Health Foundation long read (PDF version)

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How transport offers a route to better health

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The Health Foundation

Contents

Key points

- This long read examines the challenges of shifting towards a transport system that better supports health. It sets out how transport affects health, the difficulties in moving towards greater use of public transport and the effects of COVID-19 on travel patterns.
- There have been huge changes to how we travel over the last 70 years. The average annual distance people in Britain travel is now three times as far as it was in 1952, largely due to a tenfold increase in the distance travelled by car. Over the same period, the average distance travelled by bus annually has decreased from 1,900km to 600km per person.
- Quality of transport infrastructure and adequacy of transport services directly affect health – for example, by enabling active modes of travel that have health benefits or reducing road accidents and harmful emissions.
- Our analysis suggests that increasing walking and cycling in all regions of England to that of regions with the furthest distance walked or cycled could prevent 1,189 deaths per year. If exercise levels increased each week by a combined 30 minutes of cycling and 30 minutes of walking, there would be an annual reduction of around 6,100 deaths.
- A transport system that is easily accessible, reliable and affordable contributes to life satisfaction and wellbeing in multiple ways. It enables access to work, friends and family, as well as health-supporting facilities such as schools, colleges, parks, libraries and health care centres.
- Research shows that people who rate public transport as 'good' are close to three times more likely than those who rate it as 'poor' to be able to access public services such as health care, food shops or education. They are also slightly less likely to report feeling under strain, being dissatisfied with life or experiencing mental health problems.
- Cars offer great convenience and mobility but can also reduce the mobility of others – by marginalising some road users and discouraging walking and/or cycling because of the way the built environment is designed to favour cars. The right planning approach can encourage a shift towards a wider range of transport options that can help support a healthier and more environmentally sustainable transport system.
- The investment required to support the UK's recovery from the COVID-19 pandemic presents an opportunity to reshape our transport infrastructure and 'level up' access. It is essential that the government embeds these aims in new infrastructure projects, to increase safe cycling and walking facilities and to improve the availability, reliability and affordability of public transport services.

1. Introduction

A good transport system is essential for a healthy society. The impact of air pollution on health is well-known, but transport affects the health of people across society, in multiple ways. Investing in transport is one way we can help address widening health inequalities and regional disparities in public health.

The quality of the transport infrastructure and the adequacy of transport services directly affect health by, for example, enabling active modes of travel (such as walking and cycling) that have health benefits or reducing road accidents and harmful emissions. But wider, indirect impacts on health include enabling people to get to work, school, hospital and fresh food shops, as well as social events and leisure activities – aspects of life that are important for good physical and mental health.

The growth in car ownership has revolutionised people's lives in the UK – providing comfort and increasing the geographical scope of employment and social interactions. But these benefits have not been shared equally across society, with access especially low among young adults and low-income families. Car-centric policies can lead to underinvestment in other forms of transport and reduced options for people without a car.

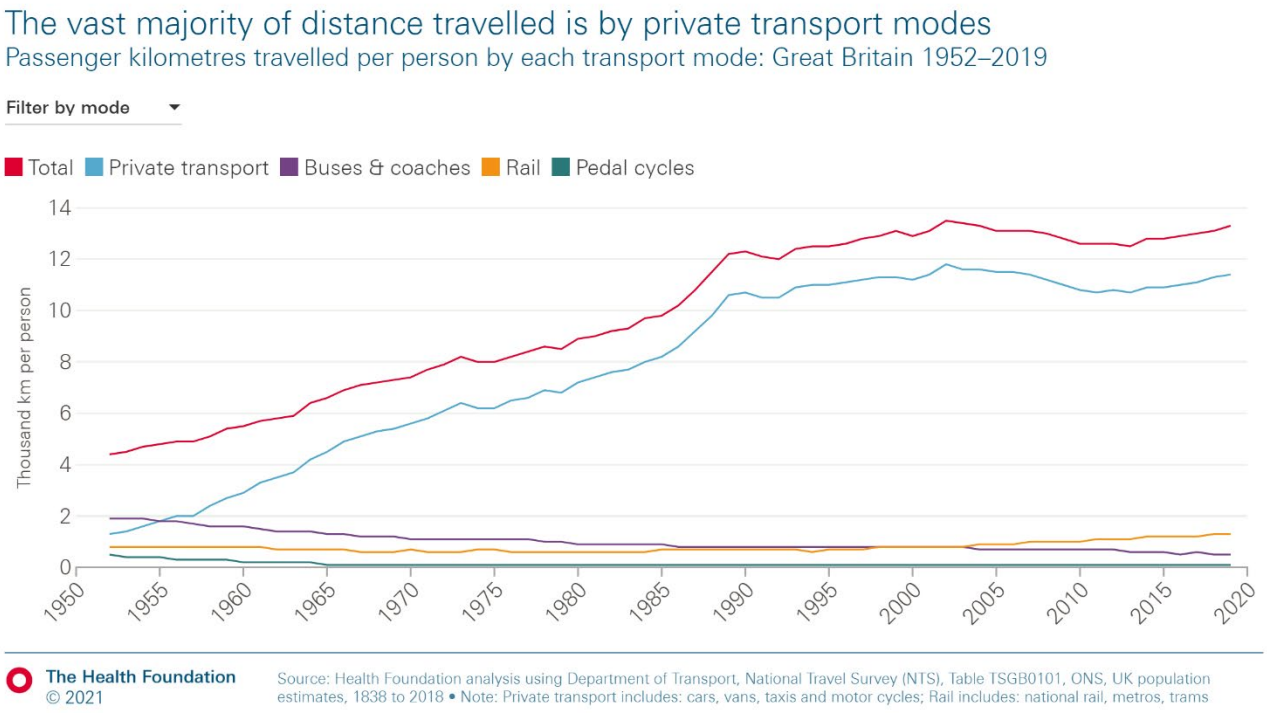
This long read examines the challenges of shifting towards a transport system that better supports health. It sets out:

- how transport affects health
- the consequences of a car-dependent transport system
- the difficulties in shifting towards greater use of public transport
- an overview of transport policy and the effects of COVID-19 on travel patterns.

2. Context

The modes of transport that people use have changed significantly during the last 70 years. In 2019, the average annual distance people in Britain travelled was three times as high as it was in 1952 (Figure 1). This is predominantly due to the tenfold increase in distance travelled using private transport by road – mostly by car – reaching 11,000 km per person in 2019. Over the same 67-year period, the average distance travelled by bus has decreased from 1,900km to 600km per person. Rail travel increased from 800km per person in 1952 to 1,300 km per person in 2019.

Figure 1



The increase in driving is caused not only by a desire for convenience, but because cars play an increasingly important role in meeting a perceived minimum standard of life. For some, driving is not a choice but a reflection of deteriorating bus services and rising costs, as well as the need to travel further to find suitable work. Some struggle with the cost of driving but have no alternative transport options, resulting in lower quality of life and financial hardship.

Meanwhile, for people unable to drive, public transport policies can make the difference between social participation and exclusion. This is increasingly important today, when transport is one of the biggest components of household spend and public transport fares have increased at much faster rates than the cost of motoring and the general cost of living.

In a 2019 survey, more than 70% of people polled were in favour of reducing motor vehicle use in urban areas for the sake of public health. But this view is not reflected in the behavioural reality of people in the UK.

Many people say they don't have an adequate alternative to their private vehicle. Many more who rely on public transport experience at least one problem with their work commute. This affects people's decisions on what jobs they can accept, how often they can visit friends and family, and which educational or health care facilities they can access. All of these are important factors that affect our physical and mental health, as well as our quality of life more generally.

The government has recognised the role investment in public transport can play in helping to 'level up' poorer regions as well as promoting healthier, greener environmental outcomes. Pre-pandemic announcements made in February 2020 included £5bn for improving buses and active travel outside of London over the next 5 years. Of this funding, £250m was allocated to an emergency active travel fund to help councils reconfigure road space for cyclists and pedestrians during the pandemic.

However, given historic trends in use of alternative modes of transport relative to car use, to make real progress in shifting away from cars, a concerted effort is needed to tackle long-term systemic challenges in transport policy and infrastructure.

3. How does transport affect health?

Transport affects health directly, but also indirectly – through its relationship with the wider determinants of health. This influence occurs through four main channels:

- active travel
- air and noise pollution
- road safety
- social exclusion.

Active travel

Increasing physical activity and minimising time spent sitting down helps maintain a healthy weight and reduces the risk of cardiovascular disease, type 2 diabetes, cancer, and depression. The NHS recommends that to stay physically and mentally healthy, adults should do at least 150 minutes of moderate or 75 minutes of vigorous activity per week. Walking and cycling as part of routine travel – whether for an entire journey, part of one, or to access public transport – can help meet these targets.

Box 1: Quantifying the health benefits of active travel

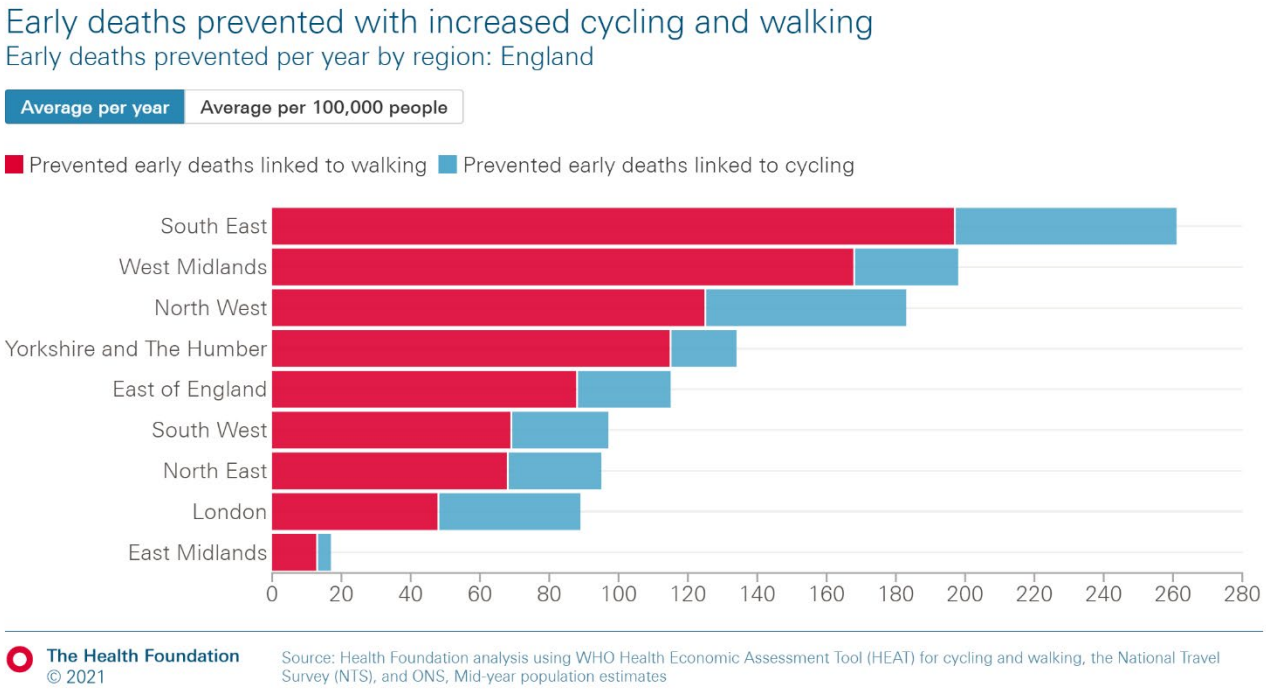
We estimated the number of prevented early deaths due to increased physical activity through regular walking and cycling trips, using the Health Economic Assessment Tool (HEAT). The tool is based on data from published meta-analysis on the relative risk of death from any cause among people who walk/cycle regularly compared to those who don't walk/cycle regularly. The average relative risk estimates derived from the studies are then applied to the level of walking and cycling specified by users.

The number of prevented early deaths estimated here is the difference between the current level of walking/cycling and a new hypothetical scenario, scaled by the population size of each region. To model the hypothetical scenario, we assume that walking and cycling rates in all regions increase to the same level as in the regions with the highest average daily miles walked/cycled per person within specific age groups (aged 20–49 years and 50–74 years for walking, aged 20–49 years and 50–64 years for cycling). The regions with the highest existing walking or cycling vary by age group.

Our analysis using the World Health Organisation's HEAT tool (see box 1 for more detail) shows that increasing the amount of walking and cycling in all regions of England to that of regions with the highest distance walked or cycled for different age groups (up to age 74) could prevent 1,189 deaths per year. The majority of this improvement (around 80%) is from those aged 50 to 74. Given initially lower levels of cycling and walking, the regions with the greatest possible improvement in the rate of

prevented deaths are the North East and the West Midlands. The greatest possible overall reduction in the number of deaths is in the South East, which is mainly due to the larger population in that region (Figure 2).

Figure 2



This scenario equates to a relatively small increase in minutes of exercise across the population as a whole. The same model estimates that if exercise levels increased each week by a combined 30 minutes of cycling for people aged 20 to 64 and 30 minutes of walking for people aged 20 to 74, there would be an annual reduction of around 6,100 deaths per year.

However, increasing the amount of active travel is not without its challenges. Using time to cycle or walk to work may displace time that was otherwise spent on other physical activity, or necessary day-to-day tasks for time-constrained families. And the option to walk or cycle to access employment or services may be restricted in rural areas, where the distances tend to be longer. These practical difficulties highlight the complex way in which transport systems affect how we live our lives.

Air and noise pollution

Road transport accounts for 35% of nitrogen oxide and 12% of particulate matter (also called particle air pollution) emitted into the air in the UK. These include PM_{10} particles (particles with a diameter of 10 micrometres or less) and $PM_{2.5}$ particles (diameter 2.5 micrometres or less), both of which are small enough to penetrate the respiratory system. Outdoor air pollution is associated with premature

mortality and increased risk of hospital admissions from respiratory disease, lung cancer and cardiovascular illness.

In the UK, long-term exposure to air pollution is attributed to between 28,000 and 36,000 deaths each year. Air pollution from road traffic tends to be worse in the most deprived areas, despite lower vehicle ownership rates in those areas, because more deprived areas tend to be more urban.

The health impacts of noise are well-documented too, with unwanted sound associated with higher levels of stress, anxiety, sleep deprivation, high blood pressure and cardiovascular disease, as well as cognitive impairment in children. The World Health Organisation has previously identified noise from transport as the second most significant environmental cause of ill health in Western Europe.

Road safety

Road collisions are clearly a major cause of preventable death, serious physical injury and psychological trauma. In 2019, road collisions in the UK caused around 153,000 casualties and killed 1,748 people. Car drivers and passengers accounted for the greatest number of casualties (43%) and fatalities (58%), which in large part reflects the fact that cars make up the majority of traffic. In comparison, there were 13 casualties in total who were bus and coach occupants in 2019.

Road safety standards have improved significantly in the past few decades, but vulnerable road users, such as pedestrians and cyclists, remain at a higher risk of serious injury or death than drivers. Collisions are also distributed unequally across society, with children and young adults in the most deprived areas experiencing a higher risk of injury and death than those in the least deprived areas.

Access to services and social participation

A transport system that is easily accessible, reliable and affordable contributes to life satisfaction and wellbeing in multiple ways. It enables access to work, friends and family, as well as health-supporting facilities, such as schools, colleges, parks, libraries and – more directly – health care centres.

The quality of a transport system captures a broad range of factors, including journey times and the availability of public transport, as well as the reliability and affordability of services.

Barriers to people using public transport vary geographically, and across demographic groups, but they all have the power to make it hard – or completely impossible – for people to access essential aspects of day-to-day life. This can contribute to stress, fatigue, low mood and social exclusion.

Research shows that people who rate public transport as ‘good’ are close to three times more likely than those who rate it as ‘poor’ to be able to access public services such as health care, food shops or

education. They are also slightly less likely to report feeling under strain, being dissatisfied with life or experiencing mental health problems.

A similar study looking at the links between employment and the quality of the transport network shows that employment rates are negatively correlated with public transport travel times, even after controlling for car availability and socioeconomic variation. This suggests that more investment to improve transport services and reduce journey times could result in better employment opportunities.

4. The consequences of a car-dependent transport system

In 2019, car, vans, motorcycles and taxis accounted for 86% of the total distance travelled in Great Britain, compared to just 30% in 1952. Private motorised vehicles offer great convenience and mobility to some users, but they also contribute to reducing the mobility of others. These unintended consequences include:

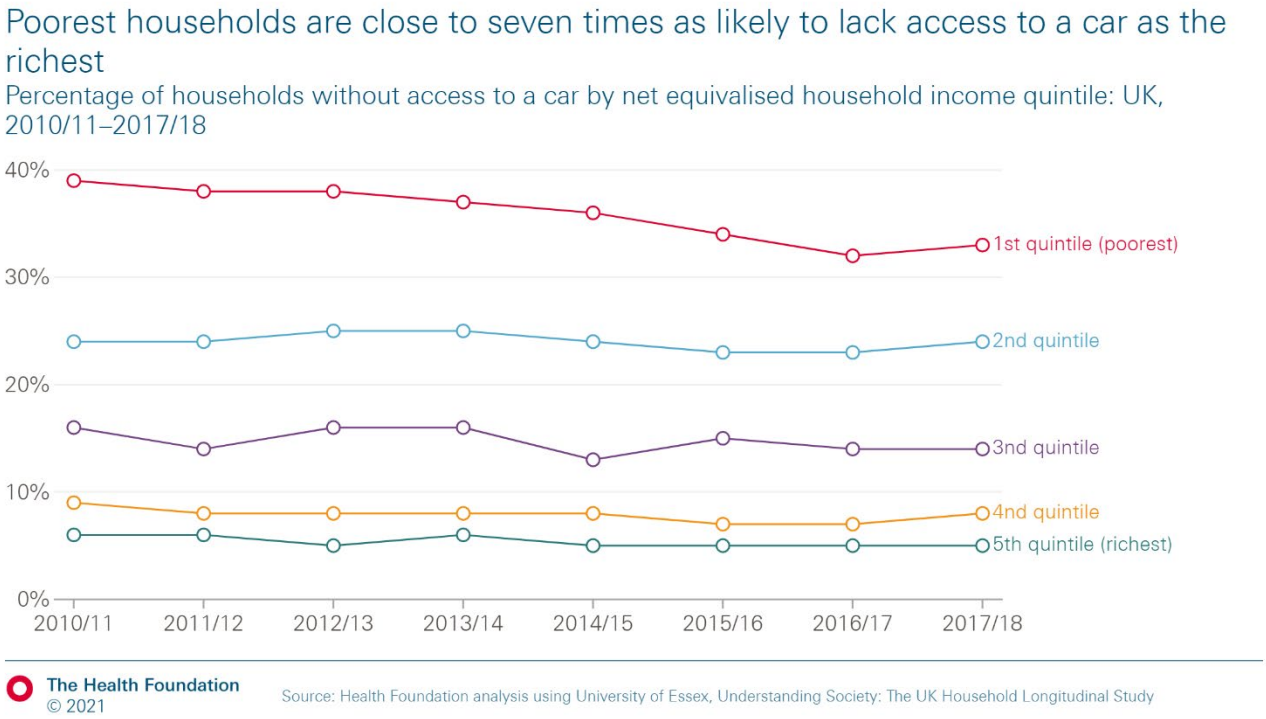
- **Marginalised road users.** Without bus and bicycle lanes, congestion marginalises other road users, making bus services less reliable and contributing to a perception of danger. Every 10% drop in bus speed caused by congestion leads to a like-for-like drop in bus passenger numbers.
- **Reduced services.** As people abandon public transport in favour of car ownership, it becomes increasingly difficult to sustain unprofitable services. This could lead to higher fares and poorer availability for those who still depend on public transport as their only way of staying connected. While local authorities can subsidise 'socially necessary' routes, declining profitability and financial pressures due to austerity can put services at risk. For example, in 2019, local authority funding for buses was £163m lower (in real terms) than in the previous decade, contributing to 3,000 fewer supported bus services in England.
- **Reshaped built environment.** Car dependence encourages the development of built environments that are predominantly adapted to the needs of drivers, leaving others behind. One study of planned housing communities in England found that most were designed around car use, with little-to-no funding for walking or cycling. It concluded that just 20 new communities would lead to 200,000 car-dependent households, as developments were built in locations far from town centres and local services.

These problems illustrate how the transport and infrastructure planning decisions we make today risk locking in higher car use for the future. The right planning approach can encourage a shift towards a wider range of transport options that can help support a healthier and more environmentally sustainable transport system. But car-centric decision making could reinforce problems that have high costs to society – both today and in the future.

Access to cars is limited for some groups in society

Our analysis shows that in 2017/18, around 33% of households in the lowest income quintile did not have access to a car, compared to just 5% of households in the highest income quintile (Figure 3). Providing high quality public transport is important – especially for low income individuals and other population groups less likely to have access to a car, such as young adults, members of black and minority ethnic groups, and people with no qualifications.

Figure 3



If adequate public transport is not provided, this could widen social and economic inequality by limiting people's opportunity to find employment and socialise with friends, as well as accessing public services (as discussed above). People in the most deprived areas are also at risk of health inequality caused by other transport-related problems, including higher exposure to air and noise pollution and more road collisions.

Poor transport can limit people's opportunities to find employment and earn a stable income needed to support a healthy life. It can restrict access to high quality jobs and increase the risk of remaining unemployed for longer. And for those people who have insecure work with irregular hours, or low wages which do not justify the cost of commuting, it could also influence whether people stay employed or not.

Difficulties in shifting towards greater use of public transport

Our analysis shows that in 2018, around 18% of unemployed people and 6% of employed people in England either turned down a job or decided not to apply for a job due to problems with transport (Figure 4). For most of them, job location and unreliable public transport were the two most important factors. These pre-existing problems may exacerbate new difficulties in finding work, given how the severity of the current economic crisis differs between local areas and industrial sectors, as well as the need to socially distance on public transport.

Figure 4

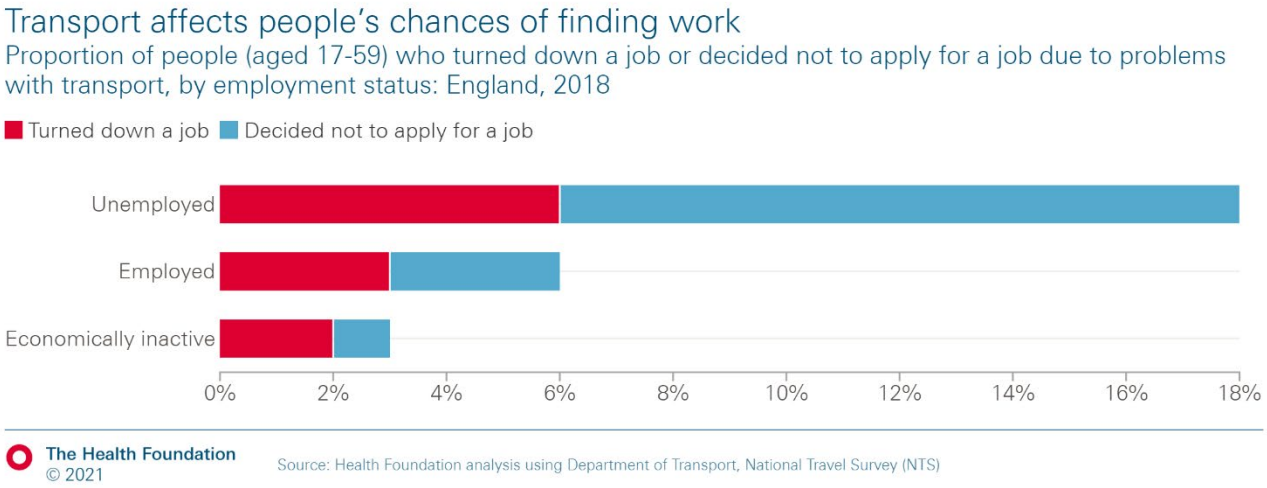


Figure 5 shows that in most regions of England, 50–60% of people using private vehicles to commute believe it would be either 'quite' or 'very' difficult to switch to an alternative mode of transport. The one exception is London where only 34% of adults reported this. This conclusion is broadly consistent with other studies – for example, in 2019 more than half (57%) of drivers reported that they would use their cars less if public transport was improved.

Figure 5

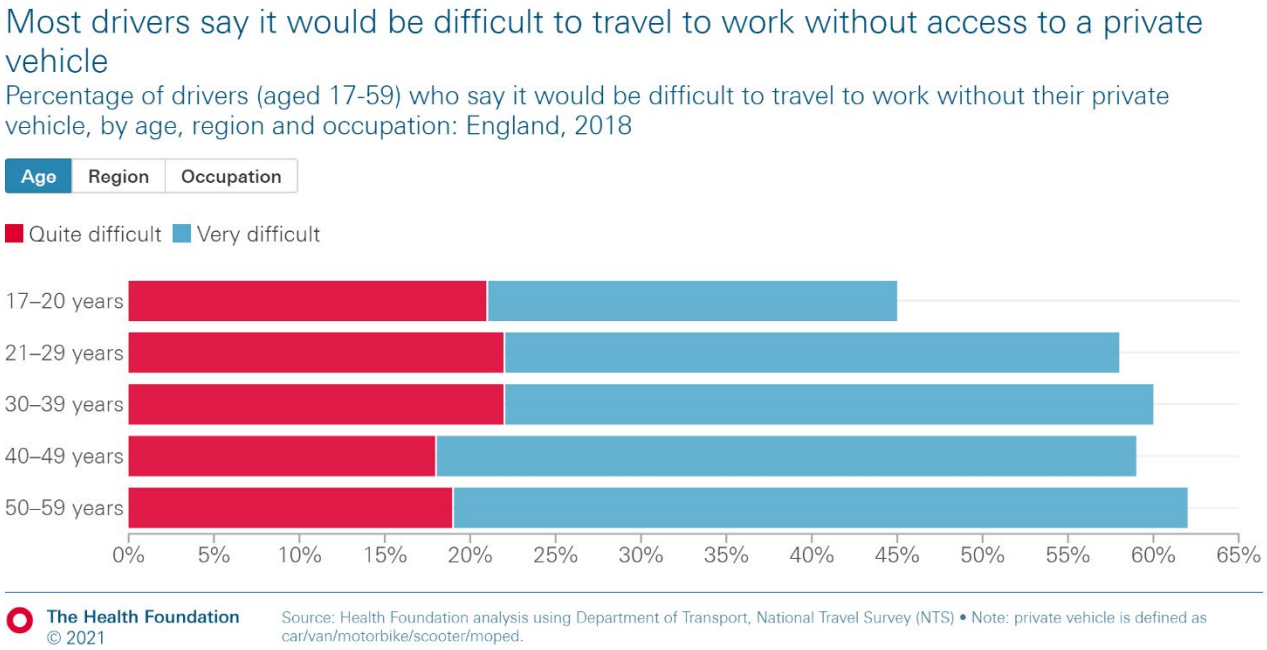
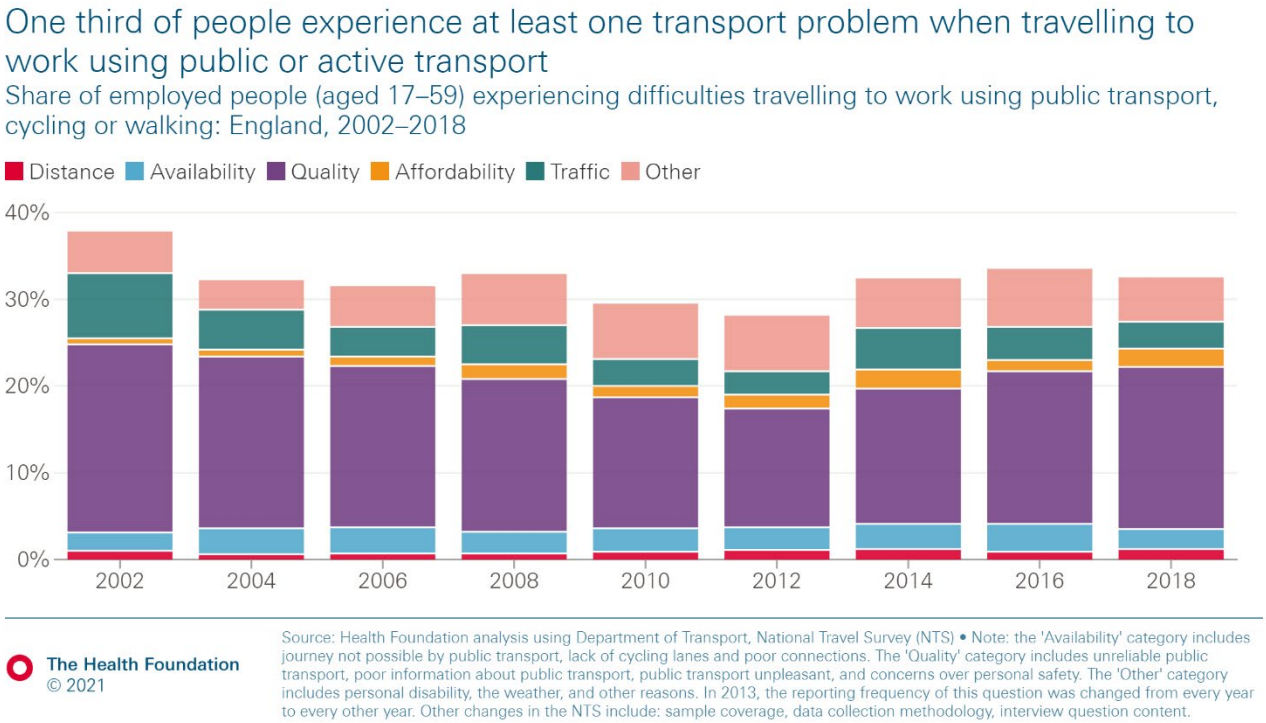


Figure 6 looks at the transport difficulties experienced by people aged 17–59 in England who commute by public transport, cycling or walking. In 2018, around 33% experienced at least one difficulty. Of these, the most reported issue was transport quality (19% of commuters). Although varying a little over time, the extent to which people report difficulties with public or active transport has remained similar over time.

These problems may put people off using public transport in the first place. They can also have an impact on wellbeing and health because such difficulties with commuting can cause stress and anxiety.

Figure 6



The transport system affects health for different groups in different ways, meaning that different policy solutions are needed. As Figure 6 shows, quality is a problem for those already reliant on public or active transport. For lower income households, affordability and pollution pose particular issues.

To provide greater historic context, and an indication of future direction, the next section looks at changes in transport policy, before considering the impact of the COVID-19 pandemic on transport.

5. Transport policy

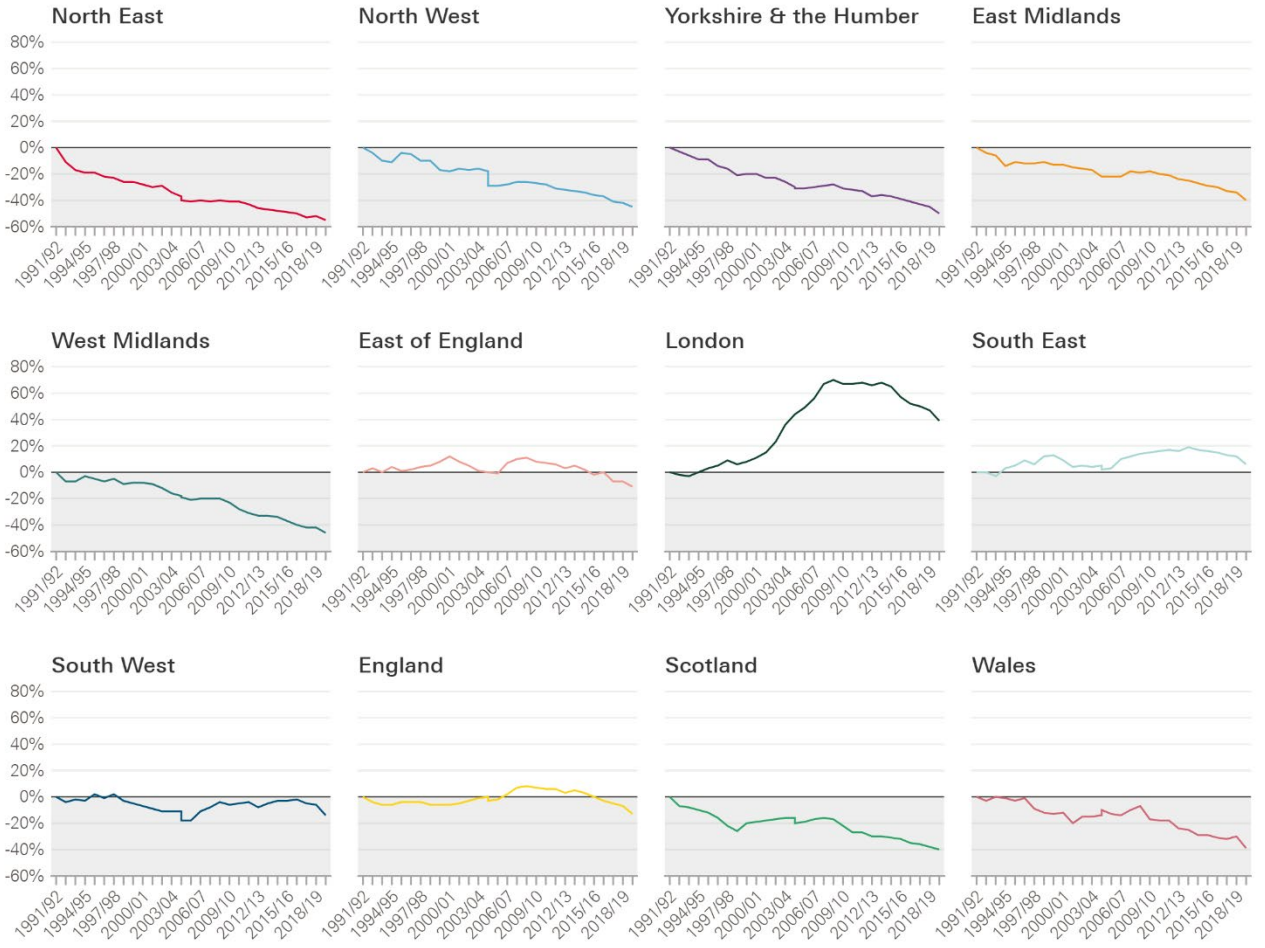
Bus use

In most parts of England, bus usage has been on a long-term decline for the past seven decades. Since the 1980s, bus passenger journeys have declined in most UK regions (with London being the key exception, where such journeys have increased). Figure 7 highlights this trend, showing the change in bus journeys per head of population for UK regions since 1991/92.

Figure 7

Bus use has fallen across most regions in the last three decades, with London the main exception

Index of passenger journeys on local bus services per head of the population by region: Great Britain, 1991/92–2019/20 (1991/92=100)



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Source: Health Foundation analysis using Department of Transport data, BUS0108_per_head

In part these trends reflect increased car use, but changes to bus policy also plays a role. The rise of bus use in London has been linked to policies introduced by Transport for London and the governance arrangements introduced at the turn of the century which have (for instance) allowed a standardised fare structure to be maintained, as well as economic and population growth and service quality.

Government funding is also important. By 2018/19, net support paid by local and central government for local bus services in London had more than tripled compared to 1995/96 levels, but only remained broadly flat in other metropolitan areas and increased by far less – 80% – in non-metropolitan areas. Since 2010/11, total net support had fallen by around 30% across all three types of area. With many bus routes run for a profit, reduced funding and usage can lead to a cycle of higher prices, further falls in usage and eventual closure of routes.

More recently, the Bus Service Act (2017) allowed metropolitan mayors to use franchising agreements in the same manner as Transport for London. In February 2020, the government launched a new 5-year plan with funding worth £3bn, to deliver more frequent bus services, affordable fares, bus priority measures and 4,000 zero-emission buses outside of London.

Rail network

As road transport increased from the 1950s, rail passenger numbers started to dwindle, and together with rising labour costs and frozen rail fares, these changes contributed to mounting financial losses for operators. Concerns about the level of subsidies needed to keep the network alive led to the Beeching report (1963), which recommended the closure of unprofitable stations. By the 1970s, the number of rail stations was reduced by almost two-thirds, but losses continued to accumulate.

British Rail was privatised in between 1994 and 1997: the track and infrastructure moved to Railtrack (now Network Rail), while service operations were franchised to private companies. Rail passenger numbers have increased significantly since then, in part due to more people commuting and travelling between major cities for work.

In more recent years there has been a focus on delivering large rail projects, such as HS2 and Crossrail, though both have had lengthy development periods, and the Great North Rail Project, which aims to improve rail across the north of England. There is also ongoing spend (£35bn between 2019 and 2024) to maintain the existing ageing rail infrastructure network.

Since the COVID-19 pandemic began, revenues have fallen due to much lower passenger numbers. As a result, the government abolished rail franchises in favour of emergency contracts and provided additional funding to train operators. The government have since announced above inflation rail fare rises, justifying these by the increased subsidy during the pandemic.

Walking and cycling

At the beginning of the post-war period, safety concerns discouraged policymakers from promoting cycling. The ever-rising demand for road space also meant that policies generally favoured the provision of infrastructure for driving. The early 1990s marked a shift in public attitudes, from focusing on the risks of collisions to acknowledging the physical activity and environmental benefits of active travel. These changes in public perception encouraged the government to aim to increase cycling rates.

Initiatives have included Cycle to Work schemes (a tax-free benefit, allowing employees to pay for commuter bikes in instalments via salary sacrifice) and the National Cycle Network, which provided 2,500 miles of cycling and walking routes in the 1990s. Despite these efforts, cycling has remained at around 0.5%–1% of total distance travelled since the 1970s.

In 2017, the government outlined an ambitious goal to double cycling rates and increase walking activity by 2025. Since then, around £1.2bn has been invested in English cities (not including London) to fund local infrastructure improvements, behaviour change incentives, safety measures and partnership building programmes. More recently, in February 2020, the government announced that a further £2bn will be invested over the next 5 years to overhaul bus and cycle links for every region outside London.

Green transport

The link between health and air pollution from transport was scientifically established in the 1950s, but widespread awareness was not seen until the 1970s. Concerns about air pollution from vehicles has since led to stricter emission regulations, including higher rates of road tax for more polluting vehicles. Over time, as newer vehicles with higher standards replace older ones, emissions from road transport have been trending downwards.

Congestion charging has been in place in one form or another in London since 2003, with the latest development the introduction of the Ultra Low Emission Zone (which requires a further daily charge for the most polluting vehicles). The creation of Clean Air Zones was announced in 2015 to effectively extend such charging outside of London. These are expected to be launched in Bath and Birmingham later this year.

In November 2020 the government announced that new petrol and diesel car and van sales would be banned by 2030. Around £1.9bn will be invested in electric vehicle charging infrastructure and consumer incentives to support drivers to make the transition. These plans are a key part of government plans to reach net zero emissions by 2050.

6. What has the pandemic meant for transport?

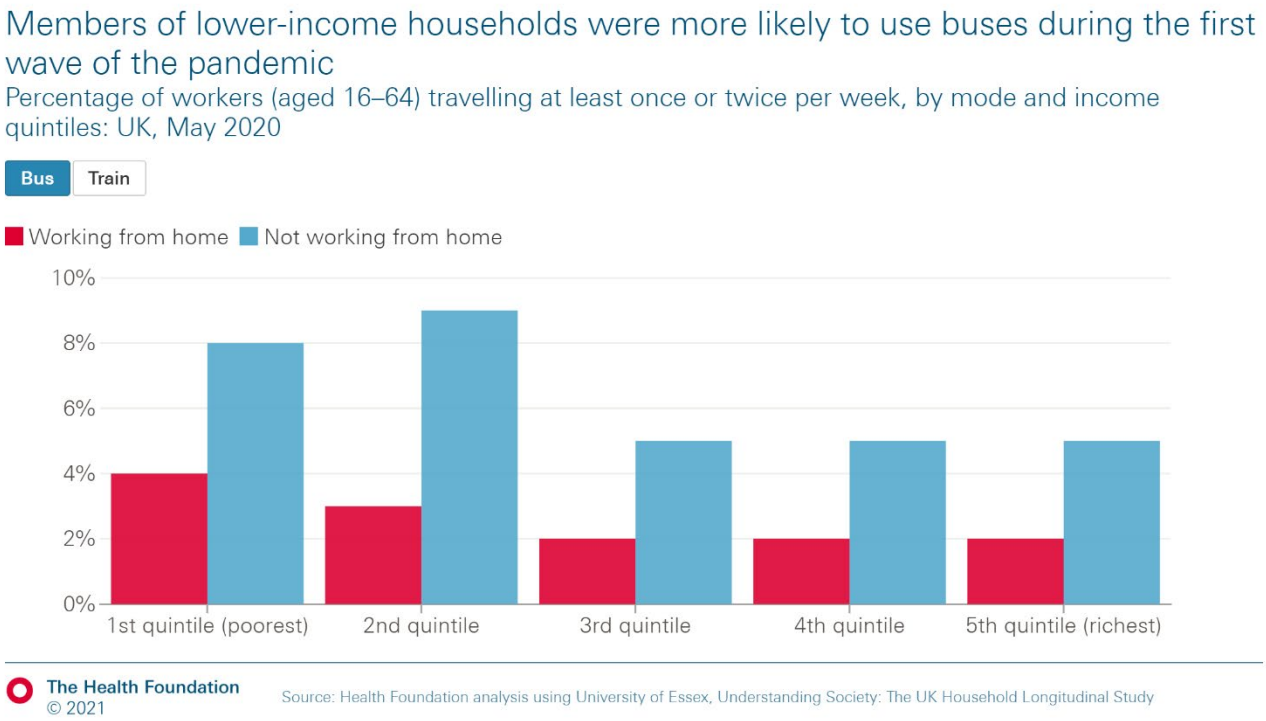
The coronavirus pandemic has inevitably had a disruptive impact on travel patterns. During the first lockdown in April 2020, car use collapsed to a third of pre-pandemic levels and public transport use fell even more sharply. Unsurprisingly, car traffic normalised more quickly than public transport use during the summer months. While restrictions were in place, there was a clear rise in walking and cycling activity.

In January 2021, during the most recent lockdown, transport use has also been low relative to the pre-pandemic period in January 2020, although it is higher than in the first lockdown because restrictions in some sectors are less stringent. Social distancing measures, perception of danger and restrictions on travelling to work are likely to reduce public transport use while measures remain in place.

The social distancing measures disproportionately disadvantage people who rely on public transport as their only means of commuting – and for whom working from home is not feasible. While many people with high incomes depend on public transport for commuting, the jobs available to them are more likely to enable homeworking than the roles of lower earners. Analysis of the UK Household Longitudinal Study shows that 69% of adults in the top income quintile said that they worked from home at least some of the time in June 2020, compared with only 37% of those in the bottom income quintile.

Figure 8 shows how public transport use varied during the first wave of the pandemic across different household income bands, depending on whether people were working from home at least some of the time or not at all. It highlights that members of lower income households were more likely to use buses. Among households with the lowest 40% of incomes, the share of people using buses at least once or twice per week and never working from home was 8–9%, compared to 5% in higher income bands.

Figure 8


Members of lower-income households were more likely to use buses during the first wave of the pandemic
Percentage of workers (aged 16–64) travelling at least once or twice per week, by mode and income quintiles: UK, May 2020
Bus
Train
Working from home
Not working from home
10%
8%
6%
4%
2%
0%
1st quintile (poorest)
2nd quintile
3rd quintile
4th quintile
5th quintile (richest)
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Source: Health Foundation analysis using University of Essex, Understanding Society: The UK Household Longitudinal Study

7. New opportunities

Pandemic restrictions have led to significant shifts in transport use. The reduction in car dependency and increases in cycling and walking have led to greener and healthier travel. Restrictions on public transport have (necessarily) been a step backwards. However, the coming recovery phase for the UK represents a clear opportunity for transport to build back better – and build back fairer.

Even before restrictions altered travel patterns, there were clear indications of greater public support for progress on transport that better supports health. More environmentally friendly modes of transport, safe spaces for more active modes of transport and better-quality public transport were all in demand before the pandemic, and must remain a high priority now.

Ensuring that people – particularly those from more deprived areas, or sectors hit hardest by COVID-19 restrictions – are connected to jobs can help economic recovery and support the 'levelling up' of economic outcomes. It can also aid social recovery by preventing social isolation and enabling people to access services and participate in social activities. This is why, when assessing new policy plans, their value for wellbeing and health must be considered. New initiatives should not be prioritised for their economic benefits alone.

The government have already announced plans for increased funding for buses and active transport over the next 5 years, but will need to go further with greater investment over a longer time period to enable the UK to significantly shift away from car dependence. While the coming fiscal climate is likely to be tough, the (currently) low cost of borrowing should be taken as an opportunity for greater capital investment.

Increased investment in our transport infrastructure now and in the next decade can have long-term benefits – from the health gains of lower pollution levels through to access to better jobs for young people who are particularly likely to experience a difficult time in the labour market in the next few years. It is crucial to ensure that transport considerations are factored into other initiatives which are already underway, such as the UK Shared Prosperity Fund, the Towns Fund and new house building projects. Committing to a programme of long-term improvements will also be key.

8. Conclusion

Transport patterns have changed dramatically over the past 70 years. Today's two-pronged need – for a recovery plan and for an environmentally sustainable economy – presents an important opportunity for the government to invest in a greener, higher quality, more active transport system that enables healthier lives for all.

A commitment of this nature could underpin a range of existing policy drives that extend beyond direct commitments to improve health and reduce air pollution, supporting the recovery efforts, and levelling up the economy.

To do this effectively, it will be essential that the government incorporates the following priorities into its planning:

- Greater coordination of new infrastructure projects with transport policies, to reduce car dependency and improve community connectedness.
- Increased safe cycling and walking facilities (such as segregated cycle lanes and secure bicycle parking facilities).
- Supporting public transport reliability by introducing traffic management measures such as priority bus routes.
- Increasing the availability, reliability and affordability of public transport services to improve wellbeing and shift travel behaviour away from cars.

Disruptions of the magnitude seen in 2020 and into 2021 have the power to trigger permanent shifts in behaviour towards more environmentally sustainable transport modes. However, concerted political will is required to enable long-term change.

Supporting information

About the author

- Nadya Mihaylova worked as an Analyst in the Healthy Lives team at the Health Foundation.

This long read was published originally on 25 February 2021 at the following address:
www.health.org.uk/publications/long-reads/how-transport-offers-a-route-to-better-health