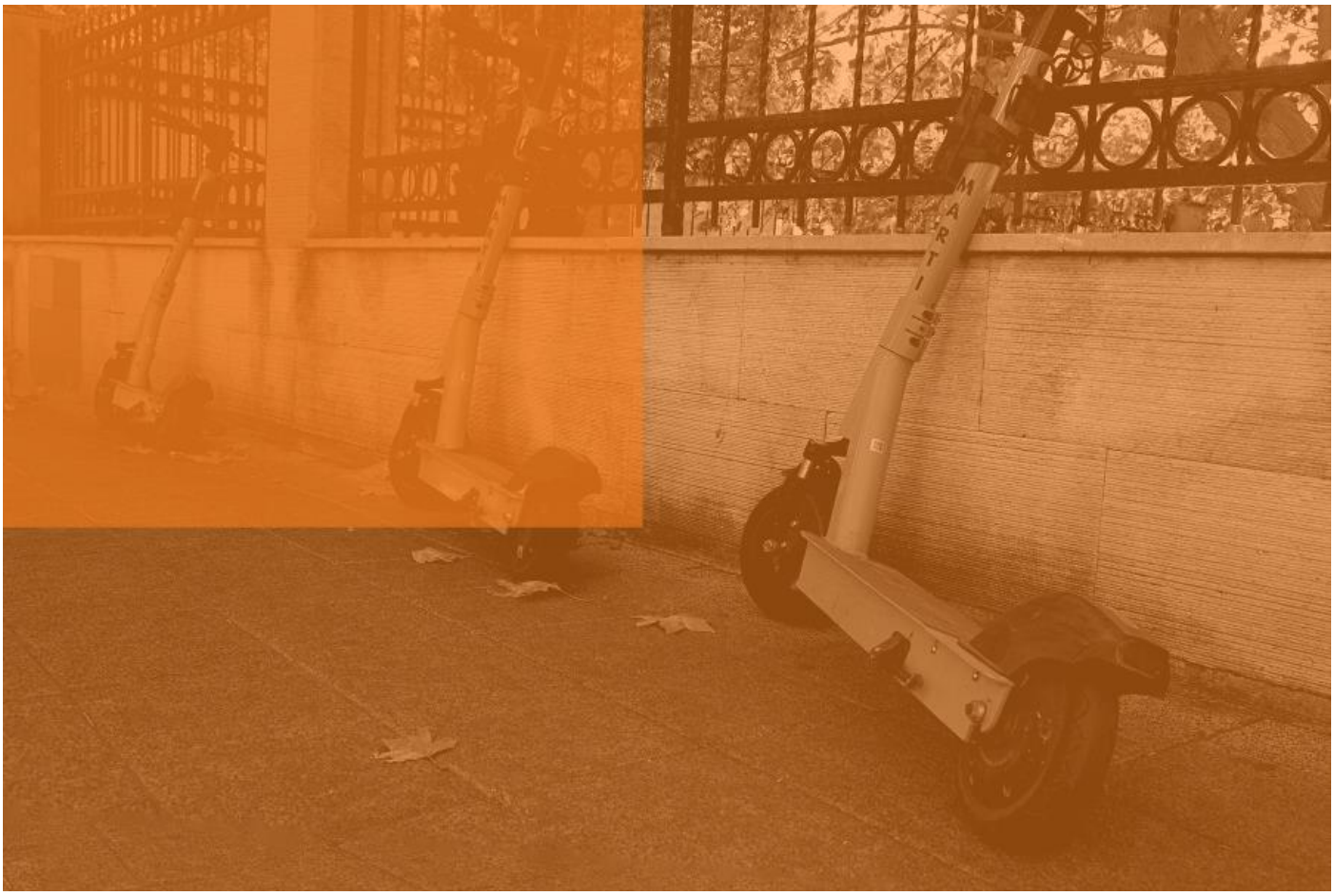
Megatrends and the West Midlands 2021:
Adapting to Future mobilities



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West Midlands Regional Economic Development Institute

FOR THE WEST MIDLANDS COMBINED AUTHORITY

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Summary

Reflecting on what would the future of mobility post-covid is important because by adapting to the current pandemic is possible to address old problems affecting not only the society but the environment and the economy. This document explores the future urban mobility considering the challenges for transport from shift to home-working; the growth in walking and cycling; car ownership and safety on public transport. Further, this document presents also how this should be seen as in the context of long-term trends, consequences of inaction and future scenarios. From the review, it can be concluded that the post-covid megatrend for mobility is based on a different urban model that prioritize walking and cycling and other forms of micromobility but also to encourage the use of public transport not only as a short term response but as a long-term national vision.

Introduction

The COVID19 pandemic has deeply affected cities in the way they function. From underused public transport to empty city centres due to closure of shops, stores and restaurants. This has negatively affected not only the economy but also the social dynamics and people's health and wellbeing. The pandemic had made evident social inequalities and had worsened the situation of vulnerable social groups such as young people and the ageing population. However, the pandemic has also led to a reduction in traffic congestion, improved air quality and growth in walking and cycling due to the lockdown restrictions. This is important because it shows that old problems in the region, such as, poor air quality and lack of physical activity could be addressed by adapting to the current crisis.

In the UK according to DEFRA and PHE (2017), poor air quality represented the largest environmental risk to the Public Health system. In fact, the UK has air pollutants such as NO2 above the guidelines set by the World Health Organization (DEFRA, 2019). In the UK the NOx and particulate matter are traffic-related pollutants (Sayegh, et al. 2016) therefore a reduction in car use and modal shift towards walking and cycling can help to reduce air pollution and in consequence reduce the number of air pollution deaths. Although multimodal comparison analysis done by TfWM shows that during the pandemic, there was a decrease in the use of private vehicles (use of motorway), cars were still used more than other transport options (see Figure 1).

The lockdown the restrictions including reducing non-essential trips and self-imposed isolation had posed great challenges for people, transport and businesses. "High streets, for instance, where people walk together, meet together, shop together and have coffee together were considered to be safer, more attractive and more economically vibrant (Living Streets, 2018), however, during the pandemic, this has turn out to be the opposite.

To adapt to the post-covid era and address old problems in the cities, it is necessary to explore different urban models and trends. At the international level, to face the crisis different cities are introducing new urban models to address the urban planning issues (Nieuwenhuijsen, 2020). Post-covid19 megatrends vary across the cities but all are based on the same principle: inverting the transport planning pyramid and prioritise walking, cycling (Nieuwenhuijsen, 2020), as well as encouraging the use of public transport rather than the private vehicles. This means to shape the cities as more compact and dense with people at the centre of the equation.

Reflecting on what would the future of mobility will be post-covid is important because by adapting to the current pandemic is possible to address simultaneously old problems affecting not only the society but the environment and the economy in the UK and more specifically in the West Midlands. In the following sections, this thought-provoking document explores the future urban mobility and the functioning of places; it considers the challenges for transport from shift to home-working; the growth in walking and cycling; car ownership, technology and behaviour and safety on public transport. Further, this document presents also how this should be seen as in the context of long-term trends, consequences of inaction and future scenarios.

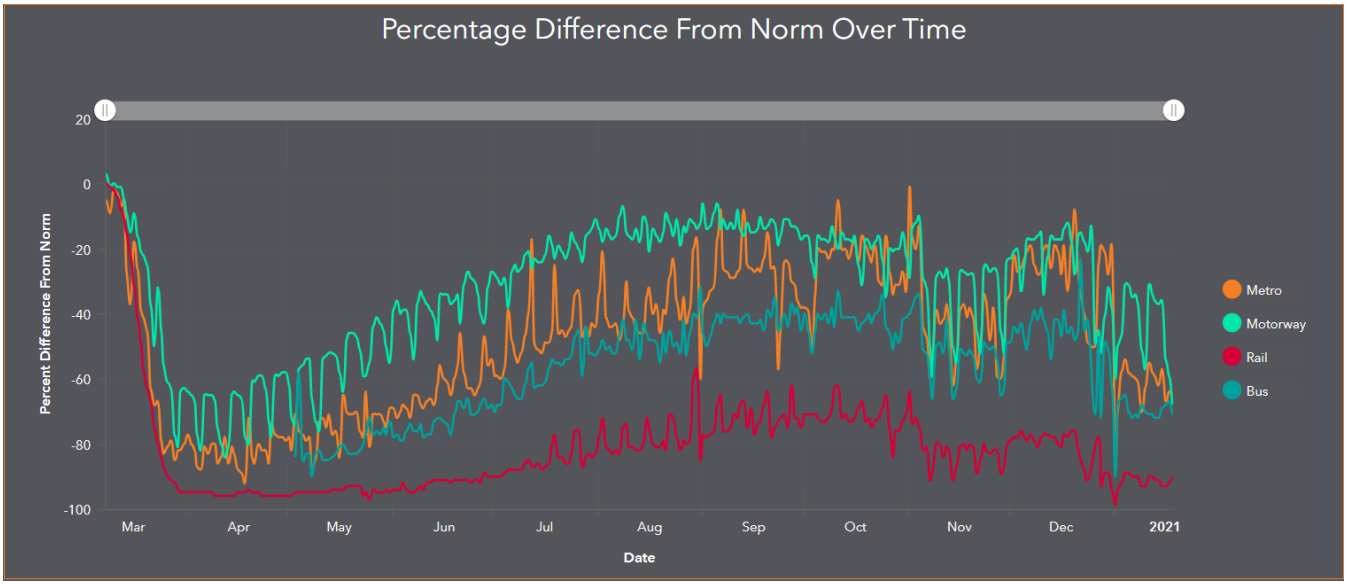

Figure 1 - Multimodal comparison Source: TFWM

Key issues/ trends

1 - Shift to home-working, emptying out of cities

Pre-covid, home-working was done in several European cities, for instance, in the Netherlands with 35,7% of employees work sometimes or usually from home, followed by Luxembourg (30.8%) and Belgium (22.7%) (Walker, A. and Desomer, E. 2020). In the UK the numbers were comparatively lower, although there has been a gradual increase (from 1.5% in 1981 to 4.7% by 2019), during the lockdown there was a growth of 43.1% and a dropped in June 2020 to 36.5% (Felstead and Reuschke, 2020).

Home-working is among one of the most important changes the pandemic has brought to comply with quarantines and lockdowns. And has resulted in the closing of business and empty streets that has become a challenge for the SMEs and local high streets (WMREDI, 2020). Analysis from 20 countries shows that "more than 20 per cent of the workforce could work remotely three to five days a week as effectively as they could if working from an office. Which means that if remote work took hold at that level, there would be three to four times as many people working from home than before the pandemic" (Lund et al. 2020).

Remote working can change the look of city centres due to reduction of demand for transport and consequent reduction on consumer spending affecting negatively the economy, however, in electronic commerce, this shows a different trend. For instance, working from home led to a growth in e-commerce (online buying) which in the short term is leading to dead shopping streets affecting especially SMEs, but in the long term post-covid future might have a negative impact on traffic and pollution in as a result of the use of conventional private vehicles for the deliveries (Nieuwenhuijsen, 2020).

Homeworking brings different challenges for the transport sector too. For instance, the restriction to non-essential travel and the closing of businesses is hitting financially transport operators and increasing the risk of job losses, therefore "demands an urgent operational response by the public transport systems" (Wong, 2020)

2 - Growth in walking and cycling

Walking and cycling were possible were advise to commute during the pandemic to avoid the risk of infection in the UK (GOV.UK. 2020) and this has been encouraged by several cities in the world (Combs, 2020). However, for walking during the pandemic, maintaining a safe distance of least 2 metres (3 steps) away any person outside the same household was suggested (NHS, 2021). In the UK, in order to achieve this, it has been necessary to reconfigure streets and widened sidewalks to accommodate walking and to allow a queueing system to enter shops. However, a study (ESRI, 2020) found that "only 30% of Great Britain's footpaths are at least 3 metres wide, 36% are between 2-3 metres and 34% are less than 2 metres wide". In the West Midlands, maps of Birmingham, which has a high population density, show that the city does not have the conditions to provide the minimum distance of separation for pedestrians.

Regarding Cycling, on one hand, in some places in Europe initially was banned to avoid the risk of accidents, for instance, Italy and Spain "placed temporary bans on leisure cycling" (Walker, 2020a). In the UK on the other hand, it has been the opposite, there has been an encouragement to use the bicycle during the pandemic in order to commute and as a way of exercising. During the lockdown, cycling has increased and 17 % of respondents to the Covid 19 travel change survey said they are likely to cycle more post lockdown (WMREDI, 2020). To encourage more cycling, the government had allocated funds to improve cycling infrastructure, for example, Department for Transport (DfT) announced the investment of £2 billion (part of the previous announcement of £5 million) to improve infrastructure for cycling in 2020.

Regarding allocation of space for cycling, according to Space to Move maps from Sustrans (2020), in Birmingham, Wolverhampton and Coventry Street changes in response to COVID-19 had been limited to only to footway made wider. However, review of the Highway Code and Low Traffic Neighbourhoods is taking place together with a trial for other forms of micro-mobility (e.g. e-scooters).

The importance of growth in walking and cycling goes beyond the coronavirus outbreak. Pre-covid, the West Midlands is a region which already had poor health outcomes, the pandemic has highlighted this and improving the health of the population continues to be an issue (WMREDI, 2020). Walking and cycling can help to implement more physical activity into people's lifestyle while commuting and help to reduce the health costs from sedentary lifestyles (Cepeda, 2019). Even a short walk or cycle can have a positive impact on people's mental and physical health.

Besides health, walking and cycling can have positive effects on the central business districts. Living Streets in the UK, previously evaluated case studies from several English cities to illustrate and predict the economic and social value of pedestrianizing areas. For instance, in 2007 "evaluations of pedestrian improvements in Coventry and Bristol (including pedestrianisation, a new civic square, clearer signage and better placement of street furniture) showed a 25% increase in footfall on Saturdays and predicted £1.4 million benefits respectively" (Living Streets, 2018)

3 - Car ownership

Regarding car ownership, in the UK by 2015 "one third of households were identified as car-free with the lowest levels of car ownership in urban areas"[1] (Living Streets, 2018). In average a car is used only 4% of the time and the rest of the time is parked (80% at home and elsewhere about 16%) (Bates and Leibling, 2012), however, streets infrastructure is designed to prioritize private cars, and people in a vulnerable situation due to economic barriers, disability, age, sex, employment status suffer most of the negative effects of private car use (such as air pollution and traffic accidents) (Living Streets, 2018).

During the pandemic, "43 % of public transport users expressed concern about using public transport post lockdown" (WMREDI, 2020). This can lead to the rise of use of the use of private cars, which are a source of CO2 emissions and affect the zero-emissions target for 2050 set by the government (GOV.UK. 2019). The pressure over

[1] Data from the National Travel Survey statistics "Household car ownership by region and Rural-Urban Classification: England, 2002/03 and 2014/15" and Scottish Government: Scottish Household Survey 2015 (Living Streets, 2018)

the ambitious target is leading to invest in research and development of EVs by private companies, but it would require also a governmental investment in infrastructure to adapt the roads and add public charges. Research has predicted that by 2030, the demand for vehicles general will increase by 27.4%, of which 13.3% will be EVs (Jones, et al. 2020).

Using EVs can be good for substituting public transport provides an excellent opportunity to reduce emissions of Carbon Dioxide (CO2) and other Greenhouse Gases (GHGs) (Jones, et al. 2020) but the encouragement of private EVs will not help to tackle other urban problems such as congestion and social challenges such as physical inactivity. Besides, not everybody will be able to afford these new vehicles (Walker, A. and Desomer, E. 2020).

4 - Safety on public transport

Public transport (PT) is essential to society, during the pandemic it was essential for critical workers to be able to commute to work. To help people to commute to work easily, in the West Midlands PT was made free for essential workers (WMCA, 2020). However, during the pandemic, PT also implied a risky option for commuting depending on how crowded the transport is and how easy it is to maintain social distance at the stops, the stations and onboard the transport. For instance, 43 % of public transport users expressed concern about using public transport post lockdown" (WMREDI, 2020).

Measures such as boarding only via the front door of busses and had been into place but recommended measures by the UITP (2020) such as back-door boarding on buses was not possible to implement in most of the buses in the WM because a system of electronic payment in every door when boarding the buses is not yet in place.

Pre-pandemic, one of the major strain on the UK's transport infrastructure was the demand for transport in the peak travel time (GOS, 2019). During the lockdown, "morning and evening peak demand of PT curves are flattened, resulting in smaller fleets and generating significant cost reductions in service provision (WMREDI, 2020)

Possible future scenarios

What if we do nothing?

- In the short term, lockdown has led to fewer people driving, fewer people using PT, less traffic congestion, less air pollution thus better air quality. To date, pollutants (NO2); noise, heat and lack of green space is the cause of premature deaths. With the increase in home deliveries, there is potential for traffic and pollution from using conventional (petrol and diesel operated) vehicles for the deliveries (Nieuwenhuijsen, 2020).
- Post-lockdown if we do nothing, with the potential increase of home working there will be an increase in social inequalities. Hybrid models of remote work are likely to remain post-pandemic but this will be only for highly educated workers in high skilled jobs, representing a minority of the workforce, exacerbating pre-covid existing inequalities at a social level (Lund et al. 2020).

Evidence of what works

- Leveraging from emerging transport innovations to reduce the long term impact from CO2 and other vehicle pollutants. New technologies such as drones and robots can help to maintain clean and sanitized public areas and public transport. For instance, drones can spray disinfectants, monitor social distancing behaviour and make public service announcements (ITF, 2020). Operational response by the public transport systems together with governmental support (Wong, 2020).
- Adopting an approach towards cities centre's offering services within walking distances can be more open and more green. Hyper-proximity can be a source of new economic and social models in our cities (Moreno, 2019). An approach of dense but friendly cities can help to boost the economy since the pedestrian streets can help to encourage shopping approach can translate into a better impact on wellbeing for communities. Different approaches can be:

- **15 minute city** where "locals are able to access all of their basic essentials at distances that would not take them more than 15 minutes by foot or by bicycle" (Moreno, et al. 2021). One example of this is the city of Paris, where the mayor Anne Hidalgo refers to the "de-concentration" of power to be nearer the citizens and "co-constructions" of initiatives and to move to a more circular economy[2] (Power, 2020).
- **20 min neighbourhood** which aim is to "give people the ability to meet most of their daily needs within a 20-minute walk from home, with safe cycling and local transport options" and is the base of the government Strategy (Plan Melbourne, 2020)
- **Hyper-proximity** is a concept introduced by the cities of Groningen and Utrecht in the Netherlands as well as Copenhagen and Aarhus in Denmark. The concept is based on the idea of "developing social, economic and cultural interactions, of ensuring substantial densification, while increasing spaces for public meetings and mixing, travelling by foot or cycling and ensuring that digital technology becomes a factor of social cohesion and inclusion" (Moreno, 2019)
- **Compact City** refers to a city with "higher densities that are contained and reduce urban sprawl, protect agricultural and amenity land, and make more efficient use of the existing urban land. There is a mixture of uses in close proximity, claimed to encourage sustainable modes of travel such as walking, cycling, and the use of public transport. Environmental, social, and economic benefits are suggested because there would be less dependency on cars and a reduction in GHG emissions. Mixed uses and more people living and working in the same place would give rise to social and cultural vitality, with facilities within easy reach of everybody. Higher densities and the close proximity of a larger population would mean that local businesses become more viable" (Jenks, M. 2019)

- Support for walking and cycling to boost the economy. Previous studies have pointed out that improving walking and cycling can help the economy by providing support to industries such as retail (Littman, 2017). A pre-covid study by the Mayor's office in Madrid using data from BBAV Bank found that the increase of walking and public transport had a positive impact on the businesses in the centre (Ayuntamiento de Madrid, 2019). Although the study is taking only into consideration three zones of the centre of Madrid, it shows the potential of making more car-free streets.
  - Investment and planning for bicycle use. The city of Paris, for instance, has planned to create cycling lanes and make every street in Paris cycling friendly by 2024 (investing £300m) (Carey, 2020).
  - People have expressed that when lockdown restrictions are lifted they will walk more (47%) (WMREDI, 2020). By widening the footpaths is likely to positively influence people to walk more in fact, previous research found that pedestrians feel that commuting on foot leaves them vulnerable and at risk of accidents (Hodgson et al., 2004). Although to face the pandemic temporary street transformations happened, it is important moving away from short-termism in solutions and plan a complete reconfiguration of the space with pedestrians as a priority for the long term.
- Reduction of car use, increase of the use of new technologies such as electric vehicles for commercial use and support the sharing economy. New approaches for reducing car use are:
  - **Car-Free City,** which aims to "reduce unnecessary private motorized traffic and provide easy access to active and public transportation" Analysis of the impact of car-free cities have shown that they can help in reducing air pollution and noise levels, increase the level of physical activity and create space for green areas (Nieuwenhuijsen and Khreis, 2016). An example of this is Vauban in Freiburg, Germany, a neighbourhood without cars and with sustainable housing (Melia, 2006) and the city of Hamburg that plans to be car-free by 2034 (Nuwer, 2014).
  - **Urban Superblock, t**his approach aim is "to reclaim public space for people, reduce motorized transport, promote sustainable mobility and active lifestyles, provide urban greening and mitigate effects of climate change". Empirical analysis from the city of Barcelona found that creating

[2] The Circular Economy aim is "to trigger a virtuous circle such that goods at the end of their service life are converted into resources for the next generation of goods" (Panwar and Niesten, 2021)

superblocks can achieve reductions in air pollutants (NO2); noise, heat and increase in green space and thus reduce the number of premature deaths (Muller, et al. 2020).

- Improving and incentivising the use of Public Transport. In the short-term, it is important to keep reinforcing the cleaning patrols and maintaining the social distancing inside and when queuing, until passengers perception of risk is less. Post pandemic, in the long term PT might not require the levels of current hygiene but "the demand will be for environments that will enable safety effortlessly" (WMREDI, 2020). Which means that shifting to more use of artificial intelligence (AI) and deep learning tools in public transport is important. As well as developing IT tools for bus schedules in real-time, including stop closures and changes and also generalised contactless payments and smart cards for multimodal transport.
    - "Automated vehicles (AVs) and Electric Vehicles (EVs) can be put into public transport service. For instance, last year the project by the Future Automated Bus Urban Level Operation System (FABULOS) "demonstrated actual public transport operations using AVs in regular traffic in a variety of locations in Europe" (Schweiger, 2021)
    - Post-pandemic having fewer measures based on "safe-distance" extended adoption of Mobility as a Service (MaaS) and Mobility On Demand (MOD) options can help to allocate demand for transport and help improving mobility. MaaS is based on the use and integration of shared modes of public transport and rideshare systems such as Uber, bike-share and car-share (MAAS.EU. 2020). MOD on the other hand, "consumers access mobility, goods, and services on-demand by dispatching shared modes, courier services, public transport, and other innovative strategies" (Shaheen and Cohen, 2020).

Implications

The ultimate goal of any transport policy is to improve people's well-being by improving access to important activities. During the COVID19 pandemic, government restrictions to travel have affected more heavily vulnerable people. Therefore it is essential to rethink the design of cities is essential to solve old problems and improve people's wellbeing. Because as the World Health Organisation manifesto for a recovery from the COVID-19 pandemic have stated, "we cannot go back to the way we did things before" (WHO, 2020).

To achieve healthier, cleaner and economically vibrant cities, is necessary to turn to more psychologically informed approaches to understanding shifting behaviours and values. For instance, some researchers proposed using urban psychology to approach to urban designs. As an example, in the UK the City of Liverpool is part of the collaborative pilot project Liverpool Without Walls, which aims to reimagine the urban landscape under the conditions of social distancing while supporting the hospitality sector (Murray, 2020).

It is also required to adopt interdisciplinary approaches to policymaking involving multiple stakeholders (Nieuwenhuijsen, 2020) and bringing together artists, designers, psychologists, planners, economists, geographers and others to redesign cities to face the future of mobility (Murray, 2020).

Policy recommendations

- Infrastructure is essential but this should go hand in hand with a change in values and behaviour (WMREDI, 2020)
- "Local transport authorities to produce plans to permanently reshape local transport networks based on active travel shared and public transport and ensure local authorities and bus operators work together to re-plan bus provision, with better integrated, multi-modal networks" (Better Transport, 2020)
- Increase support and guidance for SMBs in developing staggering working hours and other measures in order to distribute the demand for transport (HMGOV. 2020)
- Enhance support for individuals and businesses to incentivise mobility start-ups and scale-ups projects (BEIS, 2021) as well as encourage public-private partnerships to revive the hardest-hit sectors and further enable MaaS" (Walker and Desomer, 2020)

- "Redesign the mobility taxation to stimulate alternatives for car: a higher demand for both green and electric vehicle technologies, as well as public transport with attractive first and last-mile solutions" (Walker and Desomer, 2020).
- Re-allocation of street space from cars to cycling and walking in order to realize modal shift and climate ambitions (Walker and Desomer, 2020)
- Strong commitment to academia and research institutes since these "will be critical to economic and social recovery from the impacts of COVID-19" (BEIS, 2021)

Key discussion points

Although there is still great uncertainty about what would it be the post pandemic scenario, it is necessary to develop a different urban policy response to reinvent cities based on repurposing outdoor space and the idea of more dense but friendly cities.

Whilst the levels of walking and cycling increased during the pandemic, the government needs to prioritise active transport infrastructure and behaviour change interventions to reduce the risk of rebounding towards the previous levels of car use.

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