An exploration of how ‘Living with COVID’ influences COVID-19 transmission risk, response and resilience in workplace settings: a Greater Manchester Case Study – Study 2

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The PROTECT COVID-19 National Core Study on transmission and environment is a UK-wide research programme improving our understanding of how SARS-CoV-2 (the virus that causes COVID-19) is transmitted from person to person, and how this varies in different settings and environments. This improved understanding is enabling more effective measures to reduce transmission – saving lives and getting society back towards 'normal'.

The Greater Manchester Case Study investigated how changes in policy and advice, as set out in the government report 'Living with COVID', affected COVID-19 transmission risk, response and resilience in workplace settings. The project undertook a mixed methods approach collecting both qualitative and quantitative data across the Greater Manchester region to incorporate wide-ranging views and reflections of changes following the publication of 'Living with COVID'.

The research highlighted the inequitable impact of the pandemic on those already experiencing health inequalities, including people on more precarious employment contracts or who were unable to work from home during the pandemic. The research suggests that many of the levers previously available to control COVID-19 transmission, such as access to testing and formal Government guidance, were no longer available for the majority of workplaces at the time of data collection.

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Abstract

Background

The Greater Manchester Case Study investigated how changes in policy and advice, as set out in the government report ‘Living with COVID’, affected COVID-19 transmission risk, response and resilience in workplace settings. The project examined changes in how Greater Manchester workplaces were supported by local authority public health and environmental health teams during the course of the pandemic.

Methods

The project undertook a mixed methods approach collecting both qualitative and quantitative data across the Greater Manchester region to incorporate wide-ranging views and reflections of changes following the publication of ‘Living with COVID’. Quantitative data was collected from local employers (n=149) and employees (n=491) using online surveys and qualitative data from stakeholders (n=19) working within local authority roles in the region.

Findings

The research highlighted the inequitable impact of the pandemic on those already experiencing health inequalities, including people on more precarious employment contracts or who were unable to work from home during the pandemic. The survey results suggest that although many workplace mitigation measures such as face mask use were becoming less commonplace, there were still a lot of concerns amongst those employers and employees who responded to the survey around COVID-19 transmission in workplace settings. The interview and survey findings also suggest that ventilation of workplaces needs more focus. Facilitators that helped local authorities to support employers to manage transmission included detailed national guidance, good communication, partnership working, funding, and timely access to data. Barriers to supporting employers included contradictory or confusing national guidance, structural inequalities/lack of funding, and delayed access to data.

Conclusion

The research suggests that many of the levers previously available to control COVID-19 transmission, such as access to testing and formal Government guidance, were no longer available for the majority of workplaces at the time of data collection. It is therefore vital to draw on lessons learned through the pandemic to ensure preparedness for future pandemics or health crises.

Executive summary

Background

The Greater Manchester (GM) Case Study project builds on previous studies that were conducted during the first two years of the PROTECT National Core Study, particularly the study of Areas of Enduring Prevalence (AEPs), which examined why certain local authority areas had high sustained levels of COVID-19 prevalence and highlighted the impact of existing health inequalities on the wider picture of prevalence rates of COVID-19 (Lewis et al, 2022). Previous PROTECT projects also identified limitations in data by workplace and by occupation during the course of the pandemic.

This study investigated workplace responses during the course of the pandemic, changes as a result of government policy including the February 2022 report 'Living with COVID' (UK Government, 2022) and how GM workplaces were supported by public health and environmental health teams during the course of the pandemic. Two companion PROTECT reports include an analysis of data on outbreaks of COVID-19 in GM workplaces (Johnson et al, 2023) and an analysis of interviews on workplace outbreaks in educational settings (Varga et al, 2023) during the pandemic.

Methods

The project undertook a mixed methods approach collecting both qualitative and quantitative data across the GM region. Quantitative data was obtained from online surveys for GM employees (via unions) and employers (via GM Chamber of Commerce) between August and October 2022. Qualitative data was gathered from 19 interviews with local authority public health and environmental health teams. Interview participants included Directors of Public Health (DsPH) and Environmental Health Officers (EHOs) who supported GM employers to help them reduce COVID-19 transmission and manage outbreaks during the course of the pandemic. Interviews were conducted between August and November 2022. Ethical approval from University of Manchester Proportionate Research Ethics Committee (Ref: 2022-14470-24900) was granted to carry out the study.

Findings

The findings demonstrate the experiences of 'Living with COVID' in GM, and the local interpretations of national guidance that were developed and implemented. Key findings outline facilitators and barriers to 'Living with COVID.' A resilience framework outlines these characteristics to provide summary learning from the area (Figure 1).

The research highlighted the inequitable impact of the pandemic on those already experiencing health inequalities, including people on more precarious employment contracts and people who were unable to work from home during the pandemic. It should be noted that the employee survey was not representative, as 70% of respondents were working in education, The employee and employer survey results suggest that although many workplace mitigation measures such as face mask use were becoming less commonplace, there were still a lot of concerns amongst those employers and employees who responded to the survey around COVID-19 transmission in workplace settings. Levels of job stress remain higher amongst respondents than before the pandemic. The interview and survey findings also suggest that ventilation of workplaces needs more focus. Facilitators identified in the interviews that helped local authorities to support employers to manage transmission included detailed national guidance, good communication, partnership working, funding, and timely access to data. Barriers to supporting employers included contradictory or confusing national guidance, structural inequalities/lack of funding, and delayed access to data.

Conclusion

Some key issues have arisen from this research which align with previous research (e.g. Lewis et al, 2022) such as the inequitable impact of the pandemic on those in lower socio-demographic groups and those already experiencing health inequalities, including people on more precarious employment contracts or who were unable to work from home during the pandemic. The research demonstrated the way this primarily impacted on workplace transmission through precarious working roles and different types of industries. The issues highlighted by interview respondents around controlling COVID-19 transmission in schools, care homes, food processing and call centres in particular draws attention to the need for careful planning for these areas and as a result there is evidence of existing work continuing in these sectors to ensure ongoing commitment to infection prevention. This work has highlighted the risks of poor communication or guidance and a lack of joined up thinking or slow access to data. It also demonstrates the benefits of good quality local data facilitated by excellent local partnerships and a sense of community and collaborative working.

The research suggests that many of the levers previously available to control COVID-19 transmission, such as access to testing and formal Government guidance, were no longer available for the majority of workplaces at the time of data collection. It is therefore vital to draw on lessons learned through the pandemic to ensure preparedness for future pandemics or health crises.

Recommendations

Recommendations for future research that were identified by interview participants are included in Section 3 of the report. Recommendations for national government and local authority teams include:

- Further funding for areas of development, including continued funding for PH and EH teams to enable them to continue to work in partnership to support employers
- Provision of financial support to enable people to self-isolate when needed
- Continued work to support specific risk sectors, including the food manufacturing sector as well as schools and care homes, to manage COVID-19 transmission
- Continued emphasis on good quality communication and the role of the local authority as a conduit between good practice and workplaces
- Continued work to address health inequalities, including working with employers and national government to address factors that influence COVID-19 transmission such as lack of sick pay
- Building on and sharing examples of good practice to control COVID-19 transmission within and between local authority areas
- Continued partnership working at local authority, regional and national levels, and with partners including health, police, local communities, and workplaces (large and small) to manage COVID-19 transmission
- Continued development of inter-organisational strategies to manage COVID-19 transmission, specifically including:
    - strategies to minimise stress and enhance resilience in the workplace to prepare for future outbreaks
    - encouragement of improved workplace ventilation and other mitigation measures
    - support for those with Long COVID.

Framework of risk, response and resilience for 'Living with COVID'

The following table summarises the key factors that emerged from this work:

Area	Theme	Facilitating factors	Barriers	Lessons
Risk	Socio demographic / health inequalities	Partnerships with community groups	Precarious work Inability to work from home Low vaccination rates Lack of trust Clustering of risk factors (e.g., lack of sick pay, inability to work from home, overcrowded accommodation)	Targeted work on health inequalities Partnerships
	Schools & Care homes	Partnerships Communication Local data	Structural barriers to implementing mitigations	Targeted work on risks Partnerships Data
Response	Communication	Clarity Speed Interpretation	Confusing or contradictory guidance. Too many changes Saturation	Targeted, clear communication
	Data	Timely access to data Data sharing	Delayed access to data Lack of data sharing.	Partnership working
	Funding	Funding for specialist roles Funding for isolation	National payments insufficient Lack of continuation funding	Importance of targeted fast funding and continuation
	Partnerships	Within & across Local Authorities (LAs) Health partners Community partners Local businesses/ workplaces	Differences in interpreting national guidance across local areas.	Importance and benefits of partnership and collaborative working, with improved focus on workplaces/businesses.
Resilience	Planning	Plans based on previous experiences	Lack of current planning Alternative pressures	Update contingency plans
	Commitment	Data and communication support understanding of risk	Apathy/reduction in mitigation measures Back to normal Low perception of risk Job stress Uncertainty (e.g., over sick pay for self-isolating)	Encourage awareness of the continued importance of measures such as ventilation Future measures may be difficult to implement in near future

Figure 1 - Framework of risk, response and resilience for 'Living with COVID'

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List of abbreviations

ADPH	Association of Directors of Public Health
AEP	Areas of enduring prevalence
CCG	Clinical Commissioning Group
DsPH	Directors of Public Health
EH	Environmental Health
GM	Greater Manchester
GMCA	Greater Manchester Combined Authority
HSE	Health and Safety Executive
ONS	Office for National Statistics
PH	Public Health
PHE	Public Health England
PROTECT	Partnership for Research in Occupational, Transport and Environmental COVID-19 Transmission
SAGE	Scientific Advisory Group for Emergencies
SME	Small and medium sized enterprises
UKHSA	UK Health Security Agency

1. Introduction

The Greater Manchester (GM) Case Study project builds on previous studies that were conducted during the first two years of the PROTECT National Core Study, particularly the study of Areas of Enduring Prevalence (AEPs), which examined why certain local authority areas had high, sustained levels of COVID-19 prevalence (Lewis et al, 2022). That research highlighted the impact of existing health inequalities on the wider picture of prevalence rates of COVID-19.

When it comes to controlling workplace transmission of SARS-CoV-2, the virus that causes COVID-19, different industrial sectors have faced different challenges, both in terms of likely transmission routes and which control measures can be practically and effectively implemented. Theme 3 (Sector specific studies) of PROTECT has conducted targeted studies (e.g., public transport, construction, food production, energy generation) to improve understanding of specific risks associated with COVID-19 infection and support these sectors to return to more normal operation. Study findings have helped generate recommendations to help the government, and the sectors studied, respond more effectively to infectious disease outbreaks and allow services to continue to operate.

The sector specific work has been ongoing longitudinally since October 2020 and we have revisited sectors at different times during the pandemic. This previous PROTECT research has highlighted gaps in knowledge / information resources and suggested where further research is needed linked specifically to work environments.

The current study ('An exploration of how 'Living with COVID' influences COVID-19 transmission risk, response and resilience in workplace settings: a Greater Manchester Case Study – Study 2) investigated workplace responses during the course of the pandemic, changes as a result of government policy including the February 2022 report 'Living with COVID-19' (UK Government, 2022) and how Greater Manchester workplaces were supported by public health (PH) and environmental health (EH) teams throughout.

Two companion PROTECT reports include an analysis of data on outbreaks of COVID-19 in GM workplaces (Johnson et al, 2023) and an analysis of interviews on workplace outbreaks in educational settings (Varga et al, 2023) during the course of the pandemic.

Aims

The Greater Manchester Case Study aimed to investigated how changes in policy and advice, as set out in the government report 'Living with COVID', affected COVID-19 transmission risk, response and resilience in workplace settings. The project examined changes in how Greater Manchester workplaces were supported by local authority public health and environmental health teams throughout the pandemic.

This diagram outlines the stages of the pandemic and was used as a stimulus for reflective data gathering to inform the future of ‘Living with COVID’.

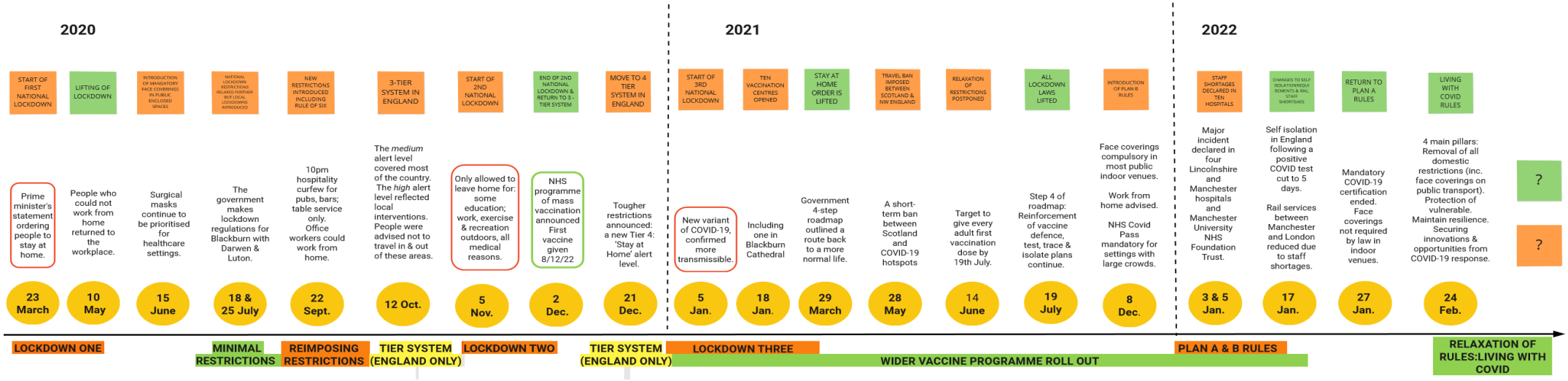


Figure 2 - Pandemic timeline relative to Greater Manchester

Literature

This section reflects on literature on workplace responses during the course of the pandemic, along with changes as a result of government policy including the February 2022 report 'Living with COVID-19' (UK Government, 2022). The literature suggests that the pandemic affected the population, economy, and health of GM to a greater extent than England as a whole. Localised socio-economic and health features were significant from the onset on the pandemic – and beforehand – which add weight to this report's focus on material that narrates the localised 'model' or blueprint to aid in future pandemic planning.

A review of academic and business literature was undertaken to contextualise the quantitative and qualitative data collection. The full list of literature reviewed and process for review is held in Appendix A. The national and local literature collected were mapped to key themes emerging from empirical data including the system, the area and context, facilitators and barriers to supporting workplaces and preventing transmission and understanding changes and 'Living with COVID.' Using this approach, the literature review offered a mechanism and basis of triangulation with empirical data. The following is a brief thematic summary of the evidence published.

National literature

Previous research, including research conducted as part of the PROTECT programme, has highlighted links between occupation and risk of COVID-19 transmission. Beale et al (2022), for example, suggested that occupation influences COVID-19 transmission risk in a number of ways. Occupation influences workers' ability to work from home, to practice social distancing at work, to work in well-ventilated environments, and to have access to appropriate personal and protective equipment (PPE). People working in certain sectors, including health, social care and transport have been identified as being at higher risk of infection (Rhodes et al, 2022).

The ability of individuals to isolate, when necessary, along with workplace policies such as sickness absence and provision of sick pay, also influences workplace transmission of COVID-19 (Marmot et al, 2020). As discussed in more detail in the next section of the report, there is evidence that occupational risk is influenced by covariates including ethnicity, socio-economic status, and deprivation. In an exploration of exposure to COVID-19 within residential neighbourhoods, for example, Harris and Brunsdon (2022) found that Pakistani, Bangladeshi and Indian groups were disproportionately exposed to the COVID-19 virus in later waves of the pandemic which is likely to reflect the nature of employment of these groups who were more likely to work in public facing roles thereby increasing their risk of exposure.

Previous research (e.g., Daras et al, 2021) also identified clustering of risk factors for COVID-19 transmission within certain geographical areas. For example, people who do not receive sick pay or are on low incomes may also live in more deprived areas, increasing their COVID-19 transmission risk. This aligns with the findings of a previous PROTECT project (Lewis et al, 2022) which involved interviews with Directors of Public Health (DsPH) about their opinions on why certain local authority areas experienced high, sustained levels of COVID-19 prevalence. DsPH who were interviewed as part of the project reported that that 'enduring prevalence' of COVID-19 was likely to be caused by the interaction of several risk factors, including deprivation, factors related to employment including inability to self-isolate, and factors such as living in overcrowded housing. DsPH also suggested that the convergence of these factors with demographic factors such as ethnicity and age had an influence on the wider picture of COVID-19 prevalence rates.

There is a growing body of evidence, therefore, to suggest that socio-economic factors influence the wider picture of prevalence rates of COVID-19. Bambra et al (2020) describe COVID-19 as a 'syndemic': a synergistic pandemic that interacts with and exacerbates a person's existing social conditions. They suggest that COVID-19 interacts with and exacerbates existing inequalities in determinants of health.

Greater Manchester (GM) – the system, area, and context

Greater Manchester has a varied work sector profile that includes health innovation, manufacturing, media, retail, social care, hospitality & tourism' (GM Employment and Skills Advisory Panel, 2021). The Office for National Statistics (ONS) 2021 census highlight that 56.4% of GM households were deprived in more than one of three dimensions – education/qualifications, health, and accommodation. The GM Employment and Skills Advisory Panel (2021) expand on this, confirming that more than a fifth of the neighbourhoods in GM fall into the bottom 10% of most deprived neighbourhoods nationally in terms of employment and income. The board's skills report and labour market plan report that one in 10 of GM's working age residents has no qualifications and a quarter of residents are paid below the minimum wage.

Literature demonstrates that GM suffered disproportionately during the pandemic. Marmot et al (2021a), for example, report that the COVID-19 mortality rate was 307.1 per 100,000 population for men and 195.2 for women in GM, for example, compared with England averages of 233.1 per 100,000 for men and 142.0 for women between March 2020 and April 2021.

Socio-economic factors were important locally as well as nationally. COVID-19 had a disproportionate impact on some communities and patients, particularly Black and Asian communities, disabled people, and inclusion health groups such as refugees, asylum seekers and homeless people (Chair of Manchester Health and Wellbeing Board, 2021). This is supported by Marmot et al (2021a) who suggested that socio-economic inequalities in mortality from COVID-19 in GM are wider than in the rest of England. The 'Living with COVID Resilience Plan' (GMCA, 2020) asserts that the impact of the pandemic has been unequal and unfair in GM, and that it has highlighted and exacerbated existing health inequalities.

The COVID-19 pandemic continues to have a negative impact on workplaces in the current time of 'Living with COVID' in 2022. Many more people in GM are now experiencing unemployment, businesses have closed or reduced staff numbers, with more redundancies and business closures anticipated as described by GM Combined Authority (GMCA) in their (2021) Local Outbreak Prevention and Response Plan. The plan confirms that several communities suffered disproportionate adverse impacts from COVID-19, including older people, ethnic minorities, some religious groups, asylum seekers and people with no recourse to public funds as well as certain occupational groups, people living in areas of high deprivation and residents of care homes. Future work should build on this learning.

Facilitator and Barriers to supporting workplaces and preventing transmission

The role of local authority work and in particular PH and EH teams, was vital in supporting employers to manage workplace transmission of COVID-19. Manchester's Public Health Annual report 2020-21 (Manchester City Council, 2021a) suggests that the pandemic has highlighted the vital role that PH services play in maintaining the health of residents. Marmot et al (2021a) suggest that PH has three primary goals in the next few years in GM: to tackle health inequalities, which have been exposed and exacerbated by the pandemic; to develop greater understanding of the impact of the pandemic on the population, and to learn from the pandemic in preparation for future disease outbreaks.

Evidence suggests that in the second year of the pandemic, in terms of wellbeing, economic resilience, and the agility to assess risks and make effective changes, mirrored, and spotlighted the divisions of the first year. There were challenges to managing transmission, including lack of sick pay, or working at more than one setting. However, there were also opportunities such as solidifying partnerships that supported community health, including working with local community groups and community leaders to provide key messages, help dispel myths and provide reassurance to the community (Manchester City Council, 2021b).

The GMCA & BMG (2022) report that there have been decreases in behaviours designed to stop the spread of the virus. The GM Strategy, 'Our People Our Place' (2018), however, emphasises the importance of partnerships between civic leaders, business, and the community amidst changes in attitude toward risk management. Additionally, the importance of timely access to data continues to be highlighted as a key facilitator to managing COVID-19 transmission, as highlighted in previous research, e.g., Hartwig et al (2022), who reported that timely access to local data was vital to the development of local mitigation strategies.

Understanding Changes and 'Living with COVID'

This section of the report focuses on how the increased awareness of risk to health inequalities added in new approaches to working with those likely to be at risk of health inequalities. Marmot et al (2021b) suggests that understanding the close association between deprivation and mortality rates from all causes of death and COVID-19 is important for understanding how COVID-19 has affected inequalities in mortality in GM and in developing appropriate and effective remedial interventions. Analysis for GM shows that levels of income, education and skills, type of employment and health are more strongly related to inequalities in COVID-19 mortality (and all-cause mortality) than other factors associated with neighbourhoods and deprivation (crime, housing, living environment).
The GM Residents Survey (GMCA & BMG, 2022) reported declines in all the behaviours which are advised to stop the spread of the virus. Respondents still wearing face coverings, at the time when the survey was conducted in September 2022, had declined to around one in four (25% in crowded spaces, 26% on public transport). More than three quarters of residents, however, said that they still say they regularly wash or sanitise their hands (80%) or stay away from work if they feel unwell (78%).

Although the concerns of COVID-19 are still significant, as the UK Government report 'Living with COVID' report states there is a shift in COVID-19's year-round dominance for the nation's health. The report suggests that, over time, it is likely that COVID-19 will become a predominantly winter seasonal illness, although this may take several years to occur.

The global, national, and local shift of priorities have changed COVID-19 primacy on many aspects of work and public life to bring a post-pandemic time of reflection and awareness of the total health context to the pandemic's impact, i.e., socio-economic covariates. The Living with COVID-19 Resilience Plan (GMCA, 2020) outlines advice around three areas: where the impact of COVID-19 has been significant and even devastating; where the impact has caused challenge, and where the impact has driven innovation and accelerated new approaches. As previously discussed in the section on national literature, The Secretary of State for Work and Pensions in COVID and Occupational Impacts (2022) highlighted that occupational risk of COVID-19 is also influenced by covariates including ethnicity, socio-economic status, deprivation, and co-morbidities.

To add context to the case study is the significant shift since spring 2022 of global demands swaying community and governance priorities. The global pandemic, the Russia-Ukraine war and Brexit, for example, are significant events that could have an impact on priorities (GMCA, 2022).

2. Methods

A mixed methods approach was undertaken to examine 'Living with COVID' (2022) in the GM area. The project undertook both qualitative and quantitative data collection across the region. Quantitative data was collected from local employers and employees using online surveys and qualitative data collected from stakeholders working within local authority roles in the region.

Quantitative data was collected using two online surveys between August and October 2022. The first survey was targeted at employers and senior managers and the second was focused on employees. Inclusion criterion for all participants was that they had to be working in GM workplaces during the pandemic. The employer survey was conducted via GM Chamber of Commerce, who disseminated the survey to their member organisations, as well as to non-member organisations which included schools and leisure centres. The employee survey was disseminated to GM employees via all the trades unions in the northwest that were listed in the Trades Union Congress (TUC) directory, as well as by the TUC itself. These included Unison, University and College Union (UCU), UNITE, The Union of Shop, Distributive and Allied Workers (USDAW), The Public and Commercial Services Union (PCS), The Professional Trades Union for Prison, Correctional and Secure Psychiatric Workers (POA), National Union of Rail, Maritime and Transport Workers (RMT), Community, Prospect, National Education Union. The survey link was also circulated by Transport for GM and the Mott Macdonald group, who researchers already had contacts with, and via several Twitter and LinkedIn accounts, including University of Manchester and PROTECT. Unions and other contacts were sent emails with a follow-up phone call where possible, inviting them to participate. Follow-up reminder emails were sent twice to those who did not respond. The survey data is presented in full in Appendix B.

Qualitative data was collected from stakeholders working in local authority roles in the region. In-depth data was collected from 19 participants during 14 semi-structured interviews including three group interviews. Inclusion criteria was participants who held senior roles in managing the COVID-19 response in local authorities in GM and strategic sampling was undertaken to seek representation of all 10 boroughs in the region. The full table of roles of participants is in Appendix C. To maintain anonymity each respondent was also given a unique ID code comprising a number, which is also included in Appendix C.

Interviews were conducted online via Teams or Zoom by two researchers (CL and CM) between August and November 2022. The interviews included 14 questions and were an average of one hour in length. Interview respondents were asked to identify the main factors that they felt contributed to differences in workplace transmission and outbreaks of COVID-19. They were asked for their opinions of the effectiveness of national and local level strategies, policies and guidance in preventing workplace transmission during the course of the pandemic, along with barriers and facilitators to preventing transmission. The full list of interview questions is provided in Appendix C.

Qualitative data was transcribed and thematically coded (Braun and Clarke, 2006) by two researchers (CL and CM) using NVivo analytics software. Empirical data was subject to iterative discussion between qualitative researchers for inter-coder reliability and triangulated with the findings of the literature review.

Ethical approval from University of Manchester Proportionate Research Ethics Committee (Ref: 2022-14470-24900) was granted to carry out the study.

The findings of the online surveys and the interviews with key stakeholders are presented in the next section of the report, followed by the overarching discussion and presentation of framework of outcomes and recommendations.

3. Findings

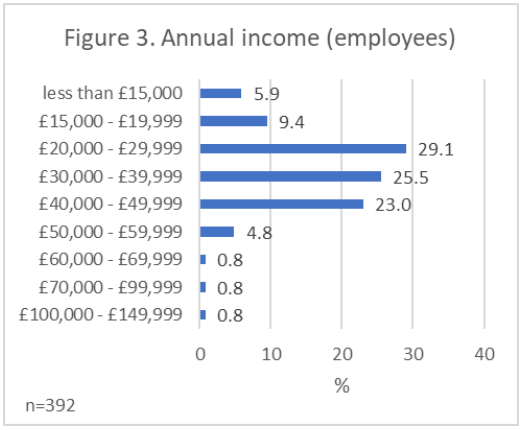
This section of the report presents an overview of the findings from empirical data collection. The first section summarises the findings of the quantitative online surveys for employers and employees, and the second section reviews the qualitative data collected from key stakeholders in local authority roles.

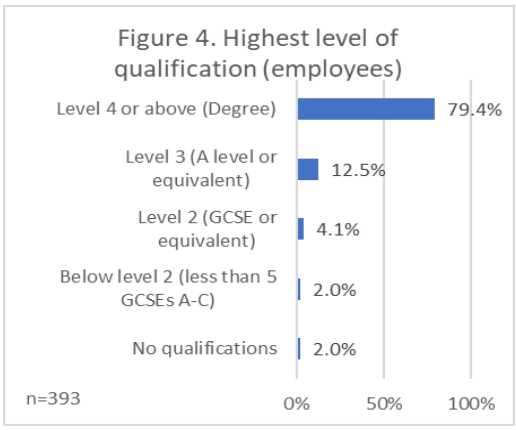
Quantitative Data - GM Area Employee/Employer survey

This section provides an overview of the findings of the online surveys for employers and employees. The two online surveys were conducted between August and October 2022, with links distributed to employees, and to employers and senior managers in GM.

There were 491 responses to the employee survey, of which 397 were valid responses. Six were excluded as the respondent did not work in GM and 88 were excluded as they did not answer past the background questions in section 1 of the questionnaire. For the employers and senior managers survey, there were 149 responses, of which 96 were valid. Fourteen were excluded as they did not work in GM and 39 were excluded as they did not answer past the background questions in section 1.The following is a summary, combining the results of the two surveys. Survey results in full can be found in Appendix B.

Around one in seven employees (15.3%) were earning less than £20,000. Almost four in five had a high qualification level (79.4%), at degree level or above. Only 8.1% had qualifications at Level 2 or below (Figures 3 and 4).





More than half employees (58.2%) were aged 35-54 and 70% were female. There were very few respondents from black and ethnic minority groups (4.0%, n=16) and 4.3% (n=17) were 'white other'.

During the pandemic, amongst employees there were slightly more larger households of three to eight people (50.1%, compared to 45.9% currently). During the pandemic and currently, slightly fewer employees were claiming at least one benefit compared to prior to the pandemic, when one in ten were on some kind of benefit.

Amongst employers, around one in four (26.0%) were based in the City of Manchester. The rest were spread through the other nine boroughs (range 3.1% Bolton, to 12.5 % in both Stockport and Trafford). Almost three-quarters of employers lived in GM (73.7%).

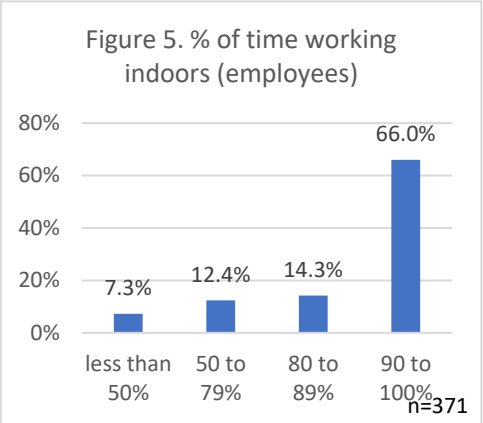
Workplace characteristics and risk factors

Sector/types of industry: Amongst employees, 71.3% were in the education sector and 10.3% in transportation and storage. There was a broader range of sectors represented

amongst employers, with the largest numbers in manufacturing (15.6%) and 'other service activities' (12.5%).

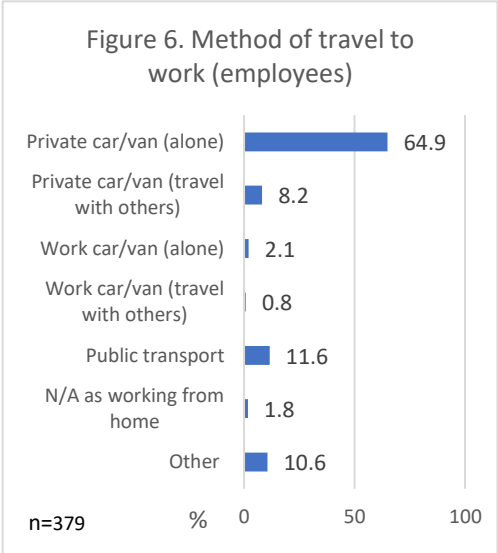
Size: Around three-quarters (76.1%) of employees worked in medium to large organisations of 50-plus employees. Over half (57.9%) worked with more than 50 employees on site together. Amongst employers, more than one in three (38.7%) worked in micro-organisations of nine or less employees. Just under one in three (32.3%) worked in medium or large organisations (50 or more employees).

Risk factors: There were high levels of risk factors for COVID-19 amongst employees, with two thirds working more than 90% of their time indoors (Figure 5). More than half (58.4%) of respondents shared their workspace with more than 20 people (co-workers and clients).



Almost three quarters of employees (72.6%) worked in direct contact with members of the public and around one in ten (11.3%) worked in direct contact with people with COVID-19 e.g., as a health or care worker.

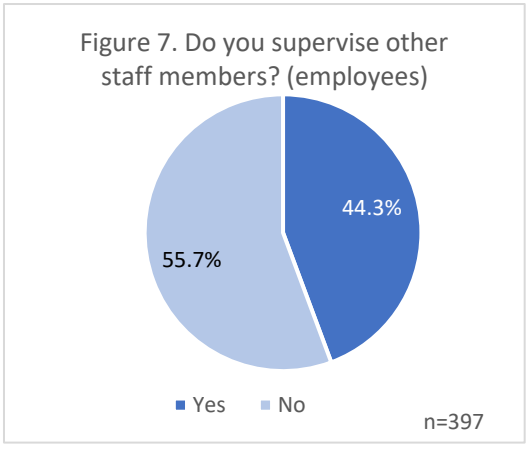
Shared travel is another risk factor, and one in five employees (20.6%) usually travelled into work with others (Figure 6).



There were 5.9% of employees who said they attended work despite being asked to self-isolate. For those earning less than £15,000, this rises to 9.1% - higher than all other income groups except £50,000 to £59,000, where the figure was 21.1%. Of those still attending work when asked to self-isolate, 70% said they did so every day or many times (n=14 out of 20 respondents).

Amongst employers, there was reduction in some risk factors, with reports of shift working, a cold environment and close contact with colleagues all lower currently compared to prior to the pandemic. However, face to face contact with the public and travel as part of the business day were both higher currently compared to before the pandemic.

Employment status and supervisory role: 93.2% of the employees surveyed had permanent contracts and 81.4% worked full time. There were only two self-employed and one sub-contractor. Just under half (44.3%) supervised others at work (Figure 7). Of these, 67% supervised between 1-5 people. There were 8.8% with more than one job. More than half (58.3%) had worked in their current job for more than 5 years.



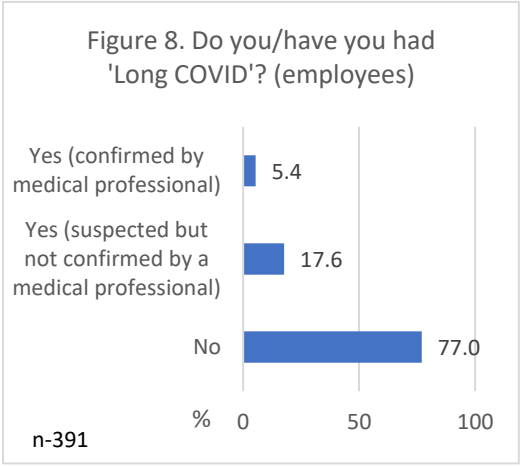
Amongst the employers surveyed, 18.5% of organisations had 10 or more sub-contractors. Most (69.6%) had between 0-10 (it was not possible to separate out those with '0'). The vast

majority were employed full-time permanently (82.3%). None of the respondents were temporary employees or sub-contractors.

Vaccinations: A very small proportion of the employees surveyed were un-vaccinated (3.8%, n=15 of the 391 who answered the question). Almost three quarters (72.6%) had had two doses and at least one booster.

COVID-19 experience

Long COVID: Almost one in four of the employees surveyed would describe themselves as having 'Long COVID' (23% of the 391 people who answered this question, n=90) (Figure 8). This had been medically confirmed for around three quarters of those saying yes (n=21 out of 90).



Shielding: One in ten (10.3%) employees said they had been contacted by letter or text message to say they were at severe risk from COVID-19 due to an underlying health condition and should be shielding.

Outbreaks: More than one in four employers (27.5%, n=19) said there had been COVID-19 outbreaks at their workplace. Seven respondents reported that there had been four or more outbreaks. These were in sectors including service, wholesale and retail, transport and health and social care.

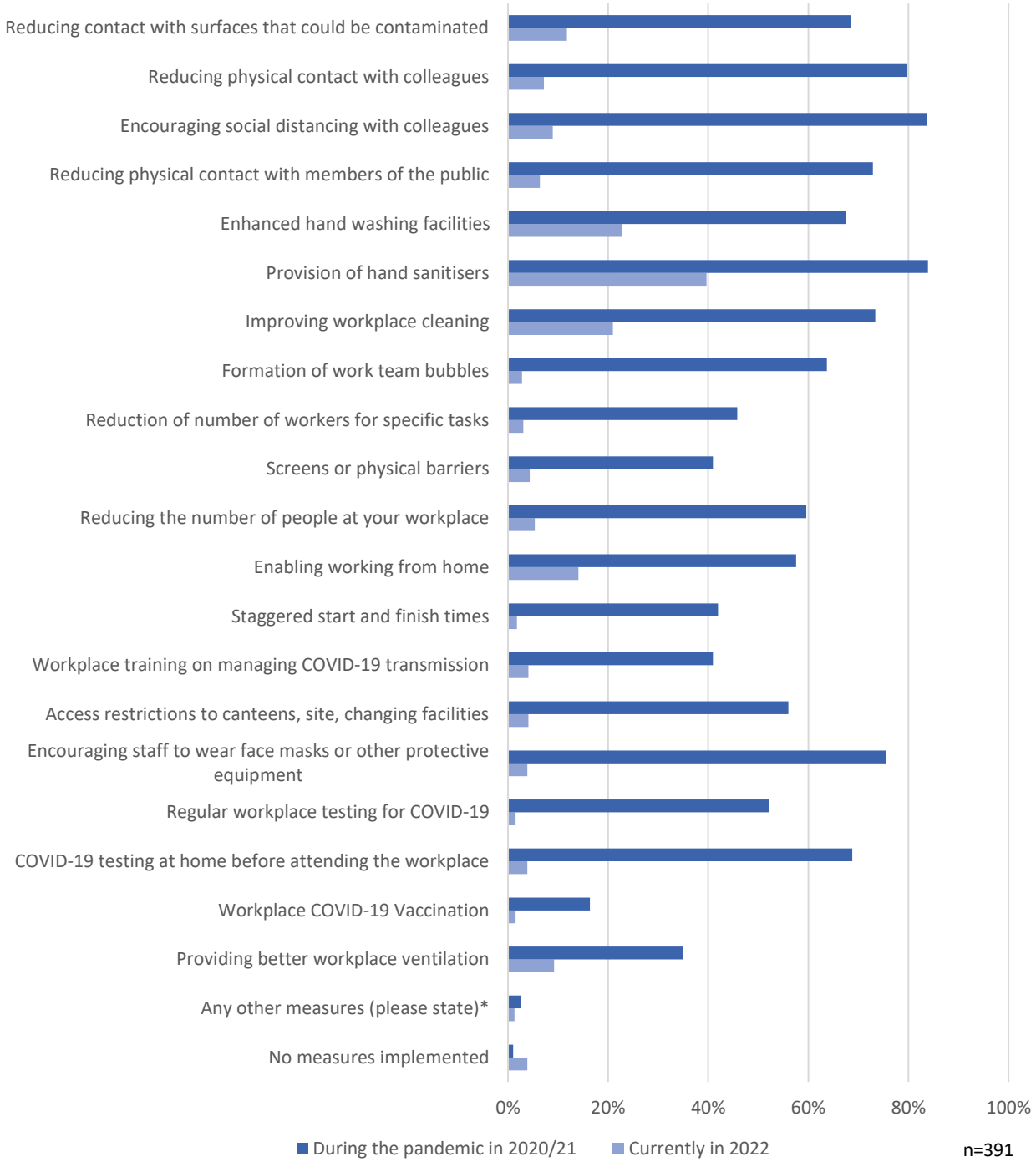
Transmission risk control

Workplace policies and practices/management of workforce environment: All mitigation measures introduced during the pandemic have been much reduced currently. For example, the employee survey reported that 'Encouraging social distancing with colleagues', 'Reducing physical contact with colleagues' and 'Encouraging staff to wear face masks or other protective equipment' had all been discontinued in more than 70% of cases. However, over a third of respondents reported that their employers still provided hand sanitisers (39.6%). Other measures more likely to remain were enhanced handwashing facilities (22.8%), improved workplace cleaning (21.0%) and enabling working from home (14.1%) (Figure 9). There were no major differences between sectors, with for example the health sector no more likely than some of the other sectors to maintain mitigation measures, including hygiene measures. These results were mirrored in the employers' survey (see Appendix B).

Three quarters of employees (75.5%) reported that wearing of face masks at work was encouraged during the pandemic, reducing to just 3.8% currently. Amongst employers, just under half (47.9%) reported that wearing of face masks at work was encouraged during the pandemic, reducing to 13.5% currently.

Most employees (85.1%) reported that their employer had conducted a COVID-19 risk assessment of their workplace and around one in three (34.8%) said they had contributed to this assessment. Most employees strongly agreed they could take time off to self-isolate.

Figure 9. Which measures did your employer implement to reduce the risk of COVID-19 infection? (employees survey)



Home working (employers survey): Opportunities for home working currently are greater than prior to the pandemic (see Figure 10 below).

- For one in five employers (20.4%, n=19), there was and still is no home working.
- Almost one in ten employers (9.7%, n=9) reported that home working had been allowed during the pandemic only, not prior to or currently.
- For 18.3% of employers (n=17), there had been no home working at all prior to the pandemic, but this had been allowed during the pandemic and has continued currently.

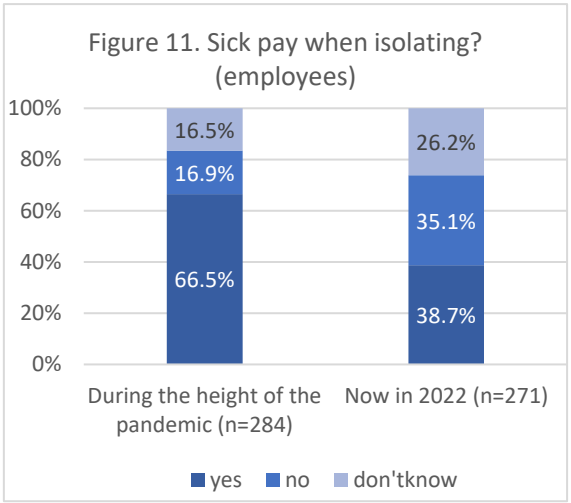
- In 41.9% of cases (n=39), some working from home had been practiced before as well as during the pandemic and currently.
- For one in three of these (14.0% of the total, n=13), the opportunity for home working currently was greater than prior to the pandemic.

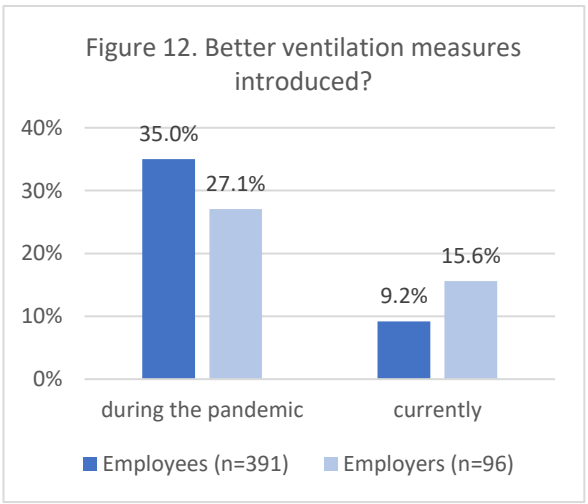
ID	PRIOR to pandemic	DURING pandemic	CURRENTLY
7	This was not allowed	For staff members whose role could be performed at home all had to work from home	We are now operating a hybrid model 1-2 days in office rest at home but that's flexible as well
41	No working from home prior to the pandemic	Everybody working from home	Minimum 1 day per week in the office

Figure 10: Two case studies illustrating new working from home policies that still remain (employers survey)

Sick pay: The majority of employees (96.0%) had access to sick pay. Respondents were less likely currently to get sick pay when self-isolating currently (38.7%) compared to during the pandemic (66.5%). There is more uncertainty currently about access to sick pay when self-isolating ("don't know" = 26.2% currently compared to 16.5% during) (Figure 11).

Ventilation: Only around a third of the employees surveyed (35.0%) and even fewer employers, (27.1%) reported that workplaces provided better ventilation during the pandemic to reduce the risk of COVID-19- infection. This reduced to only 9.2% currently for employees (15.6% according to employers) (Figure 12).





Partnerships: When asked, only two employers mentioned liaising with other organisations to control outbreaks ('*local council, NHS'* and '*up to 11 external organisations'* – which organisations not stated).

Perceptions of transmission risk

COVID-19 concerns: Around one in five employees (17.4%) in this survey are currently very concerned about COVID-19 occurring in the workplace (figure 13a). This compares to 56.1% during the height of the pandemic (figures Q40 and Q41 in Appendix B). During both periods, transmitting the virus to family members was the greatest concern. Many of the employees surveyed still currently thought they were very likely to get infected at work and at indoor gatherings - as likely as during the pandemic (figure Q42&43, Appendix B). This contrasts with employers, of whom only 4.3% were currently very concerned about COVID-19 transmission in the workplace (Figure 13a).

Figure 13a. How concerned are you currently in 2022 about COVID-19 occuring in your workplace?
(employees and employers survey)

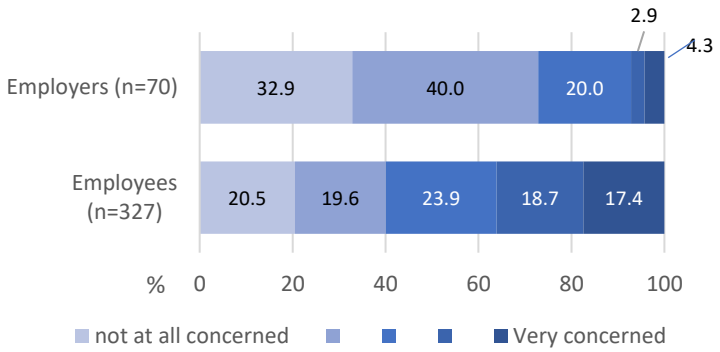


Figure 13b. Current concerns about COVID-19 occuring in the workplace by employment type
(employees survey)

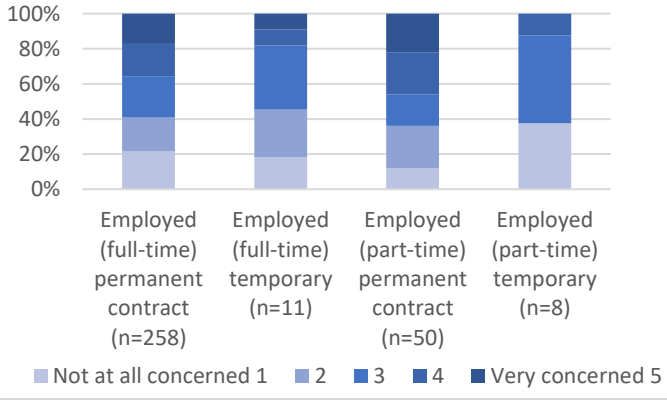
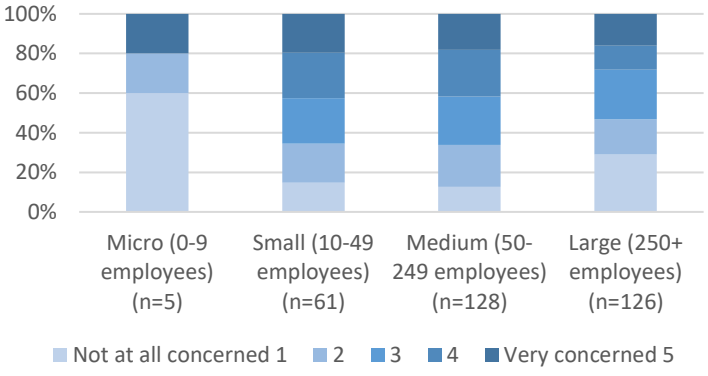


Figure 13c .Current concerns about COVID-19 occuring in the workplace, by size of organisation
(employees survey)



Data was analysed by type of employment. There was only one sub-contractor and two self-employed respondents in the employees survey, so these types of employment could not be considered. Overall, temporary part-time employees seemed to be least likely to be very concerned over COVID-19 currently (Figure 13b shows concerns in the workplace).

Although there were only five employees who worked in micro organisations (i.e. less than 10 employees), they were consistently much less concerned currently about COVID-19 in the workplace, about themselves and their family contracting COVID-19 and about COVID-19 remaining a health issue, compared to those in small, medium and large organisations (e.g. Figure 13c shows concerns in the workplace). The differences between small, medium and large organisations were much less pronounced.

Initial analysis suggests an association between gender and COVID-19 concerns, with female employees more likely to have concerns in each area than males.

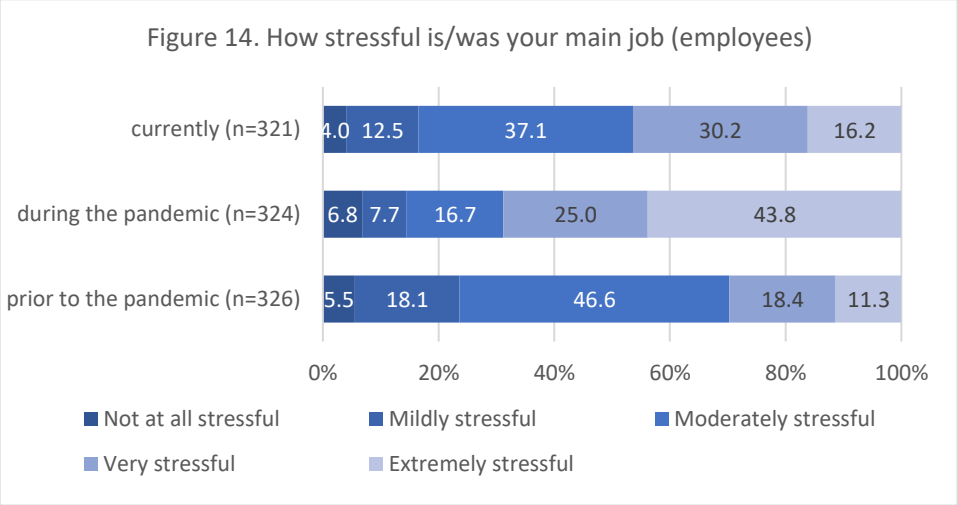
Safety and leadership (employee survey): In response to a set of questions about current safety and leadership, with 1 strongly disagree to 5 strongly agree:

- employees were slightly more inclined to agree there is currently compliance with safety measures (mean 3.5, mode 4.0).
- they neither agreed nor disagreed with statement about a good safety climate (mean 3.1, mode 3.0)
- they were more likely to disagree/strongly disagree with statements about whether there is good health leadership (mean 2.2, mode 1.0).

Adherence to measures: Almost all the employees surveyed (93.2%) said they adhered to control measures in the workplace always or most of the time. Around two-thirds (68.2%) felt that others adhered to control measures always or most of the time. Amongst employers, more than half (59.4%) felt that workers are/were able to adhere to COVID-19-measures introduced by the employer. However, 22.4% felt there were barriers to adherence to these safety measures (space constraints, costs, etc. – see Appendix B, Employers survey Q28a for list of barriers).

Currently, around two thirds of employees (65.5%) rarely or never wear a face covering outside work.

Health and Wellbeing and Job Stress:
Levels of current health and wellbeing amongst the employees in this survey are neither poor nor good (there was no question on 'prior' or 'during' the pandemic).



More than 2/3 (68.8%) of the employees surveyed found their job extremely or very stressful during the pandemic, compared to less than 1/3 (29.8%) before. Levels of stress remain higher than before the pandemic, with 46.4% currently finding their job very or extremely stressful (Figure 14).

Qualitative Data - Local Authority Stakeholder Views

Overview

As part of the project, participants from GM local authority PH and EH teams were asked about ways in which they had supported GM employers to control COVID-19 transmission and prevent outbreaks during the course of the pandemic. Public health participants included Directors of Public Health (DsPH), PH Consultants, PH Specialist Leads. EH participants included Environmental Health Officers (EHOs) and Regulatory Services Managers (see Appendix C).

Participants discussed providing employers with a broad range of support, including helping employers to interpret national guidance, as well as support with workplace contact tracing, testing vaccination, and advice on infection control and managing ventilation.

Participants were also asked about facilitators and barriers to supporting employers. Facilitators that were identified by interview participants included detailed national guidance, good communication and partnership working, funding, and timely access to data. Barriers to supporting employers included contradictory or confusing national guidance, structural inequalities/lack of funding, and delayed access to data.

The interview schedule that was used, along with the coding framework that was used to code the interviews on NVivo, is included in Appendix C.

Risk factors related to workplace transmission

This section outlines the factors related to employment identified by participants which may impact on managing risk transmission and 'Living with COVID' ((UK Government, 2022). The factors related to workplace transmission are also largely related to deprivation and socio-economic factors in workforce characteristics but also industry sectors, types, and sizes.

Socio-demographic factors

Multiple participants highlighted that workers who would not get paid if they did not work, including those who were unable to work from home, were less likely to isolate if needed. This also included employees who did not receive sick pay, or were self-employed but did not receive support grants, and included workers who were on more precarious employment contracts such as zero hours contracts or agency workers. Workers who would not get paid if they tested positive (and stayed away from work), especially frontline workers, might also be disinclined to take a COVID-19 test, increasing the risk of workplace transmission:

> *"Potentially what we were seeing is a difference in propensity to test between different populations with those people who had a lower…lower personal consequences if they tested positive being more likely to test and test regularly and report those results compared to populations who perhaps were doing more frontline work or face to face work and had more consequences if they couldn't go out to work."* (P1, PH)

Even within the same company, participants highlighted differential risks for different groups of staff, including those who were unable to work from home:

> *"I think we had a bit of a two-tier workforce…So, obviously you had those who had the ability to work from home, so could keep themselves safe, stay in their own little bubble. And then obviously we had staff who were frontline and had to come into work."* (P16, EH)

Participants also highlighted that workers who were in insecure or low paid work were also likely to live in the more deprived geographical areas or wards within the local authority, further increasing their level of risk. Many participants highlighted certain geographical areas or wards within their local authorities where there had been high, enduring rates of COVID-19 transmission.

> *"We're usually pretty average on just about most public health indicators that you care to look at… However, that hides an unusually large divide between areas of high deprivation and areas of relative affluence. So, XX is one of the most polarised districts in the country.*" (P11, PH)

Participants highlighted factors related to employment as a reason for these variations in risk of COVID-19 transmission, along with other risk factors including residents living in overcrowded housing. Participants also highlighted links between deprivation levels and uptake of testing, pointing out that when mass testing programmes were carried out in Liverpool, for example, uptake was much higher in more affluent parts of the city:

> "*I suppose that does link to the deprivation or the disadvantage levels that we've got here, because the nature of our economy is that a significant chunk of particularly our inner wards are amongst some of the most deprived communities, and the occupations are very different I guess in those communities. So again, low wage, insecure work, you have to turn up to get paid."* (P19, PH)

Participants also highlighted that certain groups (e.g., people from certain age groups, such as young people) and ethnic groups might be more at risk at transmission because they were likely to be in frontline roles and unable to work from home and were more likely to be in jobs where they did not receive sick pay.

Participants also reported that vaccination rates were lower among certain groups of people, including more deprived communities and certain age groups and ethnic groups, as well as people in certain occupational groups:

> *"I remember us looking at taxi drivers and security guards, they were coming up quite often as well, and we'd often find that they were from our ethnic minority groups that again were at highest risk, they weren't vaccinated, they were in these... front-facing jobs and were in a lot of contact with people and they were vulnerable." (*P7, PH*)*

Several participants also discussed high proportions of people with long-term health conditions, as well as those with unhealthy lifestyles, within their local authority areas. This increased workers' risk of suffering worse outcomes if they were to contract COVID-19. It also increased the importance of implementing workplace interventions in order to prevent employees from contracting COVID-19:

> *"For a number of reasons…we experience quite poor health outcomes, probably more so than you would expect given our overall level of deprivation. Certain areas in terms of things like alcohol, cardiovascular disease… cancers, particularly lung cancer and other respiratory disease."* (P10, PH)

Industry sectors and types

There were many examples of specific industry sectors and types presenting challenges in the pandemic.

As mentioned in the previous section, participants said that people working in certain sectors were less likely to receive sick pay when absent from work. Workers who did not receive sick pay would find it harder to isolate. Participants highlighted sectors where this was more likely to be an issue including the hospitality and transport industries, as people were less likely to be able to work from home or to receive sick pay if they needed to isolate. One participant

highlighted the care sector as a sector where people were less likely to receive sick pay, as well as one where workers experienced relatively high levels of deprivation when compared to other professions:

> *"Some of our care home staff, who are probably the people…that you wouldn't want to go to work with any sorts of respiratory symptoms whatsoever, we know that a large chunk of those people don't get paid if they don't go in. And we know that there's work from the Health Foundation that's come out recently that shows that quite a high proportion, compared to other professions and other jobs, of people working in the care sector are living on…in relatively higher levels of deprivation." (*P13, PH*).*

Again, participants highlighted links between work sector and demographic factors such as ethnicity and age, with people from younger age groups being more likely to work in sectors such as hospitality, for example, where they were less likely to be able to work from home, which increased their COVID-19 transmission risk, or working in close proximity to other members of staff in call centres:

> *"So, another typical setting for us might have been call centres or similar businesses, again where people sit closely together, or solicitors' offices, you know, where you have fairly young people working fairly closely together in an open-plan environment, and difficult to sort of rearrange seating sometimes."* (P11, PH)

Schools and care homes were added as emergent significant categories reported on by several participants, especially participants from a PH background who were more likely to have these organisations within their remit. Several participants mentioned risk in call centres or distribution centres. One participant drew attention to the risks associated with the sporting industry – in particular the two (United and City) football clubs when they reopened and had people travelling from different areas to events. Participants highlighted that areas of transmission included anchor institutions (e.g., council, university, hospital) as well as prisons, homeless centres, and the airport. Several participants also mentioned hospitality as a sector where they had seen more frequent outbreaks.

Several participants suggested reasons why people working in these sectors might face increased risks of transmission. One participant linked risks to noisy environments which required people to be close together to communicate. Several participants highlighted the risks to where people work in close contact, such as food processing or garment industries. whilst others highlighted risks of working in enclosed areas such as abattoirs:

> *"So, we have a big abattoir within the borough, so they're dealing with in quite high-risk environments where it's quite moist enclosed areas…they're cutting up meat and all those kind of thing*s." (P10, PH)

Several participants reported that although high risk industries (such as gyms, hairdressers) were initially closed, their reopening was linked to transmissions later in the pandemic. Multiple participants reported they had ongoing issues with high-risk businesses resistant to compliance, which some participants linked to the risk of loss of income, including gyms, barbers and tattooists. Several participants also mentioned hospitality trades specifically pubs, restaurants, and takeaways. Other participants highlighted food processing and manufacturing as sectors where they saw more frequent outbreaks. However, some participants also highlighted that this may be partly because employers in these sectors tend to be larger and employ more staff, as discussed in the next sub-section, which participants felt also put them at greater risk of outbreaks. Other participants, however, reported that it was more likely to be individual employers who were less likely to comply with restrictions, rather than any particular sector.

Participants also highlighted issues around accessing outbreak data related to certain settings, including hospitality, and this is discussed further in the section on managing workplace transmission.

Size of business

Participants discussed the impact of the size of organisation on risk of COVID-19 transmission and outbreaks. Several participants suggested larger organisations were more likely to have more frequent outbreaks due to having large number of workers in one place:

> "*And supermarkets were another one, of course, another type of business we had more dealings with. And by necessity this would be bigger outbreaks often because their staff base is quite so big."* (P11, PH)

Participants also discussed links between size of organisation and sector - food processing and manufacturing businesses were also likely to be larger in size, which could put them at increased risk of outbreaks. Despite this increased risk of outbreaks, however, as discussed further in the sections on facilitators and barriers, several participants suggested that larger organisations had more means and resource to deal with outbreaks and implement transmission reduction measures than their smaller counterparts:

> *"I would say our larger workplaces definitely have more frequent outbreaks, but I don't necessarily think that was about the way in which they were doing things because many of them had such good practices in place and we were visiting them regularly…. I think the workplaces in many of those larger ones did amazing things. You know, they spent lots of money. The improvements they made were really, really good."* (P4, EH)

Several participants reported that staff in small and medium sized enterprises (SMEs) were less likely to be able to work from home. As previously discussed, this might lead them to come into work whilst symptomatic, especially if they did not receive sick pay. Participants also suggested there were difficulties for SMEs in terms of staff turnover and turnover of ownership:

> *"But in the main a lot of SMEs…local businesses, and quite a high proportion of takeaways and food businesses, that tend to have… quite a high turnover, not only of staff but also of ownership."* (P14, EH)

Participants agreed that transmission reduction and management presented differing challenges dependent on multiple factors and size was definitely one factor as it clearly influenced the ability to resource their response.

Other risk factors linked to employment

Relaxing of control measures such as social distancing measures during break times, along with using shared facilities such as canteens, were also identified as risk factors for workplace transmission:

> *"They try and keep them apart whilst they were in the work setting and then they'd all go and sit together on their break.*" (P4, EH)

Participants identified workers socialising together outside work as a risk factor, as well as commuting. Commuting was highlighted as an issue that was potentially more difficult to control, and, again, risk factors linked to commuting were highest for those who were unable to work from home:

"Often it felt like businesses were doing everything they could within the setting but then that people will be travelling to work in the same car or might be coming on the tram. And I think that was often found to be the weaknesses in where transmission was happening." (P4, EH)

Changes during the course of the pandemic

This section summarises the risk factors related to workplace transmission described above. Interview participants highlighted the importance of socio demographic factors and deprivation in particular on transmission risk which was known prior to the pandemic. There is evidence of enhanced understanding of health inequalities and importance placed on them from the start of the pandemic to the present day. There is evidence of efforts by all teams to focus on health inequalities, however, there have been limited changes in structural factors to support this focus.

Several participants noted targeted interventions and evidence of learning within specific industries and organisation types as the pandemic progressed. There was evidence that in the early pandemic a wide range of support measures were offered to organisations via local authorities to support their implementation of risk reduction measures in the workplace, as well as enforcement of those measure. The evidence demonstrates that through the pandemic this support was received well initially, although in many cases businesses only connected for support at the point of an outbreak or threat of enforcement and implemented measures to prevent future outbreaks or penalties.

Throughout the pandemic some industry sectors were impacted by measures more than others, especially those in hospitality and retail who were subject to the most changes in rules and operations. There was an evident divide in risk between those able to work from home and those who could not (especially given the highlighted risks of commuting) and to a large extent this risk was tied to socio-economic status. In the middle of the pandemic with the changes in rules and re-opening of some industries which had been forced to close, transmission risks increased for those in specific industries who could not work from home. There is evidence that those working in care homes and schools had the biggest risk in the workplace and for most respondents these industries were the only areas of ongoing work in 'Living with COVID'.

Facilitators of transmission reduction from local authorities

This section outlines what works well in the role of local authorities reducing workplace transmission, focusing on the facilitating factors. This section focuses on workplace interventions, helping employers to interpret national guidance, communication, partnerships, and data.

Workplace interventions

Participants discussed implementing a wide range of measures in order to support employers. This included support with contact tracing, testing, and vaccination. As shown in the quote below, participants discussed working in partnership with NHS teams to set up vaccination clinics outside food production factories. Other participants discussed pop-up vaccination clinics being set up inside larger workplaces.

"And then the other bit we actually then brokered surge vaccination in some particular car parks that were adjacent say to our food production factories. So, we were…because we have…we developed real collaborative working with our NHS vaccination team, not only did we have surge testing, but we had surge vaccination

that was coming to say the car park that was just off the food production factory. And so, we were actually able to serve that workforce community and also provide the advice and guidance." (P9, PH).

Participants also discussed implementing more targeted interventions for certain groups, including COVID-19 risk health checks:

> *"So, we also put in COVID-19 risk health checks, so we were able to give that offer when there wasn't vaccination yet. And those COVID-19 risk health checks are still running, they're just supplemented on the NHS health check, but they were for people with a long-term condition, or from a BAME community. Taxi drivers, care workers, et cetera, I mean, when you look at the differential impact on the most disadvantaged in our communities, they are the ones who continued to work in frontline services right through lockdown."* (P11, PH)

Several participants remarked on the emerging importance of ventilation to reduce transmission risk:

> *"Obviously, ventilation was one of the main things that kind of came in a bit late in the day, but it was that focus more in 2021 that under health and safety legislation we were trying to make sure that…workplaces were well ventilated, which they should be anyway, but even more so to control the spread." (P3,* EH)

Several participants reported supporting employers with managing the mental health of their workforce during the course of the pandemic. The move to working from home presented challenges for some workers (e.g., isolation), and in particular the risks to their mental health:

> *"We were able to put into place quite a robust package of support for staff…Then combining that as well with the wellbeing support…Around them obviously working from home and that feeling of being isolated, ensuring they still felt part of an organisation, they still had that contact with the managers and the teams. So, there was a whole raft of work around that that was a quite resource-intensive but important aspect certainly at the beginning of the pandemic, but then continued through it as well as people continued to work from home for longer periods of time."* (P5, EH)

Helping employers understand national guidance

Many participants reported that a significant part of their role was in helping employers, including local authority employers, to understand government guidance and put measures into practice.

> *"I think the main thing we tried to do was to just offer support to workplaces, to help understand the guidance." (P2, PH)*

Many participants suggested that they found the government guidance useful, although other participants reported limitations such as confusing or contradictory guidance, which is discussed in the section on barriers. Participants who found the guidance useful reported that it was more prescriptive than legislation that they would normally deal with, which meant that it was easier to enforce:

> *"In many ways, the regulation was more prescriptive than much of the legislation we would normally deal with and then was backed up with the guidance that was very prescriptive as well. And that was really helpful for us when speaking to businesses … And even if something was only guidance, you know, to me, people had to have a very good reason or a very good alternative why you wouldn't follow government*

*guidance during a pandemic. And those were the kind of conversations we could have with the workplaces." (*P4, EH)

As well as providing advice on preventative measures, organisations were supported during outbreaks towards a swift resolution and future prevention. One participant suggested that government materials provided at a fast pace were helpful to underpin their work:

"I think that did work well 'cause we were able to develop a lot of materials around things like template risk assessments, COVID-19 assessments. All of that support allowed us to develop those materials. When we were working at the fast pace that we were in in very challenging times, that was actually very, very supportive to us. So, I would say that's probably one of the most beneficial things we've seen through the policy in terms of materials that's been provided." (P5, EH)

Several participants also said that efforts to control transmission locally or at a GM level had gone beyond what was required nationally, in order to make sure that businesses remained open and to protect staff, and in the case of care homes, to protect residents:

"During the pandemic it was very interesting to talk to employers about the decisions they had made about.. whether they were going with current guidance or sometimes working more stringently… when people could come back to the workplace then it was often left to employers to make the decisions about how many people they bring back and whether they let them work from home, and how risk averse...they were in terms of the speed of bringing people back." (P11, PH)

Several participants suggested that managing government expectations was easier earlier in the pandemic but became difficult when restrictions were eased:

"When we started to see the restrictions being eased, and there was sometimes maybe a bit of a discrepancy between what they were doing in their home life compared to what the expectations were within the workplace, that sometimes created quite a few issues for us in terms of continuing to manage that effectively." (P5, EH)

Communication

Overall good quality messaging and communication strategies were seen as a facilitator of transmission reduction, not only from government to local authority but also cascaded from local authority via the PH function.

"So, it was about thinking how do we get these messages out a bit more? I did a lot of engagement with business leader groups…I'd go along to give them some advice and reassure them or give them an update…or actually paint the picture of doom which was necessary in some cases … trying to put it in the terms of if you end up with more staff off sick or if you end up with a big outbreak, and we have to take further steps it's not good for your business either. So, there was quite a bit of that preventative work we tried to do and getting out there with comms and promotion of the testing offer or the vaccination offer." (P10, PH)

Several participants mentioned working on key communication efforts, including those aimed at certain population groups perceived to be at greater risk of transmission due to their role, type of work or socio-demographic status:

"So, on the one hand when we did sort of social media campaigns, we'd target those directly… particular sort of populations who identified at risk, and that's kind of particularly kind of ages. So, again we found kind of under 35s were, I suppose…probably because of

that overlap with the hospitality sector, you know, were, I suppose, the more kind of less formal ways of working in the gig economy and we kind of targeted activity towards those. But then, as I mentioned previously… certain ethnic minorities, and then people who lived in certain boroughs." (P15, local government)

Several participants said that their roles at the start of the pandemic related to making sure workplaces remained closed when they should. As re-opening began in these sectors, the role changed to supporting workplace interventions to prevent transmission:

"What we probably saw as the pandemic progressed, I think the trickiest thing was managing it as we started to move back towards reintegration and were bringing people back into the office. It was the way in which we were changing our approach to things like the use of face coverings, whether we were able to reduce the restrictions we had around social distancing and those sort of issues…but doing that in a way that staff still felt assured and comforted that…that risk management was still in place to protect their health as they were returning to work." (P5, EH).

Partnerships

Many participants reported the benefits of partnership working as a facilitator of managing transmission risks. Participants discussed partnership working at a local, GM, and national levels. PH participants discussed working closely with EH colleagues, as well as a wide range of other stakeholders including local GM police, clinical commissioning groups (CCGs). Participants also worked closely with local communities, including with community and voluntary organisations and faith leaders. Participants also discussed partnership working within communities to reduce transmission as well as employers, such as different call centres, working together to discuss strategies to reduce transmission.

Many participants discussed close partnership working between PH and EH teams, which for some participants involved daily online meetings at the height of the pandemic. PH participants also discussed involving EH colleagues when they needed advice with specific issues such as ventilation:

"For example, environmental health have been involved in some of our nursery outbreaks, because they could look at the scheme of...the ventilation requirements et cetera, in a way that, of course, we weren't trained to do." (P12, PH)

Participants discussed working with a wide range of other partners, including other departments within the local council, the police and fire service, CCG, and other health providers:

"So, it was a real integrated family if you like. There's been quite a lot of recent changes … but throughout COVID-19 we already had a lot of those links and relationships, so we did quite a lot of close work with them. And I'd say our director of commissioning within the CCG and some of those leads led a lot more on the vaccination rollout, which we supported and worked closely with them. But there was a real division of some of the tasks there, which was really helpful. So, yeah, I'd say we did have a good approach. …the COVID-19 health protection board that we stood up that was in meeting weekly..we had the mental health provider... we had the police, fire…the hospital, CCG…So, we had really wide involvement and engagement across those wider public sector partners but particularly in the healthcare sector." (P10, PH)

One participant remarked on feeling part of national partnerships and having a voice in the ongoing learning:

> *"I think we made really good nationally ties with our profession in particular and trading standards, environmental health, and trading standards, with the engines of policymakers…there were times when the information was really getting to Chris Whitty for Whitehall changes and for updates, the five o'clock podium quite quickly. So, information really was getting through, and they were…were listening to the people on the ground.*" (P8, EH)

Some participants discussed partnership working that was focussed on specific issues, such as PPE, whilst others reported focused work on interventions in high-risk settings such as schools and care homes:

> *"I also had to work to establish what we called a COVID-19 hub which also had nurses in but also patient advisors, we set up a helpline number, we had schools reporting directly into us, so we set up the systems around all that so that our infection control nurses could focus on care homes and other high-risk settings like our asylum seeker hotel and things like that." (*P7, PH)

As discussed further in the 'current situation' section later in the report, participants highlighted that many of the partnerships that had been developed during the course of the pandemic had been maintained and expanded in order to focussed on wider health issues as well as future COVID-19 challenges.

Data

Most participants reported the benefits of data to their work, although participants also expressed a number of challenges around data, including delayed access to data and issues around data sharing, which are discussed in the section on barriers.

Several participants remarked on the speed and frequency of data being produced during the pandemic, as a benefit. Several participants also reported the benefits of working with local data to manage outbreaks, a process which most participants agreed was best managed at a local level:

> *"We'd also get…a lot of the information we got directly from the workplaces and from, for example, the care homes and schools. So, we often didn't have to wait for the national data to come through…actually we had good relationships with all our local schools, care homes, workplaces. So, we often would find out if…especially with the schools and care homes we would normally know before the data came through nationally because people had already been in touch with us."* (P1, PH)

Other participants also reported the benefit of regularly updated data from the Health and Safety Executive (HSE) and Public Health England:

> *"So, part of the Public Health team were pulling together on a weekly basis a set of data that they would report on both graphically and in tables. And that was pulled together quite early…on in the pandemic, and that was probably the main thing that we used because it also had the maps and colour-coded areas…we also had a daily report that Public Health would put together of, it was called a coincidence report of workplace settings. So, they would monitor workplace settings and obviously if… one business,…was having a high number of cases, that would then obviously highlight that organisation for us to get involved with….It was really helpful to have that data being, you know, analysed so frequently." (P3, EH)*

Funding

Funding was mentioned by several participants as a facilitator of managing transmission risks, including funding to help people to isolate when needed, although participants also identified a number of barriers related to funding which are explored further in the section on barriers.

Participants discussed accessing national level funds to support local residents, including those on low incomes as well as those who were unable to work if they were isolating:

> *"So, there was the Government Isolation Fund, I think it was called, that people could apply for, but we also had our local, and we called it a welfare fund, I think, that people could apply for as well." (*P4, EH*)*

Participants also discussed working in partnership with employers, in order to implement the national living wage:

> "*We have, as a city, got..a national living wage commitment to all of our care settings, to our own council staff. And as part of a social value, pledges from our partners to…themselves be national living wage employers, and we celebrate that, we know it's important."* (P12, PH)

Changes during the course of the pandemic

In summary, the local authorities' role in preventing workplace transmission changed through the pandemic but largely focused on communication, data management and enforcement. At the start the local authority role focused on providing clear interpretation of government guidance and making sure places stayed closed when they should. As restrictions eased the role changed to supporting workplace interventions. Partnerships were developed and strengthened throughout the pandemic.

Barriers to reducing workplace transmission

Government advice

Although several participants said that government advice had been helpful, and several acknowledged and appreciated the challenges that the government faced because guidance needed to be implemented at pace, many participants reported a number of barriers around government guidance. Many participants reported that guidance was often confusing or contradictory. This was exacerbated by the fact that it was often implemented at very short notice, sometimes retrospectively, giving participants very little time to read the guidance before they were expected to explain it to employers within their local authority area:

> *"And we got no consultation obviously, which I understand because the government were having to react, but we literally found out about the legislation and guidance as the public did. So, immediately, we would get people…phoning, emailing, what does this mean for me, and can you explain this, you know, the whole argument. For us, it was very frustrating to have to start argument what a substantial meal was, .. That whole argument was just nonsensical. But obviously, we're regulators and we had to.. enforce what we were being told to enforce."* (P3, EH)

Several participants also said that different pieces of guidance were conflicting, or that guidance would have been helpful if it had been received earlier:

> *"I think the biggest thing is not necessarily individual bits of guidance, but when the guidance conflicted with each other and it wasn't clear… a lot of the times the guidance was helpful, but…was it helpful at that time for what we were going through..it's like it is useful, but actually we could have done with that six weeks ago, or, it's useful but it doesn't match with this other guidance, so what do you want us to do… it's those examples really."* (P7, PH)

One participant reported that the constant rule changes made it difficult to ensure that resources were accessible for a diverse population, including making sure that there was time to translate guidance into other languages:

> *"I think a big thing for us…was a lot of the health equity work we did about working with community leaders and trying to understand what was happening on the ground helped to influence our comms work…we were translating things into 21 different languages…And by the time you've done all that, the guidance or the rules have changed and you're starting all over again*." (P7, PH)

Several participants suggested that the government advice was 'one size fits all' and was not always suitable for all businesses. Other participants said that guidance was being interpreted differently by different local authorities. This caused issues for larger or national organisations who were liaising with a number of different EH teams across the country:

> *"Whether it's pub chains or national care home providers, they would be on the receiving end of different interpretations of the guidance, and they would just get increasingly frustrated with us."* (P13, PH)

Several participants stated that lack of support nationally, including from HSE, was also a barrier to managing outbreaks within schools and care homes, especially in terms of managing outbreaks. Other participants suggested that overlapping or unclear responsibilities could be difficult to manage and acted as a barrier:

> *"I think the Health and Safety Executive should have done more on this …so we had a death in a setting… they had 50 cases, it definitely was an outbreak, the place was extremely reluctant to consider it an outbreak and they didn't RIDDOR report the death, and that happened more than once. So, there was under-reporting, definitely."* (P1, PH)

Other participants explained the need on occasion to circumvent government advice, as shown in the quote below in relation to schools. Participants also discussed going beyond what was required nationally at a GM level with regards to care homes.

> *"Particularly when we were having huge waves and then national guidance…it was like, oh, we're stopping that…you don't need to wear masks anymore, and we were having the biggest outbreaks in schools we've ever had and we were like, that decision isn't supporting us. So, there were a couple of times when as DPH XX and other colleagues in GM overruled national and said actually for us, we want you to continue wearing face coverings in schools because we've got these huge outbreaks and we're trying to keep you in school for your education. So, we did have to sort of make our own local decisions at times when it didn't feel right for us, which ruffled some feathers at some times, but it was right for us."* (P7, PH)

Several participants suggested that compliance fatigue was a barrier to managing transmission, and that these issues worsened through the changing stages of the pandemic and particularly towards the end of the pandemic. Participants highlighted that bringing back

measures after they had been relaxed was a barrier to reducing transmission due to lower compliance with the measures:

> *"When we were then starting to reintegrate after June and we were starting to slightly increase some of the capacities within the office whilst maintaining some of our Hands Face Space measures and were gradually bringing people back, we did a lot of work around that to look after them. But then we moved into suddenly Plan B measures in the winter period and then we were having to sort of go back and reverse it. It was very difficult from a cultural point of view to then step back from where we were moving back to reintegration, to then step back into this sort of greater restrictions that we were putting into place for staffing. I think that to-ing and fro-ing really created quite a few difficulties for us in how we managed that."* (P5, EH)

Access to data

Although previously reported as a facilitator, on some occasions access to data was also identified as a barrier to preventing transmission. Several participants reported difficulties early in the pandemic accessing data. Some participants expressed that available data was not sufficiently detailed, whilst several others expressed that although data might have been available, they were not able to access it in a timely manner. Another participant suggested it was not only access to data that was a barrier but access to advice on processing and interpreting data, including interpreting data about individuals who were at greater risk if they were to contract COVID-19. One participant, however, outlined the way that data had initially been a barrier which had been overcome by localised partnership working:

> *"That was a weakness actually which we escalated to UKHSA at the time, we found it very difficult to continue our investigations and contact tracing outside our own area, UKHSA was expecting us to follow through…so we were getting to know who was where and we were forging relationships with businesses after ten years of not having any input with them, which was really beneficial and they… wanted the help as well. So, their line lists and the contact tracing and the outbreak work really did harness better working relationships with our workplaces*." (P8, PH)

Many participants expressed frustrations related to contact tracing nationally, especially at the outset of the pandemic:

> *"I can't not mention contact tracing…contact tracing sat with my environmental health officers, and it was a fiasco… all I was being told by my environmental health manager was …it doesn't really work, we're not getting the information when we need to get it.*" (P17, EH)

Participants reported that a contact tracing hub had been established at a Greater Manchester level. Several participants felt that contact tracing was more effective when done at a local, or regional, level, rather than a national level. They suggested a number of reasons for this, including being able to draw on existing relationships with local communities in order to reach a greater number of residents, and being able to provide support for residents in order to help them to self-isolate if needed:

> *"I suppose it also ties into the contact trace elements as well..once you actually had the resource at a Greater Manchester or a local or even a neighbourhood level to actually go out and, you know, use your knowledge of those communities to…or even like the relationships that you've kind of already got in place then, you know, that felt far more effective than, you know, the national Serco call centre sort of trying to phone somebody up three times and if not getting through to them after the third time, or whatever, just considering it a dead lead...also I suppose then being able to almost have an intensive programme of support for somebody at a local or neighbourhood*

*level... being able to provide that support or signpost to that support in a way that just wasn't done at a national level. "(*P15, local government)

Several participants also said that there had been some confusion about who was responsible for contact tracing, and that roles and responsibilities of each organisation were often more clearly defined when contact tracing was carried out at a local or regional level. Participants also reported that employers did not always realise that they had a responsibility to contact trace:

> *"So, I think as much as we could in terms of resources, we tried to do contact tracing in house because certainly businesses didn't understand that they had a responsibility to contact trace…it was trying to make them realise that…they could be days ahead of the contact tracers…if they did that proactively, then hopefully they would have less of a spread in their business, but that wasn't always that well understood." (P3,* EH)

Several participants reported that since testing had stopped there was very limited access to data:

> *"Now with the demise of testing, we don't have that data anymore. In terms of vulnerability to COVID-19 outbreaks, actually, I don't think that's where our concern is anymore, I think it's more vulnerability to other outbreaks probably."* (P2, PH)

Employer capacity

Several participants reported capacity and cost as a factor influencing attitude becoming a potential barrier to implementing workplace mitigation strategies, with some participants again highlighting that this was more likely to be an issue for smaller employers:

> *"I think there were challenges throughout, in terms of capacity, both in HSE and, to some extent, in local authorities, to be able to support workplaces to manage transmission as well."* (P2, PH)

As previously discussed, several participants reported the compliance fatigue contributing to more negative attitudes of individuals and organisations. Other participants also pointed to their own workplace stress as a result of dealing with COVID-19 as a potential future challenge:

> *"I certainly don't want to replay the last two years…Literally, it used to be seven o'clock in the morning until seven, eight o'clock at night just literally sat at my desk not taking a break, full-on literally firefighting."* (P3, EH)

Insufficient funding

Funding was identified as a facilitator to reducing COVID-19 transmission, but it was also identified as a barrier. Despite some financial support such as COVID-19 support grants being available, some participants reported that these measures have not been sufficient to provide adequate financial security for communities in deprived areas. This is illustrated in the quote below which refers to people working in the care sector, some of whom would not receive sick pay if they needed to self-isolate:

> *"So, these are not people that can afford to lose two weeks' worth of pay and the £500 COVID-19 support grant was not even a sticking plaster, I think. And I think that influences not only people's whether or not people go to work if they're feeling slightly*

*off…it influences whether people get tested in the first place. Because people aren't daft, …if they know that they can't afford to feed their kids if they get tested positive, they're not going to get tested. " (*P13, PH)

Changes during the course of the pandemic

This paragraph sums up the changes in relation to barriers during the course of the pandemic. As previously highlighted, the LA role in preventing workplace transmission changed through the pandemic but largely focused on communication, data management and enforcement. Some of the key facilitators also acted as barriers. There were many examples of where government guidance could be improved in clarity and speed, and there was evidence that the guidance caused significant confusion, especially as it changed with restrictions lifting later in the pandemic. National efforts at contact tracing were considered unsuccessful and contact tracing became more beneficial as it was adopted locally. Access to data changed and improved through the pandemic and LAs developed a range of strategies to collect and share data at a local level as the pandemic progressed. Changing attitudes contributed to difficulties managing workplaces as over time employers and employees developed annoyance with and apathy towards compliance. At the time of data collection, many participants reported that no testing or contact tracing was taking place in most workplaces.

Current situation

For most participants, the current situation in relation to the pandemic at the time of data collection was 'business as usual' with no testing or tracing taking place. Some participants suggested a greater number of people work from home or hybrid than before the pandemic. One participant reported continuing with ventilation audits. Multiple participants reported that work was ongoing with care homes and schools:

"I would say we're not really doing any COVID work now. We're not expected to, the levers that we had to be able to do that have gone now." (P2, PH)

Most participants, however, expressed a lack of any plans for the future in relation to COVID-19. Several participants suggested that future policies were focused and reliant on vaccination as the main strategy for transmission prevention. Other participants suggested this reliance on vaccines meant that other infection control measures might not be maintained. Other participants again highlighted differences in vaccination rates among certain groups which would increase health inequalities if vaccines were the only COVID-19 mitigation measure. Other participants reported that vaccination rates were declining:

*"I'm not sure of the figures, but I suspect the uptake of the latest booster isn't up there as in previous numbers as well. I speak to a lot of people and a lot of people are telling me they're not having the booster. I think there's a bit of resistance now in terms of the stories, oh I've had my booster and I was really, really ill, and all that sort of stuff. And this notion that well, I've had the booster, but I still got it, so what's the point." (*P16, EH)

Future COVID-19 Challenges

One participant suggested that there was broader learning and future work around partnerships to prevent infection transmission.

"I think that role with Public Health certainly developed really, really well, and we've continued to foster that very close working relationship going forward. You know, particularly around just ongoing infection control and hygiene issues. Not necessarily

now relating to COVID-19, but just thinking about managing those sort of issues across our workforce going forwards has been really, really valuable... but it's like a key… You know, one of the things we've done, there's been set up now a further health protection and infection control board, a resilience board that's been set up, that we now have input to and work very closely with them on to have a look at how we can manage those risks going forwards." (P5, EH)

Several participants suggested that future challenges to COVID-19 related to broader challenges around health inequalities and existing problems in the health structure, combined with challenges in responding to people who were experiencing Long COVID:

"The other thing that we haven't invested in in this country, and we didn't have enough of previously were therapy and rehab services. So, now we've got a whole load of more people needing rehab, but we don't have anything like the services that we need." (P1, PH)

Whilst one participant suggested that the public would understand if lockdown had to be reintroduced, as they were now more familiar with restrictions being in place, several others suggested that public fatigue around complying with measures over time would present problems if they had to be reintroduced in the future:

"I think is if we were to end up in a really difficult situation, again similar to COVID-19, I think we'd have a different challenge on our hands in terms of trying to get the compliance around some of this, and the trust. ... And as I say I do feel with education, with the schools, I think there was a lot of collateral damage …I think it just went a bit too far. I think for a lot of the time last year where we had the scenario where you could have the pub down the road full at lunchtime of people potentially who had COVID-19, yet the school here had half the kids at home because we'd have to close the bubbles and send loads of kids home." (P10, PH)

Several participants referred to the cost-of-living crisis, suggesting that it could cause people to go into work even if ill which could lead to infection transmission. Another participant highlighted that current issues with rising costs would impact the ability to continue good practice measures such as enhanced cleaning.

Non COVID-19 Challenges and priorities

Several participants referred to the current non-COVID-19 challenges and priorities. These included the cost of living and energy crises, austerity, and the war in Ukraine. They also included the backlog in health service demand, dealing with other illnesses such as monkeypox, and addressing the impacts of COVID-19 lockdowns and other restrictions on the education system. Other priorities also included supporting employers to comply with EH legislation that could not prioritised at the height of the pandemic:

"I think we're back to our main challenges, from a Public Health perspective, which are things like housing and employment and poverty and cost of living and all those kind of things. So, you know, and infectious diseases-wise, actually we're dealing with Scarlet Fever and invasive Group A Strep infections, and Monkey Pox and stuff like that. So, COVID just kind of sits alongside those other infectious diseases really, but probably more like, it's more akin to how we manage flu now." (P2, PH)

New partnerships

One of the most significant and positive change reported by participant was the new partnerships and ways of working which were developed as a result of dealing with COVID-19 that were maintained after for other good practice.

> *"I think what's been good is that we built relationships with key people really, so we know that if we've got any future situations, not just COVID-19 but other things, that we've got those relationships in place, we can get in contact people, we can come together quickly, and we can just get on with whatever we're faced. So, I think that's a real benefit from the COVID work forced people to work together in a way, we had to come together, but we have built good partnerships and built good relationships that we can build on, continue to build on." (*P7, PH)

Participants expressed that these new partnerships could now be focussed on issues beyond COVID-19, such as tackling other health issues:

> *"So, we still have that relationship and we've expanded it beyond COVID, and now we've got this, kind of, like almost personal relationship where you see people, oh we haven't met in person, but it was awesome the way that we really worked together during the pandemic."* (P12, PH)

Recommendations for future research

Stakeholder participants were invited to consider the future research they would like to see, or where they thought there were gaps in current research. Responses included:

- Focused work with schools and care homes as these workplaces presented the biggest challenges
- Investigate the best ways to ensure that roles and responsibilities of local and national organisations in managing transmission are clearly defined, including the role of each organisation in contact tracing
- Research on the effectiveness of mitigations to control COVID-19 transmission
- More advice for the health and safety sector on effectiveness of ventilation systems
- Further information on how to influence and improve behavioural aspects of compliance
- Expert guidance in terms of best practice case studies from managing a pandemic, including partnership working
- Research on enforcement and outcomes of legal challenges
- Further research on infection control
- Research to improving our understanding of population immunity for COVID-19
- Research on how the virus works and ability to morph, risk of new pandemics
- Further research on how many vaccines people are likely to need, how long protection lasts for following the vaccine and information on differences in vaccine uptake between geographical areas and groups of people
- Research on if impacts of ongoing control measures to prevent COVID-19 transmission on sickness absence rates for other infectious diseases.

4. Discussion

The study found that socio-demographic and other contextual factors would impact workplace transmission but that there were also a wide range of other non-contextual facilitators and barriers to preventing workplace transmission. These lessons are vital in the context of now 'Living with COVID' and answering the research question How will 'Living with COVID' affect transmission risk, response, and resilience in workplace settings?

Risk

Our study identified different levels of risks for different people and in different types of workplaces. As identified in the literature review (Marmot et al 2021a), it is widely accepted that socio-demographic factors impact the transmission of COVID-19, and this is supported by data from our study, in particular in relation to workplace transmission.

Interview participants highlighted the impact of socio-demographic factors on wider COVID-19 prevalence rates. This included the impact of low pay and employment conditions such as insecure contracts and lack of sick pay, as well as wider issues such as the impact of living in overcrowded accommodation. People who experienced long-term health conditions, which participants again linked with deprivation, were more vulnerable to impacts from COVID-19 and were more likely to suffer from Long COVID.

Interview participants also reported differences in vaccination rates. They highlighted that residents working in certain occupations (e.g., manual workers) and particularly people from certain age groups (e.g., younger people) and people from minority ethnic groups working in these occupations were less likely to be vaccinated. In the employee survey, employees with a higher level of qualification were more likely to have had at least two vaccinations plus one or more boosters. This aligns with the findings of previous research. The OpenSAFELY project (The OpenSAFELY Collaborative et al., 2021), for example, found that there were differences in vaccination by ethnicity and across rankings of deprivation. The authors concluded that reasons for variation in vaccination coverage were complex. However, in the employer survey, those with a lower income were more likely to have had these vaccinations – this unexpected result requires further investigation. It is possible that it reflects positive outcomes of all the work that has gone into supporting specific communities with vaccines.

Qualitative data suggested that people who did not receive sick pay, who were on zero-hours contracts, were in low-income jobs, had precarious employment terms, or were self-employed but did not qualify for support grants, found it more difficult to take time off work in order to self-isolate, which may have also made them more reluctant to take a COVID-19 test. The extent of this problem is suggested by the findings of the employee survey which showed that almost 6% of those employees surveyed had gone into work despite being asked to isolate. It should be noted that this and the other employee survey findings reported should be treated with caution, as the survey was not representative, with 70% of the respondents working in the education sector.

Participants also highlighted the intersection of other factors, including ethnicity and age, with factors such as employment on wider prevalence rates. For example, several participants said that people from certain ethnic minority groups might be more likely to be in frontline jobs where they were unable to work from home –people working as taxi drivers were suggested an example of this. In the surveys, there were too few respondents from ethnic minority backgrounds to explore this further.

The findings above align with the findings of previous research, including the findings of previous PROTECT projects including the 'enduring prevalence' project (Lewis et al, 2022) which also reported that people who did not receive sick pay, or were on more precarious employment contracts were less likely to be able to isolate when needed. The authors also highlighted the convergence of structural factors such as deprivation with demographic factors such as age and ethnicity on wider COVID-19 prevalence rates. These findings also

align with wider research findings. In an exploration of exposure to COVID-19 within residential neighbourhoods, for example, Harris and Brunsdon (2022) found that Pakistani, Bangladeshi and Indian groups were disproportionately exposed to the COVID-19 virus in later waves of the pandemic which is likely to reflect the nature of employment of these groups who were more likely to work in public facing roles thereby increasing their risk of exposure.

In the interviews, participants highlighted that residents in low paid jobs who did not receive sick pay often also lived in more deprived areas, which aligns with the findings of previous research, e.g., Daras et al. (2021).

Response

Both qualitative and quantitative data outlined the extent to which a range of measures were introduced, such as improved hygiene (hand washing facilities etc.), physical and social distancing, training, and workplace ventilation.

Qualitative data explored a wide range of responses to reduce COVID-19 prevalence rates and prevent outbreaks. Within local authority roles this included helping employers to understand national guidance, as well as providing support with testing, contact tracing and vaccination. This fits with the literature reviewed, for example the Living with COVID-19 Resilience Plan (GMCA, 2020) suggested:

> *' [O]ne of the really positive takeaways from the Greater Manchester response to the pandemic has been understanding the need and value of locally driven, community-based support, interventions, and responses.'* (GMCA 2020 p.3)

Interview participants identified a number of facilitators to reducing COVID-19 prevalence. These included good communication, funding, and timely access to data, along with partnership working. They also discussed a number of barriers to reducing prevalence, which included confusing/contradictory national guidance which changed frequently and at short notice. Other barriers included delayed access to data and issues with data sharing. Participants also highlighted inequalities and deprivation levels as a barrier, as local level interventions to reduce transmission rates were limited by structural, systematic inequalities which were difficult to resolve with local level resources in the short term. Commuting was also highlighted in the interviews as an issue that was potentially more difficult to control. One in five (20.6%) within the employee survey population usually travel into work with others, either on public transport, or in a shared car or van. Other barriers to reducing prevalence identified in the employers' survey included space constraints, cost, and type of work.

Partnerships were a key facilitator reported by interview participants who benefitted from internal and external partnerships including those with statutory, community and health organisations. Participants discussed partnership working at the local, GM and national levels. PH participants discussed working closely with EH colleagues, as well as a wide range of other stakeholders including local GM police and clinical care groups (CCGs). Participants also worked closely with local communities, including with community and voluntary organisations and faith leaders. Participants also discussed partnership working with employers to reduce transmission as well as employers working together to discuss strategies to reduce transmission. By contrast, the employer survey suggested that more attention needs to be given to partnerships with workplaces. Of the 19 workplaces reporting outbreaks, there were only two responses to the question "*Which internal and external partners and organisations did you liaise with to control the outbreak?"*

These findings align with previous literature, which suggests that partnerships are key to future success in managing COVID-19 transmission risk, as well as improving population health more generally. The *GM Strategy*, 'Our People Our Place' (Marmot, 2021a) continues to emphasise the importance of partnerships between civic leaders, businesses, and the wider community.

Resilience

The Government report 'Living with COVID' (UK Government, 2022) suggests that the future path of the virus is currently uncertain. The report states further waves may occur before the virus becomes more predictable and emphasises the importance of future planning in order to maintain resilience in order to be prepared for possible resurgences of the virus or the emergence of potential future variants. Although the surveys and interviews suggested that many of the mechanisms that participants had previously had available to control transmission were no longer in place, participants also discussed partnerships that had been established during the course of the pandemic, that were in place ready to address future pandemics if needed.

Interview participants discussed changes over the course of the pandemic. At the time of data collection between August and November 2022, following the publication of 'Living with COVID' (UK Government, 2022) interview participants reported that testing and measurement had largely stopped. This also aligns with the findings of the employee and employer surveys, which showed that most mitigations that had been implemented during the course of the pandemic had greatly reduced by the time of data collection between August and October 2022.

The importance of ventilation in workplaces to reduce transmission risk has been highlighted in the literature (UK Government, 2022; Addam et al, 2022) and was acknowledged in the interviews as becoming more widely recognised as an important mitigation measure. However, the surveys showed that ventilation needs more focus, as ventilation measures reported by the survey population during the pandemic were not very widespread and have reduced greatly since, with only 9.2% employees and 15.2% of employers reporting that their workplaces currently provide better ventilation.

Some mitigation measures had been reduced more than others, with hygiene measures amongst those more likely to remain. A number of interview participants highlighted that a group of COVID-19 leads still attended a regular meeting to discuss COVID-19 planning for winter 2022 into 2023. This meeting had previously been focussed only on COVID-19, but its remit had now widened to include other health issues. Interview participants also suggested that a small number of mitigations were continuing, such as employees continuing to work from home. This aligns with the findings of the employee survey, which showed that there are more opportunities for home working currently compared to before the pandemic. For example, for 18.3% of employers in the survey population, although there had been no home working at all prior to the pandemic, this had been allowed during the pandemic and has continued currently. Several interview participants, however, suggested that the COVID-19 vaccine was the only mitigating measure that was still in place, with several suggesting that there was an 'over reliance' on the vaccine as a way of controlling transmission rates.

There were some differences between sectors with regards to the above, with interview participants reporting that mitigations were continuing in sectors such as the health sector, including in care homes, at the time of data collection. The survey results were inconclusive on this, with the health sector no more likely than some of the other sectors to maintain mitigation measures, including hygiene measures. Recent research has suggested that long term mitigation measures in some workplaces may be warranted, especially in the education sector, where workers have persistently higher risks (Rhodes et al, 2022).

Within this survey, fewer than one in five employees were very concerned about COVID-19. This compares to 50% or more during the height of the pandemic. This parallels with data from the GM Residents survey (GMCA & BMG 2022). During both periods, our survey showed that family members were of most concern. Overall, temporary part-time employees seemed to have the least COVID concerns currently, as did those working in micro sized organisations. Females in the survey were more concerned than males. Although some

concerns have decreased, others remain high, with many employees still thinking it very likely to get infected with COVID-19 at work or indoor gatherings. Compared to employees, the employers were much less concerned about infection in the workplace currently (17.4% of the employees surveyed and 4.3% of employers had such concerns). As with this and other issues, employees and employers were mostly aligned, e.g., agreeing that concerns had reduced, but with employees having a generally less favourable outlook compared to employers. In two other examples, both agreed that face mask use and ventilation measures in the workplace had reduced, but employees felt they had decreased to a greater extent.

There is still some uncertainty over sick pay when isolating, with more employees in the survey population currently unsure about access (26.2%) compared to during the pandemic (16.5%) (employees survey). Along with qualitative data from interviewees, which emphasised the importance of adequate financial support for self-isolation, our report findings have demonstrated the need for sufficient funding in the case of managing future outbreaks and ensuring compliance.

Levels of job stress appear to have remained higher than before the pandemic, with 46.4% of employees surveyed currently finding their job very or extremely stressful. Strategies to minimise stress and enhance individual resilience in the workforce should be an important consideration in managing future outbreaks (Park and Jung, 2021).

Future challenges highlighted in the interviews included responding to people who were experiencing Long COVID. The employee survey revealed that levels of Long COVID were high, with almost 1 in 4 (23%) of those surveyed describing themselves as having the condition. The GM residents' survey also revealed high Long COVID levels, with around four in ten respondents who have had COVID-19 (40%) reporting they are still experiencing impacts as a direct result (GMCA, 2022). National figures (ONS, 2022) suggest that in November 2022, around 3.4% of the population as a whole were experiencing self-reported Long COVID.

The findings of the employer and employee surveys, along with the interviews, suggest that many workplaces have reverted to 'business as usual' and there is a risk of apathy towards some mitigation measures. For example, around two thirds of the employee survey population (65.5%) rarely or never wear a face covering outside work. The two surveys also showed that there is currently much less encouragement of wearing face masks in the workplace – hardly any according to the employees' survey respondents (3.8%). The GM Residents survey (GMCA, 2022) similarly reported that the proportion of respondents saying they wear face coverings in any situation has significantly decreased since April 2022 to around one in four.

As discussed, most interview participants reported that the current situation in relation to the pandemic was 'business as normal' with no testing or tracing taking place. Other than vaccination, interview participants expressed a lack of any plans for the future in relation to COVID-19.

In addition, interview participants reported that local authorities were now focussing on other issues, now that COVID-19 was less all-consuming. These included the cost-of-living crisis and war in Ukraine, as well as other illnesses such as monkey pox, and increasing vaccination rates for other illnesses. Interview participants highlighted, however, that the partnerships that they had formed during the pandemic could be focussed on these other health issues and were in place ready to address future pandemics.

Framework of risk, response, and resilience for 'Living with COVID'

The following table summarises the key factors emergent from this work by their relation to the above criteria:

Area	Theme	Facilitating factors	Barriers	Lessons
Risk	Socio demographic / health inequalities	Partnerships with community groups	Precarious work Inability to work from home Low vaccination rates Lack of trust Clustering of risk factors (e.g., lack of sick pay, inability to work from home, overcrowded accommodation)	Targeted work on health inequalities Partnerships
	Schools & Care homes	Partnerships Communication Local data	Structural barriers to implementing mitigations	Targeted work on risks Partnerships Data
Response	Communication	Clarity Speed Interpretation	Confusing or contradictory guidance. Too many changes Saturation	Targeted, clear communication
	Data	Timely access to data Data sharing.	Delayed access to data Lack of data sharing.	Partnership working
	Funding	Funding for specialist roles Funding for isolation	National payments insufficient Lack of continuation funding	Importance of targeted fast funding and continuation
	Partnerships	Within & across LAs Health partners Community partners Local businesses		Importance and benefits of partnership and collaborative working, with improved focus on workplaces/businesses.
Resilience	Planning	Plans based on previous experiences	Lack of current planning Alternative pressures	Update contingency plans
	Commitment	Data and communication support understanding of risk	Apathy/reduction in mitigation measures Back to normal Low perception of risk Job stress Uncertainty (e.g., over sick pay for self-isolating)	Encourage awareness of the continued importance of measures such as ventilation Future measures may be difficult to implement in near future

Figure 15: Framework of risk, response, and resilience

Limitations of the research

70% of the employee survey respondents were working in education, which may have skewed the findings and meant that the survey was not representative. Most employee survey respondents had a degree or higher qualification, which excluded the views of a large segment of the working population. This is likely to be explained by the differences in co-operation from different unions in recruiting respondents, with the teaching unions being the most helpful. It could also be due to data collection methods, as the survey was online and potentially the assumed level of literacy required may have deterred people without a high qualification to complete the survey. In addition, few of the employee survey respondents were from minority ethnic backgrounds, and a larger proportion of the respondents were women. Very few of the survey respondents were on precarious contracts.

The employee and employer surveys, along with the interviews, included questions about different time points throughout the pandemic. However, the surveys and interviews were only conducted on one occasion and therefore they provide a 'snapshot' of respondents' experiences at the time of data collection in Autumn 2022. If the surveys and interviews had been conducted at a different time point, responses might have been different.

5. Conclusion

The report reflected some of the key issues faced by the GM region in managing workplace transmission during the COVID-19 pandemic and in particular on changes experienced and the future of 'Living with COVID'.

Some key issues have arisen from this research which align with national work such as the inequitable impact of the pandemic on those in lower socio demographic groups and people who are already experiencing health inequalities. The current research demonstrated the way this primarily impacted on workplace transmission through precarious working roles and different types of industries. The challenges identified by interview participants around controlling transmission in schools, care homes, food processing and call centres in particular draws attention to the need for careful planning for these areas. As a result, there is evidence of existing work continuing in these sectors to ensure ongoing commitment to infection prevention.

This work has highlighted the risks of poor communication or guidance and a lack of joined up thinking or slow access to data. Our study demonstrated the benefits of good quality local data facilitated by excellent local partnerships and a sense of community and collaborative working. There were many examples of success in these areas.

Most participants reported that they no longer had access to many of the levers that they had used previously to control transmission, such as access to testing, timely infection data. It is therefore vital to draw on lessons learned through the pandemic to ensure preparedness for any future events.

6. Recommendations

As a result of the above work, we can make the following recommendations for maintaining resilience in 'Living with COVID' into 2023 and beyond.

Recommendations for national government and local authority teams:

- Further funding for areas of development, including continued funding for PH and EH teams to enable them to continue to work in partnership to support employers
- Provision of financial support to enable people to self-isolate when needed
- Continued work to support specific risk sectors, including the food manufacturing sector as well as schools and care homes, to manage COVID-19 transmission
- Continued emphasis on good quality communication and the role of the local authority as a conduit between good practice and workplaces
- Continued work to address health inequalities, including working with employers and national government to address factors that influence COVID-19 transmission such as lack of sick pay
- Building on and sharing examples of good practice to control COVID-19 transmission within and between local authority areas
- Continued partnership working at local authority, regional and national levels, and with partners including health, police, local communities, and workplaces (large and small) to manage COVID-19 transmission
- Continued development of inter-organisational strategies to manage COVID-19 transmission, specifically including:
    - strategies to minimise stress and enhance resilience in the workplace to prepare for future outbreaks
    - encouragement of improved workplace ventilation and other mitigation measures
    - support for those with Long COVID

Recommendations for future research:

As discussed in Section 3, interview participants were invited to consider the future research they would like to see, or where they thought there were gaps in current research. Responses included:

- Focused work with schools and care homes as these workplaces presented the biggest challenges
- Investigate the best ways to ensure that roles and responsibilities of local and national organisations in managing transmission are clearly defined, including the role of each organisation in contact tracing
- Research on the effectiveness of mitigations to control COVID-19 transmission
- More advice for the health and safety sector on effectiveness of ventilation systems
- Further information on how to influence and improve behavioural aspects of compliance
- Expert guidance in terms of best practice case studies from managing a pandemic, including partnership working
- Research on enforcement and outcomes of legal challenges
- Further research on infection control
- Research to improving our understanding of population immunity for COVID-19
- Research on how the virus works and ability to morph, risk of new pandemics
- Further research on how many vaccines people are likely to need, how long protection lasts for following the vaccine and information on differences in vaccine uptake between geographical areas and groups of people
- Research on if impacts of ongoing control measures to prevent COVID-19 transmission on sickness absence rates for other infectious diseases.

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Appendices

Appendix A – Literature Review - Supporting material

The review was undertaken in October-December 2022 and was undertaken worked in parallel with the concurrent data collection and analysis. An integrative thematic approach was designed and undertaken, and the design included both academic material and public facing grey material. Inclusion criteria were publications between 2020-2022. The search looked for literature related to Manchester or the North and a range of keywords including the following:

living with COVID-19	COVID-19 business and employers	levelling up and COVID-19
COVID-19 still here	health (and) wellbeing	keeping workplaces safe (risk)
COVID-19 (and) workplace	economy (work) after COVID-19	COVID-19 affects/Long COVID
impact of COVID-19	prevention and support plans	COVID-19 guidance
'build back fairer'	evaluation of COVID-19	behaviour change
after COVID-19	workforce response to COVID-19	health inequalities

From an initial search result of 48 papers, a total of 30 papers were selected for inclusion in the review.

A1. Local Literature Review Summary

QUALITATIVE LOCAL LITERATURE REVIEW: GM CASE STUDY 'Living with COVID'

INTEGRATIVE APPROACH THEMATIC TABLE

KEY: TYPES: GREY LITERATURE, ACADEMIC PAPERS, BOOKS/CHAPTERS, MIXED METHODOLOGY

YEARS: PRE 2020: A; 2020: B; 2020-2021: C; 2021: D; 2021-2022: E; 2022 F: 2022-2023: G

LITERATURE	THE SYSTEM	THE AREA/CONTEXT	SUPPORTING WORKPLACES	CHANGES	BARRIERS
B Manchester City Council, Manchester Local Care Organisation, Manchester Health and Care Commissioning *Manchester's Public Health Annual Report 2020-2021*	Manchester has had more lockdowns than other parts of the country. In fact, we only had 25 days from March 2020 where we weren't under some sort of restrictions (p.4) Our region saw the highest COVID-19 death rate in the UK (p.4)	We saw the biggest drop in life expectancy since World War II. (p.8) 50–60% of admissions to some GM hospitals in the first wave were people on the lowest incomes, compared to 26% nationally. Differences in number of hospital admissions by ethnicity.	The pandemic has thrown into the spotlight the vital role that Public Health services play in keeping our residents safe and well (p.5)		
D Marmot, M., et al, (June 2021) Build Back Fairer in Greater Manchester: Health equity and dignified lives,	Proportionate universalism is an important principle. Funding should be proportionate to the scale of the problem, but universal in reach. (p.8) 2020 Greater Manchester Social Value Framework (p.11)	…socioeconomic inequalities in mortality from COVID-19 are wider than in the rest of England (p.5) …many of the sectors that especially employ young people – sport, leisure, and hospitality –	… anchor institution (p.9) Good working conditions, fair progression, decent pay and security of work are vital to good health (p.10) Build Back Fairer Framework emphasises the power and value of	Understanding the close association between deprivation and mortality rates from all causes of death and COVID-19 is important for understanding how COVID-19 has affected inequalities in mortality in Greater	… heightened awareness of the vital role of key workers and the importance of local assets – clean air, green spaces and the role of the voluntary sector (p.9) …increase in poor mental health among children and young

Institute of Health Equity	Greater Manchester's Marmot Beacon Indicators (p.11) Greater Manchester as a devolved region … still significant limitations in how far the Combined Authority can make decisions that affect health and equity (p.11) The COVID-19 mortality rate between March 2020 and April 2021 in Greater Manchester was 307.1 per 100,000 population for men and 195.2 for women compared with England averages of 233.1 per 100,000 for men and 142.0 for women (p.16) Overall COVID-19 mortality rate was 25% higher than England and Wales average between March 2020 and January 2021. (p.18) *Our People Our Place*, that includes priority 8, safer and stronger communities (p.27) High streets and city centres have been significantly affected by the pandemic, with thousands of jobs lost (p.21) In Greater Manchester…higher rates of low pay than the average for Great Britain in all local authorities except Salford and Trafford (p.40) The North West experienced cuts of approximately £15 per person in public health spending between 2014 and 2021. The five English regions with the highest number of deaths per 100 people involving COVID-19 between march and July 2020 were also the five regions with the higher cuts over this period p.49) …a disproportionate number of people critically ill in intensive care units with COVID-19 were morbidly obese. (p.51)	being most affected by COVID-19 restrictions. (p.8) IHE report of February 2020, *Health Equity in England*: *The Marmot Review 10 years on*, we documented three worrying features of health in England over the decade from 2010, pre-pandemic, a slowdown in improvement in life expectancy that was more marked than in any other rich country except Iceland and the United States, increased Health inequities and decline in life expectancy for the poorest people outside London (p.14). … disproportionately high burden from COVID-19 and consistently higher mortality rates from COVID-19 among Black British people and those of South Asian descent across England compared with other ethnic groups (2). There are also signs of disproportionate social and economic harm on some ethnic minority communities as a result of containment measures. (p.17) … employed rate for 16-25- year-olds has increased more than any other age group (p.37) One third of Black or Black British workers are low paid, compared with 27 percent of Asian workers and 21 percent of White workers (p.40) Temporary workers who lack job protection and thus have high levels of job insecurity were particularly affected throughout 2020 (p.46)	multi-agency and cross-sectoral partnering (p.11) …collaborative working is essential on the social determinants of health… (p.11) The COVID-19 Health Equity Manchester Group, Manchester health and Care Commissioning (p.21) Community hubs (p.23) Greater Manchester Mental Wellbeing Conversation survey (p.27) *Our People Our Place* strategy stresses the importance of partnerships between civic leaders, business, the voluntary, community and social enterprise sector, and local people (p.27) A Bed Every Night (p.32) Housing First (p.32) Let Us ethical lettings (p.32) Better Homes, Better Neighbourhoods, Better Health Tripartite Agreement (p.32), Good Landlord Scheme (p.32), Youth Task Force (p.38), Innovation Greater Manchester (p.43) LEP (p.43), No Child Should Go Hungry Initiative (p.43) Working Well (p.47), Greater Manchester Levy, Matchmaking Service (p.47) Greater Manchester's Economic Vision (p.47) Living Well (p.55), Aging Well (p.55), Mentally Healthy Schools Programme (p.55) Social prescribing schemes have expanded during the pandemic … (p.55) One of the key aims of Greater Manchester's 2019 Local Industry Strategy is to reduce inequalities…The Skills Action plan (p.47)	Manchester and in developing appropriate and effective remedial interventions (p.18) Our analysis for Greater Manchester shows that levels of income, education and skills, type of employment and health are more strongly related to inequalities in COVID-19 mortality (and all-cause mortality) that other factors associated with neighbourhoods and deprivation (crime, housing, living environment). (p.21) The Association of Directors of Public Health, led by the Director of Public Health in Tameside, has stated that public health has three primary goals in the next few years in Greater Manchester: to tackle the health inequalities, the pandemic has exposed and deepened; to develop greater understanding of the impact of the pandemic on the general population; and to learn from the pandemic to improve health protection and resilience against continuing threats and future disease outbreaks (p.49)	people from already concerning levels before the pandemic. (p.8) …vaccine hesitancy decreased at the start of 2021among Black/Black British adults from 44% (13 January to 7 February 2021) to 22% (17 February to 14 March 2021) and rose again to 30% (31 March to 25 April 2021). (p.22) Poor-quality and overcrowded housing is harmful to health (p.29) In 2019 the bus network in Greater Manchester had declined to three-quarters of what it was in 2010 (p. 30) ..in 2014, people in the 25 percent richest areas enjoyed nearly three times as much green space per head as the 25 percent most deprived areas (p.30) ..in January 2021 around one-fifth of those surveyed were working fewer hours than November 2020, that there had been increasing redundancies and the use of food banks was higher. (p.41) Prior to the pandemic, in 2014/15 65 percent of adults and 28 percent of children in Greater Manchester were classified as overweight or obese (p.50)

F Greater Manchester Combined Authority & BMG (2022) *Greater Manchester Residents' Survey*, survey 3 carried out 1st-21st September	Around a quarter of respondents (22%) are still extremely or very worried about COVID-19 and its impacts. This is a decrease from the previous survey (30%), which took place as the last remaining national restrictions were being lifted (April 2022). (p.8) After remaining steady at under three in ten from December '21 to April '22, the proportion of respondents who say they are extremely or very worried about COVID-19 and its impacts has decreased to under a quarter (23%) (p.12) …if central government is careless, or worse, about health inequalities, action has to come from somewhere. As we documented, the actions of central government in England after 2010 were a likely contributor to stalling of life expectancy increase and of worsening health inequalities. (p.4)	… term 'from within racially minoritised' to refer to people and communities experiencing racial inequality. The term recognises that individuals have been minoritised through social processes (p.6) *Living Safely and Fairly with COVID-19* (p.7) LONG COVID: Around four in ten respondents who have had coronavirus (40%) say they are still experiencing impacts as a direct result. The most common of these are enduring physical health impacts (experienced by over a quarter, 28%); more than 1 in 10 say they are still experiencing direct mental health (16%) and/or financial (12%) impacts (p.8) 39% of those who have had COVID-19 are experiencing some lasting impacts. Of these, over two thirds (71%) are experiencing physical symptoms, and two fifths (40%) mental health or wellbeing impacts (p.17) OVER A THIRD EXPERIENCE DIGITAL EXCLUSION – 36% of respondents noted that their household experienced some form of digital exclusion. This is in comparison to around 28% in Spring 2022. (p.51) If respondents are experiencing digital exclusions, they are most likely to say that their household is digitally excluded due to a lack of skills or support to allow them to access digital online service (p.57)	Almost a quarter of respondents would like to hear about the support available for using loyalty cards to qualify for discounts and deals (24%) and buying in-season food (23%). A fifth want support with meal plans, shopping at cheaper stores or joining a community cooking club (20%) (p.48)	COVID-19-SAFE BEHAVIOURS: There have been declines in all the behaviours which are advised to stop the spread of the virus. Respondents still wearing face coverings have declined by half to around 1 in 4 (25% in crowded spaces, 26% on public transport). But more than three quarters still say they regularly wash or sanitise their hands (80%), or stay away from work if they feel unwell (78%) (p.8) COVID-19-SAFE BEHAVIOURS: There have been declines in all the behaviours which are advised to stop the spread of the virus. Respondents still wearing face coverings have declined by half to around 1 in 4 (25% in crowded spaces, 26% on public transport). But more than three quarters still say they regularly wash or sanitise their hands (80%) or stay away from work if they feel unwell (78%). (p.8) Over half of respondents said it was very likely that they would get a COVID-19 booster and a flu vaccine if offered one this winter. The most common reasons for not getting a COVID-19 vaccine are not wanting the vaccine side effects, and not trusting the motivations behind them (p.9) The proportion of respondents saying they wear face coverings in any situation has significantly decreased since April. However, staying at home if you feel unwell has increased over the same period (p.17)	During 2022 there have been many worldwide and national events which could impact on the attitudes and feelings of respondents. The global pandemic, the Russia-Ukraine war and Brexit are just three significant events (p.6)

D Marmot, M., (2021) *'Building back fairer in Greater Manchester and the country'*, Royal Society Publishing	The life-expectancy drop in England in 2020 was 1.2 years in men and 0.9 in women – shocking, but not as high as in the NW. COVID-19 mortality rates were high in England; 25% higher in the NW. Inequalities in mortality are high in England, bigger in the NW (p.1)	…it is not lack of healthcare that leads to people getting sick in the first place; it is the social determinants of health. (p.3)		The opening line of my book, The Health Gap, asked: why treat people and send them back to the conditions that made them sick? (p.2) The six spokes (of the Build Back Fairer Framework) are crucial steps to take in achieving progress on these dimensions: build back fairer for future generations; build back fairer resources; build back fairer standards (covering quality of employment, environment and housing, transport and clean air); build back fairer institutions (anchor institutions are a good example—considering the wider community and environmental impacts of hospitals and industry); build back fairer monitoring and accountability; build back fairer through greater local power and control.	…in the least deprived 20% of areas, spending per person went down by 16%; in the most deprived quintile, by 32%. In our 2010 Marmot Review, we coined the phrase proportionate universalism (p.3) …it is important to ask if there is a link between England's poor state of health pre-pandemic and poor handling of the pandemic. My speculation is that the link could work at four levels: quality of governance and political culture; the level of social and economic inequalities; disinvestment in public services and poor health status in England pre-pandemic that would increase risk during the pandemic. (p.4)
D Greater Manchester Employment and Skills Advisory Panel (2021) *Local Skills Report and Labour market Plan*	*Our People, Our Place – the Greater Manchester Strategy* (GMS) (p.4) Local Industrial Strategy (p.4) There are 36 SAPs (Skills Advisory Panels) across England as part of Mayoral Combined Authorities and Local Enterprise Partnerships (p.7) (GM) …over 124,000 businesses and a diverse economy (p.8) …formation of the Combined Authority, election of a Mayor, and six devolution deals signed, the city-region now has a unique set of functions, powers and levers across multiple policy areas (p.8) The 16-64 economic inactivity rate in GM was 23.7%, compared with 20.8% nationally, in September 2020 (p.16)	The complex barriers faced by some of our residents around learning and/or work remain and must be addressed with flexible, personalised support around core skills and employability linked to jobs and progression. (p.5) 1 in 10 of GM's working age residents has no qualifications (p.13) GM has 9.4% of its population without any qualifications compared with 7.4% nationally. (p.17) A quarter of residents are paid below the minimum wage (p.13) Just over a fifth of the neighbourhoods in GM fall into the bottom 10% of most deprived neighbourhoods nationally in respect of employment and income. Meanwhile, in terms of	Greater Manchester Employment and Skills Advisory Panel (ESAP) (p.4) Greater Manchester Combined Authority (GMCA) (p.4) Greater Manchester's Independent Prosperity Review and Local Industrial Strategy (p.8) Prosperity Review recommended taking an integrated approach, as is already being applied in Greater Manchester's health and social care system, to create a single education, skills, and work system for the city-region. (p.9) Kickstart, Restart, Job Entry Targeted Support (JETS) (p.23) Manchester Apprenticeships and Careers Service (GMAC) (p.25) GM has pivoted locally commissioned provision to support	…challenges around tackling low pay and in-work progression pathways, particularly within the foundational sectors of our economy, have been brought to the fore by the vital role played by key workers in sectors such as social care, retail/logistics and the public services (p.5) January 2021, DfE published its White Paper "Skills for Jobs: Lifelong Learning for Opportunity and Growth," which set out a number of reforms aimed at putting employers more firmly at the heart of the skills system (p.7) With both COVID-19 recovery and the underlying skills and labour market challenges in mind, individual resilience and	devolved Adult Education Budge (p.8) Poor health is a barrier to entering and progressing in work (p.13) GM's labour market has struggled through the pandemic. Unemployment (whether understood through the claimant count or through the Labour Force Survey/Annual Population Survey) has risen, affecting 72,000 people (to 5.1% in September 2020 compared with 4.9% nationally) – and is likely to rise further. (p.16) The increase in employment share has been highest in Health and Social Work (1.9 percentage points) and in Administrative and Support Services (1.5 percentage points) (p.19)

	GM is a large, broad-based and diverse city region without a particular dependence on any single sector or occupational group for its economic well-being. Its sectoral and occupational location quotients (LQs) are modest, with no particular reliance or disproportionate number of particular occupations or industries in our job market relative to other sectors or to national norms (p.16) GM's local industrial strategy (LIS) segmented the economy into 'frontier LIS sectors' and 'foundational economy' sectors. The former are those industries seen as fundamental to future economic well-being. They are health innovation, advanced materials and manufacturing, digital, creative and media, and 'clean growth'. The latter comprise sectors with significant employment volumes but not necessarily productivity-transformative potential. They include retail, social care, and hospitality & tourism. (p.17)	skills deprivation, 13% of Greater Manchester neighbourhoods fall into the bottom 10%, although this masks significant variation between districts (in Oldham, for example, 30% of neighbourhoods are amongst the most deprived on skills). (p.15) …the pandemic has had a devastating impact on many young people. (p.28) the large volumes of low paid, low skilled work in the Greater Manchester labour market had not improved between the MIER in 2009 and the GMIPR in 2019 (p.30) (for young people) …the cumulative impact of the pandemic and of pre-existing inequalities and barriers. (p.41) …a clear focus on the need to support those employers and individuals directly impacted by the labour market effects of the pandemic, minimising displacement of those already facing inequalities, and using this as an opportunity to focus on building a fairer, greener and more resilient labour market in the future (p.48)	the pandemic response/recovery. (p.49)	agility in the labour market will be more important than ever, built on foundations of core transferrable skills and personalised employment support, and further developed through targeted skills, careers and employment provision. (p.25) GM developed a Young Person's Guarantee as a commitment to improving the lives and experiences of young people and young adults by addressing wider needs and barriers to success, harnessing existing best practice, and bringing coherence to a busy and complex space. It was in direct response to COVID-19 and was a short intervention to drive up a series of commitments to address the concerns young people said they had (p.28) Over the past year ESAP has worked hard to strike a balance between responding to the evolving needs arising from the pandemic and maintaining the necessary focus on the existing priorities (p.39) …it is likely that the pandemic will accelerate trends that were already emerging, such as people holding varied portfolios of jobs through their working lives, more agile employment, and the advent/expansion of artificial intelligence and new technologies. (p.69)	…employer commitment to training, and commitment to investing in training, appears to be lower than it was a decade or longer ago (p.19) …our continuing drive to tackle existing labour market inequalities – brought into sharper focus by the pandemic but a long-standing challenge for the city-region – as well as other factors such as the emerging implications of the end of the transition period for the UK's departure from the European Union. (p.23) adults who need to retrain and/or upskill – including those whose skills and employment have been impacted by redundancy or furlough during the pandemic (p.32) GM has below national average economic activity rates for over-50s, a situation likely to be worsened by the pandemic, as there is very real concern that older workers who lose their jobs are more likely than younger workers to experience long-term unemployment and, in effect, slide into unplanned/involuntary early retirement (p.34)
F Lord, S., (March 2022), *Greater Manchester Nigh-time Economy*				We will work with employers to mitigate the pressures of working through the night, from staff safety and reduced transport options to poor	Greater Manchester's 24-hour health and social care, and manufacturing and logistics sectors are more widely spread across Greater Manchester. The night time economy has been

Blueprint, Andy Burnham Mayor of Greater Manchester				physical and mental health. (p.6) …that workers are supported to have good healthy jobs, with positive health and wellbeing (p.18)	more resilient to the recession than the rest of the economy (p.7)
B Director of Public Health, (July 2020) *Manchester Health and Wellbeing Board Report for Resolution*		Consider and act on the emerging evidence that the effects of COVID-19 have traced patterns of inequality, such that the negative impacts of the pandemic have been disproportionately felt across our diverse communities, both from a health perspective and in terms of our public service response (p.3)	*Greater Manchester Resilience Forum Pandemic Strategic Response Plan* (p.3) A number of workstreams / sub-groups have been established to respond to the various phases of the pandemic (p.5)		
D Chair (Ruth Bromley) of MHCC, *Report for Resolution*, 1 September 2021	The COVID-19 pandemic has led to unprecedented change in the way General Practice works. (p.10) …primary care quality, recovery and resilience scheme (PCQRRS) (p.10) The Population Health Recovery framework (p.12)	…addressing the disproportionate impact that COVID-19 has had on some population groups, as well as addressing the long-term health inequalities that would have widened as a result of the pandemic. (p.1) COVID-19 has had a disproportionate impact on some communities and patients, particularly Black and Asian communities, disabled people and inclusion health groups such as refugees, asylum seekers and homeless people. (p.10)	Throughout the pandemic, the Trust has embedded robust incident management, planning and delivery governance structures, led by the Group Directors and supported by the Hospitals and Managed Clinical Services Chief Executives and their teams. (p.4)	COVID-19 has had a much broader impact on the health and wellbeing on the people of Manchester. Some is evident now; some we can anticipate in the future; and some may yet emerge. The development of a strategic recovery framework captures the breadth of the health and social care system's response within the recovery phase. (p.11) Services based in communities often take opportunities to address the root causes of ill health e.g., employment and social connectedness. (p.12)	MFT (Manchester University NHS Foundation Trust) continues to experience operational pressures as a result of the national pandemic that is impacting on delivery of NHS constitutional targets (p.1) …meeting the new needs of our population because of COVID-19. These include physical and mental health impacts. It covers the direct impacts such as Long COVID or impacts on mental health. (p.12)

B Greater Manchester Combined Authority (September 2020) *Living with COVID Resilience Plan*	Greater Manchester's overarching principles which were determined early on in our response to the pandemic, and continue to shape and guide the development of our Living with COVID-19 Resilience Plan: Inequalities / poverty; Safe GM / Standards; Co-design, civil society and social infrastructure ; Building a confident city-region; Resilient city-region; Recovery in the context of GMS (opportunities to achieve our aims faster; risks to achieving our aims); Behaviour change (p.1) This recovery and resilience plan focuses on our activity for the next year around three areas: where the impact of COVID-19 has been significant and even devastating; where the impact has caused challenge, and; where the impact has driven innovation and accelerated new approaches (p.4).	The impact has been unequal and unfair, starkly highlighting and deepening the inequalities we know have existed for many years and which we were beginning to change. There is now a substantive body of evidence proving that more deprived areas are experiencing higher mortality rates from COVID-19 than more affluent areas. The impacts are ongoing. Many more people in Greater Manchester are now experiencing unemployment, businesses have closed or reduced staff numbers, with far more redundancies and business closures anticipated. (p.2)	Greater Manchester is now putting in place partnership governance to drive, lead and coordinate equalities activity across the city-region to accelerate the speed of our responses and increase the impact of our activities to respond to evidenced inequalities. (p.2) It (the pandemic) has demonstrated the effectiveness of our partnerships, networks and relationships to quickly put in place responses and systems to support our people and places as the pandemic hit. (p.2). One of the really positive takeaways from the Greater Manchester response to the pandemic has been understanding the need and value of locally driven, community-based support, interventions and responses. (p.3)	…ongoing lessons from the coronavirus pandemic, building resilience to our ongoing response and seeking to lay the foundations to enable the city-region to build back better. (p.1) A fundamental element, and key enabler of Greater Manchester's ability to respond to, and to live with COVID-19, is to provide a highly effective, timely, test and trace service. The service draws on multiagency coordination and relies on effective local collaboration, along with data, intelligence and information provided by Government. An effective test and trace system will be the single greatest tool available to Greater Manchester… (p.2)	COVID-19 has required us to re-consider our agreed values, our long-term strategy and the ambitions and priorities in it (p.2) The virus outbreak has also forced innovation and significant shifts in the ways services are designed, delivered and accessed. The rapid switch to online has tested our digital infrastructure but has also provided some of the fastest adoption of digital technologies and adaptations and innovations ever seen (p.2)
D Greater Manchester, (March 2021), *Manchester COVID-19 Local Outbreak Prevention and Response Plan*	…since the 23rd March 2020 the City of Manchester has been under restrictions for most of the last year, apart from 25 days in July 2020. The City has and will continue to respond to "Enduring Transmission" rates. (p.2) Manchester COVID-19 Twelve Point Plan (p.4) A year since our first reported Manchester COVID-19 case on 7th March 2020, 50,349 people have tested positive for the virus and nearly 1,000 Manchester residents have sadly lost their lives due to COVID-19. (p.5) The Greater Manchester COVID-19 Six Month Plan	We know that there are a number of communities that suffer disproportionate adverse impacts from COVID-19, including: Older people, People affected by homelessness, Ethnic minorities, Certain religious groups, Asylum seekers and people with no recourse to public funds, Certain occupational groups, People living in areas of high deprivation and Residents of care homes and other high risk residential settings (p.8) Over 62,000 residents have been furloughed and almost 16,000 are in receipt of self-employment support - equal to 32% of	Manchester COVID-19 Response Group (Health Protection Board) is a multi-agency partnership (p.7) Manchester Gold Control chaired by Joanne Roney, Chief Executive, Manchester City Council. (p.7) *Manchester Strategic Care Homes Board* (p.16) 91 iPads for care homes as part of our new digital offer to support online/remote consultation, COVID-19 symptom tracking (using the Restore2 methodology) and improved capacity and issue tracking (p.16) IPC 'Super Trainer' offering to all care homes, conducting virtual audit visits to care homes where	There is variation in the COVID-19 related death rate by self-reported religious group. The highest age-standardised mortality rate is in people identifying as Muslims; it is also higher in people identifying as Jewish, Hindu or Sikh. (p.9) Border Contingency Primary Care Service at Manchester Airport (p.18) Rolled out antibody testing programme for (primary care and vaccination site) staff (p.18) Provided expert Health Protection representation to Primary Care Network	We have managed and contained large outbreaks in university accommodation, ensured safe and COVID-19-secure evacuation from flooding (which included 'lifting and shifting' an outbreak in a complex setting) and undertaken surge testing in two areas of the City in response to Variants of Concern (VOC) (p.5) 41% of Manchester residents work in sectors of the economy which have higher death rates from COVID-19 e.g., construction, transport and manufacturing. (p.8) Developed a 'hearts and minds' video-based campaign which is

	The Greater Manchester Outbreak Control Plan The Greater Manchester Targeted Testing at Scale (TTaS) Strategy and Operational Plan (March 2021) Manchester's forward plan for easing and exiting lockdown (Feb 2021) The Manchester COVID-19 Test and Trace Communications Strategy (p.7) Infection Control Funding (ICF) (p.16) Development 12: Responding to Variants of Concern Supported businesses to access testing in surge testing boundary areas, providing a 'Collect & Drop' service to support employees unable to attend Mobile Testing Units. Sent 1664 letters to businesses within the boundaries to encourage staff to be tested, as well as visiting workplaces (p.19) £62.8m business grants (23,200 payments) have been paid out to date (p.19) Development 17: Activities to enable 'Living with COVID' Communicating clear messages that people will need to continue longer term with regular testing, contact tracing, self-isolation and infection prevention and control measures, as well as vaccination (p.26) Created local 'COVID-19 stories' and used them to support the city-wide campaign, enabling a more localised approach (p.27) Local Authority Test and Trace Grant £4,836k has been awarded to cover up to 31.3.22. This funding is to ensure that appropriate systems are in place for outbreak management and prevention of COVID-19 in line	Manchester's resident working age population. (p.8) Manchester population includes around 50% of people who are from ethnic minorities. (p.8) 1 in 5 deaths involving COVID-19 in Manchester have occurred in care homes. This is a highly vulnerable population (p.8) …delivery of the Caribbean and African Health Network's 'Health Hour' online event, with over 1500 participants, addressing fears and myth-busting around vaccination (p.23) Supported the delivery of Manchester's BME Network's webinar around vaccination and worked with them to develop 'Spring into Spring' wellbeing packs, including information about vaccines and public health messaging (p.23) Ensured access to a comprehensive range of interpreter services to support contact tracing for people in their preferred language (p.34) Manchester's Vaccine Equity Plan focuses on improving vaccination coverage amongst people in Manchester based on current data, in order to address inequalities as well as improve vaccination coverage overall (p.50) "communities within communities" (p.50)	additional support was needed (p.16) … audit of barriers to effective Infection Prevention and Control procedures in supported living (p.16) Developed a business reporting form for businesses to report where they had two or more cases over a 14-day period, helping to minimise onward transmission in many cases (p.19) …neighbourhood Health Development Coordinators to identify 'cultural connectors' to disseminate vaccination and COVID-19 messages through their social media networks (p.23) Deliver a programme of activity under the umbrella of 'Community Champions' to address inequities. This will include working with the voluntary sector and volunteers to build trust, support diverse communities to access the vaccine and other support offers related to COVID-19 (p.24) …weekly joint operations between GM Police and the city council's Compliance and Enforcement Team targeting the hospitality sector (p.25) The structures planned and put in place are: Strategic Response Team, Response Service including the Central Coordination Team, Level 1 & 2 Contact Tracing, Teams, Community Health Protection Team (Infection Control) Environmental Health, Contact Tracing Team and a Compliance and Enforcement Contact Tracing Team, Recovery Team, Personal Protective Equipment (PPE) management (to be extended until 30.9.21) (p.28) …ability to search council databases for alternative contact details for the cases we receive for	Vaccination Centre Outbreak Planning Group (p18) Carried out a mixture of remote assessments, virtual visits to premises and site visits to investigate situations (p.19) Updated Standard Operating Procedures regarding contact tracing, outbreak control and consequence management (p.19) Carried out proactive COVID-19 secure visits to premises e.g., supermarkets/offices (p.19) …enforcement action on premises not complying with advice, including the use of directions to close premises (p.25) COVID-19 Secure Marshals Scheme across the city to provide advice and support to the public and businesses on compliance with COVID-19-secure measures (p.25) Designed and produced sets of materials to support enhanced community engagement and promotion of the local testing system. Produced bespoke leaflets for care home staff and hospitality sector workers and managers. Increased number of webinars relating to specific issues such as care home visiting, testing and vaccination (p.26) Delivered a weekly COVID-19 email (more than 20k subscribers) with the latest guidance and support (p.26) Manchester COVID-19 Dashboard, a weekly report for elected members and a COVID-19 data page on the council website (over 10,000	being used to help ensure people stick to the key guidelines (p.26) According to data shared by government to compare the successes of local contact tracing systems across the eight English Core Cities, Manchester Test and Trace reached both the greatest percentage of locally offered cases relative to total cases offered, and the greatest percentage of locally offered cases versus overall cases in the city (p.35) Maintained the Shielded Patient List to ensure it is up to date, following up with phone calls via primary care to understand support needs (p.37) Storm Christophe (p.40)

	with Manchester's COVID-19- 19 Prevention and Response Plan. (p.28) Developed a process for assessing postcode coincidence reports (where two or more people have mentioned the same postcode as somewhere they have potentially been during their infectious period) (p.30) As we move out of lockdown the aim is to bring targeted testing to communities where we have seen high prevalence in the pandemic but low uptake of testing. (p.32) …national programmes such as the Workplace Scheme for employers who will be encouraged to deliver lateral flow testing (p.33) Greater Manchester Integrated Contact Tracing model. The foundation stones of this model are: A collaborative, whole system approach. Locally-led, Greater Manchester-supported and nationally-enabled A learning system leading to continuous improvement. Integrated, effective and efficient responses (p.34) We manage outbreaks by following the process below: Identification…Triage…Investigation …Review/ close /debrief… (p.38) * more relevant information p.38 23,000 businesses within Manchester (p.40) …bi-weekly, high-level COVID-19 Strategy Group to interrogate available data, making decisions regarding the initiation of enhanced community engagement in areas of high transmission (p.45)		local follow-up which have incorrect or incomplete telephone numbers (p.34) Strengthened the integrated response work between these teams as part of our branded Manchester Test and Trace Service (p.40) Response Service Operations Group (p.40) Migrant Health Team (p.43)	unique page views since the start of January 2021) (p.30) PHE COVID-19 Situational Awareness Explorer (p.30) Case Management System for cases of COVID-19 (p.30) Manchester Health and Care Commissioning Business Intelligence Team (p.31) Encouraged businesses to access lateral flow testing of asymptomatic staff, providing support and advice where needed (p.32) Manchester Community Testing Model with a focus on asymptomatic lateral flow testing, utilising existing testing sites as part of a wider community testing offer from April, with effective communications (p.33) Used learning and intelligence from our local contact tracing activity to inform regional and national policy. Most recently we have shared detailed insights from contact tracing conversations to widen national understanding of the symptoms individuals may experience during COVID-19 (p.34) Following the new national lockdown and reintroduction of shielding, letters were sent to all Manchester residents informing them of the local support available and systems were stood up again (p.37)	
C Manchester City Council (March	The Greater Manchester COVID-19 Six Month Plan	The mortality rates from COVID-19- 19 in the most deprived areas of England were more than	The Manchester COVID-19 Response Group (Health Protection Board) is a multi-agency	Undertook targeted community engagement in areas where there has been higher positivity	People with COVID-19 aged 80 or older 70 times more likely to

2021) *Manchester Local Outbreak Prevention and Outlook Plan*	The Greater Manchester Outbreak Control Plan The Greater Manchester Targeted Testing at Scale (TTaS) Strategy and Operational Plan (March 2021) Manchester's forward plan for easing and exiting lockdown (Feb 2021) The Manchester COVID-19 Test and Trace Communications Strategy (p.7) The progress of the delivery of our Local Outbreak and Response Plan is monitored through the Manchester COVID-19 Twelve Point Plan, which is updated regularly. (p.7) Updated Standard Operating Procedures regarding contact tracing, outbreak control and consequence management (p.20) £4,836k awarded to cover up to 31.3.22. This funding is to ensure that appropriate systems are in place for outbreak management and prevention of COVID-19 in line with Manchester's COVID-19 Prevention and Response Plan (p. 28) Nationally initiated programmes to respond to the emergence of new Variants of Concern (VOC) within 2 areas of Manchester: Area 1 (Moss Side/Hulme/Rusholme/Fallowfield) and Area 2 (Moston/Harpurhey) have been delivered on the basis of reimbursement of costs incurred (p.28) Case Management System for cases of COVID-19 (p.29) Undertook a needs analysis to support decision-making on the best location of walk-in Local Testing Sites (LTS) across the city, working with DHSC, city council partners and local	double the least deprived areas. There are high levels of deprivation in Manchester (p.10) Manchester population ~50% BAME. Higher risk of COVID-19 related deaths in many ethnic minority groups. Likely to be a combination of structural and individual risk factors (p.10) Established the COVID-19 Health Equity Manchester (CHEM) Group to improve experiences of and outcomes for communities that suffer disproportionate adverse impacts from COVID-19 (p.24) Work with VCSE to target messaging at specific communities e.g., CAHN event (p.52) Use of community spokespeople to promote messaging (p.52) Targeted communication and engagement with refugees and asylum seekers (p.52) Economy – implement the Powering Recovery plan for our city; short term focus on business support including funded schemes; safe re- opening of our economy in April and May; longer-term planning for the recovery (p.54)	partnership that oversees the implementation of this plan and key decisions are escalated to Manchester Gold Control chaired by Joanne Roney, Chief Executive, Manchester City Council. (p.7) Worked with partners to develop a whole system approach to protecting high risk occupational groups, including targeted testing (p.24) Established weekly joint operations between GM Police and the city council's Compliance and Enforcement Team targeting the hospitality sector (25) Delivered media work raising the profile of enforcement against licensed premises which are flouting restrictions; produced messaging and signs for the lockdown which include stronger lines around enforcement (p.25) Strategic Response Team. Response Service including the Central Coordination Team, Level 1 & 2 Funding has been allocated across the City Council in the Following ways: Contact Tracing Teams, Community Health Protection Team (Infection Control) Environmental Health Contact Tracing Team and a Compliance and Enforcement Contact Tracing Team (p.28) Manchester Health and Care Commissioning Business Intelligence Team (p.30) Workplace Scheme for employers who will be encouraged to deliver lateral flow testing (p.32) *Foundation Stones*: A Collaborative, whole system approach Locally led, GM supported and nationally enabled a learning system leading to continuous improvement Integrated,	rates. This included working with partners, local community groups and community leaders to provide key messages, help dispel myths and provide reassurance to the community (p.27) …daily Manchester COVID-19 Dashboard, a weekly report for elected members and a COVID-19 data page on the council website (over 10,000 unique page views since the start of January 2021) (p.29) …routine and ad-hoc analysis of data within the PHE COVID-19 Situational Awareness Explorer in response to outbreak situations and emerging programmes of work. This included the development of a series of maps to illustrate geographical location of potential sources of transmission of COVID-19 in Manchester based on data in PHE Common Exposures Report (p.29) Ongoing analysis and interpretation of information to inform the city's ongoing response to the pandemic by triangulating data from the COVID-19 Situational Explorer (COVID-19 tests and cases, contact tracing, common exposures and postcode coincidences, vaccine data) with locally-gathered and analysed data and insight (p.30) A very flexible approach will be required given the uncertainties and dependencies with the wider national COVID-19 situation, the evolving epidemiology of the disease, and national Government decisions (p.54)	die than those aged under 40 (p.10) 41% of Manchester residents work in sectors of the economy which have higher death rates from COVID-19 e.g., construction, transport and manufacturing (p.10) COVID-19 vaccination coverage much lower in Black African, Black Caribbean, Pakistani and Bangladeshi people than the City's average (p.10) *GM-supported* model for all contact tracing in Manchester. Our local team receives details of all complex cases in the city first and then has the ability to seek support from the GM team on a surge capacity basis. (p.34)

	stakeholders to establish a network of eight Local Testing Sites across the city…Worked with DHSC to establish a system for protected appointment slots for essential workers at Local Testing Sites…Targeted Testing at Scale (TTaS) Programme (asymptomatic lateral flow testing) for Manchester through five sites as part of the GM and national approach for 'point of care' testing (p.31) Operation Eagle: multi-agency surge testing response to Variants of Concern (p.47) Greater Manchester Six Month, Manchester's Twelve Point plan (p.54)		effective and efficient processes (p.33) additional roles within Environmental Health given the scale of workplace outbreaks and the need to provide COVID-19-secure advice to all employers. There are around 23,000 businesses within Manchester (p.39) Response Service Operations Group (p.39)		
C Greater Manchester Independent Inequalities Commission (March 2021) Good Lives for All in Greater Manchester	'Greater Manchester Model' of public service reform and taking its ambitions further. "Nothing about us without us" must be the mantra and the norm for co-designing and delivery of services across the system. (p.8)	At the same time that COVID-19 was laying bare the deep fractures of inequality running across our society, revealing just how unprepared we were for unexpected and unimagined challenges, the resurgence of the Black Lives Matter movement shone more light than ever on the blight of racism, discrimination and prejudice within our midst – in our institutions and in our relationships with one another. (p.3) The Commission has viewed inequalities within a framework that considers how interacting and intersecting inequalities create barriers that stop people from living the good lives they want. We have confronted the entrenched prejudices, discrimination and injustices, including structural racism, that withhold power and resources from diverse communities. (p.6)	Black Lives Matter (p.9) The city-region has a collective spirit of looking after one another, and a proud tradition of radicalism, co-operation and standing up against injustice. Greater Manchester can build on this spirit of co-operation to recover and rebuild for a fairer future. (p.9)	…sustainable wellbeing should be the real wealth of the city-region. (p.3) The Commission believes that Greater Manchester can only build a strong economy by focusing on the foundations – the services and sectors that meet our basic needs; by giving local people a stake and a say in the economy; and by asking more of high-value 'frontier' sectors, to ensure that local people with the least opportunities benefit from the jobs and investment they create (p.8) …it's OK to have some failures along the way and to need to adapt and flex policies and programmes until they do work. Fear of failure and fear of the size of the problem must be conquered. (p.9)	…inequalities are deeply damaging: to people's health, wellbeing and resilience throughout their lives; to a flourishing, productive and inclusive economy; to sustainability; and, not least, to the quality of the social fabric, to trust and the relationships between us. (p.9) …urgent need to repair our social safety net by reforming Universal Credit and lifting statutory sick pay. (p.10) The double hit of the pandemic and a decade of austerity has also put local authority budgets under more pressure than ever before (p.10)

Manchester Health and Wellbeing Board Report for resolution, (2020), 'Addressing Inequalities', Director of Workforce and Organisation Development, Manchester Health and Care Commissioning and Director of Policy, Performance and Reform Manchester City Council	The age standardised rate of deaths involving COVID-19 in Manchester (59.8 per 100,000) is 63&=% higher than the rate for England as a whole (36.6 per 100,000) rapid research	The risk of a COVID-19-related death for males and females of Black ethnicity is 1.9 times more likely than those of White ethnicity. Males in the Bangladeshi and Pakistani ethnic group were 1.8 times more likely to have a COVID-19-related death than White males. Females in this ethnic group were 1.6 times more likely to have a COVID-19-related death than White females. We also know that health and racism are inextricably linked. Equality Impact Assessments Inclusion weekly community and public surveillance report is now being produced and shared across MHCC based on feedback to the Engagement Team from the Patient and Public Advisory Committee and Expert Panel members, Community Explorers, voluntary and community organisations and GP practices. and equalities will be a key 'horizontal' theme that cuts across all aspects of the reset	Bringing people into employment and ensuring good work for all	Confident and Achieving Manchester programme One health and care system – right care, right place, right time Equalities and Inclusion workstream within MCC Executive Members Equalities and Inclusion subgroup Community Cell' Manchester COVID-19 Response Group Manchester Health Protection Group Public Health Intelligence Team and Engagement Teams Our Manchester Disability Plan Board Manchester University NHS Foundation Trust COVID-19 BAME Engagement Group BAME Nursing Network and the Caribbean and African Community Group	…some challenges with sequencing solutions as new pathways are developed and some retrospective analysis and mitigating actions required due to the speed of change
E PROTECT-2022, National Core Study Report (2022), *Qualitative case studies in Greater Manchester to reduce the risk of transmission of COVID-19 in workplace settings*	Mixed messages from government (p.1) Accountability on CCGs and Local authorities' roles in policy (p.1) Guidance does not cover the prioritisation process (p.2) When national data was finally made available, local teams did not have the skills or knowledge on how best to use it. Good co-operation, across the local footprint, produced the best possible response (p.4) The Greater Manchester team worked together closely to develop a bespoke model of data triangulation and sharing to reduce the risk of transmission in universities in 2021 (p.4)	Greater Manchester is an area of enduring prevalence. (p.1) COVID-19 in stools/faecal matter should be acknowledged in care sector. (p.3) Areas of enduring prevalence reflecting in part ongoing socio-economic deprivation (p.4) 565 regulated care homes in Greater Manchester (p.10) recent report from PHE (2020a) has shown that older age, ethnicity, male sex and geographical area, among other factors, are associated with an increased risk of infection, more severe symptoms and higher death rates. (p.17)	…operational aspects and single points of contact …a lot of strain and overburden on care services (p.1) The care sector has also called for more support and training (p2.) Infection prevention and control (IPC) measures and systems are a key foundation within the social care sector and legislation requires all care providers to follow guidelines ensuring that they are at all times 'assessing the risk of, and preventing, detecting and controlling the spread of, infections, including those that are health care associated' (p.4) increased staff absence may reduce the ability of care homes to provide	Designated policy translators and single points of contact in Public Health locality teams would assist the domiciliary care sector (p.3) Domiciliary care is understaffed, and absences are increasing. Staff feel underpaid and may reach exhaustion/burn out. The sector is financially unstable and not resilient. Lack of resources, clear guidance and training may also mean staff perceive themselves as at increased risk and view their employers as inadequately attending to their health and well-being (p.8)	Public Health locality teams are under-resourced – more staff needed (p.2) More targeted training for care home staff … Self-administered testing guidance should be developed. More training on how the PPE guidance applies in particular care settings. Ventilation in care settings/homes needs urgent attention. Dividing care home staff into 'care groups' or staff bubbles should be investigated as it may limit the spread of infection. (p.2) Early qualitative findings reveal

	Women account for 83% of the social care workforce nationally (p.9) As of 23rd July 2020, the North West had the highest percentage of care homes which have reported an outbreak in England, with the North East (54.4%) and London (50.1%) being the second and third highest respectively. (p.13) The ethnicity of the person who died is asked for, but it is not mandatory for the service to provide it (p.19)	people of Bangladeshi origin had approximately twice the risk of death when compared to White British people. (p.10) …urgent action is needed to fully understand the impact of COVID-19 on people from ethnic minority backgrounds in adult social care settings. (p.19)	care of the expected standard and increased mortality may result from factors such as increased dehydration (Fisman *et al.*, 2020). (p.8)	Government anticipates 45% of those discharged from hospital will require ongoing support from health and social care… and so care planning and effective IPC measures will rely upon communication between social care providers and multiple others such as local authorities, IPC health teams, GP's and rehabilitative professionals. There is a fundamental issue of trust between employers and organisations, and this should be a priority to address as we move into the recovery phase (p.20)	domiciliary care is under supported at the local level by Public Health Teams and as the sector is extremely fragmented it is difficult to support. (p.3) Staff absences (p.3)

A2. National Literature Review Summary

QUALITATIVE NATIONAL LITERATURE REVIEW: GM CASE STUDY 'Living with COVID'

INTEGRATIVE APPROACH THEMATIC TABLE

KEY: TYPES: GREY LITERATURE, ACADEMIC PAPERS, BOOKS/CHAPTERS, MIXED METHODOLOGY

YEARS: PRE 2020: A; 2020: B; 2020-2021: C; 2021: D; 2021-2022: E; 2022 F: 2022-2023: G

LITERATURE	THE SYSTEM	THE AREA/CONTEXT	SUPPORTING WORKPLACES	CHANGES	BARRIERS
B Marmot, M., (2015) *The Health Gap*, (viewpoint), The Lancet	Relieving adult poverty, paying a living wage, reduction in fuel poverty, improving working conditions, improving neighbourhoods, and taking steps to reduce social isolation in elderly people can save lives (p2441.) …we must add to our concern health inequalities between countries as well as those within countries (p.2441)	There is a clear social gradient in intellectual, social, and emotional development—the higher the social position of families the more do children flourish and the better they score on all development measures. (p. 1) … a social gradient in adult health (p.2441) Health inequalities should be an important part of the argument to change our national and global discussion from one that gives priority to economic growth of whatever form to one that puts human development at the heart of the debate. (p.2444)		In each country there is a gradient in life expectancy—the higher the level of education, the longer the life expectancy (p.2442) In the report of the WHO Commission on Social Determinants of Health, *Closing the Gap in a Generation*, we linked health inequalities within and between countries to inequities in the distribution of power, money, and resources and to the inequities in conditions of daily life to which they give rise. (p.2442)	Lack of access to health care is, by and large, not the cause of ill health; it might be the cause of a great deal of unnecessary suffering as a consequence of ill health. (p.2443)
E Christie, F., and Swingewood, A., (April 2022) *The impact of COVID-*	Furlong et all defined zones of (in)security as traditionality (e.g., full-time jobs in open-ended contracts), liminality (e.g.,	Nationally, COVID-19 exacerbated existing concerns about young people's position in the labour market. Very early	International Labour Organisation (ILO) (p.3)	Through qualitative, longitudinal methods, the research sought to capture in-depth insights into young	The youth labour market shrank, largely because young people were more likely to work in

19 on Young Workers in England Manchester Metropolitan University	temporary contracts less than 30 hours a week) and marginality (e.g., unemployed, government schemes, students). (p.4) Williams et al report that young people accounted for nearly half (46%) of the total fall in employment during the crisis, with a total of 425,000 jobs lost. Many young people were in jobs in which they were furloughed, and research reports that 1.9 million young people were fully furloughed in the first national lockdown of 2020 (nearly half (47%) of all young employees (p.5) Strong values emerge in how young people view the importance of the key worker roles (e.g., in retail, hospitality and care that many of them do). In addition, critique of how society values creative workers (p.8)	on it was clear that young people were more adversely affected than other generations by changes to employment and work caused by the pandemic (p.5) Many young people were in jobs in which they were furloughed, and research reports that 1.9 million young people were fully furloughed in the first national lockdown of 2020 (nearly half (47%) of all young employees (p.5)	UK government-commissioned Taylor Review of Good Work (p.3) GMCA sought ways to use existing 'Youth Guarantee' policy as a vehicle to actively support young people's transition into the labour market. (p.5) Plan for Jobs and Kickstart (p.5) Greater Manchester Combined Authority (GMCA), Greater Manchester Council for Voluntary Organisations (GMCVO), Greater Manchester Youth Network (GMYN), Standguide and Oldham Step Up to the NHS. (p.5) Buffering – the role of friends, family and support networks is crucial for young people's economic and personal sense of security. Those without the safety net of social support networks find it most hard to move into decent work. Managing welfare benefits systems. Young people who would not have anticipated claiming Universal Credit pre-pandemic have to do so. Job centre staff appear more flexible in their expectations of claimants, although in our sample, some had already experienced problems with processes. (p.8)	people's experiences and perspectives of insecure work at this unique period of labour market disruption (p.3) Limited work choices. COVID-19 led some to take any job available. Risk of unemployment leads to a willingness to take 'worse work' (p.7) Recognition and candour about the relationship between wellbeing and work. (p.7) The disruption of pandemic has not diminished a desire for meaningful work, which can provide progression, autonomy, and social connectedness. (p.9)	sectors (e.g., hospitality and retail, entry level administration, leisure, arts, and entertainment) that were hard-hit by lockdowns. Ten of the twenty-one had benefited from some furlough payment and six had claimed Universal Credit. COVID-19 exacerbated existing insecurities. (p.6) New opportunities – for some new and unexpected opportunities arose, creatives making work at home, students studying more, taking unexpected key worker jobs, writing blogs. (p.8) Pain and disengagement. Work remains a painful experience for some young people. Prolonged uncertainty risks leading to a disengagement with work possibilities. (p.9)
D *DoE* (January 2021) *Skills for jobs: Lifelong Learning and Growth*	It is also vital that we equip people to recover economically from the impact of the coronavirus pandemic. Between 2011/2012 and 2018/19, adult participation in further education has decreased by over one million	We want to address the fall in apprenticeship starts since 2017 for employers that do not pay the Apprenticeship Levy, which has been even more pronounced during the coronavirus pandemic (p.25)	Kills Toolkit (p.29) … Augar Report, colleges are at the heart of their local communities and economies (p.53) the pandemic also demonstrated the role	We want to build on the online learning delivered by the further education sector during the coronavirus pandemic (p.47) digital teaching and learning resources created through	…we will support more people to start apprenticeships, helping employers to recover from the coronavirus pandemic with the skilled employees they need to grow (p.25)

	learners, from 3.1 million to 2.1 million (p. 34)	We are increasing our investment in traineeships to address a rise in unemployment due to the impact of the coronavirus pandemic (p.28)	colleges and local adult education services have at the core of their communities, with exceptional examples across the sector including in producing and dispensing Personal Protective Equipment and supporting the delivery of local services (p.53)	the College Collaboration Fund during the coronavirus pandemic (p.48)	As we deal with the impact of the coronavirus pandemic, meet our commitment for net-zero by 2050, and embrace the new opportunities that exiting the European Union brings, improving the skills of people across the country will be critical to our future success (p.10)
D Wilson T., and Papoutsaki, D., (Feb.2021*), An Unequal Crisis: The impact of the pandemic on the youth labour market*	there are now 260 thousand fewer young people in work – this is nearly half (46%) of the total fall in employment since the crisis began, despite young people only accounting for one in nine of the pre-pandemic labour market (p.7) The different occupational impacts of the pandemic set out above mean that this crisis has also affected different groups of young people quite differently. (p.17)	…the falls in employment during the pandemic have already widened the employment rate gap from 22 percentage points to 26 points for Black people and to 25 points for Asian people. (18)		…young people (in UK) have also benefited from growing employment in some job types – with employment rising in sales, administration and in some higher skilled professions. This is likely being driven by a combination of pandemic-related jobs in the public sector and continued growth in finance and technology. Sales is more surprising and may reflect growing employment in online sales (as over the same period, on average around 1.1 million retail jobs were being protected through furlough). (p.12)	
F Beale et al, (April 2022), *Workplace contact patterns in England during the COVID-19 pandemic: Analysis of the Virus Watch prospective cohort study*	In the UK, adults who attended work during the pandemic had substantially higher mean contact rates than those who did not attend their work- place, with this pattern consistent but less pronounced across lockdown periods. (p.1) Workplace contact patterns vary across occupational groups and time. Differences in the frequency and intensity of direct and indirect contact at work are likely to contribute to differential			Major variations in workplace contact patterns and mask use likely contribute to differential COVID-19- 19 risk. Patterns of variation by occupation and restriction phase may inform interventions for future waves of COVID-19 or other respiratory epidemics. (p.1) The predicted probability of sharing the workspace with more six or more others was	Balancing reopening workplaces with managing ongoing community transmission and the risk of SARS-CoV-2 variants presents an ongoing challenge. (p.2) This study also demonstrates change over time in work- place contact across the pandemic, with evidence of a greater degree of workspace sharing and close contact and lower

	infection risk across occupations. (p.2) Public health interventions to reduce the number of individuals sharing workspaces - including promoting working from home where possible - and to promote the uptake of mitigation methods such as face coverings are important measures to slow transmission. (p.9) Workplace attendance and contact patterns may also be influenced by employer-level as well as national-level mandates and guidance (p.9) Occupational groups are likely to include specific roles with different risk profiles (p.10)			highest for Teaching, Education and Childcare occupations (0.78 [0.75, 0.81]), Sales and Customer Service occupations (0.67 [0.62, 0.72]), and Healthcare occupations (0.64 [0.59,0.69]), exceeding estimates for all other occupational groups (p.8) Across all occupations, intensity of workspace sharing, and close contact increased during periods of less stringent restrictions relative to the third national lockdown and likelihood of wearing a face covering during close contact decreased (p.8)	probability of wearing a face covering during periods of less stringent restrictions, including during periods of high community COVID-19 transmission. (p.10)
D HM Government (September 2021), *COVID-19 Response, Autumn and Winter Plan*	The country is learning to live with COVID-19, and the main line of defence is now vaccination rather than lockdown (p.4) Rules and regulations have mostly been replaced with advice and guidance on the practical steps people can take to help manage the risks to themselves and others. (p.4)) Over autumn and winter, the Government will aim to sustain the progress made and prepare the country for future challenges, while ensuring the National Health Service (NHS) does not come under unsustainable pressure. (p.6) The high level of vaccine protection has allowed the country to live with COVID-19 without stringent restrictions on society, the economy, and people's day-to-day lives. (p.8) …as the Government's response to the virus changes, universal free provision of LFDs will end, and individuals and businesses	…shielding advice was paused on 1 April 2021 and, since 19 July 2021, people who were previously identified as CEV have been advised to follow the same guidance and behaviours as the rest of the adult population. (p.15) …overall socio-economic effects of the Government's working from home guidance are complex and unevenly distributed (p.28) This includes support for areas with enduring transmission. These are those parts of the country where the case rate has remained above the national or regional average for a prolonged period. Support includes targeted testing and programme support for public health activities such as vaccination. (p.29) National support for an enhanced response (p.29)	Antivirals Taskforce (p.10) Scientific Advisory Group for Emergencies (SAGE) (p.23) Scientific Pandemic Influenza group on Modelling (SPI-M) has reflected on their modelling of step 4 of the roadmap. (p.23) COVID-19-status from Imperial College London showed that working from home reduced the chance of catching COVID-19 (p.28) Local authorities have always played a critical role in public health protection, emergency response and infectious disease control. COVID-19 has been no different, with local authorities leading the response in their communities. (p.29) The COVID-19 Contain Framework (p.29)	The public's continued willingness to get vaccinated, to test and self-isolate if they have symptoms, and to follow behaviours and actions that mitigate all methods of transmission has played a key role in lifting restrictions (p. 6) People may wish to use regular rapid testing to help manage periods of risk such as after close contact with others in a higher risk environment, or before spending prolonged time with a more vulnerable person. (p.13) …those not eligible for a free flu vaccine, some employers offer these vaccinations through workplaces, and vaccinations are available for a small fee from pharmacies. (p.16)	…of 9 September, more than 92 million doses of the vaccine have been given across the UK. (p.4) Over autumn and winter, the Government will aim to sustain the progress made and prepare the country for future challenges, while ensuring the National Health Service (NHS) does not come under unsustainable pressure.(p.6) It is a realistic possibility that the impact of flu (and other seasonal viruses) may be greater this winter than in a normal winter due to very low levels of flu over winter 2020-21. There is considerable uncertainty over how these pressures will interact with the impact of COVID-19. (p.6) Advances in antivirals and therapeutics will continue

	using the tests will bear the cost. (p.13) To further protect individuals susceptible to COVID-19, from 11 November it will be a condition of deployment for anyone working or volunteering in Care Quality Commission-regulated care homes providing accommodation for persons who require nursing and personal care to be fully vaccinated. (p.16) On 19 July, rules on social contact were replaced with advice to the public on the ways in which they could protect themselves and others. (p.17) By law, businesses must not ask or allow employees to come to work if they are required to self-isolate. (p.19) In addition, businesses are encouraged to: Ask employees to stay at home if they are feeling unwell. Ensure there is an adequate supply of fresh air to indoor spaces. Businesses should identify any poorly ventilated spaces, for example by using a CO_2 monitor, and take steps to improve fresh air flow in these areas. Provide hand sanitiser to enable staff and customers to clean their hands more frequently, and clean surfaces which people touch regularly. Display an NHS QR code poster for customers to check in using the NHS COVID-19 app, so they are alerted if there's an outbreak and can take action to protect others. Consider using the NHS COVID-19 Pass. (p.19) Coronavirus Act … remaining temporary powers in the Coronavirus Act are due to expire at midnight on 24 March 2022. (p.32)		The Education Contingency Framework (p.30) The Government will consult with the Devolved Administrations in the normal way ahead of publishing the ninth edition of the Coronavirus Act report and subsequent parliamentary debate. (p.32)	The risk of catching or passing on COVID-19 can be higher in certain places and when doing certain activities. In general, the risk of catching or passing on COVID-19 is higher in crowded spaces (where there are more people who might be infectious) and in enclosed indoor spaces (where there is limited fresh air) (p.17) ..to support businesses through the autumn and winter period, the Government will continue to provide up-to-date Working Safely guidance on how employers can reduce the risks in their workplace**.** Businesses should consider this guidance in preparing their health and safety risk assessments and put in place suitable mitigations. (p.19) As workers return to the workplace, employers should follow the Working Safely guidance. (p.19) Due to the importance of fresh air in limiting the spread of COVID-19, the Government will set out in guidance the practical steps everyone can take to maximise fresh air in order to reduce the risk of airborne transmission, taking into account the colder months when more activities take place indoors. (p.20) If Plan B is implemented, it could be at short notice in response to concerning data. Therefore, in order to help businesses, prepare their	to provide additional tools to manage COVID-19. (p.10) SAGE has advised that working from home is one of the most effective measures available at reducing contacts, including associated transport and social interactions, which has a strong impact on transmission and R. (p.28) …working from home has reduced the frequency of commuting for many workers resulting in reduced consumption in direct office-related spending, indirect social consumption (such as in retail and hospitality) and transport use in city centres. However, some of this reduced consumption is displaced to surrounding areas where homeworkers live and therefore partly replaced by increased consumption of other goods and services closer to home.(p.28)

	The Public Health (Control of Disease) Act 1984 gives emergency powers to be used in pandemics if they present significant harm to human health (p.32)			own contingency plans, the Government will shortly publish more detail about the proposed certification regime that would be introduced as part of Plan B (p.25)	
B Cruwys, T., et al (2020), "A social identity perspective on COVID-19: Health risk is affected by shared group membership", *British Journal of Social Psychology* *D*OI 10.1111/bjso.12391	Extant approaches to modelling the transmission of infectious diseases typically draw on economic models…such models necessarily simplify human interaction…they assume that contact between individuals is random … such that transmission is just as likely between two strangers and between a husband and a wife… (p.2) Mediating role of disgust (p.6) disgust plays in mitigating risk is to help distance people from others who could contaminate them (p.7) ..we propose that the elevated risk posed by ingroup members	…the spread of infectious disease is fundamentally shaped by their group memberships… key processes through which social identities shape health risk behaviours … (p.2) trust is also closely linked to risk taking (p.5) integrity (p.6)	individuals engage in dozens of micro-level behaviours every day that lead to infectious diseases being passed from one person to another. (p.1) … predicators of risk taking: biological factors, individual factors and social factors (p.3) …network models typically include close contacts… (p.8) …normative influence, leadership, and strategies for building solidarity … have a critical role to play in optimizing the COVID-19 response (p.8)	the most powerful weapons we possess is to change our behaviours (p.1) …shared group membership affects risk (a) via increased trust, and (b) via lower disgust (p.3) ..we propose that public health messages should explicitly challenge this, and frame a lack of physical contact as an expression of care (p.8)	… direct causal link between shared group membership and risk perception and behaviour, including in the context of disease (p.5)

	should be recognized in public health messaging (p.8)				
A Taylor, B., et al, "Can rapid approaches to qualitative analysis deliver timely, valid findings to clinical leaders? A mixed methods study comparing rapid and thematic analysis", BMJ Open Access	..explore in more-depth questions or issues identified through quantitative work and to problematise or 'unpack' issues or topics taken for granted (p.1) Rapid Assessment, Thematic Assessment (p.2) Rapid Assessment Process and Rapid Ethnography (p.2) There was a general consensus that useful meetings with a range of stakeholders were hard to arrange for a number of reasons including workload and shift pattern. TA finding (p.7)	'convenience sampling group '(p.2)			
E PROTECT-2022, National Core Study Report (2022), *Qualitative case studies in Greater Manchester to reduce the risk of transmission of COVID-19 in workplace settings*	Mixed messages from government (p.1) Accountability of CCG's and Local authorities' roles in policy (p.1) Guidance does not cover the prioritisation process (p.2) When national data was finally made available, local teams did not have the skills or knowledge on how best to use it. Good co-operation, across the local footprint, produced the best possible response (p.4) The Greater Manchester team worked together closely to develop a bespoke model of data triangulation and sharing to reduce the risk of transmission in universities in 2021 (p.4)	Greater Manchester is an area of enduring prevalence. (p.1) COVID-19 in stools/faecal matter should be acknowledged in care sector. (p.3) Areas of enduring prevalence reflecting in part ongoing socio-economic deprivation (p.4) 565 regulated care homes in Greater Manchester (p.10) recent report from PHE (2020a) has shown that older age, ethnicity, male sex and geographical area, among other factors, are associated with an increased risk of infection, more severe symptoms and higher death rates. (p.17)	operational aspects and single points of contact (p.1) ...a lot of strain and overburden on care services (p.1) The care sector has also called for more support and training (p2.) Infection prevention and control (IPC) measures and systems are a key foundation within the social care sector and legislation requires all care providers to follow guidelines ensuring that they are at all times 'assessing the risk of, and preventing, detecting and controlling the spread of, infections, including those	Designated policy translators and single points of contact in Public Health locality teams would assist the domiciliary care sector (p.3) Domiciliary care is understaffed and absences are increasing. Staff feel underpaid and may reach exhaustion/burn out. The sector is financially unstable and not resilient. Lack of resources, clear guidance and training may also mean staff perceive themselves as at increased risk and view their employers as inadequately attending to their health and well-being (p.8)	Public Health locality teams are under-resourced – more staff needed (p.2) More targeted training for care home staff … Self-administration testing guidance should be developed. More training on how the PPE guidance applies in particular care settings. Ventilation in care settings /homes needs urgent attention. Dividing care home staff into 'care' groups or staff bubbles should be investigated as it may limit the spread of infection. (p.2)

	Women account for 83% of the social care workforce nationally (p.9) As of 23rd July 2020, the North West had the highest percentage of care homes which have reported an outbreak in England, with the North East (54.4%) and London (50.1%) being the second and third highest respectively. (p.13) The ethnicity of the person who died is asked for, but it is not mandatory for the service to provide it (p.19)	people of Bangladeshi origin had approximately twice the risk of death when compared to White British people. (p.10) ...urgent action is needed to fully understand the impact of COVID-19 on people from ethnic minority backgrounds in adult social care settings. (p.19)	that are health care associated' (p.4) increased staff absence may reduce the ability of care homes to provide care of the expected standard and increased mortality may result from factors such as increased dehydration (Fisman *et al.*, 2020). (p.8)	Government anticipates 45% of those discharged from hospital will require ongoing support from health and social care (DHSC, 2020g) and so care planning and effective IPC measures will rely upon communication between social care providers and multiple others such as local authorities. IPC health systems, GPs and rehabilitative professionals. There is a fundamental issue of trust between employers and organisations and this should be a priority to address as we move into the recovery phase of COVID-19 (p.30)	Early qualitative findings reveal domiciliary care is under supported at the local level by Public Health teams and as the sector is extremely fragmented it is difficult to support. (p.3) Staff absences (p.3)
E Secretary of State for Work and Pensions, November 2022), *COVID-19 and Occupational Impacts*	The UK, like many countries, has experienced several waves of increasing and decreasing rates of infection, implementation of a variety of control measure sand changing patterns of work. . This complex situation presents challenges when evaluating adverse health effects of C O VI D -19that can be attributed to exposure to the virus in the workplace. (p.3) Any prescription for a disease under Industrial Injuries Disability Benefit must be based on robust evidence such that it is possible to assume with reasonable certainty (the balance of probabilities) that the condition was acquired as a result of work. The complex patterns of occupational and non-occupational infection and control measures that occurred during the pandemic in the UK has made it		… for Health and Social Care Workers, whose work brings the m into frequent close proximity to patients or clients, there is a significantly increased risk of infection, subsequent illness, and death. The Council therefore feels that there is sufficient evidence to recommend prescription for these workers. (p.3) the Council noted some evidence of increased risk of infection and mortality in occupations such as bus and taxi drivers and in protective services, the evidence was not robust. In other sectors, such as education and retail, the evidence for any increased risk was much weaker, with in consistent results over different time periods. The Council	It is widely acknowledged that the pandemic is ongoing and it can be expected that more and better evidence on the long-term adverse health consequences of C O VI D-19, and on the association with occupational exposure, will emerge (p.8)	Although there is some evidence of increased risk of infection and mortality in some other occupations there are fewer studies and findings tend to be less consistent. (p.3)

	challenging to evaluate the health consequences that can be attributed to work exposure. Also, the quality and quantity of available evidence relating to occupation is very variable (p.7)		concluded, therefore, that currently, the evidence was of insufficient quantity and quality to recommend prescription for these occupations. (p.7)		
E Beale S, Patel P, Rodger A on behalf of Virus Watch Collaborative, et al (April 2022), "Occupation, work-related contact and SARS-CoV-2 anti-nucleocapsid serological status: findings from the Virus Watch prospective cohort study", Occupational and Environmental Medicine,79:729-735	...based on UK standard Occupational Classification 2020 codes (p.730)	…legislation and guidance around workplace closures were broadly similar for many occupations across periods with the highest level of SARS-CoV-2 transmissions (p.734)	...healthcare workers, indoor trade, process and plant workers, leisure and personal service workers, and transport and mobile machine operatives had around twice the total odds of seropositivity compare with participants in other professional and associate occupations, adjusted for age, se, ethnicity, household income and national region (p.733)	…supporting working from home where possible and implementing social distancing and other risk mitigation methods in workplaces is likely to influence work-related SARS-CoV-2 transmission. Further inquiry into the inter-relationship between work- related contact and other features of the workplace, including ventilation, is warranted to inform public health interventions and policy. (p.730)	secondary outcome was frequency of workplace expo- sure to poorly ventilated environments (p.731)
C Neville, F.G., Templeton, A., Smith, J.R. and Louis, W.R. (2021), Social norms, social identities and the COVID-19 pandemic: Theory and recommendations. Soc Personal Psychol Compass, 15: e12596. x https://doi.org/10.1111/spc3.12596	There are two main approaches that authorities can use to try to change public behaviour. The first is *instrumental compliance* which involves commanding behaviour change and expecting obedience through the fear of punishment. However, this strategy may not produce sustainable behaviour change if people only follow guidance when they are visible to authority (p.2)	we may think of ourselves and act in one way at work, as workers, and another way at home, as family members. However, people do not have one single social identity. Individuals belong to multiple groups, such as family groups, neighbourhoods, workplaces or nations, each with its own set of norms (p3) …the source of communication is crucial. Messages should come from people who are seen as 'one of us' rather than someone from outside (Bonell et al., 2020; Haslam, 2020; Steffens, 2020) (p.7)	…in the absence of clear laws, a person might wear a face mask either because the fact that others are wearing masks convinces them that it is the right thing to do to reduce the risk of transmission (i.e., informational influence) or because they do not want to stand out negatively by not wearing a face mask (i.e., normative influence). (p2.) to secure long-term change, it is important to appeal to people's membership in valued groups and to change individual behaviour through changing social norms. This can be achieved through effective social identity-based leadership. (p.3)	*normative compliance*, where the public are persuaded that appeals for protective behaviours benefit their social group and are supported by fellow group members (p.2)	…in a UK survey of compliance with guidance, 92% of people self-reported that they had stayed 2 m away from other people when outside their home, and 90% were handwashing more often for 20 s (Duffy, 2020). (p.5)

			…leaders gain and maintain influence by shaping social norms: clarifying group members' understanding of what the group does (or does not) stand for, and defining core values, ideals and behaviours (p.3)		

Appendix B – Quantitative data

B1 Full results – Employee survey

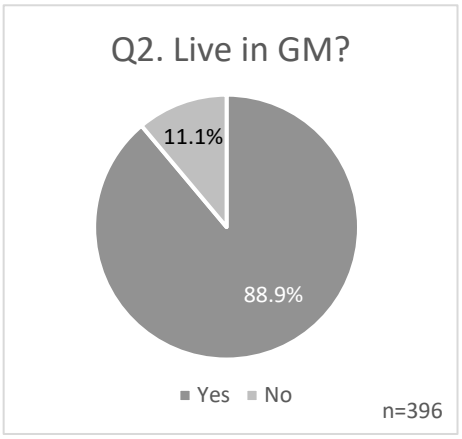
The employee survey ran from 2/8/22 and was closed 6/10/22.

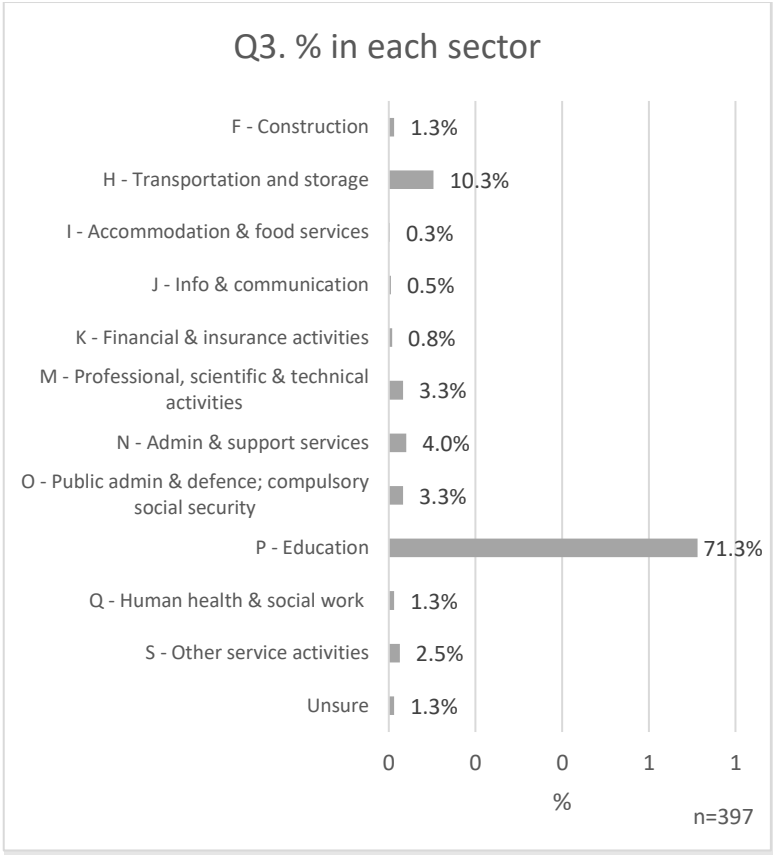
There were 491 responses in this period. 6 were excluded as they did not work in GM (Q1). A further 20 were excluded as did not answer Q1 or any other questions. Then a further 56 excluded as did not answer past Q1. This left us with 409.

Of these 409, there were 8 who completed Section 1 (demography/background)- but didn't answer any in Section 2 (COVID-19 related questions). These were excluded too, leaving 401. A test survey was discovered (identified by response to Q5). Excluded this, so left with 400. Then 3 more who hadn't got past section 1 were excluded, leaving n=397. From q.20 onwards, n=391, as a further 6 didn't get past this question.

The ‘n’ number in charts will vary, as missing responses have been excluded.

Section 1. Background



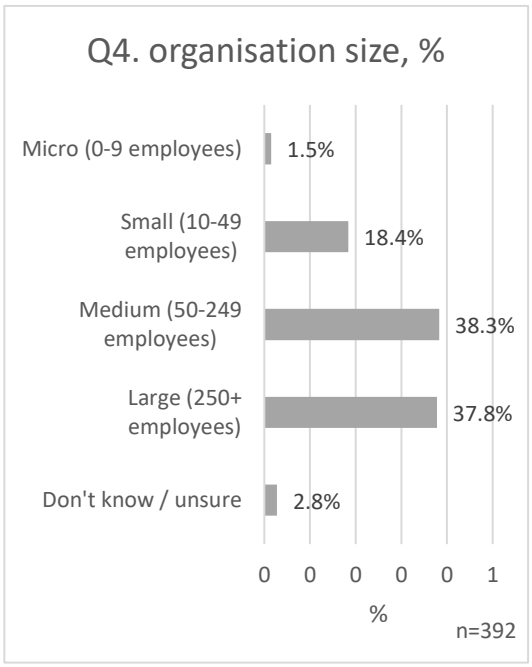


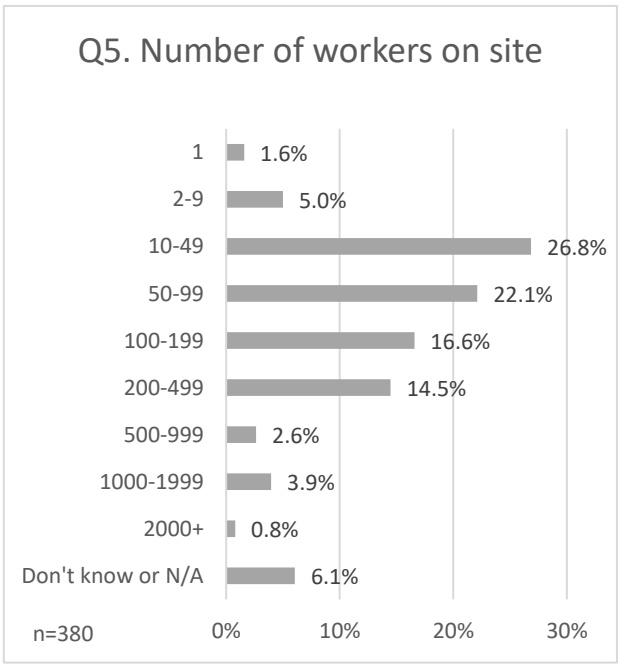
(No-one worked in A to E).

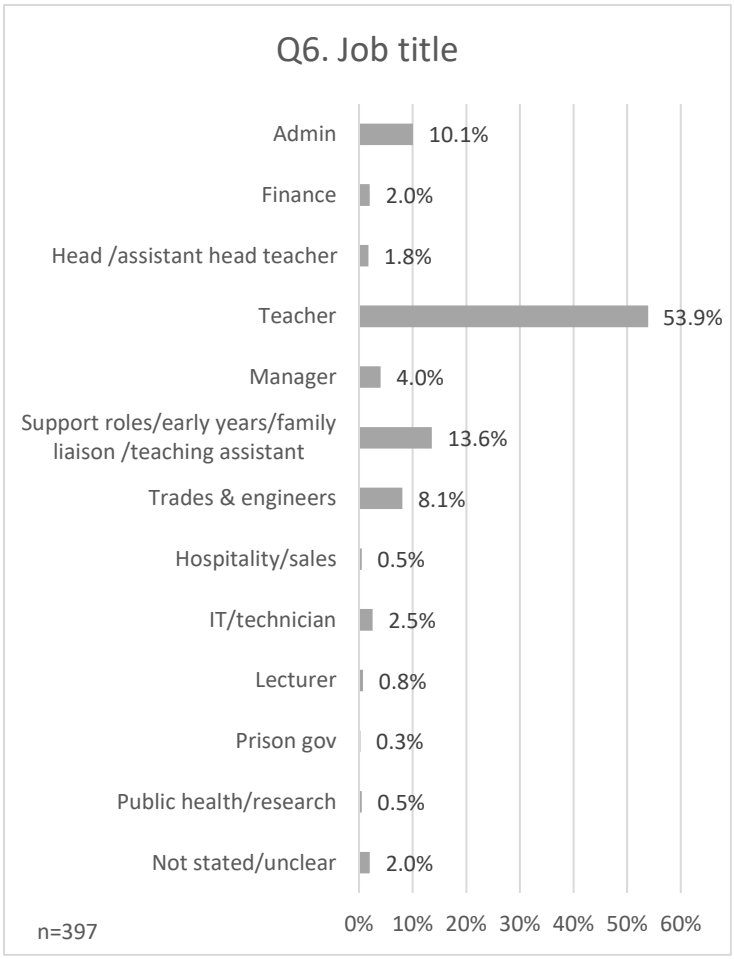
All non-excluded respondents worked in GM and 9 in 10 also lived in GM.

Around three-quarters (76.1%) worked in medium to large organisations of 50-plus employees. Over half (57.9%) worked with more than 50 employees on site together.

Q5. was an open question, answered in text form, so responses were sorted manually and arranged under broad headings.



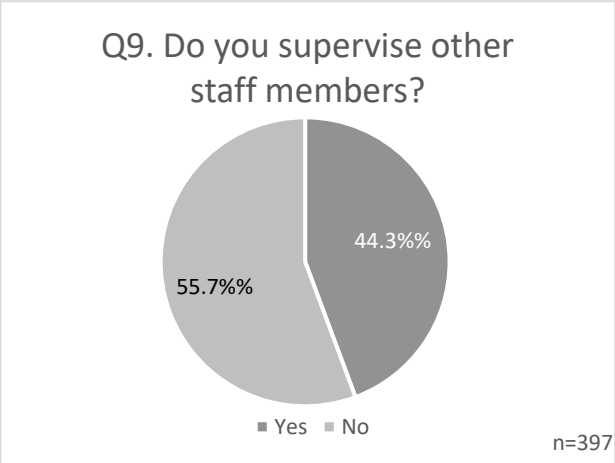


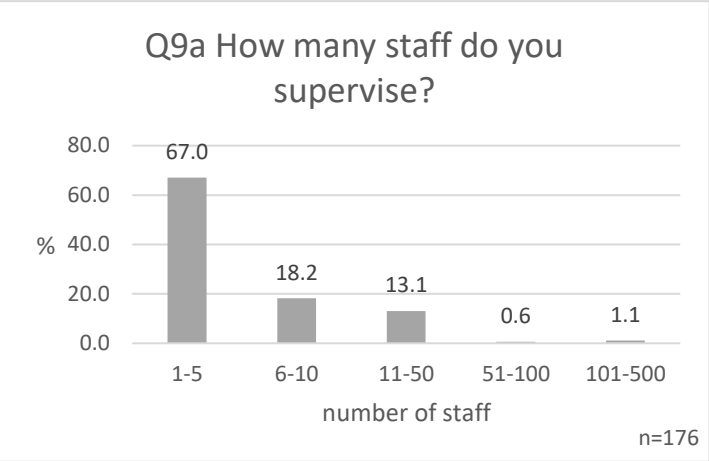


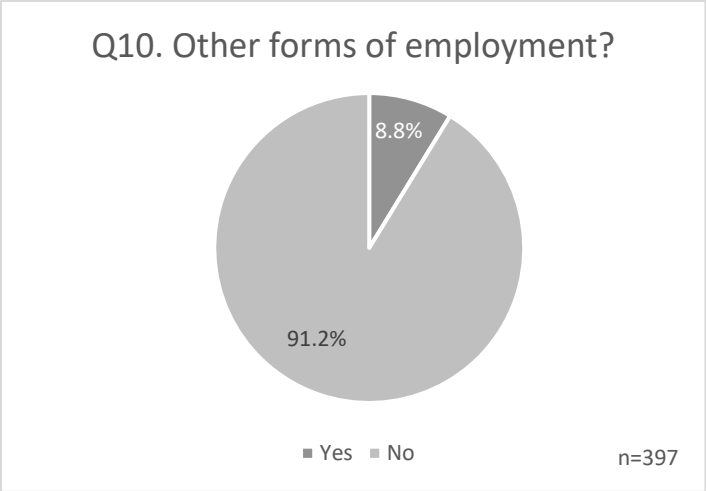
Q6. was an open question, answered in text form, so responses were sorted manually and arranged under broad headings.

More than half of respondents were teachers (53.9%).

There were only 2 self-employed and 1 sub-contractor, so it was not possible to explore differences for contractors in transmission risk and risk perceptions.



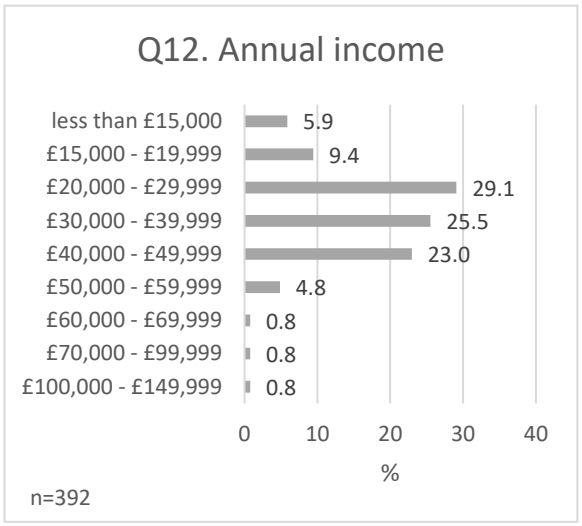


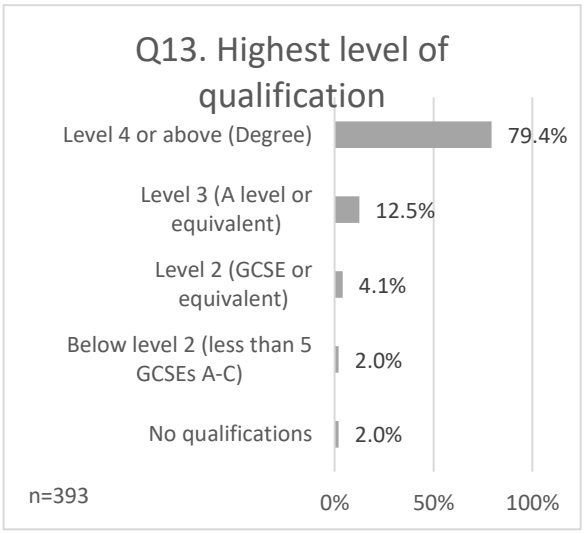


Just under half (44.3%) supervised others at work.

8.8% of people had more than one job (n=35).

More than half (58.3%) had worked in their current job for more than 5 years.





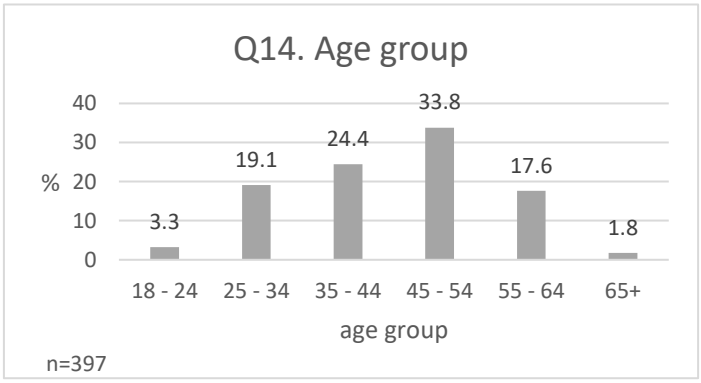
Around 1 in 7 (15.3%) were earning less than £20,000.

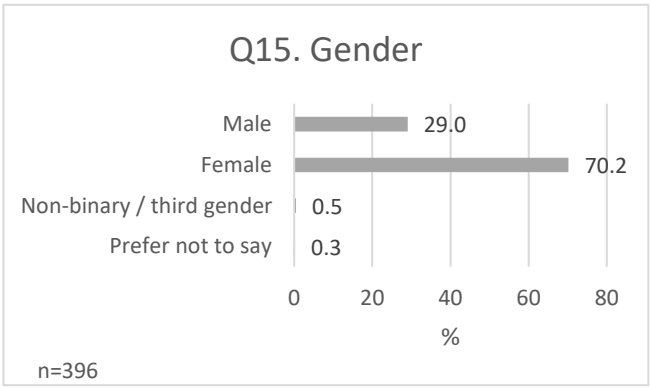
Almost 4 in 5 had a high qualification level (79.4%) at degree level or above).

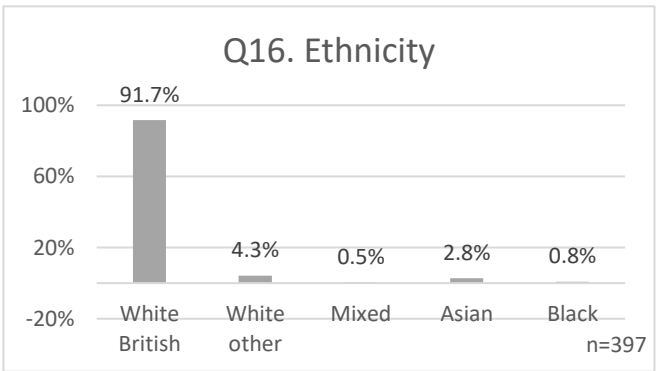
More than half (58.2%) were aged 35-54.

70% were female.

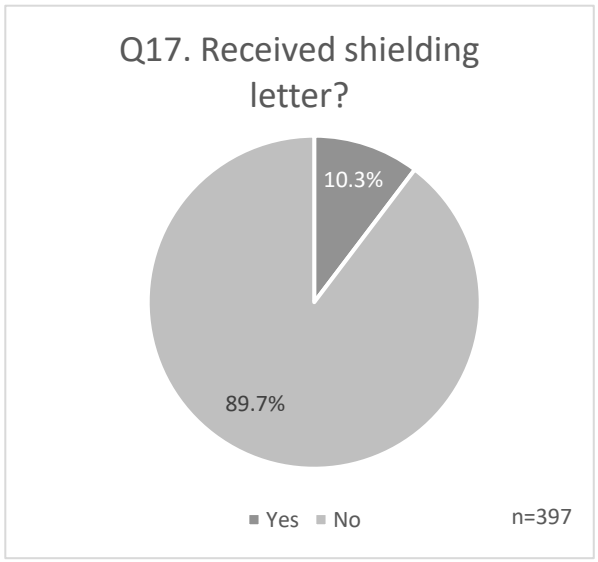
There were very few respondents from black and ethnic minority groups (4.0%, n=16).
4.3% (n=17) were 'white other'.

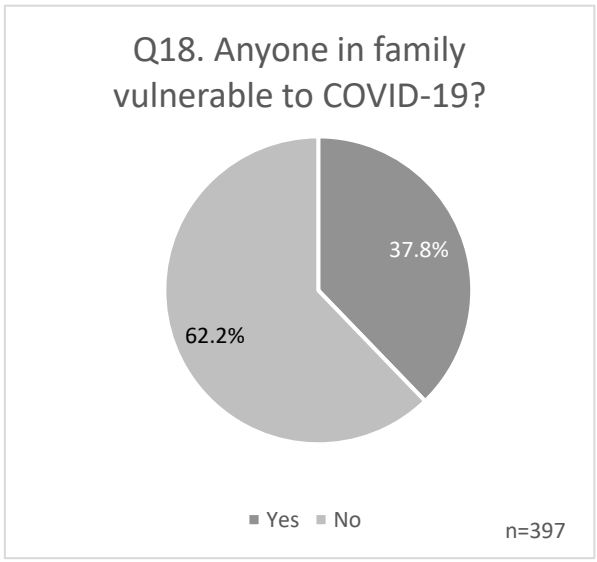




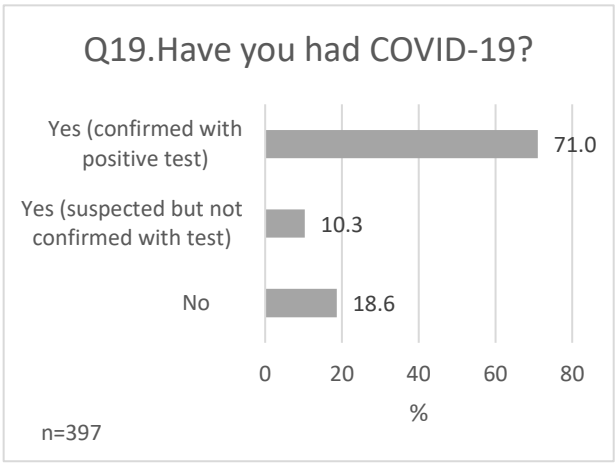


Section 2. COVID-19 experience.



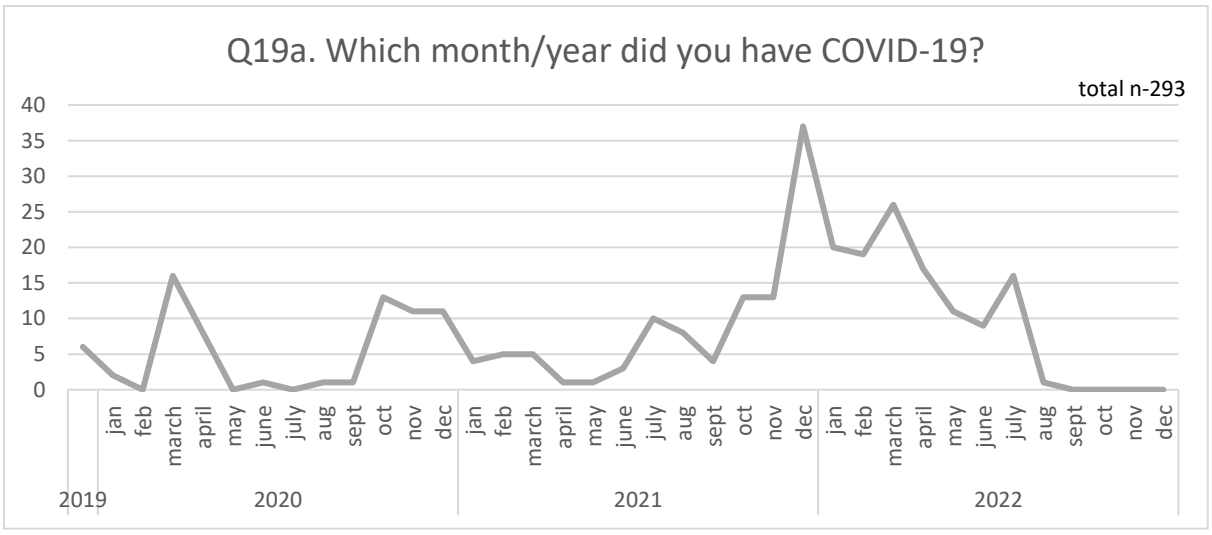


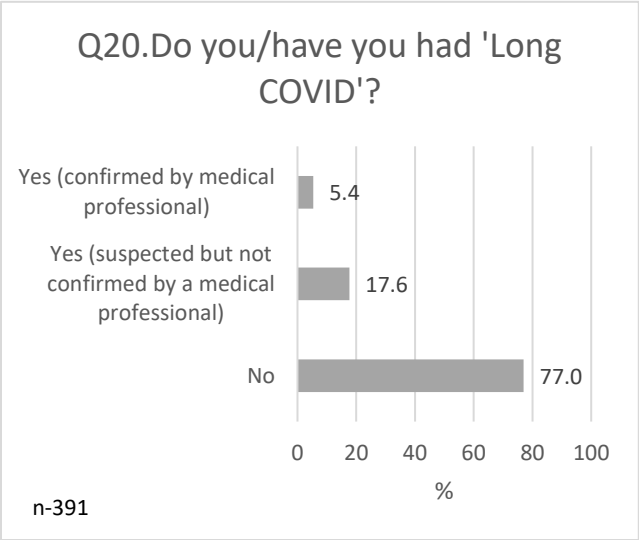
One in 10 (10.3%) said they had been contacted by letter or text message to say they were at severe risk from COVID-19 due to an underlying health condition and should be shielding. Over a third (37.8%) said they had someone in their immediate family or 'bubble' who is more than usually vulnerable to COVID-19.



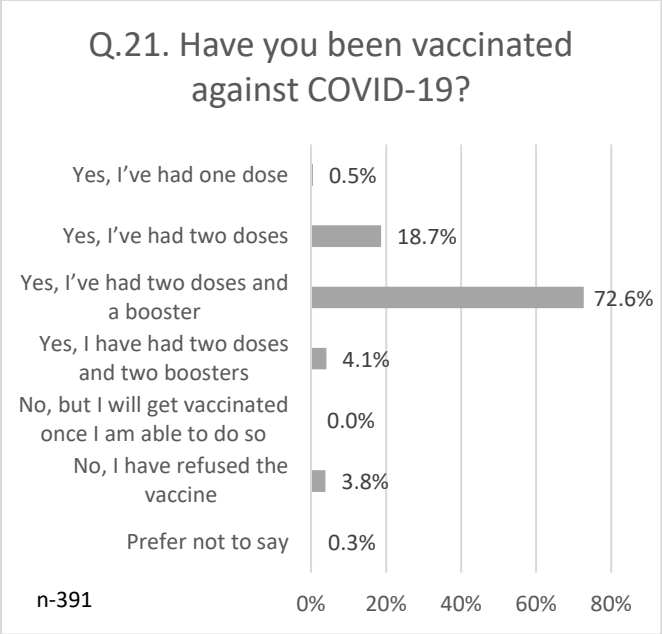
Four out of five respondents had had COVID-19 (81.4%).

There was a problem with Q19a - some gave dates for each time they'd had COVID-19. Where only 1 date was given, this was likely to have been the most recent episode if people had had it more than once, so more recent dates may be over-represented. The chart gives one date for each respondent (if more than one date was mentioned, the 1st date was used). Some respondents mentioned each date they had COVID-19.

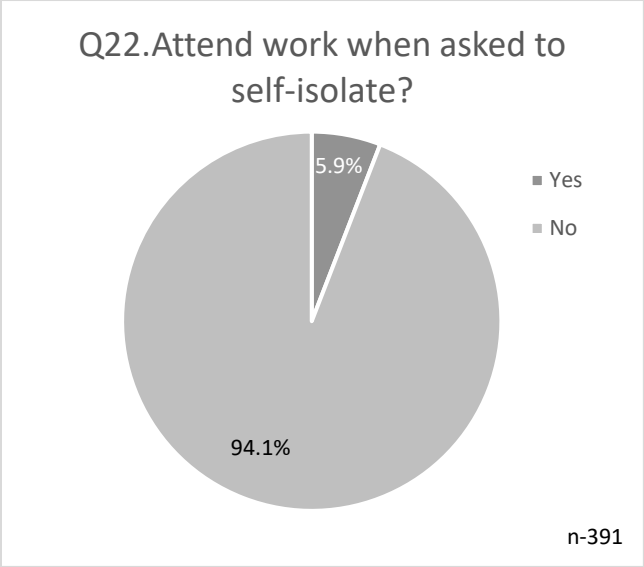




Almost 1 in 4 respondents would describe themselves as having 'Long COVID' (23% of the 391 people who answered this question, n=90). This had been medically confirmed for around three quarters of those saying yes (n=21 out of 90).

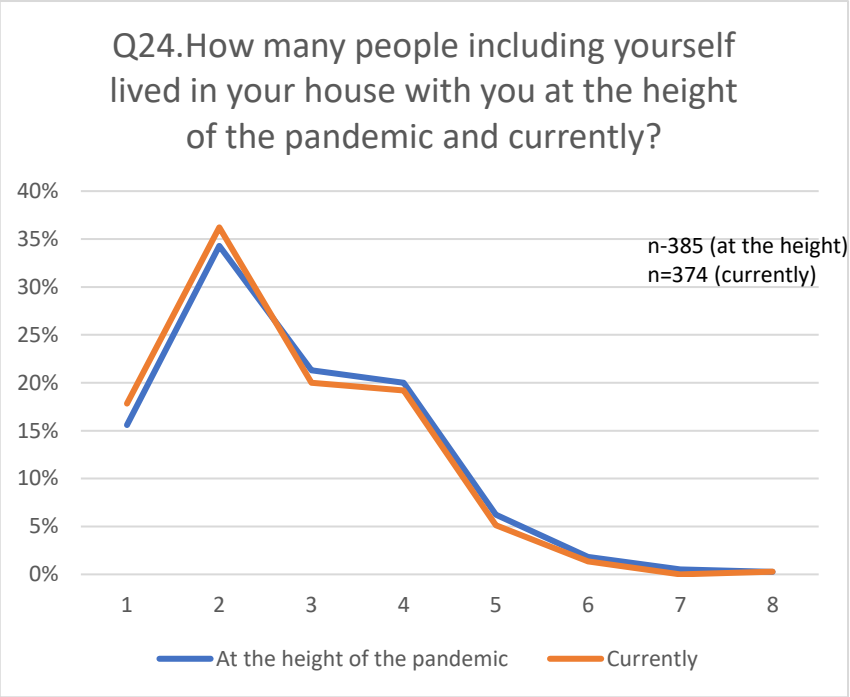


A very small proportion of respondents were un-vaccinated (3.8%, n=15 of the 391 who answered the question).
Almost three quarters (72.6%) had had two doses and a booster.

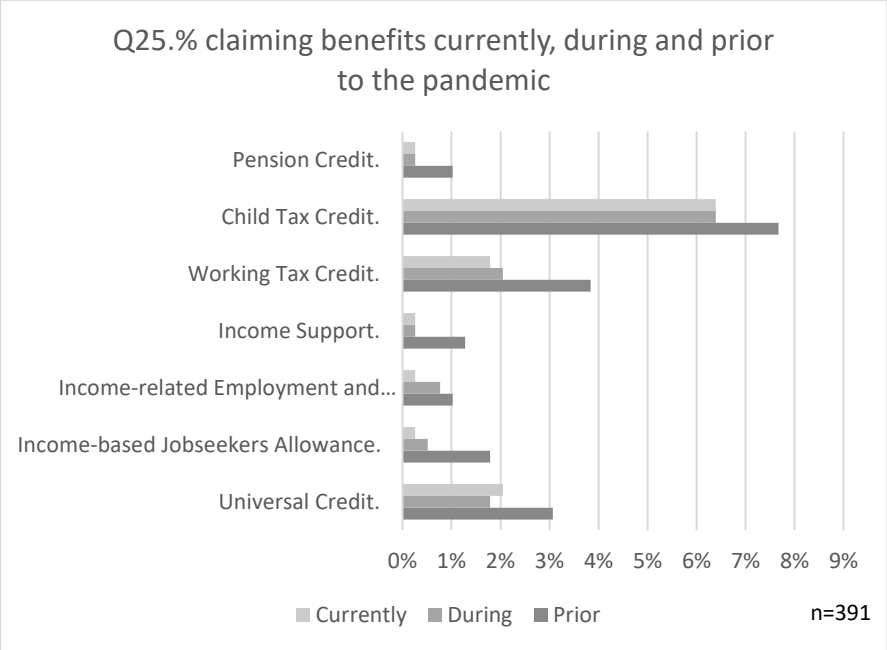


5.9% (n=23 of 391) said they attended work despite being asked to self-isolate.

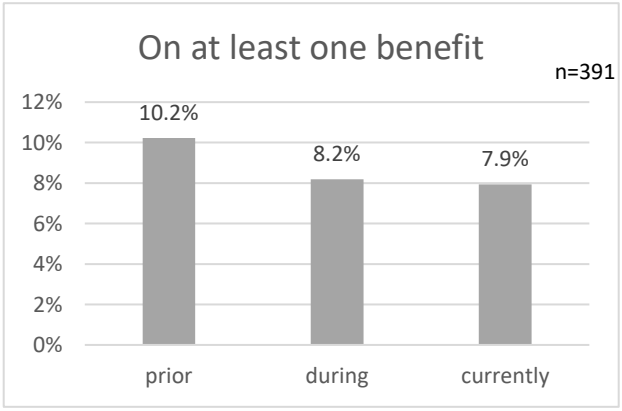
Q23 (open question – summary of results):
Of those still attending work when asked to self-isolate, 70% said they did so every day or many times (n=14 out of 20 respondents).



Around 1 in 3 households consisted of two people, which was the most common household size during both periods. There was a small difference in the household size of respondents during the two time periods, with slightly fewer smaller households of 2 or less during the pandemic compared to currently (49.9% compared to 54.1%) and slightly more households of three to eight people (50.1% compared to 45.9%).



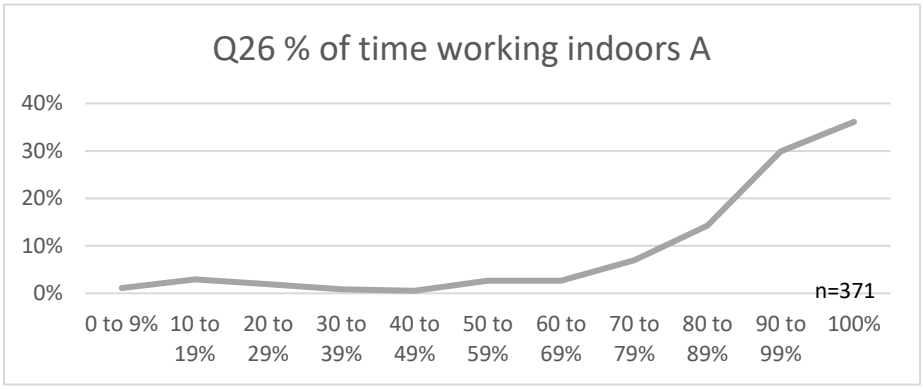
55.7% (221) indicated that they were on no benefits prior to the pandemic. But the results on 'no benefits' need to be treated with caution, e.g., 16 people who had ticked that they claim 1 or more benefits prior to the pandemic had also ticked that they claim no benefits – it is possible that these boxes were ticked in error.

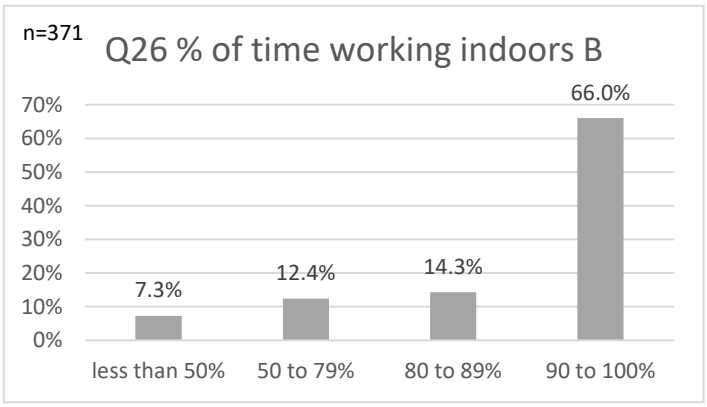


Prior to the pandemic, one in 10 respondents were on some kind of benefits (10.2%, n=40 out of 391). Of these 40, more than half (24) were just on one benefit. There were four people claiming seven different benefits (this may not be possible – may have been ticked in error).

During the pandemic and currently, slightly fewer people were claiming at least one benefit and only one person was claiming up to seven different benefits.

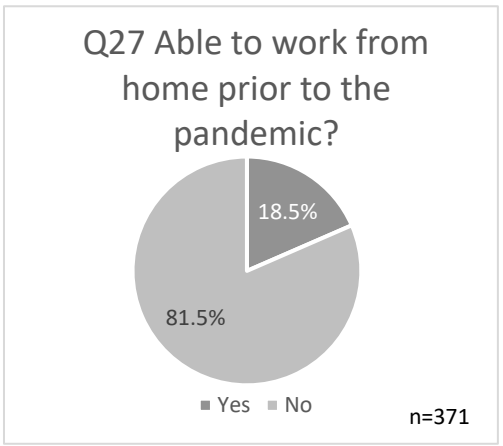
Section 3. Workplace (and related environmental factors)



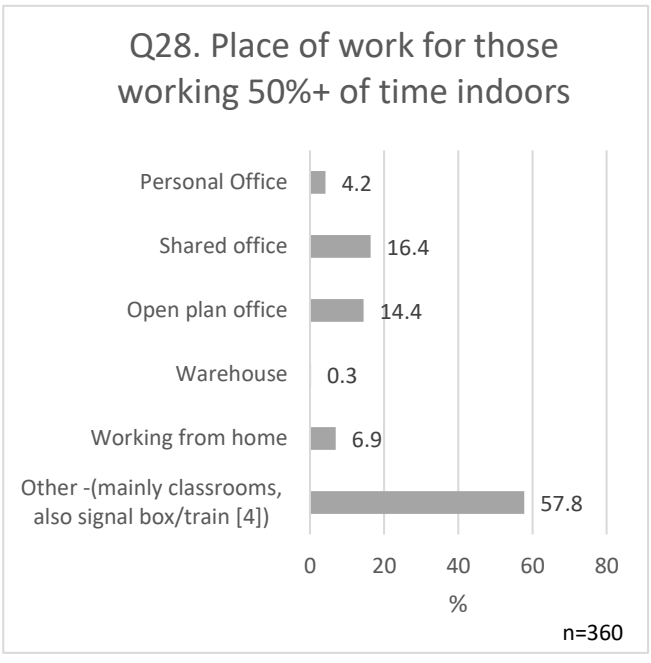


Q26 was an open question. Results have been summarised in chart B, which shows that most respondents (92.7%) spent 50% or more of their work time indoors.

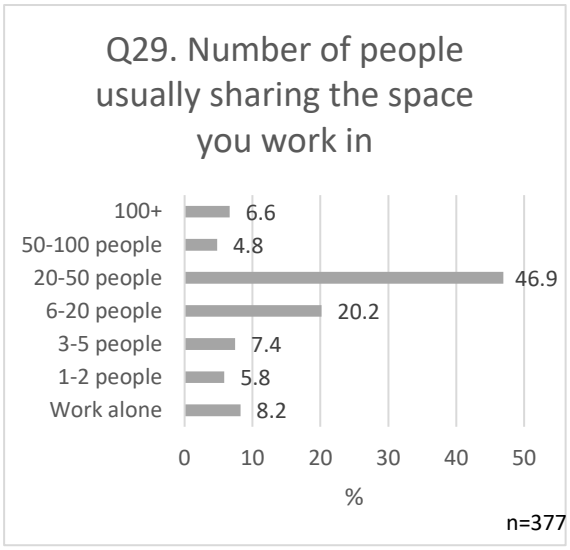
Two thirds of respondents (66.0%) worked more than 90% of their time indoors, with one-third spending 100% of their work time indoors.



18.5% could work at home prior to the pandemic. We didn't ask about whether able to work from home during the pandemic or currently.



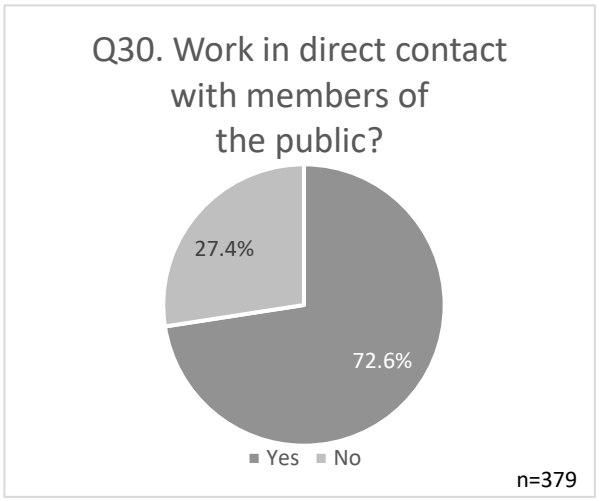
Of those who currently work indoors, 6.9% said they worked from home. Most ticked 'other', then specified a range – mainly 'classroom'.

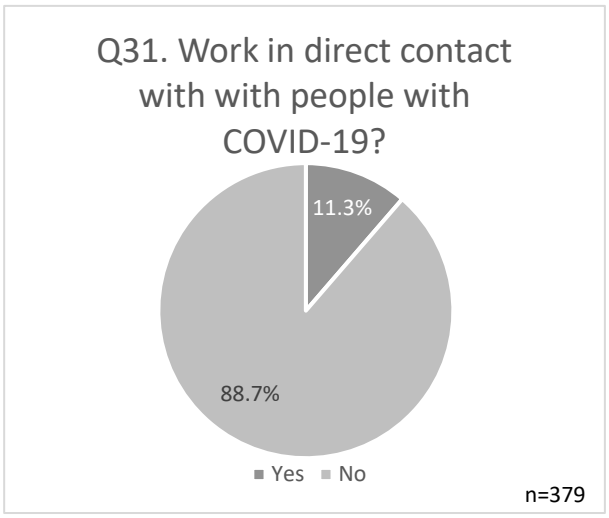


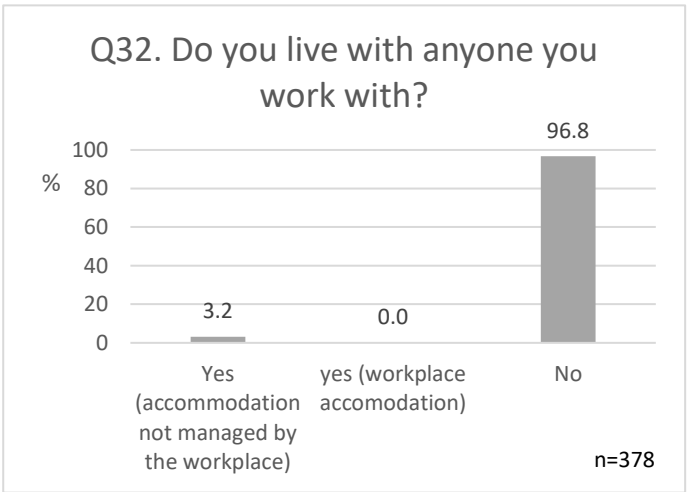
More than half (58.4%) of respondents share their workspace with more than 20 people (co-workers and clients).

Almost three quarters (72.6%) worked in direct contact with members of the public.
Around 1 in 10 (11.3%) worked in direct contact with people with COVID-19, e.g., as a health or care worker.

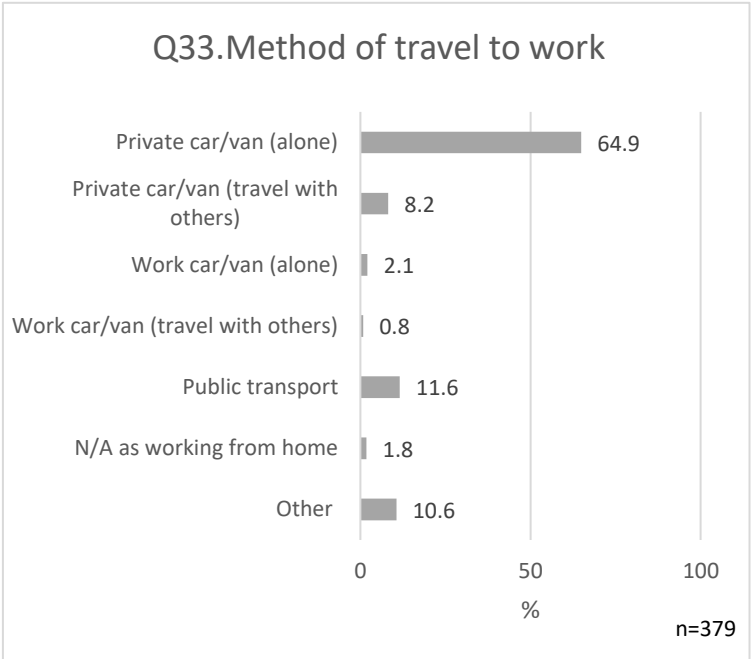
3.8% of respondents (12) lived with people they work with, but not in accommodation managed by the workplace.



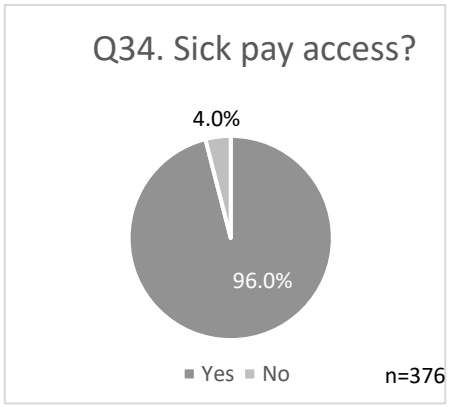


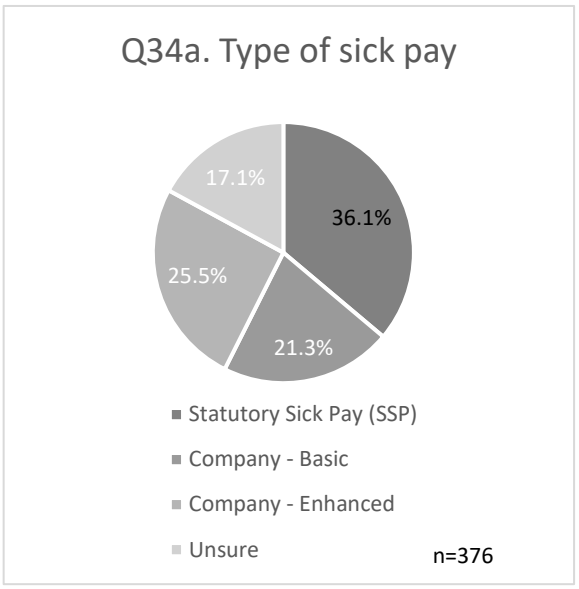


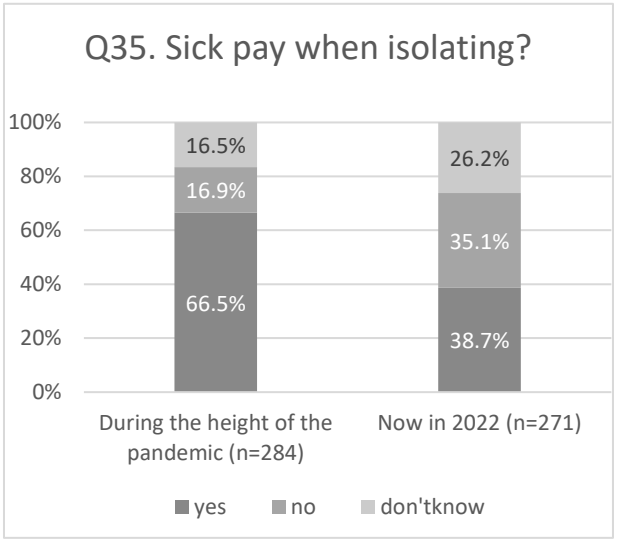
1 in 5 respondents (20.6%) usually travel into work with others, either on public transport, or in a car or van



The majority (96.0%) had access to sick pay. For 2/3 (36.1%) this was statutory sick pay.

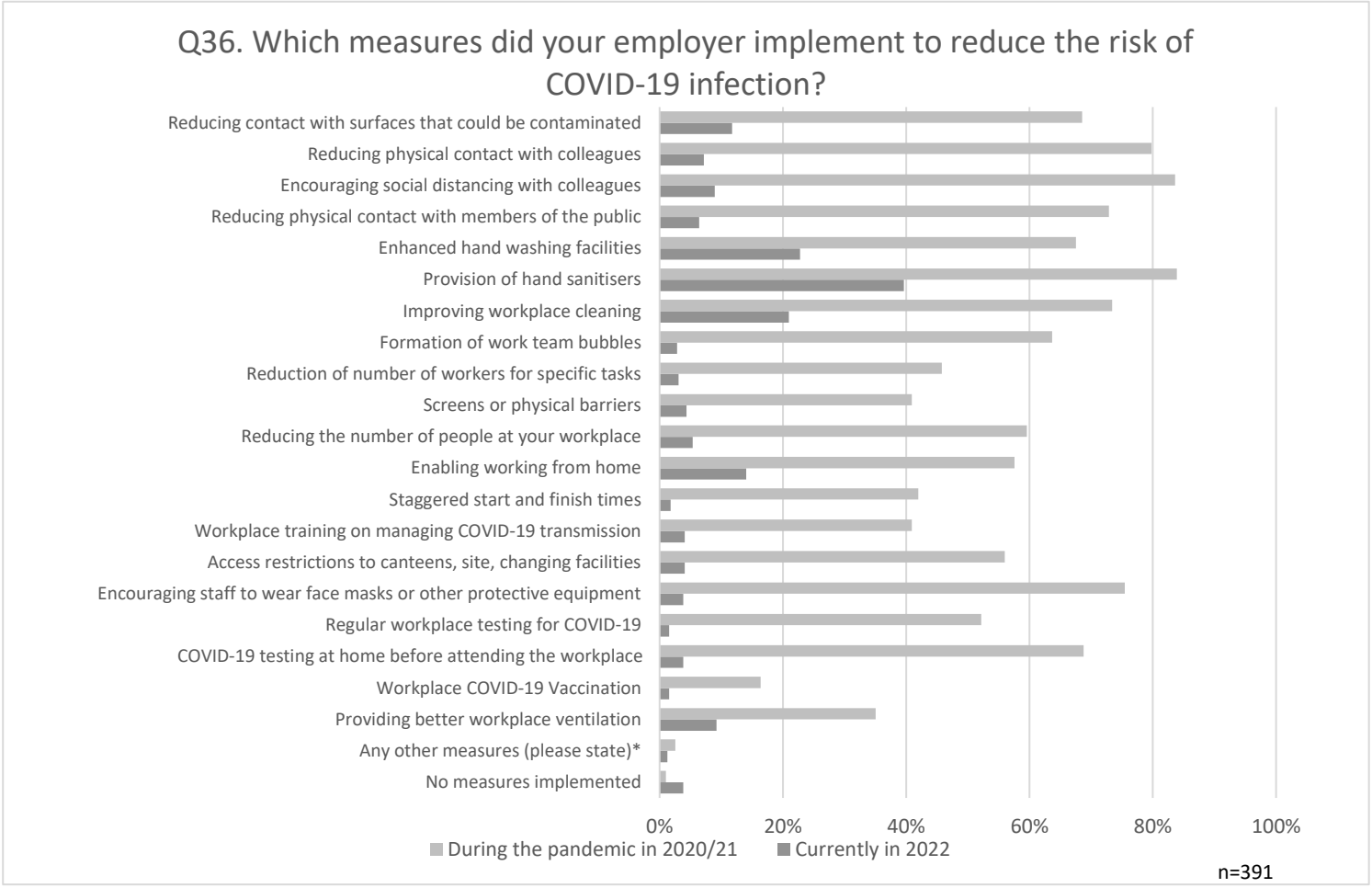






Respondents were less likely to get sick pay when self-isolating currently (38.7%) compared to during the pandemic (66.5%).
There is more uncertainty currently about access to sick pay when self-isolating (don't know = 26.2% currently compared to 16.5% during).

Section 4 - Transmission risk control measures



* 'Other' measures mentioned were: Air filters, Carbon Monoxide Monitors, Classrooms given bottles of hand sanitiser and spray to wipe desks between classes, CO2 monitors, Deep clean, Enhanced surface protection with Zoono cleaner, Signs, Windows open (one mention for each).

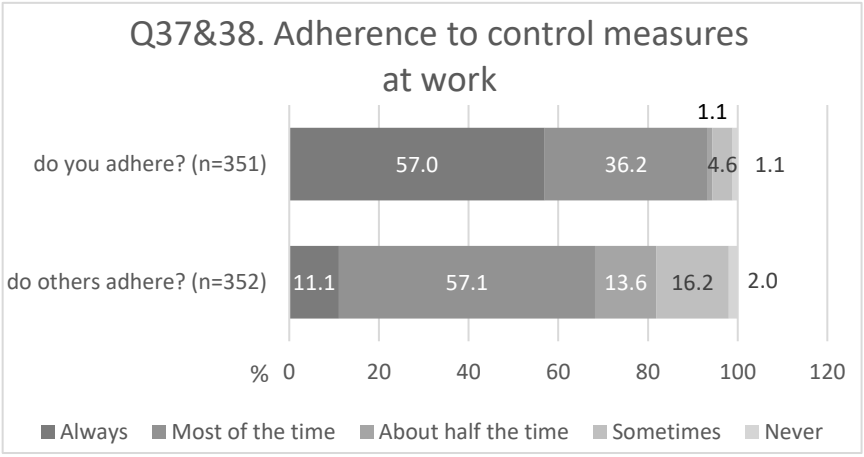
All mitigation measures introduced during the pandemic have been much reduced currently. However, there is still provision of hand sanitisers reported by over a third (39.6%). Other measures more likely to remain are enhanced handwashing facilities (22.8%), improved workplace cleaning (21.0%) and enabling working from home (14.1%).
Only around a third of respondents (35.0%) reported that workplaces provided better ventilation during the pandemic. This reduced to only 9.2% currently.

Table A1 lists the percentage change in measures, in order of which have seen the greatest reductions. 'Encouraging social distancing with colleagues', 'Reducing physical contact with colleagues' and 'Encouraging staff to wear face masks or other protective equipment' have all been discontinued in more than 70% of cases.

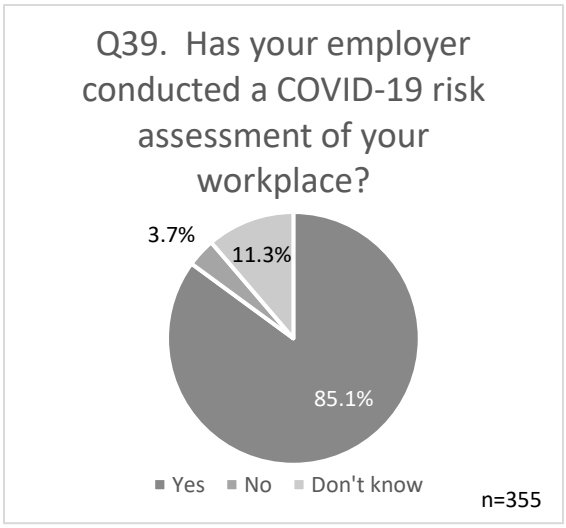
Table A1. Reductions in COVID-19 mitigation measures, from during the pandemic to currently

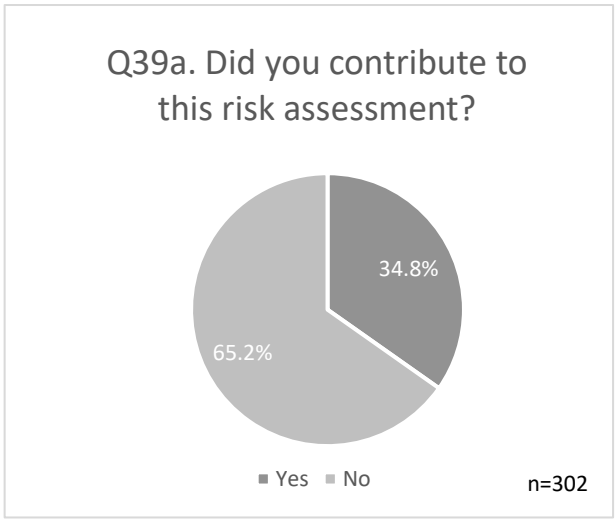
	% reduction		% reduction
Encouraging social distancing with colleagues	74.7%	Enhanced hand washing facilities	44.8%
Reducing physical contact with colleagues	72.6%	Provision of hand sanitisers	44.2%
Encouraging staff to wear face masks or other protective equipment	71.6%	Enabling working from home	43.5%

Reducing physical contact with members of the public	66.5%	Reduction of number of workers for specific tasks	42.7%
COVID-19 testing at home before attending the workplace	65.0%	Staggered start and finish times	40.2%
Formation of work team bubbles	60.9%	Workplace training on managing COVID-19 transmission	36.8%
Reducing contact with surfaces that could be contaminated	56.8%	Screens or physical barriers	36.6%
Reducing the number of people at your workplace	54.2%	Providing better workplace ventilation	25.8%
Improving workplace cleaning	52.4%	Workplace COVID-19 Vaccination	14.8%
Access restrictions to canteens, site, changing facilities	51.9%	Any other measures (please state)	1.3%
Regular workplace testing for COVID-19	50.6%	No measures implemented	-2.8%



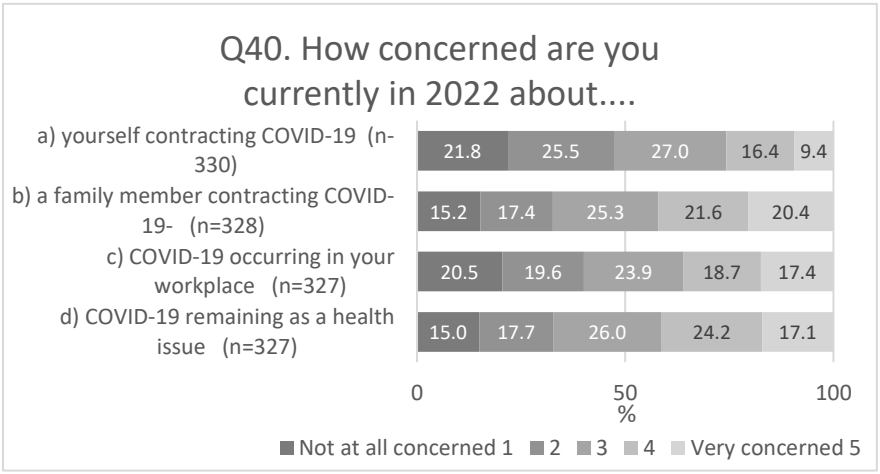
Almost all (93.2%) said they adhered to control measures always or most of the time. Only 68.2% (around two-thirds) felt that others adhered to control measures always or most of the time.



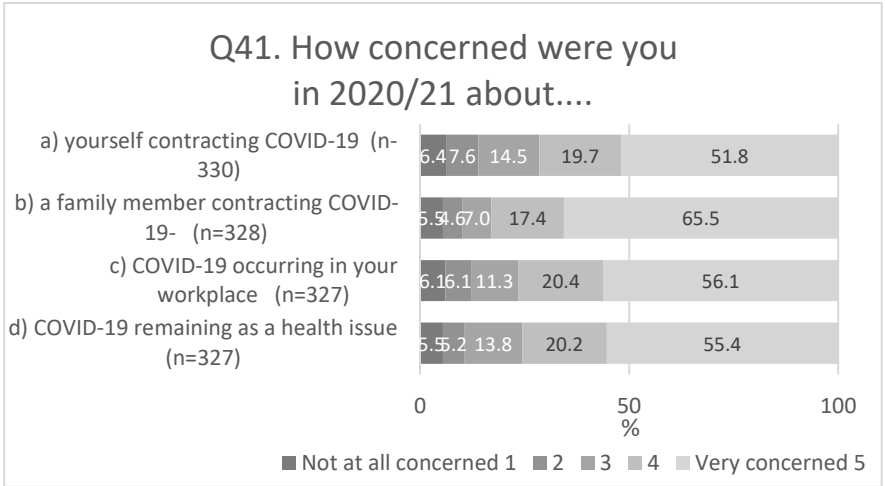


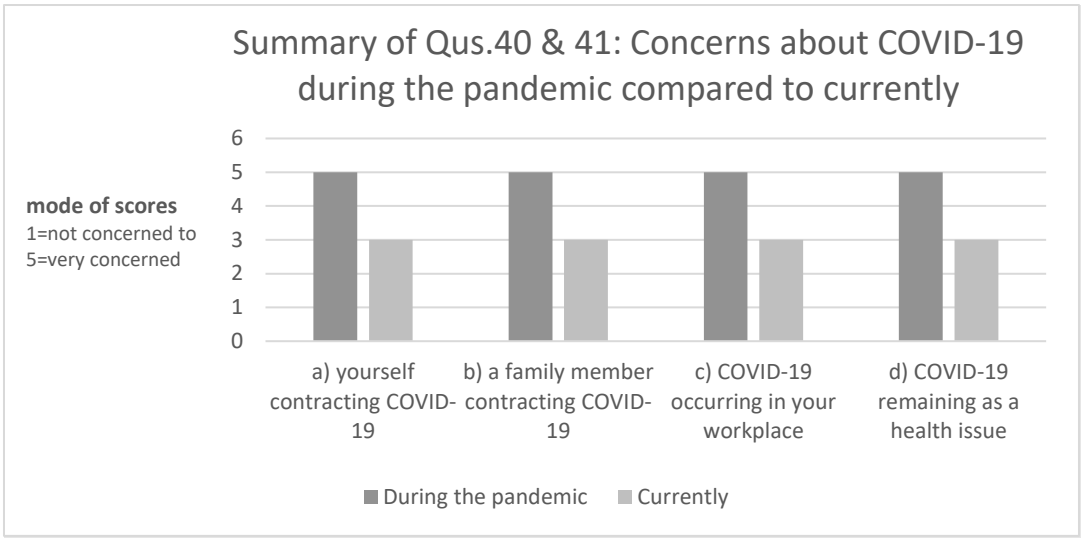
Most respondents (85.1%) said that their employer had conducted a COVID-19 risk assessment of their workplace.
Around 1 in 3 (34.8%) said they had contributed to this assessment

Section 5 – Perceptions of transmission risk

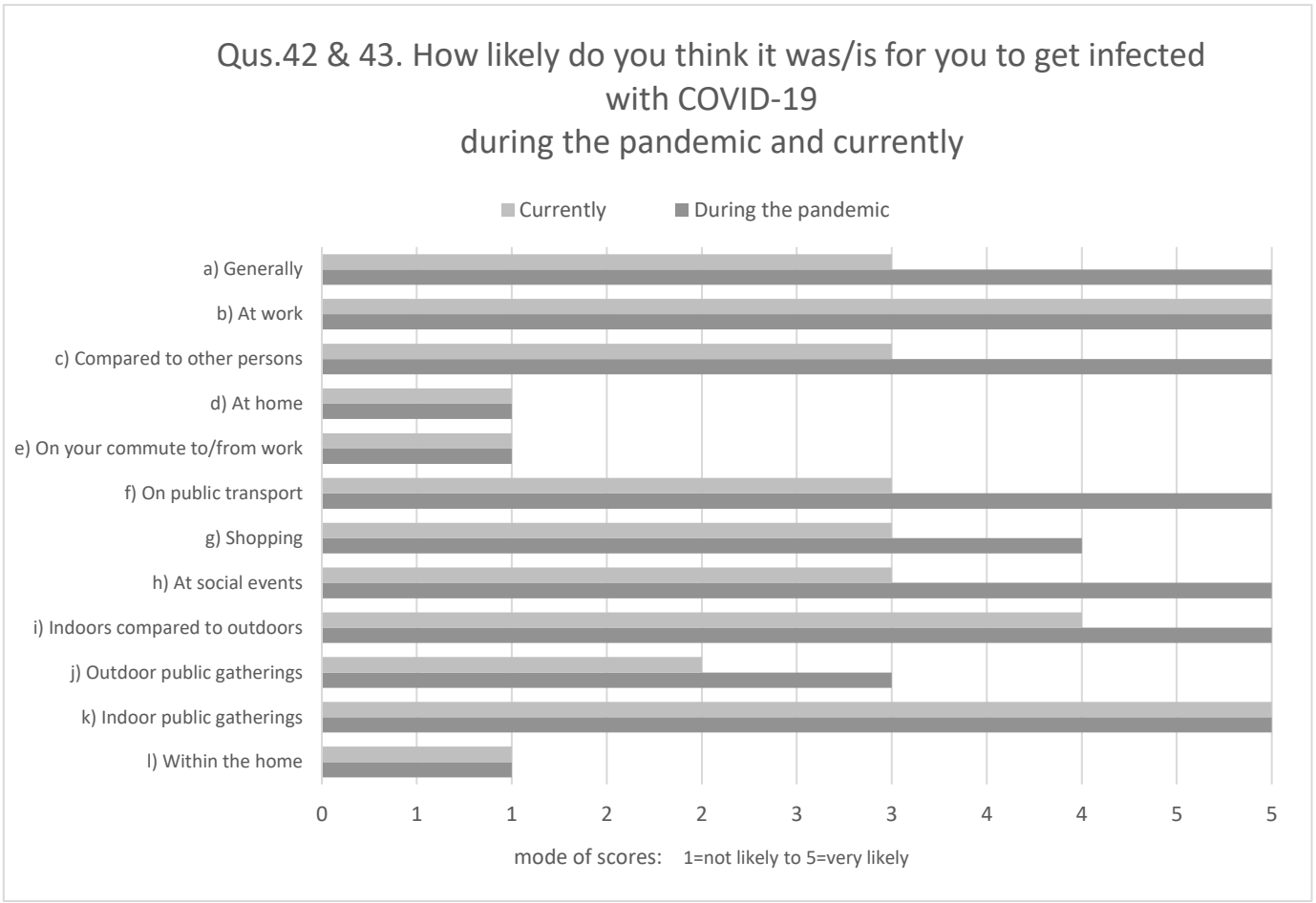


Currently, 1 in 5 or fewer are very concerned about COVID-19. This compares to 50% or more during the height of the pandemic. During both periods, family members were of most concern.

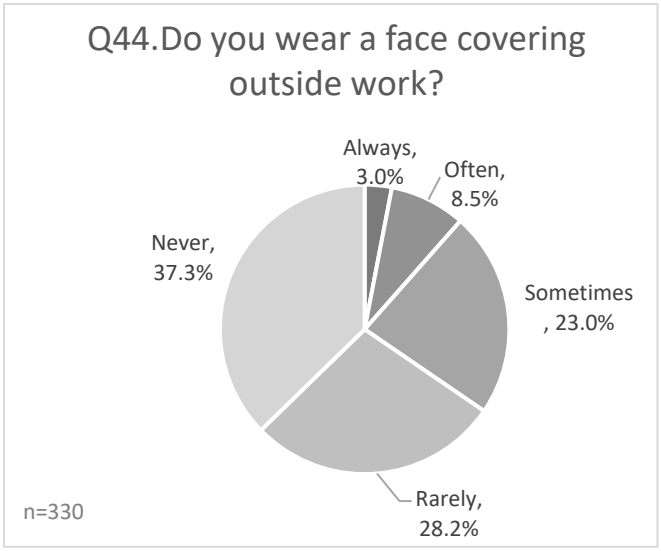




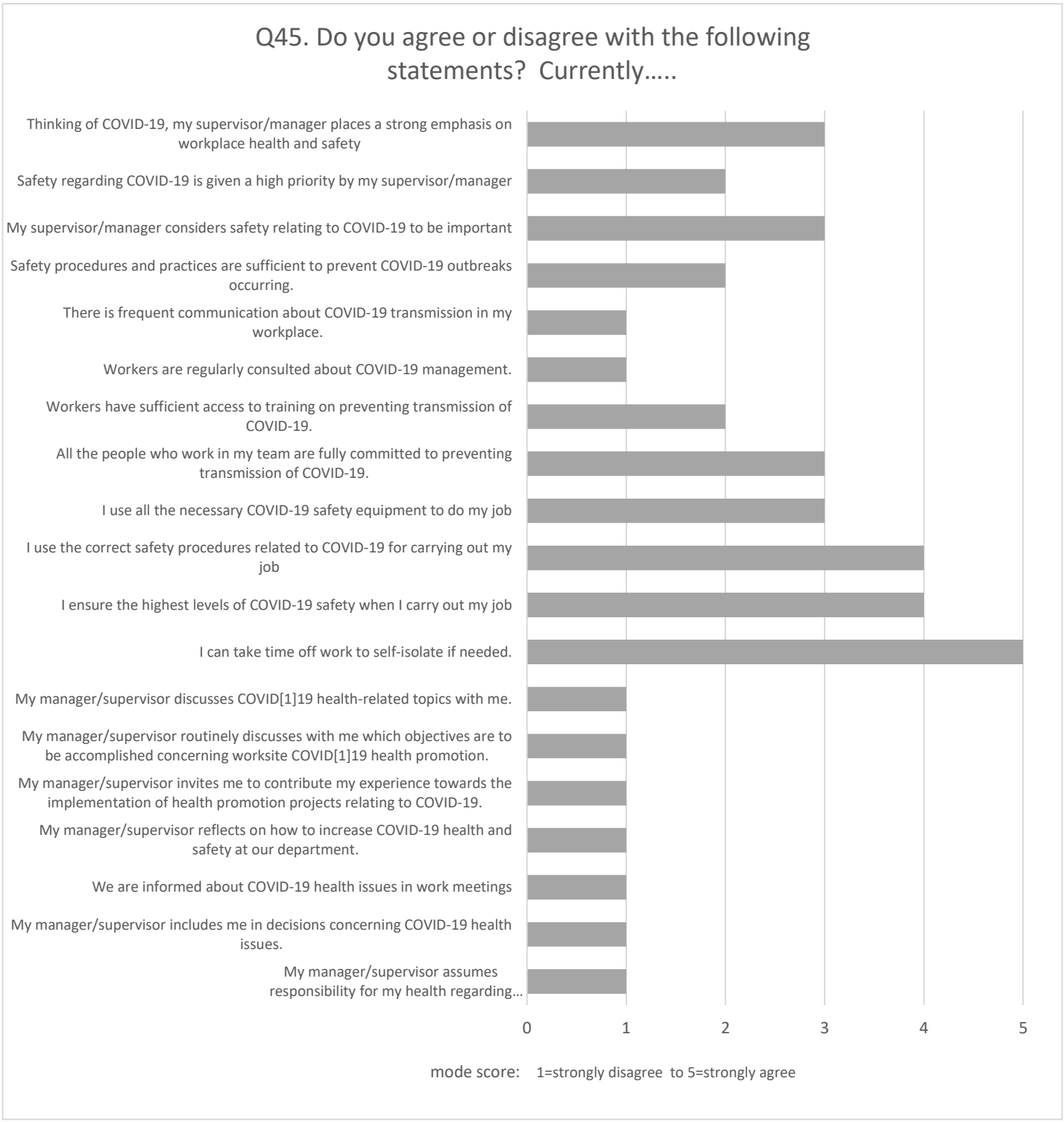
The majority of respondents are neutral as to whether or not they are currently concerned about each of these COVID-19 issues. During the pandemic, they were very concerned about each issue.



Many respondents still currently thought they were very likely to get infected at work and at indoor public gatherings - as likely as during the pandemic.
Most thought they were not likely to get infected at home or on their commute, during the pandemic as well as currently. (As more than 2/3 [68.8%] travel alone to work or work from home, this explains the low commute score).



Around two thirds (65.5%) rarely or never wear a face covering outside work.
Q.44a was when and why not – there were 209 different answers.



Most people strongly agreed they could take time off to self-isolate. Most strongly disagreed about being consulted and involved in decision making and communication around COVID-19 issues.

Some of these questions were grouped together to form the following variables:

- safety climate: Q46_1, Q46_2, Q46_3
- safety compliance: Q46_9, Q46_10, Q46_11
- health leadership: Q46_13, Q46_14, Q46_15, Q46_16, Q46_17, Q46_18, Q46_19

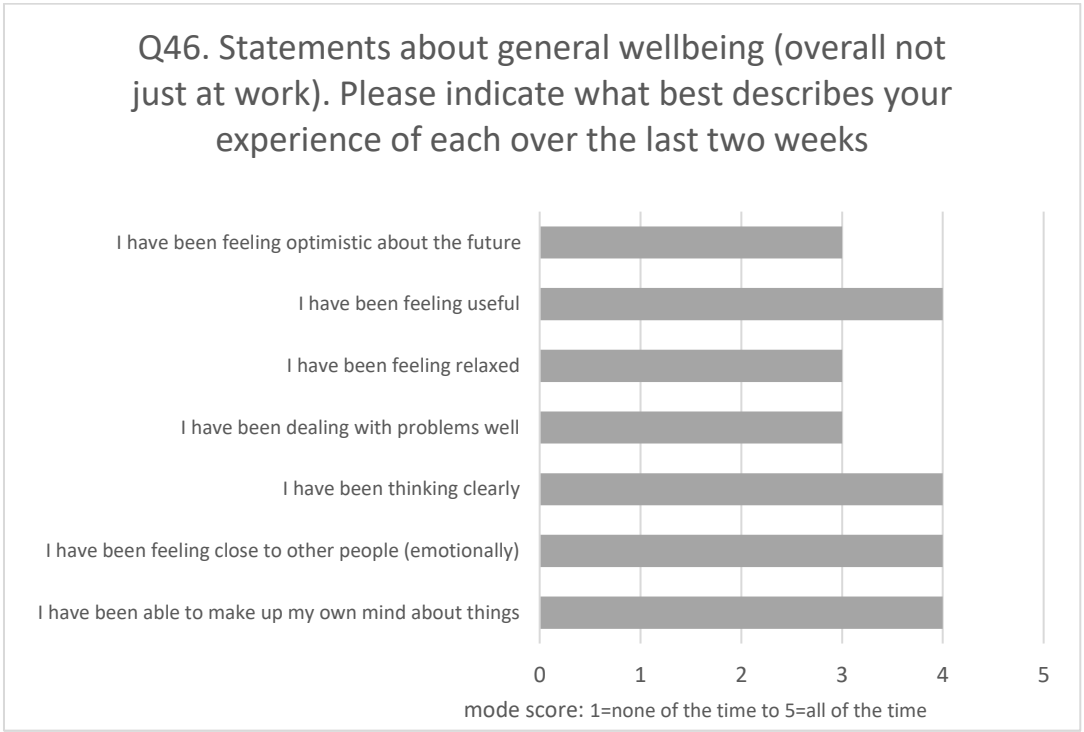
Mode and mean scores for these sub-groups are as follows:

	Safety Climate	Safety Compliance	Health Leadership
Mean	3.1	3.5	2.2
Mode	3.0	4.0	1.0

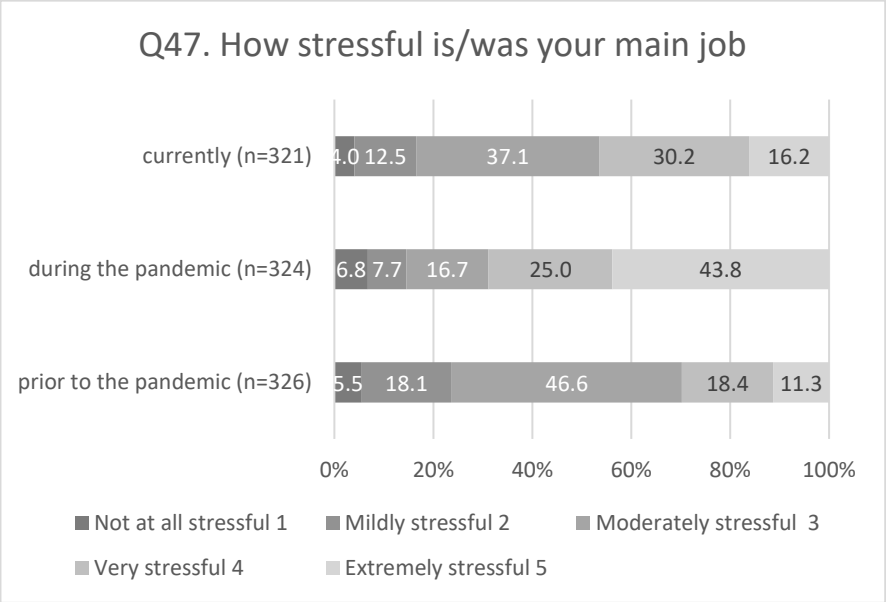
Safety & leadership summary: In response to a set of questions with 1 strongly disagree to 5 strongly agree:

- respondents were slightly more inclined to agree there is currently compliance with safety measures (mean 3.5, mode 4.0).
- they neither agreed nor disagreed with statement about a good safety climate (mean 3.1, mode 3.0)
- they were more likely to disagree/strongly disagree with statements about whether there is good health leadership (mean 2.2, mode 1.0).

Section 6 – Wellbeing



The overall computed score for wellbeing indicated that respondents felt mid-way between none of the time and most of the time on these issues (mode=3, mean=3.3).

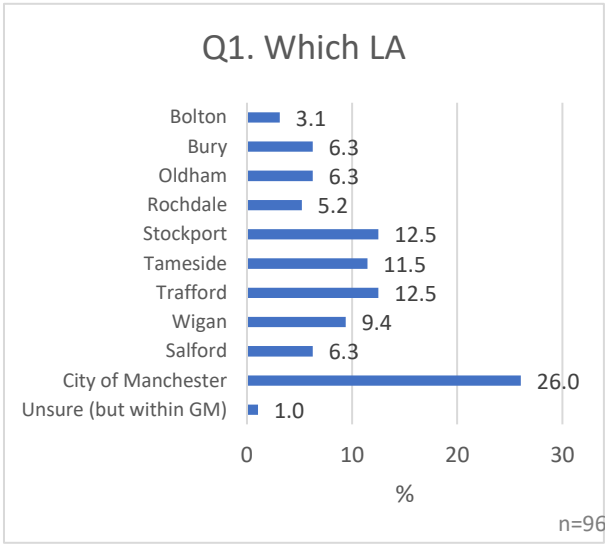


Of those that responded, more than 2/3 (69.8%) found their job extremely or very stressful during the pandemic, compared to less than 1/3 (29.8%) before. Levels of stress remain higher than before the pandemic, with 46.4% currently finding their job very or extremely stressful.

B2 Full results – Employer survey

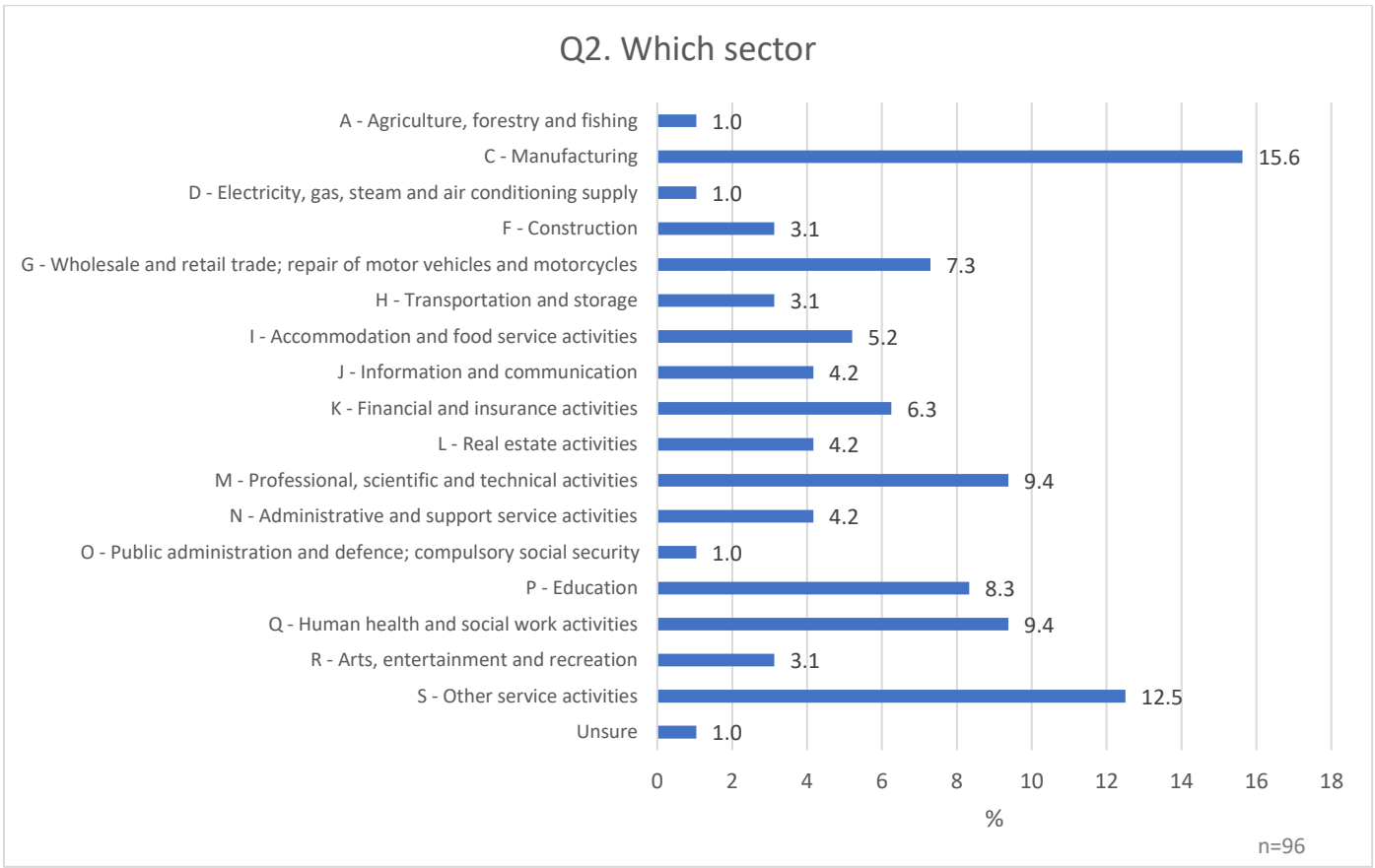
The employer survey ran from 4/8/22 and was closed 18/10/22.
Initial n=149, then 7 were excluded as they didn't tick any boxes as to where in GM they worked. A further 15 were excluded as they only completed 6% of questions. We also excluded 16 who didn't get past Section 1 background questions (Q1 to 10).
Another 7 were excluded as they answered 'not located in GM' to Q1. Then another 7 who didn't answer this question or any other questions. And a test survey (discovered at q7). So final n=96 (Then only 88 got past Section 2)

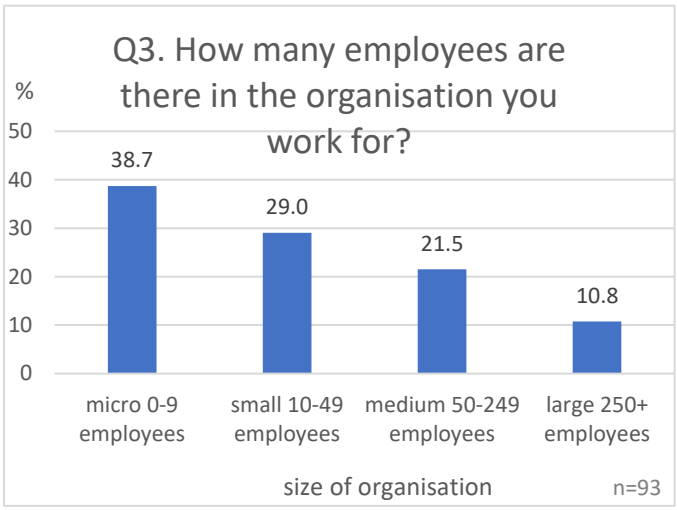
Section 1. Background (qus.1-10):



Around 1 in 4 (26.0%) worked in the City of Manchester. The rest were spread through the other nine boroughs, ranging from 3.1% in Bolton, to 12.5 % in Stockport and in Trafford.

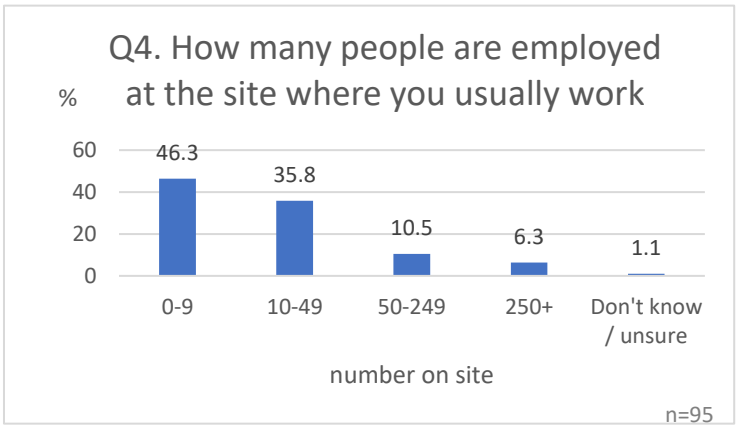
There were a broad range of sectors represented, with the largest numbers in manufacturing (15.6%) and 'other service activities' (12.5%).



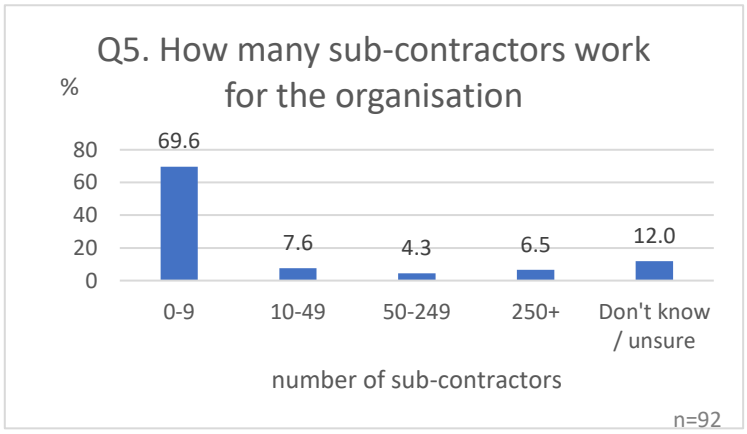


More than 1 in 3 respondents (38.7%) worked in micro-organisations of 9 or less employees.

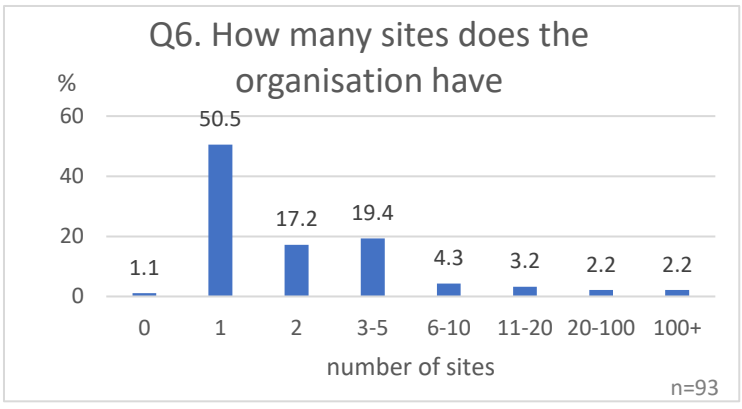
Just under 1 in 3 (32.3%) worked in medium or large organisations (50 or more employees).



There were only 16.8% of respondents who worked with 50 or more people on site. For 46.3%, there were less than 10 on site.



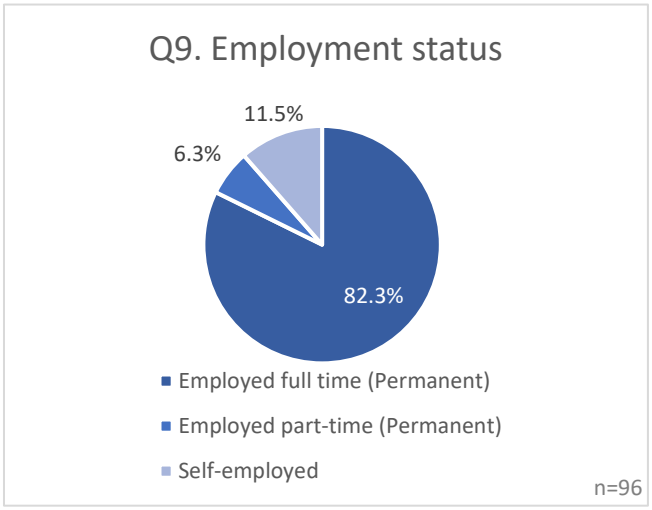
Most organisations (69.6%) had between 0-10 sub-contractors. 18.5% had 10 or more sub-contractors.

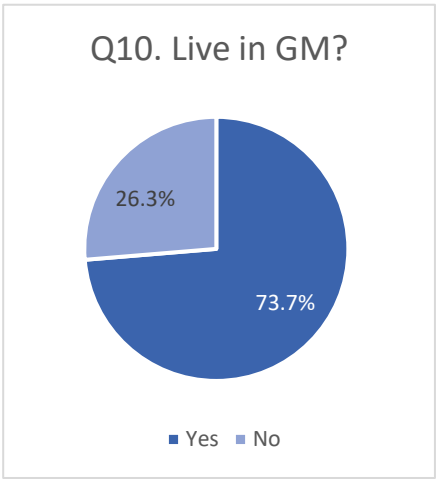


Half had just one site (50.5%). Just under a third had three or more sites (31.2%).

Q.7 Job title (not reported to protect anonymity)

Q8. Overview of types of job roles at company (not reported to protect anonymity)





The vast majority were employed full-time permanently (82.3%). None of the respondents were temporary employees or sub-contractors.

Almost three-quarters of respondents lived in GM (73.7%).

Section 2. Organisation policies

Q11-22: were all open free text questions. Responses to these questions were tabulated. The results tables were printed and manually coded, then summarised as follows:

Q11-13. What was the company policy on working from home, including the proportion of time that employees are permitted to work from home PRIOR to the pandemic, DURING the height of the pandemic in 2020/21 and CURRENTLY.

There were 93 responses (Table A2).

- For 1 in 5 employers (20.4%, n=19), there had been no home working at any time.
- Almost 1 in 10 (9.7%, n=9) reported that home working had been allowed during the pandemic only, not prior to or currently.
- For 18.3% of employers (n=17), there had been no home working at all prior to the pandemic, but this had been allowed during the pandemic and has continued currently. For example (table A3):

Table A2. Home working (HW) policies prior to the pandemic, during the pandemic and currently	no.	%
No HW anytime	19	20.4%
Some HW only during the pandemic, not prior or currently	9	9.7%
Some HW only during the pandemic and continues currently	17	18.3%
Some HW possible prior, during and currently	39	41.9%
(Similar levels prior and currently)	(20)	(21.5%)
(More HW currently than prior)	(13)	(14.0%)
(HW very limited)	(6)	(6.5%)
Not stated	9	9.7%
Total	**93**	**100%**

Table A3. Examples of new working from home policies that still remain			
ID	PRIOR to pandemic	DURING pandemic	CURRENTLY
7	This was not allowed	For staff members whose role could be performed at home all had to work from home,	We are now operating a hybrid model 1-2 days in office rest at home but that's flexible as well
41	No working from home prior to the pandemic	Everybody working from home	Minimum 1 day per week in the office

- In 41.9% of cases (n=39), some working from home had been practiced before as well as during the pandemic and currently.
- For 1 in 3 of these (14.0% of the total, n=13), the opportunity for home working currently was greater than prior to the pandemic. The following table (A4) gives two examples:

Table A4. Examples of expansions of working from home policies			
ID	PRIOR to pandemic	DURING pandemic	CURRENTLY
23	Hybrid, flexible.	Working at home only.	Hybrid, flexible, but now more formalised into a written policy.
30	Employees allowed to work at home 1 to 2 days per week.	Everyone to work at home as default with site work and occasional visits to offices as necessary to get the job done.	Up to three days per week at home.

Q14-16. What proportion of their usual pay did employees receive when they were absent from work due to sickness? (e.g., SSP, full pay etc.) PRIOR to the pandemic, DURING and CURRENTLY
There were 77 responses to this question. The vast majority of employers reported no change in the proportion of usual pay when sick before, during or after COVID-19. Only eight mentioned that there would be increased provision during the pandemic, for example three said there would be full pay during this period and three noted that that sick pay would be boosted by government scheme payments. One employer stated that the allowance of six days per year on full pay was increased to 10 days during the pandemic but is back at six now.

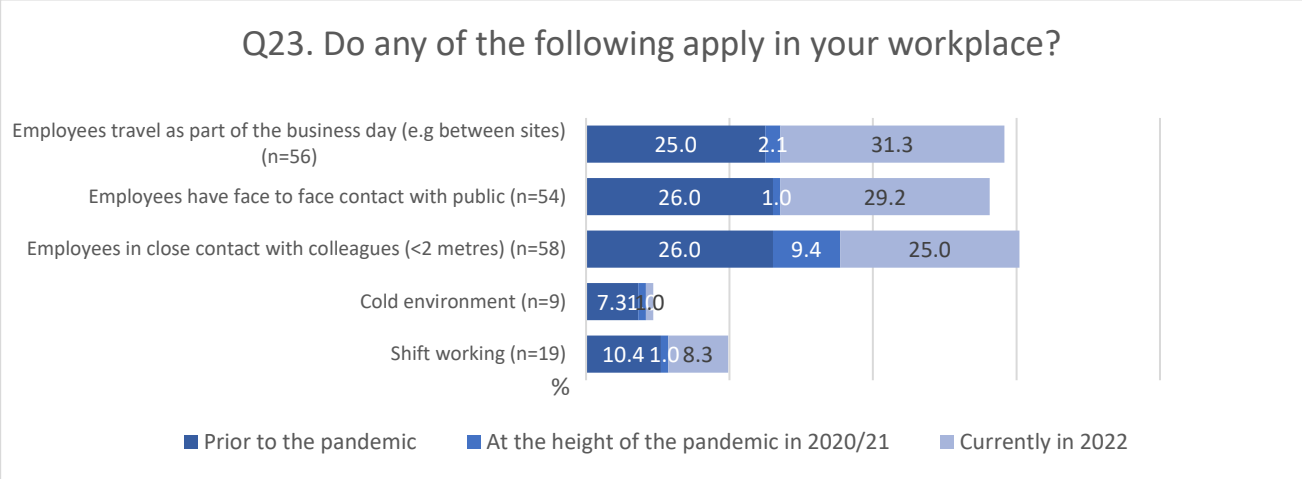
Q17-18. What proportion of their usual pay did employees receive if they had to isolate as a close contact of someone with COVID-19? (e.g., SSP, full pay etc.) DURING the pandemic and CURRENTLY?
There were 77 responses to this question. The majority stated that there had been no change, with SSP or full pay for self-isolation- the same during and after the pandemic. There were five employers who reported lower levels of self-isolation pay now compared to during the pandemic. For example, in one case, self-isolation pay was given from day one during the pandemic, compared to day four currently (ID8). In another case, self-isolation pay was given for ten days during the pandemic, compared none currently (ID42).

Ten employers noted that the question does not apply, with five mentioning there's no need to self-isolate now, and a further five who said that either workers had to come in as usual or were able to work from home in isolation both during the pandemic and currently.

Q19-20. Did/do the company provide accommodation for employees DURING the pandemic and CURRENTLY?
There were 76 responses to this question, with most stating there had been no accommodation provided during the pandemic or currently. Five said there is accommodation provided when necessary (e.g., when site working), but this has not changed over time (one misunderstood and said 'yes – an office!).

Q21-22. Did/do the company provide any employees with transport to work DURING the pandemic and CURRENTLY?
There were 76 responses to this question. The vast majority said there was no transport provided to work either during the pandemic or currently. For three, transport was provided now but not during the pandemic. Two employers stated there was transport provided during both time periods. Only one said there was transport provided during the pandemic but not currently.

Section 3. Workplace and related environmental factors

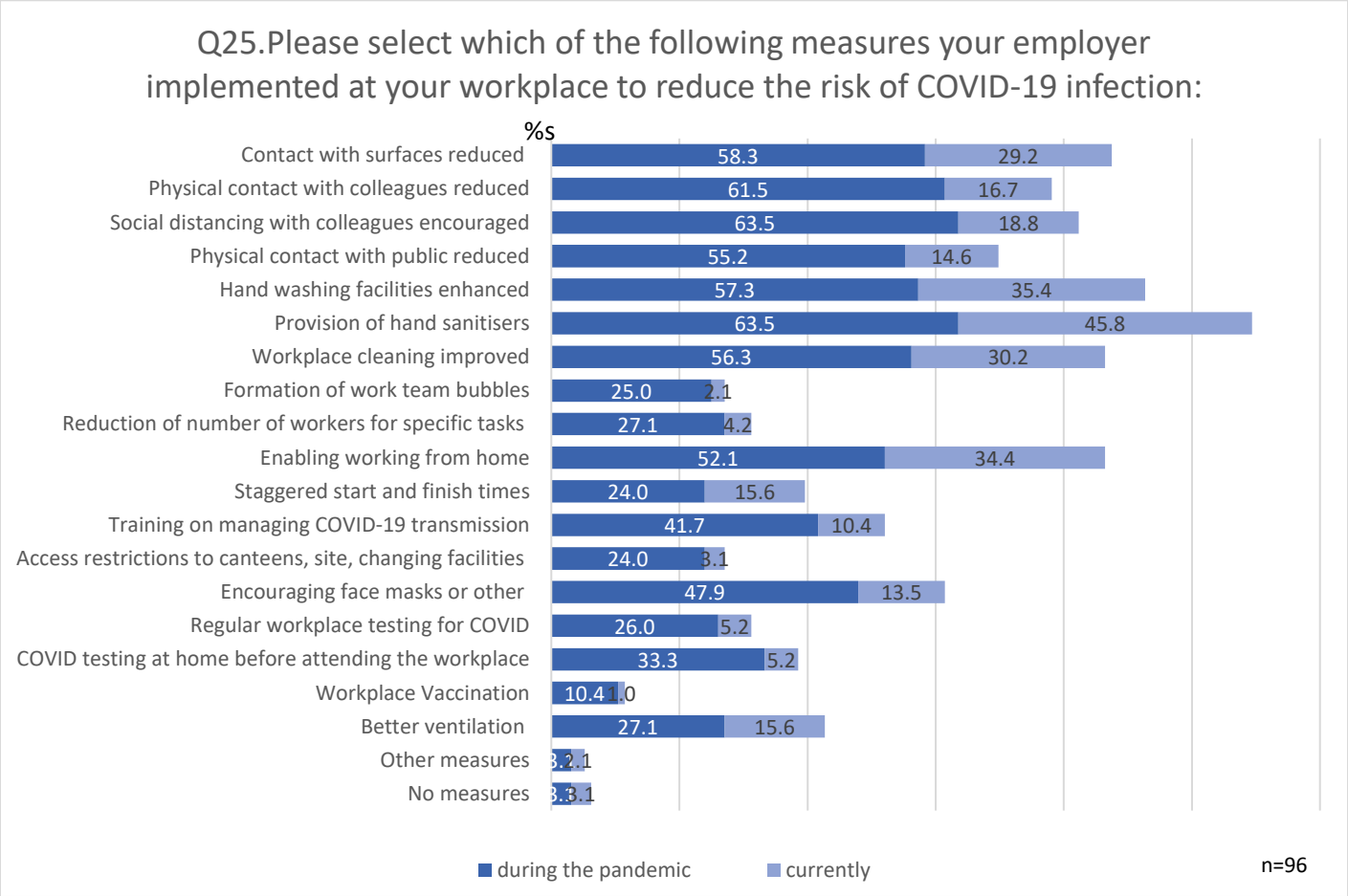


Percentages for each (see Q23 chart) were much lower during the height of the pandemic. Reports of shift working a cold environment and close contact with colleagues were all lower currently compared to prior to the pandemic.

Face to face contact with the public and travel as part of the business day were both higher currently compared to before the pandemic.

Section 4. Transmission risk control measures

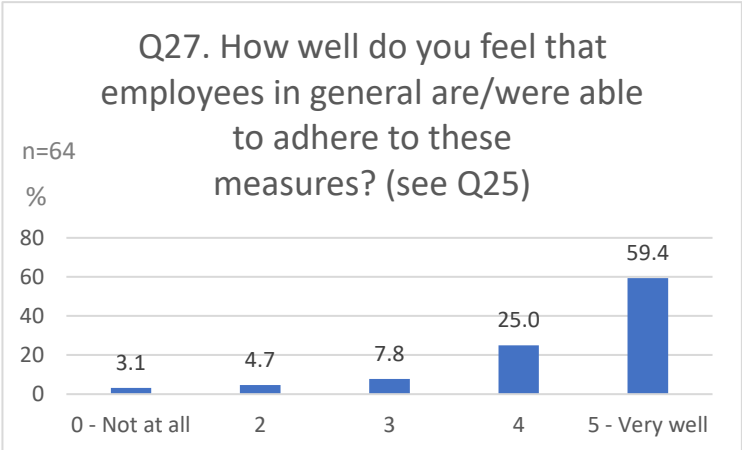
(note – there is no Q24.)



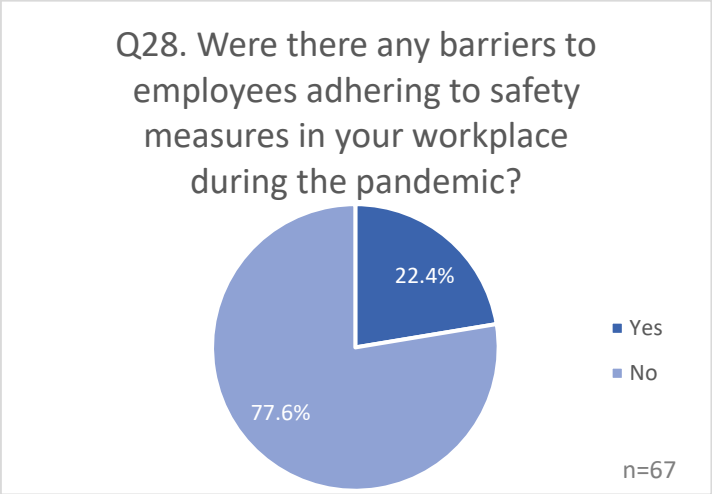
(Q.25): Numbers of organisations using measures introduced during the pandemic have reduced currently for each measure included in the questionnaire. There have been large reductions for some measures, such as discouraging physical contact and social distancing with colleagues and members of the public, COVID-19 training and the encouragement of face mask use.
There was less of a reduction in enhanced handwashing facilities, provision of hand sanitisers, workplace cleaning and enabling working from home.

Q26. What, if any, training have employees received about reducing COVID-19 transmission in the workplace?
This was an open question. There were 52 responses in total, with most employees reporting that there was some level of training, and seven stating there was no training. Responses in full were as follows (Table A5):

Table A5. What, if any, training have employees received about reducing COVID-19 transmission in the workplace?		
basic	In house training and protocols in place	Regular toolbox talks as the legal aspects changed
basic training	Informal in-house training	Risk assessments and updates
Briefings by Zoom meetings	Local Council/Health Service Courses	Sharing of Government advice as released/updated.
COVID-19 prevention	Managers taking advice from Gov website and informing staff	toolbox talks
e-learning	n/a	toolbox talks
film set COVID-19 rules	Nil, don't feel I need it I am an intelligent person	Toolbox Talks
frequent training on policy relating to COVID-19	none	training in health & safety - COVID-19 specific
General government guidance	Non, just common sense	Training was delivered online
GOV Online information, NHS Leaflets and Guidance, Local council advice	none	Unsure
government guidelines	None	Update on current working policies
Government guidelines	None it was all over the news	video
H&S briefing and guidance how to educate the public entering the building	not needed as it was so well known	we all followed the above selected rules
H&S training via Peninsula	not sure	we were kept up to date with gov restrictions
HOW TO WEAR MASK AND KEEP AREA CLEAN	Online courses	Whatever is in government guidelines at the time
HR instructions based on government guidelines	Online training	Yes
in house	Online video tutorials WHO and AHA	Yes, training provided remotely
In house training	PUBLIC INFORMATION NOTICES	Total 52 responses



More than half (59.4%) felt that employees are/were able to adhere to COVID-19 measures introduced by the employer.

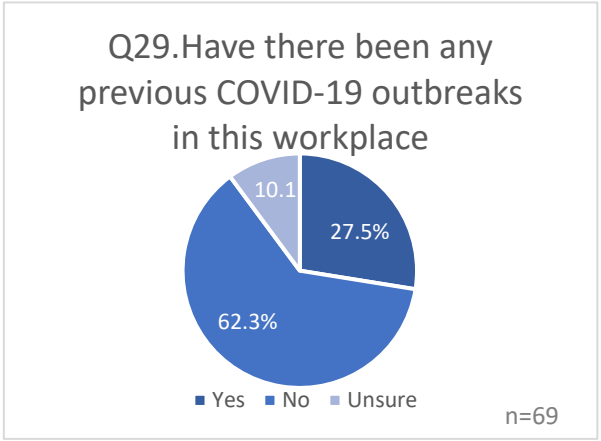


22.4% felt there were barriers to adherence to safety measures.

Q28a: What types of barriers were there to employees adhering to safety measures in the workplace during the pandemic? Please give examples if possible.
This was an open question with 14 responses, listed in Table A6 below. One employer mentioned cost as a barrier.

Table A6 What types of barriers were there to employees adhering to safety measures in the workplace during the pandemic?	
Big changes to factory floor is hard to implement	There are space constraints to enforce social distancing
Contact with public, cost of measures	Those with invisible disabilities for instance
Front-line work with people with neuro-diverse and other conditions and not always possible to ensure social distancing or that clients observe precautions.	we all worked from home and had to communicate with our managers if we we're going into the office. The office was open for anyone struggling with their mental health due to being alone.
Installation staff entering clients' properties	We are a hotel, so avoiding contact with people is almost impossible
Temporary closures of the building by the landlord	we need to work closely in one office
The need to maintain staffing levels whilst avoiding close contact	When on site or, attending a job out of office and in contact with others.
The work is in childcare and so social distancing was a barrier	working with customers
Total 14 responses	

Section 5. Perception of transmission risk



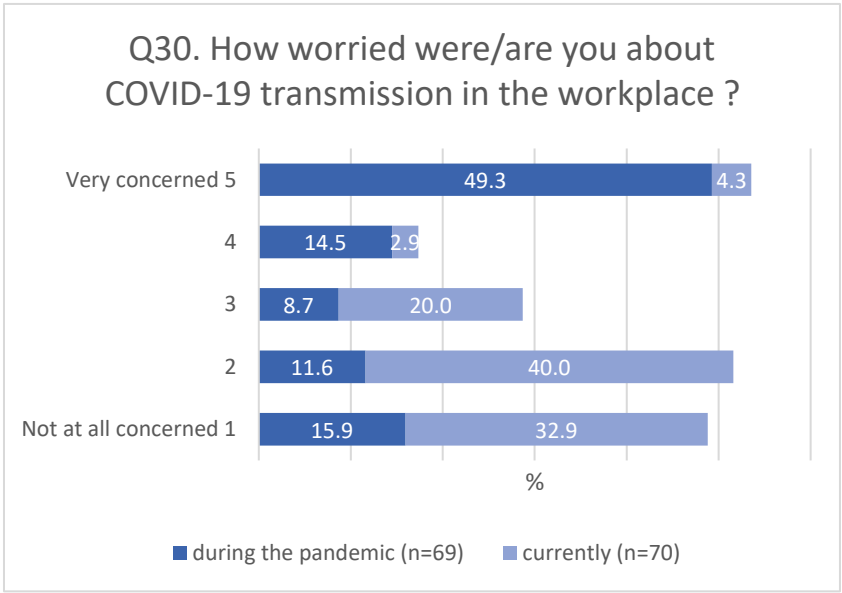
Q29a. How many outbreaks of COVID-19 did you have in your workplace?

Number of outbreaks	Number of respondents
0	2
1	5
2	3
4	2
many	5
not sure	2

More than 1 in 4 (27.5%, n=19) said there had been COVID-19 outbreaks at their workplace. Five respondents reported that there had been more than 4 outbreaks.

Q29b. For each outbreak, how many employees were involved, and which internal and external partners and organisations did you liaise with to control the outbreak?
This was an open question, with 17 responses, which are presented in Table A7. One mentioned liaising with up to 11 external organisations. Only one other employee mentioned liaising with others.

Table A7. For each outbreak, how many employees were involved, and which internal and external partners and organisations did you liaise with to control the outbreak?
1 each time.
1 or 2
1) 1 employee only - self-isolated, reported as required (local council, NHS) 2) 5 staff (probably arose from Xmas outing to pub, reported to NHS, outbreak occurred shortly before Xmas shutdown, no further action required) 3) 2 x senior managers, self-isolated and reported to NHS 4) 1 x front-line worker, self-isolated, recent contacts advised
10 employees, deep clean of area
2
3 (4 respondents)
4. The landlord took control of the outbreak
All employees caught it the same week but possibly from different sources. No liaising took place with others
isolate
many
never more than 2, up to 11 external organisations
several
The outbreaks mainly were taking place on our production facility were people had to have close contact with each other so quite a few people were usually involved each time
we are expected to stay at home
Total 17 responses



Around half (49.3%) of respondents were very concerned about COVID-19 transmission in the workplace during the pandemic. This has fallen to only 4.3% currently.

Appendix C – Qualitative research

C1 Interview schedule

1. What is your role (in relation to workplace transmission) and how has it changed over time?
2. What are the main factors that contribute to differences in the workplace transmission and outbreaks of COVID-19?
3. How effective do you think national and local level strategies, policies and guidance have been in preventing workplace transmission, and workplace outbreaks, during the course of the pandemic and currently?
4. Which (if any) organisations in Greater Manchester did you work with in terms of management of COVID-19 workplace transmission and outbreaks during the course of the pandemic, and currently in 2022?
5. What data, evidence and knowledge is used to inform local decision making and how has that changed?
6. In your opinion, what are the future challenges for preventing or reducing COVID-19 transmission in the workplace?
7. What future research do you think would be most useful to provide insights that can support practice and decision making?

C2 Coding framework

- The system
    - Roles and responsibilities
    - Role of environmental health / public health
    - Whole system approach
    - Partnerships / Collaborative working HSE

- The area/context
    - Deprivation / Socio-economic status (income, age, ethnicity housing etc)
    - Prevalence
    - Types of industries/sector
    - Different size of business
    - Different types of staff
    - Risk factors linked to employment (commuting, shared accommodation)
    - Workplace policy and practice

- Supporting workplaces - Facilitators
    - Difficult for small business to engage with support
    - Helping employers understand the guidance
    - High levels of government expectation of business
    - Workplace interventions
    - Data

- Supporting workplace – Barriers
    - No single approach to workplaces
    - National ‘one size fits all’
    - Managing outbreaks
    - Access to data
    - Workplace policy and practice

- Changes
    - Current situation
    - Future
    - Improved partnership working sustained
    - Data management
    - Vaccination reliance
    - Current non COVID-19 challenges
    - Future COVID-19 challenges
    - Policy gaps

C3 Local authority stakeholder participant roles

Participant code	**Local authority team**
P1, PH	Public Health
P2, PH	Public Health
P3, EH	Environmental Health
P4, EH	Environmental Health
P5, EH	Environmental Health
P6, PH	Public Health
P7, PH	Public Health
P8, EH	Environmental Health
P9, PH	Public Health
P10, PH	Public Health
P11, PH	Public Health
P12, PH	Public Health
P13, PH	Public Health
P14, EH	Environmental Health
P15	Local government
P16, EH	Environmental Health
P17, EH	Environmental Health
P18, EH	Environmental Health
P19, PH	Public Health

The PROTECT COVID-19 National Core Study on transmission and environment is a UK-wide research programme improving our understanding of how SARS-CoV-2 (the virus that causes COVID-19) is transmitted from person to person, and how this varies in different settings and environments. This improved understanding is enabling more effective measures to reduce transmission – saving lives and getting society back towards 'normal'.

Same report-specific text as inside front cover, provided by the PROTECT portfolio office team at HSE.

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