

# Report: At a crossroads – Travel adaptations during Covid-19 restrictions and where next?

March 2021

Greg Marsden, Jillian Anable, Iain Docherty and Llinos Brown



## About this report

This research has been funded by Covid-19 emergency response funding from UKRI and repurposing of time from three existing grants (CREDS EP/R035288/1, DecarboN8 EP/S032002/1 and the PIN Network ES/R007810/1). It has also benefited from investment in enhancing the panel size and in supporting analysis and sharing of policy findings from Transport Scotland, Transport for the North, Liverpool City Region Combined Authority, Strathclyde Partnership for Transport and the University of Leeds. The findings contained within this report represent the analysis and interpretation of the research team and do not necessarily imply endorsement by the funders.

## Reference

This report should be referenced as:

Marsden, G., Anable, J., Docherty, I. and Brown, L. 2021 At a crossroads: Travel adaptations during Covid-19 restrictions and where next? Centre for Research into Energy Demand Solutions. Oxford, UK. ISBN: 978-1-913299-07-1

## Authors:

- Greg Marsden | University of Leeds
- Jillian Anable | University of Leeds
- Iain Docherty | University of Stirling
- Llinos Brown | University of Leeds

More details on the [COVID19 Transport, Travel and Social Adaptation Study website](#).

## Contents

Executive summary	4
2. Introduction	9
3. Changes in use of transport	10
4. Changes in car ownership	15
5. Attitudes to public transport	18
6. Working from home	23
7. Online shopping	31
8. Government interventions	33
8.1 Public transport subsidy	33
8.2 Active travel investment	34
8.3 E-scooter trials	36
9. Where next?	37
10. Annex 1 – survey details	42

## Executive summary

Covid-19 has forced countries around the world to make massive adaptations to the normal way of life to reduce the risk of the spread of the virus. This briefing sets out new insights into how people's travel patterns have adapted over time and why. It draws on national data sources and a major panel survey of over 6000 people conducted in July and December 2020. It calls for a major realignment of investment and policy to ensure that we do not return to the overcrowded, congested, polluting and unhealthy transport system that people had come to accept as inevitable.

### Active travel: walking is the big winner



- Walking is the only way of getting around that more people are doing more regularly than they did before the pandemic. 56 percent of our respondents are walking three times a week or more, up from 36 percent pre-pandemic. This massive shift has been hidden in plain sight because walking so often gets ignored in what gets counted.

- Cycling levels have also increased relative to last year. This is despite cycle commuters being very likely to work from home. The warm conditions of the first lockdown saw levels increase two to threefold. Even in winter levels held up remarkably well.
- The UK and Scottish Governments invested to support the rapid introduction of schemes to provide more space for walking and cycling. This supported the trips that people have wanted to make more of and offers great public health outcomes.
- The introduction of new cycling and walking schemes was done in a hurry and some were not well used or had design faults. However, we found that people want to see more reallocation of space to active modes. Support for measures which improved walking and cycling outweighed objection to them by a factor of almost 2 to 1. The vocal objectors are in the minority.

### Public transport – a critical service but will it recover?



- By the end of 2020, £5.4Bn of additional funding support for public transport had been provided or committed by government. This enabled bus operators and the rail industry to provide services that complied with social distancing rules. Falls in patronage of up to 95 percent meant that no public transport services were commercially viable. Without this support the sector would have collapsed.
- The services provided have been proven to be essential, however. 60 percent of bus users reported having no alternative but the bus for the journeys they made during the pandemic. Just under 60 percent of rail users reported the same for their rail journeys.
- People were asked to avoid using public transport if they could and to travel only where necessary. Rail use has on average been 25 percent of the previous year. Bus use outside and in London has on average been 35 and 46 percent of the previous year respectively.
- Whilst bus use recovered to around 60 percent of 2019 levels in the early Autumn, rail did not get above 43 percent at best. Some people have already come back to public transport but the picture looking ahead is very difficult.

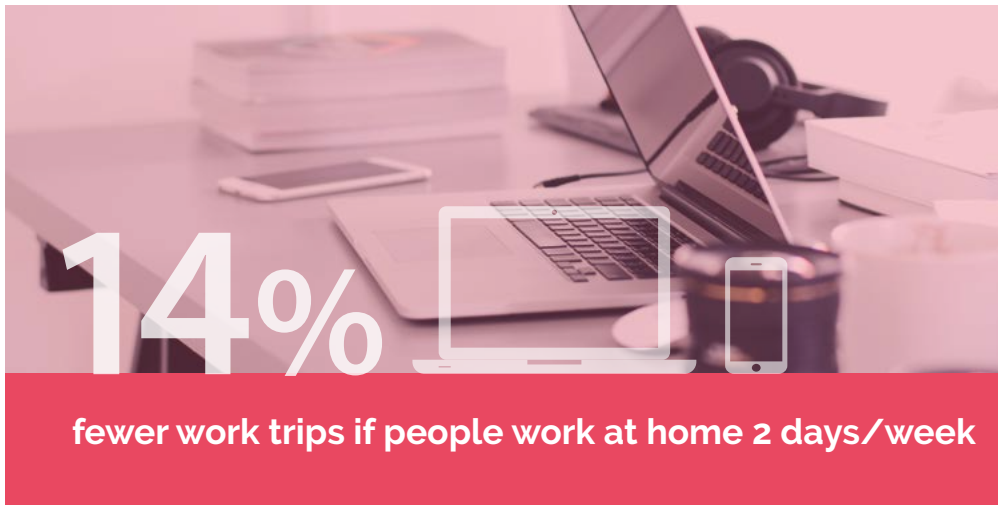
- Recessionary effects, continuation of some level of working from home, a desire to avoid overcrowded places and some vulnerable groups who seem likely to stay away from busy services for longer mean that public transport will require substantial transition funding for some time to come. Without it, there are risks of a negative cycle of route closures and further decline in use.
- Public transport will also need to adapt and continue the developments in real time crowding data to reassure travellers and provide more flexible ticketing if fewer people are commuting five days a week.

## The big switch to car has not happened



- It was assumed that the switch away from public transport would mean everyone turned to the car. This has not been the case. Car traffic averaged 70 percent of pre-pandemic levels and the morning peak never returned to anything like pre-pandemic conditions.
- People bought fewer cars nationally with a 35 percent drop in new car purchases and an almost 15 percent drop in used car purchases in the year to February 2021. Many people have deferred decisions about whether to buy, replace or get rid of their cars.
- Our research found that as many people gave up a car as bought one. Around a third of the decisions around car increase, decrease, retention or borrowing were impacted by Covid-19. Covid-19 was reported as being more important a factor in reducing car ownership than it has been in increasing it.
- Because of the potential for some journeys to be replaced by online ways of doing things, it is not inevitable that car traffic will return to pre-pandemic levels.

## Increasing home working and shopping – how much could stick?



- Prior to the pandemic just over 25 percent of the workforce had some experience of working from home with around 12 percent of the workforce working at home at least once in the survey week. By October 2020 we estimate the number of days worked from home had quadrupled. This has been a huge shift and going back to pre-pandemic patterns of work is unthinkable.
- How much working from home is possible depends on the structure of the local and regional economy. London, Bristol and Edinburgh all showed levels of home working all well above our survey average with Lancashire, Ayrshire and Aberdeen well below.
- Car commuters (both drivers and passengers) were doing the least amount of working from home in October. Those who, pre-Covid, were more likely to be car commuters were most likely to be the ones physically travelling to work.
- We estimate that if people who used to commute by car and who are now working from home were to continue to do so for two days a week, almost 14 percent of morning car trips would be cut. This could result in traffic reductions similar to those seen in school half terms. The prize of continuing some working from home is quite significant in congestion and carbon emission terms.
- Online shopping has continued its rising trend, jumping from 18 percent of all national retail sales by value before the pandemic to 34 percent by January 2021. Food shopping online has more than doubled to over 10 percent of food sales. Non-food has been as high as 45 percent of sales.
- Around a quarter of our respondents said that they will continue to shop online more for groceries after lockdown and this held level over 2020. More than a third of our respondents said they would continue to buy more online for non-food and this rose by 5 percent over the year. The trend to buying online has been significantly accelerated.
- There is both a clear need and an opportunity to re-think the balance of retail, office, residential and recreational space in our town and city centres.

## Where next? Major risks of taking the wrong recovery path

The actions taken by the UK and Scottish Governments to date have been critical in supporting public transport and boosting active travel. However, the direction of the post-pandemic recovery has yet to settle and there are a number of interventions which suggest that the opportunity for a genuinely 'green' recovery is about to go to waste. Four indicators of this are the actions of the UK government to:

- Continue with above inflation rail fare rises of 2.6 percent in England and Wales (RPI+1 percent).
- Freeze fuel duty for the 11th consecutive year.
- Maintain a £27bn major roads programme when we have seen clearly that much of the business and commuting travel on which it is predicated could be done virtually.
- Consulting on the reduction of Air Passenger Duty for domestic flights.

The Climate Change Committee's analysis shows that 30 percent of the emissions reduction from transport in the period to 2029 is expected to come from behaviour change and demand reduction. Such ambitions at a local scale can mean triple figure growth in public transport which may now be difficult to achieve. Ambitious walking and cycling plans are already part of future climate plans. The only option to fill the gap is to capitalise on the opportunity for greater home working.

If this can be achieved then the bonus is that large parts of the major long-distance infrastructure investment funds could be refocused on high quality liveable neighbourhoods and safe routes to schools and town and city centres. These have the potential to benefit everyone, they have popular support and they can support local jobs and neighbourhood and town centre renewal.

Such an approach would also be a more resilient response to the pandemic, building up the fitness of individuals and communities and enabling us to be more nimble in adapting to future outbreaks of a highly transmissible nature and other disruptive events. Building back better needs to be building back differently.



## 2. Introduction

The COVID19 Transport, Travel and Social Adaptation Emergency Data Collection has been tracking how and why travel patterns have been changing in response to the pandemic restrictions. As we begin to enter the opening up of the economy following the January-March/April 2021 lockdown this document reviews the overall position of the transport sector. It takes a closer look at some policy questions which stakeholders agreed were important in late 2020. The report draws on nationally available data sources and reports from other organisations as well as evidence collected from our unique panel survey (details of which are in Annex 1). The panel survey will continue with a third wave in May and additional funding is being sought for two further waves. There are already some important findings which help to interpret future scenarios but the coming year remains uncertain as stated intentions turn into observed actions as the economy opens up and whilst social distancing persists.

### 3. Changes in use of transport

One of the defining stories of the behavioural adaptations that have made during lockdown is how different this has been across different forms of transport. Figure 1 shows the Department for Transport's estimates of aggregate fluctuation of traffic volumes over time.

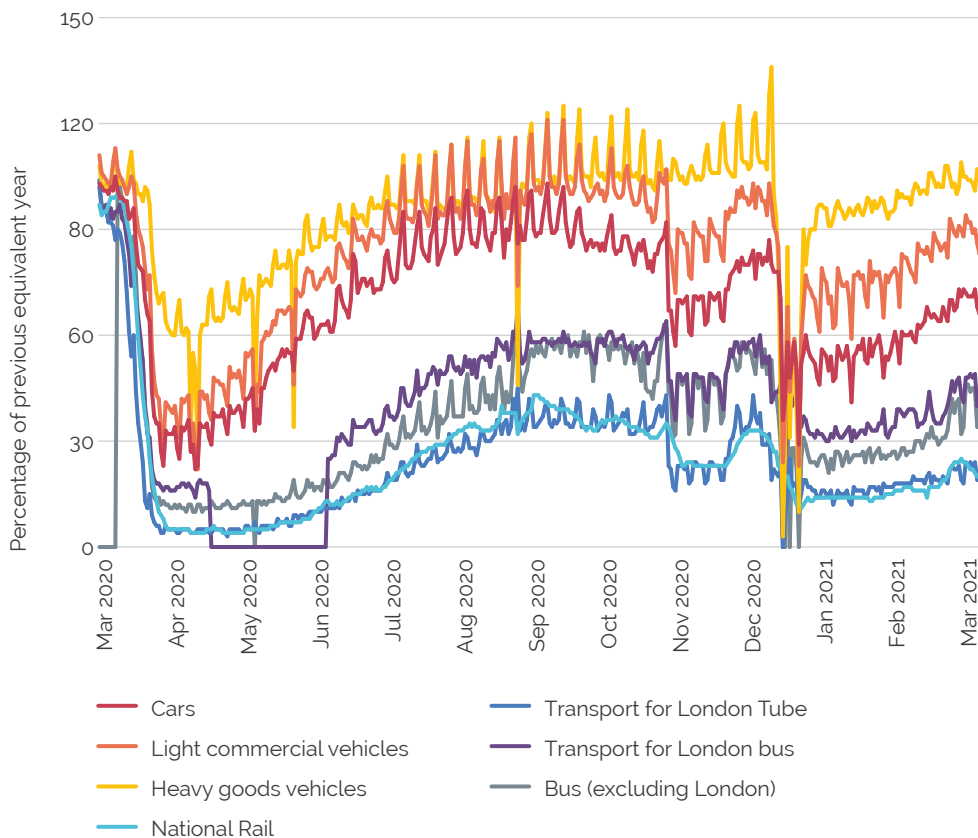


Figure 1: Department for Transport Use by mode statistics

Figure 1 shows that in England across the year, car usage was at 70% of the previous equivalent year. It recovered to a working week high of 91% during the week of 14th September. A comparison of changes in the LGV and HGV markets reveals some important distinctions. Overall, LGV traffic reduced to 83% of the previous equivalent year whilst HGV was 94%. LGV traffic was at or above the levels for the previous year for the six working weeks of 7th September to 12th October inclusive. HGV traffic was above the levels for previous years from 1st September to 18th December inclusive and again in week of 22nd Feb 2021.

The increase in HGV figures is not explained by economic output relative to previous years (4th quarter GDP was 7.8% lower than the same period in 2019). Further work is required to understand the impacts of any additional intercontinental goods movements in advance of the end of the Brexit transition in these figures.

Interestingly, LGV and Car traffic track each other with an almost linear relationship ( $LGV\ Traffic = 1.029 \times Car\_traffic + 10.9$ ,  $R^2 = 0.93$ ) whereas HGV use does not map well with car traffic ( $HGV\ Traffic = 0.69 \times Car\_traffic + 45.8$ ,  $R^2 = 0.55$ ) or LGV traffic ( $HGV\ Traffic = 0.76 \times LGV\_traffic + 31.5$ ,  $R^2 = 0.75$ ). Neither does it map to changes in online retail patterns which has been suggested to be a cause (see Section 7). This suggests that the LGV market is more aligned with behaviours in the private car market which is likely to reflect the use of vans as personal vehicles amongst that part of the population who were continuing to travel to work.

Rail has on average been 25% of the previous year. Its peak working week performance was the week of 7th September where it was 42.6% of previous years. The highest weekend performance was 41% on the weekend of 12th September. Weekend performance was broadly similar to weekday levels which tallies with the main difference relating to the presence or absence of rail commuting.

Bus outside of London has on average been 35% of the previous year compared with Bus in London which was 46%. Bus use outside London was above 50% of previous year in the period from 7th September to 23rd October with a peak working week of 58% in late September and early October. This may reflect something close to the maximum safe socially distanced carrying capacity in some areas (see Section 5). In London bus use was above 50% of previous year from 3rd August to 11th November with a peak again close to 60% although one bank holiday day was reported at 69%.

In Section 6 we review the extent to which shifts in working from home affected the use of different modes of transport in more detail. In general however, switchers to working from home were more likely to be public transport users than car drivers and, of those, they were more likely to make bigger switches if they were rail rather than bus users. The traditional morning peaks were not seen on the road or public transport networks with the middle of the day being busiest or weekends which were more related to leisure travel.

Figure 2 shows cycle use across the period for England. It shows a very marked increase in cycling in the early stages of the first lockdown followed by a decline to below a typical early March benchmark against which the comparisons were made. On average cycling use was 124% higher compared with the previous year. It is the ONLY mode of transport in this data set to record higher levels year on year. It has been suggested that the increase in cycling is largely leisure based. However, the increase in cycling for leisure is also offset by the reduction in cycling for commute (and other activities) just like other modes. Our work (Section 6) shows that cycle commuters are disproportionately represented among those people who worked from home at least part of the week before Covid-19, and those who were able to transition to working from home during Covid-19 and so bike commuting will be impacted more.

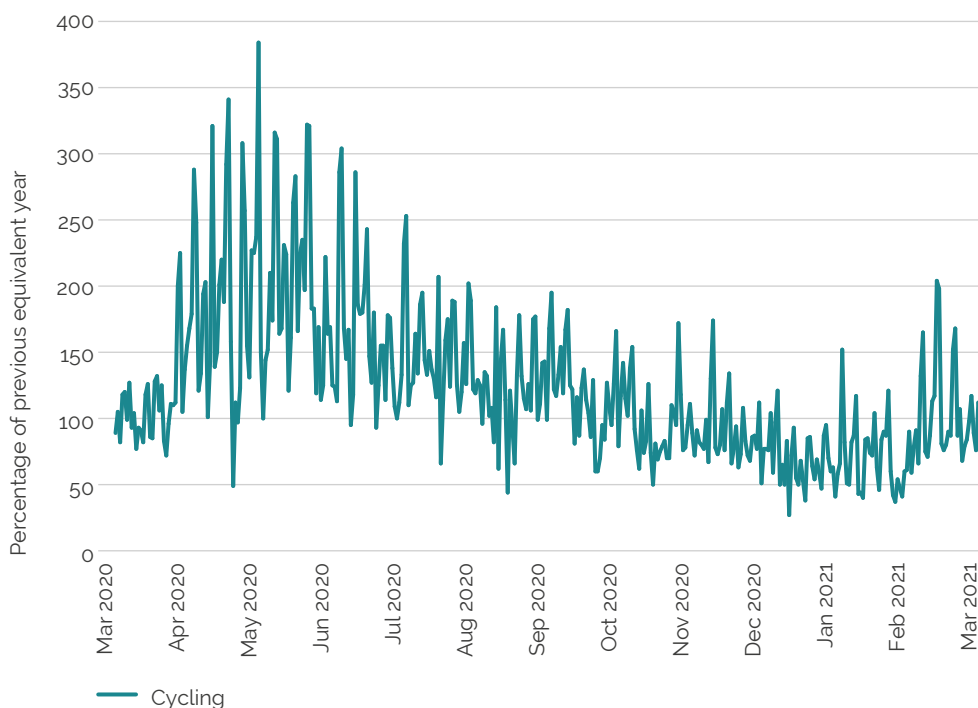


Figure 2: Department for Transport Use cycle mode use statistics.

Table 1 shows the change in modes relative to the previous equivalent day in the year before split by weekends and weekdays. It shows that cycle has the biggest swing between weekday (+109%) and weekend (+158%) of +49% whereas other modes are all within 3% of each other. It also shows that weekday cycling is up on the previous year. Its change in use, relative to last year, is 39% higher than the car (109% vs 70%) during the week and 90% higher at weekends.

**Table 1: Change in mode use relative to previous equivalent day split by weekend/weekday<sup>1</sup>**

Mode	Weekday average	Weekend average
Cars	70%	68%
LGV	84%	81%
HGV	93%	95%
Rail	25%	24%
TfL Tube	24%	24%
TfL Bus	46%	46%
Bus outside London	36%	34%
Cycle	109%	158%

As there was a particularly large increase in the first lockdown, we have removed the periods where England was in a national lockdown from the data set. These are 23/03/2020 to 01/06/2020, 05/11/2020 to 02/12/2020 and 06/01/2021 to 01/03/2021.<sup>2</sup> After these periods are removed cycling has increased to 120% compared to the previous year. HGV in the same periods is 100%, LGV 95%, Car 83%, TfL Bus 53%, Bus outside London 45%, Rail 34% and TfL Tube 32%. On this metric too, cycling has outperformed other modes and is the only one being used more than in the pre-pandemic period.

Whilst the increase in cycling has been a feature of debate in the media, walking has been largely hidden. It is absent from the count figures provided by the Department for Transport although is presented by Transport Scotland. However, walking is, in general, neglected in transport statistics and data capture at a local level with the focus being on town centres. The potential significance of overlooking this is huge. In our panel survey and in the qualitative interviews which we have undertaken, walking emerges as the only mode with significant increases in regular use and these had grown over time. Figure 3 shows that there was an increase from 36% of people walking at least three days a week to 56% in October 2020.

<sup>1</sup> Bank Holidays were classified as weekend days

<sup>2</sup> This was the last day of the dataset when accessed on 8th March 2021.

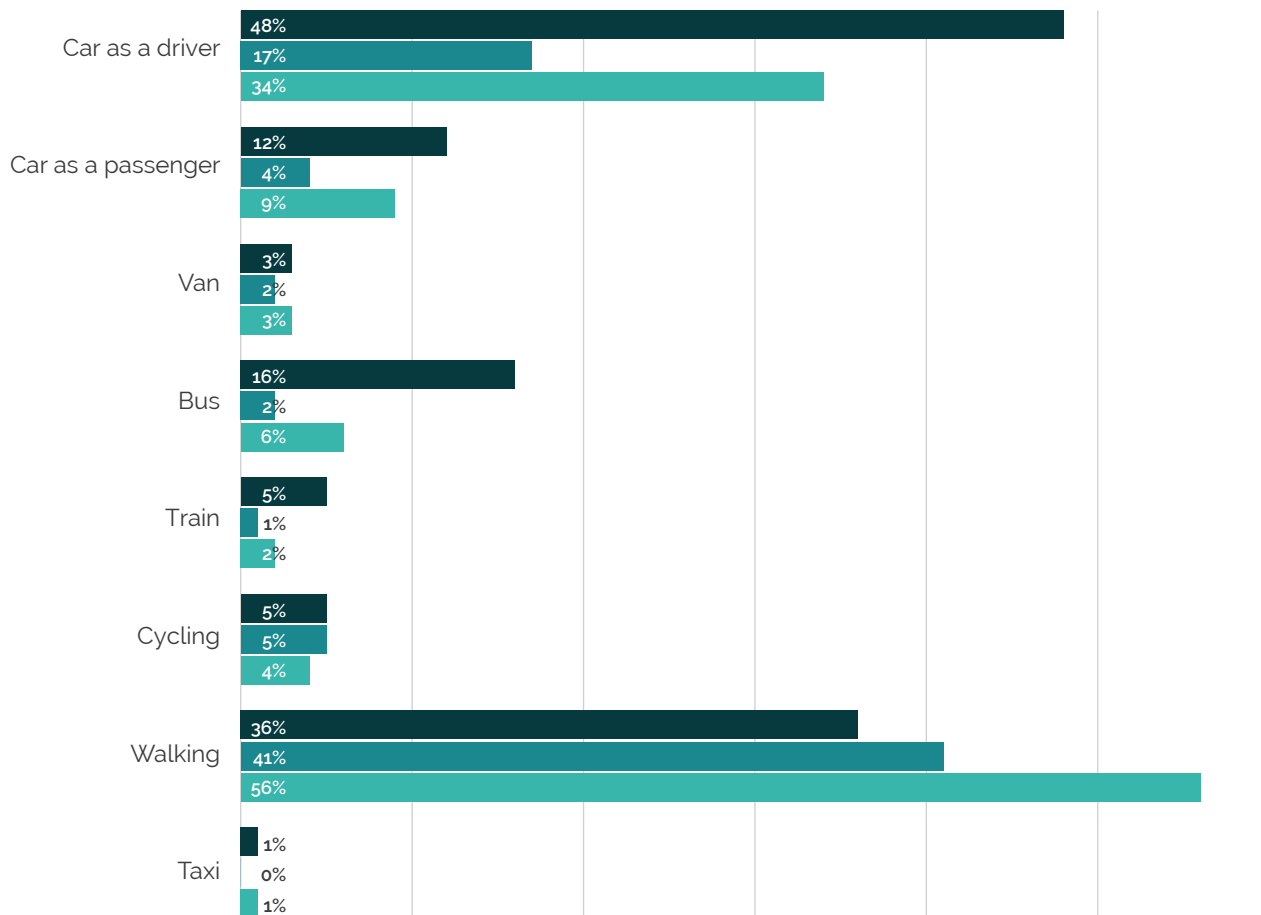


Figure 3: Changes in use of transport modes three days a week or more. (Survey data) Weighted: Before N=9,362, during N=9,362, October N=6,209.

Car use as a driver at least three days a week dropped to 17% in the first lockdown and only recovered to 34% by October. Cycling use in our sample declined marginally from 5% to 4% cycling three days a week or more which suggests that more occasional cycling explains the overall increases observed. Public transport use showed significant falls with bus recovering more than rail in line with national data.

Walking is the big behavioural switch. It has been available to the majority of the population to take up. There are well understood and significant health benefits to people walking more and savings to the economy from this. It is critical that this upswing is spotlighted and nurtured.

## 4. Changes in car ownership

The data above suggests that the popular narrative that "car use is back to normal" is wrong. Accompanying this narrative has been suggestions that more people will take up buying cars to avoid the need to use public transport. The national figures suggest a 35% drop in new car purchases and an almost 15% drop in used car purchases in the year to February 2021.<sup>3</sup> Figure 4 shows the change in car ownership across the whole survey sample from our survey.

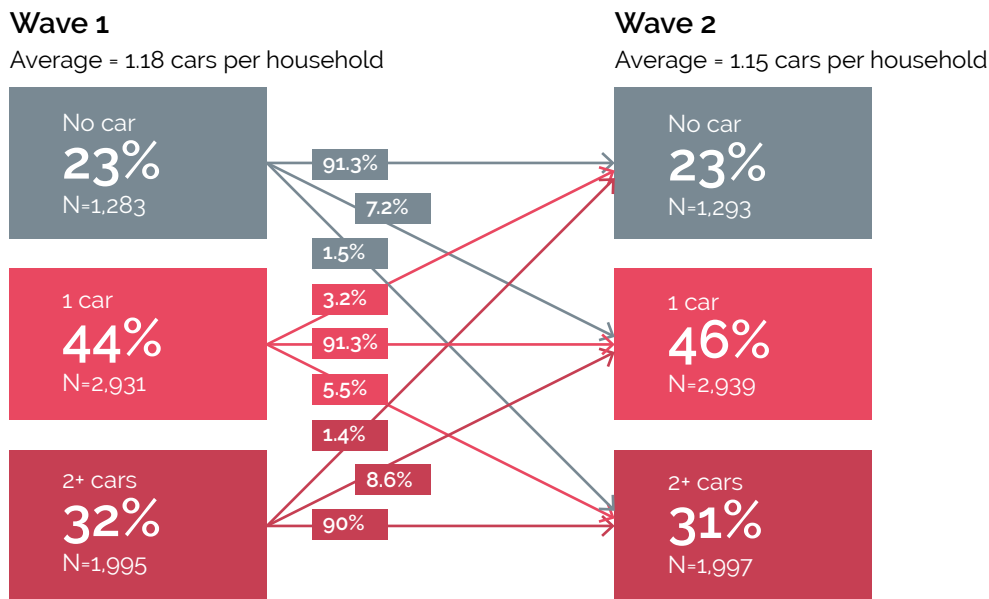


Figure 4: Change in car ownership across whole sample from Wave 1 to Wave 2. Ave = Average. (Survey data)

Overall there was no significant change in average cars per household. This hides a significant amount of change in behaviour however, with 8.7% of households that had no car before June 2020 moving into car ownership by November 2020 (1.8% of sample) whilst 1.4% of two car households and 3.2% of one car households moved to not having any cars in the household (1.9% of sample).

<sup>3</sup> Data from Society of Motor Manufacturers and Traders: [Car registrations](#) and [used car sales](#)

Just under 10% of the sample reported not getting rid of a car or holding on to a car for longer than intended over the period to November, suggesting some people are waiting to see how activity patterns will settle down before taking a firm decision.

The churn in car ownership decisions underneath the aggregate "no change" headline is explored further in Figure 5 broken down by our survey areas. London exhibited the greatest total change in ownership. Lancashire was the most uneven with more households giving up a car.

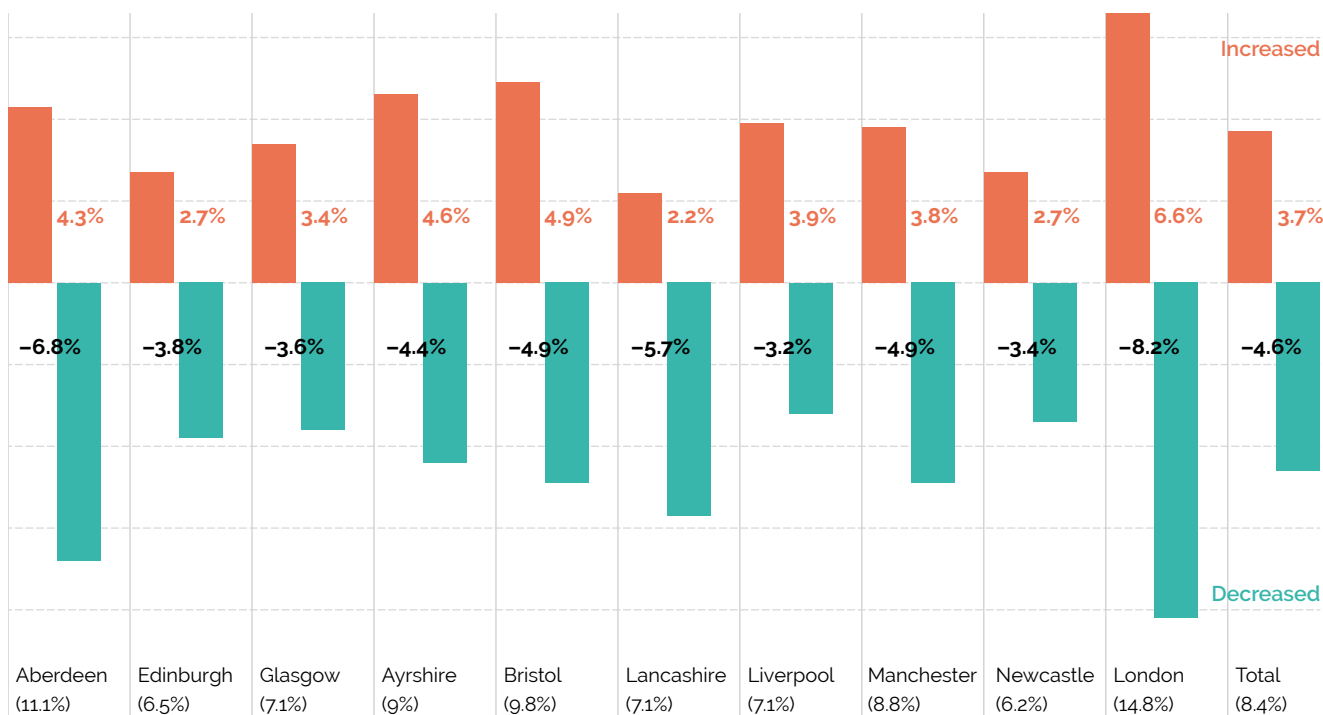
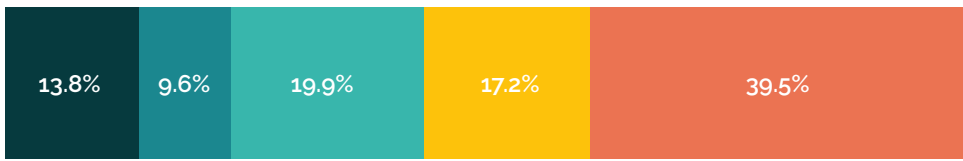


Figure 5: Change in car ownership by survey location (Survey data). Percentage of households reporting a change in the number of household cars from before lockdown. Questions asked to households in Wave 2 with at least 1 driving licence. Numbers in brackets denote total proportion of households with a change. (Survey data) Weighted: N=5,343.

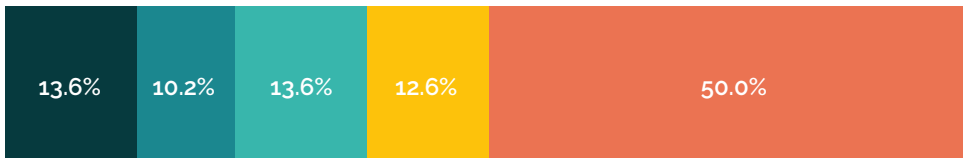
Around a third of the decisions around car increase, decrease, retention or borrowing were impacted by Coronavirus. For those deciding to give up a car, around a quarter cited a change in work situation or not needing the car as much as before. Only 10% of those increasing car ownership cited fear of using public transport as a reason. Overall, as shown in Figure 6 the pandemic has been reported as being a greater factor in reducing car ownership than it has been in increasing it to date. Other parts of our survey data sheds some light on potential factors such as shifts in working from home. However, stated intentions do not map well to observed behaviours at this stage. We will be developing further insights on car ownership decisions through the interviews with the public being conducted as this report is being written.



Decrease N=261



Increase N=206



■ A great deal   ■ Quite a bit   ■ Somewhat   ■ Very little   ■ Not at all

Figure 6: Contribution of Covid-19 to decisions to decrease or increase car ownership. (Survey data)  
Weighted: N=467.

## 5. Attitudes to public transport

As shown in Figure 1, bus and rail use have been significantly reduced during the pandemic. This has resulted in part from the reduction in economic activities available which has affected all modes and in part from the public health messaging. In order to maintain social distancing guidance was initially for operators to run services with 2m spacing and this has subsequently been modified to 1m+. This reduces the operational capacity of public transport and has required additional messaging to enable that capacity to be used by key workers.

Whilst the changes made have been led by the public health and economic access concerns, the reality is that the message has often boiled down to "Avoid Public Transport" as shown by Figure 7.



Figure 7: Example of simplified messaging on public transport use

An overriding concern of decision-makers and public transport operators alike has been the extent to which the experience of the pandemic, where alternatives to public transport use have been pro-actively promoted for a year or more, coupled with changing working practices and messaging that public transport is unsafe could have

a significant and long-lasting impact on public transport use as physical distancing measures are relaxed. This section explores these issues and tries to drill down beneath the aggregate question to understand differences between bus and rail and between different user groups which may have different concerns.

Transport Focus has been running a weekly user insights survey of around 2000 people which is nationally representative. Respondents are excluded from participating in future rounds of the survey so the results are a snapshot of opinion. The work is particularly useful for comparing between attitudes of bus and rail users and regularly reports on differences between user categories.<sup>4</sup>

The Transport Focus work suggests that the pandemic has had a negative impact on people's attitudes to public transport. In their report on week of 19-21 February 2021 they found that a half of people agreed that Coronavirus has made them rethink how they will use public transport in the future.<sup>5</sup> Only 52% of regular public transport users reported expecting to use public transport as much as they did before March 2020. This is slightly higher for occasional public transport users (59%). There are some important differences between user groups:

- Those with clinical vulnerabilities, a disability or with children under 5 were more likely to say they would never feel completely comfortable on public transport
- Younger people (aged 18-35) were more likely to report being happy getting back to using public transport for regular activities (around 55%)

It is also important to note that almost two in five people reported being concerned about their financial circumstances in the near future (38%). This was highest for those out of work and also BAME (both 61%) and those aged 25-34 (56%) and households with children (56%). The recession will reduce travel across all modes and this will add to the financial pressures on public transport operators over and above those resulting from changing work patterns and perceptions of safety. Figure 8 shows the March 2021 medium term budget projections.

---

<sup>4</sup> Full details available at [Transport Focus data hub](#).

<sup>5</sup> Travel during Covid-19: attitudes to travel post-lockdown.

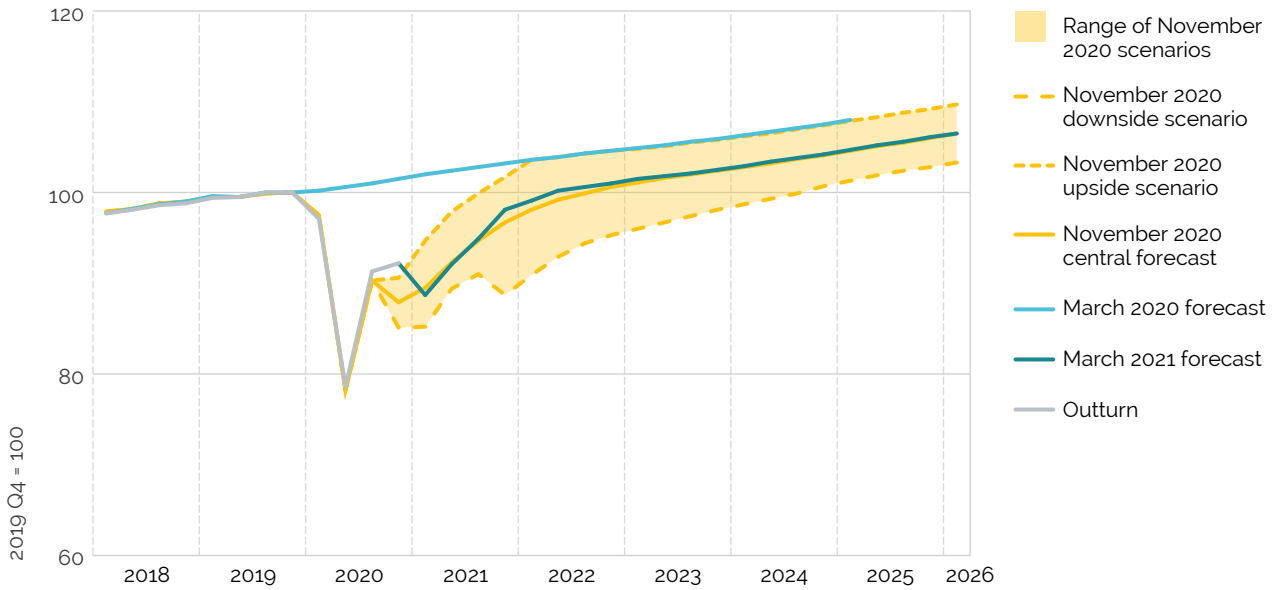


Figure 8: GDP recovery range estimates – March 2021 Office for Budget Responsibility.

Any work seeking to explore the likely impacts of the pandemic on attitudes to public transport should be aware of the gulf between the experiences of users and the beliefs of non-users. This is exemplified in Figure 9 from our survey where bus users were more than twice as likely to report good compliance with face covering wearing than non-users. It is also the case that they were more likely to report poor compliance. Similar findings were reported for cleanliness and were mirrored for rail.

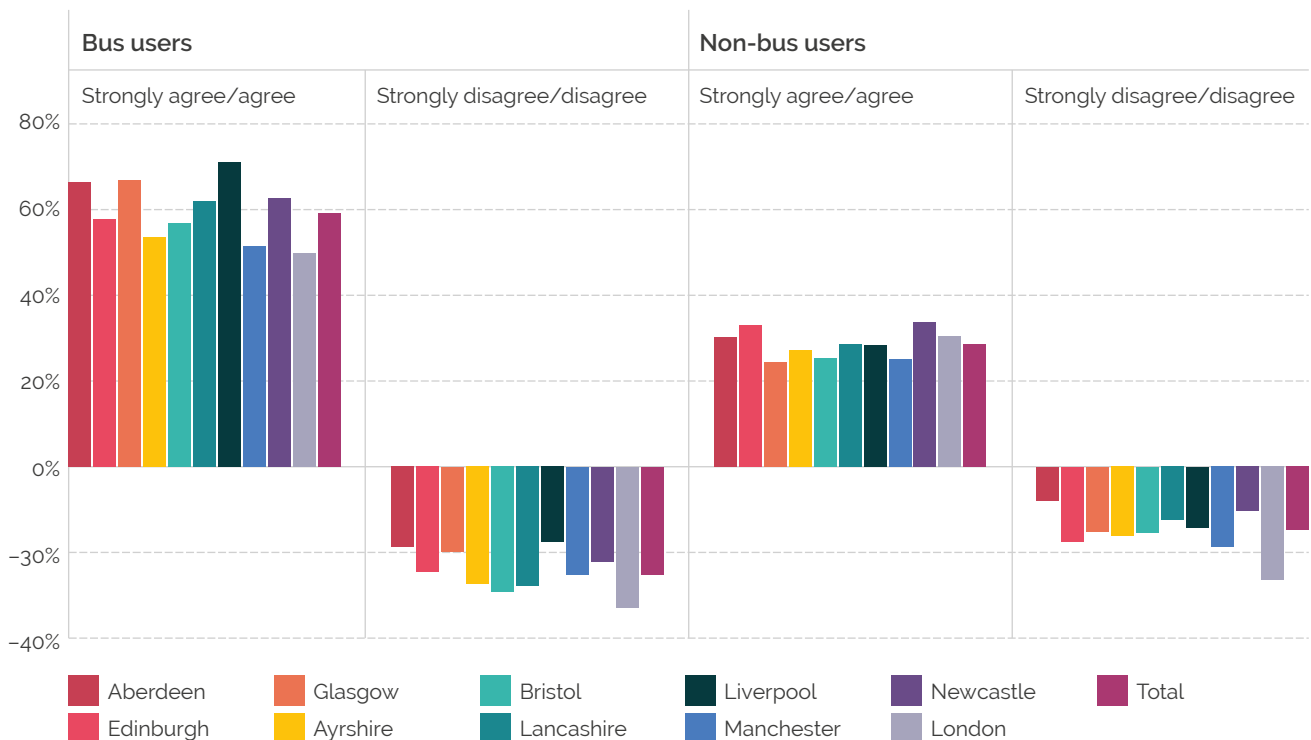


Figure 9: Attitudes to face coverings on buses by users and non-users. Users were asked to agree / disagree with "I think there was good compliance with face coverings by people using the bus". (Survey data, Wave 2) Weighted N=1,688 (Bus users) and 4,521 (Non-bus users).

In both open text answers on our online questionnaire and in interviews with members of the public, there appears to be a reluctance, in particular, to returning to using overcrowded public transport was seen to be less attractive than it had ever been.

Figure 10 shows the extent to which that part of the bus and rail market which did return during the pandemic is a captive market. A broadly similar pattern of around 60% of bus users being reliant on the bus for some of the journeys they made was found with around 20% using the bus whilst having other options. This shows the importance of the bus as a key service for economic and social activities. For rail the picture is more variable across areas which likely reflects the availability of rail relative to other options. In aggregate the numbers are similar.

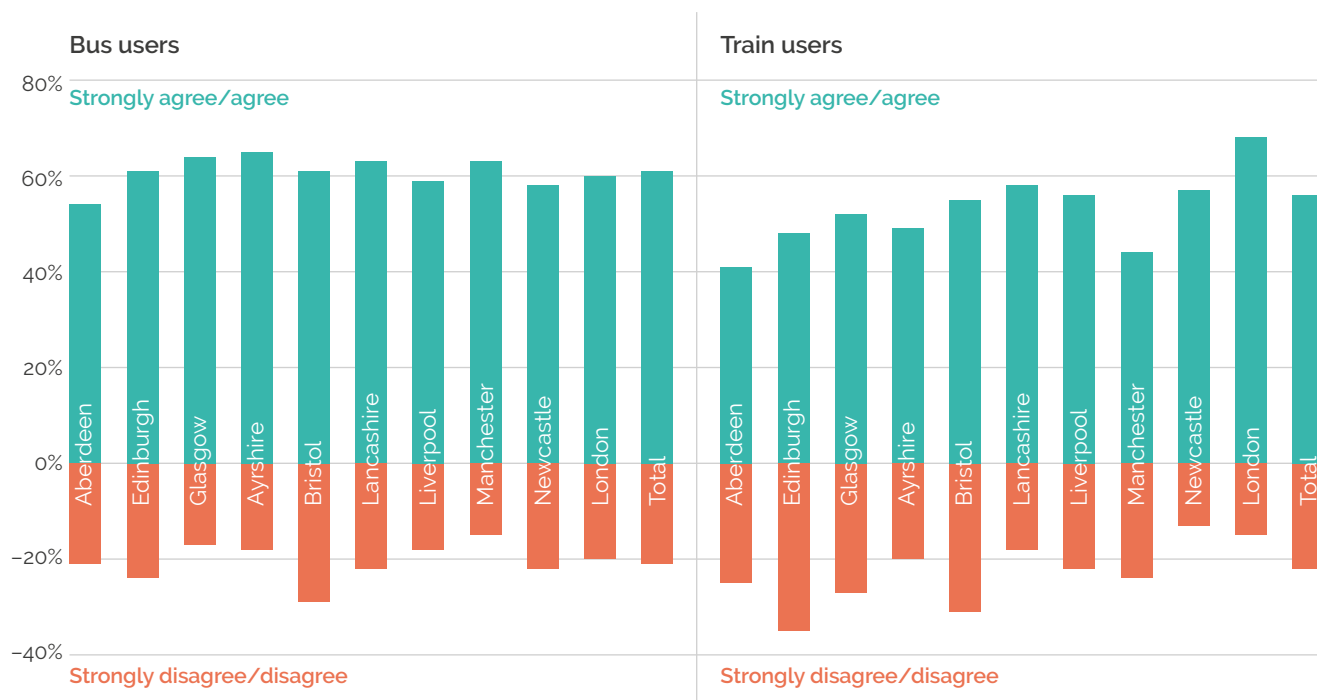


Figure 10: Assessment of extent to which public transport users during the pandemic were reliant on it. Users were asked to agree / disagree with "I had no choice but to use the bus / train for some journeys". (Survey data, Wave 2) Weighted: bus users N=1,688 and train users N=874.

Looking then at non-users, 80% of bus users had other ways to fulfil their journeys which were not dependent on bus and this is around 10% lower for rail as shown in Figure 11. With the exception of rail in London, non-users of public transport showed very little reliance on it with 5% or fewer reporting there were no other ways to get around.

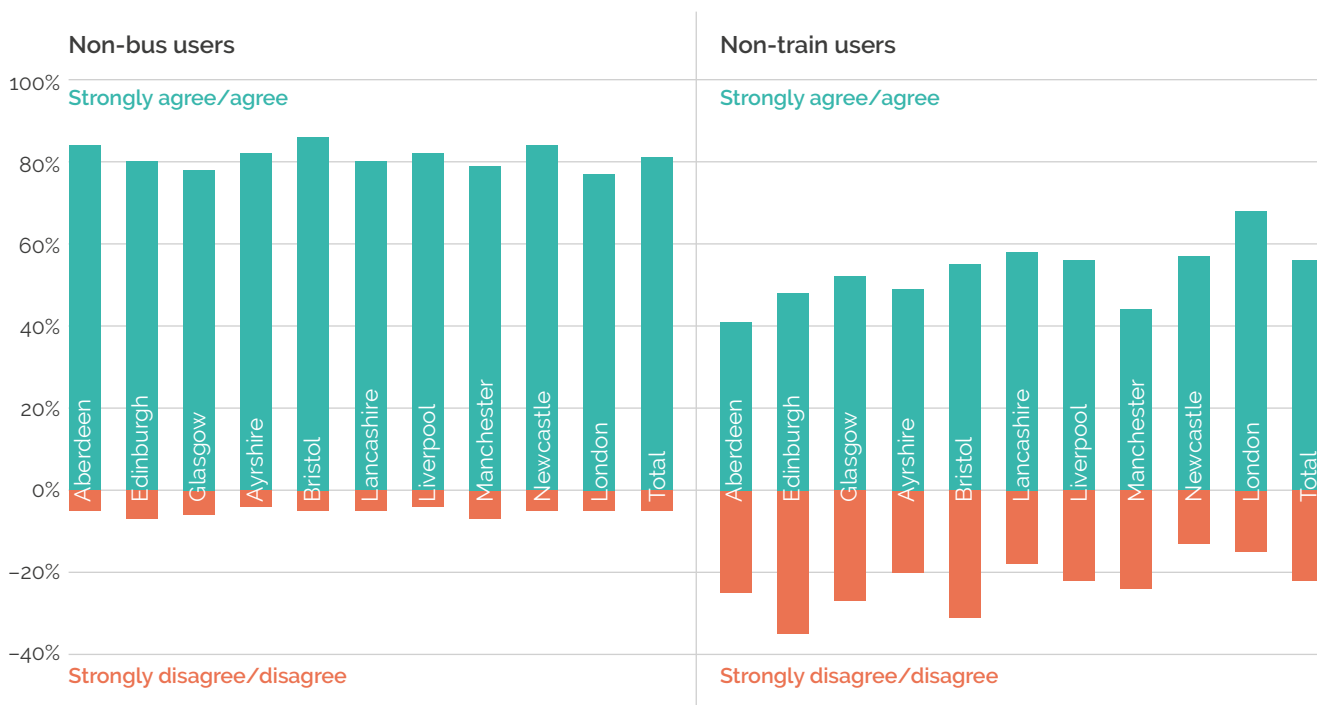


Figure 11: Assessment of the extent to which public transport users were captive users during the pandemic. Users were asked to agree / disagree with “I do not need to use the bus / train as I have other ways to get around”. (Survey data, Wave 2) Weighted: non-bus users N=4,521 and non-train users N=5,355.

The data suggests a difficult transition period for public transport. In particular there appear to be challenges in winning people back to using public transport when there are alternatives for most non-users. There are also issues in retaining the pre-pandemic users as there are some groups who report feeling more vulnerable and less likely to use public transport. On top of this, there are already concerns being reported about financial pressures amongst some users who might typically be seen to be more reliant and regular public transport users. We look further at the implications of working from home on future public transport use below in Section 6.

The evidence seems consistent and clear that, even with rapid removal of restrictions on physical distancing, the public transport industry will not return to a pre-pandemic position. It will be difficult to open up new markets to backfill any patronage loss from people who are travelling less or have found new ways of doing things. Most non-users feel they have alternative options. This suggests the need for a longer-term transition in support arrangements for public transport which allows for some time to build up trust in getting out and about more generally and in trying public transport again.

## 6. Working from home

Prior to the pandemic just over 25% of the workforce had some experience of working from home (ONS, 2020a). In that same survey around 12% of the workforce had worked at home in the previous week with far fewer (5.1%) working mainly from home (ONS, 2020a). An ONS survey of the workforce in April 2020 found 46.6% of people in employment did some work at home and of those 86.0% did so as a result of the pandemic restrictions (ONS, 2020b). The extent to which the population can work from home varies both across occupation and role (Figure 12).

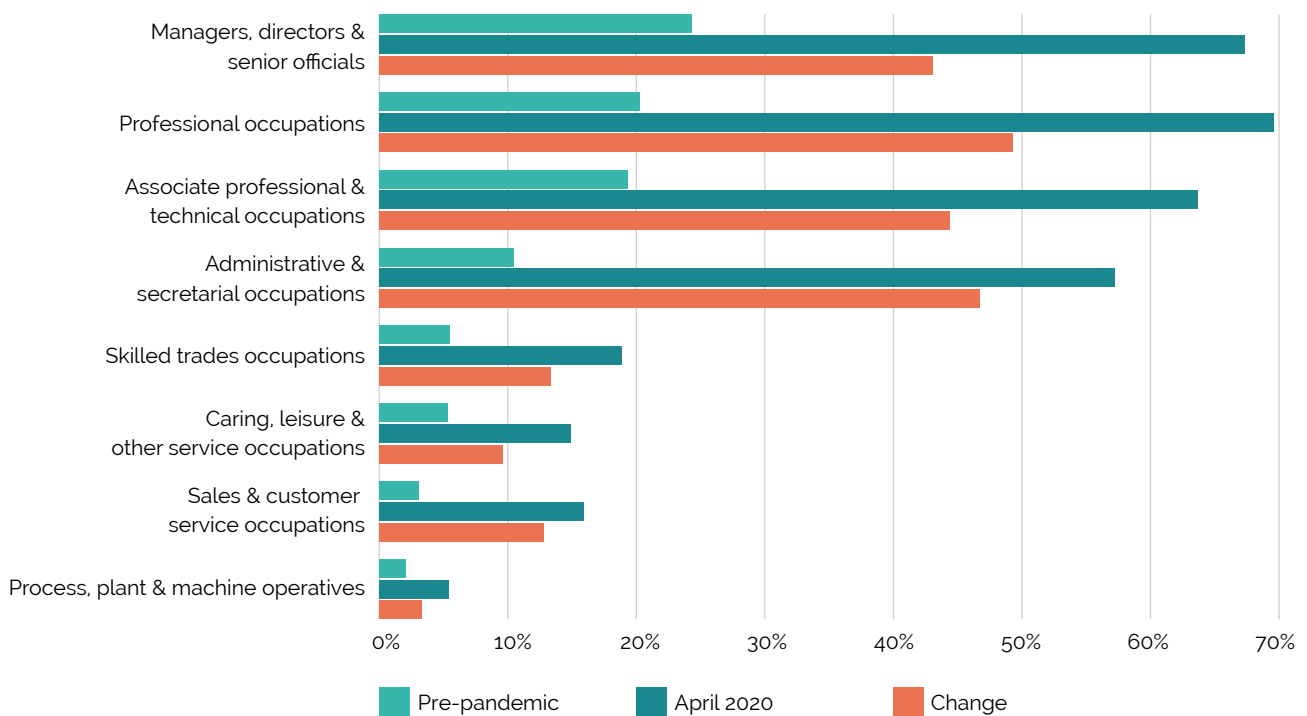


Figure 12: Change in reported homeworking during a survey week (Source: [ONS 2020a](#) and [ONS 2020b](#)).

The policy advice issued during the pandemic was to work from home if you can. Whilst this clearly impacted different occupations and roles in a diverse way, there has been a massive increase in the number and range of roles which have been working from home. Some jobs have changed from being roles which had to be conducted in a specific place of work to jobs which had to be worked from home. There is no turning the clock back on this shift in institutional logics and in the experiences which people have built up on how to work remotely. Whilst a small proportion of the workforce predominantly worked from home prior to the pandemic more people used to work from home some of the time. The key issue to be understood is what the blend will look like in the future and how many of the roles that have been conducted remotely will continue to allow home working.

The panel survey data collected by our study showed that almost half of those who never worked from home before lockdown shifted to partial or 100% working from home, making up 1/3 of the sample overall (see Figure 13).

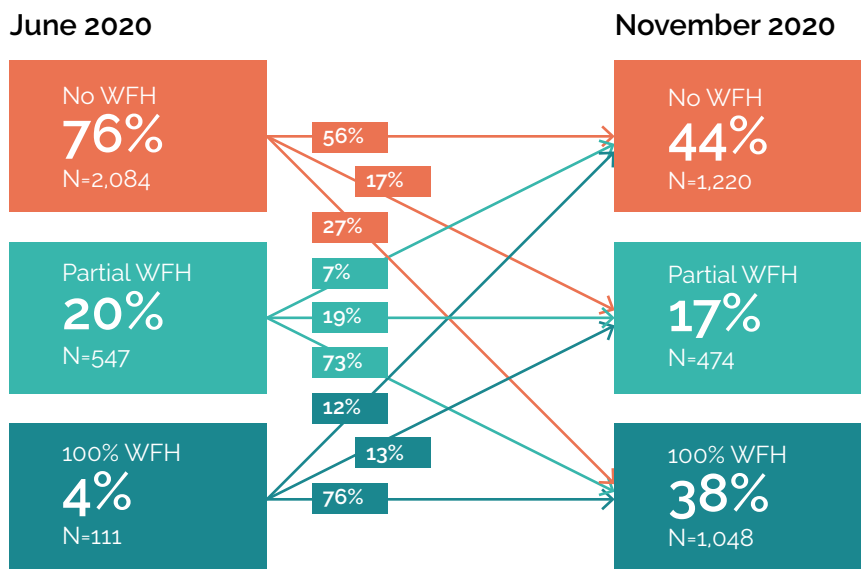


Figure 13: Change in levels of working from home for those workers in both June and November 2020. (Survey data)

There are some important differences in the proportions of roles being worked from home across our survey sites, the extent to which those increased and also returned to physical places of employment during the Autumn as shown in Figure 14. This is also reflected in the ONS surveys which found that London had the highest proportion of roles which could be worked from home (57.2%) and the West Midlands the least (35.3%) reflecting structural differences in the job market in different areas. Figure 15 shows the shifts in days worked from home according to occupation type. This data begins to provide something of a picture which local areas can use to make an assessment of size and nature of the work from home shift and what the potential might be for that to persist or shift back closer to pre-pandemic levels.



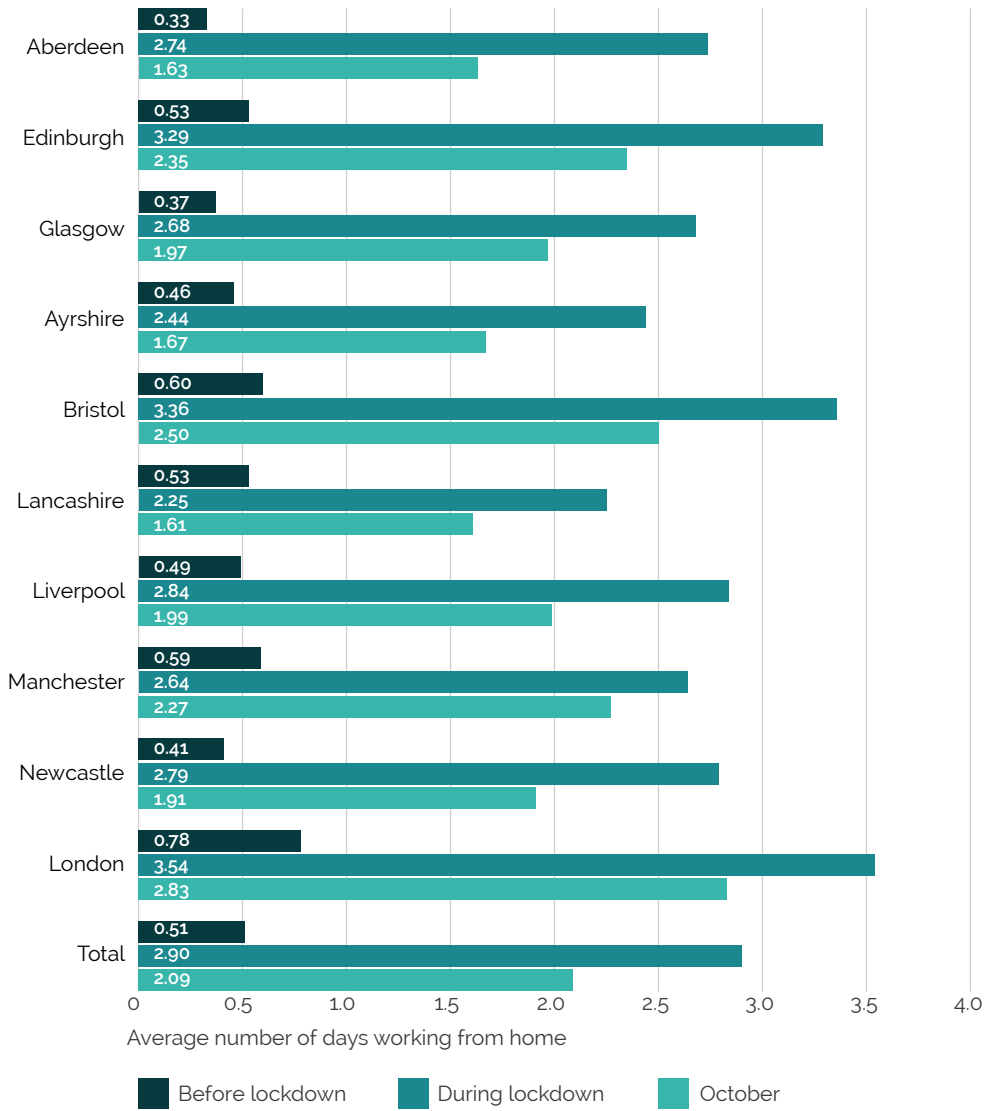


Figure 14: Change in average number of days worked from home by area. (Survey data) Weighted: before lockdown N=5,418, during lockdown N=3,772, October N=3,074.

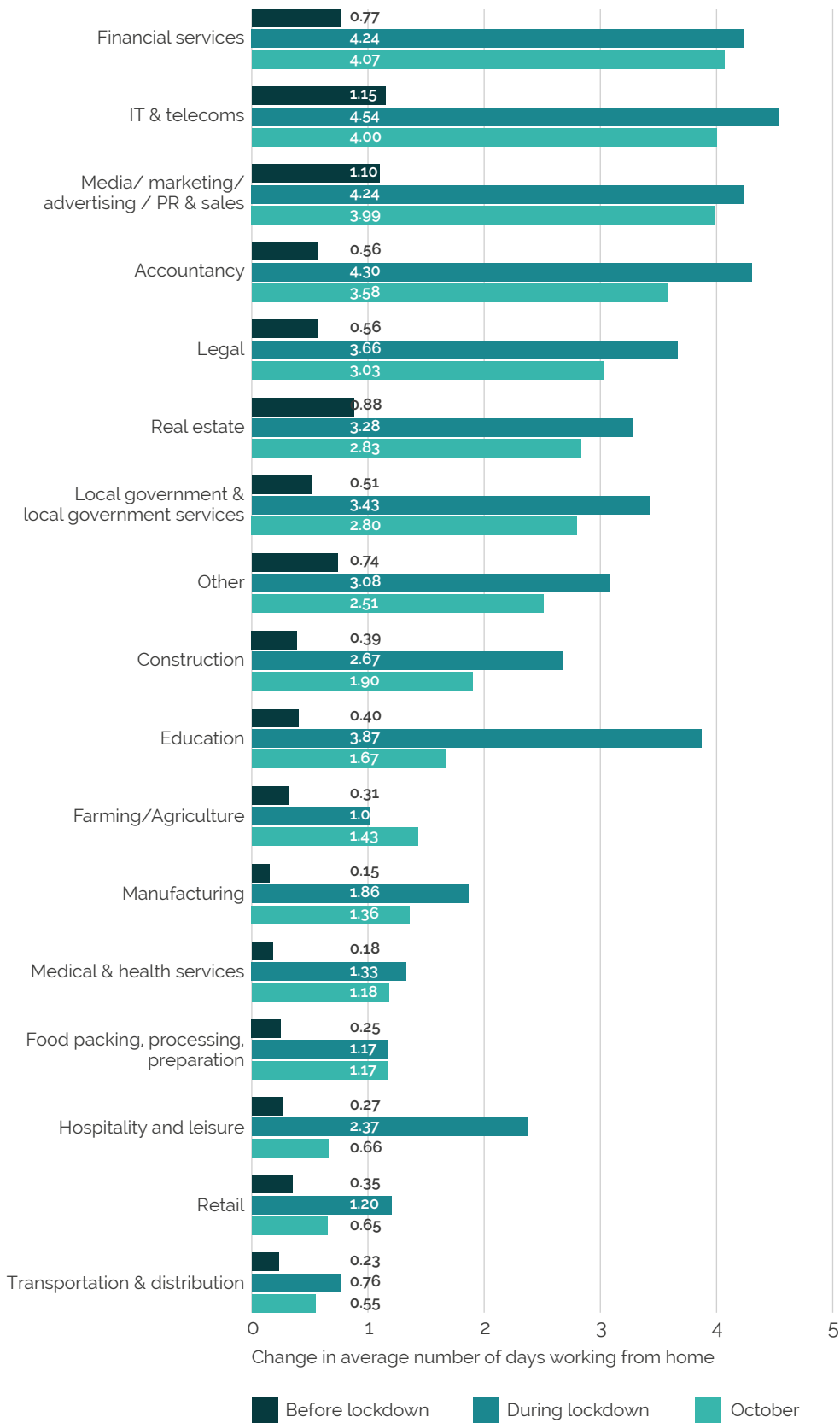


Figure 15: Change in average number of days worked from home by employment sector. All employees who left the house to work at least one day per week. (Survey data) Weighted: before lockdown N=5,429, during lockdown N=3,711, October N=3,132.

The extent to which shifts to working from home were associated with different ways of getting to work are shown in Figure 16. The data excludes London which shows much greater reliance on public transport modes more generally. Train commuting is most associated with working from home before and in October and so exhibited smaller growth. All other modes, except van, exhibited similar levels to each other before lockdown, with car passenger and bus slightly below other modes. In October, local public transport users and cyclists had maintained the greatest switch to working from home. Car drivers and passenger commuters were doing the least amount of working from home in October. Those who continue to never work from home are disproportionately reliant on the car for commuting and make up the majority of the working population. These journeys seem less likely to be city centre commutes and will reflect the dispersed land-uses in some parts of the country which public transport does not typically serve well.

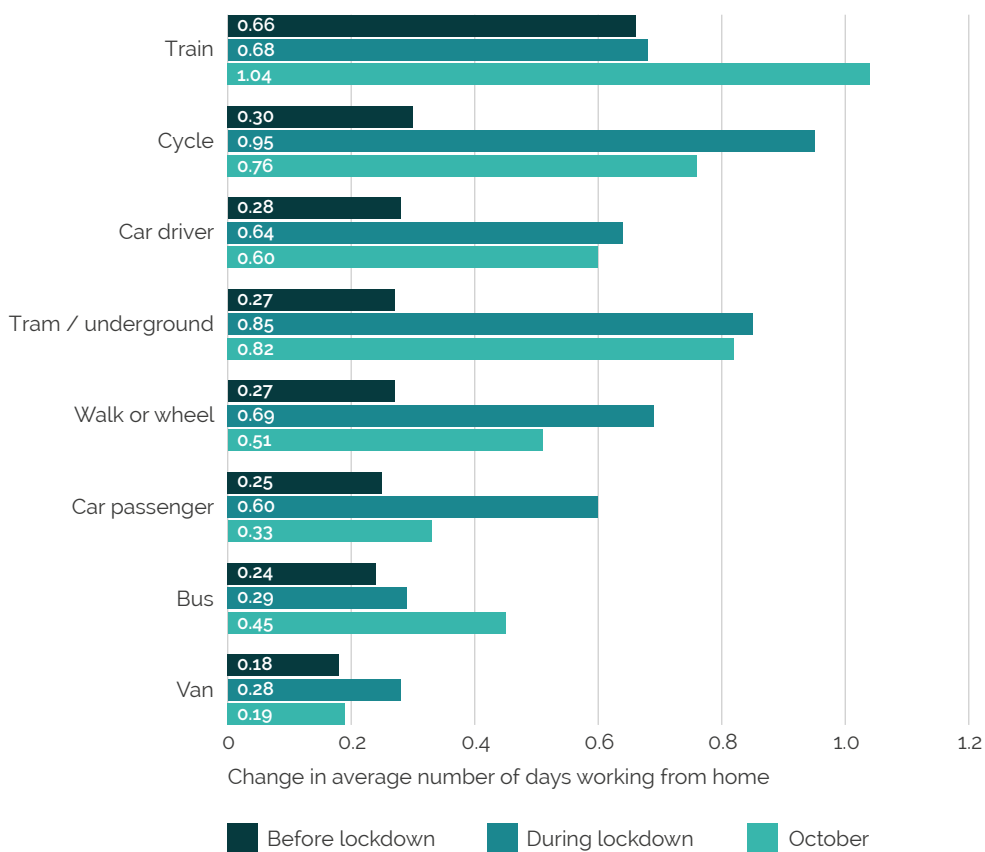


Figure 16: Change in average number of days worked from home by main commuting mode. All employees who left the house to work at least one day per week, excluding London. (Survey data) Weighted: before lockdown N=4,637, during lockdown 1,513, October N=1,819.

It is clear that there are important differences between the market of commuters using rail and bus as shown in Table 2 with greater propensity for rail users to work from home and to persist with it, although bus users also demonstrate an important increase.

**Table 2: Change in proportion of days spent travelling to work or working from home for bus and rail**

Commuter type	Ratio average number of days per week left house to travel to work : working from home
Bus commuters BEFORE	4.16 : 0.23
Train commuters BEFORE	4.03 : 0.50
Bus commuters OCT	1.93 : 1.91
Train commuters OCT	1.61 : 2.43

In June 2020 a quarter (24.9%) of all workers surveyed in our panel said that they would work from home a little or much more in the future with 23.1% saying they would conduct business meetings on line that they would otherwise have travelled for. However, it is important to see the evolution of working from home as a mix of employer and employee responses rather than it simply being a matter of individual preferences or sector alone. Some companies have already responded. BP, which employs 6000 people in the UK has told employees that they will be expected to work from home for two days a week after summer 2021. Investment bank JP Morgan has signalled that its employees will be given the choice to work from home in a variety of different patterns including a few days a week, or one or two weeks a month. Nestlé in York has invested £9m in refurbishing its offices to allow for more flexible working and to provide more collaborative workspaces for when people are there. The reasons for travelling to work also extend beyond just accessing work. For some, the ability to access retail and leisure opportunities at lunchtime or before or after work is an important part of their routine. As these activities return to being possible, this too will form part of the decision-making process. For some people there has simply not been the space to comfortably work from home, or the internet connectivity has been limiting or it has been isolating and limited the training and support which people may need. It remains difficult to forecast what the future propensity to work from home will be and how that might vary across different commute markets. However, what happens next on this is critically important to a number of policy areas which we set in context below.

We have estimated the likely reduction in commuting trips which would be observed if all of those workers who are now working from home some or all of the time who did not used to work from home all of the time carried on with doing so two days per week. Using a top down approach drawing on national statistics we estimate that the average number of days that all workers are at home rather than in their main place of work increases from 0.3 to 1.1.<sup>6</sup> This would potentially reduce trips to work by just under 15%. We estimate a similar metric, but focusing only on car commutes, working bottom up from our survey data as shown in Table 3. There we find a reduction of just under 14%, although this would be slightly larger as a proportion of commute distance.

<sup>6</sup> 7.1% of workers assumed to work from home 1 day per week and 5.1% 5 days per week pre-pandemic (inferred from ONS pre-pandemic survey). 46.6% of workers assumed to work from home (5.1% working 5 days per week as before, remaining 41.5% to work 2 days per week).

**Table 3: Estimates of reduction in car commutes. Those who were participating and working in both W1 and W2 and drive to work before lockdown (N=1624)**

Description	Number
<b>Total days worked in one week by those who commuted to work by car before lockdown</b>	<b>6,191</b>
Percentage of days working from home by car commuters BEFORE	6.9%
Days that car was driven to work BEFORE	5,763
Percentage of days working from home by same people in October	39.4%
Percentage of days working from home if they maintained 50% of the October working from home frequency	19.7%
Days that car would be driven to work	4,970
<b>Reduction in weekly car driving commutes from additional working from home</b>	<b>13.8%</b>

To put this shift in context, that would be roughly equivalent to the drop in trips during a school half-term week. This would have significant impacts on overcrowding, traffic congestion, toxic air pollution and climate change emissions. It would have some important wider implications for public policy and the private sector. There would be a negative impact on the finances of public transport (see also Section 5) on the need for investment in capacity enhancement projects and there would be major repercussions to property market values in commute destinations and the viability of retail and catering offers although this in turn will depend on the residential locations of home workers.<sup>7</sup>

The evidence on the net energy benefits of home working are mixed. In a recent systematic review it was found that of 39 eligible studies 26 found that there were energy benefits and 8 suggested that impacts were neutral or negative.<sup>8</sup> Some of the savings from not commuting have previously been found to be offset in residential re-location decisions with people moving further from work and in additional domestic heating. A shift to home working on this scale has not been seen before however, and it may be quite different to the slower shifts seen previously. Thus far, our survey data shows no greater tendency for people who work from home to say they have an increased desire to move home. What we can observe so far is that people have tended to take more trips on foot and by bike. The lower traffic levels have also contributed to reductions in CO2 emissions and improvements in air quality.

<sup>7</sup> De Fraja, G., Mattheson, J. and Rockey, J. 2021. Zoomshock: The geography and local labour market consequences of working from home. *Covid Economics*, 64: 1-41

<sup>8</sup> Hook, A., Court, V., Sovacool, B.K. and Sorrell, S. 2020. A systematic review of the energy and climate impacts of teleworking. *Environmental Research Letters*, 15 (9)

A study using anonymised and aggregated mobile phone data provided by O2 found that during April to June 2020 morning peak CO<sub>2</sub> emissions were 30 to 38% lower than in February, although some of this could be attributed to workers being furloughed.<sup>9</sup>

What happens on the future of working from home is, therefore, very important for a number of reasons. It is something which Governments and businesses can influence. The next stage of our project is exploring how to reduce the uncertainty about the potential to maintain homeworking and how best to deliver this for maximum social benefit during the Spring period of 2021. We return to the importance for policy in Section 9.

---

<sup>9</sup> Lokesh, K. and Marsden, G. (2021) Estimates of the carbon impacts of commute travel restrictions due to Covid-19 in the UK. Under review, *Transport Findings*.

## 7. Online shopping

Online shopping has been steadily increasing as a proportion of all retail sales for over a decade. By late 2019 it made up 18% of all retail sales by value. The average adult travelled just over 200 miles less for shopping in 2019 than they did in 2002, a fall of 22%. The story of changing shopping patterns does not start or end with the pandemic. However, as with working from home, there have been huge shifts in the shopping behaviours of people, partly as a result of some shops being closed for periods, but also during periods where shopping was opened up but managed with social distancing measures as shown in Figure 17.

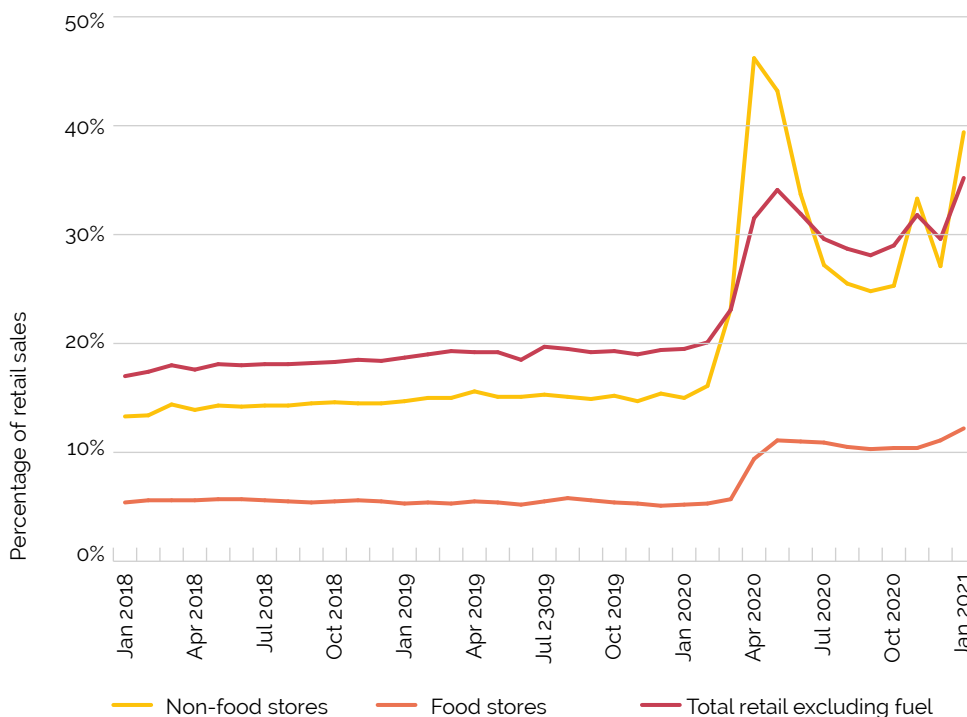


Figure 17: Online retail as a percentage of all retail sales.

Retail sales online reached an all time high of just over 35% in January 2021. Just as with working from home, there is some evidence of drop off of online shopping during the releases from lockdown. However, online grocery shopping has never dropped below 10% and has more than doubled compared to before lockdown. Non-food is more volatile reaching more than 45% during the first lockdown but not ever dropping below 25%, up from its previous 15% of sales. The growth in online sales has been seen in all sectors with clothing being particularly important at 50% of all sales, again reinforcing previous trends.

Consumers say that they are likely to continue to conduct more shopping activities online than pre-pandemic as shown from our surveys in July and December in Figure 18. The proportions saying they will continue doing more grocery shopping are fairly stable at around 25% overall over the two surveys. Non-food shopping has seen an increase in people reporting they will do this more from 31% to 36.4%. As with office based businesses, the retail sector has already been forced to adapt. There have been a number of high profile companies who have either gone out of business or moved entirely online during the pandemic. 2020 saw a net closure of nearly 10,000 retail units, the worst performance in a decade. A year of experience of buying more things on line and a year for more businesses to improve their online services provides a cycle which is likely to embed some of the change which has been seen.

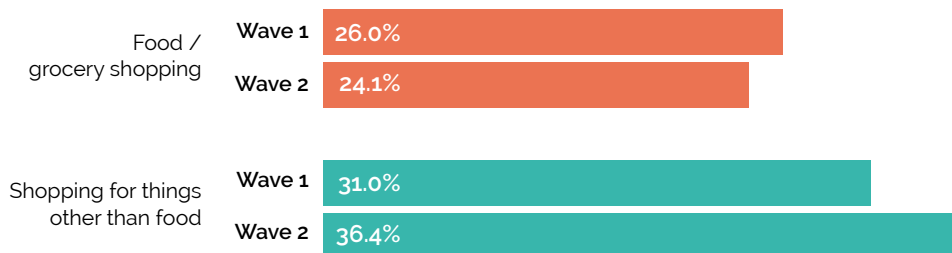


Figure 18: Proportion of people saying they will do more food and non-food shopping online after lockdown. (Survey data) Weighted: Wave 1 N=9,362 and Wave 2 N=6,029.

Everyone reading this report has probably felt that there has been an increase in delivery vehicles in their local neighbourhood. Of course, greater volumes of online ordering means that more vans will be required to service those demands. However, the relationship is far from linear, as delivery companies are able to consolidate orders to adjacent homes and businesses more effectively. Previous work has also shown online retail to be responsible for only a small proportion of overall light van traffic, perhaps 15% overall. A regression of the percentage of retail sales online with the change in van traffic finds only a very weak negative relationship ( $R^2=0.22$ ) and even less for HGVs ( $R^2=0.14$ ). Whilst in some local areas there will be more delivery van traffic, nationally this does not seem to be an important factor in goods vehicle movements.



## 8. Government interventions

Here we provide a short reflection on the interventions taken by national and local governments to date.

### 8.1 Public transport subsidy

The Department for Transport and Scottish Government both moved quickly following the start of the pandemic to provide public support for the operators of bus and rail services. By September 2020 the National Audit Office identified £5.4Bn of spending commitments for public transport (out of a total of £70Bn across the whole of Government). In the rail sector this was delivered through a switch to Emergency Management Agreements which, by 21st September 2021 had moved to Emergency Recovery Measures Agreements for up to 18 months. Bus support has been delivered through a variety of mechanisms including changes to Bus Service Operators Grant and additional funding for the procurement of services which would not be commercially viable. The Scottish and English systems were delivered differently, for example with the COVID-19 Support Grant – Restart (CSG-R) being launched in Scotland in early July to support additional services with £191.3m being announced in phases (June, August, October, December) through to March 2021. In England a longer-term rolling arrangement was announced on 8th August with bus services outside London receiving up to £218.4 million of support over eight weeks, with further rolling funding at up to £27.3 million per week afterwards.<sup>10</sup> Tram services were also covered in this settlement having previously been funded in more bespoke arrangements.

This is a significant additional block of funding. 60% of bus users in our research said that they had no alternative for their journey and this was almost as high for rail. It is clear that the funding enabled the running of services that would not have been commercially reliable that parts of the population relied on and who continue to do so.

---

<sup>10</sup> [Transport Scotland COVID-19 Support Grant](#) and [GOV.UK Government extends coronavirus support for buses and trams, total funding tops £700 million](#).

Figure 19 shows the extent to which users / non-users experienced / perceived crowding on public transport given the social distancing measures that were in place. On average more than 40% of bus users reported buses sometimes being too crowded and this was lower for rail at round 30% although with London experiencing more than 40%. Just under 40% of users reported that they had not experiencing crowding. Non-users reported lower perceptions on both crowding and space for social distancing. This suggests to us that the levels of provision struck a compromise between over providing and giving users the confidence to access services in a socially distanced manner. Where peaks in usage were seen operators were encouraged to adapt by providing additional services and also by using technology to communicate real-time service busyness levels. However, the overall position supports the necessity of the levels of service which were provided.

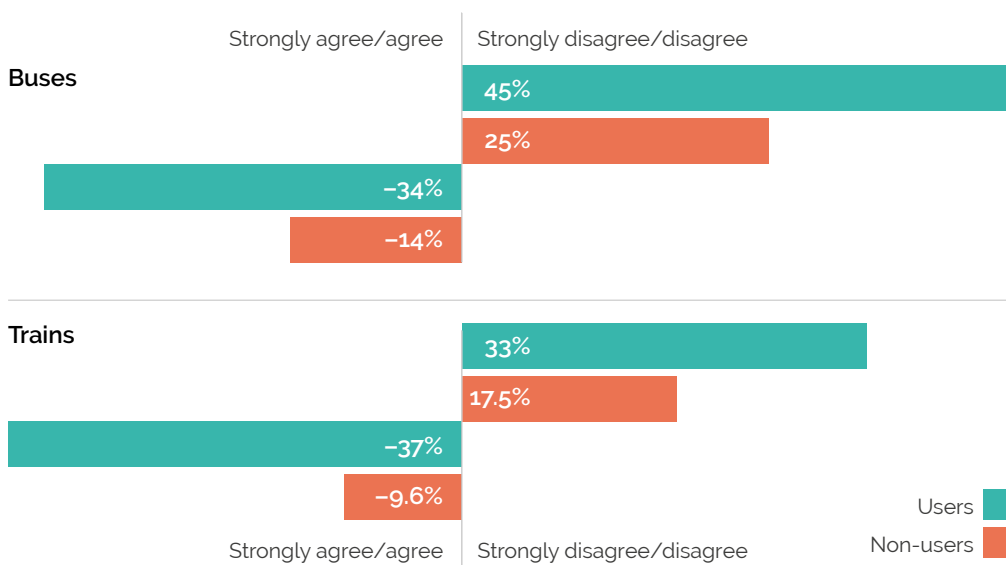


Figure 19: Perceptions and experiences of public transport crowding during the pandemic. Users were asked "Sometimes buses were too crowded to allow social distancing". (Survey data) Weighted: Bus users N=1,688 vs. non-users N=4,521; Train users N=874 vs. non-users 5,355.

## 8.2 Active travel investment

Both the Scottish and English national governments encouraged the adoption of measures to support walking and cycling from early in the pandemic, recognising the need to take pressure off public transport and the limited space which was often available on footpaths and roads. On 28th April the Scottish Government announced a £10m Places for People fund which it subsequently topped up with £20m in late May. On 9th May, the Secretary of State announced a £2bn fund for walking and cycling over 5 years in England which included £250m to be spent on emergency active travel measures. There followed, in July, the DfT's Gear Change Strategy which sets out a new approach to active travel investment in England through which the £2bn will be channelled.

Our surveys and other supporting data have been unequivocal. The main increase in modes in the pandemic has been walking and then cycling. The strategies and messaging put in place by both governments have been supportive of this. It is worth stating that much of the increase happened in advance of the delivery of some of the emergency active travel measures. The levels of investment are also small to date, with spend per capita from the first round of allocations in eligible cities amounting to less than £1 per capita. Fewer than 50% of our respondents were aware of pop up cycle infrastructure, although 60% or more of respondents reported being aware of them in Newcastle, Edinburgh and Aberdeen.

Not all of the schemes which have been implemented have been done well and some have been removed either due to lack of use or because of complaints (sometimes referred to as 'Bikelash'). Responding quickly was always likely to lead to some mistakes and these should not be overstated relative to the large number of good schemes being established around England and Scotland. Indeed, support for measures which improved walking and cycling outweighed objection to them by a factor of almost 2 to 1 as shown in Figure 20. The actions of both governments was aligned with public health messages, supported the trips which people have wanted to make more of and has helped identify a nascent demand for reallocation of roadspace which has far more support now than it has detractors.



Figure 20: Attitudes towards pro-pedestrian and cycling investments. (Survey data)  
Weighted: N=6,207.

### 8.3 E-scooter trials

On 30th June, as part of its pandemic response, the Department for Transport brought forward plans to launch rules for experimenting with e-scooter trials and several are now up and running in cities across the UK. This is a good time to be testing the operation of these systems as there are far fewer people in the central areas where they are being deployed. However, because there are far fewer people in city centres little has yet been learnt about how these e-scooters will help improve the attractiveness of multi-modal travel or how much nuisance they may cause. This seems to have had little to do with the pandemic, certainly relative to the other interventions discussed.

## 9. Where next?

The cycle of lockdowns and partial re-opening of the economy has provided some important insights into how people and businesses can adapt, what people most want to get back to doing and how they have done that. However, all of this has happened under an umbrella set of conditions where the virus was still widely prevalent in the population and significant social distancing arrangements still persist. In research we have undertaken with decision-makers the uncertainties have been so significant that foresight was described in timescales of weeks and not months.

As the vaccine programme is rapidly delivered, the UK is looking forward to a period where all activities are unlocked. Only then will we really begin to see what the impacts of finding new ways of doing things has been and what the real impacts of the pandemic have been on businesses in all sectors, on what is available where and what the impacts on employment and disposable income will be. This is going to vary quite substantially across the population dependent on employment sector and place. The next wave of data collection for our study will be in May 2021 to inform our understanding of change over time.

Our work to date identifies the following as likely to push down the impetus to travel:

- Recession
- Shifts to Home Working
- Shifts to Online shopping and leisure

Specifically with relation to public transport we can also add:

- Concerns about exposure risk amongst some parts of the population
- Reductions in commute and business travel in professions who have predominantly been frequent rail users

We have yet to see the appetite to 'catch up' on missed opportunities which might act to increase travel demand, at least in the short run. This will apply in particular to leisure related trips. We will pursue this further in our third wave of data collection but, in the same way that the three months following the March 2020 were not a guide to how people would behave during the whole pandemic, neither will the immediate period after restrictions are released give a full picture. New patterns will take time to establish.

Overall, it seems likely that there will be a reduced volume of commuting traffic compared to pre-pandemic levels, by all modes. Public transport is more vulnerable than the car and, within that, rail more so than bus. It is inevitable that the 'restart' levels of public transport use will be substantially lower than pre-pandemic levels. There is a real need for bridging support funding for the public transport industry to ensure that there is time to build back confidence and to understand what ridership might look like or it will face a financial crisis with severe impacts on the travelling public. Whilst this cannot be an open-ended blank cheque, it is critical to realise that growing public transport was a key part of the decarbonisation trajectory for transport suggested by the Committee on Climate Change and is core to many authorities' strategies. If support is withdrawn too quickly it will result in a spiral of public transport service withdrawals and declines which communities around the UK are only too familiar with. We note that the English Bus Strategy released on 14th March has a commitment for the [COVID-19 Bus Services Support Grant](#) to be kept in place in England as long as it is needed. This is welcome but how this develops is a crucial feature of the coming months.

We have seen a rise in the propensity to walk and also to cycle, even in conditions where every other form of travel has reduced. This suggests a switch in emphasis more profound than even the recent announcements on funding imply. Governments should rebalance their infrastructure investment goals to focus on high quality liveable neighbourhoods and safe routes to schools and town and city centres. These have the potential to benefit everyone. It can be delivered at pace and has the benefits of being labour intensive and therefore also supports job growth as well as public health. The nature of the work is also that it is also more accessible to smaller suppliers and local supply chains. Instead of pushing forward with a £27bn roads investment programme which is subject to challenge on its compliance with the Government's climate goals, much of this money could be diverted to carbon reducing projects which deliver on health, safety and well-being benefits for all. It will tie in with other policy goals being pursued such as re-vitalising town and city centres which need to re-invent themselves as a result of the decline in retail and also office utilisation.

The fundamental rationale for most transport investments has, for decades, been to tackle congestion and overcrowding and to save travellers minutes of journey time which, added up, provides the primary economic value for justifying investment. If, as seems likely, the propensity to commute and travel for business falls and/or if the option of conducting many economic activities virtually has risen relative to travelling to them then this should fundamentally alter infrastructure investment priorities.

More physical capacity and getting places a bit faster may have been overtaken by digital connectivity. It is important to state that it is not an "either/or" situation where digital and physical should be played off as "good/bad". People will still want to and need to travel to meet and will do so in large numbers. However, if the blend of physical and digital means we do not need to travel as much then Governments should switch the money earmarked for expensive capacity enhancements to support schemes which help people to live better more locally. Much is said about a "Green Recovery" but it needs to go beyond old solutions dressed up in a new narrative and should address the realities of our climate change commitments. 30% of the emissions reduction expected from transport by 2029 comes from demand reduction. It seems clear delivering this through growing public transport has taken a hit through the pandemic so other options need to come in to play at the start of the decade if the budget is not to be blown. There is a major policy priority to capitalise on different ways of living in a more digitally blended way which require less travel to meet climate change goals.

We are pessimistic about the extent to which this potential for change is recognised. Whilst we have concluded that the interventions on public transport support and active travel to date have been well measured, there are a number of interventions which work the other way:

- Continuation with above inflation rail fare rises of 2.6% in England and Wales (RPI+1%)
- Freezing fuel duty for the 11th consecutive year
- Maintaining a £27bn major roads programme when we have seen clearly that much of the business and commuting travel on which it is predicated could be done virtually
- Supporting a consultation on the reduction of Air Passenger Duty for domestic flights.

The growing gap between public transport and private motoring costs is not new as Figure 21 shows. However, that they are persisting at a time when the opportunities for virtual substitution are revealed and when, because of technology changes driving is in any case becoming cheaper, suggests a fundamental disconnect between stated policy goals and policy action. The Government is in danger of missing the opportunities to support a low-carbon recovery through actions such as supporting real terms cuts in the costs of motoring or flying at a time where public transport fares continue to rise.

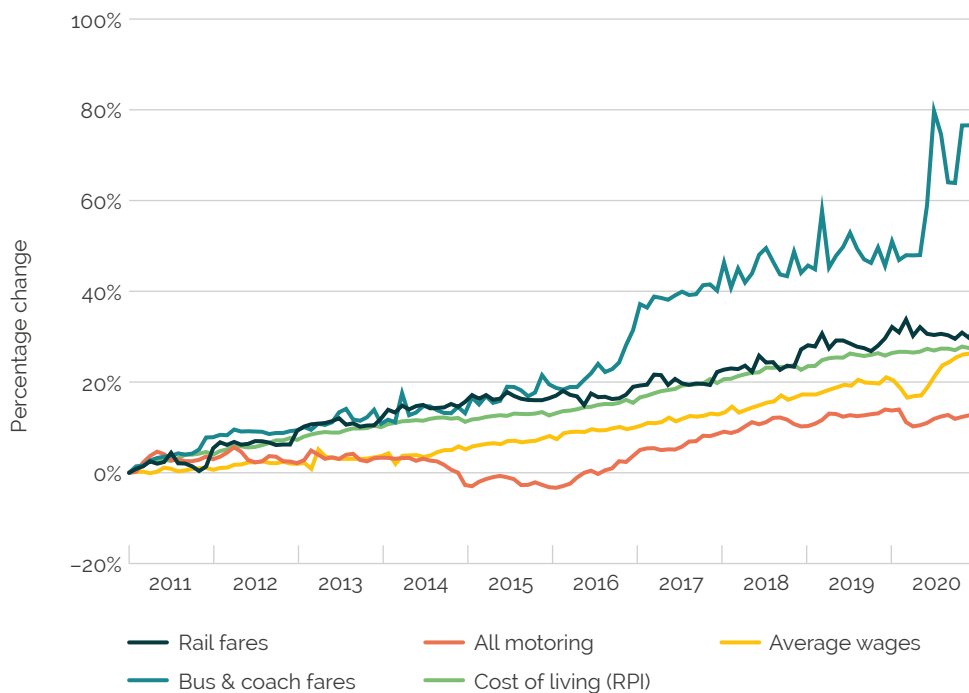


Figure 21: Changes in the real cost of travelling by car, rail and bus (Source: RAC Foundation).

We note that there may be some important divergence between Scotland and England in so far as the December 2020 update to the Climate Change Plan for Scotland recognises a need to reduce distance travelled by 20% by 2030. It is too early to know whether this will be matched by a shift in policy actions but if this opportunity is not seized then it is difficult to see where the momentum will be generated from.

It is also prudent to look ahead with the understanding that Coronavirus has not gone. There remains uncertainty about the appearance of new 'variants of concern' that have the potential to reinfect people who had previously fallen ill with COVID-19 and/or evade first generation vaccines.<sup>11</sup> The UK government has already announced that there will be a third wave of vaccination in autumn 2021 with 'booster' shots either of the same vaccine individuals have already received modified to target new variants or deliberate use of a different COVID vaccines in combination to provide two separate immunity responses.<sup>12</sup> Given that understanding of the mutation behaviour of the virus is developing, it is possible that the short to medium term future could see a rolling vaccination campaign in which people are vaccinated every six months; annual revaccination for COVID targeting annual variations in a similar fashion to the flu vaccine programme is already widely assumed to be likely for the foreseeable future.

11 Nature: [Fast-spreading COVID variant can elude immune responses.](#)

12 The BMJ: [Covid-19: How the UK vaccine rollout delivered success, so far,](#) and The Times: [First trial to test mix-and-match Covid vaccines amid fears of shortages.](#)



One other remarkable aspect of the winter lockdown and widespread adoption of Non-Pharmaceutical Interventions (NPIs) such as physical distancing and the wearing of face coverings has that there have been zero cases of influenza reported across many countries in the northern hemisphere in what would have been the usual winter flu season. Given the usual rate of flu-related mortality and morbidity in any given year (10,000 deaths might be expected from flu in the UK in a 'typical' year and perhaps 20,000 in a 'bad' year ), this raises the critical questions about whether there will be a continued expectation for some NPIs – especially mask wearing – to be in place in winter in future once more severe restrictions are lifted. Any move to retain compulsory (or even advisory) use of face coverings would have uncertain implications for the attractiveness of public transport services and some indoor environments. Of course, none of this is certain. However, a resilient response to the pandemic requires investing in those things which support better public health all of the time and enable us to adapt more quickly and more safely in the event of future outbreaks of whatever nature. Such responses will also help our resilience to a range of other disruptions. Going back to investment strategies that look the same as pre-pandemic would be to ignore these very important lessons.

## 10. Annex 1 – survey details

The TRANSAS panel survey was undertaken in 10 city-regions across England and Scotland (Table 4). The survey was administered by a market research company (YouGov) on behalf of the University of Leeds. Each wave of the survey underwent a pilot (n=100) prior to going live. The sampling approach included quotas by region, age, gender and social grade, in addition to ethnicity for London, and the data was subsequently weighted to be representative of each region. YouGov provided the weighting based on ONS population statistics and census data. Weightings differ for Wave 1 and Wave 2 due to different sample sizes. Participants who completed Wave 1 were invited to participate in Wave 2. Sample sizes differ between wave 1 and wave 2 due to natural drop-out rates between waves. Each wave of the survey took approximately 30 minutes to complete.

Respondents were randomly selected based on their YouGov registered profile. They were invited via email and incentivised by a YouGov points on completion, which can be redeemed when they reach a certain milestone of points. To avoid sampling bias respondents were invited to participate by a general email invitation which did not provide details of the survey.

Analysis took place in IBM SPSS Statistics 26. The results in this report focus on respondents who answered both waves of the survey. As such we use the wave 2 weightings for analysis reported in this document.

Wave	Dates in field	Sample size
1	3rd – 22nd June 2020	9,632
2	1st – 11th December 2020	6,209
Scotland: Ayrshire, Aberdeen, Edinburgh, Glasgow		
England: Bristol, Lancashire, Liverpool, Manchester, Newcastle		



## About DecarboN8

DecarboN8 is an EPSRC-funded network to bring together business, government and academia across the North of England. It aims to trial and accelerate the adoption of low carbon transport solutions. DecarboN8 is funded by UK Research and Innovation, Grant agreement number EP/S032002/1

## About CREDS

The Centre for Research into Energy Demand Solutions (CREDS) was established as part of the UK Research and Innovation's Energy Programme in April 2018, with funding of £19.5M over 5 years. Its mission is to make the UK a leader in understanding the changes in energy demand needed for the transition to a secure and affordable, low carbon energy system. CREDS has a team of over 140 people based at 24 UK universities.

CREDS is funded by UK Research and Innovation, Grant agreement number EP/R035288/1

**ISBN: 978-1-913299-07-1**

 [CREDSadmin@ouce.ox.ac.uk](mailto:CREDSadmin@ouce.ox.ac.uk)

 [www.creds.ac.uk](http://www.creds.ac.uk)

 [@CREDS\\_UK](https://twitter.com/CREDS_UK)

 [www.linkedin.com/company/credsuk/](https://www.linkedin.com/company/credsuk/)



**UK Research  
and Innovation**



**Engineering and  
Physical Sciences  
Research Council**



**Economic  
and Social  
Research Council**