

Historic and Geographic Patterns of Health Inequalities

Report of a roundtable

February 2022

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This report summarises the discussions at a roundtable jointly convened by the two Academies on 10th November 2022. The views summarised in this report are not necessarily representative of the participants nor individual Fellows of either Academy, but are commended as contributing to and enriching public debate and dialogue.

While the initial request which led to this report came from the Scientific Advisory Group for Emergencies (SAGE) and while the work that underpins this report was part funded by a core grant from the Department for Business, Energy and Industrial Strategy (BEIS), it was carried out independently of Government.

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Foreword

Pandemics throughout history often accelerate existing trends in society. Nowhere has this been more marked than in the magnification of structural and geographic inequalities. Specifically, the COVID-19 pandemic has revealed, exacerbated and brought into stark focus the pre-existing inequalities in health and life chances for those born and living in different parts of the UK.

We are delighted to present this report of a roundtable we jointly chaired in Autumn 2021. For this we critically examined the question as to whether the geographic spread of COVID-19 infection and mortality rates were distinguishable from place-based health outcomes over the past 200 years. We assembled a multi-disciplinary group, including patient representatives, to discuss and explore the question and consider its implications for the way evidence can best be gathered and used. These deliberations are captured in the pages of this report. But first we offer our personal reflections.

Health inequalities intersect and interact with other, deeply ingrained, inequalities across the United Kingdom, affecting the everyday lives of real people. The question of whether or not historical rates of infection or mortality are distinguishable from those that we have seen from COVID-19 begs the deeper question of what creates and sustains the inequalities in health and life that underpin these statistics.

Geographic health inequalities exist, but to be properly understood, 'geography' must relate to more than north or south or the differences between regions; they also exist between towns and cities, neighbourhoods and communities, and the interactions between physical, social, and political geographies amongst others. Some of these may exhibit persistent patterns over long periods of time, but others are less persistent, and can also be dynamic, to be understood with an appropriate degree of nuance.

An historical perspective on health inequalities can help reveal continuities and differences in the lives of those places and people impacted by them. It can also reveal strengths and weaknesses in our research and practices which can be addressed with the prospect of real positive change. As an example, this report was informed by leading international scholars of health inequalities – including historians, geographers, sociologists, epidemiologists, lawyers, ethicists and psychologists – but also by patient and public contributors and public health practitioners.

History also provides some examples of success in tackling health inequalities in the UK, a basis on which to build. These range from the Elizabethan Poor Laws of the 16th century to the social welfare programmes developed in the aftermath of the Second World War and the health inequalities strategy put forward for England by the Labour Government at the start of the 21st century. More recently, ambitious initiatives by local councils such as Wigan's take a longer-term view on tackling health inequalities, grounded in an understanding of the past.

Finally, it has been both a privilege and a pleasure to co-chair this workshop on one of the most fundamental injustices we face. We are extremely grateful to all those who contributed so generously of their time and expertise, driven by the desire for a fairer future.



Professor Dominic Abrams FBA

and



Professor Dame Theresa Marteau FMedSci

Executive Summary

In November 2021, the British Academy and the Academy of Medical Sciences convened a roundtable, chaired by Professor Dominic Abrams FBA and Professor Dame Theresa Marteau FMedSci, on geographic and historic patterns of health inequalities in the UK. The multidisciplinary approach needed to address such a question motivated us to bring together distinguished researchers from a range of disciplines represented by both Academies, as well as stakeholders from relevant health and public sector organisations. Health inequalities, like all inequalities, affect people on a personal level, and so the roundtable also included public and patient representatives.

The roundtable followed a request from the UK Government's Scientific Advisory Group for Emergencies (SAGE) in June 2021 to explore the geographic factors associated with historically poorer public health outcomes over the last 200 years.¹ In order to explore the question further, the British Academy, in partnership with the Academy of Medical Sciences, held an independent roundtable to consider:

To what extent are the geographic spread of COVID-19 infection and mortality rates distinguishable from place-based health outcomes over the past 200 years?² What are the causes and consequences of this? And what needs to change?

Five key themes emerged from the roundtable discussions. These address the evidence for differences in health outcomes as a function of place over the last 200 years, as well as how this evidence (or the lack of it) might inform effective policy changes to improve health outcomes and reduce disparities in future. The five themes are summarised below and discussed in greater depth in the main roundtable summary.

- 1. There is value in the historical perspective,** but it must be used carefully. An historical perspective is essential for understanding both continuities *and* differences with the past. It is necessary to attend to both of these in order to disentangle factors that are recurrent or inevitable, and those that are distinctive and unprecedented. For example, the similarities between maps of COVID-19 mortality in England and Wales in 2020–21 and maps showing mortality rates in the 19th century could provide a useful tool to understand and intervene on the factors which have led to the entrenching of health inequalities across certain regions of the UK, in spite of historical policies attempting to address them.

However, **the relationship between deprivation and COVID-19 mortality has been dynamic across the course of the pandemic.** Deprivation rates became a predictor for mortality rates only as the pandemic progressed past its initial stages. Different geographical regions have not been equally impacted by COVID-19 at any one point in time. The dynamism of COVID-19's spread, its variants, and its different waves **necessitate caution in making direct historical comparisons** with the geographic spread of other communicable and non-communicable diseases.

1 SAGE 87 minutes: Coronavirus (COVID-19) response, 22 April 2021.

2 Note that both elements might have different drivers, and certainly the severity of the disease might vary but not lead to mortality.

And while historical place-based continuities in public health are striking, and can provide a powerful case for policy intervention, **it is arguably more important to look at those areas which have ‘bucked the trend’** and have comparatively good outcomes from COVID-19 despite historical health inequalities. These examples could provide **key insights into policies or public health interventions that have been effective and could therefore be replicated elsewhere**. Telling the story of a place *in its own terms* – developing a narrative of people and place – can bring its own benefits: history, geography, and culture matter.

- 2. We need to look beyond the pandemic for future lessons.** While COVID-19 has acted as an immediate motivator for work re-examining geographic health inequalities and their historical contexts, we must move beyond the pandemic to ask bigger questions about the state of the health of the population and its unequal distribution, given wider trends and looming future crises such as climate change. Policy should **focus on how regions and communities can be made more resilient to future ‘health shocks’** such that impacts are minimised.

The factors that make a place more ‘resilient’ are complex, but **central to this is the involvement and engagement of people and communities as enablers** and creators of bespoke, local solutions. Narratives of place are important here. Cities, regions, and local areas are diverse in many ways and similar levels of socioeconomic disadvantage do not always result in similarly poor health outcomes. Factors that can contribute to resilience include community cohesion, population stability across changing economic conditions, supportive housing policies and access to green spaces.

- 3. Co-production in research is essential to a holistic understanding.** Scientific research focusing on a solely academic audience, though essential, cannot provide a complete method for understanding and addressing problems such as health inequalities that have long and (in some cases) deeply ingrained histories. Investigating health inequalities without involving those affected by them risks producing research that holds little relevance to people’s real lives. A lack of co-production may result in policy recommendations and initiatives that are unfeasible at a local level, or at an inappropriate scale to benefit those most in need and may, potentially, even widen inequalities. Funders and policymakers should help support communities and researchers to work together to come up with diagnoses and solutions to problems such as health inequalities.

A marked shift which has occurred with the pandemic is **a greater stress on the value of narrative accounts of the experience of COVID-19** (especially long COVID)³ and of the interaction of social inequalities that can drive health inequalities, particularly given the novelty of the virus. Good-practice examples of community engagement, and of **doing ‘with’ not ‘to’**, can be seen across the country, particularly from local public health boards and in community-level initiatives. Learning from these examples will help ensure that research addresses critical questions of the most relevant populations and in the most effective manner.

3 See for example the series of blog posts for the British Medical Journal by Professor Paul Garner about his experiences of long COVID.

4. **Data must be used in a more flexible and agile way.** The UK has some of the highest quality and largest quantity of data on health and inequalities, but we must look beyond headline figures coming out of large data sets. The pandemic has prompted us to consider whether our understanding of inequalities related to COVID-19 can make better use of our existing and extensive data assets, and whether we would benefit from new types of data. Greater attention to sociological and demographic data would be a valuable addition, in order to link social determinants to health outcomes and understand the root causes of health inequalities. **Critical data gaps**, such as those relating to certain ethnic minority groups, people living with disabilities, people from LGBTQ+ groups, and data at local and hyperlocal levels must be addressed if we are to have a clearer picture of health inequalities, those affected, and to design appropriate policies. There is also great value in **a mixed methods approach that treats qualitative data as equally valid as quantitative data**. Qualitative data, including narratives from people most affected, can provide context to the numbers, allowing for a better understanding of the causes and impacts of inequalities, and how they might be tackled.

The data must also be more accessible and used in a more agile way with better linkages between datasets, opening up data to a wider range of researchers and disciplines, and subjecting it to a range of analyses. **Great strides have been made throughout the pandemic in both data linkage and access. However, improvements have not been universal**, with most progress made in health specific data sets, while access remains an issue for those wishing to do non-health research or to study the associations between health and other factors. Linkage and wider cross-disciplinary analyses are critical: maps, figures, and numbers must be situated in socio-political context to better understand the spread and causes of health inequalities. In sum, understanding and addressing the geography of health inequalities requires a wider range of both qualitative and quantitative data, suitably contextualised, which balances granularity with spread and diversity, and captures continuity as well as a single point in time.

5. **Health inequalities both contribute to and derive from inequalities in life more broadly.** Deeper understanding will come from broadening our use of the term 'geography'. We need to consider geography at different levels of granularity to not skip over experiences of disadvantage outside of disadvantaged places. To make significant inroads, we should look beyond physical geography to social geography, political geography, and social infrastructure – all of which are important if we want to understand geographic inequalities in health. Social and practical constraints on social mobility are important drivers of continued health inequalities. A focus on processes of power differentials across class, race, and gender is a necessary part of finding ways to redress this balance.

Deep inequalities in the UK exist in health, educational attainment, income and wealth, and many other domains. Historical examples where considerable population-level reductions in health inequalities have been achieved for an appreciable period have all taken a wider view of inequalities, and included an expansion of social security safety nets, increased access to healthcare (especially for the poorest), and incorporation of multiple communities and voices in the political process. **Any attempts by policymakers to address health inequalities must come with the trust of the communities they will affect.** Communities must buy-in to and help to shape any attempted interventions and this can only be achieved through involvement, engagement, transparency and acting in a trustworthy way.

1.0 Introduction

COVID-19 has been referred to as a ‘syndemic’ crisis: a situation in which there is ‘the accumulation and adverse interaction between two or more conditions in a population, often resulting from the social context in which that population lives’.⁴ Health and wellbeing, local economic risk and resilience, poverty and deprivation, and response planning all have an important place-related dimension that has shaped the impact of the crisis.

This impact has identified clear place-based vulnerability; the disease has hit the most deprived communities hardest, as have the other health impacts of the pandemic. Inequalities are rising within and between communities, with more people falling into poverty, and existing trends in inequalities pre-COVID are being exacerbated and accelerated. In considering our focal question, the roundtable and preparatory scoping aimed to investigate the historical contexts and geographic aspects of these inequalities.

The multidisciplinary approach needed to address such a question motivated us to bring together distinguished researchers from a range of disciplines represented by both Academies, as well as stakeholders from relevant health and public sector organisations. Health inequalities, like all inequalities, affect people on a personal level, and so the roundtable also included public and patient representatives.

Prior to the roundtable, the British Academy and the Academy of Medical Sciences undertook a short scoping review of existing literature on the geographic spread of historic health outcomes, in parallel with a series of supporting calls with a small number of researchers and other experts across a broad range of disciplines, to further develop and inform the approach to the research question.

This initial scoping was also heavily informed by the interdisciplinary evidence and insights captured in the Academy of Medical Sciences’ reports *Preparing for a challenging winter* (2020) and *COVID-19: preparing for the future* (2021) and the British Academy’s *COVID Decade* reports *The COVID Decade: Understanding the long-term societal impacts of COVID-19* and *Shaping the COVID Decade: addressing the long-term societal impacts of COVID-19*.⁵

A wider rapid literature review was then conducted, drawing upon literature and available data identified by the researchers and experts who contributed to scoping. This preliminary review informed the scope of the roundtable. A briefing provided to participants of the roundtable (see Annex B), summarised these initial insights and reflections to establish a context and frame to stimulate discussion and initiate thinking about important evidence gaps.

4 Campos-Matos, I., Newton, J. and Doyle, Y. (2020), ‘An opportunity to address inequalities: learning from the first months of the COVID-19 pandemic’, *Public Health England, Gov.UK*, 29 October 2020, citing Singer, M., Bulled, N., Ostrach, B. and Mendenhall, E., (2017), ‘Syndemics and the biosocial conception of health’, *The Lancet*, 389(10072): 941-950.

5 The Academy of Medical Sciences (July 2020), *Preparing for a challenging winter 2020/21*; The Academy of Medical Sciences (July 2021), *COVID-19: Preparing for the future. Looking ahead to winter 2021/22 and beyond*; The British Academy (2021), *The COVID Decade: Understanding the long-term societal impacts of COVID-19*. The British Academy (2021), *Shaping the COVID Decade: addressing the long-term societal impacts of COVID-19*.

The roundtable itself brought together researchers and other experts with a breadth of disciplinary perspectives to address the question above (see Annexes A and B). Owing to COVID-19 restrictions the event took place virtually, and sought to facilitate participation across all nations and regions of the UK, across sectors, and by public and patient representatives. The format comprised short opening talks from expert speakers followed by breakout and plenary sessions.

Three sub-questions guided the discussion:

- Do we have evidence of differences in health outcomes as a function of place over the last 200 years, and if so, at what level of aggregations (eg cities, regions, towns, villages, neighbourhoods)? Where are the gaps in the evidence base and how can these gaps be addressed?
- What attributes and conditions of local areas increase the risk of disease and disability, when individuals are exposed over their life-course? How does the evolution of a place relate to changes in the health of local populations?
- How can evidence on the impact of place-based factors on health inequalities be translated into effective policy change to improve health outcomes and reduce disparities?

In the following section, the five main themes from the discussion are summarised and drawn out.

2.0 Summary of roundtable discussion

2.1 The value of an historical perspective

There are notable similarities between maps of COVID-19 mortality in England and Wales in 2020–21 and maps showing mortality rates in the 19th century, such as for infant mortality – an observation which prompted this request.⁶ These similarities are visually compelling, but it is crucial to recognise the differences in historical context over the last 200 years and how much has changed, in terms of medical advances as well as societal shifts, making direct comparison difficult. Moreover, the differences between historical and contemporary maps of health inequalities may be more enlightening than the continuities, as discussed further below.

The 200-year timeframe is helpful and interesting and provides context within which to evaluate the particular periods, both longer and more recent, that provide the most useful insight. The longer view highlights the importance of Elizabethan England's universal care system and the Poor Law Act of 1601, which used progressive taxation to protect all subjects of the Crown from a range of vulnerabilities.⁷ The period since the Second World War, which saw the establishment of the NHS and significant restructuring of public health provision, is arguably most relevant for comparative purposes. The influenza pandemic of 1918–19 also offers key historical comparisons, with those of lower socioeconomic status seemingly bearing a higher burden of disease.⁸

Focusing on historical continuities, but neglecting discontinuities, in place-based health inequalities risks a sense of fatalism or self-fulfilling prophecy. The history of an historically deprived place can stereotype people and communities, 'putting them in a box'. One example is Wigan and its representation by George Orwell in *The Road to Wigan Pier*.⁹ But history does not define community identity or health outcomes, now or in the future; place-specific health inequalities are not inevitable. Telling the story of a place *in its own terms* – developing a narrative of people and place – can bring its own benefits: history, geography, and culture matter in community development. The Wigan Deal is one such example of an asset-based approach to improving public services and local health outcomes, through recognising and building on the strengths of local individuals and communities – a more positive and forward-thinking approach than focusing solely on deficits.¹⁰

While historical place-based continuities in public health are striking, and can provide a powerful case for policy intervention, it is arguably more important to look at places where things have changed, especially in recent decades. Participants note this inevitably raises several questions and hypotheses: What has led to improvements in these places? This may be tied to investment and development (for example, the Canary Wharf area of London), but is this always the case? Have there been changes elsewhere that are not attributable to such drivers? What are

6 Jeavans, C. (2021), 'Dying too young: Maps show little has changed in 170 years', BBC News article, 8 July 2021.

7 Szepter, B., Cooper, H. and Szepter, S. (2019), 'Elizabethan lessons in ethical economics', Blog post for the Bennett Institute for Public Policy, Cambridge.

8 Mamelund, S-E., Shelley-Egan, C. and Rogeberg, O. (2021), 'The association between socioeconomic status and pandemic influenza: Systematic review and meta-analysis', *Plos One*, 16(9): e0244346. For a study of variations in mortality in the (H1N1) 2009 influenza pandemic, see for example Rutter, P.D., Mytton, O.T., Mak, M. and Donaldson, L.J. (2012), 'Socio-economic disparities in mortality due to pandemic influenza in England', *International Journal of Public Health*, 57(4), pp. 745-750.

9 See Orwell, G. (1937), *The Road to Wigan Pier*.

10 Naylor, C. and Wellings, D. (2019), *A citizen-led approach to health and care. Lessons from the Wigan Deal*, The King's Fund.

the impacts of policy shifts and political agendas? We need to do more of this kind of analysis as valuable insight may derive from the historical view of ‘shocks to the system’, as well as more incremental but no less dramatic changes, and the impact of these on communities and health – whether the decline of the South Wales mining industry, for example, or the fall of communism and German reunification.

Mount Pleasant Estate

The work of M’Gonigle and Kirby highlights the complexities of a location-specific approach to health inequality, and the range of factors that must be considered for a positive impact on health outcomes. In a chapter of their 1936 work *Poverty and public health*, M’Gonigle and Kirby reported on mortality and health outcomes in Stockton-on-Tees – comparing the expenditure, nutrition, and health of one group who had been moved from slum dwellings to a ‘modern self-contained housing estate’ (the Mount Pleasant Estate) in 1927 with those who remained in the ‘unhealthy area’ of the slums (the Riverside Area).¹¹ Despite the better-quality housing and environment on the Mount Pleasant Estate, crude average mortality rates for this group increased markedly between 1928 and 1932, while decreasing for those in the Riverside Area.¹² M’Gonigle commented:

‘It did not appear that the estate itself could be blamed for the higher mortality, for it possessed all the advantages of a carefully planned and well-built estate. The actual houses were soundly constructed and possessed up-to-date sanitary arrangements ... a bath, an efficient kitchen range, a well-ventilated food store, wash boiler and so on.’¹³

However much improved the physical conditions and location were for those on the Mount Pleasant Estate, it appears that the lack of corresponding uplift in their socioeconomic circumstances may have been the defining factor in worsened health outcomes. Many on the estate were long-term unemployed, and the greater proportion of their limited income now had to go on their higher rent, with impacts on money available for food.¹⁴ Subscriptions such as a weekly doctor’s club also either lapsed or decreased markedly.¹⁵ M’Gonigle concluded:

‘The deficiencies in the diets cannot be attributed to temporary causes but that, owing to prolonged unemployment, the deprivations were, in the majority of cases, of long standing ... It is difficult to come to any other conclusion than that the increased mortality was associated with dietary deficiencies.’¹⁶

11 Smith, G.D., Dorling D. and Shaw, M. eds. (2001), ‘George C.M. M’Gonigle (1888-1939) and J. Kirby (dates unknown)’, in *Poverty, inequality and health in Britain: 1800-2000: A reader*, pp. 173-184.

12 Smith, Dorling and Shaw eds. ‘M’Gonigle and Kirby’, pp.175-177.

13 Smith, Dorling and Shaw eds. ‘M’Gonigle and Kirby’, p.175.

14 Smith, Dorling and Shaw eds. ‘M’Gonigle and Kirby’, pp. 179-183.

15 Smith, Dorling and Shaw eds. ‘M’Gonigle and Kirby’, p.181.

16 Smith, Dorling and Shaw eds. ‘M’Gonigle and Kirby’, p. 184.

German reunification

The reunification of Germany in the 1990s offers an example of the rapid narrowing of health inequalities. Prior to reunification, the East (the German Democratic Republic, or GDR) had fallen behind on key indicators, including economic development, living standards, environmental standards, healthcare provision and medical technology, and public health.¹⁷ The scale of the differences with West Germany was especially notable in relation to healthcare.¹⁸ Rapid improvements in life expectancy for those in the former East can be attributed to both economic and medical factors, such as adoption of the more buoyant Deutsche Mark as currency, investment in industry (although privatisation and deindustrialisation did drive increased unemployment), funding for social welfare programmes, and the extension of the West German pension scheme.¹⁹ Among other changes, the former East saw increased investment in health infrastructure, as well as in preventive and curative healthcare. The approach to addressing the inequalities driven by the previous geographical and ideological divide was all-encompassing.²⁰

Understanding local-level change requires delving into and documenting people's and communities' histories, with granular insight deriving from telling the story of a place at community level. To take up the example of Wigan, mentioned above: the current metropolitan borough includes the towns of Wigan and Leigh as well as various other urban and rural areas, each with its own long heritage. Understanding and narrating people's experiences in those townships has enabled tailoring of public health interventions that bring the community on board.²¹ This is closely related to the imperative for co-produced, participatory research on places and health that empowers citizens, including in telling their stories (see section 1.3 below).

In considering any historical comparison, it is important to note that the map of COVID-19 morbidity or mortality is dynamic. Relationships between deprivation and COVID-19 infection or mortality have not been stable over the course of the pandemic in Britain, with marked changes over relatively short timeframes. Early in the pandemic, cases were more common in less deprived groups, and particular geographical areas do seem to have been affected at different rates at different times. However, deprivation became a more important factor as time went on, particularly for mortality rates.²²

As more data emerged and more analysis was possible, it became clear that spatial inequalities in COVID-19 mortality during 2020 dwarfed those in relation to other causes of death and the regional aspect of these inequalities were most evident when overall COVID-19 mortality rates were lower – consistent with the fundamental cause hypothesis (which posits a direct link between lower socioeconomic status and poorer health outcomes).²³ Yet still, immediately after Christmas 2020, for example, with the prominence of the Alpha variant in the UK and implementation of tiered restrictions, the spread of this variant was initially concentrated in less deprived

17 Bambra, C. (2016), 'German Lessons', in *Health Divides: where you live can kill you*, pp. 166-173, at p.168.

18 Bambra, 'German Lessons', p.168.

19 Bambra, 'German Lessons', pp. 170-172.

20 Bambra, 'German Lessons', p.173.

21 Naylor and Wellings, *A citizen-led approach to health and care*.

22 Griffith, G.J., Davy Smith, G., Manly, D., Howe, L.D. and Owen, G. (2021), 'Interrogating structural inequalities in COVID-19 mortality in England', *Journal of Epidemiology and Community Health*, 75(12), pp. 1165-1171.

23 Griffith et al., 'Interrogating structural inequalities'.

areas in the south-east of England before it took more general hold in the population. The dynamism of the spread of SARS-CoV-2, its variants, and its different waves necessitate caution in making direct historical comparisons with the spread of other infectious diseases.

2.2 Looking beyond the pandemic

Looking back can help illuminate the present and offer insight for the future, but it is also essential also to look forward to pending crises (notably climate change) which will have severe impacts on, and implications for, geographic and other (health) inequalities. Can lessons from the COVID-19 pandemic help us prepare for the unequal impacts of climate change on health and wellbeing, locally and nationally? How can we build greater resilience for the future?

It is crucial to shift the focus of health inequalities with regards to place and to see people as enablers and creators, and places as assets, rather than as problems to be fixed. Narratives of place are important here: the social geography of an area can remain strikingly fixed over time in terms of where and how people connect – the places they frequent for social, cultural, and sporting events, for example – intersecting with changing demography. As highlighted above, this shared identity can have positive impacts upon health and resilience.

Cities, regions, and local areas are diverse in many ways and similar levels of socioeconomic disadvantage do not always result in similarly poor health outcomes. One longitudinal study of 54 UK parliamentary constituencies which had been identified as areas of persistent economic disadvantage between 1971 and 2001, found that 18 of them were in fact ‘more resilient’, with significantly lower mortality rates than others in this group.²⁴ While no single characteristic or combination of characteristics can definitively be said to build resilience and better health outcomes in any given location, a combination of quantitative analysis and case study interviews identified several key aspects at both the individual and community level. Principle among these was community cohesion, as well as population stability across changing economic conditions, supportive housing policies and access to green environments.²⁵

There are international networks which focus on developing communities to be more resilient to a range of shocks and challenges. The Rockefeller 100 Resilient Cities initiative is one example, helping cities to build physical, social, and economic resilience through a range of directed support and partnerships with different sectors, as well as sharing best practice across the network of cities involved.²⁶ Health and wellbeing considerations also form an important part of adaptation plans designed to help communities be more resilient to the growing challenges posed by climate change.²⁷ As well as increased adverse weather events, climate change also poses the threat of increased weather-related illnesses and those who already experience inequalities, such as socioeconomic hardship, food or fuel poverty, or who live with disabilities will be the most susceptible to these changes.

24 Tunstall, H., Mitchell, R., Gibbs, J., Platt, S. and Dorling, D. (2007), ‘Is economic adversity always a killer? Disadvantaged areas with relatively low mortality rates’, *Journal of Epidemiology and Community Health*, 61(4), pp. 337-343.

25 Mitchell, R., Gibbs, J., Tunstall, H., Platt, S. and Dorling, D. (2009), ‘Factors which nurture geographical resilience in Britain: a mixed methods study’, *Journal of Epidemiology and Community Health*, 63(1), pp. 18-23.

26 The Rockefeller Foundation, ‘100 Resilient Cities’.

27 See for example, Wigan Council Environment Directorate (2021), *Our Adaptation and Resilience Action Plan 2021-2026. Wigan Council's response to a changing climate.*

If we are to learn and apply important lessons for public health, different questions will need to be asked in addition to those posed in this commission. For example, how consistently important is geography to health inequalities? How have places changed and how have people changed?

2.3 Co-production in research is essential

Investigating health inequalities without involving those affected by them risks producing research that holds little relevance to people's real lives, and policy recommendations and initiatives that are unfeasible at a local level, or at an inappropriate scale to benefit those most in need. Interventions developed without input and insight from those they are designed to help may have little beneficial impact or may even widen existing inequalities. As one patient representative said at the roundtable: 'we are real people, from all walks of life. We are not simply depersonalised data points, we have huge collective professional, personal, and lived experience'.

Over the course of the pandemic and lockdowns (in particular), remote working has produced its own inequalities in participation and visibility in the virtual room, including in conversations on topics such as health inequalities. It is vital that it is not just the 'Zoomocracy' involved in discussions. The roundtable questioned whether we have managed to ask the "right questions of (all) the right people, in the right way", to gather the most relevant evidence and insights and develop the most appropriate actions on health inequalities. This draws attention to the need to bring the public more directly into public health. Engaging directly with individual and group lived experience will help to avoid misunderstanding and misrepresentation.

Co-production is of vital importance for all stages of the research and policy making process, from framing the research questions, to deciding what types of data will be gathered and how, through to how this data is interpreted and analysed, and findings shared. Finding ways to listen to a wider range of participants without formalised questions can help to engage a range of stakeholders in ways that are appropriate to their contexts and circumstances.

The academic sector in particular faces a challenge in engaging communities and individuals who do not normally actively engage with science and research,²⁸ but this brings the benefit of a wider range of valuable perspectives if it can be achieved. Good-practice examples of community engagement, and of doing 'with' not 'to', can be seen across the country, particularly from local public health boards and in community-level initiatives. Initiatives include Hartlepool Action Lab's Stronger Neighbourhoods project to rebuild strong community connections to tackle poverty,²⁹ and the Wigan Deal, an agreement between Wigan Council and everyone living and working in Wigan to create a better borough and improve local health outcomes through 'a genuine partnership which is owned by everyone – not a single organisation'.³⁰

Scientific research focusing on a solely academic audience, though essential, cannot provide a complete method for understanding and addressing problems such as health inequalities that have long and (in some cases) deeply ingrained histories. Indeed, to make more rapid progress on topics such as health inequalities, research

28 See for example the British Science Association's audience model to help understand engagement with science in their audiences aged 16+.

29 See Hartlepool Action Lab's 'Stronger Neighbourhoods' project.

30 Wigan Council, 'What is The Deal?'; Naylor and Wellings, *A citizen-led approach to health and care*. Quote is taken from a presentation delivered by Wigan's Director of Public Health on the approach and progress of the 'Healthier Wigan Deal for Health and Wellness'.

must increasingly be conducted and communicated in a way that addresses the questions that policymakers - including local authorities and councils - and the public want answered and in a timely way. Communicating via the media is crucial, too, in terms of messaging.³¹

In its report *The COVID Decade: understanding the long-term societal impacts of COVID-19*, the British Academy highlighted the value of mobilising patient groups whose lived experience could help us better understand symptoms and impacts of long COVID.³² The report also stressed the importance of communicating in culturally and linguistically appropriate ways in order to avoid barriers to information and learning, as well as the vital role that volunteer, community, and mutual aid groups have played in combatting the pandemic.³³ These are lessons which can be applied to addressing health inequalities more broadly. The Academy of Medical Sciences' report *COVID-19: Preparing for the future* goes one step further and was developed with input from patients and the public throughout and was published alongside an accessible summary and a 'People's Perspective'.³⁴

Communities in Charge of Alcohol

An example of a volunteer-led, place-based approach to tackling a longstanding health problem closely associated with inequalities, and which was highlighted at the roundtable, is the five-year Communities in Charge of Alcohol programme run by the University of Salford.³⁵ Directed at those areas in Greater Manchester identified as having higher instances of alcohol harm, the study assesses the impact of training local Alcohol Health Champions.³⁶ The study highlighted difficulties communities face when trying to influence local authority statutory processes around the sale of alcohol in their local areas, but also suggested that greater benefits may be derived from developing communication among volunteers and communities.³⁷

Co-production is based on values and principles of equality and equity, and explicitly considers factors such as power differentials, honesty, and inclusivity. Participating in processes and conversations can be empowering, as well as enabling participating individuals and groups to be heard. The patient/public representative role must be truly valued and respected, however: sharing insights and personal experiences involves emotional labour, and if this input is ignored it can lead to disillusionment, distress, and even despair.

31 The British Academy, *The COVID Decade*, pp. 53-56 and pp. 78-83

32 The British Academy, *The COVID Decade*, pp. 47-53. Long COVID is also known as post-COVID-19 syndrome; we follow current NHS usage at the time of writing.

33 The British Academy, *The COVID Decade*, pp. 55-56 and pp. 65-70.

34 The Academy of Medical Sciences (2021), *COVID-19: Preparing for the Future*; The Academy of Medical Sciences (2021), *COVID-19: Preparing for the future. Public summary*; The Academy of Medical Sciences (2021), *People's Perspective. COVID-19: Preparing for the future. Work with us, work for all of us*.

35 University of Salford, Manchester, 'Communities in Charge of Alcohol Programme'. A number of research outputs are also available through the project website.

36 University of Salford, Manchester, 'Communities in Charge of Alcohol Programme'.

37 University of Salford, Manchester, 'Communities in Charge of Alcohol Programme'.

Insight into places and lived experiences can only be gathered effectively by engaging directly with people in those communities and circumstances, in a way which is appropriate to them. There is a very significant and ever-growing body of qualitative research on health and health inequalities, particularly since the 1990s. A further shift which has occurred with the pandemic is a greater stress on the value of narrative accounts of the experience of COVID-19 (especially long COVID)³⁸ and of the interaction of social inequalities that can drive health inequalities, particularly given the novelty of the virus. Organisations such as Long Covid Support offer a valuable resource in that they include people with lived experience of the condition who are willing to engage with researchers from the early stages of research, as well as providing links to relevant frameworks to help researchers design and develop this form of engagement.³⁹ Narrative experiences constitute data in themselves, while patient voices also have implications for how we understand and interpret quantitative data.

2.4 Data must be more flexible and agile

The pandemic has seen an unprecedented effort to produce and share data, specifically relating to COVID-19 infection and mortality, in order to help us tackle this new disease and the challenges it poses. However, there is a need to consider whether our understanding of inequalities related to COVID-19 would benefit from new types of data, and where we can simply better utilise our existing and extensive data assets. In order to better understand and address current health inequalities, our data must be more agile and more accessible with better linkages between datasets, opening up data to a wider range of researchers and disciplines, and subjecting it to a range of analyses. As the Office for Statistics Regulation has recently noted, ‘sharing and linking data can have life-saving impacts’.⁴⁰

Critical data gaps must be addressed if we are to have a clearer picture of health inequalities and those affected, and to design appropriate policies. These data gaps relate to certain ethnic groups as well as LGBTQ+ and people living with disabilities, among others.⁴¹ Both quantitative and qualitative data are important here: narratives and stories are data, too. Co-production, as discussed above, is central and may help to fill data gaps, particularly for marginalised groups. Data are not independent of power structures in our society: we need to think critically about how data are produced, how they are analysed, and whose questions data are answering. Are our data, and the ways we use data, serving the interests of marginalised groups, or those of existing elites?

Data access is causing serious problems for health research due to bureaucracy and outdated systems for access, limiting the reactive capabilities of some data producers and researchers and making it difficult to get research and engagement off the ground or even to develop the right questions.⁴² Data from the 2007 Adult Psychiatric Morbidity Survey, for example, can be accessed by researchers within minutes while access to data from the 2014 survey requires approval from the Data Access Request

38 See for example the series of blog posts for the British Medical Journal by Professor Paul Garner about his experiences of long COVID.

39 Long COVID Support, ‘Researchers’.

40 Office for Statistics Regulation (October 2021), *Improving health and social care statistics: lessons learned from the COVID-19 pandemic*, lesson 8.

41 Office for Statistics Regulation (October 2021), *Improving health and social care statistics*, lesson 4.

42 See, for example Office for Statistics Regulation (October 2021), *Improving health and social care statistics*, lessons 5, 7 and 8; see also Ford, T., Mansfield, K.L., Markham, S., McManus, S., John, A., O’Reilly, D., et al. (2021), ‘The Challenges and opportunities of mental health data sharing in the UK’, *The Lancet Digital Health*, 3(6), E333-E336.

Service at NHS Digital which can take months.⁴³ While access to some health data has been sped up during the pandemic, this has not been universal. It has been difficult, and slow, to obtain data through the Office for National Statistics (ONS) and Public Health England, particularly for researchers outside the biomedical sciences; access also comes with high financial costs. This means that many studies are dependent on data that are already out of date (such as 10-year-old census data) in the dynamic context of COVID-19.⁴⁴

There have been significant efforts to link data, although the focus tends to be on health data. This includes, notably, the COVID-19 Data and Connectivity programme led by Health Data Research UK, in partnership with the ONS, which connects health data and (crucially) involves working closely with patients and the public to embed their voice into research and inform decision-making.⁴⁵ Greater attention to (sharing of) sociological and demographic data would be a valuable addition, in order to link social determinants to health outcomes and understand the root causes of health inequalities. For example, despite the syndemic nature of COVID-19, and its likely exacerbating impact on income inequalities, employment and income data from the Department of Work and Pensions and HMRC is rarely looked at alongside health data.

In Scotland, it is already possible to link individual health data (from NHS administration records) with geographic data, albeit under certain restrictions. This facility may also be coming in England, although challenges would remain for joining up data across the UK. The UK Government's Geospatial Data Strategy is just one initiative which could help facilitate better connections among datasets and systems across the UK, if it were applied with greater consistency and regularity, but it will not be enough on its own. It should also be noted that data linkage is not without its challenges and concerns: for example, proposals to share NHS health records data for the purposes of research and planning were postponed due to a public backlash amid privacy concerns, notwithstanding NHS data sharing protocols.⁴⁶

43 Editorial (August 2019), 'Smorgasbord or Smaug's hoard?' *The Lancet Psychiatry*, 6(8), p. 631. See also Ford et al., 'The Challenges and opportunities of mental health data sharing in the UK'. For the 2014 Adult Psychiatric Morbidity Survey see NHS Digital (2016), 'Adult Psychiatric Morbidity Survey: Mental Health and Wellbeing in England'.

44 Ford et al., 'The Challenges and opportunities of mental health data sharing in the UK'.

45 Health Data Research UK, 'COVID-19 Data and Connectivity'. For information on the involvement of patient and public voices as part of the 'Data and Connectivity' National Core Study, see Health Data Research UK, 'Patient and Public Involvement in the National Core Studies'.

46 Vallance, C. (2021), 'GP data sharing: What is it and can I opt out?', BBC News article, 22 June 2021; Churchill, J (2021), 'GP Data for Planning and Research: Letter from Parliamentary Under Secretary of State for Health and Social Care to general practices in England - 19 July 2021', NHS Digital; Boiten, E. (2021), 'NHS plan to share GP patient data postponed - but will new measures address concerns?', *The Conversation*, 27 July 2021; Kelly, C. and Manser, P. (2019), 'NHS England and NHS Health and Justice, Department of Health and Social Care, Ministry of Justice, Her Majesty's Prison and Probation Service and Public Health England. Information Sharing Protocol across secure and detained settings', NHS England and NHS Improvement.

Digitising Scotland

The Digitising Scotland project offers an example of using data such as digitised historical records to create a multidisciplinary research database, including births, marriages, and deaths, and occupations data, for 18 million individuals since 1856.⁴⁷ This project also links available address information to consistent geographies through time. Joining up data in this way created a multifaceted resource for researchers, helping to reveal the extent to which population change has been and may continue to be driving changes in geographic health inequalities, by allowing people to be tracked across time and place.

As noted above, understanding and addressing (place-based) health inequalities requires both quantitative and qualitative data, including contextual socio-historical data. Maps, figures, and numbers must be situated in socio-political context to better understand the spread and causes of health inequalities. Contemporary narrative data sheds light on the historical context, too, helping to build a longer view of disadvantage experienced by individuals and groups within our society, why this might be, and the personal and community contexts of these inequalities.

Avoiding ecological fallacies and assumptions about individuals based on group membership requires a combination of macro- and micro-level data, both qualitative and quantitative data, and engaging in co-production and hearing from people themselves. For example, linking health data with person-level data which reflects an individual's wider social context (housing, occupation, income, etc). This highlights the need for better data access for a wider range of researchers across disciplines, too. Agent-based models (a type of computer model) offer a way to simulate and explore the interactions of people and environment, allowing for better understanding of complex systems and behaviours which underlie health challenges.⁴⁸ In sum, understanding and addressing the geography of health inequalities requires a wider range of both qualitative and quantitative data, suitably contextualised, which balances granularity with spread and diversity, and captures continuity as well as a single point in time.

Moreover, understanding geographic inequalities in morbidity and mortality requires good data collection and appropriate analysis on population movement. Does the population of a given area change over time due to mobility (internal migration or immigration)? Improved health in an area may result from wealthier individuals with better overall health moving into areas that previously had poorer health outcomes, pricing local populations out. This scenario results in a change in health outcomes for the local area, but not for the people who once resided there.

How, then, can we distinguish between 'levelling up' and gentrification? – the former indicating real, long-term, positive impact, the latter an artificial outcome which may actually exacerbate inequalities. Moreover, places may have longstanding populations (families, forms of employment) alongside transitory groups (such as students) of varying size. These populations may have separate trajectories, but

47 'Digitising Scotland. Understanding Scotland's People'. The project is run by the University of Edinburgh's Longitudinal Studies Centre—Scotland. The website also offers links to a range of research outputs using the data that has been collected.

48 Population Health Agent-Based Simulation Network, 'Understanding population health using agent-based simulation methods'. This example is focused on non-communicable diseases.

also interactions between them, and outcomes may extend well beyond the specific locality – all requiring consideration for public health research and policy.

Work across disciplines, and qualitative as well as quantitative approaches, are crucial in order to combine multiple perspectives when creating, gathering, and analysing data, as well as framing and posing research questions. Without this broader insight there exists a potential tension between what is measurable and what is meaningful.

2.5 Addressing inequalities

Geography is just part of the systems that create inequalities in health and life – class patterning and the distribution of wealth are also crucial, for example. It is important not to skip over experiences of disadvantage outside disadvantaged places; geography is only part of the picture. Yet certain deprived areas of the UK continue to be associated with poor health, notwithstanding universal healthcare provision. To take up a metaphor used by one participant at the roundtable, if you have a poor field, you will grow and continue to grow poor crops. In some areas of the UK, in the most literal sense, the soil itself is contaminated by well over a century of industry and pollution, and this will impact the health of the people living there.

In part, it is helpful to broaden our understanding of what we mean by ‘geography’ here. We need to consider geography at different levels of granularity – not just in terms of north and south, or between the nations, but also in terms of region to region, city to city, city to rural and in terms of different neighbourhoods and communities. We should also look beyond physical geography to social geography, political geography, and infrastructure – all of which are important if we want to understand geographic inequalities in health.

Perhaps more importantly, although specific places may rise and fall and see shifts, the broader system of inequalities in power, money and resources has not changed so much over time and social mobility has stagnated.⁴⁹ In varying degrees, Britain continues to have a combination of richer and poorer places with resultant richer and poorer lives, with little social mobility. In other words, the essential ‘engine’ of inequality does not change very much, and health inequalities are an inseparable part of this. We must move beyond big-P Politics and focus on processes of power and how power operates in our society, including class, race, and gender and the way these shape experiences – in addition to focusing on exposure variables for health.

Since Michael Marmot and his team first published their review into health inequalities in 2010, life expectancy has stagnated and, for those most impacted by inequalities it has fallen.⁵⁰ Socio-economic inequalities, heightened by austerity measures and more recently the pandemic, are a key component of the clear social gradient that we see in these health outcomes. Examples of where this link has been broken at local levels can, however, highlight potential solutions. As discussed above, some studies on community resilience have shown certain more deprived areas doing better,⁵¹ although chance may account for some of these cases, along with factors such as population mobility (for example, displacement of poorer, sicker people).

49 See for example the All-Party Parliamentary Group on Social Mobility.

50 Marmot, M., Allen, J., Goldblatt, P., Boyce, T., McNeish, D., Grady, M. and Geddes, I. (2010), *Fair Society, Healthy Lives. The Marmot Review. Strategic Review of Health Inequalities in England post-2010*. Institute of Health Equity; Marmot, M., Allen, J., Boyce, T., Goldblatt, P. and Morrison, J. (2020), *Health Equity in England: The Marmot Review 10 Years On*, The Health Foundation and Institute of Health Equity.

51 Cairns-Nagi, J. and Bamba, C. (2013), ‘Defying the odds: a mixed-methods study of health resilience in deprived areas on England’, *Soc. Sci. Med.* 91, PP. 229-237; Tunstall et al, ‘Is economic adversity always a killer?’.

A key question, again, is how people and communities can be supported to become more resilient, increasing the equitable distribution of personal, cognitive, social, material, and other resources, to support those least able to react and adapt to something like a pandemic as well as improving health outcomes overall.⁵² Connection (including personal connection) is crucial and brings opportunities, furthering social resilience. These concerns tie in with the National Resilience Review⁵³ as well as initiatives such as the Rockefeller 100 Resilient Cities network, as mentioned above, promoting social resilience and investment in communities.⁵⁴

Geographic health inequalities are also related to the spread of ideas influencing people's behaviour – in other words, inequalities of information and trust. Information and ideas spread dynamically in communities, and popular understanding also changed (and is still changing) over the course of the pandemic. These phenomena are difficult to map in retrospect, but may have influenced trends invisibly, leading to outliers in the pattern of distribution of COVID-19. Likewise, public trust in information about the pandemic may have varied by level of deprivation and place, with some groups in society less able to access information or even excluded from health messaging.⁵⁵ Vaccine hesitancy is also related to deprivation, which may potentially lead to endemic hotspots in more deprived areas.⁵⁶

The roundtable also highlighted the importance of the political dimension in relation to health inequalities. It is crucial that we understand what people really value, what matters to them in their specific circumstances, and why. The most recent British Social Attitudes survey report, for example, showed that the majority of those who took part are concerned about social inequality, ahead of health inequality, and even ahead of economic inequality.⁵⁷ Although this is based on a random sample of just 3000 people, it does give us some longitudinal insight into public attitudes. Findings such as these raise the interlinked questions of, first, why Britain does not have democratic support for the kinds of interventions that could have a positive impact on inequalities (such as redistribution of wealth) and, second, how to activate civil society and make sure that it is listened to, via local political, civil, and social engagement and action for change.

It is crucial that researchers engage with a range of dynamics about the current policymaking context and environment in conducting research, and be supported to do so. For example linking evidence-based challenges and solutions to current Government priorities, such as the levelling up agenda, can have benefits that effect change.⁵⁸

Historical examples where considerable population-level reductions in health inequalities have been achieved for an appreciable period have all taken a wider view of inequalities, and included an expansion of social security safety nets, increased access to healthcare (especially for the poorest), and incorporation of the working

52 There are parallels in the work undertaken by the British Science Association in thinking about 'Science identities and science capital'. An example of how this might be done can also be found in the work of the Hartlepool Action Lab - a community scale approach getting one of the most deprived communities in the UK supported to work together to solve its own problems.

53 See Cabinet Office (2021), 'Consultation outcome: Public Response to Resilience Strategy: Call for Evidence'.

54 The Rockefeller Foundation, '100 Resilient Cities'.

55 The British Academy, *The COVID Decade*, pp. 53-56 and pp. 78-83.

56 Institute for Community Studies, Institute for Community Research and Boston University (2021), *Understanding vaccine hesitancy through communities of place*.

57 NatCen Research, 'British Social Attitudes 38'.

58 See for example the case made for the North of England in Northern Health and Science Alliance (2021), *A year of COVID-19 in the North: Regional inequalities in health and economic outcomes*.

classes and/or minority groups in the political process.⁵⁹ Investment in health systems, preventative healthcare, support for children, a focus on reducing poverty and increasing old age pensions all formed part of governmental strategy between 1997 and 2010.⁶⁰ Following the economic depression in the late 1920s and 1930s, ‘prolonged and enthusiastic state intervention ... reduced inequalities in mortality’ in Britain – and while this took some 21 years to achieve, the approach kept levels of income inequality low until the late 1970s.⁶¹

Rather than there being a single silver bullet to address health inequalities, what seems to be crucial is a range of policy options which target the various social determinants of health, engaging directly with communities, and sustained political action over time and across governments.⁶²

Finally, health inequalities have a strong values dimension: hence it is important to be clear not only what matters to us, but who the ‘us’ is – developing this agenda through co-produced as well as systematic and scholarly work. Sociological research suggests that the way people understand and prioritise health is affected by how the questions are framed. Life and death are an existential and hence universal priority, but there are inequalities. In other words, there are inequalities in social, scientific, health capital, resources and health literacy, as well experiences of racism and other forms of discrimination, that can limit the capability of individuals or communities to make this a priority for action.

59 Bamba, C. (2021), ‘Levelling up: Global examples of reducing health inequalities’, *Scandinavian Journal of Public Health*, 19, pp. 1-16.

60 Mackenbach, J.P. (2011), ‘Can we reduce health inequalities? An analysis of the English strategy (1997–2010)’, *Journal of Epidemiology & Community Health*, 65(7), pp.568-75.

61 Thomas, B., Dorling, D. and Davy Smith, G. (2010), ‘Inequalities in premature mortality in Britain: observational study from 1921 to 2007’, *British Medical Journal*, 341:c3639.

62 Bamba, ‘Levelling up’, p. 5.

Annex A - List of roundtable participants

The following individuals were present at the roundtable held on 10 November 2021

| | |
|---|--|
| Professor Dominic Abrams FBA Co-Chair | Social Psychology, Director of the Centre for the Study of Group Processes, University of Kent |
| Professor Dame Theresa Marteau FMedSci Co-Chair | Director of Behaviour and Health Research Unit, University of Cambridge |
| Winston Allamby | Patient and Public Contributor |
| Professor Kate Ardern | Director of Public Health, Wigan Council |
| Professor Clare Bamba Speaker | Public Health, Newcastle University |
| Professor Virginia Berridge | History and Health Policy, London School of Hygiene and Tropical Medicine |
| Jo Bibby | Director of Health, The Health Foundation |
| Dr David Busse Observer | Epidemiology Advisor, Government Office for Science |
| Dr Helen Bodmer | Head of Health Systems and Partnerships, Medical Research Council |
| Professor Carol Brayne FMedSci | Public Health Medicine, University of Cambridge |
| Professor Sarah Curtis FBA Speaker | Professor Emerita, Durham University |
| Professor George Davy Smith | Clinical Epidemiology, University of Bristol |
| Professor Carol Dezateux FMedSci | Clinical Epidemiology and Health Data Science, Barts and the London, Queen Mary School of Medicine and Dentistry |
| Sophie Evans | Patient and Public Contributor |
| Dr Zhiqiang Feng | School of Geosciences, University of Edinburgh |
| Professor Tamsin Ford FMedSci | Child and Adolescent Psychiatry, University of Cambridge |
| Professor Dame Hazel Genn FBA | Socio-Legal Studies, University College London |

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| Claire Hastie | Patient and Public Contributor |
| Dr Gareth Griffith | Senior Research Associate, Bristol Medical School, University of Bristol |
| Professor Dame Anne Johnson FMedSci | Epidemiology, Co-Director UCL Health of the Public, University College London and President of the Academy of Medical Sciences |
| Professor Srinivasa Vittal Katikireddi | NRS Senior Clinical Research Fellow, University of Glasgow, honorary Consultant in Public Health at NHS Health Scotland |
| Professor Kamlesh Khunti FMedSci | Primary Care Diabetes & Vascular Medicine, University of Leicester |
| Lynn Laidlaw | Patient and Public Contributor and Patient Researcher |
| Professor Richard Mitchell | Health and Environment, University of Glasgow |
| Dr Alex Mold Speaker | History, London School of Hygiene and Tropical Medicine |
| Professor James Nazroo FBA | Sociology, University of Manchester |
| Amy Newman | Policy and Strategy Trainee, NHS England and NHS Improvement |
| Dr Paul Norman | Population & Health Geography, University of Leeds |
| Professor Michael Parker | Bioethics, Director of Wellcome Centre for Ethics and Humanities and Director of Ethox Centre, University of Oxford |
| Professor Jenny Popay | Sociology and Public Health, Lancaster University |
| Professor Simon Szreter | History and Public Policy, University of Cambridge |
| Professor Kier Waddington | History, Cardiff University |
| Colin Wilkinson | Patient and Public Contributor |
| Eren Akadimir | Academy of Medical Sciences |
| Alice Fletcher-Etherington | Academy of Medical Sciences |
| Dr James Squires | Academy of Medical Sciences |
| Angel Yiangou | Academy of Medical Sciences |

| | |
|-------------------------------|------------------------------------|
| Alex Mankoo | The British Academy |
| Dr Molly Morgan Jones | The British Academy |
| Alexandra Paz | The British Academy |
| Dr Joanna Thornborough | The British Academy |
| Dr Christine Knight | External consultant to the project |

Annex B - Roundtable briefing

The roundtable addressed the following core questions:

- To what extent are the geographic spread of COVID-19 infection and mortality rates distinguishable from place-based health outcomes over the past 200 years?
- What are the causes and consequences of this?
- What needs to change?

Background

COVID-19 has been referred to as a ‘syndemic’ crisis, a situation where there is ‘the accumulation and adverse interaction between two or more conditions in a population, often resulting from the social context in which that population lives’.⁶³ Health and wellbeing, local economic risk and resilience, poverty and deprivation, and response planning all have an important place-related dimension that has shaped the impact of the crisis. This impact has identified clear place-based vulnerability; the disease has hit the most deprived communities hardest. Inequalities are rising within and between communities, with more people falling into poverty, and existing trends in inequalities pre-COVID are being exacerbated and accelerated.

Understanding how the mortality rates of COVID-19 map against geographical location, physical infrastructure and social conditions, and to what extent these trends are long-standing or newly surfaced by the pandemic, will allow for better understanding of the different priorities that may be needed in different places.

In June 2021, the British Academy and the Academy of Medical Sciences received a request from SAGE to investigate the geographical factors associated with historically poorer public health outcomes over the last 200 years. This request arose in part from discussion at a meeting of SAGE on 22 April 2021 on common characteristics between areas of persistent transmission.⁶⁴

This request was then developed into the following research question, to be investigated independently by the British Academy in cooperation with the Academy of Medical Sciences:

To what extent are the geographic spread of COVID-19 infection and mortality⁶⁵ rates distinguishable from place-based health outcomes over the past 200 years? What are the causes and consequences of this? And what needs to change?

63 Campos-Matos, I., Newton, J. and Doyle, Y. (2020), ‘An opportunity to address inequalities: learning from the first months of the COVID-19 pandemic’, *Public Health England, GovUK*, 29 October 2020.

64 SAGE 87 minutes: Coronavirus (COVID-19) response, 22 April 2021.

65 Note that both elements might have different drivers, and certainly the severity of the disease might vary, but not lead to mortality.

To approach this question, we began with a short scoping review of existing literature on the geographic spread of historic health outcomes, in parallel with a series of supporting calls with a small number of researchers and other experts across a broad range of disciplines, to further develop and inform how we might approach the question. This initial scoping was also heavily informed by the interdisciplinary evidence and insights captured in the Academy of Medical Science's reports *Preparing for a Challenging Winter* (2020) and *COVID-19: Preparing for the Future* (2021) and the British Academy's *COVID Decade* reports.⁶⁶

In order to help catalyse discussion at the roundtable and provide a shared background to some of the historical perspectives and trends in health outcomes, a wider (but still initial and light-touch) literature review was then conducted, drawing upon existing literature and available data identified by the researchers and experts we spoke with. This initial review has informed the current briefing document and the scope of the roundtable.

The purpose of the roundtable is to bring together researchers and other experts with a breadth and depth of disciplinary perspectives in order to address the question above.

The discussion and outputs from this roundtable will be summarised in a briefing note, alongside additional analysis from the literature review. In addition to SAGE, the briefing note is intended to inform and enrich debate among a wider policy audience.

After the roundtable, the British Academy and the Academy of Medical Sciences will be discussing a range of next steps, including the possibility of a larger programme of work building on this project. If you would be interested in contributing to any further work, please let us know.

Initial insights and reflections

The points below offer an initial set of insights, considerations, and reflections to help kick-start and catalyse the discussion. They are not intended to be comprehensive or exhaustive, but we hope participants will be able to review them in advance and use them to help inform their own contributions to the discussion. We highlight questions about remaining evidence gaps and look forward to building on this through the roundtable discussion.

Q1. To what extent are the geographic spread of COVID-19 infection and mortality rates distinguishable from place-based health outcomes over the past 200 years?

In order to answer this question, we will need to consider evidence relating to:

- Place-based health outcomes over the past 200 years,
- The geographic spread of COVID-19 infection and mortality rates, and
- The extent to which the latter maps onto the former.

⁶⁶ The Academy of Medical Sciences (July 2020), *Preparing for a challenging winter 2020/21*; The Academy of Medical Sciences (July 2021), *COVID-19: Preparing for the future*; The British Academy (2021), *The COVID Decade: Understanding the long-term societal impacts of COVID-19*.

Place-based health outcomes over the past 200 years

The **history of industrialisation and urbanisation in the early decades of the 19th century** is key to any consideration of historic and geographic health inequalities in Britain. This timeframe coincides with the availability of data on population, mortality, health, and disease,⁶⁷ supported by bioarchaeological and palaeopathological evidence of the health impacts of 19th-century urban industrial life.⁶⁸ Historians highlight the **‘urban penalty’** that emerged with the influx of working-class people into industrial towns and cities, creating the conditions for a set of place-based health risks, notably epidemics of infectious disease such as cholera and typhus.⁶⁹

Health geographers and others have explored **place-based health inequalities within Britain in the late 20th and early 21st centuries**. At the **local level**, there have been growing inequalities in premature mortality between districts.⁷⁰ At the **regional level**, health inequalities have affected post-industrial areas since the 1980s (e.g., West of Scotland, North West and North East of England, South Wales, parts of Northern Ireland). Specific places suffering from poor health outcomes in this period include **Glasgow, Manchester**, and parts of **London**, with **broader divides between North/South and urban/rural**.⁷¹

Most recently, *The Marmot Review Ten Years On* report, published in February 2020 just before the impact of COVID-19 on the UK, demonstrated **widening health inequalities in the last decade and growing regional health inequalities**, following the North/South divide identified in previous reports (with the North East faring especially poorly). Regional disparities in life expectancy reflect differences in life expectancy in the most deprived areas within regions: i.e., the life expectancy penalty of living in a deprived area in the North is much higher than that of living in a deprived area in the South.⁷² Communities facing particular hardship and adversity (‘left behind’ or ‘ignored’ places) are concentrated in the North and Midlands, as well as southern coastal towns.⁷³

67 Rosen, G. (1993), *A History of Public Health*, pp. 148–56.

68 Lewis, M.E. (2002), ‘Impact of industrialization: comparative study of child health in four sites from medieval and postmedieval England (AD 850–1859)’, *American Journal of Physical Anthropology*, 119, pp. 211–23; Mathena-Allen, S. and Zuckerman, M.K. (2020), ‘Embodying industrialization: inequality, structural violence, disease, and stress in working-class and poor British women’, in Tremblay, L.A. and Reedy, S. (eds), *The Bioarchaeology of Structural Violence*, pp. 53–79; Newman, S.L., Gowland, R.L. and Caffell, A.C. (2019), ‘North and south: A comprehensive analysis of non-adult growth and health in the industrial revolution (AD 18th–19th C), England’, *American Journal of Physical Anthropology*, 169, pp. 104–21; Roberts, C.A., Caffell, A., Filipek-Ogden, K.L., Gowland, R. and Jakob, T. (2016), ‘“Til Poison Phosphorous Brought them Death”: A potentially occupationally-related disease in a post-medieval skeleton from north-east England’, *International Journal of Paleopathology*, 13, pp. 39–48.

69 Berridge, V., Gorsky, M. and Mold, A. (2011), *Public Health in History*, p. 31.

70 Shaw, M., Dorling, D. and Brimblecombe, N. (1998), ‘Changing the map: health in Britain 1951–91’, *Sociology of Health and Illness*, 20, pp. 694–709.

71 Curtis, S. and Jones, I.R. (1998), ‘Is there a place for geography in the analysis of health inequality?’, *Sociology of Health and Illness*, 20, pp. 645–672; Mitchell, R., Shaw, M. and Dorling, D. (2000) *Inequalities in Life and Death: What If Britain Were More Equal?*; Shaw, M., Thomas, B., Smith, G.D. and Dorling, D. (2008), *The Grim Reaper’s Road Map: An Atlas of Mortality in Britain*.

72 Marmot, M., Allen, J., Boyce, T., Goldblatt, P. and Morrison, J. (2020), *Health Equity in England: the Marmot Review Ten Years On. Executive Summary*, The Health Foundation and the Institute of Health Equity, p. 13.

73 Marmot et al., *Health Equity in England*, 28; Whitty, C. (2021), *Chief Medical Officer’s Annual Report 2021: Health in Coastal Communities*.

The geographic spread of COVID-19 infection and mortality rates

In relation to COVID-19, more deprived areas have suffered disproportionately in terms of both case numbers and deaths.⁷⁴ Local demographic factors (older population, lower SES, population density, proportion of ethnic minorities) accurately predicted community vulnerability to COVID-19, strain on hospital capacity, and local lockdowns in (for example) parts of London, Manchester, Bolton, Salford, Bury, and Trafford.⁷⁵ Work in the early stages of the pandemic indicated that the majority of the most vulnerable areas were in the North, correlating with deprivation,⁷⁶ but it is unclear whether this mapped precisely onto subsequent COVID-19 outcomes, and any ‘final’ or absolute map of COVID-19 mortality and infection rates in the UK is yet to be drawn.⁷⁷

To what extent do COVID-19 infection and mortality rates map onto historic place-based health outcomes?

While the link between the historic ‘urban penalty’ and COVID-19 has been flagged,⁷⁸ further research would be needed to answer this question. Prior to COVID-19, it had been shown that contemporary place-based health inequalities have a robust relationship with historic geographic inequalities in at least some areas, such as London.⁷⁹

Atlases of mortality in Britain (and underpinning data) present key resources for analysing the extent to which COVID-19 infection and mortality rates map onto historic and pre-pandemic mortality patterns.⁸⁰ Maps produced by the University of Cambridge ‘Populations Past’ project,⁸¹ for example, suggest that patterns of COVID-19 mortality closely resemble those of historic poor health and infant mortality (particularly for cities such as mid-19th-century Manchester and Liverpool with crowded and inadequate housing) or, more recently, rates of heart disease, lung cancer, and stroke in the West of Scotland.⁸² Local-level data on COVID-19 are clearly available for comparison with historic health outcomes, notwithstanding the challenges of comparability due to administrative boundary changes over time.

We would welcome discussion at the roundtable on the **need of further research** on this point and, if this is felt to be desirable, **appropriate case studies** (places), **timeframes**, and **comparators** (diseases/causes of death) for historical comparison. We would also welcome insight into any **work in progress** in this area.

74 For example Priestley, A. (2021), *Health Inequality and COVID-19 in Scotland*, SPICe; see also Morasaea, E.K., Ebrahimib, T., Mealy, P. and Coyle, D. (2021), *Place-based Pathologies: Economic Complexity Maps COVID-19 Outcomes in UK Local Authorities*, Bennett Institute for Public Policy, University of Cambridge; The British Academy, *The COVID Decade*, in particular chapter 2, ‘Health and wellbeing’, pp. 18-64 and chapter 3, ‘Communities, culture and belonging’, pp. 65-91.

75 Mills, M. (2020), ‘Vulnerability to COVID-19: demography, deprivation and behaviour’, in Abrams, D., Centre for Homelessness Impact, Hand, D.J., Heath, A., Karlsen, S., Mills, M., Nazroo, J., Richards, L. and Roberts, C., *What Factors Make a Community More Vulnerable to COVID-19? A summary of a British Academy Workshop*. The British Academy, p. 33.

76 Nicodemo, C., Barzin, S., Cavalli, N., Lasserson, D., Moscone, F., Redding, S. and Shaikh, M. (2020), ‘Measuring geographical disparities in England at the time of COVID-19: results using a composite indicator of population vulnerability’, *BMJ Open*, 10: e039749.

77 Scoping call with Danny Dorling (14/10/21).

78 Roberts, C. (2020), ‘Mortui vivos docent: let the dead teach the living in a post-pandemic landscape’, in Abrams et al., *What Factors Make a Community More Vulnerable to COVID-19?*, p. 42.

79 Dorling, D., Mitchell, R., Shaw, M., Orford, S. and Smith, G.D. (2000), ‘The Ghost of Christmas Past: health effects of poverty in London in 1896 and 1991’, *BMJ*, 321, pp. 1547-51; Orford, S., Dorling, D., Mitchell, R., Shaw, M. and Smith, G.D. (2002), ‘Life and death of the people of London: a historical GIS of Charles Booth’s inquiry’, *Health and Place*, 8, pp. 25-35.

80 Howe, G.M. (1997), *People, Environment, Disease and Death: Medical Geography of Britain Throughout the Ages*; Shaw et al., *The Grim Reaper’s Road Map*; Woods, R. and Shelton, N. (1997), *An Atlas of Victorian Mortality*.

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82 Jeavons, C. (8 July 2021), ‘Dying too young: Maps show little has changed in 170 years’, article for BBC News – Health.

Q2. What are the causes and consequences of (persistent) geographic health inequalities?

In order to address this question, we will need to consider evidence relating to:

- The attributes and conditions of local areas which increase the risk of poor health and lower life expectancy when individuals are exposed over their life course,
- How the evolution of place relates to changes in the health of the local population.

‘In short, the longer people spend in poverty and in poor places, the earlier they tend to die.’⁸³

Causes

Historically, urban health problems stemmed from the **19th-century urban environment and living conditions**, notably overcrowding, poor-quality housing, excessive building density, inadequate sanitation, factory work in poor conditions, and lack of public parks for recreation.⁸⁴ Malnutrition, vitamin D deficiency, and the individual and environmental harms of industrial pollutants have also been highlighted, while pollution from activities like coal and tin mining has historically affected more rural areas too, for example in Wales.⁸⁵

Worsening geographic health inequalities in the UK in the late 20th century may be traced to **social change and polarisation**,⁸⁶ cemented at the local level by selective migration.⁸⁷ Most recently, the *Marmot Review Ten Years On* (among others) demonstrates the impact on health inequalities of **funding cuts due to austerity**, hitting deprived areas and those outside London and the South East hardest.⁸⁸

In England, regional health inequalities are largely accounted for by **deprivation**,⁸⁹ although this is not the case for Scotland. Excess premature mortality in Scotland, and Glasgow specifically, may be explained by the lagged effects of historically higher deprivation levels, UK government regional and economic policies from the 1950s to 1980s (and local government responses to these), the nature and scale of post-war urban change, relatively low levels of social capital, and the ‘democratic deficit’ of the 1980s.⁹⁰

Specific attributes of local areas that exacerbate health disadvantage include: limited employment opportunities; poor-quality housing; poor healthcare facilities and problems with access and workforce retention (e.g. in rural, remote, and coastal

83 Dorling et al., ‘The Ghost of Christmas Past’, pp. 1550–51.

84 Rosen, *A History of Public Health*, pp. 177–82.

85 Jeavans, C. (8 July 2021), ‘Dying too young: Maps show little has changed in 170 years’, article for BBC News - Health; Mathena-Allen and Zuckerman, ‘Embodying industrialization’; McGuire, S.A. (2020), ‘Products of industry: pollution, health and England’s industrial revolution’, in Tremblay, L.A. and Reedy, S. (eds), *The Bioarchaeology of Structural Violence: A Theoretical Framework for Industrial Era Inequality*, pp. 203–31; Roberts et al., ‘Til Poison Phosphorous Brought them Death’.

86 Mitchell et al., *Inequalities in Life and Death*.

87 Brimblecombe, N., Dorling, D. and Shaw, M. (1999), ‘Mortality and migration in Britain, first results from the British Household Panel Survey’, *Social Science and Medicine*, 49, pp. 981–88.

88 Marmot et al., *Health Equity in England*, pp. 3–5; see also Alexiou, A., Fahy, K. Mason, K. Bennett, D., Brown, H., Bambra, C., Taylor-Robinson, D. and Barr, B. (2021), ‘Local government funding and life expectancy in England: a longitudinal ecological study’, *The Lancet Public Health*, 6, e641–e647.

89 McKee, M., Dunnell, K., Anderson, M., Brayne, C., Charlesworth, A., Johnston-Webber, C., Knapp, M., McGuire, A., Newton, J.N., Taylor, D. and Watt, R.G. (2021), ‘The changing health needs of the UK population’, *Lancet*, 397: 1981.

90 Walsh, D., McCartney, G., Collins, C., Taulbut, M. and Batty, G.D. (2016), *History, Politics and Vulnerability: Explaining Excess Mortality in Scotland and Glasgow*, Glasgow Centre for Population Health, pp. 8–10.

areas); lack of healthy and affordable food shops; lack of play and leisure facilities; poorly maintained public spaces; industrial pollution; and traffic congestion, pollution, and accidents.⁹¹

The attributes of the place in which someone spends their childhood can also have lifelong effects, increasing the risk of disease and disability. This includes the broad socioeconomic profile of an area, as well as specific factors such as lesser availability of public parks, which is associated with greater cognitive decline in later life.⁹²

Consequences

The consequences of (persistent) geographic health inequalities are perhaps most vividly illustrated in *The Grim Reaper's Roadmap*, which (among its many maps of mortality across the UK) highlights **gross disparities in life expectancy** between neighbourhoods, with the average age of death ranging from 66.4 years in Glasgow Easterhouse to 80.6 years in Eastbourne West (1981–2004 figures).⁹³ As well as years of life lost, we must consider **lost years of healthy and disability-free life**: the recent *Marmot Review Ten Years On* report highlights differences in healthy life expectancy within England of 12 years between the most and least deprived local authorities.⁹⁴ Health inequalities are also 'expensive to the public purse',⁹⁵ not to mention their toll of human suffering:

*'Although usually expressed in statistical terms [...] behind such summary epidemiological expressions lie genuine human tragedies: individual stories of shortened, wasted lives, pain, sickness, early death and grief, affecting individual men, women and children, their families, friends and communities.'*⁹⁶

Q3. What needs to change?

Policy options

The recent *Marmot Review Ten Years On* report highlights the twin challenges of socioeconomic and regional health inequalities and calls for a **national strategy on health inequalities** as 'an essential first step'.⁹⁷ The report calls for policy action on **early years, education, employment, standard of living, healthy places, and preventive health**, all of which are crucial to reducing health inequalities.

91 Curtis and Jones, 'Is there a place for geography'; Marmot et al., *Health Equity in England*, pp. 28–30; Priestley, *Health Inequality and COVID-19 in Scotland*; Whitty, *CMO's Annual Report*.

92 Cherrie, M.P.C., Shortt, N.K., Mitchell, R.J., Taylor, A.M., Redmond, P., Thompson, C.W., Starr, J.M., Deary, I.J. and Pearce, J.R. (2018), 'Green space and cognitive ageing: a retrospective life course analysis in the Lothian Birth Cohort 1936', *Social Science & Medicine*, 19, pp. 56–65; Curtis, S., Southall, H., Congdon, P. and Dodgeon, B. (2004), 'Area effects on health variation over the life-course: analysis of the longitudinal study sample in England using new data on area of residence in childhood', *Social Science & Medicine*, 58, pp. 57–74.

93 Shaw et al., *The Grim Reaper's Road Map*, p. 2.

94 Marmot et al., *Health Equity in England*, p. 15.

95 Marmot et al., *Health Equity in England*, p. 3.

96 Walsh et al., *History, Politics and Vulnerability*, p. 4.

97 Marmot et al., *Health Equity in England*, p. 3.

More specifically, the report recommends **investing more in areas of greatest need** (*‘proportionate universal allocation of resources and implementation of policies’*),⁹⁸ as well as early intervention, workforce development, public engagement, monitoring and accountability.

The British Academy’s *COVID Decade* reports also identified **nine interrelated areas of long-term societal impact** of COVID-19 over the coming decade, many of which were, arguably, already affecting UK society prior to the pandemic, and which will require integrated policy solutions.⁹⁹ The history of pandemics shows that they are as much social and economic crises as health ones, and that such times of upheaval provide opportunities to reshape society if vision can combine with social, cultural, and policy change.¹⁰⁰

Studies of previous systematic government attempts to tackle health inequalities may shed light on further important policy considerations, including employing policies with proven efficacy, along with more joined-up, holistic approaches with explicit links between departmental commitments.¹⁰¹ It has been suggested that such policy drives require a democratic mandate to be truly effective,¹⁰² but we note public opinion that ‘inequalities have gone too far’.¹⁰³

One evidence-based policy intervention is to address income inequalities. **Redistribution of wealth is key to reducing health inequalities**, and even a modest redistribution would have considerable impact while costing nothing.¹⁰⁴ A failure to address income inequalities and other key underlying determinants of health has been identified as a key reason for the failure of previous government initiatives to address health inequalities.¹⁰⁵

As indicated in the recent *Marmot Review Ten Years On* report, there are questions of scale and targeting to be considered for any policy intervention. For example, previous attempts to reduce smoking rates resulted in an *overall* reduction but an increase in smoking *inequalities*.¹⁰⁶ Interventions which aim for **equity rather than equality** are likely to be more impactful in addressing health inequalities.¹⁰⁷

Public Policy Projects and the Institute of Health Equity recently published a report *Addressing the National Syndemic: Place-based Problems and Solutions to UK Health Inequality*.¹⁰⁸ The report focuses on **place-based whole-sector and cross-sector approaches** to address health inequalities, with specific attention to the potential influence of local government; the health sector and other public services; the voluntary, community and social enterprise sector; the business sector; and communities. For policy change at the national level to be successful, it is necessary to consider how national policy can promote, support, and complement local place-based and cross-sector interventions.

98 Marmot et al., *Health Equity in England*, p. 7.

99 The British Academy (2021), *Shaping the COVID Decade: Addressing the long-term societal impacts of COVID-19*.

100 The British Academy (2021), *Shaping the COVID Decade*.

101 Mackenbach, J.P. (2011), ‘Can we reduce health inequalities? An analysis of the English strategy (1997-2010)’, *Journal of Epidemiology and Community Health*, 65.7, pp. 568-75.

102 Mackenbach, ‘Can we reduce health inequalities?’.

103 Marmot et al., *Health Equity in England*, p. 31.

104 Mitchell et al., *Inequalities in Life and Death*; Scoping call with Danny Dorling (14/10/21).

105 See for example Mackenbach, ‘Can we reduce health inequalities?’.

106 Mackenbach, ‘Can we reduce health inequalities?’.

107 Rashid, R., Bennett, J.E., Paciorek, C.J., Doyle, Y., Pearson-Stuttard, J., Flaxman, S., Fecht, D., Toledano, M.B., Li, G., Daby, H.I., Johnson, E., Davies, B. and Ezzati, M. (2021), ‘Life expectancy and risk of death in 6791 communities in England from 2002 to 2019: high-resolution spatiotemporal analysis of civil registration data’, *The Lancet Public Health*.

108 Public Policy Projects and the Institute of Health Equity (2021), *Addressing the National Syndemic: Place-based problems and solutions to UK health inequality*.

Finally, and relatedly, while this roundtable focuses on geographic health inequalities and policy responses at the national level, we note that **global power and resource flows play a significant role in health inequalities within the nation** (notably the economic centrality of London), and that examples of best practice for policy may be found outwith the UK, in Europe or beyond.¹⁰⁹

Some questions for consideration during the roundtable

- a. Do we have evidence of differences in health outcomes as a function of place over the last 200 years, and if so, at what level of aggregations (e.g. cities, regions, towns, villages, neighbourhoods)? Where are the gaps in the evidence base and how can these gaps be addressed?**

Have new causal factors emerged in the light of the COVID pandemic, and are those same factors likely to have been relevant (but not measured or considered) in the past, or are we looking at something different now? The obvious differences are urban density and a highly mobile population, both locally and globally, as well as greater awareness of the hyperlocalisation of the inequalities.

- b. What attributes and conditions of local areas increase the risk of disease and disability, when individuals are exposed over their life course? How does the evolution of a place relate to changes in the health of local populations?**

Considering the impact and relevance of the following aspects at different life stages: housing, built environment; infrastructure (including provision of and access to healthcare); income, employment and working practices; and social interactions. There are themes from the wider literature across multiple disciplines, including changing demography, economic and social disruption, movement and migration patterns, evolving town-centres, etc.

- c. How can evidence on the impacts of place-based factors on health inequalities be translated into effective policy change to improve health outcomes and reduce disparities?**

This question should be considered in the context of the current political environment and reforms to NHS and public health structures, such as the government's levelling-up agenda and creation of the Office for Health Improvement and Disparities (OHID). Although making policy recommendations is beyond the scope of this workshop, we hope to identify opportunities for policy implementation, key questions that need to be answered, and missing evidence that will be required for effective policy change.

109 Dorling, D. (2004), 'Healthy places, healthy spaces', *British Medical Bulletin*, 69, pp. 1-14; scoping call with Martin McKee (22/10/21).

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