

Living with Pandemics: People, Place and Policy

Mobility during and after the pandemic

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Abstract

9 months since the onset of the COVID-19 pandemic in Europe, it is startling to reflect on the profound changes to all aspects of daily life which have been necessary. Public policy has responded at a pace not seen for decades, and the general public has accepted restrictions to freedoms and changes to their everyday activities beyond what was thought acceptable before the pandemic. There have, of course, been hugely negative impacts of some of these changes to livelihoods, education and the mental and physical health and well-being for some. However, many of the adaptations we have seen in working and other practices such as shopping have shown the pandemic as an accelerant of trends that were already established.

These changes have potentially profound effects on how we move about in the future and even where we live and work. This chapter critically reviews some of the big policy questions which we face as the prospect of an effective vaccine and planning for after the pandemic takes centre stage. Should we design for a morning peak or design out a morning peak? Should we encourage or challenge the flight to the suburbs and beyond? Can we maintain the momentum for reallocating space for people rather than vehicles which was brought into such sharp relief at the start of the crisis? All of these debates exist in the shadows of the

climate crisis which points us in one direction. Whether they remain strong enough to withstand the calls to 'get the economy moving' remains to be seen.

Keywords

Transport, mobility, commuting, travel demand

Introduction

This chapter was completed around 9 months after the onset of the COVID-19 pandemic in Europe. In addition to dealing with the ongoing public health impacts of the virus, policy makers' attention is now turning to the longer-term implications of the various socio-economic impacts of the SARS-CoV2. It is already apparent that the scale and depth of the changes seen across many aspects of everyday behaviour is unprecedented in the modern era.

The pandemic therefore undoubtedly represents a 'policy moment' or point of inflexion when many trends previously considered to be stable, or at most shifting incrementally, are subject to unprecedented disruption. 2020 and its aftermath therefore represents a rare opportunity to enact radical change that can reset long standing trends and trajectories, such as the slow progress made towards achieving decarbonisation, but also presents a risk in that reactions to the challenges of the virus can 'lock in' negative changes, and in turn precipitate new, unwelcome path dependencies that will be difficult to break out of. Or, as Chris Boardman, the Cycling and Walking Commissioner for the Greater Manchester Combined Authority in

northern England put it, “what we do in the next 20 days will affect what we do in the next 20 years”.

This chapter therefore reviews some of the changes that have occurred in terms of transport and mobility during the first phase of the pandemic typical of cities across Europe and North America, and then sets out some critical uncertainties about the future role of travel, particularly with respect to commuting, the role of cities and the ‘blend’ of physical and digital connectivity that will likely come to dominate the policy debate for some time to come.

Initial impacts of the pandemic

The initial story of changes in transport and travel behaviour across many countries in Europe as ‘lockdown’ took effect was, as might be expected, one of rapidly declining demand for motorised travel. However, it is how the ‘restart’ phase has played out that tells us about the potential long term challenges the transport sector might face as a result of the pandemic. Although the precise figures vary from country to country and city to city, some common impacts can be identified. First, *public transport use fell very substantially almost everywhere, and is the surface mode slowest to recover in many places*. For example, rail and underground use in the UK fell by more than 95% following the imposition of ‘lockdown’ at the end of March. By September, before the second wave of restrictions started bus use had recovered to around 55% of pre-pandemic levels, and rail use to around 30%.¹ Although some most recent research seems to suggest that public transport vehicles are less of a transmission vector for the virus than was originally feared (RSSB 2020), it is not difficult to understand

¹ <https://www.gov.uk/government/statistics/transport-use-during-the-coronavirus-covid-19-pandemic>

why many people are reticent to return to crowded public transport services, especially given the unprecedented messages in many cities to *avoid* public transport wherever possible, which are likely to have lasting effects on people's confidence to use the network.

Second, *car use has rebounded to almost pre-pandemic levels*. Whilst people have been less willing to use shared modes of transport the car has been more resilient to the changes. Although initially dropping to around 25% of pre-pandemic levels during the 'lockdown' phase, as restrictions were eased and more journey purposes (such as leisure trips) made available again, car use quickly recovered with levels of around 85% pre-pandemic in late September before the second wave.¹ But even within this trend, further important distinctions can be made: whilst there is little reliable data for vehicle occupancy during the pandemic, we do know that ride sharing services have been significantly affected: for example, Uber's bookings in the UK fell by around 75% in the April-June 2020 period compared to the previous year². Informal car sharing has also been identified as a potentially significant mode of virus transmission³. Thus it is perhaps unsurprising that a survey by the RAC Foundation in November 2020 found motorists reporting that they were much more likely to reject public transport as an alternative mode to the car in future, and that they considered their own vehicle as a 'safe' mode of transport⁴.

Third, *there has been some uplift in the use of the active modes, but this is patchy and not necessarily embedded*. Many places saw increased levels of walking and cycling during the

² <https://www.bbc.co.uk/news/business-53687422>

³ <https://news.sky.com/story/coronavirus-scots-warned-after-car-shares-are-linked-to-1-000-new-covid-19-infections-in-the-space-of-a-week-12117020>

⁴ <https://www.rac.co.uk/drive/features/car-dependency-and-the-pandemic/>

pandemic, measured via the use of cycle rental schemes and other surveys. Many media outlets were keen to paint these changes as an apparent 'win' for more sustainable transport, but the reality is likely more complex. The increases, although upwards of 200% in some areas, came from a low base. Much of this was leisure travel which was made possible by lockdown restrictions on travel for other purposes and more people being at home both working and on furlough. Coupled with good weather and quieter roads, this created the conditions for a big boost in leisure cycling, but one that began to wane by autumn. Whilst many cities across the world have implemented schemes to reallocate road space to cyclists and pedestrians, with car traffic almost back to normal, many of these interventions are now becoming politically problematic as motorists in particular blame them for increased congestion.⁵ More positively, there is some evidence that people's 'activity spaces' reduced in geographical scope due to lockdown and the continued greater proportion of home working (Molloy et al, 2020) with more people meeting their essential needs such as food shopping by walking and cycling rather than motorised modes⁶.

Fourth, the real scale of the potential replacement of much physical mobility, and especially commuting, by digital connectivity has become apparent. The potential to replace many physical trips by digital communication has been long discussed as a way we might reduce the environmental impact of transport. The lockdown demolished many cultural and policy barriers to actually doing so overnight, and revealed the dormant potential for substantial home working across the economy (Clancy, 2020). In the UK for example, almost 50% of

⁵ See, for example <https://berlinspectator.com/2020/09/07/berlin-court-orders-senate-to-remove-pop-up-bike-lanes/>

⁶ <https://www.theguardian.com/business/2020/jun/23/britons-local-food-shops-online-stores-covid-19-supermarket>

people were working from home at least part of the week by mid-June (ONS, 2020); this figure is already well in excess of the baseline of around 10-15%, and given that around 20% of employees were either ill or away from work on the government's Job Retention Scheme, means that a highly significant proportion of overall economic activity was taking place online. The extent to which the number of radial commuting trips to/from city centre offices might not recover to pre-pandemic levels is an issue with profound implications for the financial sustainability of many transport networks, and the vitality of city centre economies themselves.

COVID as a shock to the 'mobility system'

At the theoretical level, the COVID-19 pandemic might be said to have represented the most profound shock to the mobility system in recent decades, at least since the oil crisis of the mid 1970s. As Urry (2004; 2008) wrote, the 'mobility system' is a complex socio-technical system that encompasses the physical infrastructure, vehicles, spaces and information flows that facilitate movement. Given transport is inherently a derived demand, this definition of the mobility system can be extended to incorporate the activities that generate the demand for travel, including employment and work practices, leisure pursuits and other social interactions. Changes in any one element of the system therefore exert immediate effects on other components and reveal just how interconnected our ways of living and moving are.

If we adopt this definition of mobility as a socio-technical system, then the scale and depth of the shock presented by the pandemic becomes obvious. Not only has the provision of mobility services been directly affected by public health regulations, the sudden drop in demand and the requirement for immediate (and in some cases, drastic) additional financial support, but

the underlying demand contours that shape the system have been disrupted by the changes, such as the sudden rise in remote working, outlined above. What might therefore be described as the dominant mobility ‘regime’ (Geels and Shot, 2007; Geels, 2014) – a system dominated by the car and in which public transport network design is predicated on accommodating peak demand for radial commuting trips – has been challenged in many ways as never before.

Thus as changes to the dominant regime in systems such as the mobility system are usually “manifest in *slowly* changing regulation, prevailing norms and worldviews” (Nykvist and Whitmarsh, 2008: 1374, emphasis added), the pandemic has acted as an extreme example of the kind of disruption that Marsden et al (2020) identified as having the potential to expose the scope for more radical behaviour change than might be assumed from the stability of headline mobility metrics. As Watson (2012:488) pointed out, “changes in socio-technical systems only happen if the practices which embed those systems in the routines and rhythms of life change; and if those practices change, then so will the socio-technical system”. What we have seen in the months since February/March 2020 is the most significant change in the everyday practices of mobility in several decades, and therefore one which challenges the mobility system as we have come to know it.

Adapting to a post-pandemic world

Looking ahead to the future of transport and travel after the pandemic, a number of key potential changes are apparent. In this section, we explore what some of these changes might mean for key domains of mobility that describe how and why we travel, and what our mobility

patterns mean for the wider economy and society. This is all set against a backdrop of the climate crisis. At no point prior to the pandemic had any government anywhere in the world brought forward a transport plan close to fulfilling the requirements implied by the Paris Agreement. Whilst there is an on-going narrative of a “green recovery” and “building back better”, the behaviours observed during the pandemic and their likely ongoing implications pose both challenges and opportunities to decarbonisation.

A renewed individualisation of mobility?

Ever since the scale of the environmental impact of transport became apparent in the 1990s, the normative objective of policies for transport and mobility has been about reducing the impacts of private car use. For most of this period, therefore, policy direction has been about maximising the role of public transport modes in the overall provision of mobility, e.g. by achieving ‘modal shift’ or transfer of trips from car to bus and train, and more recently about accommodating the increased sharing of road vehicles through ride sharing and the provision of better real time data to enable complex trips without the use of privately-owned cars, or ‘Mobility as a Service’.

The pandemic has brought an abrupt halt to this, not just because people have made their own individual decisions to use the cars available to them over alternatives, but also because of the completely unprecedented messages from governments to actively avoid public transport wherever possible.⁷ This situation is completely at odds with the messages and policy incentives carefully developed in many places over several years that encourage people

⁷ See, for example, <https://www.rte.ie/news/coronavirus/2020/0818/1159919-remote-working-public-transport/>

to do the precise opposite, i.e. to leave the car at home and to consider public transport and the first choice for trips that cannot be made on foot or by bike.

In terms of the actual provision of transport services in the medium term, how much and how quickly public transport demand rebounds is the key question facing policy makers charged with managing the impacts of coronavirus with mobility. At the most visible level, individual travellers switching away from public transport to the car threatens to reverse the often slow, painful progress made to make the transport system more sustainable overall in many places. But such is the depth of the collapse of demand for public transport that the viability of large parts of the network is being called into question. For example, the monthly subsidy requirement for the National Rail system in Great Britain will reach roughly £700m per month for the 12 months to March 2021.⁸ At these levels of subsidy, and with even peak demand still below 30% of pre-pandemic levels, it is increasingly difficult to see how government can continue to support the network given the cost per trip, and the overall burden on the public finances as and when fiscal consolidation becomes imperative.

What therefore actually happens to our public transport networks under such a scenario? Are cuts limited to reductions in service frequencies, or are more dramatic interventions such as mothballing or closures of sections of the network required? Even in the bus sector, where the demands for cash have been much less, the levels of what is effectively state aid required to maintain a basic level of service have been unprecedented in the modern era, given the decline in ridership and loss of fares income seen. Even if governments are willing to bridge

⁸ <https://www.ft.com/content/e8036a24-5a05-43eb-8e6a-f5a659d2e5a2>

the medium term financial demands in advance of a generally effective vaccine being widely available in 2021 (see Steer, 2020), the question remains of what a year or more of changed travel behaviours for millions of people means for the long-term viability of public transport services. As we note above, it is not just travellers' willingness to get back on the bus or subway that matters; if employers decide from experience that much increased remote working is just as productive yet much cheaper for them than maximising the proportion of employees sat behind a desk for five days a week, then the core peak commuting demand on which much public transport is designed, planned, financed and operated for may never recover. To this we can add the ridership and fiscal impacts of what is forecast to be the deepest recession on record.⁹ There are significant risks that a lasting effect of the pandemic might be to reverse the hard-won progress towards a more sustainable mobility mix, and to decollectivize the transport system in favour of even greater use of the car.

A new flight to the suburbs?

Through the lens of the socio-technical system, the importance of the interplay between the demand for (peak) commuting travel and the future nature and location of work is immediately apparent as one of the most important critical uncertainties for future travel demand. The trend away from 5 days per week commuting to a single fixed office location was already well established before the pandemic. But with the capacity of many office buildings reduced for months to come after any 'return to work', and millions of employees used to either working from home or 'blending' their work between home and a number of

⁹ <https://www.theparliamentaryreview.co.uk/news/bank-of-england-forecasts-worst-uk-recession-on-record>

other sites (one of which might be 'the office' of old), the location of work for many has also changed (Beck et al, 2020).

Significant shifts in the location of work will have profound impacts on the spatial organisation of the economy. For a decade or more, the economic development narrative in many major cities has been about densification, and clustering as many high value activities together in order to capture the agglomeration economies that have been said to improve innovation and productivity (Laird and Venables, 2017). But with fewer people commuting into city centres, this model has been upended. Although the first casualty of this restructuring is 'the Pret economy' (O'Connor, 2020) of sandwich shops and other service businesses geared at white collar office workers, the fact that many high level professional services businesses have been able to sustain activity via remote working suggests that activities across the value chain will be profoundly affected.

For firms, this means looking anew at whether their investments in expensive commercial property in city centres remain appropriate. Even if more workers drift back to the office, and there is a more general return in 2021 in the event of a successful vaccine, it is highly likely that the trend to fewer days being worked in central offices that has been established for some time will continue. The scale of the potential implications of this for the land use patterns of city centres remains unclear, but the further decline of retailing and at least a slowdown if not reversal of office space expansion seems likely.

For employees, release from the daily commute opens up a much wider range of location choices in terms of housing. We already know that people who commute fewer days per week

are more likely to commute for longer on those days when they do travel (Ravalet and Rérat, 2019). The idea that there is some kind of implicit 'travel time budget' that people dedicate to work can be extrapolated to suggest that the reports of significantly higher interest in rural residential property seen during the pandemic may endure, especially if the reduction in commuting is accompanied by an ongoing fall in business travel, reducing the importance of quick access to airport and other key longer distance transport nodes for many.

Although some might be tempted to announce that the long promised 'death of distance' (Cairncross, 1997) has finally arrived, with people able to work from anywhere they choose thanks to the internet, the reality is likely to be more complex. Even accounting for the disruption brought about by the pandemic, socio-economic structures such as the housing market retain very significant inertia, and the number of people that are likely to abandon their old way of life for a completely new one will be relatively small. Perhaps what the experience of work during COVID is most likely to stimulate is a return to the suburbs: after all, more spacious housing with a dedicated workspace, easy access to essential local services, and the option of a car or train commute for those days still spent in the office or further afield.

Like any significant shift, there will be benefits and costs to this: perhaps local retailing and service businesses will become more sustainable through greater demand (making up at least in part for any decline in the scale of provision in city centres) and people will walk and cycle more; or perhaps atomising the office based population across the housing stock will lead to increased carbon emissions through more domestic heating and short car trips (Hook et al, 2020). But there must at least be the strong possibility that after many years of promoting

increased residential densities in inner urban areas, the pendulum may be about to swing back again towards decentralisation. Importantly, this might not mean the mass exodus to the countryside imagined in some of the media coverage during the pandemic; instead as noted above, perhaps cities will in future be less dominated by one large core, with commercial activity more dispersed across several locations in a more 'polycentric' urban structure. If so, this will present a profound challenge to those places where the public transport system is dominated by routes serving the city centre, and where the car is the only realistic means of undertaking many suburb-suburb trips.

In addition to the potential restructuring of the economy across space is that of restructuring between sectors, which also has implications for how we manage mobility. One readily apparent issue is the creation of a further cleavage in the labour market between key workers in sectors such as health and schools, and others in activities such as manufacturing, who must physically travel to their place of work and those, mainly in professional services, who can work at home. We have already noted how reduced radial commuting to city centre office jobs could undermine the financial sustainability of many public transport networks comprising radial train and metro lines that are expensive to operate and maintain. But at the same time, supporting more flexible bus services will remain crucial to maintaining access to employment for those people that must travel to work. More widely, might we see a shift in investment priorities away from the largest infrastructure schemes designed to accommodate more and more peak travel to/from urban cores towards more emphasis on local travel and the '20 minute city' of neighbourhood centres accessible by walking and cycling (Da Silva et al, 2019).

Taken together, all of these uncertainties mean that the assumptions that have been made for the last decade or so about the productivity benefits of government transport investment programmes predicated on more and people choosing to live, work, and socialise at high densities in inner urban areas, enabled by mass transit, will be subject to intense scrutiny. Any form of wider trend towards urban dispersal will mean that the economic case for many planned large infrastructure investments will crumble. Not only will the use of appraisal techniques that claim to assume how society and the economy will work up to 60 years into the future appear even more absurd (see King and Kay, 2020), but the structure of how we pay for mobility overall will come under more urgent scrutiny than it has for many years. Indeed, given that the majority of fixed urban transit systems require significant revenue subsidy, the loss of a substantial proportion of farebox revenue may leave several networks in considerable short term financial difficulty. At least as concerning from a public policy perspective is the long-standing inability to cut carbon emissions from edge of city and exurban settings. Any acceleration to decentralisation will work counter to the rapid carbon reduction pathways that have become apparent.

Conclusions

The COVID-19 crisis to date has highlighted a number of critical challenges for mobility in the years to come. First – and arguably the most important – is the realisation that very substantial changes in travel behaviour, and indeed reduced mobility overall, can be achieved quickly. Whilst only some of these changes are positive, this opens up possibilities to address climate change, air quality and the public realm impacts of driving in a way that had not been throughout possible (or shied away from) before. This runs contrary to many policy assumptions that the pathway to achieving such changes is inevitably incremental in nature

(see Marsden and Docherty, 2013). Second is the impetus the public health emergency has given us to reconsider which forms of transport we privilege in cities and who benefits from these decisions. We have seen demonstrated in many places the differential impacts of long term investment priorities across different neighbourhoods and social groups. People with easy access to a car and reliable digital connectivity have found it much easier to switch to working from home and re-engage in activities such as social and leisure trips as lockdown has eased than others – many of whom are the key workers at the forefront of fighting the pandemic – reliant on public transport services whose viability is now in question.

Finally, there is the profound question about what all of this means for the future of our cities. There has been a lot of popular media speculation that things might never be the same again if the scale of the daily flows in and out of city centres fails to recover to pre-pandemic levels. The extent to which deeper socio-technical processes such as the interaction between the location of home, work and consumption is obviously highly uncertain at this point. What seems perhaps most likely is that the pandemic will act as a kind of accelerant of trends that were already established: the substantial reduction in commuting to a fixed office location, the substitution of business travel for now more effective video conferencing tools, and the general blurring or blending of the distinction between home and workplace, and physical and virtual interaction. There is no doubt that we are at a critical juncture in how these trends will play out that will set the demand trajectories for mobility across all modes for years to come. If we leave this to be an experiment in how the market will respond then we seem certain to miss out on the full potential to jump to a new and more ambitious carbon reduction pathway. If public policy for transport does not adapt now, will it ever?

References

Beck, M., Hensher, D. and Wei, E. (2020) "Slowly coming out of COVID-19 restrictions in Australia: Implications for working from home and commuting trips by car and public transport", *Journal of Transport Geography*, 88, 102846.

Cairncross, F. (1997) *The Death of Distance: How the Communications Revolution Will Change Our Lives*, Orion, London.

Da Silva, D., King D. and Lemar, S. (2019) "Accessibility in Practice: 20-Minute City as a Sustainability Planning Goal," *Sustainability* 12(1) 1-20.

Clancy, M. (2020) "The Case for Remote Work" (2020). *Economics Working Papers: Department of Economics, Iowa State University*. 20007.
https://lib.dr.iastate.edu/econ_workingpapers/102

Geels, F. (2014) 'Regime Resistance against Low-Carbon Transitions: Introducing Politics and Power into the Multi-Level Perspective', *Theory, Culture & Society*, 31 (5), 21–40

Geels, F. and Shot, J. (2007) 'Typology of Sociotechnical Transition Pathways', *Research Policy*, 36, 399-417.

Hook, A., Court, V., Sovacool, B. and Sorrell, S. (2020) "A systematic review of the energy and climate impacts of teleworking", *Environmental Research Letters* 15 093003.

Kay, J. and King, M. (2020) *Radical Uncertainty: Decision-making for an unknowable future*, Bridge Street Press, London.

Laird, J. and Venables, A. (2017) "Transport investment and economic performance: A framework for project appraisal", *Transport Policy*, 56 1-11.

Marsden, G. and Docherty, I. (2013) "Insights on disruptions as opportunities for transport policy change", *Transportation Research Part A* 51, 46-55.

Molloy, J., Tchervenkov, C., Hintermann, B. and Axhausen, K. (2020) "Tracing the Sars-CoV-2 Impact: The First Month in Switzerland", *Transport Findings*, May.

<https://doi.org/10.32866/001c.12903>.

O'Connor, S. (2020) "Goodbye to the 'Pret economy' and good luck to whatever replaces it", *Financial Times*, 1 September.

<https://www.ft.com/content/d8eb62ef-a1cb-4597-867b-15a79dbdcd5d>

ONS (2020) *Coronavirus and homeworking in the UK labour market: 2019*.

<https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/articles/coronavirusandhomeworkingintheuklabourmarket/2019>

RSSB (2020) Covid-19 transmission rates on rail. RSSB, London.

<https://www.rssb.co.uk/what-we-do/The-Coronavirus-pandemic-how-we-can-help-you/Infection-Risks>