

## THE EFFECT OF COVID-19 ON VULNERABLE POPULATIONS IN THE US AND UK: AN INTERNATIONAL SCOPING REVIEW

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### ABSTRACT

**Context:** Comparing the Covid-19 related experiences of vulnerable groups can help to improve public health. The United States and the United Kingdom are both characterized by underfunded public health in the context of racist systems. We reviewed differences in Covid-19 outcomes between groups in the US and UK and compared intergroup differences between the two countries.

**Methods:** The scoping review analyzed articles published in English during the Covid-19 pandemic focusing on the US or the UK. Using Scopus and PubMed, research articles were chosen based on titles, abstracts, and relevance to the research question. Certain demographic groups known to be differentially affected by Covid-19 were chosen a priori for inclusion. Data was extracted by the first author and reviewed by senior authors. 63 studies met the inclusion criteria.

**Results:** Two studies compared the US and UK. One found that minority status is an important social determinant of health (SDOH) of Covid-19 related health outcomes in both countries, likely through association with other SDOH. Another found that the risk of confirmed infection was higher in African-Americans, Hispanic Americans, and Asian Americans in the US and in African-Caribbean/Black-Africans, South-Asians, and Mixed-race people in the UK, compared with their respective White peers. Asian ethnicity is subject to different definitions in the US and the UK.

Individual articles focusing on either the US or the UK also found that, in both countries, essential workers were impacted; those with disabilities were more often affected by Covid-19 related comorbidities in both countries. In addition, in both the US and the UK, people living in multigenerational families were more

susceptible to Covid-19. Misclassification of causes of morbidity and mortality was noted in both countries.

**Discussion and conclusion:** A limited literature indicates that, in both the US and UK, non-White populations were more affected by the Covid-19 pandemic, possibly due to association of SDOH with racist systems. Racial definitions differ between these countries and this needs further research. In both countries, data focused on LGBTQ+ groups and people with disabilities is lacking.

**Keywords:** Covid-19; Vulnerable populations; Social Determinants; Public Health;

## Introduction

As of September 2022, almost 600 million people worldwide had been infected with SARS-CoV-2 (Covid-19) and the virus has accounted for almost 6.5 million deaths ("COVID-19 Map" n.d.). Despite considerable efforts to curtail the pandemic through public health measures such as lockdowns and effective vaccination programmes, Covid-19 has continued to disproportionately affect disadvantaged groups (Bowleg 2020). It is important to note that evidence from previous pandemics, such as TB and HIV/AIDS, show that death and disease from infectious agents derive not simply from the pathophysiology of the contagion. They also reflect wider societal factors that shape individuals' exposure and susceptibility. Covid-19 is no exception.

Pre-existing inequalities have affected Covid-19 testing, transmission and outcomes in disadvantaged groups. The pandemic is an example of a syndemic, characterised by biological and social interactions that magnify susceptibility and worsen health outcomes (Horton 2020; Singer et al. 2017). The unequal impact of Covid-19 has also deepened these pre-existing inequalities. Measures taken to control the virus have had differential impacts on people's lives and livelihoods, which will have immediate and long-term implications on people's health (Suleman, M et al.). Yet policy responses to the pandemic in countries like the US and UK have largely centred on the biological and not the social determinants of ill health. Pandemic preparedness and response in these two countries has also primarily involved a 'crisis management' approach rather than an a priori understanding of vulnerabilities and potential outcomes.

The fact that the Covid-19 pandemic has been founded on and exacerbated, but not qualitatively changed or introduced inequities, reinforces an impression found previously in the literature that a disparities framing might not be a sufficient approach to such inequities. Rather than individual differences in access, quality, or outcomes, a structural approach can illuminate far-reaching effects that pre-existed the pandemic. Hence

the popularity of the syndemic framework for understanding Covid-related inequities, and our interest in broad-based comparison of national healthcare settings with similar structural characteristics.

Additionally, it is important to consider historical contexts within which crises arise. The Covid-19 pandemic has laid bare the consequences of unequal and underfunded welfare systems in the US and UK. Following the 2008 financial crisis, public services were defunded and the underlying economy and social fabric frayed in both contexts. The shock of Covid-19 catapulted vulnerable groups through an inadequate safety net. Furthermore, responses to the virus such as lockdowns, moves to virtual working and online services further exacerbated pre-existing disadvantage (Zhou and Kan 2021).

Here, we have reviewed differences in Covid-19 outcomes between groups in the US and UK and compared intergroup differences between and within the two countries.<sup>4</sup> No review to date has been conducted to include a systematic analysis of morbidity and mortality evidence detailing the experiences and outcomes of vulnerable groups in the US and UK from Covid-19.

## **Methods**

A scoping review was carried out to compare Covid-19 morbidity and mortality outcomes in the US and UK to assess the available landscape and map possible avenues for future research. Such a review is “of particular use when the topic has not yet been extensively reviewed or is of a complex or heterogeneous nature”(Pham et al. 2014). Further, a scoping review is employed to “map a body of literature on a topic area” a suitable first step before a systematic review is undertaken (Pham et al. 2014).

Scoping reviews have become increasingly popular as a method of knowledge synthesis (Colquhoun et al. 2014). However, there has been no “universal study definition or definitive procedure” (Pham et al. 2014) for carrying out scoping literature reviews. Arksey & O’Malley (2005) were the first to publish a methodological framework for carrying out scoping reviews, where they describe a 6-step process for clarifying how such a review may be conducted (Arksey and O’Malley 2005):

1. Identifying the research question
2. Identifying relevant studies
3. Study selection
4. Charting the data
5. Collating, summarizing and reporting the results
6. An optional consultation exercise

In this review we implemented steps 1 to 5. The scoping review involved an analysis of articles published in English during the Covid-19 pandemic focusing on the US and/or the UK. Using Scopus and PubMed, research articles were chosen based on titles, abstracts, and relevance to the research question. Certain demographic groups known to be differentially affected by Covid-19 were chosen a priori for inclusion (White, Black, Latinx, Asian/ Pacific Islander, Native American, LGBTQ+, Disabled people, Jewish, Southeast Asian, Non-English speakers). Data was extracted by the first author and reviewed by senior authors.

63 studies met the inclusion criteria. Box 1 summaries the search criteria, types of evidence sources used as well as the inclusion criteria. An information scientist was consulted for guidance on suitable selection and refinement of MeSH terms. Figure 1 illustrates the PRISMA process that was undertaken for the review.

The studies yielded from the literature search were stored in a reference manager. The data from the papers were then charted using the headings listed in Box 1.

- Reference title
- Relevant (from title and abstract)
- Date published
- Country of origin (study and first author)
- Type of study or paper e.g. review, commentary etc
- Study aims and how these related to the research question
- Key findings/quotes
- Key themes re: Covid-19 morbidity/mortality and specific demographics
- Any other relevant details

### **Box 1: Labelling for charting of references**

The data within these headings, including the “key themes” in the references were then summarised. These are presented in the results section.

Box 2 provides a summary of the search strategy implemented in the study.

	<b>Inclusion Criteria</b>
Demographics	White, Black, Latinx, Asian/ Pacific Islander, Native American LGBTQ, People with disabilities, Jewish, Southeast Asian, Non-English speakers
Language	English
Date of Publication	January 2020 – May 2022
Age	All ages and > 65
Location	The United States, The United Kingdom
Types of evidence sources	<ol style="list-style-type: none"> <li>1. Primary research studies</li> <li>2. Systematic reviews</li> <li>3. Websites (WHO (World Health Organization), CDC (Centers for Disease Control), PHE (Public Health England))</li> </ol>
Database and article finding	<ol style="list-style-type: none"> <li>1. Scopus</li> <li>2. PubMed</li> <li>3. Information Scientist consulted – guided search, selection and refinement of MeSH (Medical Subject Headings) terms and other useful resources</li> <li>4. Reference chaining - Used citations to find studies that might be useful</li> </ol>
Example search (each criterion + related MeSH terms)	<p>“Covid (or related terms)” AND “Morbidity and Mortality” AND “Specific demographic”</p> <p>This was completed for each of the demographics on our list</p>

## **Box 2: Search strategy**

### **Figure 1: PRISMA flowchart for scoping review**

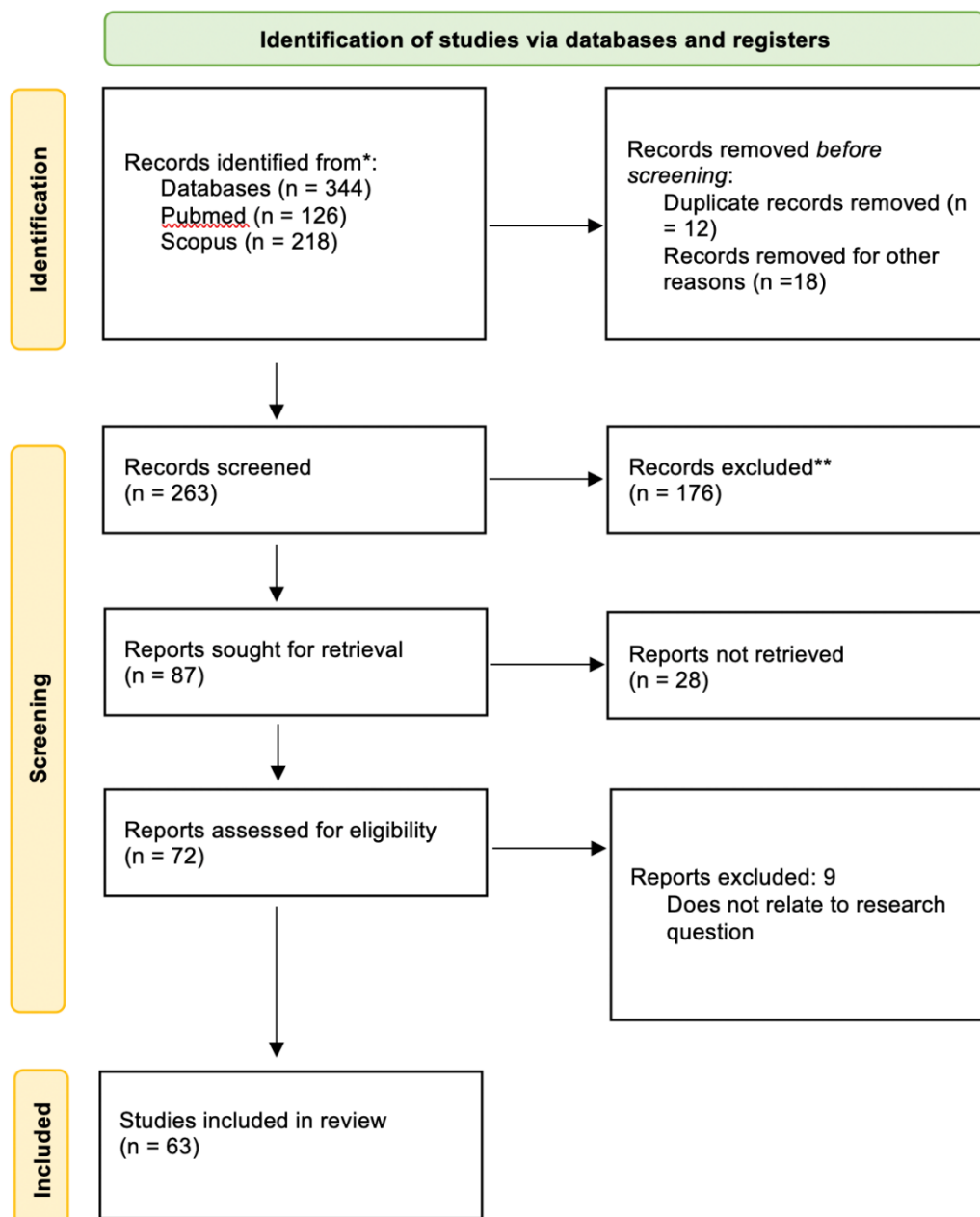


Figure 2 provides an example of search terms used during the review.

## Limitations

A scoping review can provide valuable insights to help identify future routes for research but it has limitations. It is not a critical appraisal of the quality of the studies included in the review. Also, it does not provide a synthesis of the evidence or a meta-analysis of the results. Rather, scoping reviews provide a broad overview of the available literature. This can be

useful for identifying trends and gaps in the research topic, inform the development of systematic reviews and subsequent clinical guidelines.

## **Results:**

63 studies met the inclusion criteria and were reviewed. Table 1 is a summary of the studies included in the review.

### *Studies showing direct US and UK comparisons*

Only two studies were found that compared groups and their differential outcomes in the US and UK. One study, a systematic review and meta-analysis of racial disparities in Covid-19 cases, hospitalisations, and deaths, found that the risk of confirmed infection was higher in African-Americans, Hispanic Americans, and Asian Americans in the US and in African-Caribbean/Black-Africans, South-Asians, and Mixed-race people in the UK, compared with their respective White peers (Mude et al. 2021).

The second study was a systematic review and meta-analysis whose aim was to describe the presence and magnitude of associations between ethnic groups and Covid-19-related outcomes. The study revealed that minority status is an important SDOH of Covid-19 related health outcomes in both countries, likely through association with other SDOH such as housing, employment status, socioeconomic circumstances, general health status and extended effects of racism (Agyemang et al. 2021).

### *Data from individual studies*

Data from individual studies that did not directly compare the two countries were analysed to assess the differential impacts of Covid-19 on vulnerable groups in the US and UK. We sought to assess how different groups fared in the UK and US; whether there were differences in outcomes in the different contexts; if there were differences, what may account for these; whether there were similarities; if there were similarities, what may account for these. Table 2 is a summary of the cross-study comparison. Studies analysed showed that disparities were found in reference to the following outcomes: likelihood of testing positive; hospitalisation; worse clinical sequelae e.g. needing a ventilator; worse outcomes e.g. higher mortality rates.

### *Likelihood of testing positive for Covid-19*



Two US studies found that African American and Hispanic individuals were significantly more likely to test positive for Covid-19 than White individuals (Magesh et al. 2021; Ogedegbe et al. 2020). One UK study also showed that some minority ethnic populations in England have excess risks of testing positive for Covid-19 (Mathur et al. 2021).

When investigating probable causes of greater exposure in certain groups, a US study showed that several factors were associated with higher Covid-19 case rates including higher than average household size; lower median household income; a larger share of individuals with less than a high school diploma, essential workers, and foreign-born non-citizens; and a higher proportion of workers who commute using public transportation (Figueroa et al. 2021; Yehia et al. 2020). A UK based study also showed that minority ethnic communities were more likely to be exposed to the virus due to occupational risk, household conditions, including overcrowded households, intergenerational living, and twice as high poverty rates compared to their White counterparts (Cheshmehzangi 2022).

#### *Likelihood of suffering worse outcomes*

Although the data showed that the likelihood of testing positive for Covid-19 was higher amongst vulnerable groups, the likelihood of worse outcomes, such as hospitalisation, ITU admission, severe Covid-19 sequelae and death, differed across different groups in the US and UK.

For example, in the US one study showed that mortality amongst patients hospitalised for Covid-19 was higher in Black patients compared with White patients. The analyses showed that a significant proportion of the difference in mortality between Black and White adults hospitalized with COVID-19 can be attributed to differences in the underlying burden of comorbidities, where Black patients with Covid-19 were found to have a higher burden of comorbid illnesses (Navar et al. 2021).

By comparison, the same study found that Hispanic adults had lower overall mortality than non-Hispanic adults, a finding that remained statistically significant even after accounting for demographic and clinical differences among those hospitalized (Navar et al. 2021).

US based studies showed differential results in the analysis of risk of exposure and outcomes for Asian people. Although, one study showed that Asian people had lower odds of death in comparison to White counterparts (Harrison et al. 2020) and another showed that White and Asian people had the lowest excess mortality (Polyakova et al. 2021), another study revealed that Asian Americans experienced significantly higher excess all-cause mortality and a higher percentage of deaths attributed to Covid-19



compared to non-Hispanic Whites. Furthermore, the study suggested that disproportionately low testing rates, greater disease severity at care presentation, socioeconomic factors, and racial discrimination may be contributing to the disparities in outcomes experienced by Asian people (Yan et al. 2021). The differential outcomes amongst Asian populations and between minority ethnic groups in the US warrants further study.

In the UK, by contrast, all studies that were included in the review showed that ethnic minority groups and in particular Black and South Asian communities fared worse, with higher hospitalisations, ICU admissions and premature deaths. One UK based study showed that South Asian and Black people had a substantially higher risk of Covid-19-related death than White people. Notably, the analyses showed that these differential outcomes were only partly attributable to comorbidities (Williamson et al. 2020). Another UK study showed that higher hospitalization rates and mortality from Covid-19 in minority ethnic groups were likely due to higher rates of infection rather than comorbidities or other biological factors (Ward et al. 2021). Their analysis suggests that the greatest risk of suffering worse Covid-19 outcomes is determined by differential exposure. A few studies assessed what may account for the differential exposure and subsequent outcomes. For example, two UK based study showed that multigenerational living was causally associated with an increased risk of death due to Covid-19 amongst South Asian women (Mathur et al. 2021; Nafilyan et al. 2021).

### *Disability*

No studies compared outcomes for disabled people in the UK and US. Individual studies showed that overall, in both countries, disabled people suffered poorer outcomes compared to those without disabilities. UK and US studies showed that disabled people, in particular, those with intellectual and learning disabilities, were more likely to be hospitalized, suffer higher levels of comorbidities and had a higher risk of death (Cummins et al. 2021; Kavanagh et al. 2022; Turk et al. 2020; Landes, Turk, and Ervin 2021). Overall, few studies looked at factors to understand why disabled people suffer disproportionately, such as the need for intimate care and higher rates of comorbidities.

### *LGBTQ+*

There was a paucity of evidence capturing the experiences and needs of LGBTQ+ groups in the UK and US. There were no studies that carried out cross-country comparisons and our review failed to identify a single relevant

study in the US. Only one study in the UK was found that sought to systematically review all published and unpublished evidence on the impact of the Covid-19 on the health and well-being of LGBTQ+ people in the UK. The study found that there was in fact no published research on any outcomes for LGBTQ+ people. They did find 11 grey literature reports that they deemed of “low quality” that were largely conducted by LGBTQ+ charities. Some of this data, though based on small sample sizes, reveals that LGBTQ+ people have been at greater risk of worse outcomes such as homelessness and self-harming (McGowan, Lowther, and Meads 2021).

## **Discussion**

The Covid-19 pandemic has deepened pre-existing inequalities. This review indicates that, in both the US and UK, non-White populations were more affected by the Covid-19 pandemic, (Mude et al. 2021) possibly due to association of SDOH with racist systems (Agyemang et al. 2021). The evidence shows that the greatest risk of suffering worse outcomes from Covid-19 was higher exposure to the virus (Ward et al. 2021). Higher exposure was most prevalent in groups that are subject to the perfect storm of socially determined inequalities such as poor-quality housing, financial precarity, poor quality employment and less access to financial support.

That such disadvantage tracks racial lines points to political and economic choices and structures, past and present, that are not only failing to address structural disadvantage but are further entrenching pre-existing inequalities (Bailey and Moon 2020). Policy makers who are keen to redress escalating disadvantage will find data from this study informative for pandemic preparedness and response (Varkey, Kandpal, and Neelsen 2022). The latter requires systematic management of exposure risk that directly address SDOH. For example, improvements around not just the number of people employed but the quality of jobs that they do, as well as ensuring a living wage.

1. Direct support for workers such as a sufficient safety net including statutory sick pay that is at a level that compares with continental counterparts (Bambra, C., Lynch, J., & Smith, K. E. 2021).
2. Building housing stock that meets the requirements of culturally diverse communities whilst also protecting the health and health opportunities of the young and old.
3. A data dashboard to track not only healthcare data but also SDOH which capture the jobs people do, the conditions in which they live and the support they have to maintain individual and family finances.

4. A robust data architecture will enable policy making that is both responsive to and reflective of a syndemic framework.

Another key finding from this study is the prevalence and implications of data gaps. Data on all protected characteristics should be systematically collected, maintained, shared and readily analysed as part of national, regional and local health systems. Such systematic data collection requires leadership and political will. In the UK, for example, when Covid-19 mortality rates were reported as higher amongst ethnic minority communities, Public Health England made systematic and robust ethnicity data collection a key target ("Beyond the Data: Understanding the Impact of COVID-19 on BAME Communities," n.d.). Subsequent implementation of strategy to improve health data sets including those on ethnicity yielded positive results including greater data granularity relating to specific ethnic groups ("Appendix B: Quarterly Progress Report on Improvements to Health Datasets" n.d.). In the US, an imbalance with the federal government and state health agencies' data collection efforts led to the Center for Disease Control struggling to provide real time information. The HHS Protect data platform was created to alleviate this burden and provide more accurate and up to date data ("CDC under Scrutiny after Struggling to Report Covid Race, Ethnicity Data" n.d.; "HHS Protect - A Common Operating Picture for COVID-19 | CDC" 2022).

The setting up of national data architectures to address data gaps on some protected characteristics, for example disability and LGBTQ+ status, may suffer a lag despite adequate leadership and resource investment. In the meantime, such data could be collected through collaborative working with support groups, representative charities and also primary care systems. Such efforts will need synergistic working with trusted people and spaces to mitigate systemic mistrust that has prevailed in vulnerable and minority groups (Garg et al. 2021). Data collection amongst vulnerable and minority groups ought to be cognisant of the healthy systemic mistrust that such groups have relied on in order to build and maintain resilience (Garoon et al. 2016). If established institutions and structures are to reach out successfully to groups and organisations that have been disenfranchised and suffered deep disadvantage, such outreach must include respect and a commitment to understanding the views and values of these communities. The evidence also shows that there are groups that lie below the data line such as those who are homeless or those with no recourse to public funds. This scoping review does not include data on such groups nor groups who are actively marginalised such as the incarcerated, undocumented and uninsured. Local and national policy makers should commit resources and

strategic direction to fully evaluate and address the unmet needs of such groups.

At a more granular level, the data also show that there is need for more research to understand fully the differential outcomes amongst vulnerable groups. In the US, that Hispanic and Black adults suffer higher exposure yet differential outcomes points to a need for evaluating whether such differences are due to, for example, differences in the time to presentation to healthcare services. Such data would provide deeper insights into the causal mechanisms of how SDOH have led to disparities in Covid-19 outcomes. Furthermore, robust mechanistic models illustrating differential risks, their weighting and an associated causal pathway to exposure and outcomes are absent. Such models would strengthen the evidence base for a syndemic framework and more readily inform policy making.

Another key finding from the study is how race and ethnicity is defined and implemented in data collection and analyses. In the US a broad "Asian" category is used. In the UK the data are disaggregated to include Bangladeshi, Pakistani, Indian and Chinese groups ("Appendix B: Quarterly Progress Report on Improvements to Health Datasets" n.d.). Analyses of the UK data show significant differences in outcomes amongst these groups. US data may benefit from disaggregation to more accurately reflect diversity amongst groups but also to capture differential outcomes, for example, that experienced by people of South Pacific heritage. Furthermore, differential outcomes amongst Asian populations in the US and UK requires further investigation including how ethnicities and races are defined and whether and how differential definitions may impact analyses and cross-country comparisons.

The limited number of comparative papers on morbidity and mortality for vulnerable populations during the COVID-19 pandemic might stem from institutional individualism as each country's public health entity is focused on implementing effective strategies that focus on the health and safety of its own populations. It is understandable that each country prioritizes its citizens but comparing response strategies is crucial, especially in similar countries like the US and the UK. These comparisons can create effective methods for mitigating the spread of disease, and they can identify areas for improvement in a country's response efforts while also helping promote international collaboration.

These comparisons should be unbiased to keep countries from putting blame on each other or using them as a ranking tool. The World Health Organization (WHO), a transnational entity, is uniquely positioned to make these cross-country comparisons because of its access to data and

information from a wide range of countries. Therefore, it can provide an objective analysis of the effectiveness of different pandemic preparedness strategies while playing an important role in facilitating international cooperation during pandemics by fostering the distribution of information among countries and data transparency.

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## Notes

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<sup>4</sup> The overall aim of the project, that has received initial pump priming funding from Oxford-Johns Hopkins Global Infectious Disease Ethics Collaborative (GLIDE), is to develop and pilot an ethical framework for pandemic preparedness that is informed by and responsive to inequalities.

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