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Transport, the economy and environmental sustainability post-COVID19

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Introduction

The COVID-19 pandemic has brought previously unimaginable change to the level of mobility in the economy almost overnight. People who have never before worked from home before were obliged to do so immediately, and business travel stopped almost completely in a matter of weeks. After the slow restart of many transport services, attention turned to understanding the implications of the unprecedented uncertainties about future travel demand exposed by the pandemic. Most obvious is the issue of how long some form of social distancing restrictions and/or other mitigations such as the wearing of face coverings will have to remain in place (and potentially be reintroduced in future) in advance of a reliable vaccine and/or therapeutics becoming available. These restrictions have profound effects on the capacity of many transport services, wider travel demand, and in turn the financial viability of the transport system as we know it. From these critical issues emerge subsequent questions including what a significant loss of confidence in the safety of public transport means for usage far into the future, whether the business model underpinning low-cost aviation can survive, and what the experience of working remotely *en masse* means for the future of commuting and the structure of our cities.

It is true that there have been some 'silver linings', most noticeably in terms of the uptake of walking and cycling and the improvement in local air quality due to much reduced traffic. But

much of the media's discussion of prospects for a green future for travel ignores the harsh realities that cultural barriers to radical change remain significant, and that our cities aren't set up for rapid demotorisation even if we were prepared to embrace it. The pandemic has therefore brought into sharp focus questions about the level of mobility the economy actually needs to function, and by extension, what the experience of COVID-19 tells us about how we can make the radical longer term changes required to decarbonise economic activity.

This chapter begins by reviewing the radical shifts in travel behaviour that we experienced during the 'lockdown' phase of the pandemic, the issues that emerged across the transport sector during the restart and 'recovery' phases, and what new perspectives these experiences revealed about the role of transport in the economy and society. Drawing on interviews with senior leaders in government and the transport sector undertaken in May/June 2020, we look ahead and explore the critical uncertainties about the future of travel and policy responses to them that will frame the debate on transport, the economy and environmental sustainability in the post-COVID world.

Lockdown

The shock of the unprecedented restrictions on daily life put into place as part of the 'lockdown' designed to check the spread of Coronavirus was quickly amplified by astounding numbers about its economic effects across the board. The Office for Budget Responsibility's initial 'Coronavirus Reference Scenario' (OBR, 2020) published on the 14th of April envisaged a staggering 35% fall in quarterly GDP, an increase in public sector net borrowing of 14% of GDP in a single year, and the potential trebling of unemployment. Underlying these figures were even more extreme impacts on particular sectors especially exposed to the effects of

lockdown. Perhaps the most astonishing figure of all concerned the use of public transport. The day after the OBR published its projections, the daily Number 10 briefing session focused on the collapse of demand for transport as an indication of the effectiveness of the lockdown (Cabinet Office 2020a). The single most striking figure of all was a 97% fall in the number of people using the National Rail and London Underground networks (Figure 1). Also of note was that the reductions in transport use had begun significantly in advance of the formal announcement of lockdown on 23 March: at the start of the data series on 19 March, traffic had already fallen by a fifth compared to normal, bus and train use by about half, and Tube passengers were already at only one third of expected levels.

<<Figure 1 here >>

As lockdown continued, a number of responses to the crisis in terms of travel behaviour became readily apparent. Perhaps the most profound response was that in the move of much work online, with necessity demonstrating that home working could replace much of the commuting normally undertaken. The Office for National Statistics' *Opinions and Lifestyle Survey* (ONS, 2020) found that 38% of working adults worked only from home in the period 11-14 June, with another 11% working both from home and at their usual place of work. Given something in the order of 20% of workers were either off sick or 'furloughed' on the government's Job Retention Scheme, this is a highly significant number. Or, as one of our interviewees noted, there was

> "a lot of breaking of taboos'… 'thinking of the banks, before 23 March they thought it was impossible for call centre staff to be based at home… within a week or week and a

half of 23/3, RBS had 10k call handling staff working from home… this mixed economy of mobility will become commonplace."

However, social class differentials were profound, given that the move to working from home was easiest for those in professional and administrative occupations: many of the 'key workers' in health and social care, essential retailing and the supply chain had no choice but to continue to travel to work. Further evidence for this could be found in the move of the (much reduced) morning peak earlier on many public transport services given the vast majority of continued demand was from key workers on shifts.

Other significant changes seen during lockdown included the almost universal exchange of physical business travel for online meetings, with Microsoft reporting a 200% increase in the use of its video conferencing software between March 16 and 31 alone (Microsoft, 2020). The collapse of business travel also demonstrated the aviation sector to be one of the most exposed to the economic impacts of lockdown, with many airlines filing for government financial support within days.

Then there were the apparent 'wins' for sustainable transport made possible by lockdown and the substantial reductions in road traffic. Cities across the world moved quickly to reallocate road space, giving greater priority to pedestrians and cyclists (*The Guardian*, 2020). Initial evidence on the actual impact of these moves on the economy is mixed, however. One study in Switzerland (Molloy et al, 2020) suggested that during lockdown, people's 'activity spaces' were about 20% the size of that before lockdown, with their essential needs such as food shopping served by walking and cycling as opposed to motorised transport. But data

from the UK seems to suggest that there at least, much of the increase in walking and cycling was 'exercise' rather than necessarily serving essential needs and the replacement of (especially) car journeys. The Number 10 briefing slide from 4 June (Figure 2; the last time transport use data were presented at a daily briefing; see Cabinet office, 2020b) showed that although cycling had roughly doubled, the data was highly volatile with much larger increases at weekends, supporting the thesis that much of the increase in the use of bikes was for leisure, with people taking advantage of the much reduced levels of traffic on the roads.

<<Figure 2 here>>

Restart

Given its exposure to myriad other substantial risks such as extreme weather events and terrorism, the transport sector has widespread competence in business continuity planning and well rehearsed plans for emergency situations. Most organisations we spoke to could cite previous trial runs, other relatively recent major event planning such as the London Olympics, or direct experience of dealing with other crises such as the Manchester Arena bombing. The transport sector was therefore generally well prepared to bring into play a set of operational plans to respond quickly to the imposition of lockdown. Government departments were also better prepared for emergency action than they had been even in the recent past given the freshness of planning for 'No-Deal Brexit' in their organisational memory. This meant that planning cross-government links were strong, and communications between government and providers relatively smooth.

But, as several interviewees from operating companies said to us, planning for the winding down of services was the 'easy' part of lockdown; planning to get the transport system going again given the particular challenges of COVID-19 was much more difficult, and it is from these experiences that we can learn much about the medium term challenges that the sector will face, and how these will shape and constrain the recovery of the economy more generally over the medium term. The three principal factors with long term implications that have become most apparent in the 'restart' phase are *Social Distancing*, *Money*, and the extent of *Behaviour Change.*

Social Distancing

The 'social distancing' rule – i.e. the enforced physical separation of individuals from each other by a specified minimum distance to reduce transmission of the virus – quickly emerged as the most significant issue for the restart of public transport services. Not only does social distancing drastically reduce on-vehicle safe capacity, it is also critical to determining many operational realities for transport systems such as access/egress to vehicles and the management of stops/stations. For the roughly 3 month period when blanket 2m social distancing was in place in the UK, the actual capacity of public transport services was reduced to as little as 10-20% of normal. With 1m distancing, this rises to around 40%, but at these levels of patronage, the issues about managing access to/from buses and trains becomes highly significant and a source of significant delay.

The second significant immediate impact of social distancing was the requirement to reallocate public space to enable safe movement. Government departments moved quickly during lockdown to make significant funds available (e.g. £250m from the Department for

Transport in England[1] and Transport Scotland's £30m 'Spaces for People' fund[2]) for 'pop-up' active travel infrastructure such as widened pavements and temporary cycle lanes. The Secretary of State for Transport, Grant Shapps recognised that the conditions of the lockdown presented a "once in a generation opportunity to deliver a lasting transformative change in how we make short journeys in our towns and cities" (Department for Transport, 2020). However, the legislative requirements for formal traffic orders to enable the reallocation of space meant the projects proceeded at a slower pace than perhaps many might have liked (see Sustrans, 2020). Our interviewees noted how progress in installing schemes was slow and uneven, with (perhaps unsurprisingly) those places, generally the bigger cities, with more ambitious existing plans for active travel that were most effective in seizing the opportunity to secure funding. In some contexts, this caused political controversy: whilst there was a very short time window to implement significant interventions before traffic levels rebounded, and urban contexts tended to be where the most immediate social distancing issues occurred, competition-type funding allocations (and in some cases an implicit assumption that the jam should be spread thinly across all local authorities putting forward a bid) was not deemed helpful in a crisis situation, and even argued to be illustrative of a lack of trust and centralised 'control freakery'.

Our interviews also revealed two significant issues that will continue to require careful management throughout the recovery period. The first concerns the differential recovery of different transport modes and the frictions this will create between users of different

[1] See https://www.gov.uk/government/news/transport-secretary-announces-new-measures-to-keep-passengers-safe-now-and-level-up-for-the-future

[2] See https://www.transport.gov.scot/news/10-million-to-support-pop-up-active-travel-infrastructure/ and https://www.transport.gov.scot/news/guidance-and-next-steps-for-passengers-and-transport-sector/

services. The reallocation of roadspace from the private car to any other mode is difficult enough in normal circumstances, but given road traffic has rebounded much faster than any other mode (to broadly >80% of pre-COVID levels in most areas by the end of June), the standard arguments about space and capacity differentials between cars, buses and cycles might be quite different than before, and local (political) demands to relieve congestion by removing pop-up provision will make it difficult to make these changes permanent.

Money

By the end of June 2020, we estimate that the UK and devolved governments had allocated in the region of £4 billion in emergency funding for public transport operations[3]. Allocations followed existing legal structures based on mode, which led to different treatments for different parts of the sector: the rail industry moved relatively seamlessly to a system of 'Emergency Management Agreements' where commercial train operating franchises were replaced by direct financial support for operating companies, although this processes was more complex in some areas such as Merseyside with non-standard franchise structures. Light rail systems in England were given their own direct financial support, and bus companies were able to access additional finance through existing grant mechanisms, although there was significant variation in the level of discretionary support available to bus companies depending on local government structure and appetite to intervene. Combined authorities were particularly critical of the lack of influence they had on service priorities given that buses have essentially moved to a publicly funded model.

[3] See https://www.parliament.uk/business/publications/written-questions-answers-statements/written-questions-answers/?house=commons&max=100&member=3977&page=1&questiontype=AllQuestions

Behaviour change

Polling done by IPSOS-Mori in late June 2020[4] showed that more than twice as many people were not comfortable returning to public transport than those that were. A considerable degree of reticence would hardly be surprising given much of what we now know about the transmission of the SARS-COV2 virus. But the scale of unease also reflects the wholly unprecedented content and tone of government advice throughout the lockdown about the need to 'avoid' public transport wherever possible. Many of our interviewees expressed real concerns about the long-term implications for public transport from this messaging, with those from private operating companies notably more pessimistic in terms of the likely long term effects on passenger numbers: we heard a figure of a 'permanent' loss of 20% of patronage compared to pre-COVID19 as a 'best case scenario'.

However, with so many uncertainties apparent about factors from the reticence to use public transport to the extent to which the rise in cycling will stick, and the impact of the post-COVID recession on employment, commuting and car ownership, the truth is that it is much too early to tell what the lasting impacts of the pandemic on travel behaviour will be. The media might be full of speculation about how things might turn out[5], but the truth is that there is a lot more being *said* about behaviour change than is *known* about behaviour change thus far.

The challenge for the transport sector is therefore to try and capture the positive behaviour changes from the lockdown period and make them stick. Whilst this might at first sound

[4] https://www.ipsos.com/ipsos-mori/en-uk/how-comfortable-are-britons-returning-normal-coronavirus-concern-rises-again
[5] See, for example, https://www.bbc.co.uk/news/uk-53105020

impossible, there is some evidence that it can be done. Drawing on their studies of various disruptions to transport during the 2010s, Marsden et al (2020) observed how people changed their behaviours in response to disruptions such as flooding or the sudden closure of a bridge, and what this might tell us about the potential for radical change at other times. Their headline findings were that people's behaviours faced with disruption were often more flexible than might be assumed from relatively stable headline data on transport flows, especially if they tended to use a variety of transport modes as part of their everyday lives. Although many individuals (especially those with caring responsibilities) faced significant barriers in terms of changing their travel behaviour, there was evident untapped flexibility at population level, and so significant potential scope was identified about how governments might use the insights about how people react to disruption so that they could make transport more resilient and sustainable at other times.

Intervening decisively in the short term whilst travel behaviours are still in the readjustment phase is important because the other great crisis of our times – the climate emergency – has not gone away. We are unlikely to have such an opportunity again within the timescales required to act to meet the decarbonisation commitments of the Paris Agreement on climate change. If anything, the unprecedented restrictions on normal life required to achieve the -10% to -25% reductions in carbon emissions experienced during lockdown demonstrate the (daunting) scale of change that will be required to meet our decarbonisation commitments (Le Quéré et al, 2020).

Looking ahead: 'not wasting a crisis', and choosing appropriate policy responses for recovery

Due to the COVID-19 pandemic, we have more extreme disruption than transport- and economic planners have ever considered in the modern era: as one of our interviewees put it to us, professionals used to dealing in timescales as long as the decades over which major projects are funded had had to adapt to a situation in which "two months is a long time horizon" almost immediately. We do, however, know that there are some critical uncertainties about *how* we emerge from such profound disruption that will shape the form of our transport system, its contribution to the economy and social life, and its impact on the environment for years to come. As one major UK transport consultancy set out (Steer, 2020), what the future looks like depends on three principal questions: whether or not there is a second wave, whether or not effective treatment pathways are found, and whether or not a successful vaccine is developed and widely deployed.

Our interviews elicited some revealing commentary about the deep uncertainty facing the transport sector. As things stand, planning for a scenario where there no reliable vaccine emerges is happening in only a small minority of contexts, despite this being a plausible scenario with extremely profound effects for public transport and the wider economy. In such a scenario, the scale of change in our assumptions about where, how and when we travel would lead to profound changes in how the economy and society are organised. The impact on the infrastructure we would need to build and the resources that would need to be found to maintain it and operate the services that run on it would be huge, and only part of the wider implications for how we go about urban planning and economic development more generally.

In addition, COVID-19 has revealed how our focus on 'efficiency' in the transport network has masked its fragility, especially in terms of its financial robustness. As one of our interviewees put it, whilst there is strong and widespread recognition of the public health concerns over the use of public transport, "it is not clear that the scale of ongoing additional revenue support required assuming continued suppression of demand over the medium to long term is sufficiently well understood" by government. Thus although there is now a greater understanding of the importance of a resilient transport infrastructure in supporting key public services and their workers and essential supply chains such as those on which supermarkets depend, the financial health of the transport system is now worse than it has been for decades. What this means for the ways in which transport investment has been appraised and prioritised in the UK, where any excess capacity or "quality margin" (Goodwin, 1992) has been deliberately engineered out in the relentless pursuit of 'efficiency', is a major area of contention. It was observed by some of our interviewees that the appraisal hurdles that schemes have traditionally had to jump through are now fundamentally challenged: whilst the value of travelling more/further is in increasing doubt, the social value of providing minimum levels of service on core transport routes is more widely appreciated than before. Further, given that many of our assumptions about the productivity benefits of transport investments depend on people choosing to live, work, and socialise at high densities in city centres, enabled by mass transit (see Capello and Nijkamp, 2019; Docherty and Waite, 2020), any significant change in the proportion of people that choose to live in this way will make the existing economic case for many large infrastructure schemes redundant.

Policy responses

In terms of planning for a rapid, fair and green recovery from the crisis, there are a set of critical opportunities and threats apparent that will shape how transport choices frame the recovery. Perhaps most importantly of all, we know that achieving the decarbonisation of transport requires more than even securing the universal uptake of zero-emission vehicle technologies (Transport & Environment, 2018) over the next decade or so. We also need to reduce the overall size of the vehicle fleet by around one third to do so, and given that commuting by car is such a large part of overall carbon consumption in the transport sector , a greater adoption of home working permanently (Willcocks, 2020) could make a significant contribution to achieve this goal.

More people than ever before have experienced how digital technology can replace physical travel for many purposes during the pandemic, and so creating the potential to reduce the overall need to travel in line with the decarbonisation imperative by replacing at least some of the commuting and business travel that occurred pre-COVID seems eminently achievable. We have learned from the pandemic that the major impediment to achieving this behaviour change (as in so many other domains of transport) is not in fact the lack of some future technology, but rather a change in *culture*. As Clancy (2020) points out, "the case for remote work goes well beyond its use during the covid-19 global pandemic. Over the last ten years, research from a variety of subdisciplines in economics and other social sciences collectively makes a strong case for the viability of remote work for the long-run", especially in terms of reducing the overall demand for travel and thus the carbon intensity of the economy. Importantly, this need not be full time, as even part time working reduces the demand for travel, and could be mandated by the public sector for its employees that are able to do so. Just as the we have seen how many poorly paid 'key workers' have depended on public

transport services throughout the pandemic, ensuring that improved access to high speed broadband (fixed and 5G mobile) becomes as widespread as possible, coupled with the provision of connected devices to disadvantaged groups of people, so that inequality of digital access to jobs and services in minimised will be paramount.

In seeking to make decisions about how to plan transport and mobility after the pandemic, we can identify three (harsh) realities that define the critical choices ahead for government:

1) The carbon emissions reduction trajectories for transport required to meet Net Zero were unachievable if we stuck with the pathway being followed at the start of 2020 (Brand et al, 2019). The scale and rate of emissions reductions required early in the carbon budget period required levels of demand reduction and mode shift on a scale no-one yet had a plan for, despite the political rhetoric. Given the scale of change we have already seen in travel behaviour, this is THE time to make a major one-off adjustment to the pathway;

2) There is massive, indeed wholly unprecedented, uncertainty about future travel demand and how this will contribute to restructuring of the economy across sectors and space. The scale and nature of the recession, the timing and efficacy of a vaccine, the public willingness to return to public transport, the future appetite for working in offices in city centres, accelerated move to on-line retail all pose the question of 'exactly what kind of future are we planning for anyway? Thus, if stimulus spending on infrastructure is to deliver its aims, then it needs to be spent on 'no regrets'

investments that we know we will need whatever the enduring post coronavirus related mobility restrictions look like;

3) People have experienced much better air quality, quieter streets, safer roads for cycling. It is now undeniable that different policy choices are available. As one of our interviewees observed, 'Government has realised it can make decisions quickly'. It might also be said that the experience of creating 'pop up' active travel infrastructure has shown that the most significant barriers to changing policy direction are not engineering complexity, or the availability of funding, but rather technical guidance that still puts vehicles first in almost all situations, and (more bluntly) a lack of political will.

Final Reflections

To use the well known phrase, the reopening of the economy after lockdown is not 'the beginning of the end' of the changes in how we travel around, but rather it is – or needs to be – the 'end of the beginning' of a whole set of radical policy shifts in how we use mobility to support the economy and society.

At the time of writing in late June 2020, we simply do not know what the long-term effect of the COVID-19 pandemic on transport and its support for the economy will be as the range of critical uncertainties we set out above illustrates. The range of views from our interviewees on how things might play out was therefore staggeringly broad. Some held the (highly optimistic) perception of the crisis as a single discontinuity in stable longer term trends, analogous to 9/11 on a larger scale. They hoped that the lockdown and its effects would turn

out to be a relatively short-term adjustment, after which people would be desperate to get back to 'normal' as quickly as possible, and the economy would rebound in a 'V-shape' curve, with the unprecedented contraction in GDP being followed by an equally unprecedented growth spurt as pent up demand was released.

In contrast, others saw COVID-19 as a once-in-a-century rupture of pre-existing trends, similar to the mass adoption of the motor car. Such a disruption would be so large that our assumptions about where, how and when we travel changes completely, and would lead to profound changes in how the economy and society are organised. The impact on the infrastructure we would need to build and maintain would be huge and only part of the wider implications for how we go about urban planning and economic development more generally.

There exists a raft of policy interventions (including different revenue structures such as public transport fares reform and road pricing) that we know would embed the positive changes that have become visible during the lockdown. Assuming some kind of viable vaccine and/or effective therapeutics emerge, the challenge of making the public transport system fit for purpose will remain front and centre for years to come.

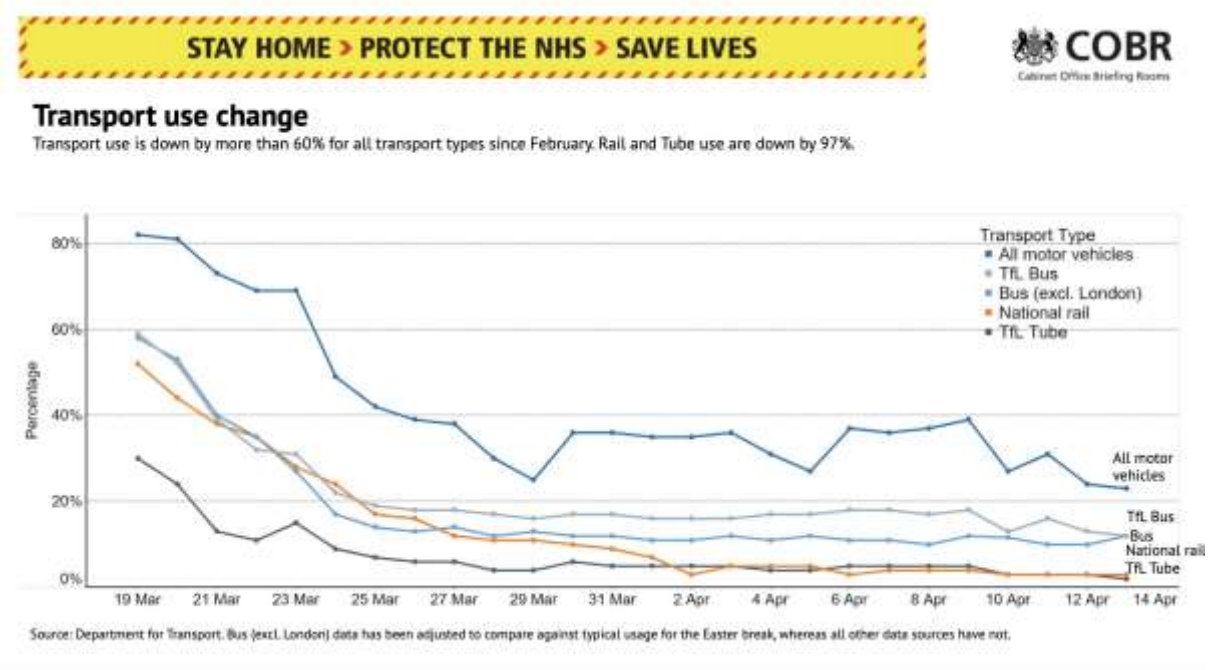
There are major challenges to developing a coherent policy programme, not least the chorus of 'get us moving again' voices that gets louder by the day. It is more important than ever to release that effective transport planning is about ensuring the right socio-economic outcomes happen rather than grabbing funds for things we do not need. This is not the time to be digging expensive holes for ourselves. Equally, the desire to avoid political controversy – especially the imperative to restrict car use – means that greater investment could lead to

‘more of everything’ (i.e. greater levels of mobility across the economy as a whole despite individual ‘successes’ such as increased cycling) which does not address decarbonisation. This would make an already extremely difficult situation even worse.

We are undoubtedly living through a profound ‘policy moment’ or point of inflexion representing a rare opportunity to enact radical change that can reset long standing trends and trajectories. The main risk is that we create the conditions for trends in transport to get worse rather than better, make it impossible to meet our decarbonisation targets, and ‘bake in’ some of the economic inefficiencies that the pre-COVID transport system displayed. It will take determined, brave and probably politically unpopular decisions to avoid this, especially given the likely depth of the approaching economic shock.

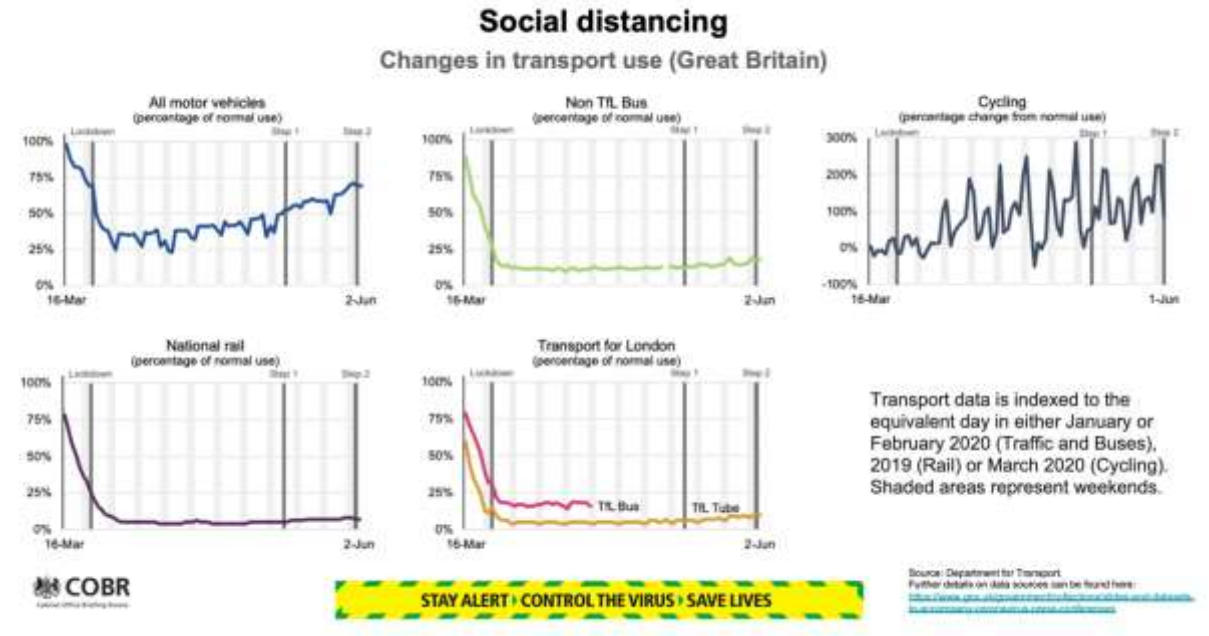
Figures

Figure 1: UK transport use 19 March – 14 April 2020



Source: Cabinet Office (2020a).

Figure 2: UK transport use 16 March – 1/2 June 2020



Source: Cabinet Office (2020a).

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