not drive.
- 2 The richest 10 per cent of the population effectively receive four times as much public spending on transport as the poorest 10 per cent.
- 3 Children of the lowest socioeconomic groups are up to 28 times more likely to be killed on the roads than those of the top socioeconomic group.
- 4 The most common cause of death for children aged 5-14 years is being hit by a vehicle.
- 5 Car owners in the lowest income quintile spend 25 per cent of total household expenditure on motoring (by comparison spending 10 per cent of income on household energy bills is defined as 'fuel poverty').

- 6 Black and black British people have amongst the lowest car ownership rates, while in London, for example, they are 30 per cent more likely to be injured on the road than white ethnic groups.
- 7 Those in the top income quintile travel two and half times as far as those in the bottom income quintile and three times as far by car. In the lowest income quintile, less than half of adults hold a driving licence and less than half of households have a car whilst half of all households in the highest income quintile have two or more cars. For those claiming income support or jobseeker's allowance, car access figures are even lower – almost two thirds do not have access to a car and a licence to drive it.
- 8 Those over the age of 60 are seven times more likely to be killed if hit by a car at 30 mph and 35 per cent of all pedestrian fatalities are people over the age of 70.
- 9 People living in rural areas now see car ownership as a necessity and around 90 per cent of households have at least one car. The cost of motoring was found to account for 60 to 100 per cent of the additional income calculated as being required for rural dwellers to meet a minimum socially acceptable standard of living commensurate with urban dwellers.
- 10 55 per cent of trains in use in Great Britain have not been built to modern access standards and 41 per cent of stations do not have step free access to all platforms. 39 per cent of buses do not have accessibility certificates.

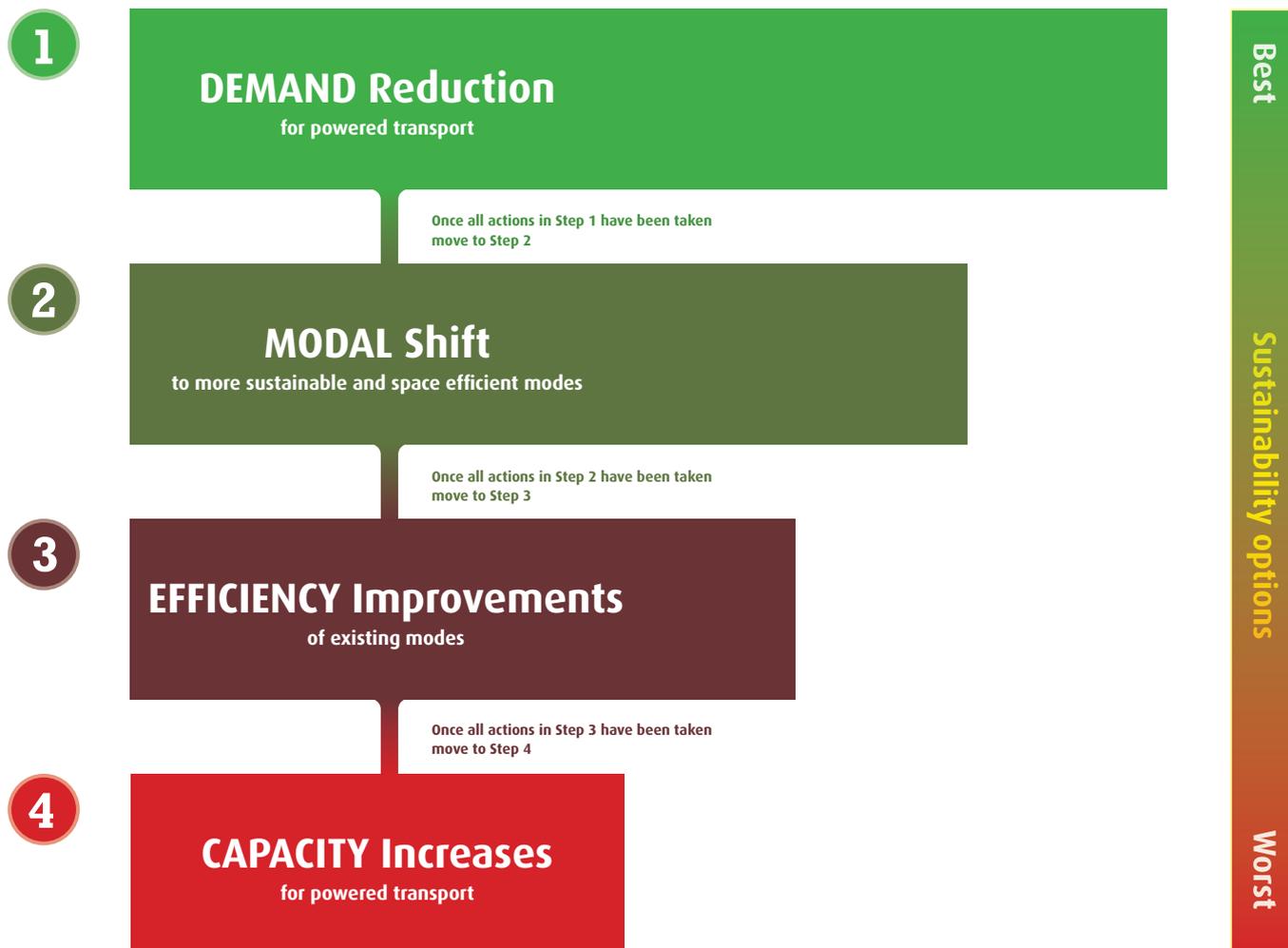
Our analysis demonstrates that existing transport patterns in the UK contribute to substantial and persistent inequalities. Some people benefit from accessing a wide range of education and employment opportunities and goods and services, whilst others are held back, unable to access the opportunities that would enable them to maximise their own wellbeing and social and economic contribution.

The inequality is two-fold. In general the people experiencing the worst access opportunities also suffer the worst effects of other people's travel. They are both 'less travelled' and 'travelled-upon'. The evidence we present in this report suggests that the central reason for this inequality is society's dependence upon the car as its dominant mode of travel. Put simply, increasing car dependency has led to increasing unfairness.

A new approach to transport policy is badly needed – one which accommodates complexity, works intelligently with social and environmental impacts, and takes a system-wide view. We need to move away from 'predict and provide' for powered transport (including rail and aviation) and work instead towards policy choices that are guided by a vision of a sustainable transport system.

We first proposed an overarching hierarchical approach to transport policy in our consultation response to the Department for Transport's *Delivering a Sustainable Transport System* consultation (2009). We used the hierarchy again to inform our approach in our *Smarter Moves* report (2010). This describes the four stages in more detail. The hierarchy is intended as a simple tool which can be used at all levels of transport policy making to structure thinking in generating and prioritising solutions:

A Sustainable Transport Hierarchy



Recommendation: The Government and the Devolved Administrations adopt this over-arching transport hierarchy approach and promote its use at all levels of transport decision-making as a tool to ensure that the most sustainable and fair transport solutions are prioritised.

Whilst this approach to policy making will help to ensure that the most sustainable solutions are prioritised, another critical area requiring progress is the more detailed appraisal of transport scheme options.

Recommendation: The Government and the Devolved Administrations should improve the handling of social and distributional impacts in transport decision-making and appraisal. Changes made should be monitored to assess whether they are leading to fairer outcomes.

The suitability of alternative decision-making processes to cost-benefit analysis for use in areas of complex policy making involving significant social and long-term impacts should also be explored. Implementing these recommendations would substantially improve the sustainability and, therefore, the fairness of future transport policy decisions. For this reason we make one further recommendation.

Recommendation: In order to tackle unfairness in society, the Government and the Devolved Administrations should make reducing transport inequalities a specific goal of transport policy.

Many of the transport schemes necessary to tackle unfairness will lie within the jurisdiction of local authorities. In England, we welcome the Department for Transport's new *Local Sustainable Transport Fund*. As the Department suggests, the fund should support local authorities wishing to introduce packages of measures "encouraging walking and cycling, initiatives to improve integration between travel modes and end-to-end journey experiences, better public transport and improved traffic management schemes".

The success of the fund will depend on both the quality of the submissions from local authorities and on the methodology used to assess those submissions. The criteria used to judge applications for any form of transport funding should be based on the sustainable transport hierarchy and assessment of the social and distributional impacts.

In a time of extreme public spending constraint, with families across the UK experiencing hardship and uncertainty, the issues of affordability of fairness policies, and their acceptability by the public, do need to be considered.

The benefit to cost ratio of many of the most sustainable transport interventions is very high, as predicted by existing appraisal processes such as the one used in England, NATA. Interestingly, the current methodology of NATA does not take into account many of the social benefits that would accrue from more sustainable transport policies. If these were included, the benefit-cost ratio calculations are likely to be even higher. It has also been argued that more sustainable policy options would be given greater value if the methodology used to calculate them more accurately reflected the urgent need to reduce carbon emissions.

By acting on the recommendations in this report, government at all levels will deliver a fairer, more environmentally sustainable transport system that no longer disadvantages the poorest and most vulnerable in society. In doing so it will result in a transport system that works better for us all.

1

Introduction

The Coalition Government put three words on the front of its programme for government: Freedom, Fairness and Responsibility. In the foreword David Cameron and Nick Clegg state that:

“Difficult decisions will have to be taken in the months and years ahead, but we will ensure that fairness is at the heart of those decisions so that all those most in need are protected... We both want a Britain where social mobility is unlocked; where everyone, regardless of background, has the chance to rise as high as their talents and ambition allow them.”¹

Equally, the debate on fairness and reducing inequalities is one that features strongly in the Devolved Administrations.

We agree that the pursuit of fairness should be a central goal of government. Much of the debate about fairness centres on reform of the welfare system, inequalities in earnings, taxation and access to health and education. In this report, we have chosen to focus on fairness in relation to transport policy and to do so within the context of the emerging policy direction of the Coalition Government. Much of the analysis in this report however is relevant across the UK Government and Devolved Administrations.

In discussing fairness and the UK transport system, it is important to define what we mean by fairness itself. One of the two key principles of sustainable development states we must ensure a “strong, healthy and just society”. This is further defined as “Meeting the diverse needs of all people in existing and future communities, promoting personal wellbeing, social cohesion and inclusion, and creating equal opportunity”.² For the purposes of this report we have chosen to shorten this simply to: **Social**

and environmental justice for all, now and in the future. (See *Appendix 1 – Defining fairness* for a detailed explanation of this).

Transport has a central role to play in the creation of a fairer society. There are straightforward questions of whether people are able to access essential services, amenities and employment opportunities, keep in touch with friends and family, or travel to gain new and varied experiences, including other cultures. These are the positive benefits that travel can offer. There are also negative impacts: congestion; air and noise pollution; deaths and injuries; health concerns; reduced social cohesion and the contribution that transport makes to climate change.

This report examines how these positive and negative impacts are experienced by different sections of society. It looks at who is benefitting and who is missing out. It examines some of the costs that our travel imposes on society and on who those costs fall. It focuses primarily on examining the impacts of personal travel in the UK, whilst also discussing some of the impacts across the globe and on future generations. However it does not explore the issues surrounding freight or aviation. For our work on the latter please refer to *Breaking the Holding Pattern* and *Contested Evidence*.³

The report shows how the principles of sustainable development can be applied to transport policy, starting from a simple hierarchy which can be applied in order to prioritise proposed policies and measures. This approach, in combination with improvements to the transport appraisal process, should be consistently applied to ensure that future transport policy decisions support the creation of a fairer and more sustainable society.

Background

This report is being written against a background of some of the most dramatic cuts in public spending that have been witnessed for decades, in order to reduce the deficit in public finances. There is a clear desire to return the country to economic growth and the government has stated that “a modern transport infrastructure is essential for a dynamic and entrepreneurial economy”. In England, the Coalition Government has also committed to a reduction

in rules and regulations and a shift to “intelligent ways to encourage, support and enable people to make better choices for themselves”.⁴

The UK Coalition Government has also promised to reduce the cost of regulations, through measures such as a ‘one-in one-out’ policy, and a commitment to ‘shunning the bureaucratic levers of the past’. However it is not yet clear

how regulatory costs will be measured, or how the benefits associated with regulation (for instance protection of the environment or better working conditions) will be taken into account.

The Department for Transport's business plan for 2011-2015 states:

"Our vision is for a transport system that is an engine for economic growth but one that is also greener and safer and improves quality of life in our communities."⁵

The business plan only mentions fairness once, in relation to the introduction of road user charging for heavy goods vehicles, yet fairness is a central theme of this Government. As we show in this report, achieving a fairer society will require a new approach to transport policy making.

The challenge is to find transport policies that promote fairness, support the economic recovery, reduce transport carbon emissions and other negative environmental and social impacts, require minimal public funding, and align with the Government's wish to reduce regulation. Similar challenges face the Devolved Administrations.

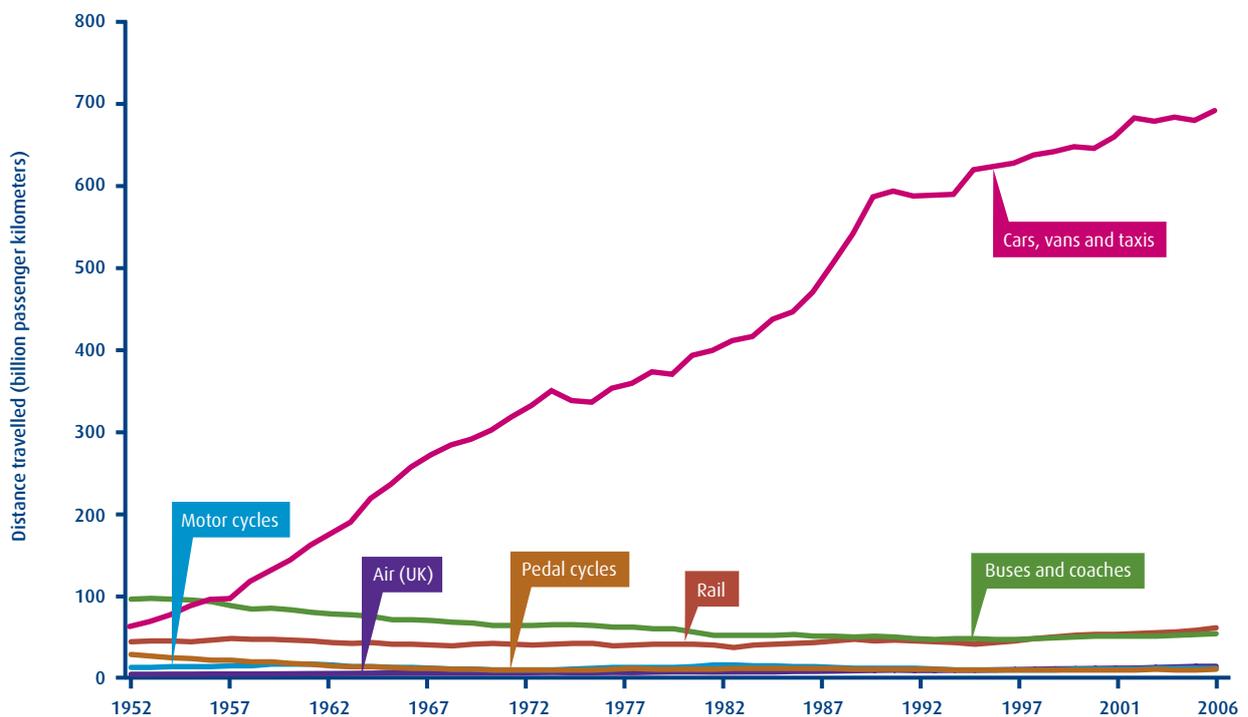
2

The right to travel

The current generation travels far more than any previous one. The average British person travelled over three times as far in 2007 as their equivalent did in 1952 and this is

excluding international air travel. Almost all of this increase has been due to increased use of cars, vans and taxis as shown in Figure 1.

Figure 1 Distance travelled by mode (DfT 2010⁶)



The widespread availability and affordability of car travel has brought many benefits for people. Cars offer the freedom to travel to almost any destination, at whatever time, with passengers and luggage and minimal need to plan ahead. They have made it easier to keep in touch with friends and family and to reach a wider range of job opportunities. As they have become more affordable, they have dramatically expanded the travel possibilities available to ordinary families.

Cars are also the subject of strong emotions. Often considered to be much more than a functional object, they can be seen as part of the owner’s identity and for some, they are a status symbol.

As a result, transport policy, in particular policy that is seen as restricting people’s freedom to travel by car, is often the subject of very strong public opinion. For instance, on becoming the new Secretary of State for Transport, Phillip

Hammond stated he would: “End the war on motorists”.⁷

In his paper, *The Right to Travel*, Chris Wood points out that discussion of “the right to travel” often confuses freedom of personal movement with the means to travel. Referring back to the *Universal Declaration of Human Rights* and the *European Convention on Human Rights*, he draws several important conclusions:

- “Freedom of movement concerns personal movement; there is no right to travel by any means,
- Access (to food, services, work, culture, quality of life, opportunities for personal development etc.) is required, not mobility,
- These rights apply to all, without discrimination; it should not matter whether one is able-bodied or disabled, is young or old, can afford to live in a quiet

location or not, drives a car or not, and so on. In addition, there is the issue of inter-generational equity, i.e. the rights of future generations to enjoy the same freedoms as we enjoy today, which is a key element of sustainable development,

- Quality of life, a good living environment, personal security and freedom from road danger, noise and air pollution, are human rights,
- Rights come with obligations.”⁸

He recognises that choosing where to live and having freedom of movement are considered by many as basic freedoms in a democratic country, but argues that these freedoms must be balanced against the freedoms of other people to enjoy life without the negative impacts of other people’s travel. He also recognises that travel can broaden the mind and is a means of self-development, but that this

must not be at the expense of other people’s rights and freedoms. There are for instance both negative and positive social impacts on local communities as a result of tourism. People’s freedom of movement must also be limited to remain within both local and global environmental limits.

The question of inter-generational equity is an important consideration. As analysis in the next chapter shows, existing UK travel patterns are largely unsustainable. It would therefore be inappropriate to suggest that future generations should have a right to travel in the same way as we do today. However they should have a right to the same ‘fundamental freedoms’ as we have.

The challenge for any government is to create a framework and introduce policies that balance potentially conflicting rights and freedoms in a way that is equitable for both this and future generations and which respects environmental limits.

3

Car Dependency

“Today, society and the lives we lead are increasingly organised around the assumption of having access to a car. So much so, nine per cent of motorists say they never walk.”

RAC Report on Motoring 2008

Before examining the fairness implications, it is first necessary to understand where we are starting from in terms of existing transport patterns. There are just over 31 million cars on the road and 4.2 million commercial vehicles.⁹ As Figure 1 illustrates, in any examination of UK travel patterns, cars, vans and taxis dominate when looking at the distance travelled.

One in five men and one in three women over the age of 17 do not hold driving licences.¹⁰ Of the total British population (including children), 42 per cent either cannot drive or do not hold a full driving licence.¹¹ Nearly all these people make journeys every day which are affected by transport policy decisions, whether they are a parent navigating a child across a busy road junction or a disabled person in a rural area with no bus service. For those who do not drive, transport means walking, cycling, public transport or getting a lift from friends or family who do have a car.

In a research project looking at scenarios for environmentally sustainable transport versus business as usual trends, the Organisation for Economic Co-operation

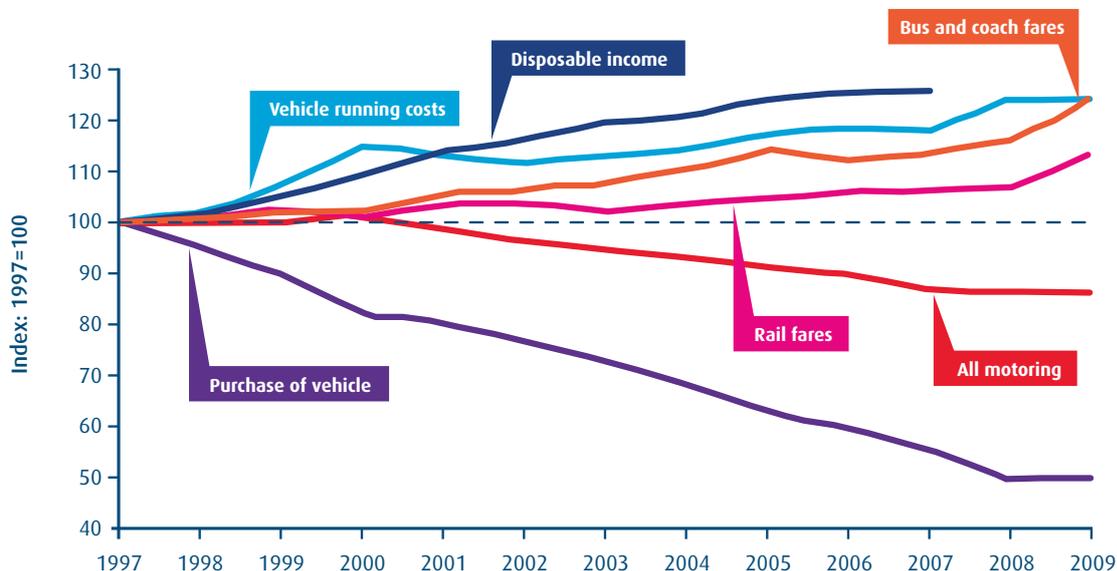
and Development (OECD) stated that about one third of the population are prevented from participating as fully as they could in the social and economic life of a country mainly dependent on the private car to meet its transport needs. They concluded “their disadvantage increases as society’s dependence on the car increases”.¹²

In its *European Best Practice* report, the Commission for Integrated Transport described the UK as having “the highest car dependency, and lowest public transport mode share, within the EU”.¹³

Buying and running a car is expensive. The total cost of running a mid-range family car for 10,000 miles a year is estimated at over £6000,¹⁴ or about a quarter of an average British salary. However many people would say that they do not feel they have any choice but to own a car in order to conduct their lives.

This is perhaps understandable given that over the past decade, the costs of public transport alternatives have risen in real terms while the cost of motoring has fallen (Figure 2).

Figure 2 Changes in the real cost of transport and income: 1997 to 2009, United Kingdom¹⁵



As the diagram shows, unrestricted growth of car use can lead to a vicious cycle of diminishing public transport quality. Incremental cuts to services and worsening reliability lead to declining public transport use which in turn leads to services becoming less viable and further cuts. Indeed over the longer term this cycle can even lead to declining expectations for what constitutes a high quality public transport system as people lose sight of what might be possible.

Over the longer term, planning decisions and land use patterns change to reflect car-dependent lifestyles with shops and services moving to car-dependent locations often resulting in the need for longer journeys. This in turn results in increased accessibility problems for those without car access.

3.1 The costs and revenues of motoring

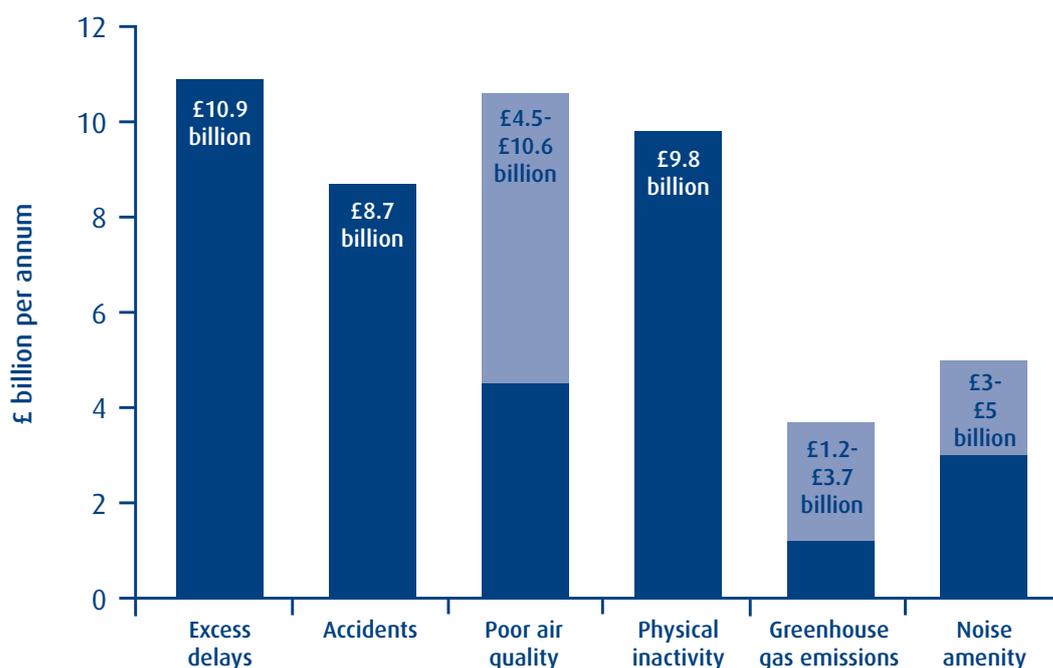
It is often argued that it is unfair that motorists pay far more to Government in taxes and charges than is spent on roads. The 2009 Transport Select Committee report, *Taxes and Charges on Road Users* calculated the total taxes and charges on UK road users as £48 billion per annum. The report quoted the typical annual expenditure on roads as about £8-9 billion.¹⁸

greenhouse gases. This compares to 3.6 pence per kilometre paid in fuel duty and VAT.

In the same report, the Department for Transport estimated that the average marginal external cost of driving a car an additional kilometre is 15.5 pence allowing for the congestion (estimated at 13.1 pence per kilometre), infrastructure, accidents, local air quality, noise and

However there are other costs to society as a result of our existing car-dependent transport patterns. In late 2009 a Cabinet Office Strategy Unit report on urban transport attempted to quantify the costs of our existing urban transport patterns. Working with the Department for Transport, the Department for Communities and Local Government, the Department of Health and the Department for Environment, Food and Rural Affairs (Defra), they arrived at the costs shown in Figure 4.

Figure 4 Comparison of the wider cost of transport in English urban areas (£billion per annum, 2009 prices and values)¹⁹



The figures are based on the best available evidence sources, adjusted to 2009 prices. Where there is uncertainty or disagreement, they have stated the likely range as shown in lighter shading in the bars. The conclusions changed policy makers' understanding of the situation. Previously, congestion had been thought to represent the majority of transport's external costs to society. Now the combined costs of accidents, air quality, physical inactivity, greenhouse gas emissions and noise at £27-38 billion per annum represent 71-78 per cent of the total.

The total cost for the English urban areas is estimated at £38-49 billion. Given that the Cabinet Office's report states that this covers 81 per cent of the population, scaling up the appropriate impacts gives an estimate of £43-£56 billion for the whole of the UK.²⁰

It is important to note that the report makes no attempt to quantify the external costs of negative social impacts, despite referring to reduced social cohesion and interaction as a result of traffic. Yet research in Norway estimated that the cost of community severance (the 'barrier effect' due to transport infrastructure such as busy roads) is greater than the estimated cost of noise and almost equal to the cost of air pollution.²¹

The Cabinet Office report also excludes the impacts of noise pollution on health, productivity and the ecosystem and does not attempt to quantify 'quality of life' impacts of the built environment. However it acknowledges that all these areas could represent significant additional costs, mentioning for instance an additional £4-5 billion for noise impacts on health and productivity alone.²²

Alternatively, estimates of the marginal costs of road transport provided in a report commissioned by the Department of the Environment, Transport and the Regions²³ result in a higher total cost figure of £71-95 billion (in 2006 prices).²⁴ This excludes the costs of physical inactivity and other as yet un-monetised costs such as severance effects and loss of tranquillity.

So it would appear that the overall costs imposed on society by motoring outweigh the revenues obtained from motorists, probably very substantially.

4

Fairness and Transport

“...it is not right or fair when the opportunities open to people are not based on their ambition, ability or hard work, but on who their parents are or where they live.”

Rt. Hon Theresa May
17 November 2010

The UK transport system generates both positive and negative impacts, and these are spread across social, economic and environmental considerations.

From a fairness perspective, the important consideration is how these positive and negative impacts are distributed across different groups and generations in society. This

is a vast topic and it is beyond the scope of this report to include a thorough analysis of all its aspects. In this section some of the most important impacts on low income groups, children, older people, the disabled, rural communities, black, Asian and minority ethnic groups and future generations are considered.

4.1 Low income groups

Key impacts for low income groups

- 1 The richest 10 per cent of the population effectively receive four times as much public spending on transport as the poorest 10 per cent.
- 2 The children of the lowest socioeconomic groups are up to 28 times more likely to be killed on the roads than those of the top socioeconomic group.
- 3 Car owners in the lowest income quintile spend 25 per cent of total household expenditure on motoring (by comparison spending 10 per cent of income on household energy bills is defined as ‘fuel poverty’).

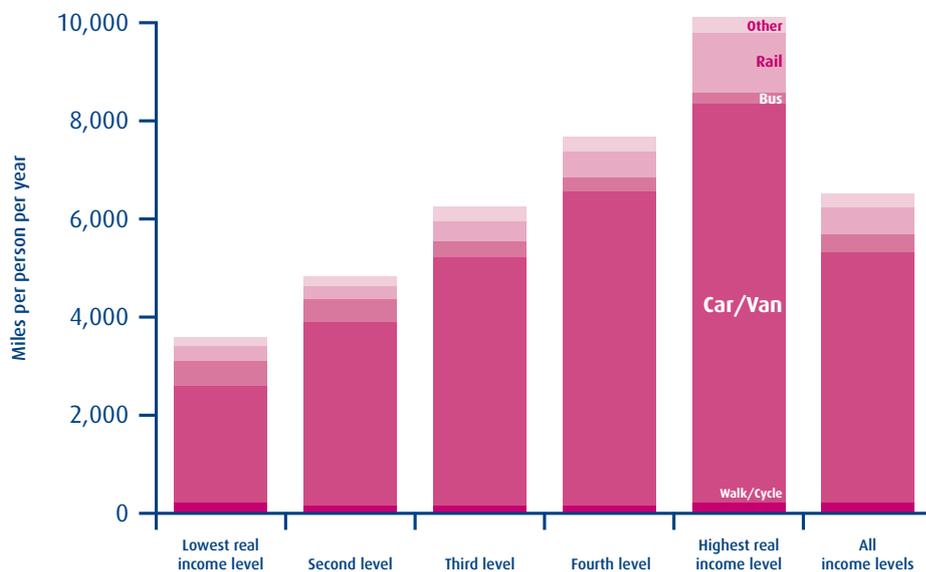
Some of the clearest correlations between inequalities and transport are seen when examining differences between income groups. There are a range of reasons for this.

4.1.1 Amount of travel by income group

Lower income groups generally travel less. Overall average figures for the amount of travel in the UK disguise huge variations between different socioeconomic groups. The Department for Transport’s *National Travel Survey* shows

those in the highest income bracket travel over two and a half times further per year than those in the lowest income bracket.²⁵ They travel over three times as far by car (see Figure 5).

Figure 5 Distance travelled by income quintile (National Travel Survey)



This is partly explained by the fact that in the lowest income quintile, less than half of adults hold a driving licence and less than half of households have a car. In comparison half of all households in the highest income quintile have two or more cars.

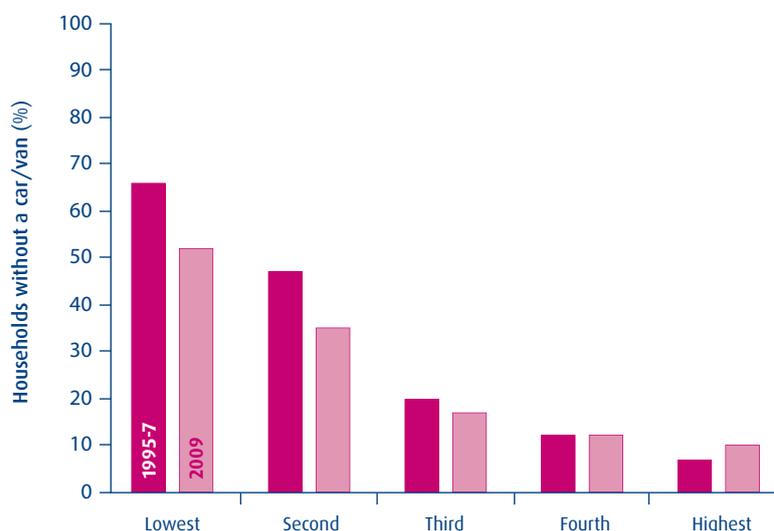
deprivation. For instance in a one-car household, if it is being used for a daily commute to work, it is effectively unavailable to other family members for a large portion of the time. This has been recognised as an issue for some time.²⁷

For those claiming income support or jobseeker's allowance, car access figures are even lower. Almost two thirds do not have access to a car and a licence to drive it.²⁶

Changes in car availability between 1995-7 and 2009 are shown in Figure 6. While the biggest drop in the percentage of carless households has been in the lowest income bracket, there are still 52 per cent of households without access to a car or van in this category. This is over five times the percentage in the highest income bracket.

Many people quote the figure that 80 per cent of households have access to a car. However, household car access statistics can also mask problems of access

Figure 6 Change in percentage of households without a car/van 1995-7 to 2009 (National Travel Survey)



Growth has been fastest in the lowest income quintile, but all quintiles except the highest have seen cars become increasingly available.

It is instructive to break down different income quintiles' travel distances into the different modes. Figure 7 shows data from the 2009 National Travel Survey. When this is done, it is clear that while car and rail use tend to increase with income, bus use declines.

Figure 7 Distance travelled by mode by income quintile (National Travel Survey)



Data for walking shows little variation with income group although levels are slightly higher in the lowest income group (223 miles compared with 201 in the highest income quintile).²⁸ Although it is often argued that we need to increase levels of walking to improve health, for those without a car in the lowest income groups, walking is often not an attractive choice and can be a stressful experience. Walking through areas which are neglected, boarded up and strewn with litter has been shown to have detrimental health effects²⁹ and deprived areas often have busy, noisy and congested roads causing further problems of traffic danger and pollution. However increasing bus fares mean that low income families often do walk, seeing the alternative of bus travel as a luxury.³⁰

Cycling has been consistently higher in the highest income quintile over the last few years, and particularly in the most

recent 2009 data (77 miles per person per year on average compared with 32 miles among people in the lowest income quintile). In general walking and cycling show less variation with income group than the other modes. In the Netherlands, Denmark and Germany where rates of cycling are much higher than the UK, cycle use is also similar across different income classes.³¹

These trends of transport use versus income quintile may be dominated by commuter patterns, but it is an important consideration when looking at fairness and transport funding decisions.

In fact, recent analysis by Horton and Reed³² illustrates (Figure 8) that the Government's spending on transport, unlike that for education, housing and health, is strongly biased towards higher income groups.

Figure 8 UK public spending on transport – cash equivalent per year versus household income decile (1=lowest, 10 =highest)³³

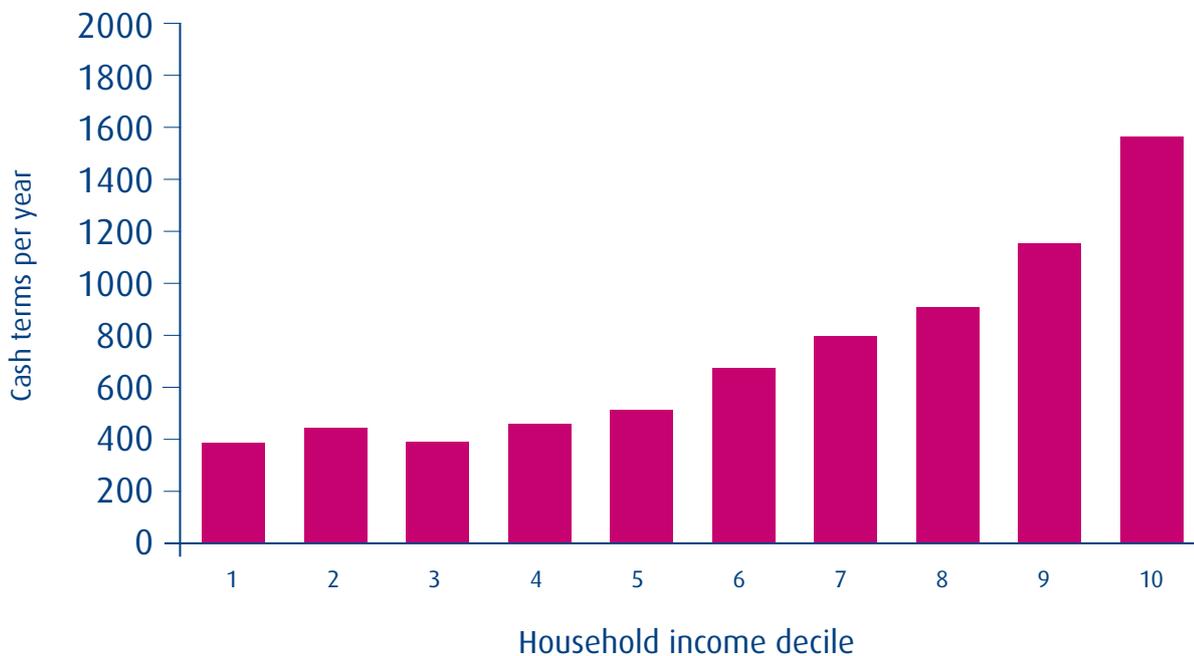


Figure 8 illustrates how the richest 10 per cent of households (those in income decile 10) effectively receive almost four times as much benefit as those in the poorest 10 per cent. This is primarily due to two factors:

- 1 Poorer households travel less and tend to use buses while richer households travel much further and tend to use private cars and the train,
- 2 A larger proportion of public spending on transport goes to road and rail travel than to bus services.

4.1.2 Negative impacts of travel by income group

The previous section established that higher income groups travel substantially more than lower ones, primarily by car and rail. This section examines which income groups suffer the worst negative effects from travel.

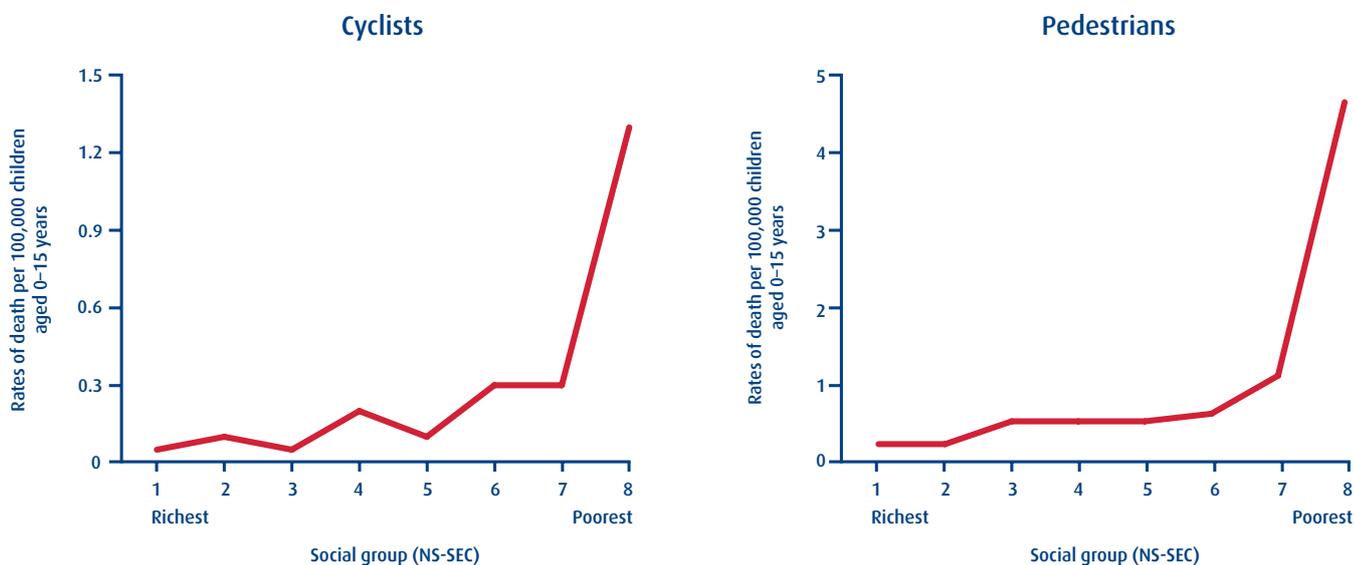
Road safety

Deprived areas suffer disproportionate numbers of deaths and injuries on the roads. The Department for Transport estimated that in 2007 there were 2500 'excess' pedestrian casualties in deprived areas.³⁴ Child pedestrians from the lowest socioeconomic group are 21 times more likely to be killed on the road than those from the top socioeconomic group. For child cyclists the figure is almost 28 times

higher (see Figure 9).³⁵ It is possible this may be partially explained by higher levels of dangerous driving behaviours in areas of multiple deprivation.³⁶

Research conducted by Road Safety Analysis³⁸ showed that the social group most over-represented in child road casualties is "Families on lower incomes who often live in large council estates where there is little owner-occupation", most commonly living in outer suburbs. They suffer more than twice as many casualties as might be expected given the number of people, despite being less likely than average to own a car. In fact, child pedestrian deaths have been described as "a contemporary disease of poverty".³⁹

Figure 9 **Child deaths by socioeconomic class (NS-SEC) 2001-2003**³⁷



Health

On average people living in the poorest neighbourhoods in England will die seven years younger than those in the richest.⁴⁰ Even worse, they are likely to spend 17 years more of their life living with a disability.⁴¹ Of the diseases most likely to be the cause of this, many can be related to transport and travel patterns: heart disease, obesity, cancers and mental illness.

Areas of high multiple deprivation tend to suffer worse pollution. Road transport is a major cause of nitrogen dioxide and the highest levels are found in the poorest areas.⁴² This can cause respiratory problems such as asthma, emphysema and bronchitis. It can also aggravate existing heart disease and damage lung tissue. This in turn can lead to a higher number of deaths.⁴³

Lower income groups tend to live in areas with poorer access to green space and recreational facilities. CABE's report *Community Green: using local spaces to tackle inequality and improve health* highlighted that affluent areas have access to five times as much green space as deprived inner-city areas.⁴⁴ This, in combination with rising car ownership, may have contributed to the highest rates of adult obesity being found in households from the lowest income quintile.⁴⁵ Poor diet, which can be associated with poor access to shops stocking healthy food, may also be a factor. For children, obesity rates can be up to twice as high in the lowest income quintile compared to the highest.⁴⁶

Lack of exercise and access to green space has also been linked to mental illness problems.^{47,48}

Links between heart disease, lack of physical exercise and poor nutrition are well known. However noise pollution, for which traffic is the primary cause, has been linked to over 3000 coronary heart disease deaths in the UK per year.⁴⁹

Cancers can be related to lack of physical exercise. Studies in the USA and Italy indicated physical inactivity could account for 13-14 per cent of all bowel cancer cases^{50,51} and 11 per cent of breast cancer cases.⁵² There is also evidence from various sources of the protective effects of regular physical exercise against cancer.⁵³

Traffic pollution has been linked to thickening of the arteries with residents living within 100 metres of a Los Angeles highway being found to have twice the average progression of atherosclerosis which can lead to heart disease and strokes.⁵⁴

In addition to these negative health impacts, lack of access to transport can result in worse medical care. The Social Exclusion Unit's report *Making the Connections* found more than 1.4 million people had missed, turned down, or chosen not to seek medical help over the previous year due to transport problems.⁵⁵

Cost and employment

For those low income families who do run a car, the total cost of car ownership can amount to a substantial proportion of their income. The Social Exclusion Unit's report identified that for car owning households in the lowest income quintile almost a quarter of household expenditure is on motoring expense.⁵⁶ By comparison, fuel poverty is defined as spending ten per cent of income on household fuel bills. As has already been noted, the cost of public transport alternatives to car ownership have risen substantially in real terms over the last decade, while in many cases services have worsened. A transport system that offers only limited and expensive public transport options can exacerbate unemployment issues. The Social Exclusion Unit's report found two out of five jobseekers stated that lack of transport is a barrier to getting a job and the two most common problems for young jobseekers were "lack of personal transport" and "no job

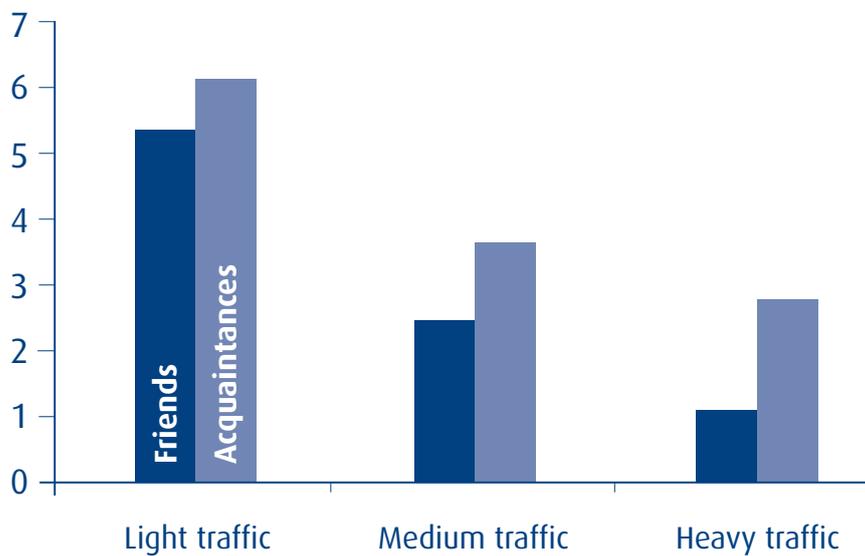
nearby".⁵⁷ For those currently hoping to move off benefits, transport problems can be a major worry. Research for the Department for Work and Pensions found:

"Of all the factors associated with concern about moving off benefit, one (access to transportation) stood out as especially important in predicting anxiety."⁵⁸

Social cohesion

Living on roads with higher levels of traffic can have negative social impacts. A study in 1969 by Donald Appleyard attempted to quantify this in San Francisco by recording the numbers of friends and acquaintances of people living on roads with varying traffic levels.⁵⁹ The study methodology was repeated in 2008 in Bristol, UK with very similar results.⁶⁰

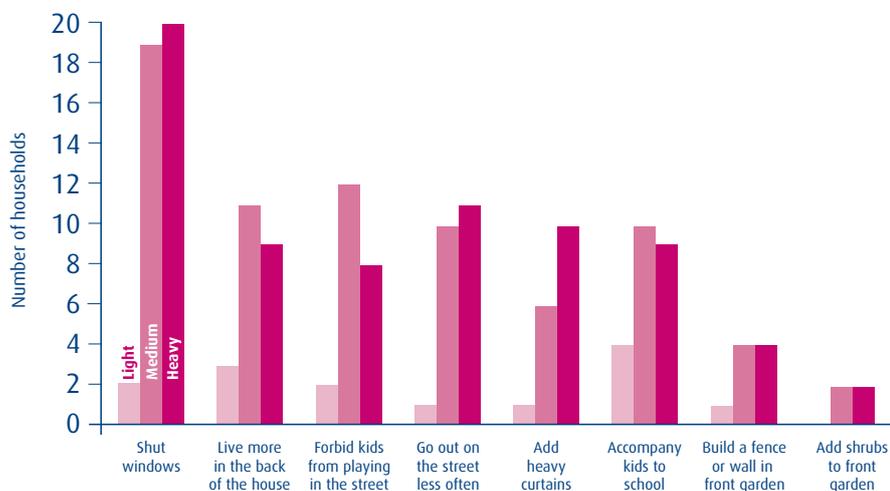
Figure 10 Average numbers of friends and acquaintances of people living on three different roads in Bristol⁶¹



The study in Bristol looked at other ways that traffic impacts social cohesion. It found various ways in which residents had tried to minimise the impacts of traffic: from living

in the back of the house and building a wall in the front garden to curtailing the freedom and social lives of their children. Examples are shown in Figure 11.

Figure 11 Ways in which residents attempt to mitigate traffic impacts⁶²



In Europe, research from Basel in Switzerland indicates that people are more sociable on streets with lower traffic speeds. The number of people saying they ‘linger’ in their street increased from 24 per cent in a 50 kph (31 mph) street to 37 per cent in a 30 kph (19 mph) street.⁶³

Social impacts such as these are not generally included in transport policy analysis yet millions of people from all social backgrounds now live with these effects on roads with heavy traffic.

4.2 Children and young people

Key impacts for children and young people

- 1 The most common cause of death for children aged 5-14 is being hit by a vehicle.
- 2 Children’s independent mobility has been dramatically curtailed due primarily to fears of traffic danger.
- 3 Children’s health is particularly badly affected by society’s car dependency – obesity, respiratory illnesses and problems caused by noise pollution.

Over the last 20 years, children living in families with good access to transport are likely to have had much wider travel opportunities than previous generations. They may have had the opportunity to experience different cultures and languages through travelling abroad, as well as visiting more of their own country. They may also have had a wider geographical range of friends and leisure activities.

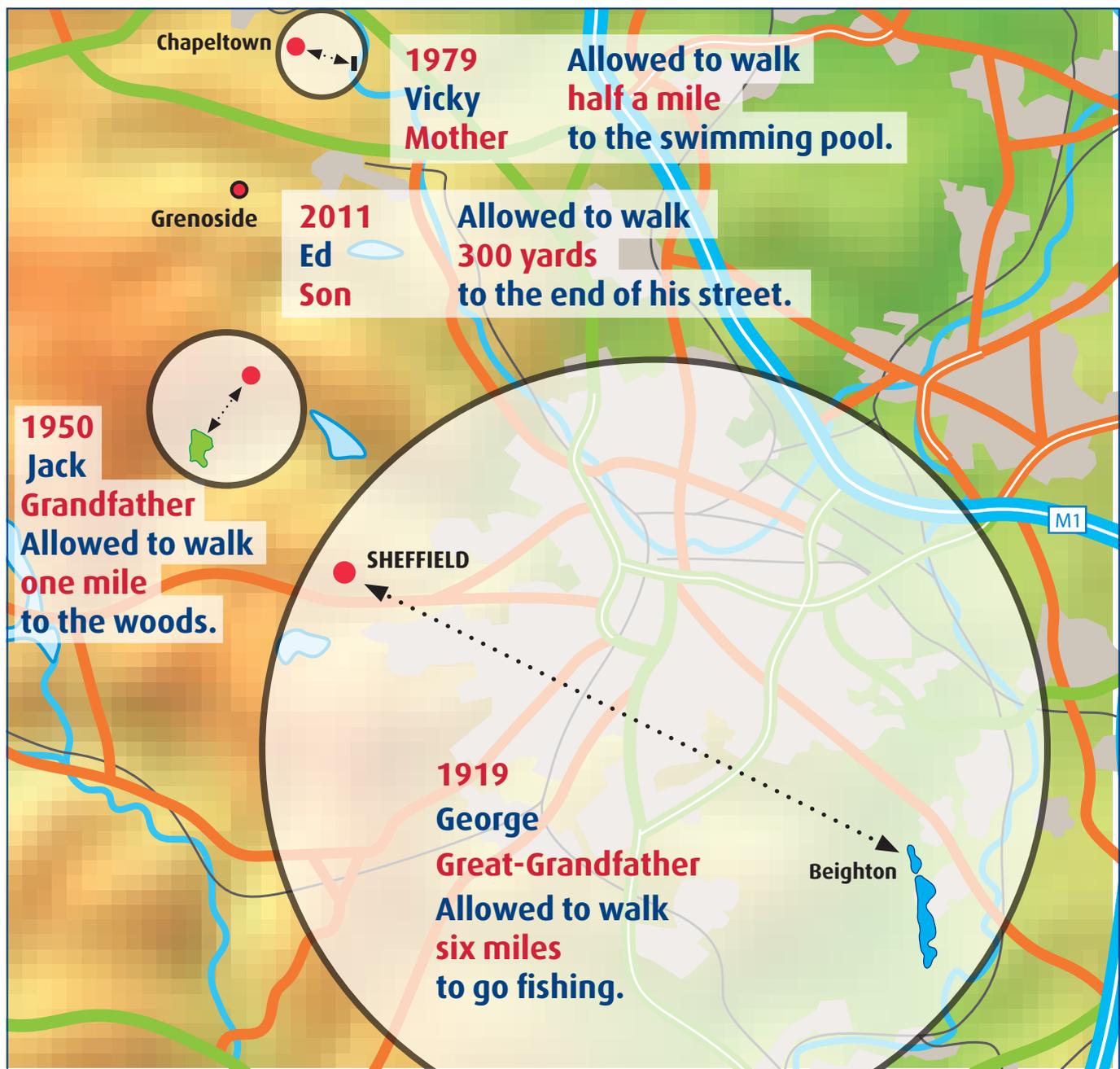
However in other respects their freedom to be ‘out and about’ has shrunk. In a speech to Barnados in June 2010, Nick Clegg highlighted this issue:

“... Every parent understands the importance of a secure environment for their children. Spaces where they can play, where they can feel completely free, where they can safely push at the boundaries,

learning and experimenting. Places where different generations can meet, binding the community together... If you ask adults if they used to play near their homes as children, 71 per cent will tell you they did. Every single day. That compares to just 21 per cent of children now. It's not right, and it has to change."⁶⁴

The problem was graphically illustrated in a newspaper article in 2007 (Figure 12)⁶⁵ It shows how the area that children are allowed to travel alone has shrunk through successive generations of one family.

Figure 12 Shrinking childhood travel (Source: Daily Mail)



So while there are potential benefits to children from increased opportunity to travel, the question is whether this has been outweighed by other changes. Have the changes

in our collective travel patterns benefitted other groups at the expense of children's health or participation in the local community?

4.2.1 Road casualties

Every day, 28 children and young people are killed or seriously injured on British roads.⁶⁶ Between the ages of five to 14, the most common cause of death is being hit by a vehicle. On average, one child in every class is killed or injured as a pedestrian, cyclist or passenger in a motor vehicle by the time they are 16.⁶⁷ Even between the ages of 14 to 35, the most common cause of death is being involved in a collision on the road.⁶⁸ While progress has been made and there has been a substantial reduction in the absolute numbers of children and young people killed and seriously injured on UK roads over the past fifteen years, these figures are still too high. In addition, the official

casualty figures may be substantial underestimates. The figures are taken from police records, but other sources indicate higher numbers. Total serious injuries to all ages are recorded as about 26,000 per year. The Department for Transport has admitted that the actual number is likely to be somewhere between 50,000 and 120,000.⁶⁹ This is equivalent to about 1,000 to 2,300 every week.

Although it is questionable whether one can put a value on a life, using Department for Transport figures, the cost to the public purse of deaths and injuries of under 25 year olds amounts to over £3 billion a year.⁷⁰

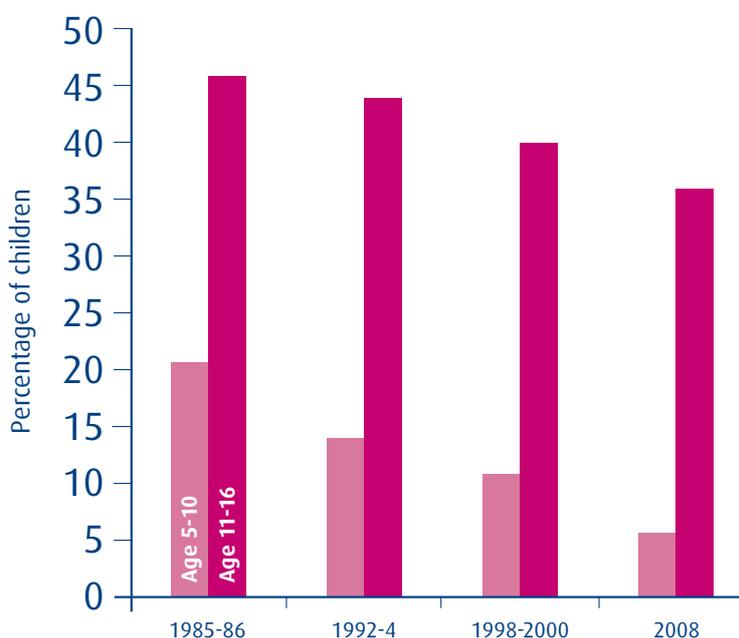
4.2.2 Independent travel

Learning to make journeys independently and to take responsibility for personal safety is an essential part of growing up. Children are eager to do this from an early age yet parents are often reluctant to allow them due to the danger posed by traffic. For instance one in three children would like to cycle to school yet under two per cent actually do so.⁷¹

The report *One False Move: A Study of Children's*

*Independent Mobility*⁷² published in 1990, looks at children's independent mobility. It concluded that between 1971 and 1990, the independent mobility of children was dramatically curtailed. One of the commonly quoted examples from the report was that in 1971, 80 per cent of seven to eight year olds walked home from school on their own. By 1990, this had dropped to just 9 per cent. This trend is confirmed by more recent results from the *National Travel Survey*.

Figure 13 From presentation by University College London – Children travelling to school alone (National Travel Survey)



Correspondingly, the number of children travelling to school by car over the past 20 years has doubled.⁷³

Policy Studies Institute repeated the *One False Move* study in 2010 in England and Germany. They found that five out of six measures of travel independence are lower for children in England than in Germany. The most marked difference

is for walking to school alone. While 7 per cent of English 8 year olds are allowed to walk to school independently, the comparable figure for Germany is 67 per cent.

There are various reasons that parents give for not allowing children to travel on their own. The most common is safety fears due to traffic danger (Figure 14).

Figure 14 Reasons adults give for accompanying their children to school (National Travel Survey 2008)

	Aged 7-10	Aged 11-13
Traffic danger	58	34
Fear of assault/molestation	29	23
Convenient to accompany child	21	30
School too far away	20	29
Child might not arrive on time	18	15
Child might get lost	19	7
Fear of bullying	6	6
Other	12	15

The ‘barrier effect’ or ‘severance’ due to transport infrastructure such as busy roads particularly affects children. To a child a busy main road can be a major limitation on their freedom to travel. As our report *Every Child’s Future Matters* highlighted, “it might as well be a river”.⁷⁴

BRAKE, the road safety charity, surveyed children’s views of traffic in 2008.⁷⁵ The results show some of the issues children face:

- 60 per cent said they thought the roads around their homes were dangerous,
- 50 per cent said they were scared all or some of the time in cars by the driver driving too fast,

- 5 per cent said they had been hit by a vehicle and a third (32 per cent) said they had nearly been hit on foot while walking without their parents,
- Of the children who cycle on roads, one in 17 (6 per cent) said they had been hit by a vehicle and almost four in ten (37 per cent) said they had been nearly hit while cycling without their parents.

It is easy to forget how modern urban design and traffic impacts children. This was summed up by the Mayor of Rome, Walter Veltroni, when he said:⁷⁶

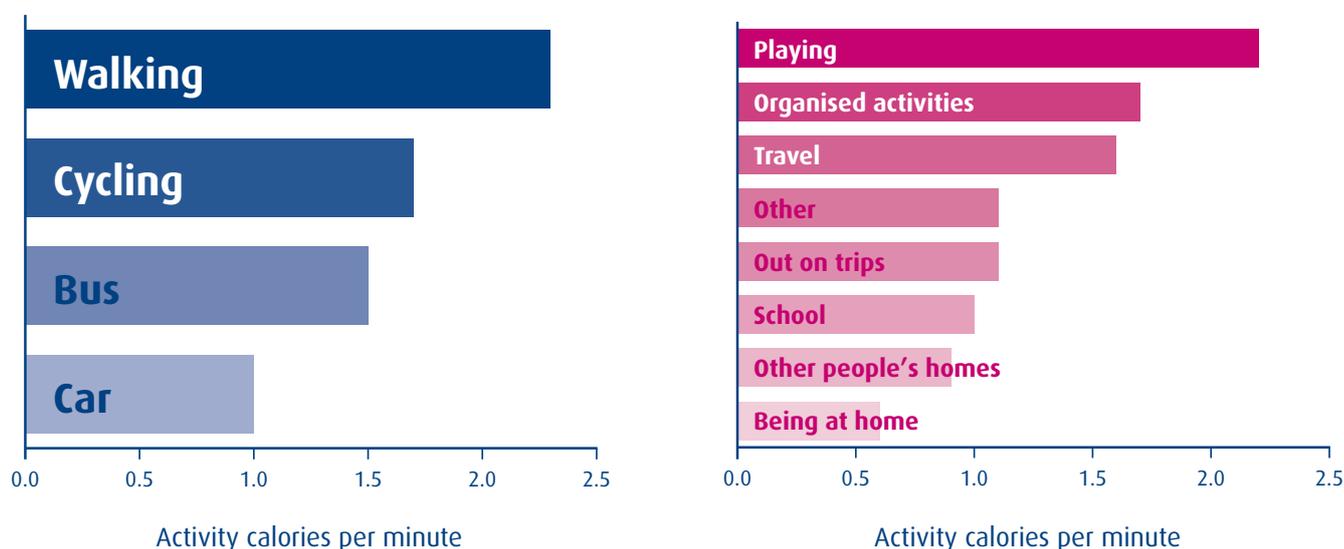
“We need to rethink the city as seen through the eyes of children, from a height of one metre and ten centimetres.”

4.2.3 Obesity

While levels of childhood obesity have declined from a peak of 17 per cent of 2-10 year olds in 2005 to 14 per cent in the most recent 2008 data,⁷⁷ this is still a substantial increase over previous levels and concerns of an 'obesity epidemic' remain. Data from the *National Child Measurement Programme* suggests that since 2006, levels of obesity in reception class children have remained static and those in year 6 have risen slightly.⁷⁸

Obesity is affected by exercise as well as diet. Childhood obesity has been related to restrictions in children's opportunities to walk, cycle, or simply play outdoors. Research by the Centre for Transport Studies in University College London has examined the calories burned by children during different activities (see Figure 15).⁷⁹

Figure 15 Calories burned during different forms of travel (on left) and different activities (on right)⁸⁰



Walking, cycling and playing outside are the activities which burn the most calories. Instead of being able to engage in these activities in their locality, children are increasingly being driven to organised activities. Walking and cycling to activities instead of being driven will burn

more calories. However researchers also found that once at a given activity, children that had been driven were less active than those who walked or cycled. These combined effects lead to a substantial overall reduction in calorie burn.

4.2.4 Air and noise pollution

Air pollution caused by road traffic is a particular issue for children. Studies have shown around a 50 per cent increased risk of respiratory illnesses including asthma for children living near busy roads.⁸¹

The primary source of noise pollution is transport, whether it be road traffic, aviation or to a lesser extent rail. Noise

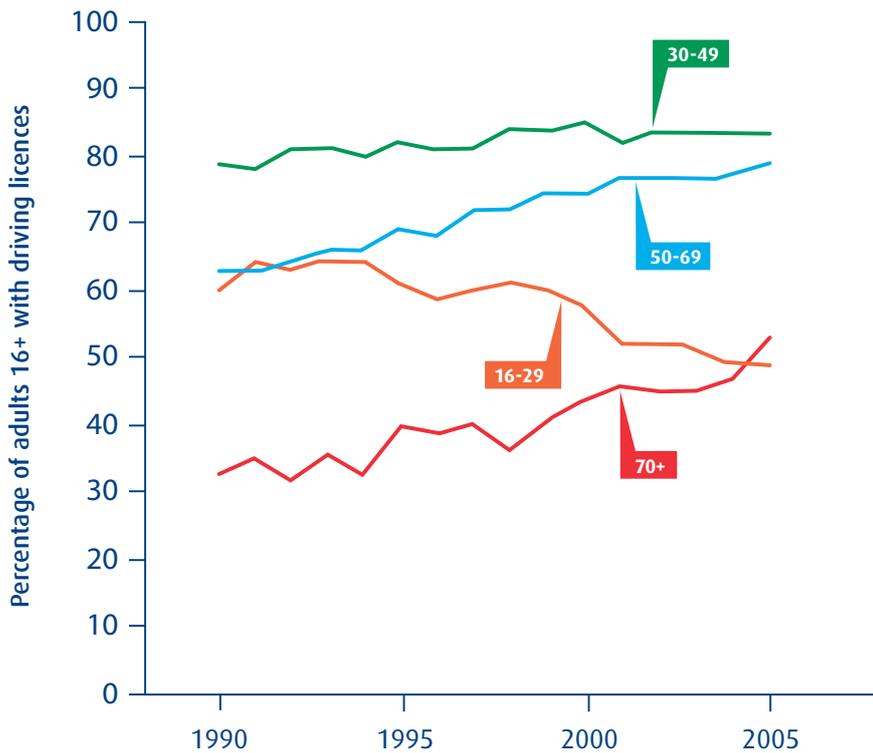
pollution can particularly affect children. In our report on health inequalities *Sustainable Development: The key to tackling health inequalities*⁸² we highlighted evidence that noise can lead to sleep disturbance and increased cardiovascular risk, negative effects on learning, negative impacts on mental health and elevated stress levels.

4.2.5 Affordability

Young people are very conscious and concerned about the cost of public transport use and this can restrict their social life and employment opportunities.^{83,84} This can be a particular problem when they reach the age at which concessionary fare schemes are no longer available. Schemes available also vary markedly. In London anyone under 16 can travel free on buses and trams, with extensions to 16 and 17 year olds in full-time education or on work-based learning. Elsewhere child bus fares are generally either half or two-thirds of adult fares and are offered up to the age of 14, 15 or 16.⁸⁵

Once young people reach the age where they are legally allowed to drive, they face significant barriers to becoming a car owner. For many, the cost of driving lessons and insurance premiums are prohibitive. As a result licence holding in the 16-29 age band has been falling (although this trend has recently reversed).⁸⁶ Licence holding in this band is now lower than for any other age as shown in Figure 16.

Figure 16 Driver Licence holding by age band⁸⁷



The inability to be able to afford to run a car in a society that has increasingly been organised around the presumption of car ownership can be a barrier to accessing educational

and employment opportunities, especially in rural areas.⁸⁸ Provision of realistic alternatives to car use can help address these issues.

4.3 Older people

Key impacts for older people

- 1 Older people are more at risk of death or injury on the road in the event of a collision, both as car users and pedestrians. Those over the age of 60 are seven times more likely to be killed if hit by a car at 30 mph and 35 per cent of all pedestrian fatalities are people over the age of 70.
- 2 Traffic, personal safety fears and problems with the reliability of public transport are all significant barriers to older people maintaining their independence.
- 3 There is a correlation between lack of access to a private vehicle and multiple social-exclusion for older people – this may be due to the poor choice of satisfactory alternatives available.

The UK has an ageing population demographic. Those over the age of 65 currently make up 16 per cent of the UK population and this is predicted to rise to almost 25 per cent by 2033.⁸⁹

Many older people now have much greater mobility than previous generations, primarily due to increased car ownership and use.⁹⁰ In 2000 research suggested that the numbers of over 70 year olds holding driving licences was expected to double by 2015.⁹¹ Figure 16 illustrates how licence holding has increased for those over 50 and particularly those over 70 in the last 20 years. This is likely to be a cohort effect as these are the first generations to have grown up with mass car ownership. As a result many have lifestyles and travel patterns based around the car.

The growth in car ownership and use, and in many areas the lack of adequate alternative travel options, have meant that not having access to a car can have serious consequences. For those that lose their licence (and any non-driving partners) the sudden loss of independent mobility can have negative impacts on mental and physical health. The RAC Foundation in a recent report cite research from Finland into car use by those over 65, which states “Reduced mobility was found to be associated with loss of independence, reduced general activity, poorer health and increased depression”. They also cite research which shows that older people make 80 per cent of their longer journeys by car.⁹²

However, almost half of those over the age of 70 do not hold a licence. There is a correlation between people who do not have access to a private vehicle and multiple social exclusion. Those without a vehicle are less likely to be in contact with family and friends, or to go out to the cinema

or theatre, and have difficulty accessing health services and shops.⁹³ While the concessionary fare scheme has been a valuable means of addressing affordability and access issues for older people, it is still dependent on the availability and acceptability of the public transport services available.

Traffic is a major barrier for older people. As their physical mobility becomes impaired it becomes harder for them to cross busy roads. Research conducted in Edinburgh concluded that those aged over 65 were disadvantaged by more than ten-fold compared to other adults in their ability to cross a shopping street.⁹⁴ This was graphically illustrated by the recent news story of the pensioner who was discovered to be making a 14 mile round trip using her free bus pass in order to cross the road to her village shop as there was no pedestrian crossing in her village.⁹⁵

Older people are also disproportionately at risk on the road. A recently released report reveals that for those over the age of 60, the fatality risk if hit by a car at 30 mph is 47 per cent.⁹⁶ This is almost seven times higher than the average ‘all-ages’ figure.⁹⁷ This helps explain why 35 per cent of all pedestrian fatalities are people over the age of 70⁹⁸ – a disproportionately high share. The report reveals that the same is true for older car drivers who are much less likely to survive a crash due to increased frailty.

As people get older they drive less and they become increasingly reliant on alternatives such as lifts from others, public transport and taxis. One study found that while the percentage of people who ‘mainly’ use public transport in middle age was 25 per cent, this increased to around 40 per cent for 65 to 84 year olds.⁹⁹ Yet their use of public transport can be dependent on overcoming a number of barriers.

Concerns about personal safety and difficulty in carrying heavy loads are two of the most common problems¹⁰⁰ but other factors such as problems with the reliability of public transport and behaviour of transport staff and other passengers are also important. Perceptions of their own health – for instance fear of falling can also become a significant factor.¹⁰¹

Older people are often reluctant to ask friends and family for lifts even for trips to doctors or hospital appointments,¹⁰² not wanting to be a burden on others.¹⁰³

4.4 People with disabilities

Key impacts for people with disabilities

- 1 Fundamental problems of inaccessibility persist despite legislation dating back to 1995 – 55 per cent of trains in use in Great Britain have not been built to modern access standards and 41 per cent of stations do not have step free access to all platforms. 39 per cent of buses do not have accessibility certificates.
- 2 A key barrier to disabled people's travel is uncertainty regarding potential accessibility problems for any given journey. As a result both education and employment opportunities can be severely compromised as can their social inclusion.

In general, disabled people are less likely to drive and are more likely to be reliant on public transport, community transport or lifts from friends and family for their journeys. However, for some groups, for instance people with physical impairments and chronic health conditions, driving is still the predominant mode of transport.¹⁰⁴

For those using public transport, the primary problem is accessibility. There are still many public transport services which are inaccessible to wheelchair users. The Social Exclusion Unit's report in 2003 found only 10 per cent of trains and 29 per cent of buses met the required standards of the *1995 Disability Discrimination Act*. The Department for Transport's goals under the previous administration were that the bus fleet should be compliant with these standards by 2017 and heavy rail by 2020. While progress has been made, in 2010 approximately 55 per cent of trains in use in Great Britain have not been built to modern access standards, and in 2009-10, 39 per cent of buses do not have accessibility certificates (although most of these do now have low floor access).¹⁰⁵ Accessibility of stations is also an issue with 41 per cent of stations not having step free access to all platforms.¹⁰⁶ In Wales the fact that more than half the rail stations are not fully accessible led to protests in October 2010.¹⁰⁷ In London only 37 over-ground stations

(47 per cent of the total) are expected to have step-free access by 2017¹⁰⁸ although this timing might now be delayed due to budget cuts.

The other key issue for disabled people using public transport is being able to obtain information such that they can be confident that they will not encounter accessibility issues at any stage of their journey.

As a result many disabled people are restricted in their travel options and in turn their choice of employment. A 2003 report surveying disabled people's transport problems found about half having to turn down a job offer or interview due to lack of accessible transport and half saying that lack of transport had restricted their choice of job.¹⁰⁹ These figures rise to 62 per cent for wheelchair users and 86 per cent for those with a visual impairment.

It is not just employment that is affected. The same survey found 21 per cent felt that transport problems had limited the availability of education and training, 30 per cent found difficulty in attending social functions (45 per cent for those without access to a car), and 20 per cent found it difficult or impossible to access the healthcare they needed.

As the Department for Transport's *Evidence Base Review on Mobility* states "policy initiatives to improve economic and social inclusion of disabled people, and to reduce health inequalities, will not be effective unless the important role of the provision of accessible public transport is recognised."¹¹⁰

There are other ways in which disability leads to inequalities. The 2010 report from the Equality and Human Rights Commission revealed that disabled men earn on average 11 per cent less than other male workers.¹¹¹ They therefore face not only direct accessibility problems but also additional inequalities as a result of lower income.

4.5 Black, Asian and minority ethnic groups

Key impacts for Black, Asian and minority ethnic groups

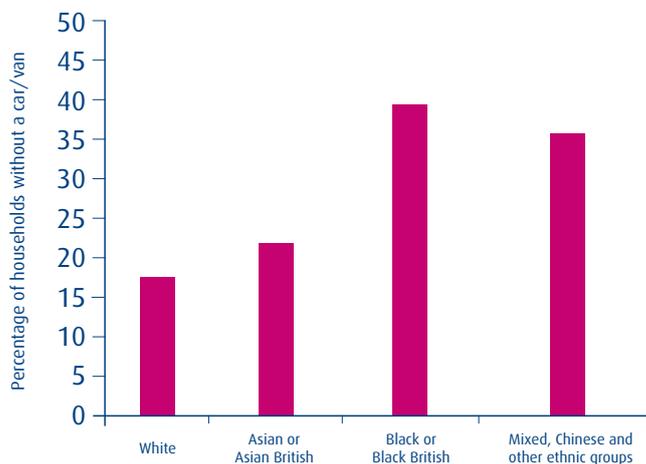
- 1 Black and black British people have amongst the lowest car ownership rates yet in London they are 30 per cent more likely to be injured on the road than those in white ethnic groups.
- 2 Minority ethnic groups are generally more likely to be public transport users yet they face greater barriers to its use in the form of personal safety fears and inadequate understanding of their needs.
- 3 Ethnic minorities have much worse access to green space in the areas in which they live, which, in combination with the transport barriers they face, leads to greater inequalities in mental and physical health outcomes.

There are also substantial differences in travel and the impacts of travel between different ethnic groups. In many cases these may be related to differences in income levels, but it is nevertheless important that government understands how this impacts different ethnic communities.

While just 18 per cent of white adults in Great Britain do not have a car or van, the figure is 40 per cent for black or black

British adults as illustrated in Figure 17. This correlates with Transport for London data which shows black ethnic groups use private vehicles 31 per cent less than white ethnic groups.¹¹² Yet a study revealed that black ethnic minority groups in London are 30 per cent (1.3 times) more likely to be injured on the road than those in white ethnic groups.¹¹³ Those that are contributing least to the problems of traffic are suffering more from the negative impacts.

Figure 17 Percentage without a car/van by ethnicity (National Travel Survey)



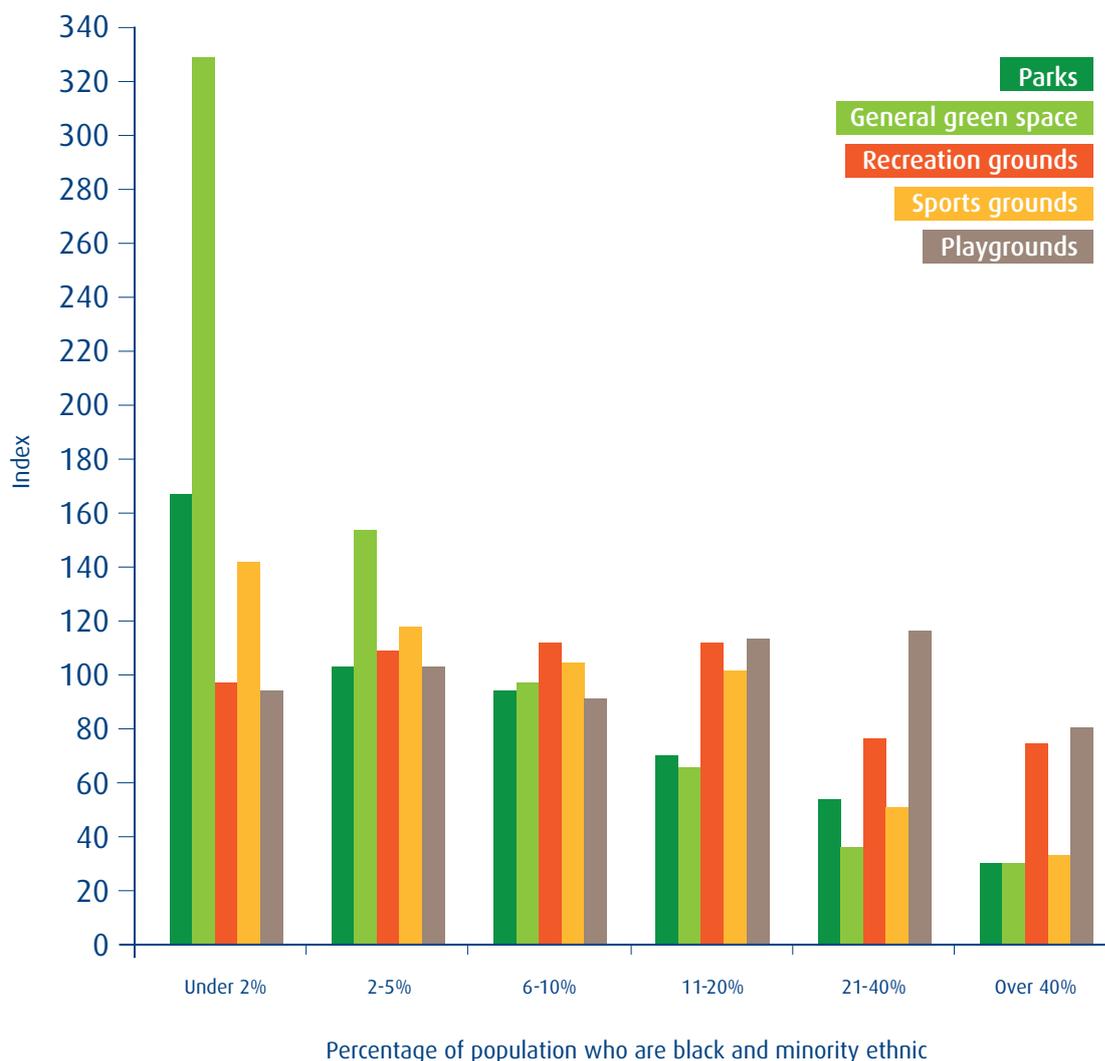
Department for Transport data also shows that the proportion of Asian adults who do not drive is twice that of white adults.¹¹⁴

While many black, Asian and minority ethnic groups are more dependent on public transport, they are also more likely to encounter problems using it. For example, in a 2001 study, more than a third of Hindu, Muslim and Sikh organisations reported that their members had been discriminated against on public transport.¹¹⁵ Research for the Department for Transport also found almost a quarter of young people from black and minority ethnic groups have reported harassment due to their colour, race or religion.¹¹⁶ Personal safety fears, when using public transport and when walking to, or waiting at bus stops or train stations are a significant barrier.¹¹⁷

There are more practical problems too. Language barriers can prevent access to public transport information services. They can also prevent ethnic minority groups from participating in consultations and customer surveys which might otherwise help to raise these issues. The Department for Transport's *Evidence Base Review of Mobility* suggests that inadequate understanding of the needs of minority ethnic and faith communities may also exclude them from accessibility planning.

There are other ways in which ethnic minorities are affected. CABE's work on access to green space¹¹⁸ highlights that wards with high ethnic minority populations (greater than 40 per cent) have eleven times less public green space than wards with very low ethnic minority populations (less than two per cent) based on area of green space per 1,000 population.

Figure 18 **Quantity and type of space by black and minority ethnic population**
(all measures based on hectares of green space per 1,000 population)¹¹⁹



This finding is strongly interlinked with issues of lower paid employment levels for minority ethnic groups and higher likelihood of living in a deprived area.¹²⁰

Much lower availability of green space, combined with the transport problems already described, is likely to result in much worse access to green space for black and minority ethnic populations. This in turn is likely to lead to inequalities in both mental and physical health outcomes.

4.6 Rural communities

Key impacts for rural communities

- 1 People living in rural areas now see car ownership as a necessity and around 90 per cent of households have at least one car. The cost of motoring was found to account for 60 to 100 per cent of the additional income calculated as being required for rural dwellers to meet a minimum socially acceptable standard of living commensurate with urban dwellers.
- 2 Young people in rural areas who do not have access to a car are particularly badly disadvantaged both in educational and employment opportunities.
- 3 Any future rises in the costs of motoring are likely to have a stronger impact on rural communities as they often have no alternative travel options.

The growth of car ownership has been accompanied by a steady decline in the provision of rural public transport services. People living in rural areas now see car ownership as a necessity¹²¹ and around 90 per cent of households have at least one car. By comparison, in London boroughs, the figure is 57 per cent.¹²² This is likely to reflect the availability of public transport alternatives and a more densified city.

The fact that a car is almost a necessity in rural areas imposes a significant additional cost on those living there. Since 2008 the Joseph Rowntree Foundation has published reports on the 'minimum income standard' – the budget required to cover the cost of a basket of goods and services for a specified household type to meet a minimum socially acceptable standard of living.¹²³ The measure has been based on urban areas and did not include the cost of running a car as this was not considered a necessity by those living in urban areas.

However in November 2010, they published a report looking at minimum income standards for rural households.¹²⁴ It examines different social groups living in rural towns, villages and hamlets. In all but one instance (pensioners living in rural towns), a car was deemed a necessity. Across the different groups and locations, the cost of motoring was found to account for 60 to 100 per cent of

the additional income calculated by JRF as being required for rural dwellers to meet a minimum socially acceptable standard of living commensurate with urban dwellers.

The 10 per cent of rural households who do not have access to a car can face difficulties accessing employment, education and other opportunities. Evidence from various sources suggests young people in rural areas without access to a car have "extremely disadvantaged job opportunities", particularly if they have low educational achievement.¹²⁵ Yet 40 per cent said that their decisions on post-16 education had been influenced by transport issues.¹²⁶ Department for Transport figures show only 51 per cent of rural households are within a 13 minute walk of a bus stop with at least an hourly service, in comparison to 96 per cent of urban households.¹²⁷ The Commission for Rural Communities' *Rural Insights* survey showed public transport to be the area that people in rural areas most wanted improving.¹²⁸

A further issue for rural dwellers is intimidation due to the danger posed by vehicles on rural roads. The Campaign to Protect Rural England found two thirds of people felt threatened by motor traffic on rural roads some or all of the time.¹²⁹ The statistics seem to confirm these fears – according to the Department for Transport, over 60 per cent

of all road fatalities happen on rural roads despite them carrying around 40 per cent of traffic.¹³⁰

For those who do have a car, the costs of travel can be prohibitive. Rural fuel prices can be as much as 10 or 15 pence higher than urban areas¹³¹ and those on lower incomes in rural areas drive much less than average.¹³²

If the taxes and charges on drivers are supposed in part to compensate for the costs of congestion and pollution, it has been argued that rural drivers pay too much and urban drivers too little in comparison to their relative contribution to these costs.¹³³ The Commission for Rural Communities has raised concerns that any introduction of road pricing schemes should be rural proofed to ensure they do not further increase inequalities between urban and rural areas.¹³⁴

4.7 Future generations and poorer nations

Key impacts for future generations and poorer nations

- 1 Those who have contributed least to the problem of climate change through their transport usage are likely to suffer the worst impacts.
- 2 There is evidence that growth in the use of biofuels to mitigate climate change is already leading to hardship and suffering for some of the poorest people in the world. Future generations are at risk not just from climate change impacts but biodiversity loss, acidification and pollution and social unrest created by diminishing natural resources.

The most obvious impact of existing transport patterns on future generations will be changes to the global climate and weather patterns. A recent Swedish study estimates the health impacts suffered in developing countries as a consequence of emissions of greenhouse gases from the Swedish road transport system may be three times greater than the mortality from road traffic accidents in Sweden itself (based on estimated disease burden related to global climate change).¹³⁵

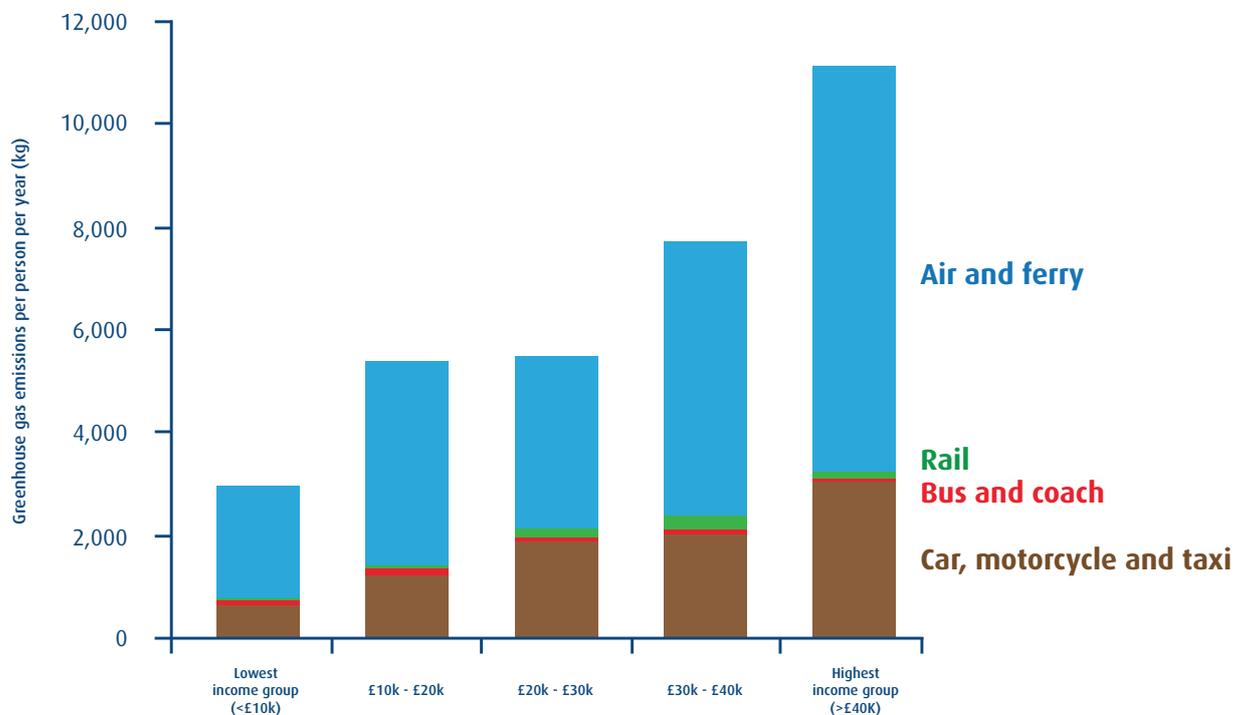
Yet it is those living in the developed countries that are disproportionately responsible for greenhouse gas emissions. According to Kevin Anderson of the Tyndall Centre for Climate Change Research, 50 per cent of global carbon emissions are produced by just one per cent of the global population, with anyone in the UK who earns over £30,000 a year probably being in that one per cent.¹³⁶

The Marmot Review of health inequalities states “Although low-income countries will suffer most acutely, in all countries the risks associated with climate change will

fall disproportionately on ‘the urban poor, the elderly and children, traditional societies, subsistence farmers, and coastal populations.’”¹³⁷ Those who are already deprived by their level of income, health or housing will be most vulnerable to these impacts.¹³⁸ In the UK poorer people are more likely to be living in urban areas which will be hotter with higher heat stroke risks.¹³⁹ Their homes are more likely to be in areas exposed to weather extremes and flooding¹⁴⁰ and will be less well protected¹⁴¹ and they are less likely to have insurance against these risks.¹⁴²

Research into greenhouse gas emissions from personal travel in the UK demonstrates that it is these low income groups who contribute least to climate change through their travel – as illustrated in Figure 19. Those earning above £40,000 generate between three and four times as many greenhouse gas emissions from their travel as those who earn £10,000 or less.

Figure 19 UK Greenhouse gas emissions from personal travel by income group¹⁴³



This unfairness is true in global terms too since the transport greenhouse gas emissions of those in developed countries will far exceed those in the developing world who will be disproportionately affected by climate change.

The global situation was summed up by Kirk Smith writing in the *Annual Review of Public Health* (2008):

“The rich will find their world to be more expensive, inconvenient, uncomfortable, disrupted and colourless; in general, more unpleasant and unpredictable, perhaps greatly so. The poor will die.”¹⁴⁴

The choices which we are making now in terms of mitigating the greenhouse gas emissions from transport will have an effect on current and future generations, domestically and globally, and so the impacts must be well understood and the most effective policies to reduce emissions must be adopted. One current policy is the increasing use of biofuels which is being incentivised in both Europe and America. However, the negative impacts of these policies are falling on some of the poorest people of the world.

Increasing demand for first generation biofuels has already been associated with food price rises,¹⁴⁵ with Oxfam estimating that biofuels accounted for over 60 per cent of the increase in demand for food crops between 2006 and 2008.¹⁴⁶ In January 2010 a report revealed one quarter of all the grain crops grown in America are now used for biofuels¹⁴⁷ meanwhile the number of hungry people in the world rose to over one billion in 2009.¹⁴⁸ Rising food prices disproportionately impact the poor for whom food costs typically account for half their spending. They also tend to be buying cereal crops directly so rises in the prices of these crops have a greater effect on their food costs than someone buying more processed food.

Biofuels have also led to rising land prices, with poorer smallholders unable to compete with large biofuels producers.¹⁴⁹ Indigenous peoples whose titles to land are often insecure are also being displaced.¹⁵⁰ Biofuels have raised concerns regarding increased water use when a third of the world’s population is currently facing water scarcity¹⁵¹ and loss of employment in comparison to small scale farming.¹⁵² Plans for millions of hectares of land to be planted with biofuels crops have also led to concerns about biodiversity loss, acidification and excessive fertiliser use, air pollution and toxicity of pesticides.¹⁵³

4.8 Summary

Our analysis demonstrates that existing transport patterns in the UK contribute to substantial inequalities. Some people benefit from accessing a wide range of education and employment opportunities and goods and services while others are held back, unable to access the opportunities that would enable them to maximise their own wellbeing and social and economic contribution.

The inequality is two-fold. In general the people experiencing the worst access opportunities also suffer the worst effects of other people's travel. They are both 'less travelled' and 'travelled-upon'.

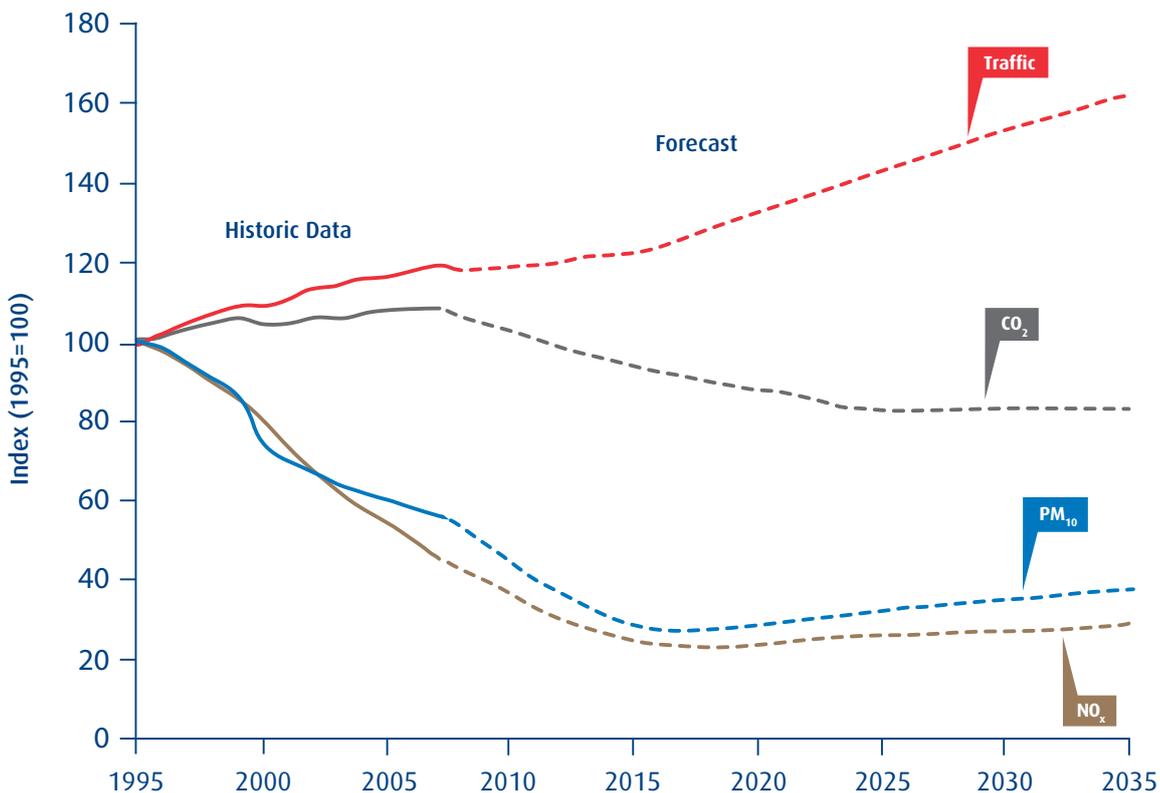
The evidence we present in this report suggests that the central reason for this inequality is society's dependence upon the car as its dominant mode of travel. Put simply, increasing car dependency has led to increasing unfairness.

Forty two per cent of the population (including children) either cannot drive or do not have driving licences. They are

therefore dependent on walking, cycling, public transport or getting lifts from friends or family in order to make their journeys. Increasing car use has made many of the alternatives less viable: buses must contend with increasing levels of congestion; cycling in particular, and also walking, have come to be seen by many as too dangerous to seriously consider (especially by children and older people); and the viability of public transport provision has been eroded by competition from the private car. Overall, public transport has become substantially more expensive over time whilst the cost of motoring has fallen in real terms.

For those who do drive, there are problems of increasing congestion and rising fuel costs. Congestion is currently estimated to cost the economy £22 billion a year.¹⁵⁴ Based on current trends, the Department for Transport predicts congestion levels will increase by 54 per cent by 2035.¹⁵⁵ (Figure 20).

Figure 20 Historic and Forecast Traffic and Emissions, England (DfT Road Transport Forecasts 2009)



The UK Energy Research Centre reported in 2009 that “a peak in conventional oil production before 2030 appears likely and there is a significant risk of a peak before 2020”.¹⁵⁶ The UK Industry Taskforce on Peak Oil and Energy Security published a report in February 2010 in which they stated “the price of oil could rise to a new and sustained, level which is well above US \$100 per barrel and that this is very likely to be the case within the next five years.”¹⁵⁷ They go on to say that “the transport sector will be particularly hard hit, with more vulnerable members of society the first to feel the impact.” This suggests that growing numbers of people will find it more and more difficult to access essential services and educational and employment opportunities.

Transport systems must also respond to the imperative to reduce greenhouse gas emissions. Currently global greenhouse gas emissions are rapidly increasing. Leading researchers have calculated that unless we can reverse this and achieve a downward trend by 2020, then it will be impossible to limit average global warming to two degrees Celsius.¹⁵⁸ Instead we may need to start planning for a four degrees Celsius rise and the substantial negative impacts this implies for the poorest people in the world. Over the

last five years, transport has been the only sector in the UK to have a rising trend in greenhouse gas emissions.

The challenges set out above are entrenched and interlinked. Policies designed to make incremental adjustments to existing travel patterns and impacts will not be sufficient to address them. A more comprehensive and holistic approach is required.

Take the example of ultra-low carbon vehicles. Clearly they can play a role in tackling climate change, but they do not solve other problems associated with car dependency such as congestion, health impacts and road danger. They may even exaggerate these problems: the higher initial purchase price in combination with much lower running costs may encourage owners to use these vehicles more in an attempt to maximise the benefits of their investment. Owners of electric vehicles may also feel less need to reduce their car use given the ‘clean’ image and absence of exhaust emissions.

A new approach based on long-term systems thinking is needed – in other words a truly sustainable approach.

5

A Sustainable Approach to Transport

As the previous chapter showed, if we are to create a fairer society we need to reduce our car dependency. However, we also need to avoid the polarised pro-car/anti-car debate and acknowledge that low carbon, efficient and sustainable cars will continue to have a role to play in the foreseeable future. Ultimately people want choice: the Department for Transport's own research shows that "nearly half of drivers say they would like to drive less than they do".

An ideal transport system enables people to fulfil their potential and contribute fully to society. It minimises the negative social and environmental impacts of transport that we have identified, and underpins a thriving, low carbon and sustainable economy. It is also resilient to energy security issues such as rising oil prices, enables us to meet our commitments on climate change and designs out the problem of congestion.

5.1 A new approach

Much transport policy has been based on detailed analysis of existing trends, extrapolation of future needs and planning to meet these needs: the so called 'predict and provide' approach. The 1998 transport White Paper recognised that this approach does not work for road transport and moved to "management of existing roads before building new ones".¹⁵⁹ After over a decade, some people are suggesting that this new management approach has worked. There is some evidence that car use in the UK is becoming saturated or perhaps even peaking before a decline.¹⁶⁰ For the last ten years the average distance

travelled by car per person has remained static at about 5,500 miles per year. It is only due to population growth that overall distances driven have increased.

Given the environmental, social and economic challenges now facing transport policy makers, it is our belief that we need to move away from 'predict and provide' for *all* powered transport. We need instead to adopt a new approach with a specific vision of creating a sustainable transport system. For this we will need new priorities.

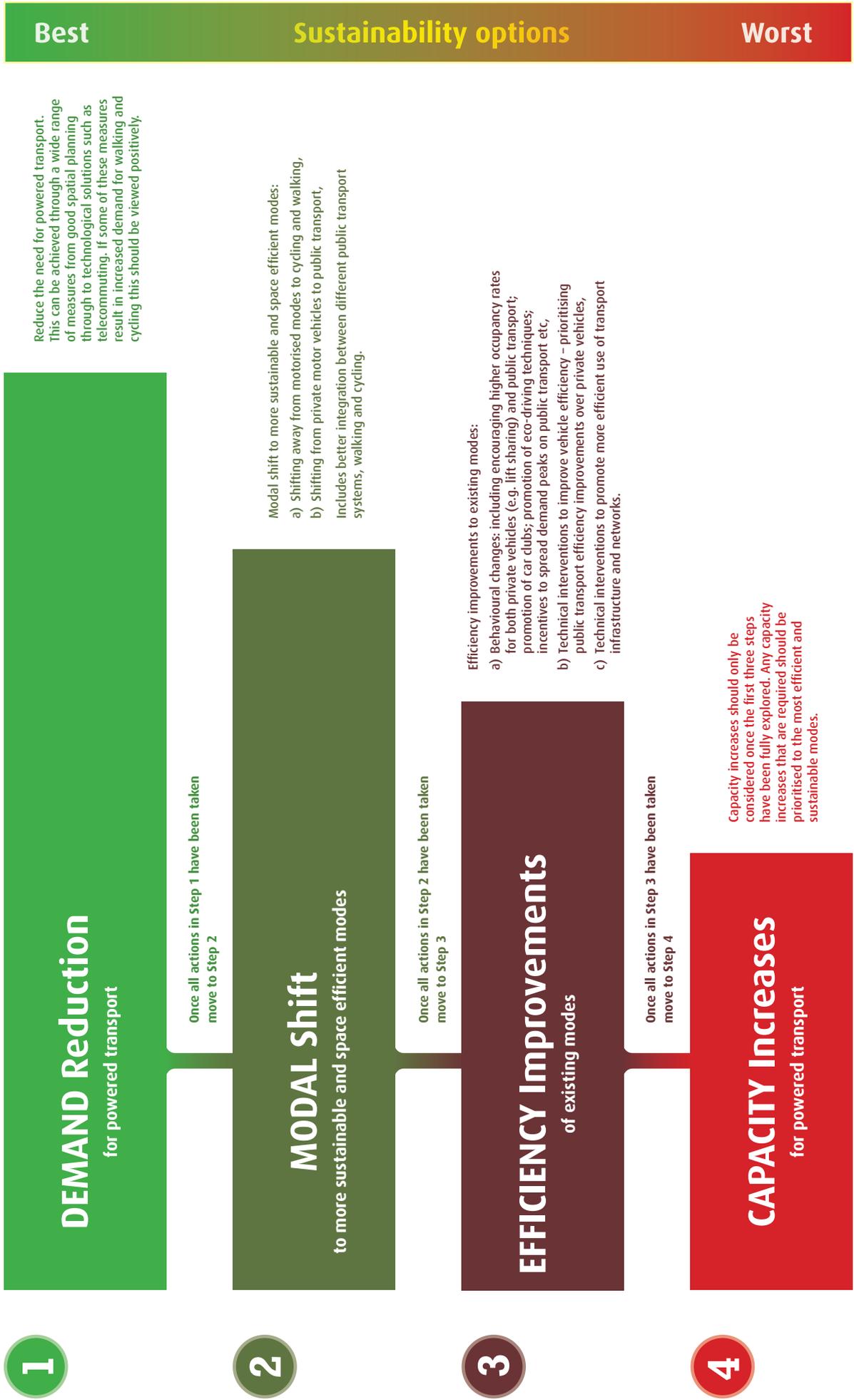
5.2 A sustainable transport hierarchy

There are many examples of the use of hierarchies to guide prioritisation in complex policy areas (see *Appendix 2 – Hierarchies in sustainability and transport*). The best known example is the waste hierarchy: 'reduce, reuse, recycle'. There are examples too in some existing transport policy literature. The Department for Transport's *Guidance on Transport Assessment* recommends the first step should always be "reducing the need to travel, especially by car".¹⁶¹ The Highway's Agency recommends that capacity enhancements should be a "last resort"¹⁶² while Dalkmann and Brannigan recommend a three-level "avoid-shift-improve" model to classify (and prioritise) carbon reduction measures.¹⁶³

We first proposed an overarching hierarchical approach to transport policy in our consultation response to the Department for Transport's *Delivering a Sustainable Transport System* consultation (2009).¹⁶⁴ We used the hierarchy again to inform our approach in our *Smarter Moves* report (2010). This describes the four stages in more detail.¹⁶⁵ The hierarchy is intended as a simple tool which can be used at all levels of transport policy making to structure thinking in generating and prioritising solutions.

The hierarchy (opposite) can be memorised using the mnemonic 'DeMEChanise' – a term implying a shift away from powered transport and towards travel avoidance and active travel.

A Sustainable Transport Hierarchy



5.3 How a sustainable transport hierarchy can improve fairness

5.3.1 Demand reduction for powered transport

The first step is to examine whether the need to travel can be eliminated or reduced. If we can enable people to meet their needs without the need to travel then we create solutions for many of those people with limited transport options. The best way of achieving this is through good spatial planning; the built environment should be designed with a view to minimise the need for powered transport. Modern communications technologies (for example teleconferencing, working from home or a 'work hub', home shopping, etc) are also providing new ways of avoiding the need to travel as our report *Smarter Moves* has already shown. While we must always be conscious of avoiding creating social exclusion problems for those with poor access to IT systems, there is strong potential to reduce overall social exclusion through these technologies. Demand reduction can also be achieved through behavioural change and fiscal interventions. Note that increased demand for 'active travel' (cycling and walking) as a result of these interventions should

be viewed positively due to the health benefits, reduced environmental pollution and better resource efficiency. Walking and cycling are also two of the most affordable, accessible and inclusive forms of travel. *Appendix 3 – Fairness benefits of active travel* explains this in more detail.

Reducing the need for powered transport can reduce its associated negative environmental and social impacts which, as we have shown, fall disproportionately on the poorest and most vulnerable sections of society. We therefore welcome progress across the UK in recognising the need for transport demand reduction. The Department for Transport, for example, has stated that investigating alternatives to travel will be one of its top three priorities.¹⁶⁶ This team delivering this has an opportunity to look not only at technological solutions, but also with planning and policy and other departmental agendas to reduce transport demand rather than increase it.

5.3.2 Modal shift to more sustainable and space efficient modes

Once all actions have been taken to eliminate or reduce the need to travel, the next step in the hierarchy is to ensure the remaining journeys are as sustainable as possible. There are two key elements to this step:

1 Shifting away from powered modes to cycling and walking. Currently 78 per cent of two to three mile trips are made by car, yet short journeys are the most inefficient use of vehicles as engine efficiency is worst when cold. Shifting to walking and cycling for these trips would create a multitude of benefits: congestion reduction; health and air quality improvements; noise reduction; less greenhouse gas emissions and greater social cohesion. These benefits would improve quality of life for everyone, but particularly those sections of society who currently suffer from the worst of these effects. Environments which encourage walking and cycling are by their nature more inclusive as discussed in *Appendix 3 – Fairness benefits of active travel*. There are a range of measures available to enable this including reducing speed limits, restricting motorised transport volumes and creating high quality, safe and attractive routes and environments for cyclists and pedestrians.

Although electric bicycles are of course powered, they should be included in this step of the hierarchy in view of their potential to increase levels of cycling. Further details on this and other policy suggestions can be found in *Appendix 4 – Potential policies to improve fairness*.

2 Shifting from private motor vehicles to public transport. Providing high quality, convenient, accessible and affordable public transport systems benefits all sections of society, but particularly those who do not have the option of a private car. Public transport is in general more space efficient than private vehicle use, helping to reduce congestion. Good public transport that is well used is also more energy efficient, reducing energy use and pollution. Increasing passenger numbers on existing public transport improves efficiency (in per passenger kilometre terms), improves viability

and can lead to improved quality of service. Regular public transport users also tend to have higher levels of walking and cycling. This category should therefore include measures to improve inter-modality between different forms of public transport and active travel.

Changing behaviours and encouraging people to make different transport choices is complex. It will require a combination of co-ordinated interventions. In particular consideration should be given to 'changing contexts' in

which decisions are made (i.e. what options are available and easy to access) rather than focusing on individuals' personal responsibilities. Interventions also need to reflect insights from behavioural science for a greater understanding of people's motivations and barriers. This is discussed further in our submission to the House of Lords' call for evidence on behaviour change¹⁶⁷ and in our forthcoming report on the role of Government and others in enabling sustainable lives.

5.3.3 Efficiency improvements to existing modes

Once we have done everything possible to encourage the most sustainable mode choice, the next step in the hierarchy is ensuring the most efficient use of any given mode. Options such as lift-sharing schemes and car clubs not only make more efficient use of existing resources, but can offer low cost access to car travel for those who cannot afford to run a car. Encouraging more efficient behaviours will reduce the number of private vehicles on our roads, reducing road danger, pollution and congestion. Improving the efficiency of vehicles and transport networks themselves further reduces pollution and emissions by reducing energy consumption. There are three key elements to this step:

- 1 Behavioural changes: including encouraging higher occupancy rates for both private vehicles (for example lift sharing) and public transport; promotion of car clubs; promotion of eco-driving techniques; incentives to spread demand peaks on public transport etc.

- 2 Technical interventions to improve vehicle efficiency – prioritising public transport efficiency improvements over private vehicles
- 3 Technical interventions to promote more efficient use of transport infrastructure and networks.

One important consideration is that improving efficiency can lead to so-called "rebound effects". For example, improving vehicle fuel consumption reduces the cost per mile and can therefore lead to increased vehicle use. Similarly, making more efficient use of road space could reduce congestion and therefore induce further traffic. This is one of the reasons why we have placed efficiency *after* steps one and two of the hierarchy.

Rebound effects can be more severe than a simple reduction in the expected benefits of an efficiency improvement. In some cases, efficiency improvements can lead to *increased* resource consumption by rendering a technology more attractive and popular.¹⁶⁸

5.3.4 Capacity increases for powered transport

This is the final step in the hierarchy, and the option of last resort. Until the impacts of the first three steps of the hierarchy have been fully explored and appraised it is not possible to determine what residual demand for increased capacity remains.

If such demand does exist, any capacity increases that are required should be prioritised to the most efficient, sustainable and fair modes and must be compatible with wider sustainability principles.

Even then the provision of increased capacity must be carefully considered owing to the problem that new transport infrastructure tends to result in increased transport demand.

Recommendation: The Government and the Devolved Administrations adopt this over-arching transport hierarchy approach and promote its use at all levels of transport decision making as a tool to ensure that the most sustainable and fair transport solutions are prioritised.

5.4 Transport appraisal

“The imperative created by the current fiscal circumstances and carbon budgets might offer the best opportunity likely to become available to take and explain decisions which anyway need to be taken to put transport programmes and spending on a more sustainable path.”

Commission for Integrated Transport, 2010

A hierarchical approach to transport policy making will help to ensure that the most sustainable potential solutions are prioritised, but another critical area is the more detailed appraisal of transport scheme options.

The Coalition Government’s *Programme for Government* included the statement “We will reform the way decisions are made on which transport projects to prioritise, so that the benefits of low carbon proposals... are fully recognised”. We welcome this commitment. Given the challenge of creating a transport system which is not only low carbon, but also contributes to fairer outcomes in society and is robust to future energy security issues, it is essential to ensure that the tools available guide decision makers to the most sustainable outcomes. Now, perhaps more than ever, we need to ensure that we get the best possible value from public money spent on transport. This can be done through taking a system approach, one that applies a sustainable development analysis and consideration of alternative in order to better reflect the value of social and environmental aspects in investment appraisals and this will help “level the playing field” for when government assesses where it wishes to prioritise investment.

A key area to review is the appraisal of transport schemes. The Department for Transport has one of the most complex transport appraisal systems in the world. The New Approach to Appraisal (NATA) was created in 1998 as a multi-criteria analysis tool for the analysis of major potential transport schemes. It was developed for use across all modes and was intended to ensure that a wide range of objectives were considered in decision making.

It grouped objectives into five areas: environment; economy; safety; accessibility; and integration.

While this approach was laudable, many feel that since NATA was introduced the reality of transport appraisal has fallen well short of its intentions. In 2007 the Department for Transport launched a consultation on refreshing the NATA process. The Centre for Transport and Society observed in their response that the areas of policy most important in moving towards a sustainable transport system are “unfortunately the same as the list of aspects which are poorly treated in NATA, or not at all”.¹⁶⁹

NATA includes cost-benefit analysis which gives a useful indication of what policies result in the best value for money. The benefit to cost ratio (BCR) indicates what the ratio is between the total benefits accruing from a scheme (only including those which can be monetised) and the total costs of implementing that scheme. Thus if a scheme has a BCR of 10:1, then it is estimated that for every £1 spent implementing the scheme, £10 of benefits would be expected.

More detailed critiques of the existing NATA processes have been made by Keith Buchan in two reports for Green Alliance.^{170, 171} The second of these reports highlighted how changes made by the Department for Transport as a result of the consultation significantly changed previous benefit cost ratio calculations for different modal interventions. However it recommended further reforms which would result in additional significant changes to the results as shown in Figure 21.

Figure 21 Summary of comparative results under different NATA assumptions¹⁷³

		Benefit cost ratio appraisal model		
		Original	Revised (after consultation)	With further reforms
Tram	Merseytram	1.97	2.07	2.85*
Cycle	Grand Union Canal cycle path	38.4	75	75
Road	A14 Ellington to Fen Ditton	10.83	6.69	1.3 - 3.25**
Bus	Cambridge to St. Ives guided busway	4.8	6.4	7.9**
Rail (Freight)	Expansion of rail freight (Felixstowe to Nuneaton)	5.25	10.4	10.4***

* Based on moving to a 60 year appraisal. The Merseytram case study provides several examples of how small changes in the treatment of tax revenues have a strong impact on the benefits (see the report, *Investing in Transport: Making the Change*¹⁷²).

** Based on limited data.

*** The carbon benefit of the rail freight scheme was already factored into the original analysis hence there is no change.

The report gave several key recommendations for changes to the process:

- “Costing of all greenhouse gas emissions above the transport sector reduction target, not a comparison with emissions under a completely unrealistic ‘Do Minimum’ scenario;
- Clear implementation of the objectives led process including the preparation of genuine alternatives and packages – if this has not been done schemes should be sent back to promoters
- Pending further research, all appraisals should include a test for the sensitivity to the size of time savings. This would involve producing BCRs (benefit cost ratios) with small time savings omitted, publishing them in the AST (appraisal summary table) and taking them into account when deciding which schemes to approve; and
- All appraisals to publish a benefit profile in the AST, with BCRs at 20 and 40 years as well as 60, again ensuring that they are taken into account in any approval decision.”

When these suggested further reforms are applied, the bus and rail freight schemes’ values improve significantly. However further changes need to be made in order to ensure that the NATA process, including the approach to BCR, supports the creation of a fairer transport system for the UK.

The Department for Transport has identified eight areas for assessing social and distributional impacts in future transport appraisals. These are noise, air quality, safety, personal security, severance, accessibility and personal affordability. The methodology for their inclusion has now been published in draft guidance. This will be a very significant step forward in ensuring that future transport decisions take account of these issues. However since the appraisal process can involve trading off and balancing competing objectives it remains to be seen whether this will result in fairer outcomes. Further information on this work is included in Appendix 5 – Department for Transport work on social and distributional impacts while Appendix 6 – Limitations of current approach to cost-benefit analysis highlights some of our concerns.

There are still social impacts which are known but for which it is currently judged that there is insufficient evidence or

no robust process for them to be included in appraisal. It is unacceptable for this to result in them being ignored or given insufficient account.

There are many transport impacts, particularly social impacts, which are extremely difficult to quantify but are nevertheless important. The problem of valuing social impacts has recently been acknowledged in Defra's work with the Government Economic Service, reviewing the economics of sustainable development. The review highlighted that:

"The economic appraisal of social impacts was not nearly as well developed as that for economic and environmental impacts."¹⁷⁴

As a result, a cross-Government group on social impacts (the Social Impacts Task Force) has been established.

Recommendation: The Government and the Devolved Administrations should improve the handling of social and distributional impacts in transport decision making and appraisal. Changes made should be monitored to assess whether they are leading to fairer outcomes.

5.5 Conclusion

Decision making processes are central to the aim of putting sustainable development at the heart of policy making. Implementing these recommendations would substantially improve the sustainability and, therefore, the fairness of future transport policy decisions. For this reason we make one further recommendation.

Recommendation: In order to tackle unfairness in society, the Government and the Devolved Administrations should make reducing transport inequalities a specific goal of transport policy.

6

Conclusion

Over the last one hundred years there has been a revolution in personal travel. This has primarily been associated with the growth in car ownership. The widespread availability and affordability of car travel has brought many benefits for many people. Cars have given the freedom to travel to almost any destination, at whatever time the user wishes, carrying passengers and luggage if necessary and with minimal need to plan ahead. They have made it easier to keep in touch with friends and family and to reach a wider range of job opportunities. As they have become more affordable, they have dramatically increased the travel possibilities available to ordinary families. The car has grown to dominate transport. It has shaped our towns and cities, changed our landscapes and for many it has become an essential they feel they could not do without.

However, for many people the growth of car-dependent lifestyles and the changes they have brought about have created serious and entrenched problems. Local shops and services have moved further away. Children's freedoms have been restricted due to road danger. Many jobs are difficult to access without a car. Where alternatives are lacking, not having access to car transport can lead to serious social exclusion.

A range of other serious problems result from car dependency. The most common cause of death for children is being hit by a vehicle. The primary cause of air and noise pollution is road transport. For those that do drive there are the problems of increasing congestion, rising fuel prices and the health impacts of obesogenic lifestyles.

As this report has shown, it is the people experiencing the worst access opportunities who also suffer the worst effects of other people's travel. They are both 'less travelled' and 'travelled-upon'.

92 per cent of our domestic transport greenhouse gas emissions come from road transport. Yet from both a national and an international perspective, it is those who have contributed least to climate change through their travel who will experience its worst effects.

We cannot hope to solve these problems by continuing to make incremental changes to our existing transport system. A fresh approach is needed based on long-term systems thinking – in other words a truly sustainable approach.

Applying the principles of sustainable development can help generate solutions to all these problems. A sustainable transport hierarchy can guide thinking to ensure that the fairest and most sustainable solutions are prioritised. Issues of social and environmental justice can also be taken into account better in the transport appraisal process.

The recommendations in this report are designed to steer us towards fairer decision making in transport policy, helping the poorest and most vulnerable in society first and foremost, but in the process creating a transport system that works better for us all.

Appendix 1

Defining fairness

The words equality and equity are both used in relation to fairness and justice but they are not the same. The Oxford English Dictionary distinguishes between them:

Fairness

- 1 Equitableness, fair dealing, honesty, impartiality, uprightness.

Equity

- 1 The quality of being equal or fair; fairness, impartiality; even-handed dealing,
- 2 What is fair and right; something that is fair and right.

Justice

- 1 The quality of being (morally) just or righteous; the principle of just dealing; the exhibition of this quality or principle in action; just conduct; integrity, rectitude (One of the four cardinal virtues),
- 2 Conformity (of an action or thing) to moral right, or to reason, truth, or fact; rightfulness; fairness; correctness; propriety.

Equality

- 1 The condition of being equal in quantity, amount, value, intensity, etc,
- 2
 - a) The condition of having equal dignity, rank, or privileges with others; the fact of being on an equal footing,
 - b) The condition of being equal in power, ability, achievement, or excellence.

So, while equity is essentially the same as fairness, equality is not. Equality is not necessarily fair, and inequality is not necessarily unfair. For example, a tax applied equally to all members of society regardless of their income is equal, but many would argue is not fair. Furthermore, while

equity requires something of a moral judgement, equality suggests an approach that can be objectively quantified. This may explain why equality, rather than equity, receives more policy attention.

Equality of opportunity and equality of outcome

Discussions on fairness often talk about equality of opportunity and equality of outcome. Providing people with equal opportunities has been a specific policy aim and has been enshrined in law for many groups and sectors, but it is accepted that this is unlikely to result in equal outcomes for all and indeed it would be unrealistic to aim to achieve this.

In recent policy documents, equality of opportunity is often expressed as *equal life chances*, for example in the Mayor of London's *Equal life chances for all* policy statement (July 2009).¹⁷⁵ This may stem back to the Fabian Society's *Life Chances Commission* report (2006). The Fabian Society states that "The 'equal life chances' agenda recognises that today's unequal outcomes shape tomorrow's unequal

opportunities, and has a particularly strong concern with the intergenerational transmission of inequalities, to prevent life chances being so strongly determined by the circumstances into which we are born as they are at present."

The benefit of taking sustainable development as the framework in which to understand fairness is that it concerns the quality of life of citizens and their relationship to their compatriots now, *whilst also acknowledging the impact this has on other countries and future generations*. The Department for Education's *Sustainable Development Action Plan* encapsulates this breadth well in defining equity as a situation in which:

“Every person’s basic needs are met; burdens (such as environmental impacts, crime, financial) and rewards (such as community resources and leisure opportunities) are fairly spread; and everyone has access to employment opportunities. Equity extends not only to all members of our society, but to all citizens of the world now and in future generations.”¹⁷⁶

The inclusion of environmental benefits and costs is critical to a holistic approach to fairness: environmental inequity compounds the consequences of social differentials.

Environmental inequality

According to Gordon Walker of Lancaster University, environmental inequality can be measured and described in terms of:

- Distribution of environmental bads and vulnerability to their impacts (pollution, flooding etc),
- Distribution of and ability to access environmental goods (green space, healthy food etc),
- Creation of environmental bads (e.g. resource consumption, pollution, waste generation),
- Access to, influence on and participation in decision-making processes.

In other words, both the positive benefits society obtains from the environment and the effect of our negative impacts on the environment can be unequally distributed across society.

Social and environmental justice

The concept of justice can be viewed as involving judgment and principles and is thus not easily measured. However, it is important to understand these two related terms:

Social justice

A term first used before the 1800s and now one of the four pillars of the Green Party. Social justice is defined by the Oxford English Dictionary as “justice at the level of a society or state as regards the possession of wealth, commodities, opportunities, and privileges”. The term has also come to mean the movement which seeks to create a socially just world.

Environmental justice

Environmental justice attempts to make the link between social and environmental concerns. It has been defined as “equal access to a clean environment and equal protection from possible environmental harm irrespective of race, income or class or any other differentiating feature of socioeconomic status”.¹⁷⁷ According to the SDC’s *Vision for Sustainable Regeneration* report¹⁷⁸ the term was coined in America, referring primarily to the disproportionate impact of pollution on poorer communities, but is now being widened to include less tangible aspects of quality of life including community confidence, cohesion and safety, civic pride, empowerment and environmental education.

Conclusion

There are a wide range of definitions which relate to fairness. The existing sustainable development principles speak of creating a just society and the expressions social and environmental justice are established terms both in previous work by the SDC and more widely. Organisations such as WWF and Care International have already adopted the language of social and environmental justice¹⁷⁹ and the

term justice is perhaps more commonly understood and has greater resonance with the public than equity and equality, while still embodying both.

For these reasons, the definition of fairness used in this report is: **Social and environmental justice for all, now and in the future.**

Appendix 2

Hierarchies in sustainability and transport

In sustainability the use of decision-making hierarchies is well established. The most well known example is the 'waste hierarchy':

- 1 Reduce
- 2 Reuse
- 3 Recycle

The importance of this simple and memorable tool in helping people to identify the most sustainable approach should not be under-estimated. Often discussions of solutions to the problems of waste jump straight to various recycling options. Referring back to the hierarchy ensures that the options of reducing the production of waste products in the first place, and finding ways of reusing them should be given priority over recycling options. Only by doing this will the most sustainable solutions be reached.

Perhaps recognising this, in April 2009, the Institution of Mechanical Engineers published a similar hierarchy for energy:

"The Energy Hierarchy links closely to the principles of sustainable development and offers an integrated, easy to use approach to energy demand and supply decision making. A common-sense sustainable energy policy should make its first priority the reduction of energy use, before seeking to meet the remaining demand by the cleanest means possible:

- Priority 1: Energy conservation** – changing wasteful behaviour to reduce demand
- Priority 2: Energy efficiency** – using technology to reduce energy losses and eliminate energy waste
- Priority 3: Exploitation of renewable, sustainable resources**
- Priority 4: Exploitation of non-sustainable resources using carbon dioxide emissions reduction technologies**
- Priority 5: Exploitation of conventional resources as we do now.**¹⁸⁰

There are several examples of hierarchies being used in transport. The Department for Transport's own *Guidance on Transport Assessment* published jointly with the Department of Communities and Local Government, recommends an iterative approach, stating "a transport assessment should address the following issues:

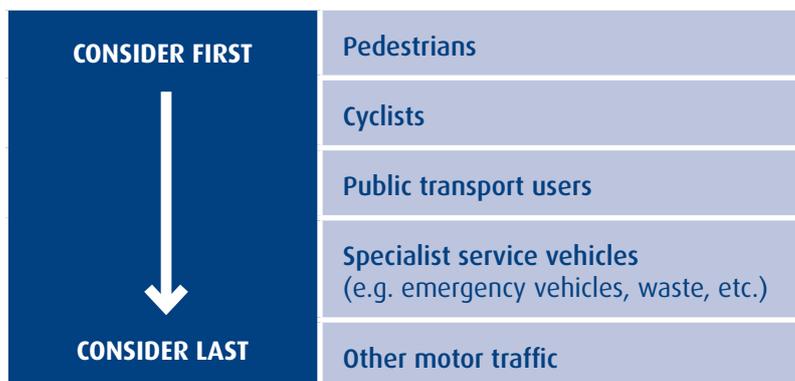
- **Reducing the need to travel, especially by car** – ensure, at the outset, that thought is given to reducing the need to travel; consider the types of uses (or mix of uses) and the scale of development in order to promote multipurpose or linked trips,
- **Sustainable accessibility** – promote accessibility by all modes of travel, in particular public transport, cycling and walking; assess the likely travel behaviour or travel pattern to and from the proposed site; and develop appropriate measures to influence travel behaviour,
- **Dealing with residual trips** – provide accurate quantitative and qualitative analyses of the predicted impacts of residual trips from the proposed development and ensure that suitable measures are proposed to manage these impacts,
- **Mitigation measures** – ensure as much as possible that the proposed mitigation measures avoid unnecessary physical improvements to highways and promote innovative and sustainable transport solutions."¹⁸¹

The Highways Agency states that it will "seek to apply the following solutions iteratively:

- Impact avoidance through choice of sustainable location,
- Impact minimisation through realistic Travel Plans,
- Access management,
- Capacity enhancements as last resort and only where compatible with suitable principles."¹⁸²

The Department for Transport's *Manual for Streets* includes a user hierarchy:

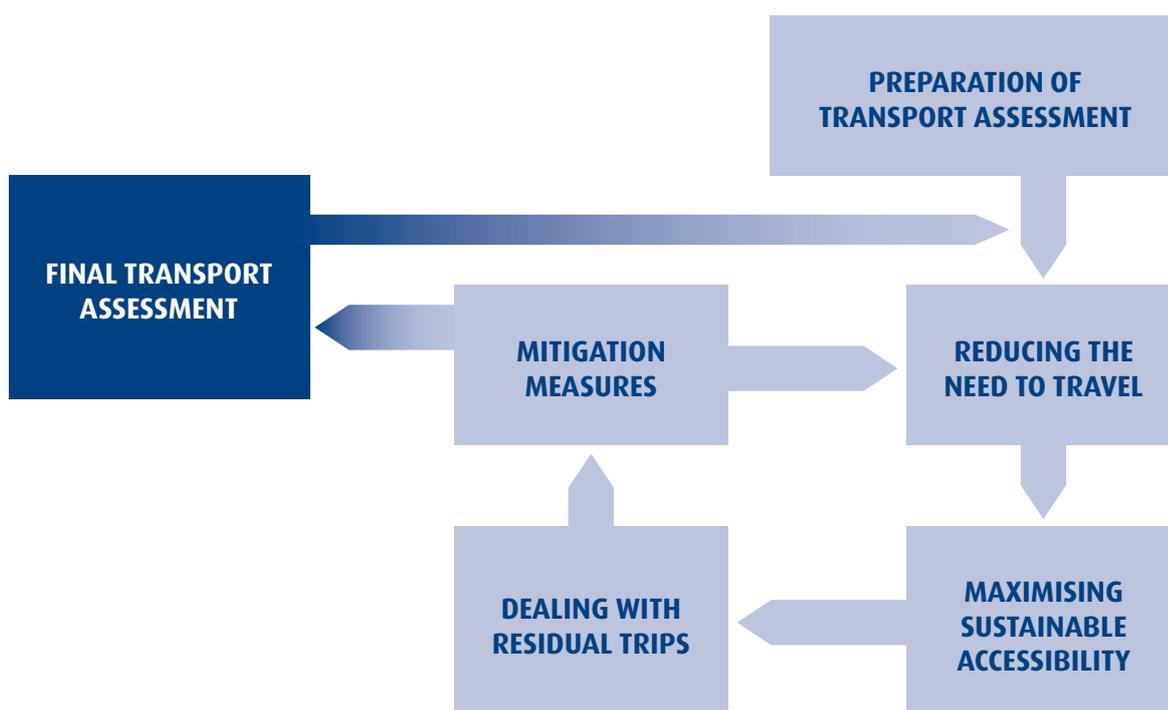
Figure 22 Manual for Streets user hierarchy



Meanwhile other government guidance has for many years recommended that the first consideration should be reducing the need to travel. For example, *Planning Policy Guidance 13* (PPG13) which was first published in 1994 states “reduce the need to travel, reduce the length of journeys and make it safer and easier for people to access jobs, shopping, leisure facilities and services by public transport, walking and cycling.”¹⁸³

This message is still being repeated in the latest documents. Defra published *Using the Planning System to reduce Transport Emissions*¹⁸⁴ in January 2010, which reiterated the importance of the Department for Transport and Department for Communities and Local Government transport assessment guidance.

Figure 23 Flow diagram illustrating an iterative approach to transport assessment



However none of these examples provide a high level prioritisation tool for transport **policy** development in the way that the 'energy hierarchy' does for energy policy. It is for this reason that we recommend the adoption of an overarching sustainable transport hierarchy.

Appendix 3

Fairness benefits of active travel

Environments that are safe and attractive for journeys made by foot or by bike are by their nature inclusive for all sections of society. They allow children to start making journeys independently at an earlier age. They are safer and better for those with disabilities, even those who are themselves unable to walk or cycle. They allow older people to continue to get about independently even if they have had to stop driving. Interestingly, the four countries which ranked highest in the UNICEF child wellbeing study¹⁸⁵ also have the highest levels of cycling in Europe (Netherlands, Sweden, Denmark and Finland).

In the Netherlands the over-65s still make 24 per cent of their trips by bicycle. In the UK, the equivalent figure is just one per cent.¹⁸⁶ Staying mobile and physically active in this way helps the Dutch to maintain good health, but even for those who have to use wheelchairs and electric mobility scooters, the network of safe, well maintained, continuous cycle routes is a valuable resource.

Cycling is actually more accessible to those with disabilities than is perhaps commonly realised. In the Netherlands it is not uncommon to see older people cycling who are unable to walk without the aid of a stick – in fact hospitals sometimes provide special brackets for it to be carried safely on a bike. Tricycles can be used by those with balance problems, debilitating diseases such as multiple sclerosis and polio, or stroke victims and those with spinal cord injuries.¹⁸⁷ Specially adapted cycles or hand-cycles can be used by those with missing or nonfunctional limbs. Even the blind and partially sighted can enjoy cycling on a tandem with a sighted partner.

The growing availability of electric bikes has further widened the number of potential cyclists to include those who did not previously have the physical strength or fitness

to cycle for certain journeys. There are two types available: so called ‘pedelecs’, which require the rider to pedal before providing electric assistance and ‘twist and go’ versions in which pedalling is optional. ‘Twist and go’ variants are particularly useful for those with limited physical strength due to conditions such as chronic fatigue syndrome, diabetes, lung and heart conditions as they allow the user to choose when and to what extent they are able to pedal. Technical developments from mountain biking are also helping to ensure that these bikes can cope with varied terrains. In fact there is even an electrically powered off-road four wheel wheelchair available now designed for para- and tetraplegics.¹⁸⁸

While not everyone with a disability will be able to cycle for everyday journeys, and some of the more specialist designs available are expensive (though clearly cheaper than cars in terms of initial outlay and running costs), many people could benefit both physically and mentally from the opportunities that these bicycles and vehicles offer.

Walking and cycling are generally the lowest cost forms of transport and are therefore the most accessible to all levels of society. In a recent survey of residents in Portsmouth, the most common reason given for cycling (76 per cent) was its low cost.¹⁸⁹ Creating environments which encourage high levels of walking and cycling, helps to remove any negative social stigma associated with these healthy and inherently safe modes of travel. They are made ‘normal’, socially acceptable, and perhaps even fashionable.

High levels of walking and cycling also helps to encourage greater social cohesion. You are much more likely to stop and talk to neighbours if you are passing on foot or by bike. This breaks down barriers of mistrust and helps create societies in which all colours, races and creeds are valued.

Appendix 4

Potential policies to improve fairness

In the following tables, selected policy options are examined for their potential to improve fairness under the headings of the four steps of the sustainable transport hierarchy.

Demand reduction for powered travel

Policy Intervention	Fairness implications
Car-free developments	Car-free developments – as long as they include access to high quality accessible public transport systems – can greatly improve inclusivity and fairness. Children can travel in the area on their own in comparative safety, the disabled and older people are better able to maintain their independence and the blind and partially-sighted would find minimal risks in traffic-free streets. Providing car-free developments also improves choice – allowing those who wish to live in an area free of cars the opportunity to do so.
Spatial planning	Spatial planning which reduces the need for powered travel, and enables increased numbers of journeys to be made by foot or by bike can promote fairness. Walking and cycling are the lowest cost and most accessible forms of transport. Creating environments which reduce the need for private vehicles reduce inequalities for those who do not drive as long as services are available locally. Good spatial planning should aim to manage both land use and transport demand to optimise spatial efficiency and minimise the external costs of transport. ¹⁹⁰
Accessibility planning	An Accessibility Plan sets out how to improve access to employment, education, health care and other local services particularly for disadvantaged groups and areas. By ensuring that services are available locally it can contribute to reducing demand for powered transport. Accessibility planning has been in place since 2003 and has the potential to significantly improve fairness. However, there is a need to review progress and to establish best practice. We endorse the Passenger Transport Executive Group's (PTEG) recommendation that the Department for Transport "provide renewed leadership and momentum for the transport and social inclusion agenda". ¹⁹¹
Universal broadband provision	While not everyone can afford a computer and broadband access, the costs are substantially lower than those for car ownership. Home broadband can allow people to work from home some or all of the time if their job allows. This can dramatically reduce commuting costs and impacts. Teleworking is not a panacea however: many manual workers or those who must otherwise attend specific work places will not have the option to telework, adding to existing inequalities. Flexible working policies can help single parents with childcare responsibilities find employment. Home shopping deliveries can reduce problems of access to good quality, healthy food. Rural communities could benefit from innovations such as 'work hubs' reducing commuter journeys. The Coalition Government's broadband strategy should ensure that all sections of society have access to these potential benefits, whilst being mindful of the need not to disadvantage those who must be physically present in the workplace.
Video-conferencing	Public provision of technologies such as telepresence could potentially enable public sector services such as health care to be delivered remotely with reduced need to travel, helping those who have limited transport options. For example, NHS Lothian is looking at the potential to put 'patient pods' in local shopping centres. These would be linked using high quality video-conferencing to specialist clinicians in hospitals potentially saving patients a 50 mile round trip. ¹⁹²

Modal shift to more sustainable and space efficient modes

Policy Intervention	Fairness implications
Smarter Choices	<p><i>Smarter Choices</i> describes a range of policy options designed to reduce reliance on private vehicle use.¹⁹³ This will reduce the negative impacts of car use and support higher quality public transport, walking and cycling provision. As this report has shown this is likely to contribute to a fairer society.</p> <p>The three UK sustainable travel towns, Peterborough, Worcester and Darlington demonstrated the benefits of <i>Smarter Choices</i> interventions: A reduction in car trips of nine per cent (there was an estimated fall of about 1 per cent in other medium-sized towns over the same period); bus trips per person increased by 10-22 per cent (there was an estimated national fall of 0.5 per cent in medium sized towns); cycle trips per person increased by 26-30 per cent (against other comparable towns seeing estimated cycling trips fall by 9 per cent); walking trips per person increased by 10-13 per cent (there was an estimated national decline in trips in similar towns of nine per cent).¹⁹⁴ Sustrans' TravelSmart programmes have also been shown to deliver significant shifts away from car dependency: reduction in car driver trips of 11 per cent, 14 per cent increase in walking, 38 per cent increase in cycling, 20 per cent increase in public transport use.¹⁹⁵</p>
Cycle training	<p>There is concern that there is insufficient knowledge regarding safe cycling techniques, especially in today's traffic conditions. It is essential that children in particular have access to training to ensure that they learn how to cycle safely in modern traffic conditions. Habits formed in childhood will stay with them for the rest of their lives and can be passed on in time to their own children. Cycle training has been shown to be a highly cost-effective intervention, with average benefit cost ratios of 7:1.</p>
Walking and cycling routes	<p>Providing high quality and attractive routes which feel safe can significantly increase levels of walking and cycling. Sustrans state that "two-thirds of users in areas of deprivation say that the National Cycle Network (NCN) helped them to increase their levels of regular physical activity".¹⁹⁶</p>
Cycle storage	<p>Cycle storage is often a particular problem for those living in flats and small terraced houses. Many low income groups come into this category. A planning requirement that every dwelling no matter how small should include convenient secure storage space for at least one bicycle would solve this. This was one of the key planning criteria included in the advice for eco-town developments.¹⁹⁷</p>
Support for electric bikes	<p>Electrically assisted bikes have strong potential to increase levels of cycling. Electric bikes can help older people or those who are less fit or have health problems to see cycling as a viable alternative to car use. In fact the main reason given for purchasing an electric bike in one survey was 'health problems/getting old'.¹⁹⁸ Although they are expensive to buy in comparison to conventional bikes, electric bikes are a more affordable option than car use. The Government could examine the case for providing incentives to encourage sales of electric bikes.</p>
Filtered permeability	<p>A successful way of encouraging greater levels of walking, cycling and public transport use is to make it quicker and more convenient than using a car. This can be done in a variety of ways: ensuring that walking and cycling routes are shorter and more direct (using linking footpaths and/or 'cycle gaps') while routes accessible by car are more circuitous; using 'bus gates' to ensure certain roads are not accessible to private vehicles while remaining available and uncongested for public transport; providing pedestrian-only zones etc. Increasing walking and cycling will promote fairness since these are the lowest cost and most accessible forms of transport. Providing more reliable public transport encourages greater use.</p>

Policy Intervention	Fairness implications
<p>Area-wide 20mph speed limits</p>	<p>Transport for London's <i>Braking Point</i> report found 20mph zones have achieved overall casualty reductions of 42 per cent and a reduction in children's deaths and serious injuries of 50 per cent.¹⁹⁹ The same report stated "they have directly reduced the disparities between the least and most deprived areas in terms of road casualties by 15 per cent". Creating a built-up environment in which parents feel it is safe to allow children to travel independently is crucial to children's development and wellbeing. It enables them to learn to take responsibility and improves their ability to access play areas and green space.</p>
<p>Reducing speed limits</p>	<p>Reducing speed limits on other roads, particularly some rural roads has the potential to significantly reduce both the actual danger and the perceived threat from traffic. This can help reduce the disproportionate numbers of casualties on rural roads and encourage increased levels of walking and cycling.</p>
<p>Mixed priority routes and 'shared space'</p>	<p>Department for Transport report on mixed priority routes found 24-60 per cent casualty reductions; noise and air quality improvements; increased levels of walking and cycling; and children and mobility impaired users reporting greater confidence in the new surroundings. Interestingly the report also found that "improvements in the quality of streetscape have led to a reduction in vacant premises and a more vibrant local economy".²⁰⁰ <i>The Manual for Streets 2</i> highlights that shared space can be used to improve the built environment, give people freedom of movement, improve the ambience of places, enhance social capital, enhance the economic vitality of places and improve safety. The coalition government is also encouraging local authorities to reduce street clutter.</p> <p>A particular issue appears to be the need to ensure that all vulnerable road users and minority groups are engaged in the design process at an earlier stage when streets are redesigned. Concerns about shared space have been raised by blind and partially sighted groups as it tends to remove some of the navigational features they rely upon such as raised kerbs. The report <i>Sight Line</i>²⁰¹ published by CABI aims to address these issues and makes a number of recommendations to improve the legibility of streets and shared spaces for low vision users. Thorough and early engagement with all users of a public space is essential prior to any redesign.</p> <p>Shared space is a valuable tool which contributes towards a wider need to rebalance transport infrastructure in built-up areas in favour of pedestrians and cyclists and improve the quality of life for everyone. As the Department for Transport report concludes, "Shared space schemes need to be understood as tactics designed to improve quality of life, visual amenity, local economic performance and environmental quality."²⁰²</p>

Efficiency Improvements

Policy Intervention	Fairness implications
Smart Cards/ Integrated ticketing	Initiatives such as integrated ticketing (where one ticket can cover more than one transport mode) and smart cards make public transport easier and more convenient to use, helping to further promote behaviour change programmes. Smart card technology will also allow much more accurate understanding of travel patterns allowing public transport operators to provide services better tailored to the needs of customers. The Commission for Integrated Transport's report <i>Transport Challenges and Opportunities – Getting more from less</i> ²⁰³ highlights that smart card technology that can be used on any public transport could then be used to deliver a more efficient concessionary fares scheme.
Eco-driving	Encouraging widespread adoption of eco-driving techniques is a cost effective way of reducing the negative impacts of motoring which, as this report has shown, particularly impact low income and disadvantaged social groups. Encouraging smoother, slower driving can result in around 8 per cent reductions in fuel consumption and carbon emissions. ²⁰⁴ Lower engine speeds can reduce noise pollution levels by up to 32 times and eco-driving can also improve road safety and reduce the number of collisions by encouraging slower speeds and improved anticipation. ²⁰⁵
Road pricing	In the longer term, road pricing is likely to be necessary to tackle congestion problems, to compensate for reducing fuel duty revenues as vehicle efficiency improves and to create a fairer way of charging motorists than the current combination of fuel duty and vehicle excise duty. The primary reason given for the planned introduction of road pricing in the Netherlands is to improve equity and fairness by creating a stronger link between the costs paid by road users and problems such as reducing congestion and improving accessibility. Moving to road pricing policies may help achieve greater equality by utilising charging which is proportional to the environmental impact of the vehicle used as well as the demand for the road used. Thus lower income motorists using fuel efficient vehicles on uncongested rural routes will pay substantially less than those using high fuel consumption vehicles on congested routes. To gain public acceptance it is generally agreed that the introduction of road pricing would have to be made revenue neutral – the charges replacing fuel duty and annual vehicle excise duty payments. Interestingly the Dutch have stated that they expect this to lead to 57 per cent of drivers being better off. ²⁰⁶
Car sharing and car clubs	Car clubs could provide low cost access to car use for those who currently cannot afford to buy and run their own vehicle. On joining a car club members who were previously car owners reduce their annual mileage and increase their use of public transport, walking and cycling, avoiding unnecessary car journeys. Each car club vehicle has been calculated to replace more than 20 privately owned cars. ²⁰⁷ It is clear that some communities in rural areas could also benefit from car clubs.
Promotion of electric and ultra- low carbon vehicles	EU legislation on carbon dioxide emissions from new cars requires manufacturers to improve the efficiency of the vehicles they offer, using financial penalties to ensure that the targets for improvement are met. The UK Government has committed to offer £5000 subsidies to purchasers of ultra-low carbon vehicles such as full electric cars in order to try to further promote growth of this market. While it is essential to achieve reductions in carbon emissions from car use, it is questionable whether these subsidies contribute to creating a fairer society. The likely beneficiaries will be the richest sections of the population who will be able to afford the high prices of electric vehicles and will then benefit from the much lower running costs. The average income of Americans who have ordered new Nissan Leaf electric vehicles is \$125,000 (£78,500). ²⁰⁸

Capacity increases

Policy Intervention	Fairness implications
<p>Light rail/Trams</p>	<p>Trams can play a valuable role in reducing social exclusion. Modern tram systems have good accessibility for disabled people and can prove more popular than dedicated services for the disabled.²⁰⁹ They can also tackle transport problems for workless households, providing fast and reliable services to city centres or regeneration sites. The Croydon Tramlink service halved journey times between isolated housing estates and the town centre.²¹⁰ Research has shown that rail systems are preferred to bus transport by the general public as, amongst other reasons, they offer smoother, quieter, more reliable services.²¹¹ Research by PTEG also showed that trams are particularly successful at attracting motorists out of their cars, with 20 per cent of peak hour tram travellers formerly car commuters and at weekends up to half of all UK tram users previously having made the journey by car.²¹²</p> <p>However, without additional measures to 'lock-in' reductions in car use, the impact of this additional capacity could be an overall increase in travel. There are also concerns over the costs of tram schemes. For example, the current Edinburgh scheme has run significantly over budget and behind schedule.</p>
<p>High speed rail</p>	<p>The creation of a high speed rail network is being promoted as a means of achieving modal shift away from road transport.²¹³ If this results in a reduction in road transport, it may reduce the negative externalities, which this report has shown to fall disproportionately on disadvantaged groups. However, there are obviously negative externalities associated with both the building and the use of high speed lines, for example, noise, severance issues and impacts on landscape.</p> <p>There are potential fairness benefits for regional economies. It is argued that a high speed rail network would help to rebalance the UK economy and could allow existing rail lines to be dedicated to improved local rail services. However, others have suggested that rather than bolstering the economies of the Midlands and the North it will further imbalance the national economy towards London.²¹⁴ High speed rail could also divert funds away from investment in local rail services.</p> <p>As section 4.1.1 showed, those in the highest income quintile are the greatest users of rail. Despite commitments to ensure that new high speed services would not be offered at premium prices it could therefore be argued that higher income groups would stand to benefit most from large scale investment in a high speed rail network.</p> <p>Ultimately, the fairness impacts of a high speed rail network will depend on the detail of implementation plans, how it is integrated into the existing transport network and what complementary transport policies are included.</p>
<p>Road building</p>	<p>Many commentators have stated that further road building acts to increase car dependency which, as this report has shown, could lead to increasing unfairness. The options in steps one to three of the hierarchy proposed in this report are not only likely to result in fairer outcomes, but often offer better value for money.</p>

Appendix 5

Department for Transport work on social and distributional impacts

The Department for Transport has commissioned several reports investigating the treatment of social and distributional impacts (SDIs) in transport appraisal and evaluation. The term was first introduced in appraisals for the Transport Innovation Fund (TIF).²¹⁵ The initial report examining literature on this subject identified many potential areas in which SDIs can apply.²¹⁶ The final report narrowed these down to eight key ones based on the availability of evidence to assess impacts:

- 1 Reduce exposure to noise
- 2 Reduce air quality health costs
- 3 Reduce the risk of death or injury
- 4 Reduce crime
- 5 Reduce severance
- 6 Improve accessibility
- 7 Improve affordability
- 8 Improve connectivity/access to leisure (user benefits)²¹⁷

These are then assessed against specific groups of people:

- **Income groups** – most deprived to least deprived
- **User groups** – Pedestrians; cyclists and motorcyclists
- **Social groups** – Children and young people; young men; older people; carers; women; people with disabilities; black and minority ethnic

The Department for Transport have created a six-step process setting out how SDIs should be appraised as part of the NATA appraisal process which is detailed in draft web-based transport appraised guidance (WebTAG) published in January 2010.²¹⁸ This is a very positive step forward and will help to ensure that these considerations are taken into account in future major transport schemes. However, due to the nature of the NATA process which must inevitably attempt to consider and balance a range of sometimes conflicting objectives, this does not guarantee that future transport decisions will result in a fairer society, only that these aspects should now have been considered before a major transport decision is made.

Appendix 6

Limitations of current approaches to cost-benefit analysis

Cost-benefit analysis is widely used across Government and will continue to be so. However, it is important that all decision makers are aware of some of the fundamental limitations of this approach with regard to creating fair outcomes for all, particularly future generations.

The benefit to cost ratio (BCR) that the NATA process predicts for many of the most sustainable transport interventions is very high. For instance, the Department for Transport's guidance to local authorities on low carbon transport highlights three cycling schemes with BCRs of between 18.5:1 and 38.4:1.²¹⁹ So for every pound spent, up to £38 of benefits would be expected.

Sustrans quote an average BCR for traffic-free walking and cycling routes of 26:1 but note that this would increase to 40:1 if initiatives that reduce car travel were not marked

down because of loss of income to the Treasury from fuel tax.²²⁰

Initiatives such as travel plans and car sharing schemes also score highly on BCRs. The Highways Agency's travel plan for Cambridge Science Park has been calculated to have a BCR of 15:1,²²¹ while recent calculations for lift sharing schemes have shown benefit cost ratios of up to 68:1.²²² Further examples are set out below though it should be noted that calculated BCRs should always be treated with care. It is also difficult to make comparisons between them both because the methodology used to calculate BCRs is regularly updated and likely ranges will vary according to the size of the scheme. However, it is still useful to examine typical BCRs for different interventions given the size of the differences shown in the table below.

Intervention	BCR	Comment	Source
Small scale cycling schemes	38:1	Upgrading 6km existing canal tow path to improve surface and connectivity – route for commuters.	Featured in <i>Delivering Sustainable Low Carbon Travel: An Essential Guide for Local Authorities</i> www.dft.gov.uk/webtag/documents/expert/unit3.14.php#05
	22:1	Upgrades to one kilometre length of 'greenway' traffic-free route to improve surface quality and connectivity.	
	18:1	New toucan crossing point for cyclists and walkers on busy road to promote safety.	
Traffic free walking and cycling route	26:1 - 40:1	"26:1 is the average benefit to cost ratio of a traffic-free walking and cycling route, with the majority of benefit coming from improved health. This would be even higher if initiatives that reduce car travel were not marked down because of loss of income from fuel tax. With such anomalies stripped out, the benefit to cost ratios are nearer 40:1." Sustrans – <i>More Haste, Less Speed</i> (p.11).	Sustrans (2009) <i>The National Cycle Network Route User Monitoring Report – To end 2008</i>

Intervention	BCR	Comment	Source
Car share schemes	18:1 - 68:1	Varies according to number of people with access to scheme. 18:1 is for staff in a specific company, 68:1 is for a public sector scheme covering everyone in a specific area/county.	www.liftshare.com/download/Stakeholders%20newsletter%20-%20Summer%2010.pdf
Travel planning	15:1	Highways agency sponsored scheme using travel planning for Cambridge Science park.	www.dft.gov.uk/pgr/sustainable/guidelocalauth/pdf/lowcarbontravel.pdf
Cycling Infrastructure	11:1	Based on the London cycle network.	<i>An Economic Analysis of Environmental Interventions that Promote Physical Activity – York Health Economics Consortium (2007).</i> www.nice.org.uk/nicemedia/live/11679/34737/34737.pdf
Intelligent Speed Adaptation (system to control vehicle speeds)	10:1	Mandatory – default enabled but cannot be overridden.	Commission for Integrated Transport report October 2008 – based on conservative estimates of accident reductions, fuel costs and CO ₂ savings. Found insignificant benefit to noise and other pollutants. Did not consider modal shift benefits or reduced policing costs. http://cfit.independent.gov.uk/mf/reports/isa08/pdf/isa-report.pdf
	5:1	Voluntary – default enabled, but can be overridden.	
	2.4:1	Advisory – warns driver when limit exceeded.	
Car clubs	9.5:1	Report prepared by Carplus.	Carplus 2007, <i>The Car Club National Network Project Appraisal October 2007</i> , Carplus, Leeds.
Personalised Travel Planning	7.6:1	TravelSmart figures from Sustrans.	www.sustrans.org.uk/assets/files/travelmart/sus649_TravelSmart%20review_print.pdf
Cycle training	7:1	Average figures	<i>Valuing the Benefits of Cycling – Cycling England/SQW and An Economic Analysis of Environmental Interventions to Promote Physical Activity – York Health Economics (2007)</i>
Road schemes	4.7:1	Highways Agency schemes – average of 93.	<i>Eddington Review</i> evidence base, analysed by RAC Foundation: <i>Rates of Return on Public Spending on Transport</i>
	4.2:1	Local road schemes – average of 48.	

Intervention	BCR	Comment	Source
High Speed Rail	2.7:1	London to Birmingham	<i>High Speed Rail. London to the West Midlands and beyond: A report to Government by High Speed Two Limited (Chapter 4).</i>
	1.6:1	Network Rail analysis – London to Glasgow/Edinburgh with spurs to Liverpool and Birmingham.	www.networkrail.co.uk/documents/About%20us/New%20Lines%20Programme/5886_NewLineStudy_synopsis.pdf
Low carbon cars	1.2:1	EU new car CO ₂ regulation 130gCO ₂ /km target.	www.dft.gov.uk/pgr/sustainable/carbonreduction/ia.pdf
Ultra low carbon cars	0.9:1	EU new car CO ₂ regulation 95gCO ₂ /km target.	www.dft.gov.uk/pgr/sustainable/carbonreduction/ia.pdf
Biofuels	0.59:1	Renewable transport fuels obligation.	www.dft.gov.uk/pgr/sustainable/carbonreduction/ia.pdf

By comparison the high speed rail line from London to Birmingham was described by the Department for Transport as offering “high value for money... delivering more than £2 of benefits for every £1 spent”.²²³ However, this substantially lower BCR must be considered in the context of fulfilling a very different transportation need.

Note: if further changes were made to the calculations to address criticism of over valuation of small time savings, treatment of lost revenue from fuel duty and more appropriate valuation of carbon savings then the differences between these interventions may be even larger.

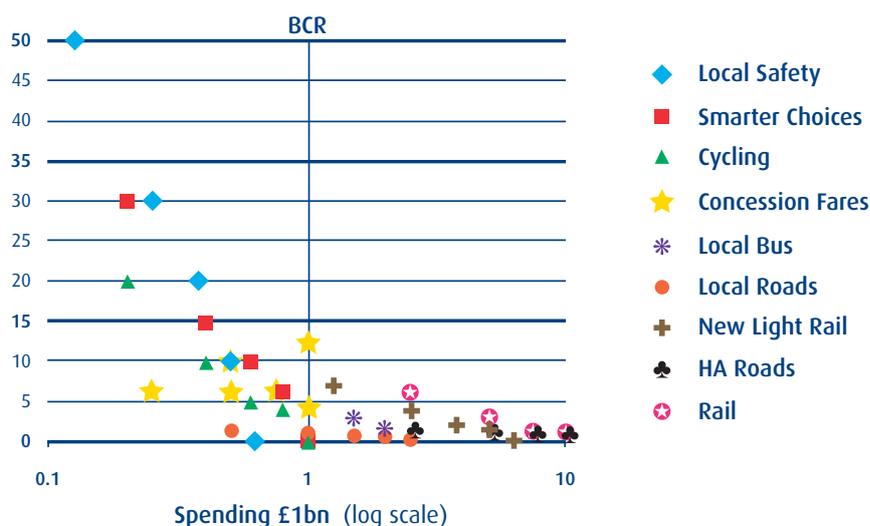
Key issues

The current methodology is unable to take into account many of the social benefits that would accrue from more sustainable transport policies. If these were included the BCR calculations would be likely to be higher. It has also been argued that more sustainable policy options would be given greater value if the WebTAG methodology used to calculate these values more accurately reflected the urgent need to reduce carbon emissions.²²⁴

Phil Goodwin, Professor of Transport Policy at the University of the West of England published research examining what transport policies offer the best returns in September 2010. It concludes that:

“By far the best value for money is currently coming from spending on ‘smarter choices’ (travel planning, car-reduction policies, telecommunications as alternatives to some travel, etc.), local safety schemes, cycling schemes, and the best of local bus and some rail quality and reliability enhancements. There are also unrealised opportunities for high benefit new light rail systems in some places.”²²⁵

Figure 24 Benefit cost ratios (BCRs) of alternative transport policy options²²⁶



The Commission for Integrated Transport’s report *Transport Challenges and Opportunities – Getting more from less* (May 2010)²²⁷ comes to similar conclusions:

“There is substantial scope to improve the value for money of transport spending by switching towards scheme types such as smarter choices and local road safety which have the highest BCRs. Larger investments to increase network capacity should not be allowed to crowd out schemes of this kind.”

“The transport carbon budget can be met at significantly lower cost to the economy by giving more emphasis to measures for travel behaviour and vans and lorries. Alternatively, greater carbon reductions can be achieved within the same cost.”

“The smarter choices programme should be expanded and accelerated, concentrating more on longer journeys and reducing the current accounting incentive towards capital schemes.”

Although it must be noted that Professor Goodwin’s work fed into the Commission’s report, these conclusions come from a wider study led by eleven commissioners.

As Appendix 4 – Potential policies to improve fairness shows, most of these recommendations come under steps one, two and three of the sustainable transport hierarchy. It would seem that a sustainable approach is also one which offers some of the best value for money.

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