Transport use, health and health inequalities: The impact of measures to reduce the spread of COVID-19

A rapid review of evidence in support of a health inequalities impact assessment

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Executive summary

Introduction

This paper has been produced by the multi-agency Social and Systems Recovery (SSR) Transport Partnership group. This group was established by Public Health Scotland (PHS) to consider the impact of COVID-19 on how people move around and the implications for health and health inequalities.

This paper considers how transport use has changed between the implementation of lockdown by the Scottish Government in response to the COVID-19 pandemic on 23 March 2020 and 6 September 2020 when Scotland was in phase 3 of easing of restrictions. It discusses the potential implications of changing patterns of transport use for health and health inequalities, and makes recommendations for action to support future decision-making.

Methods

A health inequalities impact assessment (HIIA) scoping exercise was undertaken between April and May 2020 to consider the impact of measures to reduce the transmission of coronavirus on patterns of transport use and subsequent health and wellbeing. Transport trend data and survey findings primarily published by Transport Scotland (the national transport agency for Scotland) were used to show trends in patterns of transport use and changing attitudes to moving around between 23 March and 6 September. A rapid review of evidence about the positive and negative impacts of transport on health and health inequalities was also undertaken. The evidence was used to consider the potential implications of the changing patterns of transport use on health and health inequalities for both individual travellers and the wider community.

Results

COVID-19 has had, and will continue to have, a significant impact on the number of trips people make and their modes of travel to go to work and education, access goods and services to meet their daily needs, and connect socially. The most
significant impact has been a large and continued reduction in public transport journeys compared with the same period last year. Although car journeys also reduced initially, they rose steadily between April and August. Walking and cycling increased during lockdown and into phase 1. During phases 2 and 3 cycling journeys reduced but on the whole have been higher than during a similar period last year. Walking journeys have also reduced and have been consistently lower than during a similar period last year. However, there is evidence that suggests that during lockdown walking and cycling for recreation increased. Further analysis will indicate whether different trends for recreational and utilitarian walking and cycling have continued as restrictions have eased.

Reduced capacity and use of public transport is likely to limit the transport options and add financial strain for people without access to a car, people on low incomes, older people, disabled people, people with health problems and young people.

Alternatives to using public transport have both positive and negative effects on health and wellbeing, and health inequalities. Increased use of active travel modes would bring health benefits to individuals and communities, but an increase in car traffic would have negative effects not only for individual transport users but also for the wider society.

**Key actions**

When restrictions are further relaxed, the number of people moving will continue to increase while the requirement to maintain physical distancing will remain. More people will return to work, education and training, and will access more services in the local community. Actions to limit increases in car traffic; support walking, wheeling and cycling; and protect the long-term viability of public transport are needed to bring positive benefits for health and wellbeing, sustainability and the local economy. A number of key actions are required to support this.

- Ensure transport decision-making by transport and planning policy-makers at national and local level aligns with and supports the sustainable transport
hierarchy, as described in the National Transport Strategy 2. Prioritised actions should be those that:

- protect the long-term sustainability of public or community transport services through, for example, improving accessibility, affordability, availability and appropriateness, and ensuring greater integration of transport services and ticketing to facilitate multi-modal journeys
- limit increases in private car travel and reduce the adverse impacts of motor traffic on health through, for example, demand management systems and the use of low-emission zones
- support active travel through, for example, the provision of cycling and pedestrian infrastructure and ensuring that it links into public transport nodes and systems.

- The SSR Transport Partnership group will consider the evidence and make recommendations about policies and interventions that are effective in improving health and equality outcomes.

- Transport Scotland and local government will continue to monitor and analyse changes in transport use and provision of transport as a result of COVID-19 restrictions. Transport Scotland and local government will continue to collaborate with academia and third sector organisations to collect additional information to understand how equality groups are affected and the implications in terms of access to work, education, goods and services, and social connectedness. This involves gathering both qualitative and quantitative data. Data collected should be used to inform future decision-making about strategies to mitigate the impact of COVID-19 on the transport system and the people who use it.

- Sustrans will continue to map and evaluate local government initiatives funded, for example, through Spaces for People and Places for Everyone. The SSR Transport Partnership group will support Sustrans in considering the impact on equality groups. The findings should be used to inform future decision-making about sustainable, equitable and health-promoting transport options at a local level.
The SSR Transport Partnership group will continue to monitor the ongoing impact of COVID-19 on transport behaviour and attitudes. They will consider the implications for health and wellbeing, and health inequalities, and the action needed to address these. This will enable decision-makers to take into account the impact of COVID-19 mitigation measures on health and wellbeing, and health inequalities, when developing and implementing national and local transport and active travel policy.
Background and purpose of paper

The Social and Systems Recovery (SSR) Transport Partnership group was established in April 2020. It is hosted by Public Health Scotland (PHS) and brings together partners from national and local government, the third sector and academia who are involved in transport policy, planning and implementation. The group was tasked to consider: (a) how COVID-19 is affecting the use of transport systems; (b) the implications for population health and wellbeing; and (c) support for policy responses during the transition through and beyond COVID-19.

The group undertook a health inequalities impact assessment (HIIA) scoping exercise to consider how physical distancing and other measures to reduce the transmission of COVID-19 affected transport use and the potential impact on health and health inequalities.

This report outlines the evidence in support of the HIIA. It describes:

- the context of transport policy and health in Scotland
- why transport systems are important to health and wellbeing, and health inequalities, and what we know from the evidence about the positive and negative impacts of different transport modes on transport users and the wider community
- the emerging trends about transport use and attitudes to transport and travel during the lockdown period between 23 March and 28 May and following the easing of restrictions up to and including 6 September
- the potential impact of changing patterns of transport use on health and wellbeing beyond those associated with a reduction in the spread of COVID-19, with particular attention paid to people experiencing transport poverty or with limited transport options
- recommendations for actions to support future decision-making.

The paper focuses on the main modes of transport people use to move around the community to access work, education and training, as well as goods and services. It follows the framework of the sustainable transport hierarchy as described in the
National Transport Strategy 2 (see Figure 1 below). This includes, in priority order, walking and wheeling, cycling, public transport, shared vehicles and private car use.

Scottish Government advice to work at home where possible and the introduction of systems to reduce travel, such as the NHS remote access service, have reduced the need to travel. The impact of not travelling on health and wellbeing are acknowledged but not directly addressed in this paper. Similarly, air transport was not considered, although the importance for some island communities is acknowledged.

The focus on transport for work, education and business means less emphasis is placed on walking, wheeling and cycling for recreation. It should be noted, however, that the evidence does not always clearly differentiate between walking, wheeling and cycling as a means of accomplishing errands or getting somewhere (sometimes referred to as utilitarian) and for leisure. Where the data illustrate useful differences, these are highlighted.

**Methods**

This paper addresses three questions:

**Q1:** How do different modes of transport affect the health and wellbeing of individuals and the wider community?

**Q2:** How have transport behaviour, and attitudes to transport and travel changed since lockdown on 23 March 2020 up to 6 September 2020?

**Q3:** What are the likely implications of changing patterns of transport use since lockdown for health and wellbeing, and health inequalities, beyond those associated with the spread of coronavirus?

The extent to which transport impacts on health, and the changing patterns of transport use and attitudes to transport and travel, varies across different subpopulations was also considered.
A rapid evidence review was undertaken to address question one. A small number of recent umbrella reviews examining the links between transport and health were identified in consultation with key experts in transport and health. A rapid critical appraisal was undertaken with a focus on clarity of research questions, description of method and search strategy, evidence statements and the credibility of those undertaking the review. The evidence relating to each of the five modes of transport in the sustainable transport hierarchy was collated and inequality issues identified. The findings were reviewed by key experts working in transport and health, and additional impacts identified with supporting evidence.

While it was not possible to undertake a fully comprehensive review of the evidence in the timeframe available, the engagement of the SSR Transport Partnership group and use of umbrella reviews gives us confidence that we have a good overview of the evidence about the health benefits, harms and inequalities of each mode of transport for both the traveller and wider community. Further details of the method and sources of evidence are provided in Appendix 1 and evidence summaries are included in Appendix 2.

The second question was answered primarily using transport trend data and survey results about attitudes to transport and travel during the COVID-19 pandemic, which were published by Transport Scotland (the national transport agency for Scotland).²

Trend data on journeys by the main transport modes are published weekly. These provide a snapshot of travel across the main modes of transport. The figures are prepared by Transport Scotland statisticians and are derived from a range of sources, including the Department for Transport National Travel Survey, data published in Scottish Transport Statistics and data collected across the transport networks from a range of partners. Data sources for each mode of transport and indicative confidence in the figures are available on the Transport Scotland website. The baseline comparison has varied over time. This is due to a combination of data availability and changing the focus of the comparisons needed by Transport Scotland to provide the most relevant and useful data to inform decision-making. The baseline comparisons are outlined below.
• **Weeks 1–2 (14–26 April):** Typical travel patterns for the time of year.

• **Weeks 3–6 (27 April–24 May):** Travel during the week of 30 March–5 April.

• **Weeks 7–9 (25 May–14 June):** Pre-phase 1, 18–24 May.

• **Week 10 to date (15–21 June onwards):** Travel during the same period in 2019.

In addition, public attitudes to transport and travel are monitored through a telephone survey with a representative sample of over 16-year-olds across Scotland. The first wave of the survey took place between 5 and 13 May and subsequent waves were run approximately fortnightly. At the time of writing, seven waves of the survey had been run – the most recent survey results are from 19–25 August. The initial three waves of the survey had a sample size of 1,000 but this was reduced to 500 for subsequent waves to manage resources and ensure the longevity of the survey. Survey findings are published as percentages and show changes in attitudes to travel and transport over times.

Transport Scotland statistics included in this report are:

• published statistics on changes in journeys made by public transport (as measured by concessionary bus travel, train use and ferry use), car, and walking and cycling compared with a stated baseline

• published statistics on self-reported use of public transport, private car or van use, cycling and walking; intention to drive, walk or cycle; and attitudes to using public transport.

These findings are supplemented by analyses of daily cycling³ and pedestrian⁴ counts available from Cycling Scotland cycling counters across Scotland (trend analysis from the Glasgow Centre for Population Health (GCPH)); the findings from a YouGov survey on cycling undertaken on behalf of Cycling Scotland;⁵ and analysis of air-quality data in Scottish cities undertaken by Scottish Environment Protection Agency (SEPA).⁶

At the time of writing, no analysis of transport use or attitudes to transport and travel by subpopulation in Scotland has been identified. This is due to insufficient data to
enable robust analysis. Population subgroup analyses have, however, been carried out on some items of the Transport Focus UK weekly online survey on attitudes to transport and travel. This survey is carried out with a representative sample of 2,000 adults across the UK using Populus weekly omnibus. It includes a small Scottish sample which has ranged between 165 and 196. The first wave of the survey took place between 1 and 3 May. At the time of writing there had been 18 waves of the survey, the most recent being between 28 and 30 August. A summary of key findings, some of which include subpopulation analysis, is published weekly.

The available evidence in this report provides a good overview of patterns of transport use and attitudes towards transport and travel in Scotland since lockdown. However, the nature of the pandemic means that the data are incomplete and have some limitations. This reflects the challenges of collecting data during a period of limited social contact, competing resources and the need for rapid provision of evidence. Where possible, reports based on real-time data have been used, however, these are not always complete data sets. In addition to some of the usual limitations of survey design, such as response biases and sample sizes, some surveys have been conducted online. This means that those who do not have access to computers are excluded. In addition, there have not been sufficient data to date to allow analyses in terms of equality groups. However, Transport Scotland is currently conducting demographic, socioeconomic and regional analysis of public attitudes data gathered over multiple waves of their national survey. Further details about the evidence sources for transport behaviour and attitudes can be found in Appendix 3.

Information about transport use prior to the COVID-19 pandemic is drawn from Scottish Transport Statistics 2019, the Transport and Travel in Scotland report 2019 and the Hands Up Scotland Survey 2019. Key statistics and links to the survey findings can be found in Appendix 4.

These sources of evidence were brought together to answer question three about the potential implications of changing patterns of transport use on health and health inequalities.
Context

Transport policy in Scotland

The National Transport Strategy 2 (NTS2)\(^1\) outlines the vision for Scotland’s transport system from 2020 to 2040.

‘We will have a sustainable, inclusive, safe and accessible transport system, helping deliver a healthier, fairer and more prosperous Scotland for communities, businesses and visitors.’

It sets out four priorities to: reduce inequalities; take climate action; help deliver inclusive economic growth; and improve our health and wellbeing.

The health priority aims to develop a transport system that: is safe and secure for all; enables people to make healthy travel choices; and helps to make our communities great places to live.

The sustainable transport hierarchy (Figure 1) is fundamental to the delivery of NTS2. It prioritises transport which is least damaging to the environment and produces lower levels of greenhouse gas (GHG) emissions. It also underpins a transport system which is good for health.
The second Strategic Transport Projects Review (STPR2), the Infrastructure Commission, the Just Transition Commission and the fourth National Planning Framework (NPF4) are key opportunities to support the development of a sustainable, equitable and healthy transport system.

**Health and wellbeing, and health inequalities**

Health is a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity. Health inequalities are the unfair and avoidable differences in people’s health across social groups and between different population groups. Scotland experiences some of the greatest health inequalities in Western Europe. People in the most deprived areas spend around 23 fewer years in ‘good health’ than those in the least deprived areas. Around 25% of adults in Scotland have a long-term physical or mental health condition or illness. Scotland’s
population, like the rest of the UK, is ageing. The prevalence and incidence of most health conditions rises with increasing age.\textsuperscript{19}

While life expectancy has generally increased in Scotland since 1980, recent trends have shown a stalling in life expectancy gains in Scotland and the UK, and increasing mortality in our most deprived areas.\textsuperscript{20}

**Why is transport important for health?**

**Place and health**

Health is determined by the social, economic and physical environment we live in. Inequalities in these determinants create inequalities in health (Figure 2).

**Figure 2: Theory of causation of health inequalities\textsuperscript{21}**

The places we live in are a key part of the wider environmental influences on health and health inequalities.\textsuperscript{22,23} Transport is an integral part of place. Transport systems affect the health of the transport user and the wider community, both positively and negatively, through a wide range of pathways, as outlined below. However, these impacts vary according to mode of transport used, the quality of transport infrastructure in the local communities, the population group and the ability of people to access affordable and appropriate transport options.

An important element of creating healthy and sustainable places is to develop a transport system which:
• enables **everyone equally** to move around their local area safely to meet their needs
• encourages safe and active transport
• does not create or contribute to environments that are harmful to health.

These principles are consistent with the outcomes aligned to the ‘movement’ theme of the Place Standard.  

• It is easy to move around using good-quality, well-maintained and safe wheeling, walking and cycling routes.
• Wheeling, walking and cycling routes connect homes, destinations and public transport and are, where possible, protected and prioritised above motorised traffic and are part of a local green network.
• Everyone has access to an affordable, available, appropriate and frequent public transport service.
• Traffic and parking do not dominate or prevent other uses of space and parking is prioritised for those who do not have other options.

**Pathways from transport to health**

There are a number of pathways through which transport systems can contribute to improved health.

• Enable access to work, education and training, as well as local resources. Good-quality employment, education and training are important determinants of health, along with access to local resources.  
• Enable access to health and social care services to receive treatment and care.
• Facilitate social connectedness. Social isolation and loneliness are associated with increased risk of morbidity and mortality, including a 50% excess risk of coronary heart disease, broadly similar to the excess risk associated with work-related stress.
• Active commuting can benefit physical and mental health. Regular moderate-intensity physical activity contributes to improved physical and mental health outcomes for children and adults. For example, physical activity can reduce the risk of developing obesity, cardiovascular diseases, type 2 diabetes and mental health problems, and can improve mood.  

• Help stimulate economic growth in urban areas, particularly for small independent businesses, by increasing footfall and spending. Local inclusive economic growth can play an important role in improving health and reducing health inequalities.

Some aspects of the transport system can, however, cause harm to individual travellers but more often to the wider community, by:

• generating air pollutants which have been shown to cause cardiovascular and respiratory health problems

• generating noise pollution which can have negative impacts on physical and mental health

• contributing to injuries to transport users and pedestrians

• increasing levels of stress and contributing to/exacerbating poor mental health

• reducing levels of (perceived) personal safety

• acting as a barrier to social connectedness and contributing to community severance (i.e. when transport systems limit people’s mobility, instead of facilitating it). This has implications for social isolation, accessibility of services and community cohesion

• acting as a barrier to accessing essential services such as health and social care and accessing employment

• increasing GHG emissions which drive climate change. The impacts of current and future climate change will affect health both locally and globally.
Inequalities in transport access and impacts

Unequal access

Not everyone has equal access to transport options. Unequal provision of and access to transport means that the distribution of health benefits and harms outlined above are also unequal. This contributes to increased health inequalities.

People on low incomes, disabled people, people with chronic health problems, older people, women and those working outside normal working hours often have fewer transport options. Cost is one of the primary obstacles to use of transport and an important mechanism by which transport impacts on inequality. In Scotland, 29% of households do not have access to a car and more than 1 million people are at risk of transport poverty. The risk of transport poverty occurs when people do not have access to essential services or work due to limited affordable transport options.

As a result, many people experience fewer of the health benefits from transport systems in terms of accessibility of public transport and ownership/access to a private vehicle.

Four dimensions have been identified that support transport systems which are socially inclusive:

- **Affordability**: no one is priced out.
- **Availability**: transport is easy to reach and corresponds to patterns of social and working life.
- **Accessibility**: transport systems are designed so that everyone is able to use them.
- **Appropriateness**: transport is comfortable, safe and convenient.

Unequal impacts

There are also inequalities in terms of the health impacts of transport. People in more deprived areas and those living on lower incomes are more likely to experience environmental burdens on health, including the harmful impacts of transport. Children and adults in low-income communities are at higher risk of injury from...
collisions on the road and are at increased risk of exposure to air and noise pollution.\textsuperscript{31,34,39,40} People who are socially disadvantaged are more likely to experience the impacts of climate change, yet contribute least to the generation of GHG emissions.\textsuperscript{41}

**The health impacts across the sustainable transport hierarchy**

The pathways to health benefits, harms and inequalities associated with the different modes of transport in the sustainable transport hierarchy are outlined in Figure 3. This is based on the evidence summaries and expert opinion (summaries of the available evidence are provided in Appendix 2). Figure 3 is colour coded. Transport modes that are more sustainable and health promoting are green (walking and wheeling, cycling and public transport), while those that are less sustainable and more harmful to health are red (shared cars and taxis, and private cars). Within each mode of transport the pathways to health benefits and health harms are summarised. The information distinguishes between:

- impacts from a particular mode of transport on the individual traveller using that mode
- impacts from a particular mode of transport on the wider community (sometimes known as externalities)
- inequalities in impact either for the individual users or the wider community.

The evidence suggests that health benefits are greater in transport modes in the upper part of the sustainable transport hierarchy (walking and wheeling, cycling and public transport) and health harms are greater in the lower parts (taxis and shared vehicles, and individual vehicles). Shifting the modal share towards the upper parts of the hierarchy so that there is an increase in the proportion of people wheeling, walking, cycling and using public transport, will contribute to increased benefits and reduced risks to population health. The measures to achieve this shift will determine the extent to which shifts are equitable in terms of access and health impacts.
Achieving a sustainable transport system that enables affordable access to appropriate and available transport services for everyone and enables safe active travel for all ages can deliver these health benefits and reduce these harms. It can also contribute to improved health outcomes for all as well as reduced GHG emissions from the transport sector and improved local economic growth.
**Figure 3:** A summary of health impacts across the sustainable transport hierarchy based on evidence and expert opinion

**Health impacts of walking and wheeling**

<table>
<thead>
<tr>
<th>Individual health benefits</th>
<th>Individual health risks</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Increased levels of physical activity</td>
<td>• No increased risks to health identified</td>
</tr>
<tr>
<td>• Increased social connectedness</td>
<td></td>
</tr>
<tr>
<td>• Increased exposure to open and green space</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Community health benefits</th>
<th>Community health risks</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Improved active travel infrastructure creating opportunities for increased social connections</td>
<td>• No increased risks to health identified</td>
</tr>
<tr>
<td>• Improved active travel infrastructure creating opportunities for greater footfall and spending with positive benefits to the local economy</td>
<td></td>
</tr>
<tr>
<td>• Increasing presence of people on the streets contributing to improved perceived safety</td>
<td></td>
</tr>
</tbody>
</table>

**Associated health inequalities**

- Barriers to safe walking, especially for women
- Inequalities could arise in the wider community if pedestrian infrastructure is unavailable or unsuitable to meet the needs of everyone including disabled people and older people. This could exacerbate health inequalities
# Health impacts of cycling

## Individual health benefits
- Increased physical activity
- Increased social connectedness
- Increased exposure to open and green space

## Individual health risks
- Injury from collisions (particularly with cars)

## Community health benefits
- Improved active travel infrastructure creating opportunities for social connections
- Improved active travel infrastructure creating opportunities for greater footfall and spending with positive benefits to the local economy
- Provision of safe cycling infrastructure increasing the number of people cycling

## Community health risks
- Injury to pedestrians, though very rare

## Associated health inequalities
- Higher prevalence of cycling among higher-income groups; lower prevalence of cycling among women, older people and people from a BAME background; and accessibility barriers for disabled cyclists and wheelers
- Health inequalities could be exacerbated in the community if cycling infrastructure is not equally provided and maintained between more and less deprived areas
## Health impacts of public transport

<table>
<thead>
<tr>
<th>Individual health benefits</th>
<th>Individual health risks</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Increased social connectedness</td>
<td>• Vehicle collisions, though lower than private cars</td>
</tr>
<tr>
<td>• Increased physical activity as most public transport journeys involve some walking</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Community health benefits</th>
<th>Community health risks</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Comprehensive public transport infrastructure enables social connections and increased social capital</td>
<td>• Air and noise pollution</td>
</tr>
<tr>
<td></td>
<td>• GHG emissions</td>
</tr>
<tr>
<td></td>
<td>• Community severance</td>
</tr>
<tr>
<td></td>
<td>• Vehicle collisions</td>
</tr>
</tbody>
</table>

### Associated health inequalities

- Inequalities in access to an affordable, available, appropriate and accessible public transport system can differentially affect access to health care, education and training, employment, and goods and services, particularly for those without access to a private car, people on low income, older people and disabled people. This could exacerbate health inequalities.

- Inequalities in access to public transport across geographical areas can differentially affect access to goods and services and exacerbate health inequalities.

- People on low incomes, younger people and older people disproportionately experience risks from motor traffic, including those associated with poor air quality, injuries from road collisions, noise pollution and community severance. But overall impact of public transport is likely to be less than private vehicles.
### Health impact of car share/taxis

#### Individual health benefits
- Access to distant services where public transport is unavailable

#### Individual health risks
- Air pollutants – exposure while travelling in a polluting vehicle higher than for pedestrians and cyclists
- Vehicle collisions

#### Community health benefits
- Improved social connectedness, particularly in relation to community transport

#### Community health risks
- Air and noise pollution
- GHG emission
- Vehicle collisions
- Community severance

#### Associated health inequalities
- Taxis are shared but often expensive, which puts those on low incomes at a disadvantage.
- People on low incomes, younger people and older people disproportionately experience risks from motor traffic, including those associated with poor air quality, injuries from road collisions, noise pollution and community severance. But overall the impact of shared transport is less than private vehicles.
- Community transport is likely to increase access to health services and goods and services, and social connectedness where car use and public transport is limited, particularly important in rural areas and thus reduces inequalities.
## Health impact of cars

<table>
<thead>
<tr>
<th>Individual health benefits</th>
<th>Individual health risks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access to distant services where public transport is unavailable</td>
<td>Reduced physical activity</td>
</tr>
<tr>
<td></td>
<td>Air pollutants – exposure while travelling in a polluting vehicle is higher than for pedestrians and cyclists</td>
</tr>
<tr>
<td></td>
<td>Vehicle collisions</td>
</tr>
<tr>
<td></td>
<td>Commuter stress</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Community health benefits</th>
<th>Community health risks</th>
</tr>
</thead>
<tbody>
<tr>
<td>None identified</td>
<td>Increased air and noise pollution</td>
</tr>
<tr>
<td></td>
<td>Increased GHG emissions</td>
</tr>
<tr>
<td></td>
<td>Vehicle collisions (particularly for pedestrians and cyclists)</td>
</tr>
<tr>
<td></td>
<td>Community severance</td>
</tr>
<tr>
<td></td>
<td>Loss of public space to car infrastructure which reduces opportunities for engaging with nature, physical activity and social connectedness</td>
</tr>
<tr>
<td></td>
<td>Reduced opportunities for footfall with negative impacts on local economy</td>
</tr>
<tr>
<td></td>
<td>Reduced perceptions of safety</td>
</tr>
</tbody>
</table>

### Associated health inequalities

- Car use differentially benefits wealthier people
- Forced car ownership due to location or limited public transport can contribute to transport poverty
- People with low incomes, young people, older people and disabled people are less likely to access a car
- Poor, young and older people disproportionately experience risks from motor traffic, including those associated with poor air quality, injuries from road collisions, noise pollution and community severance
- Pedestrians and cyclists in areas of deprivation at increased risk of injury from collisions with vehicles
Emerging evidence of impact of COVID-19 on transport use and attitudes to transport and implications for health

This section describes the changing patterns of transport use and attitudes to transport and travel since lockdown up to 6 September 2020. The implications for health and wellbeing for individual travellers and the wider community are considered based on the risks identified by the SSR Transport Partnership group. Some of these potential impacts are likely to be greater for particular groups due to the inequalities in transport use and infrastructure. This includes those on low incomes, disabled people, women, people living in areas of deprivation and those living in rural areas (see Appendix 4 for pre-COVID-19 data).

Summary of restrictions

Lockdown measures were introduced on 23 March 2020. Key components of the lockdown included: restricted contact with family and friends, limited travel to local areas, reduced service and capacity of public transport, closures of many shops and services, and a requirement of physical distancing of 2 metres from others. Remote working where possible was advised and daily exercise outside by walking or cycling was recommended. A phased approach to easing of these restrictions began on 29 May and is outlined in ‘Coronavirus (COVID-19): Scotland’s route map’.

At the time of writing the paper, Scotland was in phase 3 of easing (see route map updates). Many shops and services have reopened, opportunities for contact with friends and family have increased, children have returned to school and people are able to drive beyond their local area for leisure and exercise purposes, notwithstanding local additional measures. Advice to physically distance remains and people are still advised to work from home where possible. A summary of restrictions relevant to getting around during lockdown and phases of easing can be found below.
• **Lockdown (23 March–28 May):** Essential travel only, staying within local area; walking, wheeling and cycling permitted for daily exercise; work at home/remote is the default position; public transport operating with limited service and capacity with physical distancing.

• **Phase 1 (29 May–18 June):** Permitted to travel short distances for outdoor leisure and exercise but staying local (broadly within 5 miles) and travel by walking, wheeling and cycling where possible; where home working not possible businesses and organisations encouraged to manage travel demand through staggered start times and flexible working patterns.

• **Phase 2 (19 June–9 July):** As phase 1 but people were permitted to drive locally for leisure purposes; public transport operating increased services but capacity still significantly limited to allow for physical distancing; travel at peak times discouraged as far as possible; face coverings mandatory on public transport.

• **Phase 3 (10 July onwards):** Permitted to drive beyond local area for leisure and exercise purposes; public transport operating full services but capacity still significantly limited to allow for physical distancing; travel at peak times discouraged as far as possible. Additional local restrictions may apply.

**Statistics**

At the time of writing, statistics published by Transport Scotland about journeys by transport mode and attitudes to transport and travel were available from lockdown up to 6 September. The data collection schedules for Transport Scotland are noted below. Additional sources of data and statistics are noted in the text, and details about the published statistics are available in Appendix 3.

• **Lockdown (23 March–28 May):** Weekly reporting of change in journeys by mode, and wave 1 and wave 2 of attitudes survey (5–13 May; 18–25 May).

• **Phase 1 (29 May–18 June):** Weekly reporting of change in journeys by mode, and wave 3 of attitudes survey (1–7 June).

• **Phase 2 (19 June–9 July):** Weekly reporting of change in journeys by mode, and wave 4 of attitudes survey (24–27 June).
• **Phase 3 (10 July onwards):** Weekly reporting of change in journeys by mode up to and including the week ending 6 September, and waves 5, 6 and 7 of attitudes survey (8–13 July; 22–28 July; 19–25 August).

**Overview of impact on journeys**

• Transport Scotland figures indicated that the onset of the COVID-19 pandemic had a significant impact on people moving around. The average number of trips per person, per day reduced dramatically from an average of 2.7 in late February/early March to 1.05 in the week of 14 April. This reduction was across all modes of transport. During the period of lockdown there was a gradual and small increase in trips across modes. The average number of trips per person, per day rose to 1.7 in the first week of June. This has increased gradually to 2.4 for the week ending 6 September (Figure 4).

• The Transport Scotland attitude survey shows that during lockdown and in phases 1 and 2 most people left home at least once a week (87%, 84%, 82%, 83% in waves 1, 2, 3 and 4 respectively). The main reasons were to go to the shops for essential items or groceries (86%, 84%, 88% and 88% leaving the house at least once) and for outdoor exercise (83%, 79%, 77% and 78%, respectively). People shopped for essential items less frequently (1–3 times a week), whereas they took part in outdoor exercise more frequently (6–7 times per week).

• In phase 3, the number of people leaving home at least once a week has increased (86%, 91% and 89% in waves 5, 6 and 7 respectively). The main reasons have remained as shopping for essential items and groceries, and for outdoor exercise. People continue to shop for essential items less frequently (1–3 times a week) whereas they take part in outdoor exercise more frequently (6–7 times per week). There has, however, been a change in trip purpose over time with an increase in trips for non-essential shopping and visits to people’s houses. Visits to someone else’s house tends to be done once a week, while going to the shop for non-essential items increased from mostly once a week in wave 5 to 1–3 times a week in wave 6. In the early part of phase 3 there was a slight increase in the number of people travelling to work. This remained consistent across waves 5
and 6 but increased from 21% in wave 6 to 32% in wave 7. The majority of those travelling to work do so between 4 and 7 times a week.

- To date, there is a lack of analysis of population subgroups due to insufficient numbers to undertake robust analysis.
Figure 4: Trends in journeys made by car, walking, concessionary bus, train and cycling from 15 March to 6 September 2020. Data from Transport Scotland; graph adapted with permission.
Walking, wheeling and cycling

The HIIA indicated a number of potential impacts.

- An increase in recreational walking daily due to advice to exercise outdoors once a day with some people retaining this as a longer-term habit.
- A short-term increase in cycling and walking as people replace bus travel with cycling, streets have fewer cars and travel is restricted to a 5-mile radius. Some may retain this habit longer term. However, cycling rates may be affected by return to private vehicle use or less use of public transport with implications for injuries and accident rates.
- A reduction in utilitarian walking and cycling as fewer people travel to work and are concerned about maintaining a safe distance.
- Lack of space available for walking and cycling while maintaining a safe distance.
- Pressures on cycling infrastructure due to short-term increases in cycling rates and delayed construction of new infrastructure.

Key findings

- Trend data suggest that walking journeys increased during lockdown and remained high during phase 1. However, this was higher for recreational than utilitarian (useful or practical) walking.
- The number of walking journeys in phase 2 and 3 was at a lower level than the equivalent period last year.
- There has been an increase in cycling since lockdown and rates of cycling have, on the whole, been higher compared with a similar period last year, though in late August and early September levels of cycling were similar to last year.
- The available trend data for walking and cycling during phase 2 and 3 may mask the increase in recreational walking.
- Intention to walk or cycle more has remained high throughout lockdown and the easing phases.
- Use of active travel for those travelling to work has varied between 11% and 20% since the end of May. Distance, safety on the road, and a lack of washing and
changing facilities are commonly cited as reasons for not cycling or walking to work. In 2018, around 12% of journeys to work were by walking and 3% were by cycling. This suggests a potential increase in the proportion of people going to work who are using active travel.

- Disabled people have experienced significant barriers to walking and wheeling due to overcrowded spaces, limited pavement width and clutter.

**Implications**

- These findings support the hypothesis in the HIIA that walking, wheeling and cycling would increase during lockdown. The weekly trend data suggest that journeys by walking once restrictions were eased are lower than during a similar period last year. This may be an indication that the initial increase will not be maintained in the longer term. The increase in cycling appears to have been maintained over July and into early August; however, the data suggest that in late August this is similar to last year. It should be noted that walking and cycling counters tend to be located in areas where higher footfall is expected, such as city centres and commuting routes. As a consequence the trend data are likely to mask the increase in recreational walking and to a lesser extent cycling that has been observed in other studies. The baseline prevalence for cycling is low and there are substantial inequalities in its uptake. This may mean that there has only been a modest increase in the number of people cycling. As the prevalence of cycling is socially patterned, it is possible that the increase has also been socially patterned and may be limited to specific population subgroups.

- The findings suggest that disabled people have experienced difficulties in walking, wheeling and cycling easily and safely around their community while maintaining physical distancing requirements. It is not possible based on the available data to know the extent of these difficulties. It is important to fully understand these barriers to walking, wheeling and cycling, and identify barriers for other subpopulations. Future data gathering and analysis should focus particularly on groups of people who we know are likely to experience inequalities.
• There are clear health benefits from walking, wheeling and cycling for individuals and the wider community, as well as benefits to the economy and sustainability. It is important that strategies that promote safe walking and cycling for all continue to be developed, implemented and evaluated, and that effective interventions are scaled up. This will be particularly important when lockdown measures are further eased and more people commute to work.

Supporting evidence on the impact on walking and wheeling
• Transport Scotland figures suggest that weekly walking journeys increased by between 10% and 45% in the lockdown period compared with the week of 30 March and continued to increase during phase 1.

• Trend analysis of pedestrian counts by GCPH for lockdown and phase 1 (23 March to 17 June) showed an upward trend for walking that generally remained high during phase 1. The authors note that walking rates vary seasonally and tend to increase as the weather improves. Dips tended to align with periods of less settled weather. Walking on commuting routes rose relatively little during lockdown while walking on leisure routes increased much more. During phase 1, walking at leisure sites remained high while walking at commuting and mixed sites increased. Comparison with data for the same period in 2019 shows that the upward trend is greater in 2020 (see Figure 5). This suggests that lockdown has contributed to greater levels of walking, though this is likely to have been helped by generally fine and dry weather.4

• Transport Scotland figures suggest that from mid-June to the end of August, journeys by walking were lower by between 20% and 45% compared with the same period in 2019. The most recent data for the week ending 6 September indicated walking journeys were lower by 35%.

• The weekly trend data on walking journeys are based on counters which are located in areas where we would normally see footfall and walking trips, for example around city centres and areas where people may walk as part of their commute to work. They may therefore mask the increase in recreational walking
that has been observed in other studies such as the attitudes survey and also anecdotally.

- A poll of members by Disability Equalities Scotland (DES) during the week of 25 May indicated that during lockdown disabled people experienced a number of issues with physical distancing when taking daily exercise or when undertaking essential journeys by walking or wheeling. These included narrow pavements, uneven surfaces and a lack of dropped kerbs, making it difficult for wheelchair users to get on and off pavements. Disabled people also found it challenging to maintain a 2-metre distance when queuing at pedestrian crossings. Street clutter was identified as a further challenge. Concerns were raised about the increase in outdoor tables and chairs as lockdown lifts. These will decrease space further and will act as a hazard for people with mobility and visual impairments.43

Supporting evidence on the impact on cycling

- Transport Scotland figures indicated a large increase in cycling journeys of 50% and 120% in the first two weeks following lockdown compared with typical travel based on information from late February/early March. Journeys by bicycle were above the lockdown baseline during May, although the increase varied between 35% and 75%.

- Trend analysis by GCPH, using daily cycling counts from Cycling Scotland’s network of counters, indicated an early and immediate reduction in cycling following lockdown. However, this was transitory and long-term trends show an increase on commuting, leisure and mixed routes. Data up to the end of May showed that cycle volumes on leisure routes were approximately 10 times higher compared to the beginning of March, almost 2.4 times higher on commuting routes and 1.3 times higher on mixed routes (Figure 6). As with walking, the authors note that cycling rates vary seasonally and tend to increase as the weather improves, and the period of lockdown coincided with exceptionally warm and dry weather. Two periods of dips in cycling were observed. These coincided with wetter and windier conditions indicating a clear weather impact. Comparison with cycling data for a similar period in 2019 showed that the upward trend for cyclists is greater in 2020. This suggests that lockdown has contributed to greater
levels of cycling though this is likely to have been helped by generally fine and
dry weather.\textsuperscript{3}

- Transport Scotland figures suggest that the number of journeys by cycling during
June and early July (phase 2) was higher compared with the same period in
2019. Cycling journeys were up by 60\%, 25\% and 40\% for the weeks of 15 and
22 June, and 5 July, respectively, though down by 1\% for the week of 29 June.
Throughout July and much of August the number of journeys by cycling
continued to be higher than during a similar period last year. However, for the last
two weeks in August (17–23 and 24–30) there was no difference compared with
the same period last year. The most recent data for the week ending 6
September also indicated no differences compared with the same period last
year. As noted previously, the location of counters may have masked the
increase in recreational cycling observed in other studies.

- Survey data commissioned by Cycling Scotland suggest that around 4\% of
people across all age groups started cycling during lockdown. This was greatest
among young adults aged 18–24 years (11\%) compared with the general
population. The top three reasons for starting cycling were: the weather was good
(62\%), it improved wellbeing (57\%) and less traffic on the roads (50\%).\textsuperscript{5}

**Supporting evidence on travel to work**

- Transport Scotland figures indicated that among those travelling to work a small
proportion use active travel. This has fluctuated over the period of the survey.
During lockdown and phases 1 and 2 it was 8\%, 14\%, 14\% and 11\% in waves 1–
4, respectively. In phase 3, it was slightly higher (20\%, 16\% and 16\% for waves
5, 6 and 7, respectively).
Figure 5: Percentage change in 7-day moving average pedestrian counts from baseline data in March to early June for 2019 and 2020 for all of Scotland.
Figure 6: A graph showing the percentage change in daily cycle counts, by route type, from baseline data in March to the end of May. Data from GCPH; graph adapted with permission.³
Supporting evidence on the intention to walk and cycle

- Transport Scotland figures indicated that when asked about their travel behaviour once restrictions are lifted, around two thirds of respondents intended to walk or cycle more. This was consistent over the first three data collection waves, decreased to 50% in wave 4 but has increased to 58%, 64% and 65% in waves 5, 6 and 7, respectively.

- In June, respondents were asked more specifically about their intention to walk or cycle as part of their commute. In wave 4 (late June), around 25% of respondents indicated they would be prepared to walk for all or part of their commute. The main reason for not walking to work was distance. In wave 3 (early June), around 15% indicated they would be prepared to cycle for part or all of their journey to work. This was similar at 16% in wave 4. Barriers to cycling included distance, lack of washing or changing facilities at work, and safety on the road. Around 34% indicated they had access to a bike for adult use.

- Survey data commissioned by Cycling Scotland in early June indicated that 14% of people in Scotland said they think they will cycle more once lockdown ends. The figure was higher among those aged 18–24 years (20%).

- In waves 5 and 6 (July) respondents were asked about their travel intentions for their children to get to school and nursery. In wave 5, there was no evidence that respondents intended to change mode of travel to school or nursery compared with before lockdown. In wave 6, at the end of July, respondents indicated their children were less likely to travel to school and nursery by bus and slightly more likely to travel by car. However, the majority (54%) intended to walk and did so before lockdown. In wave 7, nearly two thirds (64%) used a car for dropping their children at school or nursery, compared with 32% walking or wheeling.

- No analysis of differences in travelling by walking, wheeling or cycling by population subgroups in Scotland was identified. However, some population subgroup differences in intention to cycle or walk for journeys previously done

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a The respondents were only asked about their intention to walk in wave 4.
using public transport were reported by Transport Focus based on their UK survey. Over the 5-week period between the end of May and the end of June around one quarter of respondents indicated they would cycle more (27%, 24%, 28%, 26% and 27% in consecutive weeks). Population subgroup analysis was undertaken for this item in the final week of this period (week 9 of the survey, 26–28 June). The sample, which excluded do not know/non applicable responses, was 1,048. The proportion intending to cycle was higher for young people (31%, 33% and 37% for those aged 18–24; 25–34 and 35–44 years, respectively), and lower for older adults (23%, 19% and 12% for those 45–54, 55–64 and 65+ years). Intention to cycle was higher among men than women (31% compared with 22%); among those with no disability compared with disabled people (26% compared with 19%) and among those who identified as black and minority ethnic (BAME) compared with those identified as white (37% compared with 25%). However, no information was provided as to whether these differences were statistically significant.44

- Based on the same survey, with a sample size of 1,512 (excluding do not know/non applicable answers), around 25% of people indicated they would walk more. This reduced with age from 62% among those aged 18–24 years to 38% among those aged 65+ years. Intention to walk was higher among women than men (53% compared with 44%); those with no disability compared with disabled people (50% compared with 44%) and among those who self-identify as BAME compared with those who identify as white (58% compared with 48%). No information about whether these differences were statistically significant was available.

**Public transport**

The HIIA hypothesised that disruptions to, and concerns about, using public transport may reduce the ability of people to reach essential employment and services, socially interact and undertake exercise or recreation. This would be particularly challenging for people on low incomes, disabled people, people with chronic long-term health problems, older people and women. These groups are less
likely to have access to private vehicles and are therefore more reliant on public transport, particularly buses.

**Key findings**

- The transport trend data suggest that the number of journeys by public transport reduced substantially following lockdown and has remained significantly lower than a similar period in 2019. In the week ending 6 September, concessionary bus journeys were down by 50%, train journeys were down by 70% and journeys by ferry were down by 50%.

- While concern about using public transport has reduced since lockdown, it remains high. Data collected between 19 and 25 August indicated that 68% of people were very or fairly concerned about contracting or spreading the virus on public transport, and 61% were very or fairly concerned about their ability to maintain physical distancing. At the same time around 50% of people indicated they would avoid public transport in favour of car use.

- Data collected in wave 7, between 19 and 25 August, indicated that of those travelling to work around 5% are using public transport. This is similar to the proportion in waves 1 and 2 during the period of lockdown. In 2018, around 10% of people travelled to work by bus and 6% by train.\(^9\)

- Disabled people in Scotland have experienced difficulties using public transport during the period of lockdown.\(^{43}\)

- There is some limited evidence from the UK to suggest that at the end of phase 2, older people, disabled people, women and regular users of public transport were more likely to have concerns about using public transport.\(^{45}\)

**Implications**

- The findings support the hypothesis in the HIIA that reduced public transport capacity due to physical distancing combined with concerns about using public transport would contribute to fewer journeys by this mode. Although the number of journeys has slowly risen it remains low and people are still concerned about using public transport.
• Reductions in usage of public transport, whether through public concern, reductions in capacity or reductions in service, are likely to reduce transport options, particularly for people without access to a car due to low income, age or disability. These groups tend to be more dependent on public transport to reach employment, essential goods and services, and for social interaction and to undertake exercise and recreation. There is some evidence that disabled people experienced problems using public transport during the period of lockdown and that concerns may be greater in some equality groups. However, further research is needed to fully understand this and to understand the impact for other groups who are dependent on public transport.

• Using alternatives such as a taxi or forced ownership of cars would place an additional financial strain on households. In the longer term, loss of public transport revenues could threaten the availability of services and viability of routes, reducing transport options for disadvantaged populations and further discouraging public transport use.

**Supporting evidence on the impact on public transport**

• Transport Scotland figures indicated that during the first two weeks after lockdown there was a large reduction in bus, train and ferry use. Concessionary passenger travel was lower by between 85% and 90% compared with usual travel patterns for the time of year. Train and ferry journeys were also around 95% lower.

• Use of public transport is increasing slowly; however, it remains lower than during a similar period last year. Between 15 June and 5 July concessionary bus journeys were lower in consecutive weeks by 80%, 80% and 75% compared with the 2019 baseline. Through July and August (phase 3) the difference reduced, and for the week ending 6 September, journeys by bus were 50% lower than the same time last year. Train and ferry journeys showed a similar pattern. During the week ending 6 September, train journeys were lower by 70% and ferry journeys by 50%.
• No source was identified which analysed real-time Scottish data on bus use in terms of the protected characteristics, socioeconomic status or geographical area. Data on bus journeys are available for concessionary travel which is an indication of use by particular subpopulations. There are challenges to undertaking subpopulation analysis in the current context as there are insufficient data currently available to undertake meaningful comparisons. Transport Scotland is currently exploring opportunities to develop a better understanding of transport behaviour, including bus use, across subpopulations.

• Since lockdown, concerns about using public transport have remained high. Findings from wave 2 of the Transport Scotland survey showed that at the end of lockdown around 82% of people agreed that they were very or fairly concerned about contracting or spreading the virus while using public transport. In addition, 78% were very or fairly concerned about having enough space to observe physical distancing while using public transport. These concerns reduced somewhat over subsequent waves of the survey. However, data collected in wave 7 of the Transport Scotland survey (between 19 and 25 August) indicated that 68% of people were very or fairly concerned about contracting or spreading the virus on public transport, and 61% were very or fairly concerned about their ability to maintain physical distancing. At the same time around 50% of people indicated they would avoid public transport in favour of car use. While this is a slight increase from the 40% and 41% in waves 3 and 4, this figure has been consistent at around 50% across all seven waves of the survey. The main reasons for avoiding public transport and using the car were the risk that others are still carrying the disease; cleanliness or hygiene on board public transport; convenience; and being unable to stay 1 metre apart.b

• Data from wave 7 of the Transport Scotland attitudes survey indicated that of those travelling to work around 5% were using public transport. This figure has fluctuated between 3% and 11% over the seven waves of the survey. The most

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b At the begging of July a number of sectors and settings were permitted to move to 1-metre distancing where agreed risk-mitigation measure were in place. Public transport was one such setting.
recent figure is a similar proportion to wave 2 during the period of lockdown. In 2018 around 10% of journeys to work were by bus and 6% by train.

Subpopulation analysis
At the time of writing, attitudinal data from Scotland have not been analysed in terms of population subgroups. Some limited data are available from a poll of members of Disability Equality Scotland (DES) which identified discrimination and lack of passenger assistance when trying to use public transport as key areas of concern. In addition, Transport Focus reports on population subgroup analysis on a number of items in the Transport Focus UK survey. These findings relate to the first week of July at the end of phase 2 (week 10 of the survey).

- ‘I don’t feel safe using public transport at the moment’: The analysis considered the responses of those who had not used public transport in the last 7 days (1,801). Overall 30% did not feel safe using public transport. Those who used public transport regularly before lockdown were more likely than others to say they did not feel safe using public transport at the moment (42%). In addition, people not working before lockdown, people 65 years and older and women were significantly more likely to say that they did not feel safe using public transport at the moment (34%, 34% and 33%, respectively). The level of significance and details of analysis were not indicated.

- ‘I have no concerns about using public transport now, if I have the need to do so’: Overall 34% strongly disagreed that they had no concerns about using public transport. Analysis of the sample of 1,810 responses indicated that those who had not used public transport recently, disabled people, people aged 65 years and older, people aged 55–64 years, women and those without children in the households were more likely to strongly disagree (51%, 45%, 40%, 41%, 37% and 36%, respectively). The level of significance and details of analysis were not indicated.

- ‘I expect to make more journeys by public transport when more places open (e.g. restaurants, museums, cinemas, pubs and hairdressers)’. Overall 38% strongly disagreed with this statement. Analysis of the sample of 1,713
responses indicated that those who were not using public transport before lockdown, people aged 55–64 years, disabled people, regular car users before lockdown, people aged 65 years and over, women and people who classified themselves as white respondents were more likely to strongly disagree (50%, 50%, 47%, 42%, 42%, 41% and 40%, respectively). The level of significance and details of analysis were not indicated

**Car use**

The HIIA identified a number of potential interrelated health impacts that may result from reduced and increased levels of road traffic.

- Reduction in adverse health impacts from traffic due to fewer vehicle movements. However, imposing restrictions on public transport but not private cars may result in increased car use and may increase pollution and other traffic impacts.
- Mistrust and concern about using public transport may lead to increased car and taxi use.
- Increase in delivery traffic as a result of increased online shopping – mostly motorised but also some cargo bikes.
- Transport collisions may reduce due to lower traffic volume, but increased speeds could cause collisions. In addition, there may be an increased risk to pedestrians stepping into the road to maintain physical distance.
- People may benefit from better use of the space currently assigned for parking.

**Key findings**

- Following a substantial reduction in car use during lockdown, the number of journeys by car has steadily increased and is currently only 10% lower than a similar period in 2019.
- Cars and private vans remain the main mode of transport for trips in the last 7 days. They are used across most trip purposes and are the main modes of travelling to work.
• Benefits from the reduced level of car use during lockdown and phase 1 were observed. In particular, concentrations of traffic-related nitrogen dioxide (NO$_2$) in the four major Scottish cities fell sharply after lockdown and remained at low levels through April and May before rising in June as restrictions began to be lifted. There is emerging evidence that casualties from road traffic collisions reduced during lockdown.

**Implications**

• These findings confirm the concerns raised in the HIIA that car use would increase as we emerge from lockdown. As many people are still not working or are working from home, it is likely that car commuting could increase further as restrictions are eased, contributing further harm to public health from physical inactivity, air pollution, noise pollution, injuries and community severance. This is likely to be a particular concern in areas of higher social deprivation which suffer more from the negative impacts of road traffic and for populations who are most vulnerable to the impacts of air pollution.

• Increased car use may also reduce the likelihood of people walking, wheeling and cycling.

**Supporting evidence on the impact on car use and traffic**

• Restrictions imposed during lockdown resulted in a large reduction in road traffic. Transport Scotland reported an initial reduction in car journeys of around 70–75% at the beginning of lockdown compared with typical travel patterns for the time of year. The number of journeys by car increased gradually.

• The most recent Transport Scotland figures for the week ending 6 September indicated that journeys by car are only 10% lower than for the same period last year.

• In wave 7 of the Transport Scotland attitudes survey (19–25 August), 76% of people travelling to work indicated that they were travelling by car or van compared with 5% using public transport and 16% using active modes. Cars or private vans have consistently been used by the majority of those travelling to
work. This figure was highest (at 80%) in wave 3 (1–7 June) at the beginning of phase 1.

- **Official published data on road fatalities or casualties for Scotland during the period since lockdown are currently not available. However, indicative data from Police Scotland suggest that there were 573 casualties from road collisions during the period to the end of the first quarter of 2020/21 compared with 1,689 during the same period in 2019/20.**  
  There were fewer fatalities (14 versus 49), fewer people were seriously injured (215 versus 376) and fewer people slightly injured (344 versus 1,272). Data from France, Ireland, Israel, Sweden, Norway, London and the USA published by the United Nations Economic Commission for Europe (UNECE) in mid-May suggested there was a reduction in road fatalities in these countries. A recent report by the European Transport Safety Council concluded that preliminary data from 25 EU member states showed an average 36% drop in road deaths in April 2020 compared to the average of the same month in the previous three years. In general, deaths did not decline by the same degree as traffic volume. The report noted that more research is needed to understand the full reasons but speeding, higher numbers of vulnerable road users on often unprotected infrastructure, as well as changes to enforcement levels, may have all played a role.

- **There were early indications that on certain roads (some motorways and trunk roads) in Scotland the proportion of vehicles recorded travelling over the speed limits has risen during the period of the lockdown.** However, the actual number of vehicles observed speeding had fallen by approximately 50% compared with a typical weekday or weekend prior to COVID-19 restrictions being introduced. Work is underway to capture data from a range of locations across the trunk and local road network. The aim of this work is to provide data on traffic volumes and speeds, including the number and proportion of vehicles travelling over the speed limit, and the number and proportion of vehicles excessively speeding.

- **Air quality:** To demonstrate how changes in NO\textsubscript{2} concentrations have been affected by the COVID-19 lockdown, SEPA modelled and measured hourly NO\textsubscript{2} concentrations at kerbside automatic monitoring stations in Glasgow, Edinburgh, Dundee and Aberdeen from the beginning of February to the end of June.
2020. The modelled concentrations showed very good agreement with the measured concentrations during the period before lockdown. While actual traffic flows reduced significantly after the start of lockdown, traffic data used within the model remained the same, thus providing an indication of what the NO₂ concentrations were likely to have been if lockdown conditions had not been implemented. In general, concentrations of traffic-related NO₂ fell sharply after lockdown restrictions were applied on 23 March and remained at low levels through April and May before rising in June as restrictions began to be lifted. There is, however, variability across different monitoring stations due to varying local traffic patterns and different distributions of private cars and heavy vehicles such as buses. Similar reductions in carbon dioxide (CO₂) were evident with an overall reduction in traffic volumes. It is much harder to predict how particulate matter (PM; both in terms of PM₁₀ and PM₂.₅) has fluctuated during the lockdown, as these pollutants are influenced by wider aspects other than just change in traffic. For example, there have been episodes of elevated PM in relation to transboundary events driven by slow movement of air mass from continental Europe even when mass lockdown measures were in place across many European countries.⁶

- Currently no data have been identified tracking whether there has been an increase in delivery vans contributing more generally to an increase in road traffic.

**Conclusions and next steps**

COVID-19 has had, and will continue to have, a significant impact on the number of trips people make, and their modes of travel to go to work and education, socially connect, and access goods and services.

The evidence reviewed here suggests that a major impact has been a reduction in journeys by public transport. Alternative modes include walking and cycling,

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⁶ Events that cause pollution in one country but by crossing the border the pollution is able to cause damage to the environment in another country.
increased use of private vehicles and reduced travel to work or for goods and services. There are health and wellbeing implications associated with reduced public transport capacity and these alternatives affect both transport users and the wider community. There are also substantial inequalities in access to these alternatives which may be exacerbated through the ongoing COVID-19 pandemic.

When restrictions are further relaxed the number of people moving will continue to increase while the requirement to maintain physical distancing will remain. This will help to reinvigorate the local economy but also increase the pressure on local spaces. At the same time COVID-19 may also accelerate the upward trend towards home working which has been observed over the last 20 years\textsuperscript{50,51} and increase the number of people accessing goods and services remotely, thus contributing to a reduction in the need to travel. This will be greatest among those who are able to work or access services remotely, and may contribute to a worsening of health and social inequalities.

**Actions**

Actions to limit increases in car traffic, support walking, wheeling and cycling, and protect the long-term viability of public transport are needed to bring positive benefits for health and wellbeing, sustainability and the local economy.

These include:

- Ensure transport decision-making aligns with and supports the sustainable transport hierarchy. Prioritised actions should be those that:
  - protect the long-term sustainability of public or community transport services through, for example, improving accessibility, affordability, availability and appropriateness, and ensuring greater integration of transport services and ticketing to facilitate multimodal journeys
  - limit increases in private car travel and reduce the adverse impacts of motor traffic on health through, for example, demand management systems and the use of low-emission zones
- Support active travel through, for example, the provision of cycling and pedestrian infrastructure ensuring that it links into public transport nodes and systems.

- The SSR Transport Partnership group will consider the evidence to make recommendations about policies and interventions that are effective in improving health and equality outcomes.

- Transport Scotland and local government will continue to monitor and analyse changes in transport and provision of transport as a result of COVID-19. Transport Scotland and local government will continue to collaborate with academia and third sector organisations to collect additional information to understand how equality groups are affected and the implications in terms of access to work, education, goods and services, and social connectedness. This involves gathering both qualitative and quantitative data. Data collected should be used to inform future decision-making about strategies to mitigate the impact of COVID-19 on the transport system and the people who use it.

- Sustrans will continue to map and evaluate local government initiatives funded, for example, through Spaces for People and Places for Everyone. The SSR Transport Partnership group will support Sustrans in considering the impact on equality groups. The findings should be used to inform future decision-making about sustainable, equitable and health-promoting transport options at a local level.

**Limitations of the evidence**

Approaches to data collection for transport use and attitudes during the pandemic were developed rapidly to provide the most useful information to inform policy. Standard approaches have been used, however, constraints on available data and resources mean there are some limitations worth noting.
Transport trend data

Limitations in the transport trend data are reflected in the indicative confidence levels noted by Transport Scotland. These are medium for walking, cycling and car use, and high for public transport. Data are reported at a national level and there are likely to be regional variations due to differing local context and services.

- Data on walking and cycling from active travel counters in Scotland are not weighted so it is not possible to ensure the data are representative of urban/rural or utilitarian/recreational active travel. The travel counters across urban areas show consistent trends and indicate a large decrease in walking and smaller increase in cycling; however, there is less certainty about the actual levels of change in use. Furthermore, cycling and walking rates vary seasonally and tend to increase as the weather improves. The comparisons with 2019 data suggest that observed increases in active travel are not solely due to the weather but are likely to be COVID-19 related. However, because the data are unweighted there is less certainty about the level of increase. Finally, the national distribution of counters means it is difficult to establish if the levels of effect seen from lockdown apply consistently across the country as a whole.

- Data on car use are based on counters on the strategic road network, primarily motorways and, to a lesser extent, A roads. Trunk roads represent around 40% of miles travelled and therefore the extent to which these findings are replicated across the local road network is unclear.

- Confidence in public transport data is higher due to the more direct source of data. However, as with other modes of transport, the data in this report are national and there are likely to be regional variations.

Attitudes to transport and travel

The attitudes survey commissioned by Transport Scotland provides much of the evidence about attitudes to transport and travel with additional evidence from the YouGov survey commissioned by Cycling Scotland.
• The Transport Scotland survey is a representative telephone survey which provides reliable data about attitudes. However, the reduction in sample size from 1,000 in waves 1–3 to 500 in subsequent waves means that while the reliability of the findings are maintained, the confidence intervals widen and therefore findings are less precise.
• The Cycling Scotland survey was a large representative sample. However, due to the online nature of the survey those without easy access to the internet may be excluded.

Differences between subpopulations
Evidence of differences between population groups was drawn from the survey by Transport Focus which was a UK survey.

• While this surveyed a representative sample of 2,000, population subgroup analysis was undertaken on a smaller sample and therefore caution should be applied in interpreting the results. In addition, the sample was drawn from across the UK and can therefore only be taken as indicative of potential subgroup differences which may be found in Scotland.
• The DES poll provides additional Scottish data about the nature of the challenges faced by disabled people. However, it does not provide any indication of the numbers of people affected. Furthermore, there is likely to be a selection bias with those experiencing problems being more likely to respond.

Fatalities and injuries from road traffic collisions
The published figures from Police Scotland are based on the most up-to-date recorded crime data available at the beginning of July 2020 for the first quarter of 2020/21. The data are Police Scotland management information and not official statistics and are not suitable for drawing longer-term trend comparisons of crime types.
Appendix 1: Rapid evidence review of the impact of transport on health

A rapid review of the evidence about the links between transport and health was undertaken between May and July 2020. Seven reports based on umbrella reviews which had been produced by Scottish, UK and EU agencies since 2017 were identified in conjunction with the advisory group. An umbrella review is a review of reviews. It compiles all the evidence from existing reviews on a topic to give a high-level overview.

A rapid critical appraisal was undertaken based on clarity of research question, methodology, search strategy, evidence statements and authority of author. All the reports were produced by authors with a strong track record in transport and health and/or published by reputable organisations including Public Health England, Health Protection Scotland, The Scottish Public Health Network, the European Union INHERIT (INter-sectoral Health and Environment Research for InnovaTion) project and Department for Transport. Three of the reviews provided clear information about research questions, methodology and search strategy, and commented on the strength and quality of the evidence. A further three provided more limited details of methodology, however, one of these was an update of a previous good-quality review. The seventh report did not provide details of methodology and was regarded as a briefing rather than a review. Limited evidence was drawn from this report. In addition, a number of other reports provided by members of the SSR Transport Partnership group, which were specific to Scotland, were used. The reviews and additional papers are listed below.

A thematic analysis of the evidence in the reviews was undertaken. The pathways through which transport affects health, both positively and negatively, were used to develop the framework for analysis. The evidence was categorised in terms of mode and pathways/impacts. Evidence of inequalities was also included. Summary evidence statements were developed for each modality. Where review authors commented on the strength of evidence this was included.
The amount and quality of evidence about different pathways to health outcomes varied across transport modes. For some modes no evidence was identified for specific health pathways. This variability may be due to limited research or because modes, pathways or outcomes were out of scope for the review. Given the rapid nature of the current work and the decision to use a small number of umbrella reviews we cannot conclude that there is no relevant evidence for these categories. However, the absence of evidence in these reports which are current and wide ranging could indicate that there is unlikely to be a substantial number of relevant studies. A more detailed review in some areas would help to clarify the evidence base. Further details of the evidence are available from the authors if required.

**Walking, wheeling and cycling**

Four of the reports considered the health impacts of utilitarian walking and cycling together as active travel. More limited evidence was identified which specifically considered the impact of utilitarian walking or cycling separately on health outcomes. The evidence related to ‘active travel’ as well as specific evidence on walking and cycling have, therefore, been used to inform the evidence statements about the impacts of walking and wheeling and the impacts of cycling on health outcomes. Additional evidence on cycling was drawn from a recent report of cycling casualties by Young and Whyte published in 2020, a report on value for money for cycling, a report by Living Streets and a paper by McCartney et al on active travel in Glasgow.

Much of the evidence focused on improved physical health through increasing physical activity. A smaller body of evidence considered impacts on health through other pathways. No evidence specifically focusing on the links between wheeling and health outcomes was identified.

**Public transport**

Five of the reports considered the impact of public transport on health outcomes. Much of the evidence specifically focused on bus transport and there was a strong focus on groups without access to private cars. The evidence
tended to examine the links between bus use and health through access to health and social care, and the links between bus use and access to employment, training and education. A further body of work examined the impact of bus use on levels of physical activity.

**Taxi and shared car**

None of the reports included evidence specifically about taxis, shared car use or community transport. Evidence related to private car use and public transport has been used to inform our understanding of the health impacts of this part of the sustainable transport hierarchy. Further review of the evidence in this area is warranted.

**Private car**

Five of the reports consider the evidence of the impacts of motorised vehicles and road traffic on health.\textsuperscript{31,32,35,36,39} The body of evidence is considerable though the quantity and quality varies in relation to the different health impacts. The evidence does not, however, always differentiate between cars and other types of road traffic or motorised vehicles.

**Umbrella reviews**


Briefings

Additional papers
• Young M, Whyte B. Cycling in Scotland: A review of cycling casualties, near misses and under-reporting. Glasgow: Glasgow Centre for Population Health; 2020.
Appendix 2: Evidence summaries

Walking, wheeling and cycling

Evidence about the health impacts of utilitarian walking and cycling are often considered together as ‘active travel.’

1. There is strong evidence that regular, moderate-intensity activity improves physical and mental health.\textsuperscript{27} The body of evidence suggests that many of the health benefits of utilitarian walking and cycling result from increased levels of physical activity. The evidence is strongest for cardiovascular health. Although more inconsistent, there is some evidence that active travel is associated with weight status and body mass index (BMI) – studies found either a positive or no association. There is some evidence of an association with positive health status in terms of cancer and mental health, though the evidence base is more limited. The available evidence suggests that where cycling and walking replace car use this can contribute to improved health and reduced morbidity, particularly associated with cardiovascular health, as well as reductions in negative health impacts from air pollution.\textsuperscript{35,39,52}

2. Walking and cycling can increase social contact among the community, improve social capital, and increase independence and autonomy among vulnerable members of society.\textsuperscript{32,35} However, feelings of safety and fear of violence can limit walking and cycling, particularly among women.\textsuperscript{1,54}

3. There is some evidence that active travel commuters experience less stress and better mental wellbeing compared with those commuting by car.\textsuperscript{35,53}

4. Walking and cycling can help stimulate economic growth in urban areas, particularly for small independent businesses, by increasing footfall and spending.\textsuperscript{28,29}

\textsuperscript{d} Walking, wheeling and cycling as a means of accomplishing errands or getting somewhere rather than for leisure.
5. While pedestrians, wheelers and cyclists are at risk of injury from road collisions and air pollution, overall, the evidence suggests that the health benefits accrued outweigh the risks to health.\textsuperscript{35,52}

**Walking and wheeling**

1. There is moderate- to high-quality evidence to suggest that investing in infrastructure to support walking is associated with increased levels of physical activity among children, adults and older people.\textsuperscript{52} However, there is evidence from some studies of differential impacts on physical activity according to socioeconomic status, age and health status.\textsuperscript{35}

2. As walking is a zero GHG emission mode of transport and does not produce air pollutants it will contribute to reductions in air pollution and GHG emissions with positive benefits for health.

3. A significant minority of casualties from road collisions are pedestrians. Compared with users of other modes of transport, pedestrian casualties are more likely to have serious injuries or die. Rates of pedestrian casualties are twice as high among children compared to adults, and adults aged over 70 years have the highest fatality rate.\textsuperscript{33} It should be noted that these figures are based only on injuries resulting from collisions reported to the police and there is underreporting of cycling and pedestrian casualties.

4. In 2018, most of those not working at home travelled to work by car or van with around 12\% travelling to work on foot. In general, the greater the income of the household, the less likely a person was to walk.\textsuperscript{8}

**Cycling**

1. There is good evidence that cycling for travel can increase levels of physical activity and contribute to improved health outcomes.\textsuperscript{53,54} Modelling studies have found that substituting short car journeys with cycling results in improved health outcomes, particularly due to increased levels of physical activity. The evidence of the impact of improved health as a result of reduced air pollution is mixed and there is some evidence of a slight increase in traffic collisions. Overall, the evidence suggests, however, that the health benefits of increased
physical activity associated with cycling outweigh the risk of increased inhaled air pollution and injury from collisions.

2. There is evidence that significant health economic benefits can be gained from cycling. Modelling using the World Health Organization’s Health Economic Assessment Tool (HEAT) and Scottish travel data in 2012 estimated a £2 billion economic benefit per year, accrued after five years, if 40% of car commuter journeys of less than five miles were swapped to cycle journeys. Given the increase in cycling to work this may now be higher.54

3. As cycling is a low GHG mode of transport it will contribute to reductions in air pollution and GHG emissions with implications for health.

4. Infrastructure that supports active travel and reduces vehicle traffic has been found to benefit communities and improve the local economy. Cycling can also help stimulate economic growth in urban areas, particularly for small independent businesses, by increasing footfall and spending.28

5. Cycling makes up around 1–2% of traffic, however, incidents involving pedal cycles represent about 8% of reported casualties from road collisions. There has been an increase in pedal cycle traffic and a reduction in pedal cycle casualties over the last 10 years, however, the number of fatalities and serious injuries has fluctuated over this period. Since 2004, there has been an 18% increase in rates of killed or seriously injured cyclists. Over the last five years, 59% of all fatalities were on non-built up roads. The majority (84%) of cycling casualties involved a car and 10% of occurrences were hit and run incidents. Unlike cycling participation and access to bikes, cycling casualties were not skewed towards wealthier demographics.54

6. Pedestrian casualties arising from a cycling collision are rare. 1% of crashes resulting in a pedestrian injury between 2014 and 2018 involved a bike.54

7. There is some limited evidence of potential risks associated with trams, including cycle wheels becoming trapped in tram tracks.39

8. The evidence suggests that the prevalence of cycling is less among more deprived communities, among women, those with a BAME background and in
older people. The health benefits are therefore likely to be differentially experienced. This pattern is not reflected internationally, particularly where there are higher rates of cycling.\textsuperscript{35,54}

9. There is some evidence to suggest that where safe cycling infrastructure is introduced there is an increase in people cycling.\textsuperscript{55}

Public transport

1. The evidence suggests that public transport, in particular buses, is essential in accessing health and social care, employment, education and training, particularly for those on low income, older people and disabled people.\textsuperscript{32,35,36}

2. As public transport is often multi-modal it can contribute to increased levels of physical activity and improved health outcomes. There is good review-level evidence that public transport which involves active travel contributes to increased physical activity in adults, with the potential to improve cardiovascular outcomes. In addition there is evidence that high-quality public transport is associated with increased physical activity in children. The quality of the evidence in relation to children is less clear.\textsuperscript{32,35,39,52}

3. There is potential for public transport to contribute to reduced air and noise pollution and GHG emissions depending on the type of engine (due to higher number of persons per vehicle).

Taxis and shared vehicles

1. No evidence was identified specifically about the health impacts of taxis, shared vehicle use or community transport.

Private cars

1. Private car ownership enables access to health and social care, employment, education and training, as well as goods and services. However, the evidence indicates these benefits are disproportionally experienced by those who are more affluent and who have greater access to cars.\textsuperscript{32,39}
2. The evidence suggests that reliance on cars contributes to reduce physical activity for adults and children.\textsuperscript{32,35}

3. There is some limited evidence that commuting by car is associated with greater levels of stress.\textsuperscript{32,35}

There is a large and growing evidence base that car ownership has negative health impacts for car users and, in particular, the broader community. However, the evidence base is variable.

4. There is strong evidence that air pollutions, particularly fine particulate matter and NO\textsubscript{2} even at low concentrations, are linked to excess ill health.\textsuperscript{31}

5. Transport is currently the largest contributor to GHG emissions, responsible for 37\% of Scotland’s total emissions in 2017. Transport emissions have increased since 2013, while emissions from other sources, such as energy, have reduced. This accounts in part for the increased contribution of transport. The largest contributor to transport emissions is cars at 40\%. An additional 25\% of emissions are generated by light-goods vehicles and heavy-goods vehicles. Despite more efficient vehicles there has been an increase in vehicle kilometres driven.\textsuperscript{1} There is good evidence that the impacts of climate change affect health both locally and globally.\textsuperscript{37}

6. There is mixed evidence that traffic noise affects physical and mental health though the evidence is stronger for mental health effects.\textsuperscript{32}

7. Around 25\% of casualties from road collisions are pedestrians (15\%) and cyclists (8\%). The risk of injury from road collisions is twice as high for children as adults.\textsuperscript{6} Cars make up the majority (over 70\% of total) of vehicles involved in road traffic collisions with more vulnerable road users, i.e. cyclist and pedestrians, with related health and societal costs.\textsuperscript{54}

8. The evidence suggests that road traffic and infrastructure contributes to community severance and impacts on social connectedness, access to services and social cohesion.\textsuperscript{32,35,39}
9. Harms to health, in particular, exposure to air pollutants and injury from collisions, is disproportionately experienced by those living in areas of deprivation.31
Appendix 3: Sources of statistics on transport journeys and attitudes since lockdown

A summary of the data sources used for each mode of transport is provided below. Where there is repetition only the title and any relevant additional information is provided.

Impact on walking, wheeling and cycling

- Transport Scotland weekly reports on walking and cycling journeys compared to baselines. It is important to note that these baselines have changed over the reporting period. Reports for walking began on 27 April and for cycling on 14 April. Source data are from active travel counters owned by Local Authorities or Cycling Scotland. Alongside the top-line analysis which is published weekly, the data file for this analysis is also published and available on the Transport Scotland website. Transport Scotland reports an indicative confidence level of medium.

- Transport Scotland public attitudes survey data on transport and travel. Data collection began on 5 May. At the time of writing seven waves had been reported. The survey is an online telephone survey with people aged 16+ years in Scotland. The sample is randomly generated and quotas are defined based on age, gender, socioeconomic classification and region to ensure it is nationally representative. The initial three waves of the survey had a sample size of 1,000 but this was reduced to 500 for subsequent waves to manage resources and ensure the longevity of the survey. Alongside top-line analysis which is published after each wave, the data file for this analysis is also published and available on the Transport Scotland website.

- Transport Focus UK weekly attitudes survey. Data collection began on 1 May. At the time of writing 18 weekly reports had been published. There has been some analysis of intention to walk and cycle by population subgroup. The data set includes a Scottish sample; however, because it is very small subgroup differences are reported for the UK data set. Alongside top-line analysis
published weekly, the data sets are available on the Transport Focus data hub webpage.

- Glasgow Centre for Population Health (GCPH) trend analysis for walking⁴ and the GCPH trend analysis for cycling.³ These analyses are based on daily cycling and pedestrian counts from Cycling Scotland cycling counter sites across Scotland. These data sets form part of the National Monitoring Framework and include sites in 17 of the 32 Local Authority areas in Scotland. Cycling data were available from 59 cycling counter sites and walking data from 29 of the 40 sites that record counts for pedestrians as well as cyclists. Routes were distinguished in terms of being predominantly commuting, leisure or mixed routes to allow for comparison between cycling for leisure and commuting. Data from the same period in 2019 were used to compare the relative number of walkers and cyclists in 2019 and 2020. It should be noted, however, that recording sites are not equally distributed and occur in just over half of the Local Authorities. Counters tend to be in places which are of interest for cycling (rather than walking) but data do give a useful impression of pedestrian activity. Fewer monitoring sites were also available in 2019 than in 2020. Weather patterns are known to influence cycling and walking – the weather during the period of analysis was considered in discussing the findings.

- Cycling Scotland Survey report on cycling intentions post lockdown released on 9 June.⁵ The Cycling Lockdown Survey was undertaken by YouGov Plc on behalf of Cycling Scotland between 14 and 22 May 2020. This online survey study was funded by Transport Scotland. Participants were selected at random from a baseline sample of over 800,000 and allocated to the survey based on a predefined sample and quotas. The total sample size was 2,035 adults. The figures have been weighted and are representative of all adults in Scotland (aged 18+ years).

- The Disability Equality Scotland (DES) poll of members during the week of 25 May.⁴³ The poll is one of a number of weekly polls carried out by DES. The response rate of 920 was among the highest to that point. The overwhelming majority responded positively to the question about experiencing difficulties. The
main themes and concerns emerging from the responses have been summarised. While this poll provides a rich source of data about the experiences of disabled people, one of the limitations of this type of survey is that those who experience problems tend to respond to a greater degree than those who do not.

**Impact on public transport**

- Transport Scotland weekly reports from 14 April on concessionary bus journeys, rail and ferry journeys compared to baselines. It is important to note that these baselines have changed over the reporting period. Source data for concessionary bus travel are passenger numbers using concessionary passes – these numbers track commercial bus patronage closely; numbers of train passengers from Scotrail; and numbers of ferry passengers from the ferry operators. Alongside the top-line analysis which is published weekly, the data file for this analysis is also published and available on the Transport Scotland website. Transport Scotland reports an indicative confidence level of high.

- Transport Scotland public attitudes survey data on transport and travel.

- Transport Focus UK weekly attitudes survey. Data collection began on 1 May. At the time of writing 18 weekly reports had been published. There has been some analysis of attitudes to public transport.

- The Disability Equality Scotland (DES) poll of members carried out during the week of 25 May.

**Impact of car use and traffic**

- Transport Scotland weekly reports from 14 April on journeys by car compared to baselines. It is important to note that these baselines have changed over the reporting period. Source data are from Transport Scotland. A subset of counters on the strategic road network are used. These are consistent with an index of around 100 counters. The locations are predominantly motorway points and some A roads and do not take account of the local transport network. Alongside the top-line analysis which is published weekly, the data file for this analysis is
also published and available on the Transport Scotland website. Transport Scotland reports an indicative confidence level of medium.

- Transport Scotland public attitudes survey data on transport and travel.\(^2\)
- Correspondence with Scottish Environment Protection Agency (SEPA).
- Police Scotland management information data on casualties from road vehicle collisions.\(^46\)
- International data from United Nations Economic Commission for Europe (UNECE).\(^47\)
- Parliamentary questions on COVID-19 and answers by the Scottish Government.\(^49\)
Appendix 4: Pre-COVID statistics on transport and inequalities

Pre-COVID statistics on transport and travel are taken from the following sources. Figures are based on data collected in 2018 unless otherwise stated.

- Transport and Travel in Scotland 2018: Results from the Scottish Household Survey.9
- Transport Scotland Statistics No.38 2019 edition.8
- Travel to School in Scotland Hands Up Scotland Survey 2019.10
- The Scottish Government website Equality Evidence Finder56 summarises the available evidence by key protected characteristics and socioeconomic status.

Walking, wheeling and cycling

Journeys by walking
- 20% of journeys were primarily walking.

Journeys by cycling
- 1.4% of journeys were by bicycle.

Access to a bike
- 35% of households had access to at least one bike for adult use and 19% had access to two or more.

Journeys to work
- 12% of journeys to work were by walking.

- 2.8% of journeys to work were by bicycle. There has been an upward trend in cycling to work since 1999.

Journeys to school
- The most recent Hands Up Survey indicated that in 2019, 41% of children walked to school.

- 4.1% of children cycled to school.
• Active travel has been the most frequent mode of travel to school in Scotland since 2010.

• Overall there has been a decline in walking from 45.8% in 2010 to 41% in 2019 and an increase in cycling from 2.8% in 2010 to 4.1% in 2019. There has also been an increase in scooting or skating.

Inequalities

• No significant difference was observed between levels of walking as a means of transport between different income groups.

• A higher proportion of men (25%) walked almost every day as a means of transport in 2016, compared to women (21%)

• Cycling is more common among higher-income households than lower-income households, and household access to bikes increases with household income. Cycling as a means of transport is greater in men than women and decreases after the age of 40.

• In relation to travel to work:
  o people from lower-income households are more likely to walk to work (20%) compared with those from the highest-income households (8%)
  o women were more likely to walk to work (13%) compared to men (10%).

Public transport

Journeys by bus

• Around 8% of journeys were made by bus.

• Journeys by bus accounted for 73% of public transport journeys.

• Two fifths of journeys by bus were made under the National Concessionary Travel Scheme.

• Bus use has been declining in Scotland. There has been a 22% fall from a peak in 2007–2008, while car use has increased.
Journeys to work
- Around 10% of people use the bus to travel to work.

Journeys to school
- The most recent Hands Up Scotland survey\textsuperscript{10} indicated that in 2019, 16.0% of school pupils surveyed reported normally travelling to school by bus.
- Overall, the percentage of pupils travelling to school using the bus has decreased from 18.2% in 2010 to 16.0% in 2019.

Journeys by train
- Around 3% of journeys were made by train.
- Train use accounted for 19% of journeys by public transport but is increasing.

Journeys to work
- Around 6% of journeys to work are by train.

Inequalities
- People on low incomes, people who are permanently sick or disabled, older and younger people are more likely to use buses.
- People on low incomes and people who are permanently sick or disabled are less likely to use the train.
- Women are more likely to travel to work by bus than men.
- NTS2 notes that women tend to take on a disproportionate level of care and domestic tasks, compared to men, in addition to full- or part-time work. As a result they are more likely to make multi-stop and multi-purpose trips, combining travel to work with trips for other purposes such as taking children to school, looking after family members or shopping. Public transport timetables and routes are not designed to fit travel behaviour that is shaped by unpaid care work and part-time employment.
Cars

Journeys by car
- The car was the most popular mode of transport for journeys made in 2018. Around 53% of journeys were made as a car driver and 13% as a car passenger. This compares with around 8% for bus, 3% for rail, 20% for walking and 1% for cycling.

Journeys to work
- Around 68% travelled to work by car or van (as either the driver or as a passenger).

Journeys to school
- Reliance on motorised transport to travel to school has increased. In 2019, around 25% of school pupils surveyed indicated they normally travelled to school using only a private motorised mode of transport. This is the highest proportion of private motorised travel since the survey began.

Inequalities
- Approximately 29% of households do not have access to a private car. People on low incomes, disabled people, people experiencing health problems and single pensioners are less likely to have access to a car.
- Car use is higher among those on high incomes.
- The proportion of those travelling to work using a car tends to increase with age, type of employment (65% of those who work part time, compared to 68% for full time) and annual net household income.

GHG emissions
- The NTS2 notes that transport accounts for 37% of GHG emissions in Scotland, with cars being the major source of transport emission (40%).
Air pollution

- Transport generates over one sixth of Scotland's total particulate matter (PM10) and over a third of nitrogen oxides (NOx). The majority of these pollutants are caused by road transport. NOx from road transport are reducing but not as quickly as anticipated and road transport contributes significantly to poor air quality.
References


