Greater Manchester's Clean Air Plan to Tackle Nitrogen Dioxide Exceedances at the Roadside

Appendix 5 - Impacts of COVID-19 Report

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Version Status:	DRAFT FOR APPROVAL	**Prepared by:**	Transport for Greater Manchester on behalf of the 10 Local Authorities of Greater Manchester
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Contents

Table of Figures

Tables

1 Introduction

1.1 In Greater Manchester, the ten GM local authorities, the Greater Manchester Combined Authority (GMCA) and Transport for Greater Manchester (TfGM), collectively referred to as "GM", have worked together to develop a Clean Air Plan to tackle NO_2 Exceedances at the Roadside, referred to as GM CAP.

1.2 This document sets out the results of analysis carried out by GM to understand the possible impacts of the Covid-19 pandemic on the GM Clean Air Plan (GM CAP).

1.3 Since 2017, as a result of government direction Greater Manchester Authorities have been working together to develop a Clean Air Plan to tackle nitrogen dioxide (NO_2) concentrations at the roadside, referred to as the GM CAP. GM's proposals were prepared pre-Covid-19, based on best practice methods and data, and GM undertook to make an assessment of the possible impacts of Covid-19 to inform this technical briefing note for decision makers.

1.4 This note sets out evidence of the impact of the pandemic on travel patterns, vehicle purchase patterns, businesses and the economy, and considers the possible impact of Covid-19 on:

- Whether the assumptions underpinning the GM CAP are still valid;
- Whether GM will eliminate exceedances of legal nitrogen dioxide under the proposals as they currently stand;
- The measures proposed in the package for consultation; and
- Whether the proposed support package will be sufficient.

1.5 Without action, forecasting shows that GM is likely to remain in exceedance of legal limits for NO_2 concentrations until 2027. The focus of this report, therefore, is on the extent to which the impacts of the pandemic will continue into future years (2022 and beyond), in terms of the vehicles on the road, travel and traffic patterns, public transport supply and demand, and business and economic circumstances.

1.6 This document was drafted in April/May 2021, with the data and evidence included reflecting the situation up to March 2021, unless stated otherwise.

1.7 The evidence presented in this report has been considered in the review of the GM CAP Policy post-Consultation.

2 Context of the GM CAP

2.1 Air pollution affects the health of people living, working and travelling in GM. Pollutants such as nitrogen dioxide (NO_2) - which is the harmful form of nitrogen oxides (NO_x) - and particulate matter ($PM_{2.5}$ and PM_{10}) are found at dangerous levels in many urban areas across the UK and particularly on busy roads.

2.2 Air pollution affects people's lungs, worsening respiratory issues such as asthma or bronchitis as well as cardiovascular problems, and reduces life expectancy. The air you breathe inside your vehicle can be dirtier than the air outside so people who spend a lot of time in their cars, taxis, vans or lorries are particularly at risk. Further information on the health impacts of poor air quality is set out in the Strategic Case of the Outline Business Case (OBC), available at https://cleanairgm.com/technical-documents/.

2.3 In 2017-2018, the ten local authorities of GM were instructed by the Government to produce a feasibility study i.e. a Clean Air Plan (CAP) to set out how they will target and mitigate areas of poor air quality within their boundaries. The GM local authorities have decided to submit a joint, GM-wide response to this request, which is being co-ordinated on behalf of the ten local authorities by Transport for Greater Manchester (TfGM).

2.4 The primary objective of the GM CAP is to achieve compliance with legal Limit Values in the shortest possible time. In line with Government guidance, this is the Determining Success Factor by which the programme is appraised.

2.5 GM's modelling carried out prior to the pandemic, predicted that there would be 203 points (sites of exceedance) along 160 stretches of road across GM where concentrations of NO_2 were forecast to be above legal limits in 2021. The local modelling identified that all ten GM local authorities would contain points of exceedance for NO_2 in 2021. Without action, compliance was not expected to be achieved in GM until 2027.

2.6 Following submission of the OBC, which identified that a charging Clean Air Zone Class C (CAZ C) with additional measures was the best performing option and following submission of further evidence requested by the Government's Joint Air Quality Unit (JAQU), the ten GM local authorities were directed by the Government to introduce a CAZ C across the region. Certain vehicle types will pay a daily charge for driving inside the zone if they do not comply with emissions standards in the Government's CAZ Framework.[1] Non-compliant vehicles that will be charged are: Buses, Coaches, Minibuses, Hackney Carriages and Private Hire Vehicles (PHVs), Heavy Goods Vehicles (HGVs) and Light Goods Vehicles (LGVs).

2.7 GM proposed a Package for Consultation of funding and measures based on pre-Covid-19 assumptions and modelling. Alongside a charging CAZ category C, the package proposed support to help owners or registered keepers of non-compliant buses, coaches, HGVs, LGVs, taxis and minibuses with the cost of upgrading or retrofitting their vehicles, as well as a Try Before You Buy scheme for Zero Emission Capable (ZEC) hackney carriages; a network of 40 taxi-only rapid electric vehicle charging points; and a Hardship Fund of £10m.

2.8 Based on the pre-pandemic position, the Consultation Package was forecast to deliver the following benefits by 2025 including:

- All buses expected to be compliant;
- Close to 100% of HGVs operating in GM expected to be compliant, compared to around 89% without action;
- 91% of LGVs operating in GM expected to be compliant, compared to around 64% without action;
- 90% of hackney carriages operating in GM expected to be compliant, compared to around 64% without action; and
- 97% of PHVs operating in GM expected to be compliant, compared to around 86% without action.

2.9 The GM CAP was forecast to deliver total reductions in NO_x emissions from road traffic of 22% in 2023, a reduction of around 1,335 tonnes of NOx per year. Forecasting suggested that compliance would be achieved in 2024 across the whole of GM.

[1] Clean Air Zone Framework, UK GOV (2020) https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/863730/clean-air-zone-framework-feb2020.pdf

2.10 In spring 2020, in the context of the Covid-19 pandemic, JAQU confirmed their continued commitment to delivering the GM CAP and asked GM to continue to develop the CAP and refrain from incorporating any possible economic impacts arising from the pandemic into the analysis prematurely. Accordingly, GM continued to progress interim deliverables as set out in the 2020 Ministerial Direction, whilst undertaking in parallel a programme of analysis and modelling to better understand the impacts of the Covid-19 pandemic on the GM CAP, the results of which are presented in this report.

2.11 In summer 2020, GM's 10 local authorities decided to proceed with a consultation on the GM CAP proposals as they stood prior to the pandemic. The purpose of the consultation was to seek views from residents, visitors, stakeholders and businesses on the proposals to achieve compliant NO_2 levels in Greater Manchester. The consultation sought feedback on how Covid-19 had affected businesses and organisations in GM. It took place from 8th October to 3rd December 2020 and 4,768 responses were received. The results of the consultation and GM's response to it are available at www.cleanairgm.com.

2.12 The results of the consultation have been considered alongside the results of the analysis presented here of the impacts of Covid-19 and have informed the development of a revised package of measures, set out in the proposed final GM CAP Policy. GM's modelling of air quality[2] has also been updated, to take account of the impact of Covid-19 and the revised post-Consultation package of measures. The initial results of this updated modelling are available on www.cleanairgm.com.

[2] Supplied in the June 2021 GMCA report, see Appendix 6

3 Context of the Covid-19 Pandemic

Trajectory of the pandemic

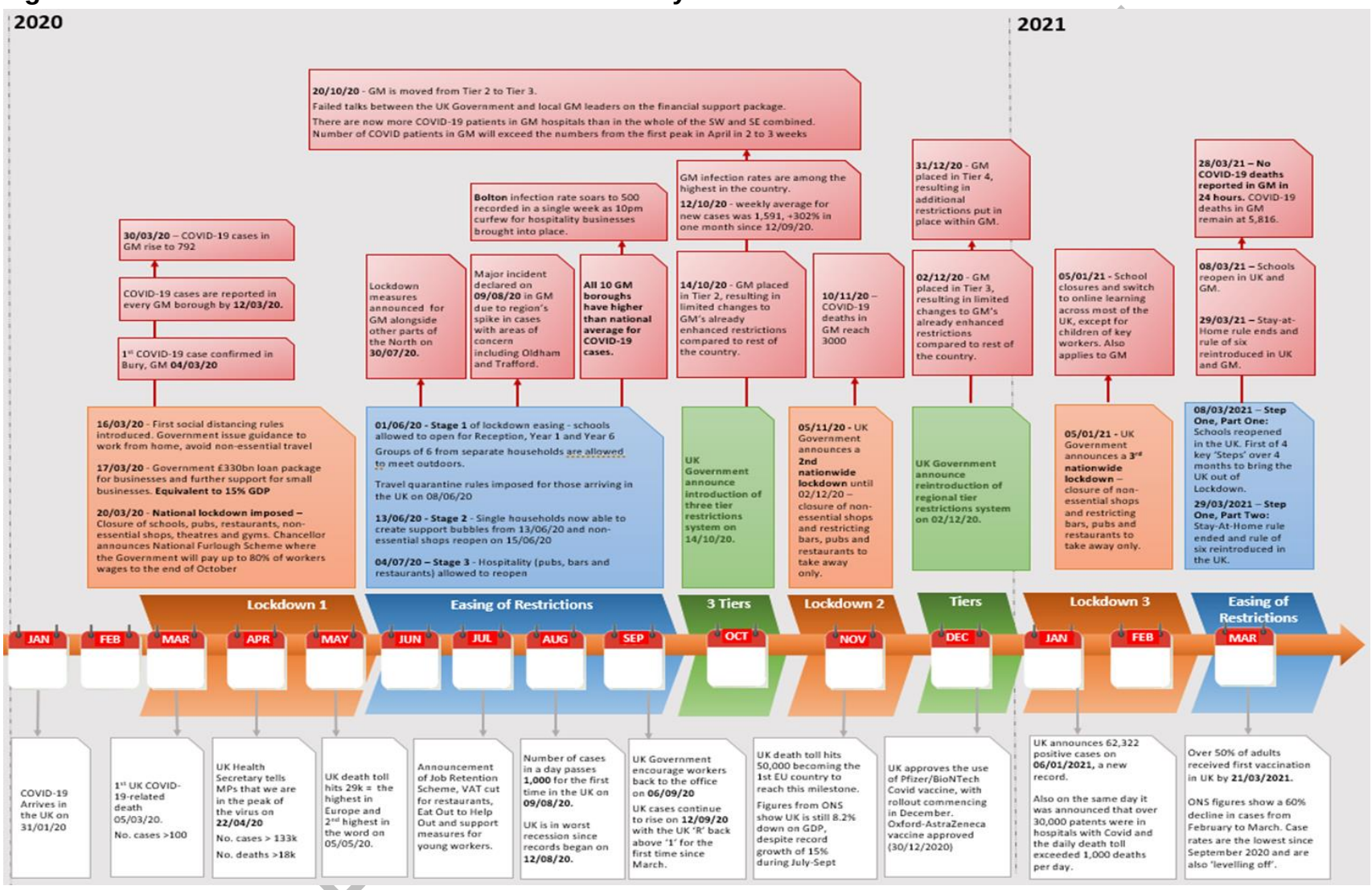
3.1 In January 2020, Covid-19 first appeared in the UK, and in March 2020 the first national lockdown was implemented. By the 30th September 2020, there were an estimated total of 453,000 people testing positive for the virus in the UK with 42,000 cases resulting in deaths.[3] By the 31st March 2021, this had risen to an estimated total of 4.35 million people testing positive for the virus in the UK with 127,000 cases resulting in deaths.[4]

3.2 The Covid-19 global pandemic has introduced uncertainty into the GM CAP project. The transport sector and the economy as a whole has been significantly impacted by the pandemic, triggering the government to provide financial support packages to affected individuals and businesses to mitigate the financial impact on them. The sector's ability to recover from revenue loss, whilst also being expected to respond to pre-pandemic clean air policy priorities by upgrading to a cleaner fleet, has been considered and known impacts modelled through sensitivity testing. However, it should be recognised that at the time of the reporting, the future trajectory of the economy is still unknown and dependent on Covid-19 related factors such as testing, vaccinations and virus mutations, and on whether these result in further lockdowns or restrictions on activity and travel.

3.3 Since Covid-19 first emerged in the UK, the UK government has sought to balance public health against the economy taking into consideration the resultant impacts that changes to the state of the economy could have on job security. **Figure 3.1** provides a summary of the key Covid-19 events and Government responses during the pandemic and provides context on how people and businesses have been living and operating. GM-specific elements are highlighted by the red boxes.

[3] Coronavirus (COVID-19) UK Government Dashboard, UK GOV (2021) https://coronavirus.data.gov.uk
[4] Coronavirus (COVID-19) UK Government Dashboard, UK GOV (2021) https://coronavirus.data.gov.uk

Figure 3.1 Covid-19 National and GM Timeline: January 2020 to March 2021



Source: AECOM

3.4 The high level of restrictions in place across March and April 2020 resulted in Covid-19 cases falling to the lowest level witnessed in the UK over the past twelve months, between 20,000 and 30,000 cases per month. The relaxation of restrictions over the summer of 2020 resulted in a sharp upturn in cases.

3.5 A regional approach to restrictions was in place from July 2020, and under this system GM had been placed under additional local restrictions measures because of a 'very high' COVID alert level and continuing increases in the infection rate across the GM region.

3.6 In October 2020 the government announced a three-tier system for lockdowns across England in order to 'simplify and standardise local rules'. As a result, on Wednesday 14th October England split into three Tiers, depending on the severity of the virus in the Local Authority area. Tier 3 restrictions came into effect on Friday, 23rd October 2020.

3.7 On the 5th November 2020, the government imposed a second lockdown with restrictions on gatherings and continued business activity in England between the 5th November and 2nd December. The restrictions included the closure of non-essential shops and hospitality for all but take-away food and drink.

3.8 At the end of the second lockdown England returned to a tiered system and GM was placed in Tier 3 before moving to Tier 4 (which amounted to lockdown measures) on 31st December 2020.

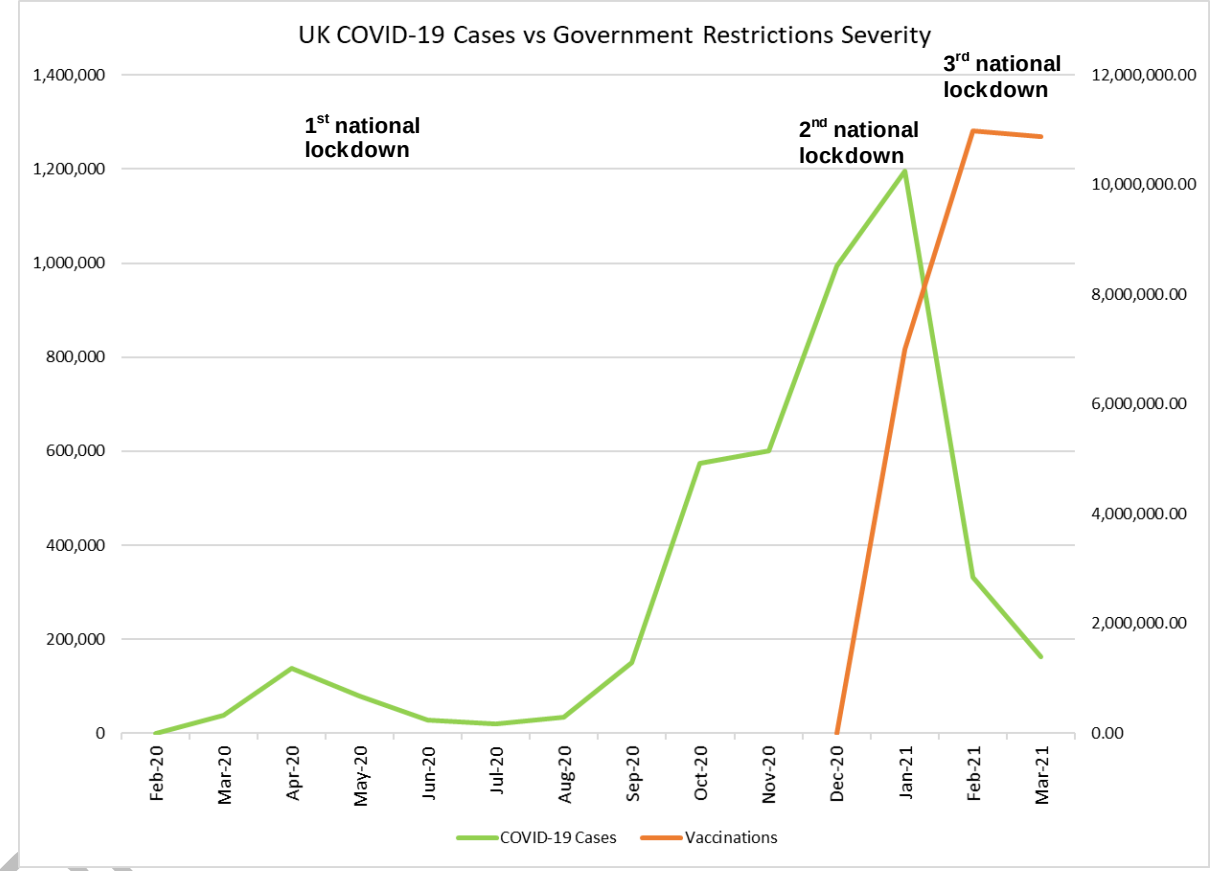
3.9 In January 2021, government imposed a third national lockdown. Throughout December 2020 and January 2021, Covid-19 cases peaked, surpassing 1 million cases in January 2021. Subsequently, the impact of the third national lockdown coupled with the acceleration of the vaccination programme has reversed the upward trend in Covid-19 case rates and enabled the government to gradually relax restrictions.

3.10 On the 22nd February 2021, the government announced detailed plans for the easing of lockdown in the UK. The timetable includes 4 stages, with a minimum of 5 weeks between each stage to collect and assess data. The first stage commenced on 8th March 2021 with the reopening of schools.

3.11 On 29th March 2021 the 'Stay at Home' order was lifted. Restrictions on non-essential retail and outdoor hospitality were lifted on 12th April 2021, and indoor hospitality was allowed to re-open from 17th May 2021, albeit under certain restrictions. The latest announcements mean that the end of government restrictions is scheduled for 19th July 2021.

3.12 **Figure 3.2** shows an overview of the Covid-19 cases in the UK since the beginning of the pandemic, up to and including March 2021, mapped against the total number of people who have received their first dose Covid-19 vaccination. This demonstrates a clear relationship between the fall in Covid-19 cases and the ramping up of the vaccination programme. This stark correllation may be more evident at the start of the vaccination programme with vaccinations prioritised for the most vulnerable who are therefore less likely to be asymptomatic and go undetected. A more detailed overview of the UK's vaccination programme is provided in the section below.

Figure 3.2 UK Covid-19 Cases vs UK first dose Covid-19 Vaccinations



Source: UK Government Coronavirus Dashboard [5], 2021

3.13 It is important to also recognise the UK's acceleration in testing capabilities which may have accounted for the larger spike in Covid-19 cases over winter 2020 compared to the first lockdown.

[5] Coronavirus (COVID-19) UK Government Dashboard, UK GOV (2021) https://coronavirus.data.gov.uk/

Vaccine Programme

3.14 In December 2020, the UK government approved the Pfizer/BioNTech and Oxford-AstraZeneca vaccines, with the UK-wide vaccination programme commencing 8th December 2020.

3.15 The initial vaccination timeframe targets were for everyone over 70, the clinically extremely vulnerable, as well as frontline healthcare and social care workers, to be vaccinated by mid-February and the rest of the priority groups after that, by 4th of April.

3.16 The wider 'Phase 1', 'most at risk' groups, included people of 50 years and older, a total approximately of 25 million people, equivalent to a third of the UK's resident population. Government also announced that all remaining adults will be offered the vaccine by the end of July 2021.

3.17 In March 2021, the government announced that up to the end of January 2021, over 4 million vaccine doses had been administered to adults aged 70 and over. Furthermore, by 20th March 2021 over 50% of the UK adult population had received the first vaccine dose.

3.18 The vaccine delivery continues at pace with the UK announcing on 13th April 2021 it had reached its target of offering a first dose to all over-50's and those in high-risk groups by 15th April, as well as being on track to offer a first dose to all adults by the end of July 2021.

3.19 Social distancing measures are anticipated to continue being loosened following the third lockdown and as the vaccinated proportion of the population increases. If that is the case, without any change in the efficacy of the vaccine or any other factors increasing cases, most current, direct social distancing impacts of Covid-19 would likely be over by the time of the proposed GM CAP opening in early 2022. However, there may still be long term behavioural changes and financial impacts resulting from the pandemic.

3.20 At the time of writing this report, the UK remains affected by the pandemic. Emerging evidence gathered over the course of 2020 and early 2021 has shown that there have been substantial changes to economy, travel patterns and behaviours. These changes have been driven by government policy and changes to people's choices as a result of the threat of Covid-19 in the short term, however some of the behaviours adopted during government lockdowns may continue once restrictions begin to ease.

The health impacts of Covid-19

3.21 Work done to date to assess the relationship between Covid-19, air quality and the GM CAP in terms of health impacts has found that the effect of Covid-19 has been profoundly unequal:

- Among those diagnosed with Covid-19, older people, people from ethnic minorities and men have been more likely to die.[6]
- People living in deprived areas have been more likely to catch Covid-19 and more likely to die from it. The mortality rates from Covid-19 in the most deprived areas were more than double the least deprived areas.[7]
- Drivers of vehicles specifically affected by the Clean Air Zone (CAZ) are amongst the occupations recording most deaths involving Covid-19.[8]
- Taxi driving is the occupation with the greatest number of deaths in England & Wales.[9]
- Drivers of taxis, HGVs, vans and buses are all in the top 10 occupations in terms of total deaths from Covid-19 (out of 369 classifications).

3.22 A number of studies have suggested a link between air quality and risk of death from Covid-19, including an ONS study published in summer 2020 which found that long term exposure to poor air quality (specifically $PM_{2.5}$) could increase the risk of death from Covid-19.[10]

[6] Disparities in the risks and outcomes of Covid, PHE (2020) https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/908434/Disparities_in_the_risk_and_outcomes_of_COVID_August_2020_update.pdf

[7] Disparities in the risks and outcomes of Covid, PHE (2020) https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/908434/Disparities_in_the_risk_and_outcomes_of_COVID_August_2020_update.pdf

[8] Deaths involving Coronavirus (COVID-19) by occupation (those aged 20 to 64 years), England and Wales: deaths registered between 9th March and 28th December 2020,ONS (2020) https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/causesofdeath/datasets/coronaviruscovid19relateddeathsbyoccupationenglandandwales

[9] Deaths involving Coronavirus (COVID-19) by occupation (those aged 20 to 64 years), England and Wales: deaths registered between 9th March and 28th December 2020, ONS (2020) https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/causesofdeath/datasets/coronaviruscovid19relateddeathsbyoccupationenglandandwales

[10] Does exposure to air pollution increase the risk of dying from the coronavirus (COVID-19)?, ONS (2020) https://www.ons.gov.uk/economy/environmentalaccounts/articles/doesexposuretoairpollutionincreasetheriskofdyingfromthecoronaviruscovid19/2020-08-13

3.23 There is emerging evidence of the prevalence of 'Long Covid', with around one in ten respondents to ONS surveys who had tested positive for Covid-19 displaying symptoms for 12 weeks or longer. There is also some evidence from experimental ONS statistics of the possible nature and prevalence of complications that may be related to Covid-19. Patients in hospital with Covid-19 experienced elevated rates of metabolic, cardiovascular, kidney and liver disease compared with patients of similar demographic and clinical profiles over the same period, especially diabetes and cardiovascular disease. It is possible that Covid-19 may leave a proportion of the population with medium or long-term health conditions that make them more vulnerable to the impacts of air quality[11].

3.24 There are undoubtedly impacts deriving from the Covid-19 pandemic which will affect the GM CAP programme and this report seeks to provide a summary of the known Covid-19 impacts on the scheme and present available evidence to forecast the likely impacts of the pandemic whilst the situation is still ongoing.

[11] Prevalence of ongoing symptoms following coronavirus (COVID-19) infection in the UK, ONS (2021) https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/conditionsanddiseases/bulletins/prevalenceofongoingsymptomsfollowingcoronaviruscovid19infectionintheuk/1april2021

4 Assessing the potential impacts of Covid-19 on the GM CAP

4.1 The pandemic has had widespread impacts on individuals and businesses, varying in scale, leading to a change in the GM CAP base assumptions which were formed pre-Covid-19 in terms of the age of the vehicle fleet, travel behaviour and traffic levels, public transport provision and use, and the circumstances of businesses and the economy. The direct and indirect impact of the pandemic has led to changes in household savings and expenditure which have had a subsequent impact on vehicle purchasing and ownership patterns. Government restrictions have led to changes in traffic volumes, speeds and congestion and bus service patterns and bus fleet profiles. The following chapters will review the known existing and forecast impact of Covid-19 on the GM CAP, focussing on the factors considered most likely to impact the GM CAP.

4.2 To gather evidence on the impacts of Covid-19, work has included:

- Review of programme risk, sources and assumptions;
- Liaising with other CAP authorities such as Birmingham, Bath and Sheffield to share expertise;
- Scenario planning and brainstorming exercise;
- Monitoring of real-world conditions;
- Developing impact assessments by vehicle type and distributional impacts;
- Sensitivity testing of transport, air quality and economic models; and
- Research and consultation.

4.3 Businesses, taxi drivers, operators and organisations responding to the consultation were asked specific questions about the impact of Covid-19 on them and their business and their perception of the wider impacts on GM.

4.4 In addition to the above, the GM CAP programme has been in regular liaison with JAQU's technical team to agree methodology, seek guidance and inputs and share early results emerging from consideration of the impact of the pandemic across 2020. JAQU supplied written guidance to inform local authorities how to consider Covid-19 impacts, what sensitivity testing they would like local authorities to carry out and how to consider Covid-19 within economic appraisal and distributional impact assessments. This has been reflected within the ten GM local authorities' work programme. JAQU has approved the ten GM local authorities' methodology to assess Covid-19 impacts and reflect those impacts within the modelling and analysis process.

5 Factors likely to influence the GM CAP

5.1 The Covid-19 global pandemic has introduced uncertainty into the GM CAP project. GM carried out an exercise to better understand what changes could arise from the pandemic and the extent to which they could impact the GM CAP. This involved:

- A brainstorming exercise of the ways the Covid-19 pandemic could affect a wide range of factors including travel patterns, behavioural choices, vehicle fleets, public transport provision, businesses and the economy in the short, medium and longer term. This brainstorming exercise involved experts from the GM CAP consultancy team and TfGM's Strategy and Policy team, and was discussed with the local authority Steering Group[12] and JAQU's technical team to gain their input;

- A review of the evidence and assumptions underpinning the GM CAP, to establish which factors could be affected by the pandemic, where possible change had been identified in the brainstorming exercise; and

- Resulting in a shortlist of factors that both could change within the lifetime of the GM CAP and could be influential on the GM CAP.

5.2 The ten GM local authorities devised a series of sensitivity tests to test how impactful plausible changes could be. This testing took into account JAQU guidance on Covid-19 related sensitivity testing.

5.3 Where factors were identified within the sensitivity testing as potentially impactful, evidence has been gathered to assess to what extent these changes are materialising, where it is possible to do so. This evidence is set out in the remaining chapters, and the Conclusion considers in the round the extent to which changes that are resulting from the pandemic could affect air quality, and the performance and socio-economic impacts of a CAZ.

5.4 Further sensitivity testing will be carried out in summer 2021, considering how Covid-19 related uncertainty could affect the GM CAP as proposed post-consultation.

Introduction to the GM CAP modelling process

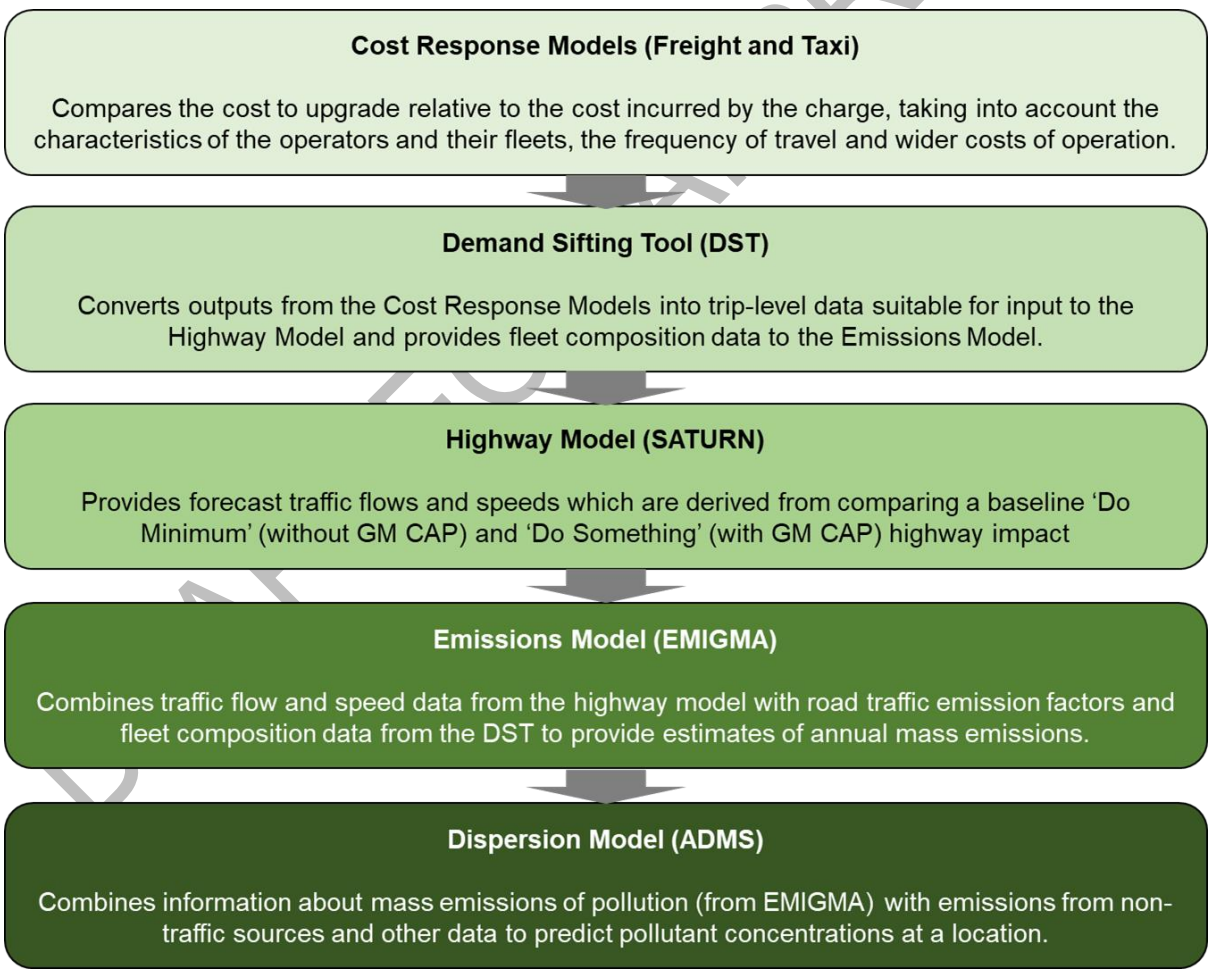
5.5 The purpose of the modelling process is to quantify the impact of traffic by vehicle type on emissions and consequently on concentrations of NO_2 at the roadside in GM.

[12] Throughout the development of the plan GM has considered a range of options to deliver compliance, overseen by the GM Steering Group. Members include Directors or Assistant Directors from each GM authority.

5.6 The modelling process provides a forecast of NO_2 concentrations in the baseline, if no action is taken, and then allows the ten GM local authorities to test the impact of different policies and proposals on vehicle fleets, traffic and emissions. Using these modelling tools, the ten GM local authorities forecasts NO_x emissions and NO_2 concentrations under a range of scenarios for the years 2021, 2023 and 2025. NO_2 concentrations for interim years and beyond 2025 are interpolated from the results in modelled years.

5.7 A brief summary of the modelling input steps feeding into the appraisal is presented in **Figure 5.1**, which shows each of the modelling components and their linkages within the modelling suite. For a full description of the modelling methodology, please see the Technical Reports T1-4 and AQ1-3 (Option for Consultation).[13]

Figure 5.1 Overview of the Modelling Process



[13] Clean Air Plan – Technical Documents, GM CAP (2020) https://cleanairgm.com/technical-documents/

5.8 Sensitivity testing can explore the impact of changes to assumptions – such as the age of the vehicle fleet, or behavioural responses to the proposed scheme - on the outputs at any phase of the modelling process.

Factors that could affect the GM CAP

5.9 The following factors were identified as both plausible outcomes of the pandemic and potentially impactful on the GM CAP:

- Vehicle upgrades are slow, with fewer new vehicles entering the fleet and older vehicles remaining in the fleet for longer;
- A sustained increase in working from home reduces commute traffic, particularly in peak periods;
- Bus mileage may reduce if patronage does not recover to pre-pandemic levels, unless subsidies are maintained to prevent this;
- Businesses may be less able to upgrade in response to the GM CAP, due to having exhausted their reserves, taken on debt, suffered shutdowns and so on; and/or
- Availability of compliant vehicles may be constrained, and/or prices may rise.

5.10 The following sections consider each of these issues, setting out the results of sensitivity testing and evidence gathered on changes over the past year. The structure of the remainder of the report is as follows:

- **Chapter 6** summarises the impact of Covid-19 on travel patterns to date, covering public and private transport, and looking at differences by vehicle type, place and time of day, as well as how the picture has changed through the pandemic;
- **Chapter 7** sets out the impact of the pandemic on vehicle purchases and therefore the age of the on-road vehicle fleet;
- **Chapter 8** sets out the evidence to date on working from home patterns during the pandemic and the results of sensitivity testing on the potential impacts of increased working from home on the GM CAP;
- **Chapter 9** sets out analysis showing the potential impact of reduced bus mileage on the GM CAP and the evidence with regards to the current position;

- **Chapter 10** sets out the impacts of the pandemic on businesses and the economy, and considers whether vehicle owners may be less able to upgrade their vehicles in response to the GM CAP;

- **Chapter 11** considers the impact of the pandemic on the availability and cost of compliant vehicles; and

- Finally, **Chapter 12** summarises analysis that has been undertaken to understand the impacts of Covid-19 by vehicle type, and to assess how vulnerable each vehicle type is to the impacts of the GM CAP.

6 Impact of Covid-19 on travel patterns

6.1 Data supplied by TfGM, Automatic Traffic Count (ATC) data and Highways England data has been assessed to evidence the pandemic's impact on travel behaviour in GM.

Overall travel demand

6.2 The impact of Covid-19 on travel demand in GM is shown below in **Figure 6.1.**

6.3 There was an initial substantial reduction in travel demand through March and April 2020 in response to the first national lockdown. This was seen across all modes of travel.

6.4 As the UK began to emerge from the first lockdown, travel demand began to increase through the summer months with travel and social distancing measures gradually easing, though did not return to pre-pandemic levels, noting that GM remained under greater restrictions than some other parts of the UK throughout this period.

6.5 At the start of September 2020, when some of the lowest levels of restrictions were in place, travel demand continued to increase (noting that GM was placed under stricter lockdown measures than much of the rest of the UK at this time). Following September 2020, further restrictions were re-introduced to control further Covid-19 outbreaks, resulting in the third national lockdown in January 2021.

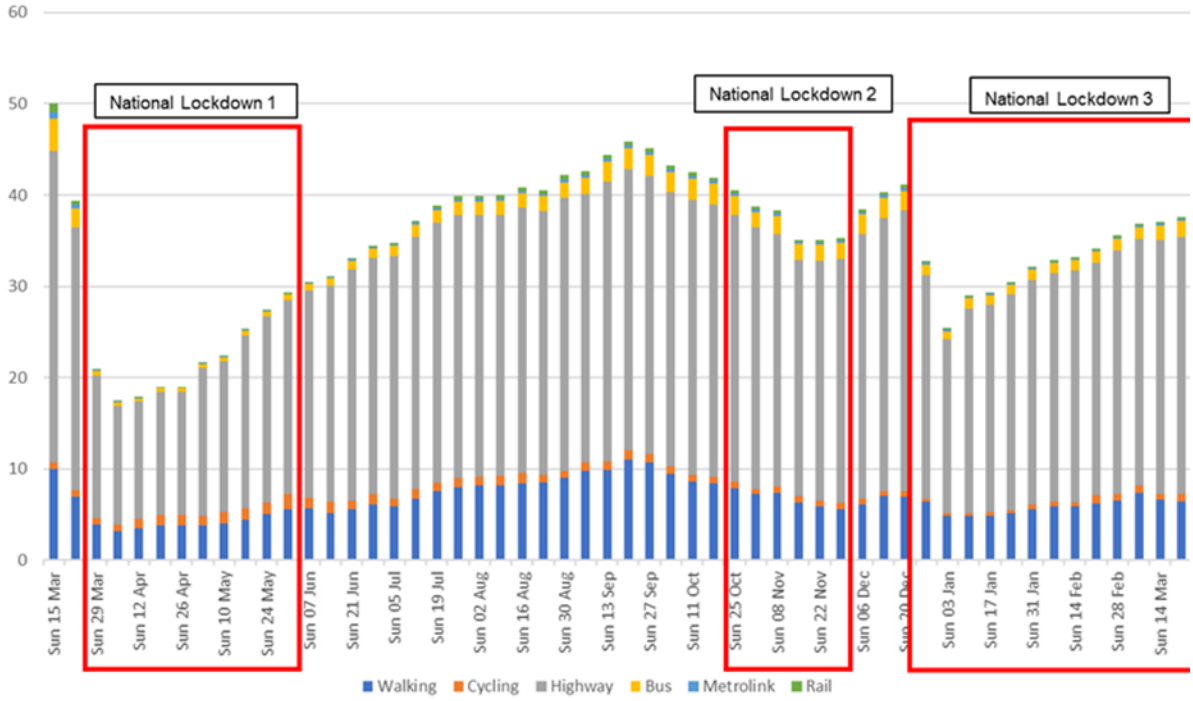
6.6 Despite the introduction of the third lockdown in January 2021, traffic demand across GM was consistently higher than experienced during the first lockdown albeit traffic levels did not reached the levels witnessed across August 2020 – September 2020.

6.7 Taking a more detailed look at the impact of Covid-19 on transport modes in GM, **Figure 6.2** displays data from pre-lockdown (March 2020) to March 2021.

6.8 This shows that travel by active modes was close to pre-pandemic levels by March 2021 (70% for walking and over 90% for cycling). Highway travel was at around 90% of pre-pandemic levels while travel by public transport was still much lower than normal.

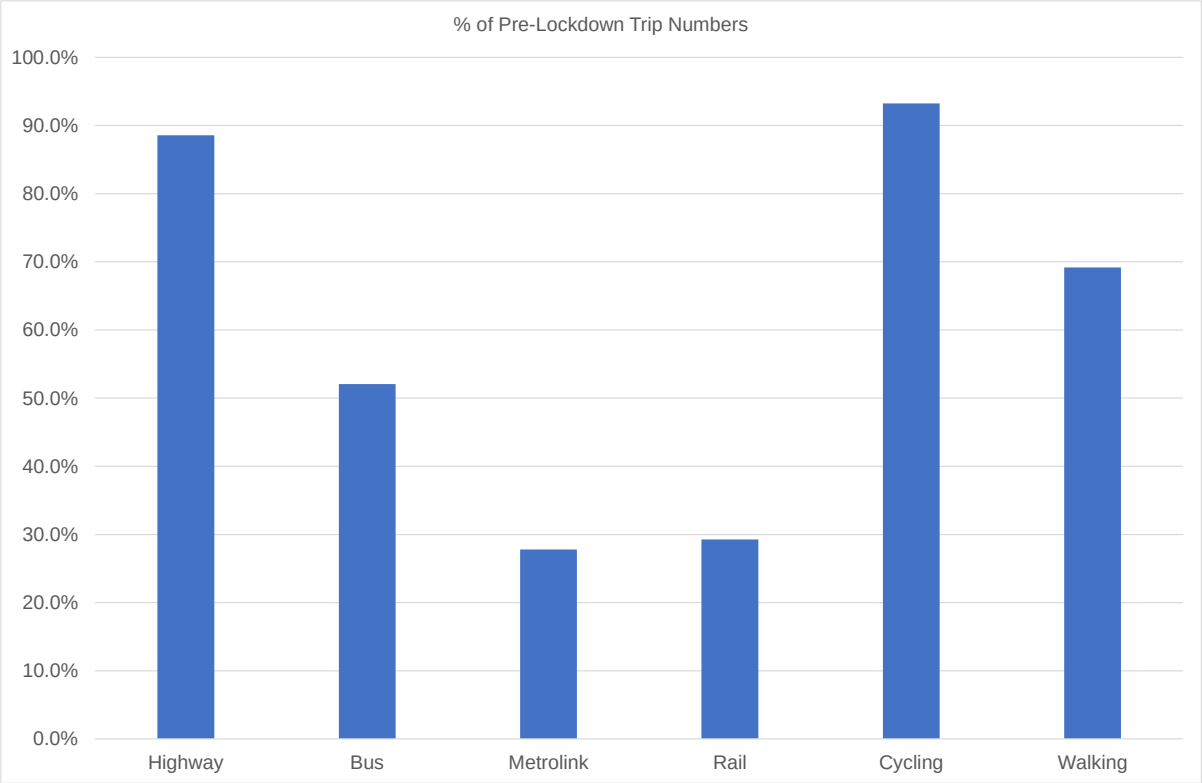
6.9 Bus demand has recovered more (50%) than other public transport modes (30% for Metrolink and Rail) reflecting the wider range of destinations served and use by those without access to a car however demand remains suppressed as only 'essential' workers were encouraged to travel on public transport during all three national lockdowns, and at the time of writing that guidance has not yet been lifted after the third lockdown.

Figure 6.1 Average Weekly Flow in GM, All Modes (March 2020–March 2021)



Source: TfGM Monitoring

Figure 6.2 Trips in March 2021 by mode as a proportion of trips in March 2020 (pre-lockdown)



Source: TfGM Monitoring

Traffic patterns: Introduction

6.10 ATC data has been used to compare the first 2 weeks in March 2020, (just prior to the introduction of the first social distancing rules on the 16th March), and the most recent data from March 2021 when restrictions were still in place.

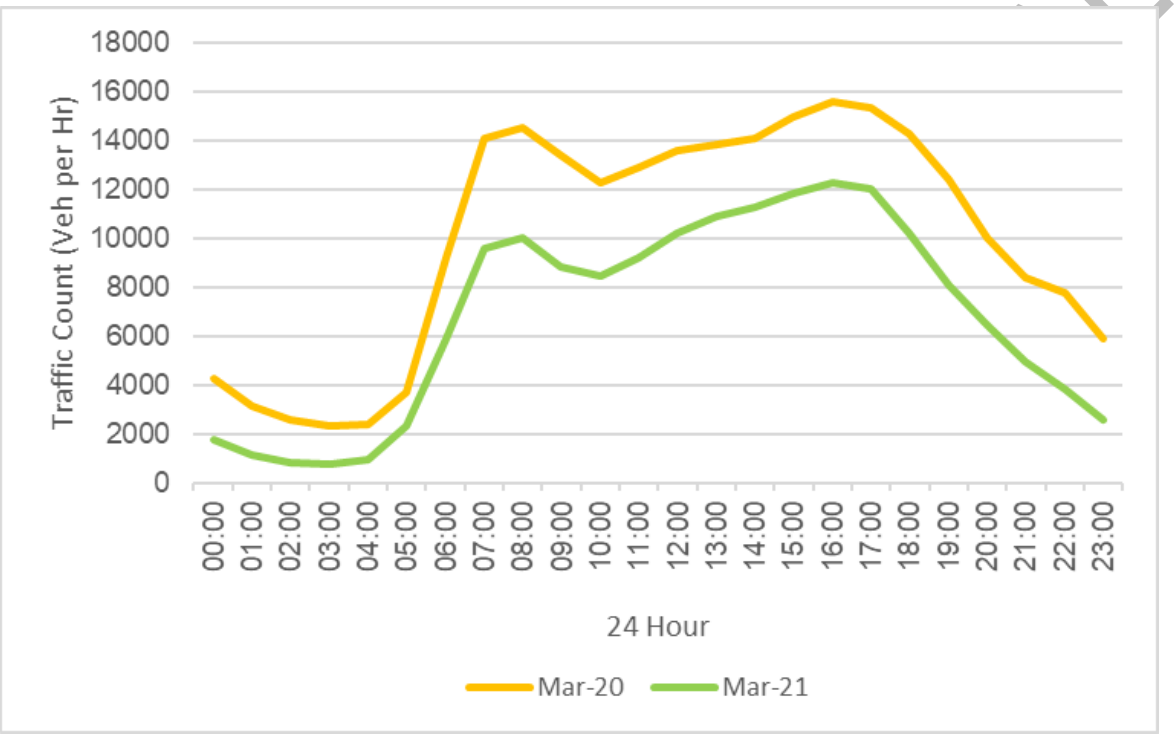
6.11 The ATC data has been reviewed by time of day (am, pm and inter-peak periods) and by type of location to understand key trends in changing traffic flows.

6.12 The findings show that over the entire course of the day, vehicle volumes in March 2021 were generally lower than in March 2020 (prior to the lockdown) however this fluctuated on different parts of the GM road network. Certain areas of the road network have been collated to produce a representative total vehicle volume. A breakdown of the findings are provided below by location and vehicle type.

Traffic patterns: Regional centre

6.13 March 2021 traffic volumes remained below those of March 2020, with a 32% average reduction throughout the day. Traffic flows were nearest to 2020 values during the interpeak with a reduction of 25%, however numbers remained consistently lower than 2020 throughout the Inter Peak and the PM Peak, with considerable decline through the night-time period.

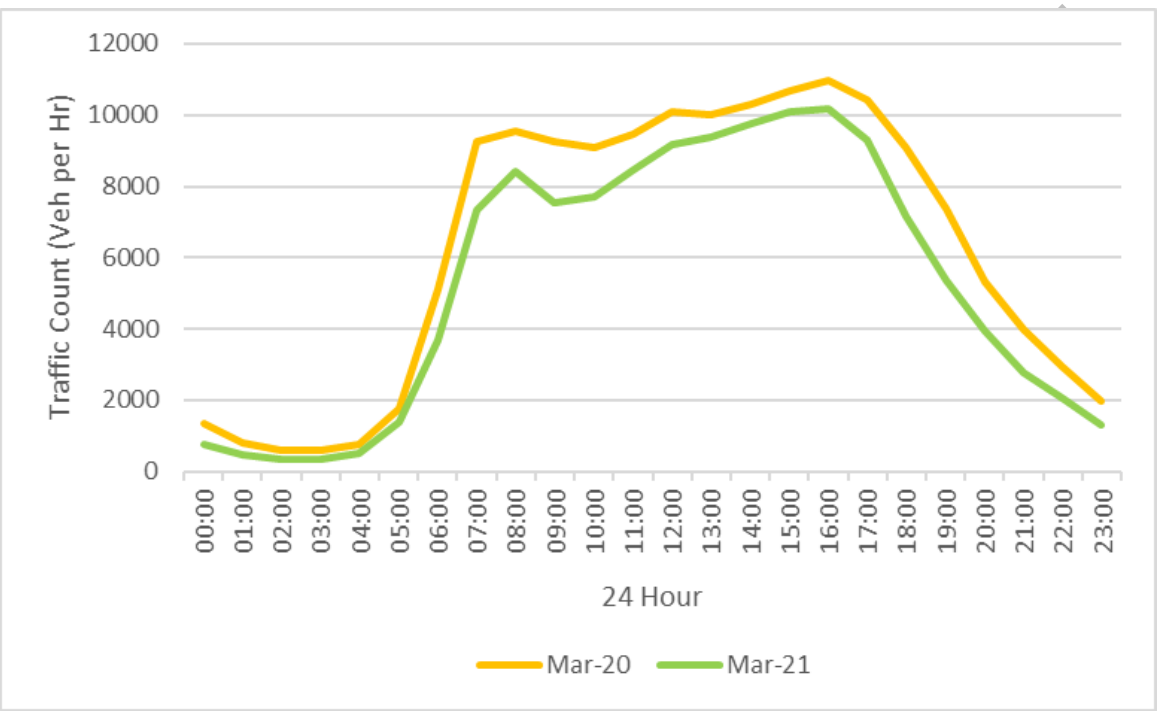
Figure 6:3 Traffic Count - GM March Comparison: Regional Centre



Traffic patterns: Local centres

6.14 March 2021 total traffic flows at sites close to Local Centres remained relatively close to March 2020 volumes, with a total average 24-hour reduction of 15%. The AM Peak had a 17% reduction in traffic in March 2021 and from the end of the AM peak into the interpeak it was slower to recover than the rest of the day.

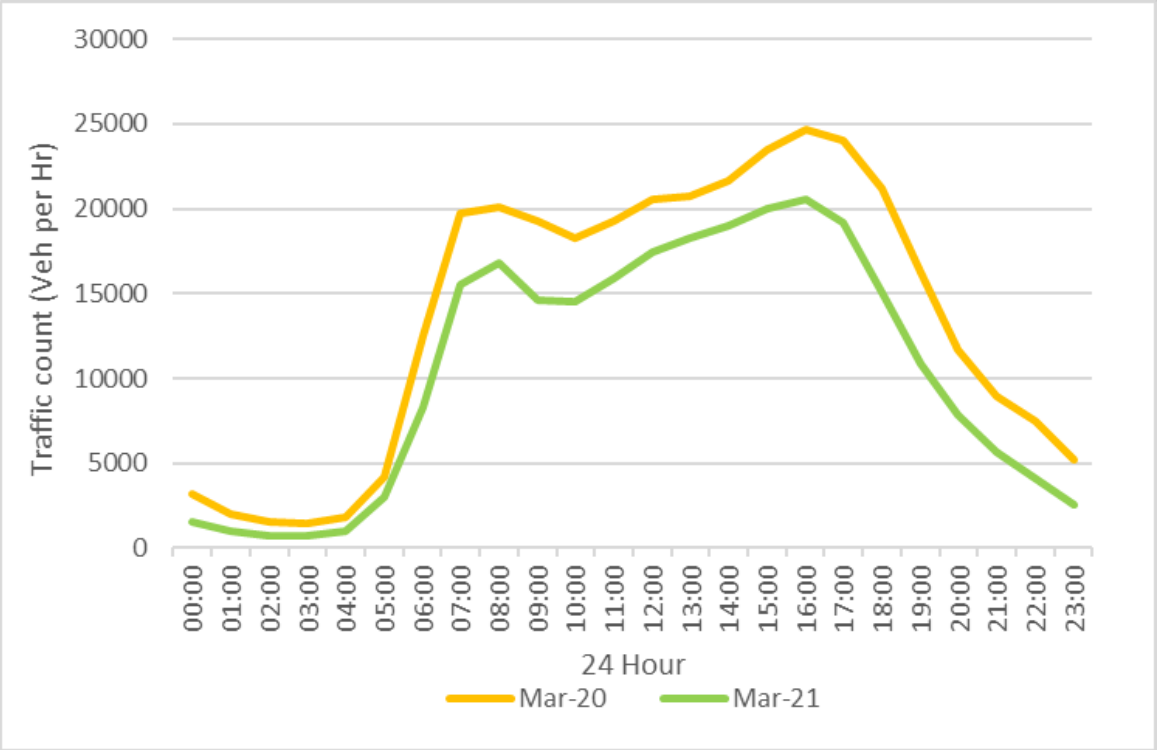
Figure 6:4 Traffic Count - GM March Comparison: Local Centres



Traffic patterns: Radial routes

6.15 Traffic flows throughout the day on key radial corridors in March 2021 were overall 23% below those in March 2020. The March 2021 inter peak period has recovered quicker than other times of the day with a 15% traffic flow decline compared to March 2020, in contrast to the AM peak which saw a 21% reduction. This can be explained by the decline in commuter traffic and the increase in working from home.

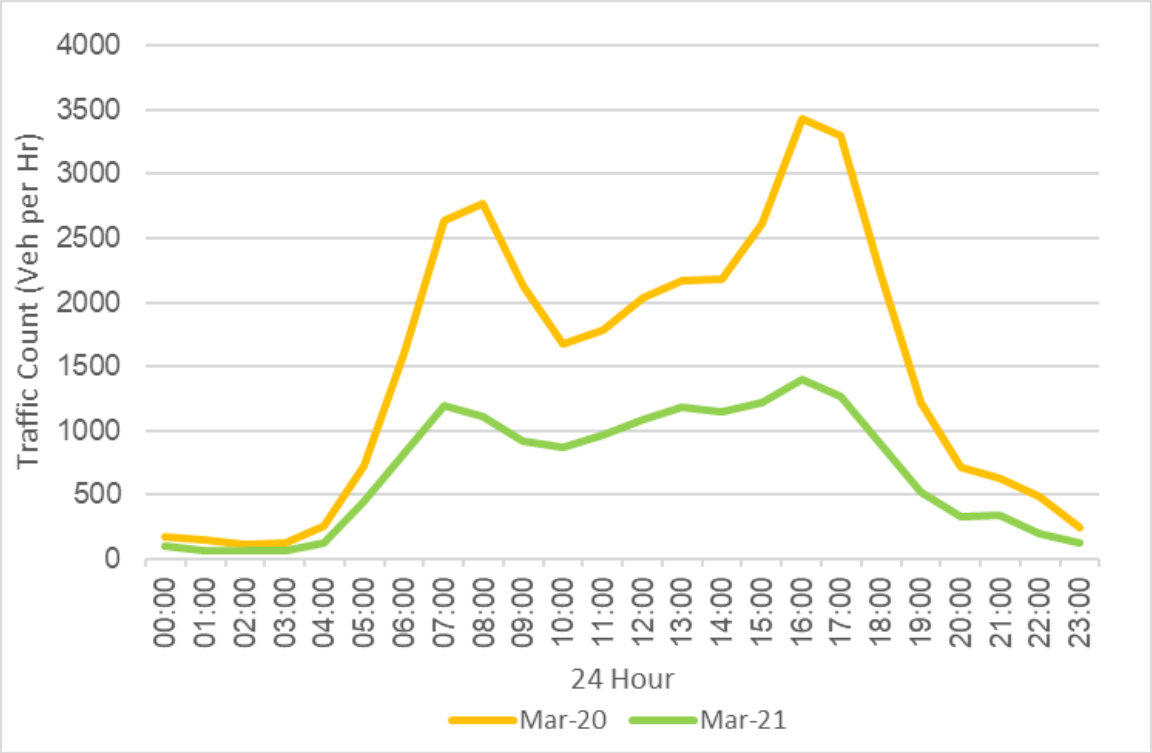
Figure 6:5 Traffic Count - GM March Comparison: Radial Routes



Traffic patterns: Employment sites such as Trafford Park

6.16 These areas saw the largest proportional decrease in traffic volumes between March 2020 and March 2021, with an overall fall of 54%. The AM and PM Peaks suffered the biggest reduction, with a 57% decrease in AM volumes and a 59% decrease in PM volumes. These considerable declines in commuter traffic in and around these employment sites are very likely to be the result of restrictions, for example the closure of non-essential shops reducing the number of visitors to shopping centres, and where it was possible workers moved to working from home[14].

Figure 6:6 Traffic Count - GM March Comparison: Employment Sites

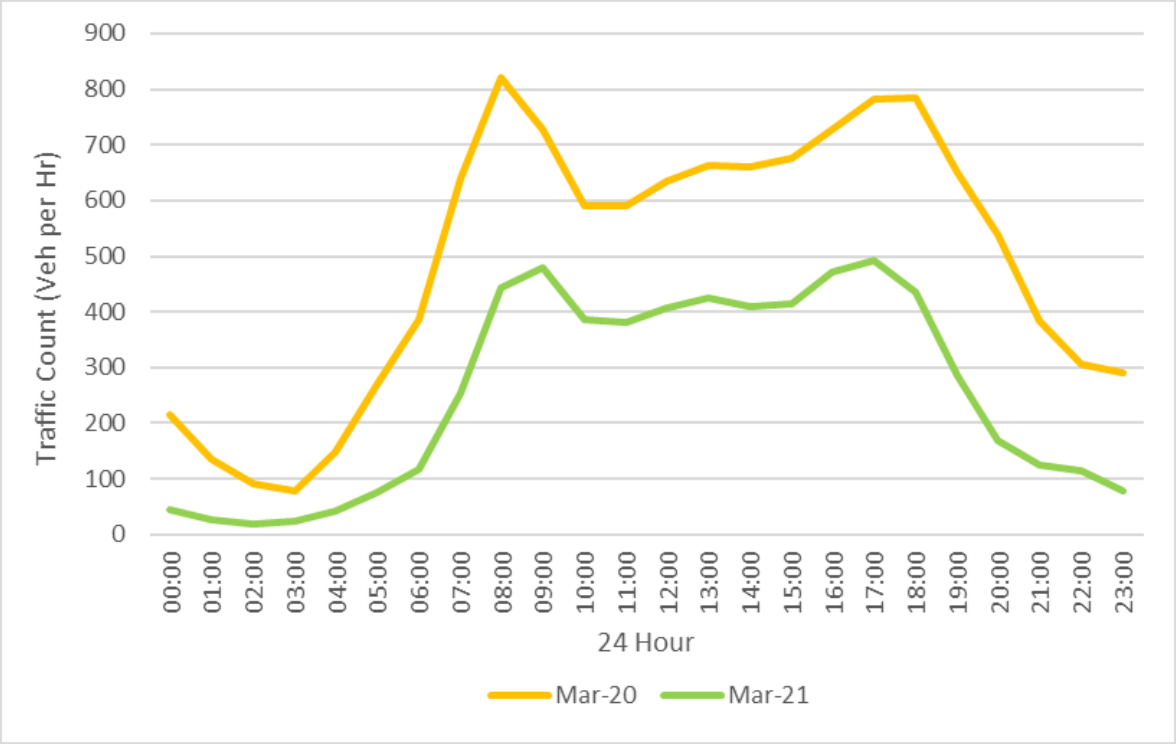


[14] It is important to note that ATC data for March 2021 was not recorded at one of the employment sites, which contributed to the large reduction in traffic volume in 2021

Traffic patterns: Manchester Airport

6.17 The pandemic has had a severe impact on Manchester Airport. Total traffic volumes, taken from the M56 Junction 5, around Manchester Airport, have seen a reduction of 48% between March 2020 and March 2021. Immediately after the March 2020 data was recorded the Airport closed 2 of its 3 terminals due to passenger numbers steeply declining because of the pandemic. The most resilient time period is the Inter-Peak with a reduction of 36%, compared to the AM and PM Peaks which have suffered a significant reduction in traffic volumes. Furthermore, in March 2021 non-essential travel was forbidden due to the national lockdown, including travelling abroad. DfT's Transport Statistics show that pre-pandemic, 28.7% of passengers travelled to the airport by taxi and therefore the reduction in air travel has had a particularly strong impact on the demand for taxi travel and therefore on the taxi trade.

Figure 6:7 Traffic Count - GM March Comparison: Manchester Airport



Strategic highway network demand

6.18 The ATC count data has been supplemented by Highways England Strategic Road Network (SRN) data from the online database WebTRIS.

6.19 The SRN data highlighted that cross-GM boundary traffic flows in March 2021 were close to reaching pre-pandemic levels witnessed in March 2020 indicating that private car and freight traffic has recovered. Whilst future trajectory is unknown, traffic levels on the road network may exceed pre-pandemic levels if public transport usage remains low.

6.20 This trend was also seen on the M60. Most sections along the M60 motorway in March 2021 were close to traffic levels seen in March 2020 with Junctions 13-14 exceeding levels experienced in 2020. The exceedance levels at Junction 13 and 14 on the M60 in March 2021 could be the result of strategic journeys converging on the SRN from the M62, M602, M61 and A580, recognising that Covid-19 has had a material impact on commuter traffic.

6.21 The marginal difference on the SRN is reflective of the limited trip impact on HGV and LGV activity after the initial lockdown period with some sectors such as food and pharmaceuticals operating at higher than expected levels, masking other freight movements which have reduced due to the pandemic such as those associated with the hotel, restaurant and entertainment sectors.

LGV traffic

6.22 There was a significant decrease in flows between March and April 2020 following the introduction of the first lockdown. By May 2020, considering the seven-day moving average of daily counts, LGV observations were 59% of what they were at the start of March 2020.

6.23 From June 2020 to August 2020 the seven-day moving average for LGVs had exceeded levels seen at the start of March and subsequent national lockdown restrictions have not been as stringent on the sectors relying on LGVs as the first lockdown period. The prevalence of home deliveries is likely to have been a significant factor here.

HGV traffic

6.24 HGV volumes saw a decline during the first lockdown with a gradual increase in volumes until September 2020, with flows exceeding pre-pandemic levels.

6.25 Despite the decline in flows during the subsequent second and third lockdowns, the HGV volumes remained on average 90% above the equivalent months and were not as low in comparison to the first lockdown. Some HGV businesses were able to diversify their operations to reflect the changing demand however more specialist HGV business that have not been able to adapt have been impacted more.

Impact of Covid-19 on travel patterns: Conclusion

6.26 Travel demand varied during the year, reflecting the differing intensity of lockdown and travel restrictions. By March 2021, highway demand was close to pre-pandemic levels, whilst public transport demand remained considerably below pre-pandemic levels, particularly on Metrolink and rail, with active travel somewhere in the middle.

6.27 The most significant decreases in traffic are during the AM and PM peak periods.

6.28 Local centres across GM experienced the smallest reduction in traffic which could be associated with a greater proportion of commuters working from home or on furlough and making a higher proportion of local amenity trips. This is consistent with the higher reductions experienced in the Regional centre and at employment locations, reflecting the nature of employment patterns along with changing travel behaviours.

6.29 The most significant reduction in traffic volumes was witnessed at GM employment sites and Manchester Airport with approximately half of journeys ceasing during the pandemic compared to pre-pandemic levels, reflecting the reduction in commuting and business travel and constraints on international travel.

6.30 The pandemic's impact on travel by different vehicle modes has been unequal with freight (HGV and LGV) activity quickly returning to pre-pandemic levels by the middle of 2020 after the initial lockdown period whilst public transport has faced a sustained fall in patronage and it remains to be seen whether passenger numbers will recover to pre-pandemic levels and how quickly.

6.31 Ongoing uncertainty remains on the trajectory and composition of traffic volumes as the UK continues to emerge from lockdown. As the economy continues to open up, it remains to be seen whether behaviours adopted during the pandemic are embedded in the long-term. This is explored further in the following chapters.

7 Impact of Covid-19 on vehicle upgrades and the age of the fleet

7.1 One possible outcome of the Covid-19 pandemic is that vehicle owners delay purchases of new vehicles, meaning that there are fewer new vehicles on the road and the oldest vehicles remain on the road for longer before being scrapped, leading to an older on-the-road fleet than previously assumed.

7.2 Sales of new cleaner vehicles lead to a natural turnover of on-road fleet, as the replaced vehicles pass onto the second-hand market, with the oldest most polluting vehicles gradually cycled out of the fleet. It is this effect which reduces overall road transport emissions as the fleet becomes cleaner leading to projected future improvements in NO_2, and it is this trend which the GM CAP seeks to accelerate by making older more polluting vehicles less financially attractive compared with cleaner models.

7.3 The ten GM local authorities has carried out sensitivity testing to assess the possible impact of an older-than-expected fleet on the GM CAP, set out below, and gathered evidence on the impact of the pandemic on vehicle sales.

Vehicle sales: Cars

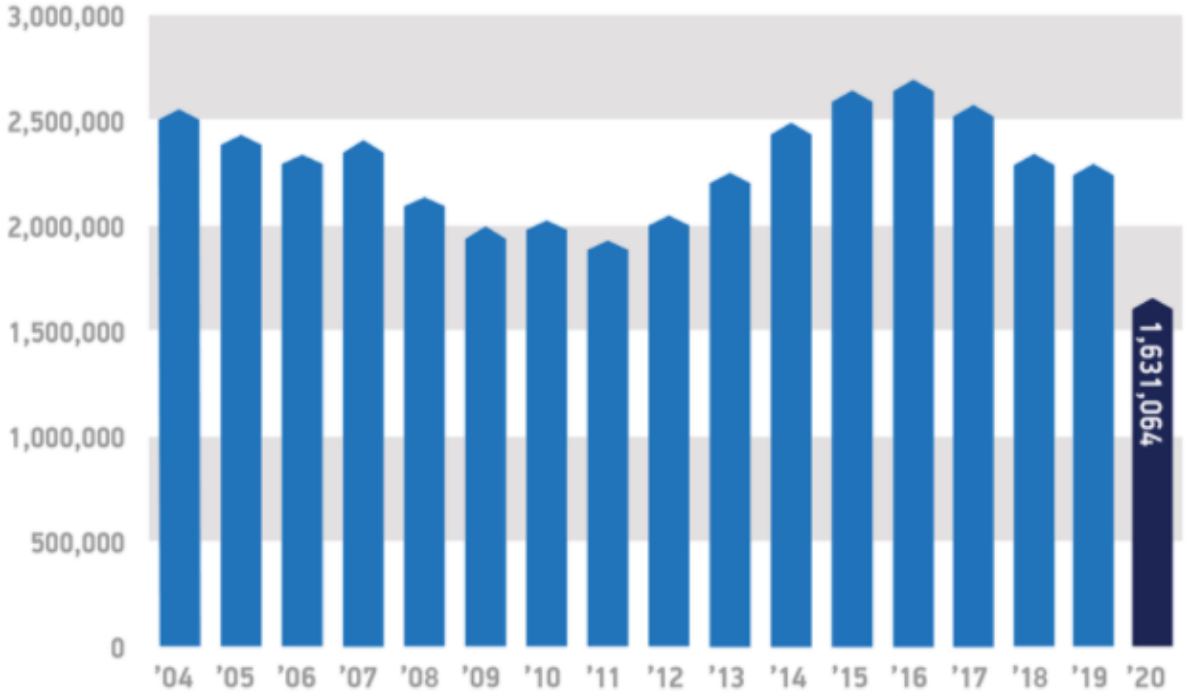
7.4 The evidence shows that Covid-19 has led to a substantial reduction in new vehicle sales of cars in 2020, which has continued into 2021.

7.5 Evidence of reduced vehicle sales since March 2020 is available on a monthly basis[15], and projections of sales recovery have been published recently by the SMMT[16] for cars in 2021/22, along with patterns in the second hand used car market.

7.6 Further analysis of the pre-Covid sales patterns for private cars, shows that sales have been falling year-on-year since 2016 (**Figure 7.1**). It is therefore not considered reasonable that vehicles sales per year should be forecast to exceed those in the pre-Covid reference level. This means that it is unlikely that the lost sales will be 'caught up' during the lifetime of the GM CAP.

[15] Vehicle Data, SMMT (2021) https://www.smmt.co.uk/vehicle-data/
[16] UK New Car and LCV Registration Outlook to 2022, SMMT (2021) https://www.smmt.co.uk/wp-content/uploads/sites/2/WEBSUM-SMMT-CARLCV-MARKET-OUTLOOK-Q1-REVISED-03032021.pdf

Figure 7.1 Annual Car Registrations 2004-2020



Source: SMMT[17]

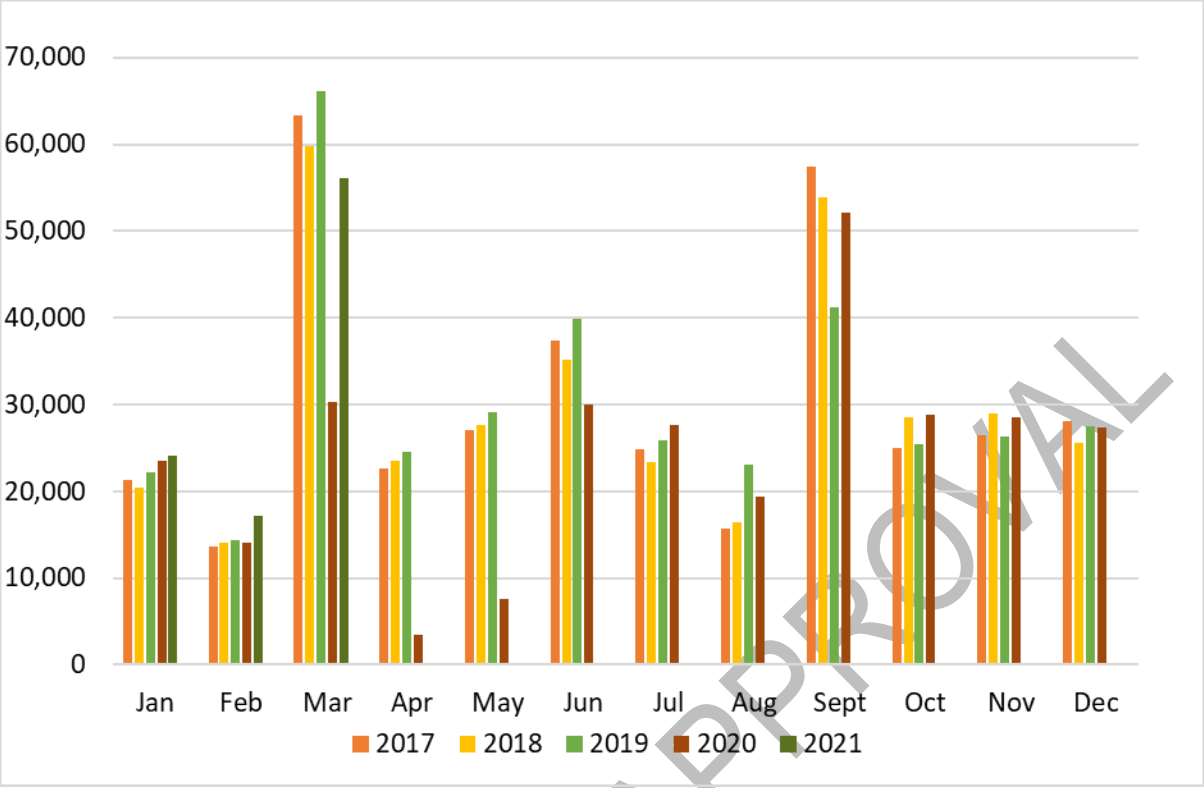
Vehicle sales: LGVs

7.7 There was a significant fall in new LGV registrations from March to June 2020 however registrations subsequently rebounded into 2021 with new registration levels now broadly following pre-pandemic trends.

7.8 Sales of vans have been stable since 2016, and were more resilient during the pandemic after the initial national lockdown. Furthermore, sales in January and February 2021 were greater than those recorded historically indicating strong market demand and that supply of new vehicles isn't unduly restricted at this stage (**Figure 7.2**). It is therefore considered reasonable that vehicles sales per year could be forecast to exceed those in the pre-Covid reference level. This means that over the duration of the GM CAP, the age of the LGV fleet is expected to get closer to the age of the fleet as forecast pre-pandemic, so the impact of the pandemic will decline over time.

Figure 7.2 Monthly Van Registrations 2017-2021

[17] Vehicle Data, SMMT (2021) https://www.smmt.co.uk/vehicle-data/



Source: SMMT[18]

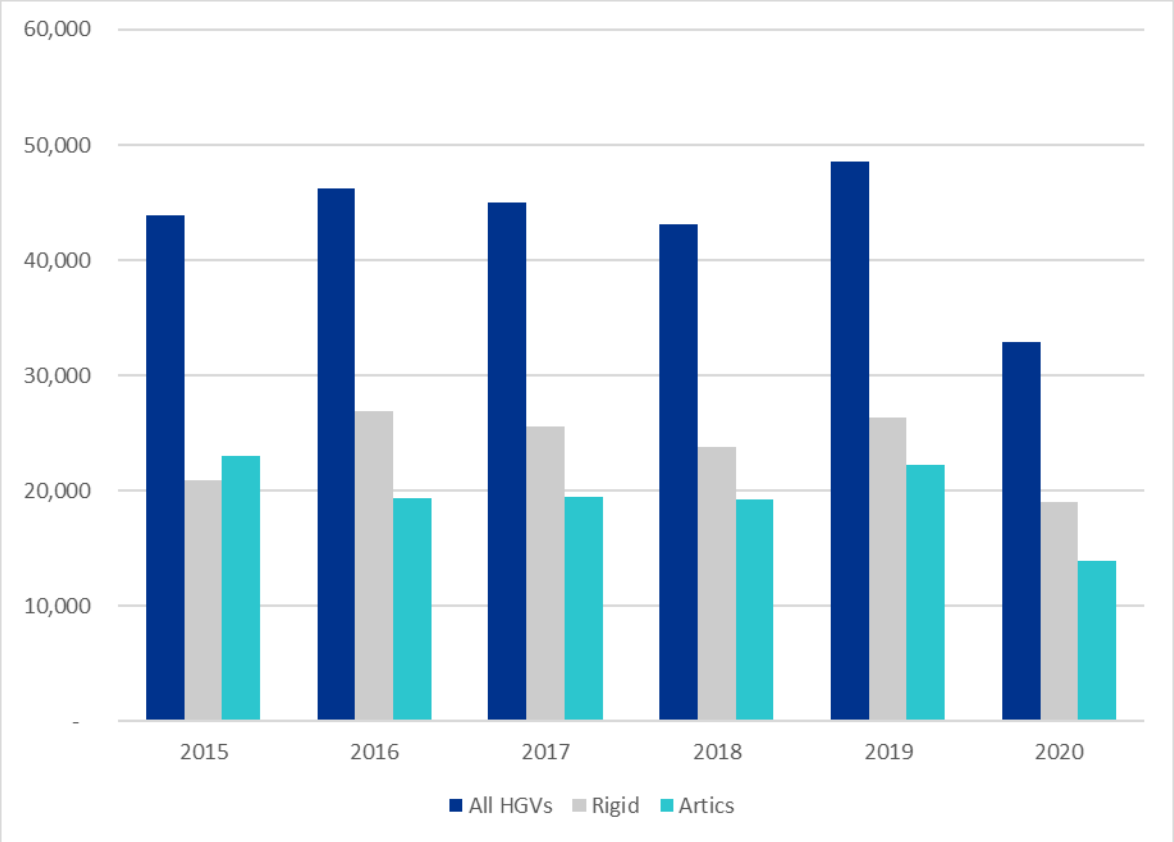
Vehicle sales: HGVs

7.9 A review of HGV sales shows that whilst there has been a reduction in 2020, this was in part a consequence of increased atypical sales in 2019 due to regulatory changes coming the following year, as shown in **Figure 7.3**.This effect would have been expected to impact 2020 sales before the impacts of Covid 19.

7.10 Total 2019/20 sales, which account for a 2-year structural sales shift altering investment cycles, fall within 1% of pre-existing 2016-2018 trends.

Figure 7.3 Annual HGV Registrations 2015-2020

[18]LGV Registrations (2021) https://www.smmt.co.uk/vehicle-data/lcv-registrations/



Source: SMMT[19]

Vehicle sales: Bus, Coach and Minibus

7.11 The UK new bus and coach market was already in decline, with the market falling by 19% in 2019. The start of 2020 offered growth in the market with bus and coach registrations up 16% in Q1 with 1,403 units joining UK roads. Minibus demand drove this overall increase, as registrations more than doubled. Although there are differences in registrations on the different bus and coach types (single-deck and double-deck), there has been a significant fall overall in new bus and coach registrations in Q4 2020 compared to the same period in 2019 (-35%).

Vehicle sales and licenses: Taxi

7.12 London Electric Vehicle Company (LEVC), one of the main producers of Hackney Carriages, wrote to its production partners in April 2020 to invoke a 'force majeure' clause in contracts due to their factory in Coventry closing on the 26th March 2020 reflecting the downturn in demand for taxis. The LEVC's factory reopened in June 2020 and has since been able to continue production. By quarter 3 2020, taxi manufacture in the UK was down 53% compared to the previous year.

[19] HGV Registrations (2021) https://www.smmt.co.uk/vehicle-data/heavy-goods-vehicle-registrations/

7.13 GM licensing data for Hackney Carriages and PHVs has been obtained for December 2020. These data show that only two compliant Hackney Carriages and 85 PHVs were registered since 23rd March 2020, representing a reduction against pre-Covid rates in new registrations of >95% and >85%, respectively.

Sensitivity testing – impact of an older fleet

7.14 A sensitivity test was carried out assessing the possible impact on the GM CAP if the vehicle fleet was one year older than previously assumed in the Do Minimum scenario (the situation without the GM CAP). This is an indicative scenario, and reflected JAQU guidance. This would mean that a greater proportion of vehicles would be in scope for CAZ charges, because the replacement of those vehicles has been delayed.

7.15 If the vehicle fleet was one year older at the time of introduction of the CAZ, this indicative modelling indicated that the number of points of exceedance in the Do Minimum scenario could increase from 69 in 2023 in the pre-pandemic scenario, to 102, with emissions increasing by more than 10%, as shown in **Table 7.1**.

Table 7.1 Delayed Fleet Upgrade - Modelled NOx Emission Totals by Area (All Vehicles, EMIGMA, Tonnes per Year)

Area	Year	% increase in emissions with a one year older fleet compared to the pre-Consultation position	
		Do Minimum	Do Something
GM	2023	+10.4%	+9.5%
	2025	+12.2%	+7.7%

7.16 This sensitivity testing indicates that the impacts of slowed fleet upgrade would likely lead to significant changes to NO_2 concentrations. The ten GM local authorities has therefore collated evidence to assess the extent to which the pandemic has led to delays in vehicle upgrades.

Impact of Covid-19 on vehicle upgrades and the age of the fleet: Conclusion

7.17 Covid-19 has led to a substantial reduction in new vehicle sales in 2020 for most vehicle types, which have continued into 2021 for cars and taxis. Commercial vehicle sales have proved more resilient in the latter stages of the pandemic.

7.18 Sensitivity testing demonstrates that this delay in vehicle sales will lead to an increase in emissions and bring more vehicles in scope for the charge.

7.19 GM has set out its methodology for representing a delayed fleet upgrade within the modelling, summarised in the Post-Consultation Air Quality Modelling Report. This applies the assumptions set out in

7.20 **Table 7.2**. The modelling results are set out in that same report.

Table 7.2 Recommendations of Vehicle Fleet and Upgrade Rates: assumptions by vehicle type

Vehicle Type	Change Proposed	Justification
Bus	No	Fleet mix assumptions will not be altered. Bus operators already responding to CAZ in terms of upgrading their fleet (retrofit funds have been made available already) and so it is not considered likely that bus fleet will age more than expected. Electric bus routes will be incorporated when funding is secured or the fleets are already in operation.
HGV	No	Purchases were disrupted in 2019 and 2020 by factors other than Covid. Analysis suggests that overall purchases across the two years were fairly typical of an average year.
LGV	**Yes**	Purchases were depressed in 2020, with some recovery in early 2021. Analysis suggests that **a delay of c.3 months is plausible**, with the age of the fleet **gradually converging to close to the pre-Covid forecast by 2025** if sales recover over time.
Hackney Cab & PHV	**Yes**	Consider that significant impact likely – based on licensing data, propose applying **a delay of one year** to the upgrade of the Hackney & PHV fleet**, to be maintained throughout the lifetime of the GM CAP i.e. to 2025.**
Car	**Yes**	Although not in scope for a CAZ C, important contributor to background emissions. Evidence suggests a significant delay in fleet upgrade and that this is likely to be maintained in future years. **Delay of c7 months proposed, to be maintained throughout the lifetime of the GM CAP i.e. to 2025**.
Coach and Minibus	No	No changes to the transport and air quality modelling are applicable, because not directly represented in these tools.

8 Impact of Covid-19 on working from home

8.1 Throughout the pandemic, workers have been encouraged to work from home if possible, and many more people have done so than before. It is possible that the experience of home working during the pandemic will lead to a permanent change in working patterns for some, where individuals and businesses have found it to be productive, efficient and appealing.

8.2 A permanent increase in working from home could lead to reductions in traffic during peak periods, due to reduced commuting. It is worth noting that it is possible that it is also possible that people spending more time at home may increase their travel by car for other purposes during the day, and there is some evidence that this has happened during the pandemic, where we have seen declines in traffic around high density employment locations, but lesser declines around local centres, as set out in Chapter 7.

8.3 The ten GM local authorities has carried out sensitivity testing to assess the possible impact of increased working from home on the GM CAP, set out below, and gathered evidence on the possible scale of working from home.

Working from home during the pandemic

8.4 Data released by the Office for National Statistics in May 2020 showed that the Covid-19 pandemic has had a significant impact on the way in which people work, especially during the initial lockdown period, with approximately 48% of employees working remotely during the period 23rd March to 5th April as a result of social distancing measures introduced by the UK government.[20]

[20] Technology intensity and homeworking in the UK, ONS 01/05/20

8.5 The amount of home working varied throughout the year. By May 2021, businesses reported that around 30.5% of their workforce was working remotely. The information and communications sector and professional, scientific and technical activities sector had the highest proportion of staff working from home, at 81% and 68% respectively, whilst only 7.5% of workers in the accommodation and food services sector were working from home. [21]

8.6 In comparison, prior to the pandemic only about 5% of the working population mainly worked from home, with 12% of employees working from home at some point in the week. Over 70% of employees never worked from home (based on surveys undertaken by the ONS during the period January to December 2019).[22] Overall, 27% of businesses said that they had had more staff working from home as a result of the pandemic.[23]

8.7 The potential for home working varies significantly by employment sector. For industries such as transport, accommodation and food services, for example, only about 10% of workers have ever worked from home prior to the pandemic, with only about 2% of workers in these industries 'mainly working' from home. In contrast, almost 15% of people working in information and communication services mainly worked from home pre-pandemic, with almost a third of the people employed in these sectors having worked from home in the week prior to interview (in 2019) and more than half having worked from home at some time[24].

Working from home post-pandemic

8.8 Although there has been a gradual increase in the proportion of people who work from home in recent years it is difficult to judge whether people's experience of home working during the lockdown period could help to stimulate demand for flexible/remote working in future years. Research carried out prior to the pandemic suggests that people are happiest with a working pattern of 2-3 days at home, spending the remaining time in the workplace.[25]

[21] https://www.ons.gov.uk/businessindustryandtrade/business/businessservices/bulletins/businessinsightsandimpactontheukeconomy/latest
[22] Coronavirus and homeworking in the UK labour market: 2019, ONS
[23] Wave 20, Business insights and impact on the UK economy, ONS https://www.ons.gov.uk/economy/economicoutputandproductivity/output/datasets/businessinsightsandimpactontheukeconomy
[24] Coronavirus and homeworking in the UK labour market: 2019, ONS, https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/articles/coronavirusandhomeworkingintheuklabourmarket/2019
[25] https://www.dpgplc.co.uk/attitudes-towards-homeworking/

8.9 Coupled with this, business attitudes to employees working from home are likely to have adapted since the pandemic as large proportions of staff within non-essential travel sectors continue to work from home. However, this is not likely to be universal: in surveys carried out by the ONS in December 2020, just 16% of businesses said they were intending to use increased home working as a permanent business model going forwards, with 67% not planning to do so and 17% not sure. Bigger businesses were more likely to be considering retaining increased home working, with improved staff wellbeing and decreased overheads the main reasons for doing so. [26]

8.10 Given the uncertainty around forecast levels of home working, a simple approach has been adopted for sensitivity testing, which involved applying percentage reductions to commuting car trips in future years. High and low growth reductions were applied, equivalent to cuts in commuting car trips of 20% and 10% respectively compared to the car trips assumed in each model year prior to the pandemic. These values are considered to be plausible, based on analysis of prior working from home patterns and the distribution of the workforce in terms of sectors where working from home is more or less possible, and could provide suitable ranges for interpolation to be used to estimate impacts for alternative scenarios.

Sensitivity testing – increased working from home

8.11 GM tested two scenarios for increased working from home: a 10% reduction in commuting car trips and a 20% reduction in commuting car trips. These were considered to be plausible in light of the level of change that has happened during the pandemic.

8.12 The impacts of increased working from home on all-purpose car trips are illustrated below in **Table 8.1**. The table shows the most significant changes occurring in the peak hours which is associated with the core commuting activity. A 10% reduction in commuting car travel would result in 5% reduction in all-purpose car flows in the AM peak hour and a 4% reduction in the PM peak hour. Inter-peak car flows would fall by approximately 1%. A 20% reduction in commuting car trips would effectively double the reduction witnessed within the AM and PM peaks.

Table 8.1 Increased Working from Home – impact on total car trips

Proposed Test	AM Peak Hour	Inter-Peak Hour	PM Peak Hour
10% Reduction in Commuting Car Trips	-5%	-1%	-4%

[26] Wave 20, Business insights and impact on the UK economy, ONS https://www.ons.gov.uk/economy/economicoutputandproductivity/output/datasets/businessinsightsandimpactontheukeconomy

20% Reduction in Commuting Car Trips	-10%	-3%	-8%

8.13 Whilst these changes are not insignificant, they need to be viewed in the context of overall road traffic emissions, and that whist car flows represent approximately 74% of the annual traffic flow in GM in 2021, they only account for 42% of total NOx emissions from road transport. This is because other vehicle types such as HGVs and buses have much higher emission rates than private cars, and therefore have a disproportionate impact on air quality levels relative to their overall contribution to the total traffic flow.

8.14 The results of the modelled changes in mass NOx emission totals from the air quality (EMIGMA) modelling relative to the 2023 GM CAP (Do Something) scenario are shown in **Table 8.2**. These results indicate that a 10% reduction in commuting car flows would produce a reduction in mass NOx emissions from private cars of approximately 2% across GM as-a-whole, with a 1% reduction in total traffic emissions (from all vehicle types) in both forecast years. A 20% reduction in commuting car flows would produce a reduction in mass NOx emissions of close to 5% across GM, with a 3% reduction in total traffic emissions (from all vehicle types) in both forecast years.

Table 8.2 Increased Working from Home – impact on NO_X emissions

Area	Year	10% Reduction in Commute Car trips		20% Reduction in Commute Car Trips	
		Car	All Vehicles	Car	All Vehicles
GM	2023	-2.3%	-1.4%	-4.6%	-2.7%
	2025	-2.3%	-1.3%	-4.6%	-2.7%

8.15 The air quality results of the test with the 20% commute reduction scenario show that one additional exceedance site is brought into compliance in 2023, leaving two remaining exceedance sites in the Consultation Option. The exceedance site which is modelled to be brought into compliance is the A58 Bury, where private cars represent 47% of total NOx emissions which is higher than the average proportion across GM. The impacts of the test at the two last points of exceedance in the regional centre are negligible. The sites are dominated by bus emissions, and therefore the impacts of reduced commute traffic does not alter the predicted 2023 modelled concentrations.

8.16 In summary, the evidence suggests that credible increases in working from home would have a fairly limited impact on air quality and on the GM CAP.

Impact of Covid-19 on working from home: Conclusion

8.17 More people have worked at home during the pandemic than ever before and there is evidence that a minority of businesses are planning to sustain this to some extent. However, future working from home practices will vary by sector and not all people or businesses will be able to work remotely.

8.18 Modelling has shown that credible reductions in commuters translate into marginal benefits in terms of the number of locations in exceedance of NO_2 limits. Any such change would not be sufficient to negate the need for the GM CAZ.

9 Impact of Covid-19 on bus mileage

9.1 Covid-19 has had a significant impact on bus operations with public funding required to maintain services whilst constraints have been applied on bus use through social distancing and public messaging to "avoid public transport".

9.2 There is a great deal of uncertainty regarding the longer-term impacts of Covid-19 on travel demand, which are likely to vary by mode. As a direct result of the Covid-19 pandemic, there is a risk that the level of bus services will contract either through a loss of services entirely or reduced service frequency. This could be realised in a number of ways including:

- Reduction in demand in peak periods due to sustained behavioural changes such as more working from home;
- Reduction in demand due to sustained changes in shopping / leisure patterns;
- Reduction in travel by bus as a recessionary impact; and/or
- Increase in the car mode share due to restrictions on public transport use, or people being deterred from public transport by fear of infection/concerns about hygiene.

Bus services and patronage during Covid-19 pandemic

9.3 At the start of the first lockdown, bus mileage fell substantially with Stagecoach reporting that they ran only 40% of normal mileage in April 2020.[27] Passenger volumes fell by 90% at the start of lockdown.

9.4 However, bus services recovered quickly as Government support was provided. The funding has been supplied by Government to enable bus operators to continue operating services despite constraints on capacity due to social distancing rules and depressed passenger demand. The Covid-19 Bus Service Support Grant (CBSSG) paid GM operators £3.5m per month between March and June 2020, followed by a restart package of £254m launched in June 2020. By November 2020, bus mileage was at 95% of normal levels.

[27] Note CV14 – Covid 19 Impacts on Bus

9.5 Patronage has been slower to recover, with bus trips remaining at just over half of their normal level in March 2021, with a greater recovery seen in early autumn before further lockdowns were implemented. Analysis in autumn 2020 found that patronage had reduced in the morning peak and between 4-5pm but increased in off-peak periods, reflecting the different travel patterns brought about by the pandemic.

9.6 It remains to be seen what will happen to patronage when all restrictions are lifted. It is understood that future bus funding from central government CBSSG is to be set with the intention of maintaining existing levels of service provision.

Sensitivity testing – decreased bus mileage

9.7 Given the uncertainty around the impacts of Covid-19 on buses, a simple approach has been adopted for sensitivity testing, testing the impacts of a 10% reduction in bus mileage across the whole of GM in 2023 and 2025. No account has been taken within this test for any possible associated increase in car travel, and therefore the reduction in bus services acts to reduce emissions, by removing buses from the roads. In practice, we would expect some bus trips to be replaced by car trips so the emissions reduction may be less than forecast here.

9.8 **Table 9.1** below outlines the emissions reductions associated with a 10% reduction in bus flows. The results show that a 10% reduction in bus mileage would result in an equivalent reduction in bus emissions in both the Do-Minimum and Do-Something scenarios, in 2023 and 2025, a total reduction of just under 1% of emissions.

9.9 Compared to the Do Minimum scenario, a 10% reduction in bus mileage would result in a reduction of eight exceedances in 2023 (from 69 to 61) and two in 2025 (reducing from 12 to 10).

9.10 With the GM CAP Consultation Option and reduced bus mileage, exceedances in 2023 would reduce by one from three to two. GM is fully compliant by 2025 with the GM CAP.

Table 9.1 Reduction in Bus Mileage - impact on NO_X emissions

Area	Year	Do-Minimum		Do-Something	
		% Change		% Change	
		Bus	All Vehicles	Bus	All Vehicles
GM	2023	10%	0.8%	10%	0.2%
	2025	10%	0.7%	10%	0.3%

Impact of Covid-19 on bus mileage: Conclusion

9.11 After an initial reduction in bus services in the very early part of the pandemic, bus mileage has been maintained close to full operation due to Covid-19 sector support offered by the UK Government.

9.12 It is understood that future bus funding from central government CBSSG is to be set with the intention of maintaining existing levels of service provision. Whilst there are typically minor variations in routes and service frequencies over time, an overall trend of mileage reduction should therefore not be anticipated or represented within the GM CAP.

9.13 Whilst marginal benefits have been shown by a reduction in buses operating across GM's exceedance locations, it is unknown whether a reduction in bus demand would lead to an increase in private car journeys thus offsetting any air quality benefits.

10 Impact of Covid-19 on businesses and the economy in GM

10.1 There is significant uncertainty about the impact of Covid-19 on the national and GM economies through 2021 and beyond, due to domestic and international conditions. There are uncertainties over the vaccination rate, efficacy, and transmission reduction effectiveness of vaccines, alongside the possible impact of current or future virus mutations. This is both in terms of impacts directly on the UK and the indirect impacts as a result of worldwide economic conditions. Alongside this is the impact of the UK leaving the EU, which remains uncertain. To provide a forward look at the environment that the GM CAP will be operating within, national and local economic data has been collated which evidences the potential impacts Covid-19 has had on the economy.

10.2 This chapter then considers the potential impact of those economic changes on the GM CAP, in terms of whether vehicle owners may be less able to upgrade their vehicles in response to the GM CAP, for example because they have exhausted their savings or reserves, taken on more debt or suffered periods of shutdown.

10.3 This builds on the analysis in Chapter 7, which considered the risk that vehicle owners have delayed business-as-usual upgrades as a result of the pandemic, and therefore that the vehicle fleet will be older in light of the pandemic and more people will find themselves in scope for the CAZ. The changes set out in Chapter 7 affect the 'Do minimum' fleet, in other words, the vehicles on the road when the GM CAP is introduced, so the impact of the pandemic on the decision to upgrade under normal circumstances without the CAZ. This Chapter considers the impact of the pandemic on the decision to upgrade as a result of the CAZ.

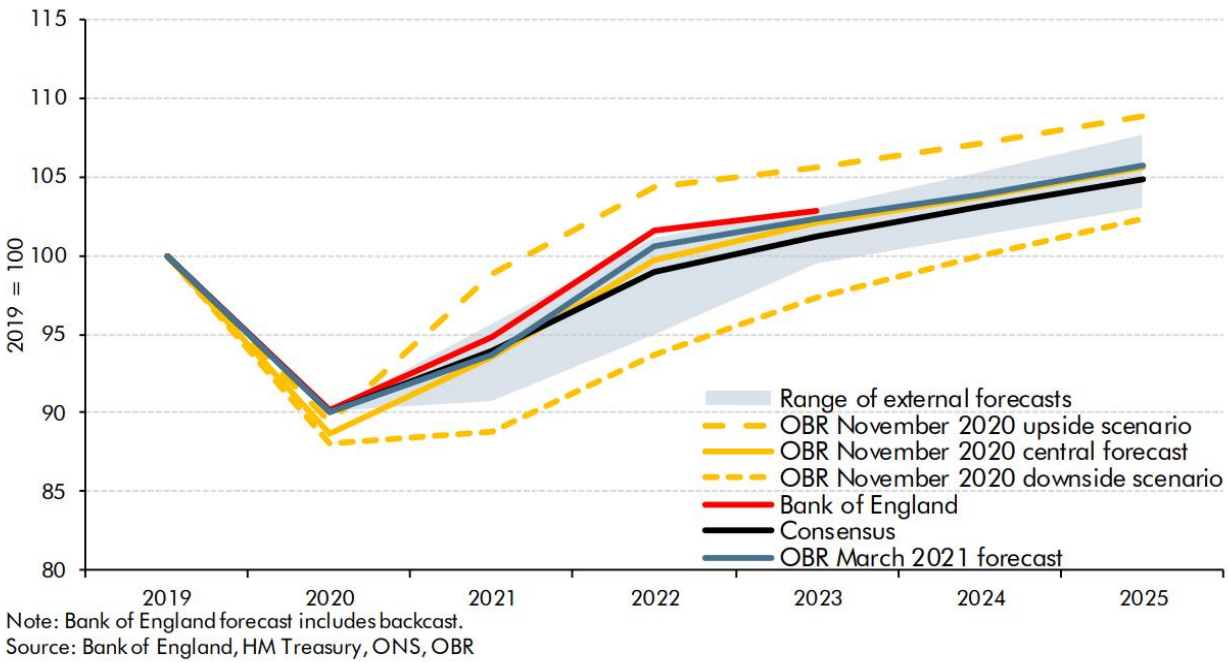
Economic Position - National

10.4 As a result of the Covid-19 pandemic, the UK economy has suffered the deepest recession since records began, with a fall in GDP of 20.4% in Quarter 2 (April - June) of 2020 following a 2.2% fall in Quarter 1. Despite a record level of growth of 16.1% during Quarter 3 (July-September 2020) following the easing of lockdown restrictions, over the year 2020 saw a 9.9% decline in GDP, the largest annual fall in UK GDP on record.

10.5 Financial support has been provided by the UK Government to businesses during the pandemic through various initiatives including the Coronavirus Job Retention Scheme (CJRS), Self-employed Income Support Scheme (SEISS), VAT cuts for hospitality and targeted sector support. However, the funding provided has only partially mitigated the full economic impact to certain sectors.

10.6 **Figure 10.1** provides the March 2021 OBR forecast for GDP growth per annum, alongside the Bank of England forecasts and a wider 'consensus' forecast. The consensus amongst the forecasts is that after a low point in 2020, there will be a steady progression upwards in 2021 towards real GDP growth.

Figure 10.1 GDP Growth Forecasts Including Bank of England and Other Entity Forecasts



Source: Office for National Statistics and Office for Budget Responsibility[28]

[28] https://obr.uk/efo/economic-and-fiscal-outlook-march-2021/

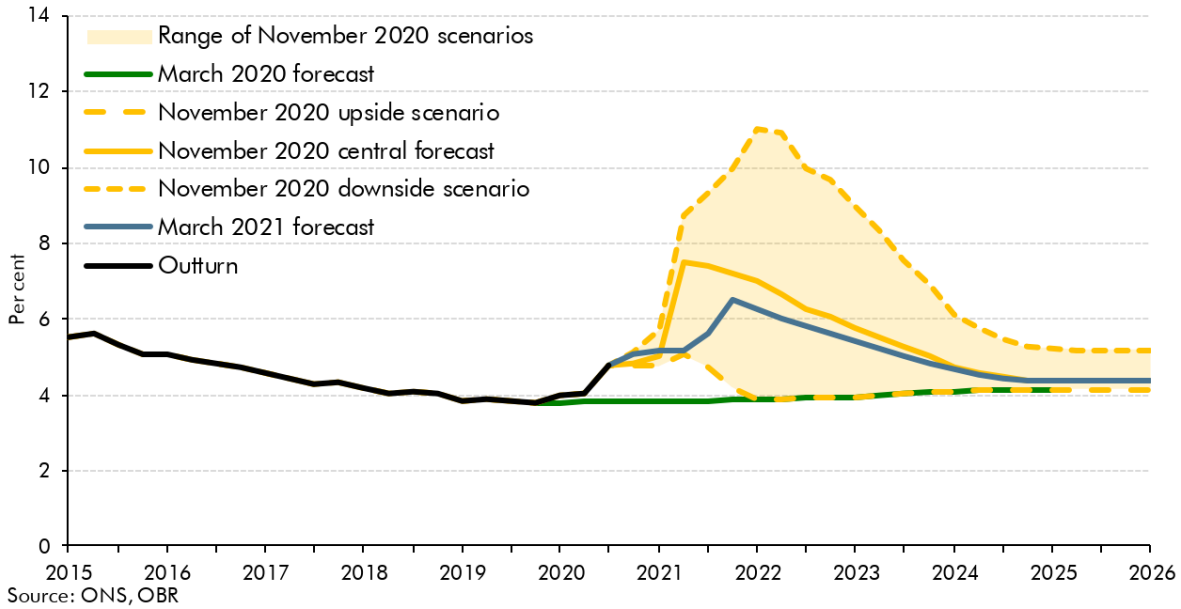
10.7 The extent of the long-term unemployment and broader economic impact of Covid-19 is discussed within the March 2021 OBR Economic and fiscal outlook report.[29] **Figure 10.2** below illustrates unemployment projections forecast by the OBR in November 2020 and compares these with the latest forecast from March 2021. The report found that a faster recovery in output, additional fiscal support from the government and the extended CJRS limited the rise in unemployment, with current unemployment levels lower than the central forecast from November 2020.

10.8 Unemployment is forecast to peak in 2022 at 6.5%-7%. For context, this compares to a peak of 11.7% in 1984, a peak of 10.4% in 1993 and a most recent peak of 8.1% in 2011. This suggests there is not anticipated to be as extreme unemployment as other recent recessions, however, there will be a large budget correction following the cost of Covid-19, which will likely impact Government spending and tax rates. It is also worth noting that the way unemployment is defined and counted has changed over the past four decades so unemployment rates at different periods are not directly comparable.

10.9 The unemployment rate by the end of 2021 is predicted to be 6.5% (2.2 million); 340,000 lower and 6 months later than what was forecast in November 2020. This pattern reflects the restrictions on industry sectors e.g. transport and accommodation, and businesses using less labour in sectors such as retail and hospitality. It also reflects the long-term impact of having time away from employment experienced by some CJRS beneficiaries. There remains a wide uncertainty in the potential long-term economic outcomes, reflected in the fact that the upside and downside scenarios produced in the OBR's November 2020 report have not been updated.

[29] Economic and fiscal outlook ONS OBR – March 2021 (2021) https://obr.uk/efo/economic-and-fiscal-outlook-march-2021/

Figure 10.2 Unemployment Rate Forecast, OBR March 2021



Source: Office for National Statistics and Office for Budget Responsibility[30]

10.10 In terms of redundancy rates, these have exceeded the highest rate during the 2008 and 2009 financial crisis.

10.11 **Figure 10.3** portrays the trend in the redundancy rates. The redundancy rate is the ratio of the redundancy level for the given quarter to the number of employees in the previous quarter, multiplied by 1,000.

10.12 Between April 2020 and July 2020, an additional 88,000 people in the UK were made redundant compared to the same period in 2019.[31] The rate continued to increase between August and October 2020 with the number of people reporting redundancy increasing to a record high of 370,000, with the peak in September 2020.[32]

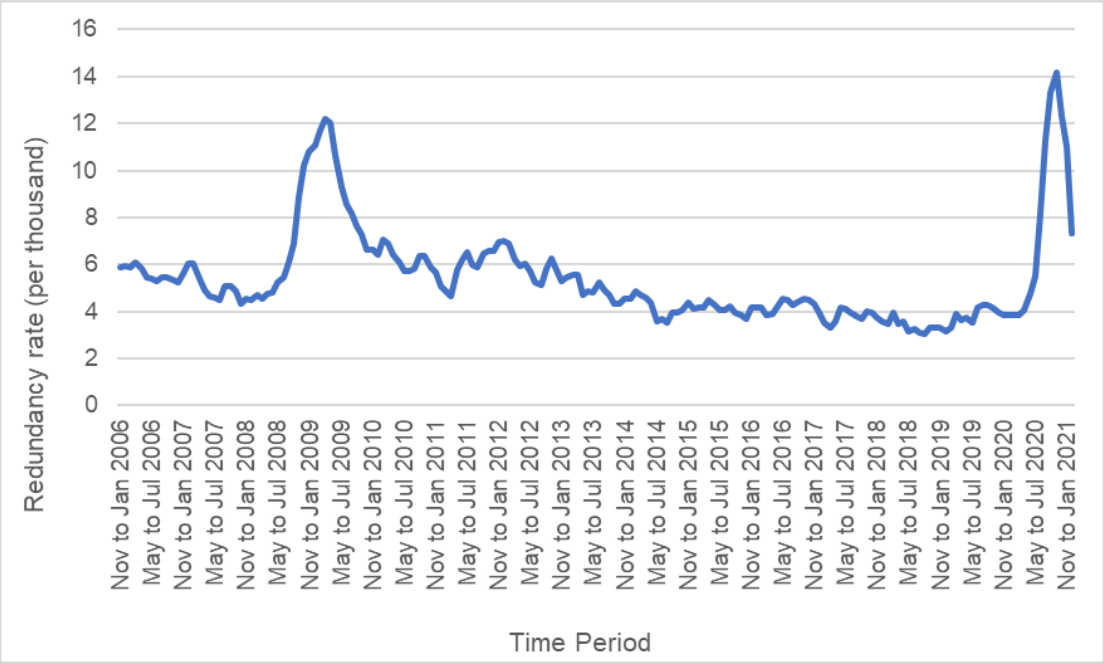
10.13 Since September 2020 the numbers have gradually decreased, but in the latest figures released by the ONS the redundancy rate was still at a higher level in January 2021 than before the pandemic in March 2020.

[30] https://obr.uk/efo/economic-and-fiscal-outlook-march-2021/

[31] Labour market overview, UK: September 2020, ONS (2020) https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/bulletins/uklabourmarket/september2020

[32] Labour Market overview, UK: December 2020, ONS (2020) https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/bulletins/uklabourmarket/december2020

Figure 10.3 Redundancy Rates in the UK (Nov 2006-Jan 2021)



Source: ONS – Labour Force Survey – March 2021[33]

10.14 **Table 10.1** shows measures of business impact, based on the Government's Business Insights and Conditions Survey. This shows that many businesses have experienced periods of closures, and that between 25 and 30% of businesses at any given time are reporting that they have very low cash reserves and are paying more in debt repayments than normal.

Table 10.1 Measures of Covid-19 business impact [34]

	Jun 2020	Sep 2020	Dec 2020	Mar 2021
Proportion of businesses currently trading	65.9%	86.3%	70.6%	75.1%
Proportion of businesses with less than 3 months of cash reserves	27.7%	25.5%	32.1%	30.7%
Proportion of businesses saying debt repayments are higher than expected for the time of year	-	-	25.3%	31.2%

[33] https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/bulletins/uklabourmarket/march2021

[34] Based on Waves 7, 14, 21, 27 (and wave 20 for Dec 2020 for debt repayments) of the ONS Business Insights and Conditions Survey https://www.ons.gov.uk/surveys/informationforbusinesses/businesssurveys/businessimpactofcoronaviruscovid19survey

Source: ONS – Business Insights and Conditions Survey[35]

Economic Position – GM

10.15 **Table 10.2** shows the various impacts during 2020 to March 2021 from GM's economic resilience dashboard, which is updated monthly by the Greater Manchester Combined Authority.

Table 10.2 GM's Economic Resilience Dashboard - March 2021

Economic Impacts	March 2021 Release[36]
% of claimant count	**84% increase to 137,890** (Mar '20 – Mar '21)
Consumer confidence points	**-16** (fallen 9 points since February 2020)
% of GM businesses reporting reduced revenues	**55%** (Feb '21-Mar '21)
Number of GM employees on furlough	**182,200** (end of Feb '21)
Number of self-employed income support scheme ph2 applications in GM	**84,000** (end of Jan '21)
% of businesses making redundancies and % planning to	**10% and 4.8%** (Feb '21 - Mar '21)

Source: GMCA[37]

[35] https://www.ons.gov.uk/surveys/informationforbusinesses/businesssurveys/businessimpactofcoronaviruscovid19survey

[36] Economic Dashboard, GMCA (2021) https://www.gmtableau.nhs.uk/t/GMCA/views/GMEconomicResilienceDashboard/Analysis/jack.james@greatermanchester-ca.gov.uk/4f3be3e5-759e-47ee-85f9-6c1538fc265c?%3Adisplay_count=n&%3AshowVizHome=n&%3Aorigin=viz_share_link&%3AisGuestRedirectFromVizportal=y&%3Aembed=y

[37] Economic Dashboard, GMCA (2021) https://www.gmtableau.nhs.uk/t/GMCA/views/GMEconomicResilienceDashboard/About/jack.james@greatermanchester-ca.gov.uk/b7906092-2ef4-46a2-837e-6c00e7ef6284?:display_count=n&:showVizHome=n&:origin=viz_share_link&:isGuestRedirectFromVizportal=y&:embed=y?iframeSizedToWindow=true&:embed=y&:showAppBanner=false&:display_count=no&:showVizHome=no&:origin=viz_share_link.

10.16 The Greater Manchester Chamber of Commerce's Quarterly Economic Survey (QES) also provides a good indicator of the local economic climate. In the March 2021 release of the QES, a 3 - 4% decline of GDP in Quarter 1 2021 is forecast. GM businesses have experienced reduced sales because of the pandemic and reported that they were less resilient than they were pre-pandemic as reflected in the Greater Manchester Index, a composite indicator which is based on selected QES measures that reflect the overall performance of the GM economy e.g. domestic sales and orders, international sales and orders, confidence in turnover and profitability and capacity utilisation™.

10.17 Many GM residents have been furloughed through the Coronavirus Job Retention Scheme and the number claiming unemployment benefits more than doubled since the start of the pandemic. At the same time, there have been fewer job opportunities overall in GM.

10.18 However, there is some optimism following the vaccination programme, the easing of the third lockdown with the 'Steps' roadmap and continuation of business support from the government. This optimism has increased business confidence, recruitment plans and customer demand, resulting in the Greater Manchester Index™ moving to positive for the first time since April 2020, increasing from -20.7 in Quarter 4 2020 to 6.1 in March 2021. However, there are variances between the industry sectors regarding recovery. The survey also found internationally active businesses are experiencing challenges with EU partners regarding trade following Britain leaving the EU.[38]

Sensitivity testing – impact of a lower upgrade response

10.19 If vehicle owners are in a worse financial position as a result of the pandemic, this could result in them being less able to upgrade their vehicle in response to the GM CAP. In particular:

- Vehicle owners may have reduced or exhausted their reserves/savings during the pandemic;
- Vehicle owners may have become more indebted, by accessing Government or other loans, overdrafts and credit options;
- Vehicle owners may not have been able to trade as normal during 2020 and therefore may find it more difficult to demonstrate that they are credit-worthy;

[38] Quarterly Economic Update Q1 2021, GM Chamber of Commerce (2021)– https://www.gmchamber.co.uk/media/3849109/qes-q1-2021-v2.pdf

- Turnover and profitability may be reduced due to any economic downturn arising from the pandemic, reducing the ability to save or borrow; and/or

- Normal business-as-usual upgrades may have been delayed, increasing the loan-to-value ratio for those upgrading (because they are financing more vehicles at any one time).

10.20 The ten GM local authorities has carried out three tests to better understand the impact of a lower upgrade response (ie: fewer vehicle owners upgrading their vehicles in response to the GM CAP) see **Table 10.3**. These are:

- A 10% increase in the proportion of vehicle owners choosing to 'stay and pay';

- A 20% increase in the proportion of vehicle owners choosing to 'stay and pay'; and

- A test representing the impact of lower affordability by increasing the purchase prices and decreasing the residual value of existing vehicles, to create a greater 'affordability gap'.

10.21 Overall, as would be expected, the tests demonstrate that if more vehicle owners choose to stay and pay, emissions will rise. A 20% increase in the proportion choosing to 'stay and pay' compared to the Consultation Option leads to a 4% increase in total NOx emissions across GM. However, the tests of a 10% and 20% increase in the proportion of vehicle owners choosing to 'stay and pay' would involve vehicle owners choosing not to do when is economically sensible for them to do, based on the evidence the ten GM local authorities has available.

Table 10.3 Changes to behavioural responses, 2023 – impact on NOx emissions

Scenario	Car	LGV	HGV	Taxi	Bus	Total
10% increase in stay and pay	0.0%	2.8%	11.9%	2.0%	0.0%	1.8%
20% increase in stay and pay	0.0%	6.3%	23.3%	4.2%	0.0%	3.9%
Reduced affordability[39]	0.0%	2.3%	3.3%	0.7%	0.0%	1.0%

10.22 The ten GM local authorities created the 'reduced affordability' test as a way of understanding the impact of plausible and measurable changes in factors affecting behavioural responses. Full dispersion modelling was carried out for this test, as the least unrealistic option. In total, the test representing reduced affordability led to an increase in the number of sites that could be non-compliant in 2023 with the GM CAP of two, from three to five. If the increase in the proportion of vehicles choosing to stay and pay was higher than this, as per theother two tests for example, the impact on exceedances would be expected to be greater, but this is considered less likely.

[39] LGVs and Hackneys: +10% in vehicle purchase cost and -10% in vehicle sell price. HGVs and PHVs: +20% in vehicle purchase cost and -20% in vehicle sell price

Impact of Covid-19 on business and the economy: Conclusion

10.23 The evidence has shown that there have been widespread negative economic impacts in GM because of the Covid-19 pandemic.

10.24 The changing national and local economic conditions that the GM CAP is forecast to operate within due to Covid-19 has required a review of the scheme. GDP is lower, unemployment and redundancies are higher due to the impact of Covid-19. Many businesses have experienced periods of closure, lower turnover and profits, and have depleted reserves and are more indebted.

10.25 The impact of any economic changes on the choices that vehicle owners would make is highly uncertain. The tests run by the ten GM local authorities demonstrate that if vehicle owners were prevented from upgrading their vehicle by the financial circumstances imposed on them by the pandemic, this could have an impact on air quality. The modelled impacts were relatively modest, but it is very difficult to assess whether these represented plausible changes in behaviour.

10.26 It is reasonable to assume that businesses in GM are less well placed than they would previously have been to respond to the GM CAP and upgrade their non-compliant vehicles. A further discussion of this issue is reported separately, in the 'Economic Implications of the GM CAP' report.

11 Impact of Covid-19 on the availability and cost of compliant vehicles

11.1 This chapter considers the impact of the pandemic on the availability or cost of compliant vehicles; and the potential impact of any changes on the ability of vehicle owners to upgrade to a compliant vehicle in response to the GM CAP.

11.2 The sensitivity test set out in the previous chapter showed that an increase in vehicle prices could act to reduce upgrade and increase NOx emissions.

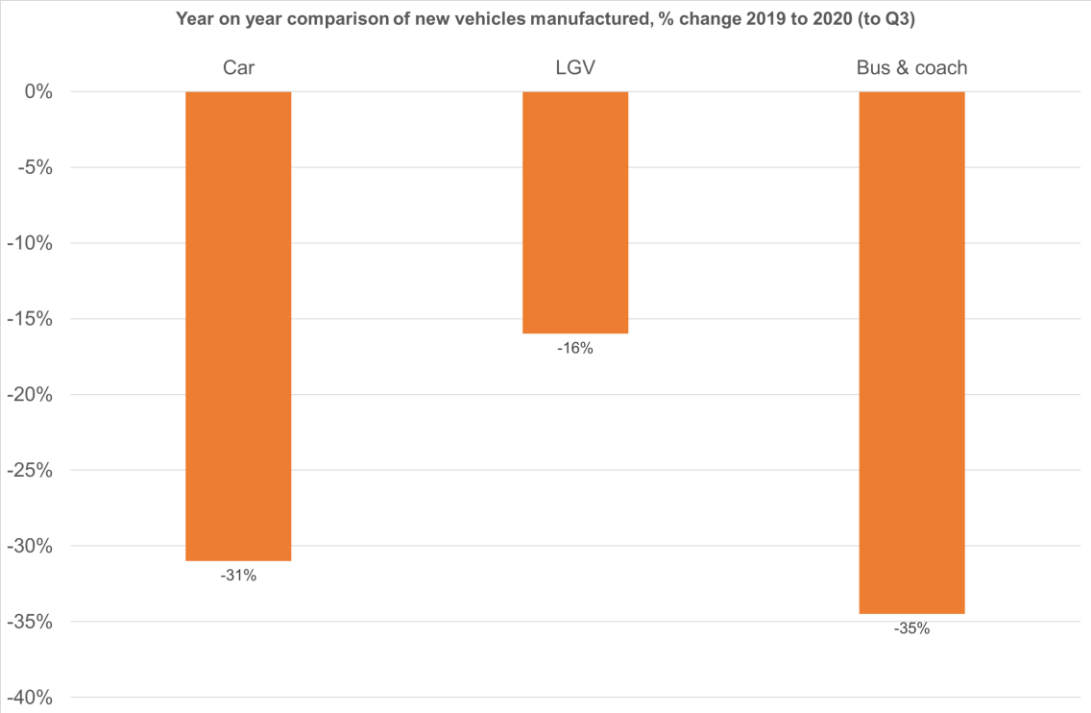
Evidence on the availability of compliant vehicles

11.3 Covid-19 could affect the availability of compliant vehicles due to:

- Reduction in the number of new vehicles manufactured due to lockdowns;
- Slowing pace of newly manufactured vehicles entering the fleet due to delayed or deferred purchases; and
- Retention of compliant vehicles by existing owners (and thus reduced supply of second-hand vehicles) due to delayed or deferred replacements.

Evidence shows that production of new vehicles was affected by the pandemic, with production in the UK at near zero during April 2020 and remaining well below normal levels by year end, shown in **Figure 11.1.**

Figure 11.1 Year on year comparison of new vehicles manufactured, % change 2019 to 2020 (to end Quarter 3)



Source: SMMT[40]

Evidence on the cost of compliant vehicles

11.4 The initial lockdown period in 2020 led to a significant shutdown across the economy resulting in an overall reduction in goods output, such as cars. Although there is evidence that demand for new vehicles across different types was reduced during the pandemic, as mentioned in **Chapter 7**, the changes to demand and supply may have resulted in fluctuations in vehicle prices. This may become more apparent through 2021 as the economy is forecast to continue to recover and demand for goods is likely to increase.

11.5 Although there is currently limited evidence on changes in vehicle prices, some high level research has been conducted into the cost of a new compliant Hackney and PHV pre-COVID (2019) and the current cost during the pandemic using various vehicle purchasing websites, such as the Cabdirect website.[41] The results are set out in

11.6

11.7

11.8 **Table 11.1** and **Table 11.2**.

[40] SMMT (2021) https://www.smmt.co.uk/vehicle-data/
[41] Cabdirect (2021) https://www.cabdirect.com/cars/?type=bespoke&make=

Table 11.1 New Compliant Hackney Cab Price Comparison Pre-Covid to Present

Compliant Vehicle	Pre-COVID Price (2019)	Current Price (2021)[42]
LEVC TX Electric Taxi	Prices starting from £56,000	Prices starting from £53,000
Mercedes Vito	£42,000	£42,000 - £47,000
Peugeot E7	£30,000	£24,000

Table 11.2 New Compliant PHV Price Comparison Pre-Covid to Present

Vehicle Make	Pre-COVID Price (2019)	Current Price (2021)[43]
Skoda Octavia	£19,000 - £31,000	£21,000 - £31,000
Toyota Prius	£20,000 - £28,000	£24,000 - £29,000
Mercedes Vito	£42,000	£42,000 - £47,000

Impact of Covid-19 on the availability and cost of compliant vehicles: Conclusion

11.9 There is evidence that vehicle manufacture in the UK was affected by the pandemic. We believe that this was also the case in some other countries, although there is very limited evidence available. It remains unclear what longer-term impact this could have.

11.10 Similarly, there is very limited evidence on vehicle prices, and markets remain affected by the pandemic in terms of constrained demand. Whilst the taxi market has been suppressed throughout the pandemic, potential changes to vehicle prices may be a more important factor for HGVs and LGVs where demand has returned to pre-pandemic levels and exceeds pre-pandemic levels in some cases.

11.11 Ongoing monitoring will be important to identify any price changes if they emerge and to assess the impact on the GM CAP.

[42] Analysis conducted in January 2021.
[43] Analysis conducted in January 2021.

12 Impact of Covid-19 on in-scope vehicle owners

12.1 This Chapter summarises analysis that has been undertaken to understand the impacts of Covid-19 by vehicle type, and to assess how vulnerable each vehicle type is to the impacts of the GM CAP.

Bus

12.2 Bus mileage dropped significantly at the outset of the pandemic but recovered quickly due to the provision of Government funding to protect service levels, such that by November 2020, bus mileage was at 95% of normal levels.

12.3 However, patronage was much lower throughout the year, reflecting advice to avoid public transport and travel only when necessary, with greater recovery during periods where restrictions were less. By March 2021, patronage was at about half normal levels.

12.4 Bus manufacturing in the UK was down by 34.5% by the end of Quarter 3 2020 compared to the same period in 2019 and various bus operators were reporting that they had restricted investment to essential capital expenditure only.

12.5 However, the bus retrofit fund opened in December 2020 with high uptake, such that the bus fleet is becoming increasingly compliant despite the pandemic. Furthermore, it is understood that future bus funding from central government CBSSG is to be set with the intention of maintaining existing levels of service provision. Whilst there are typically minor variations in routes and service frequencies over time, an overall trend of mileage reduction is not therefore anticipated within the duration of the GM CAP.

HGV

12.6 There have been no specific restrictions placed on HGV operations due to Covid-19 and much HGV activity has been classified as 'essential' throughout and has been able to continue uninterrupted. This is reflected in the traffic statistics which show that HGV activity was at 62% of normal levels during the initial lockdown period, higher than any other mode, and then recovered quickly, with near-normal traffic flows by July. By September 2020, HGV activity was exceeding normal levels.

12.7 Some sectors that suspended activity initially during the first lockdown were able to establish safe ways of working and therefore were not required to close during the November and January lockdowns. For example, on May 11th 2020 the Government issued guidance on how to safely re-open building sites. Of the small number of hauliers that were initially affected by the lockdown, many were able to switch operations to provide additional capacity in delivering medical supplies and supermarket stock.

Coach and minibus

12.8 Demand for coach and minibus services has been very substantially reduced due to travel restrictions and restrictions on other activities served by the sector such shopping and leisure, events and tourism.

12.9 Many scheduled coach services have been suspended or operating reduced services for at least part of the year. National Express reported that demand fell by 80% initially, with some demand recovering as restrictions were lifted. Services were again reduced during the November lockdown, and all National Express services were suspended from 10th January 2021, but have now resumed.

12.10 School services have been affected by school closures in the spring 2020 and winter 2021 terms. The Home to School scheme has provided funding to coach operators in GM to supply additional coaches for school services allowing social distancing. Around 15-20% of coach operators have benefited from this funding.

12.11 Tourism and leisure travel has been massively reduced in 2020/21 compared to a normal year. VisitBritain reported that as of October 2020 there had been a decline of 79% in spending from overseas tourists and 49% in domestic tourist spending, compared with 2019. According to the Confederation of Passenger Transport (CPT), only 2% of coaches that are usually involved in tourism trips during the spring and summer periods were able to still operate.

12.12 As well as the Home to School funding, coach operators have had access to the Government support schemes such as furlough. However, no bespoke support has been offered to coach operators, and they have been excluded from the rates relief support available to other essential transport services and the tourism and leisure industry.

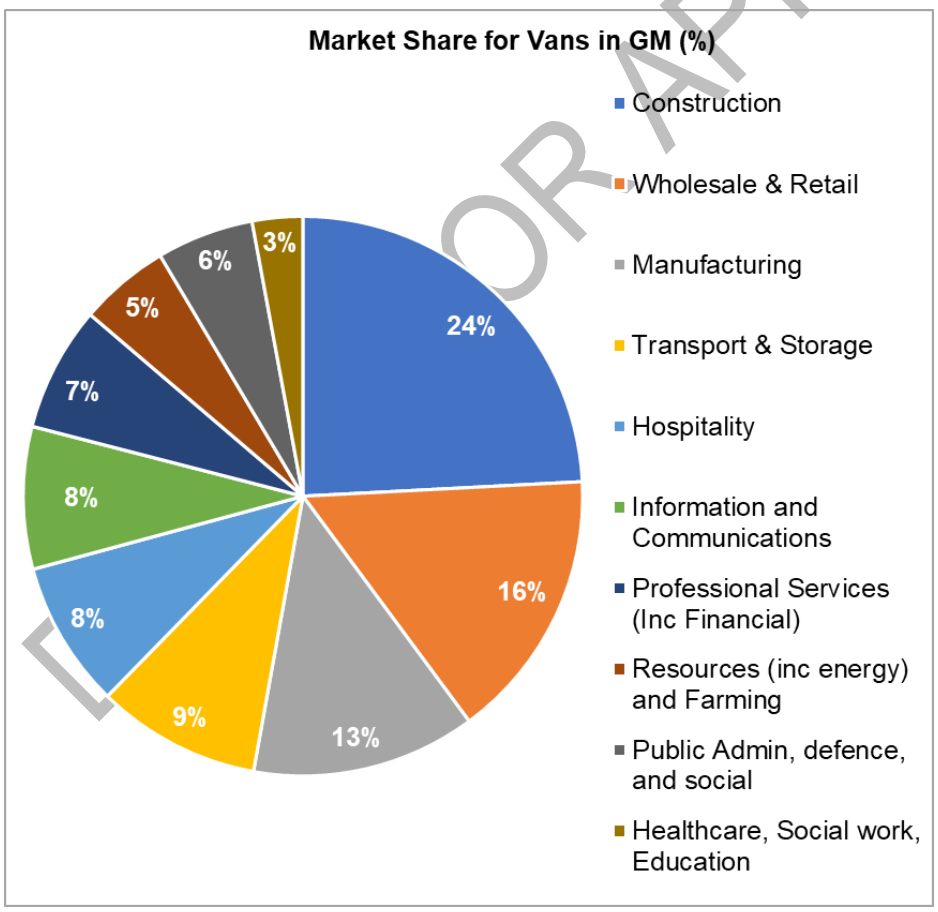
12.13 It is estimated that around 100 coach operators have gone into administration during the pandemic including GM's biggest operator Shearings. Shearings has been bought by Legar holidays who are intending to recommence their services post-pandemic.

12.14 There is very little statistical evidence of press coverage regarding the minibus sector but a report from the British Vehicle Rental and Leasing Association (BVRLA) produced in September, stated that 94% of their members expect reduced revenues compared to their forecasts pre-Covid-19 but members did not appear to be concerned that they would go out of business. This represents only one part of the minibus sector, with minibuses also owned by bus and coach operators, community transport providers and other community groups, local authorities and schools for example, as well as being in private use.

LGV

12.15 LGVs (or vans) are owned by people operating in a wide range of sectors, as shown in **Figure 12.1**, with Construction (24%), Wholesale and Retail (26%), Manufacturing (13%), Transport and Storage (9%) and Hospitality (8%) the largest sectors.

Figure 12.1 Vans by sector in GM



Source: SMMT 2019 Van Report[44]

[44] Light Commercial Vehicles – Delivery for the UK Economy, SMMT (2019) https://www.smmt.co.uk/wp-content/uploads/sites/2/SMMT-Light-Commercial-Vehicles-Delivering-for-the-UK-economy.pdf

12.16 LGV traffic has been affected by national lockdowns which restricted business operations, with later lockdowns have a much lesser effect than the initial lockdown period of March to June 2020.

12.17 The impact of the pandemic on LGV owners has varied substantially between sectors, with some sectors experiencing growth (food deliveries and increased online shopping for example), whilst others faced extended periods of closure or reduced activity, such as in the hospitality sector.

12.18 **Table 12.1** overleaf summarises the impacts of the pandemic and implications for the GM CAP for the five largest sectors. The hospitality sector has been the worst hit by Covid-19 but entered the pandemic with the most compliant fleet. The most non-compliant fleet is in the construction sector, which has experienced periods of lockdown and issues with supply of materials, but also high demand for their services.

Table 12.1 Impact of Covid-19 and the GM CAP on key LGV-operating sectors

Sector	% non-compliant	Description of Covid impacts	Implications for the GM CAP, as at May 2021
Construction	51%	Initial lockdown halted construction. Sites re-opened in May/June, with increased van use arising from a backlog of work and customers keen to begin projects; Increase in home improvements resulting in strong demand for a range of trades but tradespeople report that shortages of materials damaging productivity.	High proportion of non-compliant vehicles needing to respond to CAZ; Pandemic has impacted business finances; High proportion of sole traders operating vans in this sector, with a risk that they could have fallen through the net of COVID-19 support.
Wholesale and Retail	27%	Increased online activity and hence deliveries; Non-essential shop closures affected high street retail, though online shopping habits have maintained demand for vans.	Businesses not as financially vulnerable to COVID-19 as other sectors; Stronger position to respond to the CAZ, increased demand for vans.
Manufacturing	27%	Closures in first lockdown, but continued to operate during subsequent lockdowns, with operational changes to accommodate social distancing.	Business impacts variable across sector. COVID-19 placed additional pressure on finances, making response to GM CAP more challenging.
Transport and Storage	25%	Demand for many products dropped in the first lockdown, impacting the supply chain and companies holding more stock due to issues with supply (also Britain leaving EU); Online retail increased with increase in demand for more/different types of warehouse and distribution units.	Strong demand for postal / courier services during pandemic hence businesses more financially stable and able to respond to the CAZ.
Hospitality	19%	Business closures or reduced capacities for a large proportion of the year.	Sector will have been significantly negatively impacted, which will be reflected in depleted reserves, greater indebtedness etc. More compliant fleet but those that do need to upgrade may be less able to do so.

Taxi

12.19 The taxi trade – Hackney Cabs and PHVs – has been heavily impacted by the pandemic. There has been a very substantial reduction in demand for taxi services, especially Hackney Cabs, due to the restrictions on travel and large decline in business travel, tourism and international travel, the night-time economy and shopping and leisure activity.

12.20 In May 2020, Cabdirect reported that up to four in five PHV and Hackney drivers had (temporarily) stopped operating. Uber reported a 75% fall in bookings in April to June 2020, compared to 2019, although their UberEats business doubled and there is anecdotal evidence that other drivers diversified into food/parcel deliveries.

12.21 Demand for taxi services has been affected by the reduction in rail and air travel in particular, with rail travel at just 5% of normal levels in April 2020, rising to 42% by September 2020 and anecdotal evidence of very length waits for a fare at ranks of over an hour.

12.22 Taxis account for 29% of onward travel from Manchester Airport. Air passenger numbers were 78% lower in September 2020 than normal, equivalent to 0.7m trips lost in September 2020 alone.

12.23 Manchester City Council licence renewals in summer 2020 found that annual mileage in 2019/20 compared to 2018/19 had reduced by 25% for Hackneys and 25% for PHVs. Similarly, ANPR analysis carried out in September 2020 found that the frequency of taxi movements crossing the ANPR cameras (reflecting activity) fell by 31% for PHVs and 63% for Hackney Cabs.

12.24 Overall, the number of vehicles licensed in GM had fallen by 342 by September 2020, and very few new vehicles entered the fleet, with a reduction against pre-Covid rates in new registrations of >95% and >85%, respectively for Hackney Cabs and PHVs.

12.25 Restrictions are still in place on activities served by taxi, such as large events, international leisure travel and so on. Business travel remains much lower than normal.

Impact of Covid-19 on in-scope vehicle owners: Conclusion

12.26 HGVs and LGVs in some sectors have been able to operate the most normally, and may have gained growth opportunities as a result of the pandemic. They are likely to be in the most similar position to pre-pandemic.

12.27 LGVs in sectors that have been more affected by the pandemic have experienced periods of closure, reduced turnover and profits, and may have delayed planned vehicle purchases.

12.28 Buses have experienced a substantial drop in passenger demand and therefore revenues, and there is evidence of delays to capital expenditure on new buses as well as reduced production of new vehicles. Nevertheless, high levels of Government subsidy to maintain service levels have reduced the impact on this sector.

12.29 In contrast, passenger vehicles not in receipt of public subsidy – such as taxi and coach – have experienced a very substantial drop in demand, with long periods of closure or low operations and consequent revenue losses. Many vehicles in this sector are privately owned or secured against people's homes, and a relatively high proportion of the fleet is non-compliant.

12.30 Thus, it is clear that whilst most vehicle owners experienced a sharp drop in operations in the first six weeks of lockdown in 2020, the recovery and consequential impact has varied by vehicle type.

13 Conclusion

13.1 Whilst the Covid-19 pandemic has caused changes that radically altered transport pattens and behaviour, the relaxation of 'lockdown 1' (March to May 2020) travel restrictions from June 2020 led to increasing traffic flows. By the introduction of 'lockdown 2' in November 2020, traffic flows were at around 85% of typical pre-Covid levels. Because the GM CAP is required to take action to tackle NO_2 levels over a number of years into the future, in order to achieve compliance with legal limits, **the nearer term influence of Covid-19 on air quality is not expected to lead to sufficiently long term reductions in pollution such that compliance can be achieved without implementing a Clean Air Zone.**

13.2 **Capital investment in replacement vehicles has been delayed** and as a result the fleet on GM's roads is older and more non-compliant than would otherwise have been the case, worsening emissions. In particular, the car and taxi fleets are estimated to be up to a year older as a result of the pandemic, and these lost upgrades are not expected to be recovered by 2025. LGV upgrades have also been delayed, but the current sales trajectory suggests that much of this delay will have been recovered by 2025.

13.3 Conversely**, although peak hour traffic may reduce due to sustained increases in home working, this is considered likely to have a fairly minimal impact on overall emissions**. More people have worked at home during the pandemic than ever before and there is evidence that a minority of businesses are planning to sustain this to some extent. The likely future level of home working remains highly uncertain, as businesses have not yet had the opportunity to return to normal ways of working and so the extent to which current patterns will be maintained is not yet clear. It does not appear likely that bus mileage will be substantially reduced, given current funding plans, but there may be reasons to be concerned about whether services can be maintained if demand does not return.

13.4 It is evident that **businesses overall have lost revenue, used up reserves and are more indebted and less able to borrow than prior to the pandemic**. A significant minority of businesses remained closed at the end of March 2021. Investment cycles have been and may remain disrupted. This is not affecting all vehicle types or sectors equally.

13.5 This, along with potential constraints on the supply of compliant vehicles, means that **vehicle owners may be less able to upgrade their vehicles in response to the CAZ**. Therefore, they may need more time or financial support to be able to do so.

13.6 In particular, **Covid-19 appears to have had the greatest impact on passenger vehicles not in receipt of public subsidies – Hackney Cabs, PHVs and coaches** – who have faced a major drop in passenger demand and long periods of low or no operations. For Hackney Cabs and coaches in particular, they entered the pandemic with a highly non-compliant fleet and face high costs to upgrade. Vehicle upgrades have been further delayed during the pandemic.

13.7 **Some LGV sectors have also been badly affected by the pandemic** with extensive periods of closure, whilst others have experienced shorter periods of shutdown and reduced turnover. The picture for LGVs is highly divided, with some sectors experiencing growth and new opportunities as a result of the pandemic. A key issue is those sectors that have experienced economic impacts, where there are a high number of sole traders and very small businesses, and where the fleet was more non-compliant at the outset, such as the Construction sector.

13.8 The evidence presented in this report demonstrates that, as a result of the pandemic, **vehicle owners will not be starting from the same position as had been previously assumed** in terms of their fleets or their ability to upgrade as a result of the GM CAP. This evidence has been considered in the review of the GM CAP Policy post-Consultation.