

How did the Covid pandemic response harm society? A global evaluation and state of knowledge review (2020-21)

Kevin Bardosh^{1,2}

¹ School of Public Health, University of Washington, USA

² Edinburgh Medical School, University of Edinburgh, UK

Contact: bardosh_kevin@hotmail.com; kbardosh@uw.edu

Pre-print version: May 14, 2023

Abstract

Early in the Covid pandemic concerns were raised that lockdown and other non-pharmaceutical interventions would cause significant multidimensional harm to society. This paper comprehensively evaluates the global state of knowledge on these adverse social impacts, with an emphasis on their type and magnitude during 2020 and 2021. A *harm framework* was developed spanning 10 categories: health, economy, income, food security, education, lifestyle, intimate relationships, community, environment and governance. The analysis synthesizes 600 publications with a focus on meta-analyses, systematic reviews, global reports and multi-country studies. This cumulative academic research shows that the collateral damage of the pandemic response was substantial, wide-ranging and will leave behind a legacy of harm for hundreds of millions of people in the years ahead. Many original predictions are broadly supported by the research data including: a rise in non-Covid excess mortality, mental health deterioration, child abuse and domestic violence, widening global inequality, food insecurity, lost educational opportunities, unhealthy lifestyle behaviours, social polarization, soaring debt, democratic backsliding and declining human rights. Young people, individuals and countries with lower socioeconomic status, women and those with pre-existing vulnerabilities were hit hardest. Societal harms should challenge the dominant mental model of the pandemic response: it is likely that many Covid policies caused more harm than benefit, although further research is needed to address knowledge gaps and explore policy trade-offs, especially at a country-level. Planning and response for future global health emergencies must integrate a wider range of expertise to account for and mitigate societal harms associated with government intervention.

Introduction

The Covid pandemic was the most disruptive global crisis since the Second World War. Impacts across countries and social groups went far-beyond the mortality and morbidity burden of the virus itself. The use of unprecedented government restrictions transformed a health emergency into a worldwide societal crisis, the impacts of which will be felt for decades. In an effort to control Covid, governments implemented a range of legal mandates and policies to restrict human movement and social behaviour starting in March/April 2020; national lockdowns were imposed in roughly 150 countries (Hale et al. 2021). Governments then maintained and/or reimposed different containment and closure policies, economic responses and health system responses throughout much of 2020 and 2021 (see Table 1). Some of these policies remained in place as late as 2022-23.

Table 1: The range of Covid policies implemented worldwide*

Containment and closures	School closing, workplace closing, cancel public events, restrictions on gathering size, close public transport, stay-at-home requirements, restrictions on internal movement, restrictions on international travel
Economic responses	Income support, debt/contact relief for households, fiscal measures, giving international support
Health systems	Public information campaign, testing policy, contact tracing, emergency investment in health care, facial coverings, vaccination policy.

* According to the Oxford Covid government response tracker (Hale et al. 2021).

The use of these non-pharmaceutical interventions (NPIs), including lockdown, represented the most consequential set of policies in modern public health history. Whole societies and economies were shut down, billions of people were confined to their homes, social interactions were deemed unsafe and outlawed, markets and transport were stopped and democratic processes were suspended under emergency law. From the beginning, there were major concerns that lockdown and other NPIs would cause widespread social harm, especially among vulnerable and poorer communities (Bavli et al. 2020; Broadbent et al. 2020). Other early work sought to cast doubt on these concerns using selective data points (Meyerowitz-Katz et al. 2021).

A vigorous and consequential public and scientific debate has continued about these disease control policies. Using the cumulative research data generated so far, this paper aims to answer the question: *how did Covid pandemic policies harm society?* In approaching this question, four issues are worth noting.

First, there is a general tendency for the public health community to be overly optimistic about the benefits of their interventions and under-play or ignore their harm. This has been acknowledged as a neglected area of research in the academic literature (Allen-Scott et al. 2014; Bonell et al. 2015); Lorenc and Oliver (2014) put it this way: “*Public health contrasts markedly with clinical medicine, where there is a substantial literature on adverse events and patient safety, and the Hippocratic injunction to ‘do no harm’ is arguably more salient.*” There are a number of pertinent social science concepts and analytical traditions that can help guide an analysis of the harms of the pandemic response (Table 2).¹ Some of these have already been used in various publications: unintended consequences (Turcotte-Tremblay et al. 2021), social harm (Briggs et al. 2021), collateral damage (Green and Fazi, 2023) and cost benefit analysis (Allen, 2022; Cornwall 2020; Miles et al. 2021; Lally 2022; Yakusheva et al. 2022; Fink et al. 2022). This paper integrates these concepts and aims to advance this neglected area of public health research.

Second, concerns about harms are grounded in the long-standing consensus that ‘health’ is much more than disease control; the World Health Organization defines health as “*a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.*” Decades of mainstream public health research have shown that human health is influenced by the *social determinants of health*, operating in multifaceted ways over a lifespan. The US Department of Health and Human Services defines this as: “*the conditions where people are born, live, learn, work, play, worship and age that affect a wide range of health, functioning and quality-of-life outcomes and risks.*”² This

¹ An additional metaphor comes from medicine itself: one of the main biological pathways that leads to Covid mortality is the cytokine storm, generated by an excessive immune response rather than the virus

² See: <https://health.gov/healthypeople/priority-areas/social-determinants-health>

means that any meaningful evaluation of the Covid pandemic response should use a broader conceptual framework to consider impacts beyond Covid disease.

Table 2: Useful social science concepts

Concept	Description
Unintended consequences	Considered a “law” of purposive social action, according to sociologists. Some consequences should be anticipated. Generally supports the idea that policy decisions often involve ‘trade-offs’ or the ‘lesser of two evils.’ Political decision-making with high-levels of adverse unintended consequences often involve: error, ignorance, intentionality, value-based decisions and groupthink. See: Turcotte-Tremblay et al. (2021); De Zwart (2015).
Social harms	From the field of criminology. “Crime” is conceptualized as a social construct. Shows that anti-social behaviors that are legal are also harmful and that social structures and the lack of safety nets cause harm to individuals, families and communities. Critiques crime control and the criminal justice system as ineffective. See: Briggs et al. (2021); Canning and Tombs (2021); Hillyard et al. (2004)
Collateral damage	From political science, having gained popularity after the Vietnam war. Warzone statistics about civilian casualties is highly political and challenging to determine. Critics argue that the term itself is an “inhumane euphemism” that aims to make civilian casualties palatable to the public. It is not clear what level of noncombatant casualty is acceptable. Precision-guided weapons are believed to have reduced civilian casualties. See: Rosén (2016); Condra and Shapiro (2012)
Iatrogenic harm	From the social critique of medicine meaning, “harm caused by medical care.” This involves diagnosis, intervention, negligence and error. Related to the concept of over-medicalization, which occurs at clinical, social and cultural levels. See: Illich (1976); Panagioti et al. (2019); Hodkinson et al. (2020); Makary and Daniel (2016).
Compound risk	From disaster studies: the idea that multiple hazards occur at the same time and that vulnerability builds on itself. Also related to other ideas in disaster management such as the broken window fallacy, second disaster and anti-politics. See: Kruczkiewicz et al. (2021)
Cost benefit analysis	From economics: focused on assessing if benefits are likely to overweigh costs and risks of a set of actions and policies. Cost-benefit analysis is influenced by data, quantification techniques and model projections. Relies on both monetized metrics (QALY, GDP) and non-monetized metrics (well-being-adjusted life-year; subjective well-being measures). See: Aldred, 2022; Allen (2022); Cornwall (2020); Fink et al. (2022); Heinzerling, (2000); Miles et al. (2021); Lally (2022); Yakusheva et al. (2022).

Third, the evidence-base for the effectiveness of many Covid interventions remains contested, with considerable disagreement and scientific debate. It is important to appreciate that, prior to Covid, many in the public health community supported a cautious skepticism about the types of government restrictions and mandates widely used in 2020-21. Fear-based messaging, punitive rules and lengthy restrictions on normal human interaction were seen as counter-productive, lacking strong evidence and, in many cases, unethical or unconstitutional (Jamrozik, 2022). There was reluctance expressed in pandemic influenza plans and during the West African Ebola outbreak to implement large-scale quarantines, school and business closures and movement restrictions that

would disrupt social life (Abramowitz et al. 2015; Eba, 2014; Inglesby et al. 2006; WHO, 2019). These concerns were both epidemiological and social. Now that the acute phase of the Covid crisis has passed, scientific evaluations are re-visiting assumptions about the justification for NPIs that were presented to the public as self-evident in 2020-21. This paper contributes to this important debate.

Finally, evaluations of Covid policy are dependent on the *politics of knowledge*, including the range, visibility, and quality of research data. In our current ‘data-driven’ technological society what is not measured, or easily measured and grasped, can more readily be ignored. There is a degree of imbalance in trying to mentally weigh the control of one virus (e.g. Covid) against the wide-range of social consequences from control policies: Covid statistics are much simpler to understand and communicate to the public. This cognitive process is partially the reason why public health responses frequently make use of war metaphors. In contrast, a multitude of different types of societal harms may appear diffused, hypothetical and difficult to measure. In this regard, methodological and epistemological limitations have restricted the public debate. Certain types of knowledge have also been more valued, and provided more weight, compared to other data.³ This paper aims to address this imbalance. It aims to make more fully visible and transparent the wide-ranging interdisciplinary research on these social impacts. It also reflects on the state of global academic research, knowledge debates and data gaps.

Now that the crisis has passed, we can evaluate the collateral damage with a substantial amount of research data. In summary, this paper aims to: (1) further theoretical engagement with harm from public health interventions; (2) integrate a broad social determinants of health framework to evaluate the global Covid response; (3) further the scientific debate about the appropriatedness of non-pharmaceutical interventions; and (4) raise the visibility of interdisciplinary empirical research on societal impacts.

³ There are many reasons for this. One appears to have been a form of motivated reasoning (which I call *covidization*) that over-emphasized the benefits and necessity of Covid interventions and downplayed their risks and societal costs. Covidization has meant that people were much more willing to accept greater multidimensional societal harm for hypothetical benefits against the virus. This report does not attempt an analysis of this complex phenomenon.

Methodology

Research questions

This paper aims to comprehensively answer two important questions:

- 1) *What types of adverse societal impacts occurred worldwide due to the Covid pandemic response in 2020-2021?*
- 2) *What does current research studies tell us about the magnitude of these impacts?*

To accomplish this, a conceptual framework was developed to guide the literature review and analysis. The literature review aimed to find the highest quality evidence across a large range of topics and scientific fields. A ‘societal harm’ framework of the findings from the state of knowledge review was created based on 10 main categories. The paper is focused on the impacts of non-pharmaceutical interventions; the author has previously written about the role of social science in pandemic response (Bardosh et al. 2020) and on the unintended consequences of Covid vaccine policy (Bardosh et al. 2022).

Conceptual framework

The conceptual framework (Figure 1) accounts for different drivers of societal change, contextual factors, social effects, scales of impact and different forms of evidence. These are briefly outlined here.

Drivers of change: Four main drivers that are hard to isolate from one another influenced the societal response to the Covid pandemic. This includes the various non-pharmaceutical interventions (and vaccination programs that began in 2021) as well as viral infection itself and voluntary behaviour changes in the face of a novel virus. This is further complicated by psychological and social feedbackloops since risk perceptions were shaped by government policies; e.g. lockdowns, other NPIs and media framings created and reinforced high levels of fear, anxiety and concern. Although this paper does engage with these issues to some degree, by citing studies that distinguish between these different drivers of change, further work is needed in this area. Efforts were also made to account for resilience and relief efforts that aimed to mitigate harms.

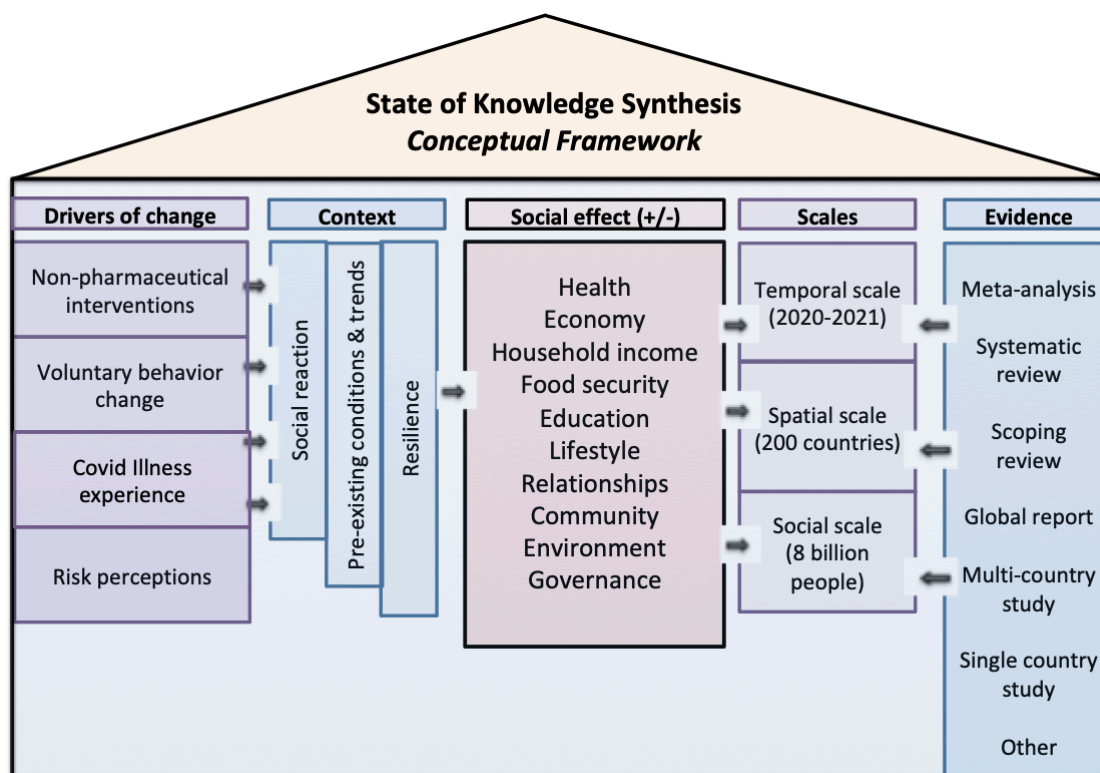


Figure 1: Conceptual Framework

Context: A second methodological issue was the need to account for contextual factors in making claims about societal effects. Social reactions are influenced by a large variety of human experiences, perceptions and structural conditions. Some social groups and countries are more resilient to crises than others. Pre-existing conditions and trends are difficult to account for; e.g. estimates of excess mortality must take into account variations in age demographics and are influenced by the timeframe used to determine ‘normal’ mortality rates, etc. Another example of this relates to increases in global food insecurity, which was increasing prior to the pandemic.

Social effects: The main aim of the analysis was to identify the types of adverse societal consequences from the pandemic response and to explore relevant research data on their magnitude. This required intellectual flexibility and an inductive approach to build interpretative understanding. The framework presented below went through various iterations, with a final 10 categories and over 50 sub-categories of harm (see **Figure 2**).

Of course, not all social effects were negative for all people (e.g. the initial lockdown period was experienced as an opportunity to spend more time with family by a proportion of people; natural ecosystems showed some recovery, etc). Some of these positive impacts are mentioned in the paper. The goal of the analysis was not to conduct a systematic cost-benefit analysis or to weigh different positives and negatives. Rather it was to review the research data on adverse consequences.

Scales: The paper synthesizes data at different scales. Temporally, public reactions and government policies changed considerably over time in 2020 and 2021. Countries also pursued very different response strategies. Substantial variation occurred in the different psychological, socio-economic and cultural responses and experiences of 8 billion people. Nonetheless, generalizations are possible; although the analysis approached this with caution.

Evidence: A large range of research evidence was used during the analysis: meta-analyses, systematic and scoping reviews, reports from recognized international bodies such as the UN system and civil society watchdogs, multi-country studies, single country studies and various commentaries and conceptual analyses. These are described in more detail below.

Literature review strategy

The literature review was conducted in three phases between September 2022 and March 2023. In total, 604 documents are included in the body of the analysis (Table 3).

Table 3: Literature included in the state of knowledge review

Systematic reviews	Meta-analyses*	Reviews	Reports**	Multi-country studies	Single country studies	Other***
107	45	83	86	116	183	29

* All meta-analyses were also systematic reviews and hence are included in both categories.

** All papers were published in peer-reviewed journals except for the reports and 5 pre-print papers.

*** This included papers that reflected on methods as well as commentaries and conceptual analysis.

First, an initial conceptual framework guided the literature review strategy from previous work by *Collateral Global* (<https://collateralglobal.org>), which was divided by: education, mental health, economy, physical health, ethics, culture, inequality, and social health. For each of these categories, a rapid literature review was conducted using Google Scholar and PubMed. The goal was to find meta-analyses, systematic reviews, scoping reviews and expert commentaries on each topic. For each paper of interest, the abstract (and, in many cases, the full research paper) and reference list were scanned and a citation-based search using Google Scholar was used to identify additional studies of interest. From this original search, roughly 100 categories of harm were first identified.

A second literature search was then conducted on each of these 100 harms using Google Scholar. The first 10 pages were searched with the terms: [harm] and review, and [harm] and meta-analysis. Publications of interest were read in full and citation-based searches were used to identify further articles of interest. A separate search using Google was used to identify model predictions and studies from recognized international organizations such as the UN system and civil society groups.

The goal was to build a conceptual understanding of the debate in each field and to present generalizable trends and findings. This included reading broadly across a large range of scientific disciplines in order to assess if there was a consensus about the consequences of the pandemic and sufficient data to make claims about magnitude, social difference and causation. Hence, the literature review required diving into a large number of additional papers that are not included in the final analysis. Due to the large amount of research publications available, priority was given to studies that were published in 2022 and 2023 over those in 2020 and 2021. Studies that were prioritized included: meta-analyses; longitudinal cohort studies with pre- and during- pandemic data; and evaluations of earlier model predictions about harms. Many fields did not have meta-analyses or systematic reviews. Some reviews and studies were of poor quality. For this reason, the analysis includes a substantial number of multi- and single-country studies that were deemed to be high quality. Effort was made to select studies that included a

range of countries with different socio-economic status. As the analysis shows, there remain significant gaps in the available academic literature.

The literature review strategy was then validated in March 2023, by conducting a systematic literature search using Web of Science. The original attempt to search for 'review' and 'Covid' generated 37,275 results in Web of Science and 36,975 results in PubMed. Screening this level of data was not possible. Instead, Web of Science was searched for 'meta-analysis' or 'systematic review' and 'Covid' in the title. This yielded 5,831 results in Web of Science. Titles and abstracts were then screened. Protocols, commentaries, posters, bibliometric studies, intervention evaluations and all reviews having to do with the management of Covid clinical disease were excluded. A total of 315 papers were reviewed for analysis. The overwhelming majority of these were either already included in the analysis, were too specialized (e.g. a systematic review of online anatomy teaching during the Covid pandemic) or were of marginal overall value. Only 9 were deemed to be of interest and were included in the final paper. Most of the higher quality systematic reviews and meta-analyses of relevance had already been retrieved through the literature search strategy described above.

An analysis of this type is subject to multiple limitations, which are outlined in the discussion section of this paper.

Results: Societal harm framework

This paper summarizes the current global state of knowledge on the negative social consequences of the Covid response (2020-2021). Societal harms are analyzed across 10 categories and over 50 sub-categories, based on 600 research papers and evidence syntheses. Categories include: health, economy, income, education, food security, lifestyle, intimate relationships, community, environment and governance (Figure 2).











THE SOCIETAL HARMS OF THE COVID-19 PANDEMIC RESPONSE				
Health  Medical services Care seeking Morbidity Mental health Excess mortality	Economy  Growth Trade Business Inflation Supply chains Government debt	Income  Labor Inequality Earnings Remittances Extreme poverty	Education  Learning loss Dropouts Lost potential	Food security  Hunger Food systems Nutrition
Lifestyle  Physical exercise Sleep Screen use Diet Addiction Drug use Obesity Frailty Personality Child Development	Relationships  Child abuse Violence Family Fertility Sex	Community  Social network Stigma Mobility Crime & law Trust Mass protests Media Elections	Environment  Pollution Wildlife Ecosystems Plastic waste	Governance  Armed conflict Democracy Freedom Human rights Institutions

Figure 2: Societal harm framework

1. Health and medical services

1.1. Excess mortality

The World Health Organization (WHO) and others have estimated an increase in all-cause mortality of 14-18 million in 2020-21 (Msemburi et al. 2022; Shang et al. 2022; Wang et al. 2022), highest in middle-income countries (Alon et al. 2022). Reported Covid deaths account for 5-6 million. Numerous methodological challenges exist with current models and data (Beaney et al. 2020; Ioannidis, 2021; Kepp et al. 2022; Moeti et al. 2023; Nepomuceno et al. 2022). While many research papers suggest a large under-reporting of Covid mortality, others suggest lower total excess mortality rates (Levitt et al. 2022) and some over-counting of Covid mortality (Friss et al. 2023; White et al. 2022). The proportion of increased mortality from non-Covid deaths remains unclear, with little data currently available outside high-income countries.

Table 4: Changes in non-Covid excess deaths, identified by Sanmarchi et al. (2022)

1. Cardiovascular diseases
2. Cancer
3. Diabetes
4. Suicide
5. Cerebrovascular diseases
6. Road accidents
7. Chronic lower respiratory diseases
8. Diseases of the respiratory system (excluding Covid)
9. Infectious diseases (excluding Covid)
10. Ischemic heart disease
11. Unintentional injuries
12. Influenza and pneumonia
13. Alzheimer's disease
14. Hypertensive diseases
15. Kidney disease
16. Digestive system disease
17. Dementia
18. Mental and behavioural disorders
19. Diseases of the nervous system and sense organs
20. Diseases of the genitourinary system

Two meta-analyses and one systematic review were found on this topic. Lu et al. (2022) found an 18% general increase in excess mortality from non-Covid causes in 2020 while Lau et al. (2022) found a 5% increase in mortality for non-COVID illness compared with pre-pandemic data. However, the limited number of studies meant these conclusions had low certainty. A systematic review (116 studies) found statistically significant changes across 20 disease conditions (Table 4) (Sanmarchi et al. 2022).

Recent high-quality studies from North America suggest 20% of excess mortality was from non-Covid causes in 2020-21: 27% in Mexico (Palacio-Mejia et al. 2022), 17% in USA (Chan et al. 2021; Mulligan and Arnott 2022; Stokes et al. 2021)⁴ and 18% in Canada (McGrail, 2022).⁵ This rose to 70% for those less than 45 years old in the United

⁴ An earlier study by Woolf et al. (2021) found that 28% of excess mortality in the first year of the pandemic in the USA was not accounted for in official Covid statistics, and likely related to undocumented Covid infection, delayed medical care and other factors.

⁵ Half (5) of Canada's 10 provinces had more non-Covid excess deaths than Covid deaths, 2020-21.

States (Beesoon et al. 2022; Lee et al. 2023; Zalla et al. 2021), and was also higher among non-White ethnic groups (Cronin and Evans 2021; Habibdoust et al. 2022; Luck et al. 2022; Todd and Scheeres, 2022). Mortality increases were mainly found from hypertension and heart disease, diabetes, drug-overdoses, homicide, Alzheimer's, and motor vehicle fatalities.

Other studies, conducted early in the pandemic, have found higher proportions in: Greece (62%), Portugal (51%), Italy (40%), Poland (38%), and England (26%) (Kontopantelis et al. 2021; Kondilis et al. 2021; Odone et al. 2021; Pikala et al. 2022; Vieira et al. 2020). A 25% increase in hospital-based mortality from non-Covid causes in 2020 was reported in Dang et al. (2022) and Gasch-Illescas et al. (2023). Research from middle-income countries, e.g. Brazil (Guimaraes et al. 2022) and Peru (Cajachagua-Torres et al. 2022), also show substantial increases in non-Covid mortality but do not provide an overall proportionate estimate.

Three issues are worth noting: suicide, influenza and child deaths. Despite predictions that the economic recession would increase suicide (Glozier et al. 2022) evidence does not support an overall short-term increase in most countries in 2020-21, although small increases did occur in specific demographic groups (younger ages) and some countries (Borges et al. 2022; Pirkis et al. 2022; Webb et al. 2022 Knipe et al. 2022). However, disaster research suggests suicide increases may be delayed by a few years (Horney et al. 2020).⁶ Secondly, the epidemiology of endemic pathogens, including influenza and other seasonal respiratory viruses, were disrupted during the pandemic contributing to less mortality in 2020-21. A subsequent resurgence of influenza and RSV occurred in 2022 due to immunity displacement (Cohen et al. 2021; Cohen et al. 2022).⁷ Finally, mortality data is unavailable to evaluate model estimates regarding increases in general child mortality in low- and middle-income countries (LMICs), which ranged from 100,000 to 500,000 (Cardona et al. 2022; Shapira et al. 2021; Osendarp et al. 2021). Using health

⁶ Some of the increases in drug-related mortality may also be interpreted as suicide-related (Rahimi-Ardabili et al. 2022).

⁷ Interestingly, recent studies suggest that endemic coronavirus cross-immunity, which is thought to have reduced during the pandemic, may help protect against severe Covid outcomes (Filmore et al. 2022).

utilization data from 18 LMICs (all with low overall Covid mortality), Ahmed et al. (2022) estimated that 113,962 of 597,422 total excess deaths (19%) were due to excess under 5-child mortality. By comparison, and according to data from UNICEF, 4,480 children under 5 died with a reported Covid diagnosis during this time.⁸

Excess non-Covid mortality is predicted to remain elevated in the years ahead for many conditions, including anticipated increases in cardiovascular disease (Banerjee et al. 2021) and cancer (Lawler et al. 2022).⁹

1.2. Health services and outcomes

Reviews by WHO identified numerous adverse effects on non-Covid healthcare services (WHO, 2021; WHO, 2022). Two meta-analyses on health utilization were available. Molyniham et al. (2021) found a 37% reduction in health service utilization across all categories up until May 2020 across: visits (42%), diagnostics (31%), therapeutics (30%) and admissions (28%). A second review found a 56% decrease in outpatient care¹⁰ across: diagnostics (63%), primary care (60%), specialty care, (58%), in-person visits (56%), emergency care (49%), and treatment (36%) (Dupraz et al. 2022). In addition, two large-scale studies, based on National Health Service data in low- and middle-income countries (LMICs), found 13% to 40% declines in outpatient volume in 2020 (Arsenault et al. 2022; Ahmed et al. 2022). Pulse survey data suggest disruptions persisted in early 2021, with 48% and 22% of countries reporting disruptions to primary care and emergency services (WHO and IBRD, 2021). Systematic reviews found large disruptions in cancer care (Ferrara et al. 2022; Teglia et al. 2022; Li et al. 2023; Van Vliet et al. 2023), cardiovascular services (Nadarajah et al. 2022), infectious disease programs (HIV, tuberculosis, malaria) (Baral et al. 2022), neurological services (Garcia-Azorin et al.

⁸ See: <https://data.unicef.org/resources/covid-19-confirmed-cases-and-deaths-dashboard/>

⁹ For example, excess mortality was 19% higher across Europe in December 2022 (77,000 additional deaths) compared to pre-pandemic trends (Eurostat, 2023a).

¹⁰ This estimate is for in-patient services and does not account for the proportional increase in tele-services, which increased during the pandemic. It is unclear how widely tele-services were available and how much they mitigated the reduction in in-person care. Tele-services were limited in low- and middle-income countries (Eslami Jahromi and Ayatollahi, 2023).

2022), immunizations (Cardoso Pinto et al. 2022) and maternal health (Chmielewska et al. 2021).

Service disruptions increased non-Covid morbidity and mortality. For example, a large-scale cohort study (61 countries, 15 cancer types) found 15% of patients in regions with full lockdowns did not receive elective cancer surgery, in comparison to 5.5% in moderate lockdowns and 0.6% in regions with light restrictions (Collaborative, 2021). A review of non-Covid cardiovascular disease (158 studies) noted that “*there was substantial global collateral cardiovascular disease damage*” (especially in LMICs) and that clinical effects were similar in magnitude between wave 1 and 2 in 2020 (Nadarajah et al. 2022). No review was found on diabetes services, although individual studies in UK and Mexico show significant negative effects (Bello-Chavolla et al. 2022; Valabhji et al. 2022). A review of emergency services (98 studies) showed delayed presentation and treatment for heart attack, brain aneurysm, diabetes, and appendicitis (Mogharab et al. 2022). A review (30 studies) by Chmielewska et al. (2021) found increases in stillbirths, maternal deaths, ruptured ectopic pregnancies and maternal depression. How these service disruptions impacted both short and medium-term mortality and morbidity are unclear. In Europe alone, Lawler et al. (2022) estimated that up to one million new cancers went undiagnosed in 2020-21.

1.3. Mental health

Systematic reviews and meta-analyses confirm negative impacts on mental health but show large differences between point surveys and longitudinal cohort data (Husky et al. 2021; Kessler et al. 2022), with only limited clinical data available. Early reviews by Santabárbara et al. (2021) and Bueno-Notivol et al. (2021), based on self-reported rates of anxiety and depression, estimated 300% and 700% increases during lockdown compared to pre-pandemic rates. Leung et al. (2022) argued that the mental health toll of the pandemic was likely equivalent to major natural disasters and armed conflict. Meta-analyses have found varied self-reported population prevalences during the first half of 2020: 13-50% psychological distress, 16-28% depression, 15-33% anxiety, 24-30% insomnia, and 17-25% post-traumatic stress disorder symptoms (Cenat et al. 2021;

Nochaiwong et al. 2021; Leung et al. 2022). A review of systematic reviews found a 32% prevalence of depression and anxiety among children and adolescents (Harrison et al. 2022). A second meta-analysis by Panda et al. (2021) found 79% of children had adverse behavioral and psychological impacts and 52% and 21% of parents/caregivers developed anxiety and depression, respectfully.

However, meta-analyses of studies with longitudinal cohorts, comparing pre- and during-effects (mostly from high-income countries), show a overall small population effect size (SMD, -0.20, rising to -0.39 during the first 2 months of the pandemic), with considerable heterogeneity, suggesting that lockdowns did not have uniformly detrimental effects on mental health across society (Prati and Mancini, 2021; Robinson et al. 2022; Salanti et al. 2022). Longitudinal studies suggest mental health deterioration was high among children and adolescents (Kauhanen et al. 2022), although existing studies have a high degree of heterogeneity and variation in study design (Newlove-Delgado et al. 2023). Based on longitudinal cohort studies, Santomauro et al. (2021) estimated an additional 53 million cases of major depressive disorder globally (a 28% increase) and 76 million cases of anxiety disorders globally (a 26% increase) in 2020. A review of data from the United States estimated a larger increase, with 30% to 50% increases in anxiety and depression during 2020, but lower than the 500% to 800% increase estimated in US nonprobability surveys (Kessler et al. 2022).

Pandemic restrictions disproportionately worsened mental health for certain individuals. Psychological studies, from Argentina and Canada, using latent-class analysis identified distinct classes of people, roughly 15% of individuals, more prone to mental health deterioration (Fernandez et al. 2022; Frounfelker et al. 2022). The pandemic created barriers to help-seeking for mental health problems (Yonemoto and Kawashima, 2022). Efforts have also been made to measure excessive fear or phobia of Covid itself (Muller et al. 2021), as well as the reasons for the over-estimation of personal risk (Graso, 2022). Reviews have shown that those with pre-existing psychiatric disorders (Carvalho et al. 2022; Theberath et al. 2022; Milea-Milea et al. 2023), mothers of young children (Racine et al. 2022), marginalized groups (socioeconomic disadvantaged, migrants, ethno-racial

minorities, homeless people) (Camara et al. 2022) and younger adults (Santomaur et al. 2021), also suffered greater adverse mental health effects.

A third source of evaluation are from clinical data. A systematic review of research from 18 countries found an increase in pediatric emergency department visits for attempted suicide and self-harm (Madigan et al. 2023). Two reviews by Meier et al. (2022) and Devoe et al. (2022) both reported an increase in eating disorders, including a 48% increase in US hospital admissions, highest among women and children and adolescents. An Italian study found an increase in somatic psychiatric disorders among children (4-14 years) during the pandemic period (Turco et al. 2022).

Few studies explore changes in mental health deterioration over time (Wade et al. 2023). A review of longitudinal studies found that depression, anxiety and loneliness peaked in May 2020 (and was highest in North America), although other mental health problems (such as PTSD and psychological distress) were higher after July 2020 (Cénat et al. 2022). Salanti et al. (2022) also found a peak for depression and anxiety during the first two months of the pandemic in 2020. A review of 11 longitudinal cohort studies in the UK found a sustained worsening in psychological distress throughout 2020 (Patel et al. 2022). A meta-analysis of data (2020-22) from children and adolescents found increases in depression and anxiety over time (Deng et al. 2022). Data is now emerging about longer-term effects, and individual studies (e.g. from Argentina, South Africa, Norway and Ghana) suggest mental health deterioration may not have improved in 2021 (Hoffart et al. 2022; Fernández et al. 2022; Durizzo et al. 2022).

2. Economy

2.1. Economic growth

According to the World Bank (2022), *“Mobility restrictions, lockdowns, and other public health measures necessary to contain the pandemic rapidly produced the largest global*

economic crisis in more than a century.”¹¹ Economic contraction affected 90% of countries in 2020, with GDP per capita declining by 3.1%: 6.7% in emerging markets, 4.6% in advanced economies and 3.6% in low-income countries (Alon et al. 2022). A sharp U-shaped global recession occurred, with real GDP growth outpacing pre-pandemic growth in 2021 at 5.9% (vs 3.4% average growth, 2013-2019) (OECD, 2022). The rebound in growth was fast but uneven. Macroeconomic impacts are believed to have been most severe in middle-income countries due to higher NPI stringency, low levels of government relief and high job dependence on social interaction (Alon et al. 2022; Gagnon et al. 2023).¹² However, despite the U-shaped recovery in 2021, global economic growth has since stalled; the IMF (2022) predicts that “*the global economy is headed for stormy waters*” in 2023 and the World Bank (2023) warned that “*the crisis facing development is intensifying.*” Growth forecasts for 2023 from the World Bank (2023) have been downgraded, from 3% GDP growth to 1.7%. By the end of 2024, GDP levels in emerging-market and developing economies are predicted to remain 6% below levels expected pre-pandemic. The precise contribution of the pandemic to future economic growth trends are unclear. However, international financial institutions worry that the 2020s may see a replay of the “lost decade” of development that occurred across Latin America and Sub-Saharan Africa in the 1980s (World Bank, 2022). The *Human Development Index* (HDI) declined globally in 2020 and again in 2021 (the first time since it began in 1990), dropping in 87% of countries in 2020 and 51% in 2021 (UNDP, 2022), suggesting that declines in human capital will have longer-term effects.

2.2. Trade and industry

Global trade and financial markets experienced historic declines in 2020, followed by rapid recoveries in 2021. The economics literature describes far-reaching demand and supply shocks affecting nearly every industry in the first two-quarters of 2020 (Brodeur

¹¹ Please note: the claim that lockdowns and mobility restrictions were ‘necessary’ requires more critical debate and is outside the scope of this paper. The World Bank report (as with many reports and studies from international agencies) simply assumes this to be the case. Such reports rarely discuss which policies were necessary or unnecessary, appropriate or excessive.

¹² In contrast, younger age demographics, lower Covid restriction policy stringency and large agricultural economies in low-income countries helped buffer recession effects, while historic government spending programs occurred in high-income countries (Alon et al. 2022).

et al. 2021; Delardas et al. 2022; Goncalves and Moro, 2023; Panwar et al. 2022). This renewed debates about the nature of contemporary globalization, political economy and geopolitics (Schneider-Petsinger, 2023). According to UNCTAD (2022), global trade declined by an estimated 9% in 2020 but then quickly rebounded 13% higher than 2019 levels in 2021, outpacing more pessimistic predictions. A similar trend occurred with global foreign direct investment (UNCTAD, 2022), global manufacturing (UNIDO, 2022) and financial markets, although the rapid recovery is also believed to have increased volatility and systemic risk (Fang et al. 2023; Jana et al. 2022; Jebabli et al. 2022; Liu et al. 2022). Commodity prices (oil, metals, minerals) rose significantly right after the 2020 lockdown period, contributing to record-high price hikes and a global cost-of-living crisis (UNCTAD, 2022). Impacts were felt across all economic sectors in 2020-21: agriculture, energy, mining, construction, manufacturing, utilities, retail, finance, tourism and education (Delardas et al. 2022). Oil consumption reduced globally, reaching an estimated 18% decline in the United States in 2020 (Wang et al. 2022). Maritime trade (responsible for 80% of the global trade in goods) declined by 4% in 2020, leading to soaring freight costs, a global supply chain crisis and a reduction in the number of connected ports in non-lucrative markets (UNCTAD, 2022). The combination of supply and demand shocks and unprecedented government fiscal stimuli helped precipitate a 9% increase in global inflation in the second half of 2022, the highest level since 1995 (Hall et al. 2023; World Bank, 2023). The IMF (2023) predicts that global inflation will remain above pre-pandemic levels in 2023 (7%) and 2024 (4%).

2.3. Business

The *World Bank Business Pulse Survey* collected data from over 100,000 businesses worldwide and found 70% closed at the peak of the first wave and 25% remained closed 6 weeks into the crisis (Apedo-Amah et al. 2020). A second survey with businesses across 50 countries found that 15% remained closed in October 2020 (Facebook/OECD/World Bank, 2020). In the first half of 2020, nearly 50% of surveyed

businesses worldwide expected to fall into arrears within 6 months (World Bank, 2022)¹³ and 19% reported laying off workers (Apedo-Amah et al. 2020). While varying by country and sector, firms experienced a 51% drop in revenue on average (highest in South Africa, Bangladesh, Nepal, Honduras, India, and Jordan), which remained at 40% reduced revenue 4 months into the crisis (World Bank, 2020). In Europe, Janzen and Radulescu (2022) found that lockdowns reduced sales growth by 63% while a study from India showed a 15% average drop in firm profits in 2020 (Jain and Kumar, 2023). Takeda et al. (2022) found that most small and medium-sized businesses (SMEs) recovered towards late 2020 in Asia, although certain hard-hit industries deteriorated (e.g. textiles, tourism, food and drink services and education). In general, research studies found that firms with more physical exposure to the public, less liquidity, more debt, lower productivity, younger age, female-headed and without a digital presence were hit hardest (Alekseev et al. 2023; Bozkurt et al. 2022; Cirera et al. 2021; Chang et al. 2022; Muzi et al. 2022). Trends of remote work are predicted to remain high in the years to come, shifting labor and business arrangements in the face of increasing automation and digitalization (Barry et al. 2022).

Lockdowns and other NPIs raised concerns about mass business failures. Although reviews have explored multiple impacts of the pandemic on business (Belitski et al. 2022; Brodeur et al. 2021), no meta-analysis exists that estimates worldwide business closures (known as *excess firm death*). The *Global Entrepreneurship Monitor* found early-stage entrepreneurial activity and established business ownership declined between 2021 and 2019 in ~60% of 34 sampled countries (Hill et al. 2022). Recent estimates of excess firm deaths in the USA vary between 185,000 to 330,000 in 2020 (Barnes and Edelberg 2022; Crane et al. 2022; Decker et al. 2022), disproportionately impacting small and medium-sized businesses (Fairlie et al. 2022) and higher in states with tighter restrictions (Dore and Mach, 2022). Across 17 European and Asian countries, Kalemli-Ozcan et al. (2022) estimated that an 8-week lockdown would increase failure by 9% in the absence of government support, rising to over 30% in hard-hit industries. Research from Japan

¹³ According to the World Bank (2022), the average business had cash reserves for less than 51 days to cover basic expenses.

estimated a 20% increase in firm exists in 2020 compared to 2019 (Miyakawa et al. 2021) while a Chinese study found 18% of small and medium-sized businesses had permanently closed between February and May 2020 (Dai et al. 2021).

Governments responded to the crisis by introducing unprecedented fiscal stimulus programs. Research from the USA and Japan suggest these were not well targeted to smaller at-need businesses and had small overall effects on employment (Auerbach et al. 2022; Chodorow-Reich et al. 2022; Granja et al. 2022). Evidence from Latin America, Asia and Africa show that smaller and informal firms faced multiple barriers to accessing aid (Guerrero-Amezaga et al. 2022; Takeda et al. 2022; Aga and Maemir 2022); Wu (2023) found only 14% of firms across 10 developing countries received stimulus money.

Firm deaths (bankruptcies) were less than expected in the short-term in many higher income countries due to the rapid U-shaped recovery, government relief and a corresponding surge in new business entry in late 2020-2021. An estimated 1 million new firms were operational in late 2021 compared to 2019 in OECD countries with an estimated 450,000 more in the US alone (Economist, 2022). It is unclear why this occurred. Some economists have called the pandemic a form of “*creative destruction*” that has spurred self-employment and entrepreneurship; others are worried that large-scale government relief has upheld less productive ‘zombie’ firms that will rapidly fail now that state support has been withdrawn (Bruhn et al. 2021; Honda et al. 2023). Recent data from Germany and the UK show a backlog of insolvencies (Dorr et al. 2022; Witchell and Webster, 2023). Data from the EU shows that the last quarter of 2022 had the largest increase in bankruptcies since records began in 2015 (Eurostat, 2023b). Wu (2023) found that firms in developing countries who reopened in 2021 had increased fragilities, including higher debt and less liquidity. It is unclear how the economic shock of the pandemic will shape the economy in the years ahead.

2.4. Government spending and debt

Government fiscal intervention to manage the crisis led to historic levels of spending and debt accumulation that now threaten to drive large-scale public austerity (IMF, 2022;

World Bank, 2022). According to the IMF (2021), \$18 trillion was spent by governments up to September 2021 (88% in advanced economies): \$11 trillion in direct revenue and \$7 trillion for business liquidity support.¹⁴ Only 8% of spending (\$1.5 trillion) was directed to the health sector. The fiscal response is estimated to have been equivalent to 20% of GDP in high-income countries, 10% in upper-middle income countries and <5% for lower-middle and low-income countries (World Bank, 2022).

Fiscal support precipitated the largest one-year increase in global debt since the Second World War, which rose 30% in 2020 to 263% of global GDP (Gaspar et al. 2022; Kose et al. 2021a,b). This increase was broad-based across private, public and household debt and the majority of countries, building on debt increases since the 2009 financial crisis. Government gross debt rose roughly 14% of GDP in high-income and upper-middle-income countries and 7% of GDP in lower-middle and low-income countries (World Bank, 2022). The crisis also led to the generation of new financial fragilities including deteriorations in country credit ratings, currency devaluations, liquidity problems and risk for debt defaulting and distress (World Bank, 2022).

The impact of fiscal measures are predicted to drive future government austerity in the context of a looming debt crisis (Kose et al. 2021b). Based on IMF projections, Kentikelenis and Stubbs (2022) estimated that 44% of countries (83 of 189) will face contractions in public spending in 2023, with 2.3 billion people exposed to budget cuts, mostly in middle-income countries (spending in low-income countries is predicted to stagnate). Others have predicted larger budget cuts (Ortiz and Cummins, 2021), directly associated with IMF Covid loans (Tamale, 2021). A recent World Bank-UNESCO (2022) report found 40% of low- and middle-income countries reduced education spending in 2020 (by 14% on average), which continued to remain below 2019 levels in 2022. Analysis by *The Commitment To Reducing Inequality Index 2022* found total spending on health decreased in 44% of countries between 2019 and 2021, while roughly half reduced education and social protection spending (Walker et al. 2022).

¹⁴ This is likely a significant under-estimate. For example, a reported \$11 trillion was spent by the US government alone during the crisis, only 5% of which was directed to the health sector, see: <https://www.covidmoneytracker.org>

3. Income and employment

3.1. Labour inequality

The pandemic recession in 2020-21 reversed the per capita income convergence of the last few decades, increasing global inequality and the wealth gap between and within countries (Adarov et al. 2022; ILO, 2022b, IMF, 2022; Narayan et al. 2022; World Bank, 2022). According to the *International Labour Organization* (ILO), workers lost roughly \$6 trillion in direct income during 2020-22 compared to a 2019 baseline.¹⁵ At the same time, the wealth of billionaires nearly doubled (Chancel et al. 2022), increasing by an estimated \$4 trillion according to Oxfam (2022a,b). A 19% loss in global working hours occurred at the peak of worldwide lockdowns (ILO, 2021b).¹⁶ Overall, ILO estimated a loss of 9% of global working hours and 114 million jobs in 2020, higher for women and young workers, and in Latin America and the Caribbean, Southern Europe and Southern Asia (ILO, 2021a). Self-reported survey data from 80 countries (subject to bias) suggests that employment for working age adults was 31% less than pre-pandemic levels in April-June 2020 (Brunckhorst et al. 2023). A full recovery stalled in 2021, mainly in lower-middle and low-income countries, with employment levels remaining an estimated 8% below prepandemic levels (Brunckhorst et al. 2023) and global working hours remaining 4% below (ILO, 2021b). Labor market impacts continued in late 2021 in low- and middle-income countries, including job displacement into lower paying jobs that were more informal and agriculture-based (Brunckhorst et al. 2023; He et al. 2023). According to a counter-factual analysis by the World Bank, at the end of 2021 there were still 40 million less jobs worldwide; in Pakistan alone, an estimated 1.6 million additional young adults were jobless (Schady et al. 2023). In the USA, an estimated 2.5 million workers were unable to work or worked at reduced hours in March 2022 because of Covid-related business losses or closures, down from 50 million in May 2020 (US Bureau of Labor Statistics, 2022). Real wage growth declined for the first time this century by 1.4% worldwide, according to ILO (2022b). While most higher-paid wage groups recovered to

¹⁵ This total estimate is based on synthesizing results from ILO (2021a,b) and ILO (2022a,b), and does not account for government relief and assistance programs.

¹⁶ In April 2020, the unemployment rate reached 14% in the United States; in Europe, 42 million people were dependent on job-retention schemes (Ebbinghaus and Lehner, 2022).

pre-pandemic levels, global employment levels among the lowest-paid group of workers remained below 2019 levels in 2022 (ILO, 2022b). There is evidence of a shift in the labour market, with an uneven recovery and lower-quality employment accounting for a large share of growth in developing countries (Narayan et al. 2022). Inequalities are now being compounded by inflation and the global cost-of-living crisis. Christensen et al. (2023) estimated that 1.7 billion workers worldwide have seen inflation outpace their wages in 2022.

The crisis reshaped class divisions between those able to work-from-home (teleworkers) and essential and non-essential workers. Reviews have explored the positives and negatives of teleworking on work-life-balance, work productivity and burnout (Newman et al. 2022; Shirmohammadi et al. 2022; Islam, 2022). According to the ILO (2021c), only 8% of workers worldwide worked from home prior to the pandemic, which rose to 17% (total 557 million people) during April-June 2020, and was highest in Canada (39%), Malaysia (36%), USA (35%) and UK (33%). This is roughly in line with other studies (Dingel and Neiman, 2020), including an analysis from Italy that showed 12% worked remotely in 2020, rising to 70% for employees of large firms (Crescenzi et al. 2022). The pandemic is predicted to increase work-from-home employment in the years ahead. Barrero et al. (2021) estimated that the percentage of remote workdays will rise from 5% to 20% in the USA post-pandemic. Some studies suggest that this will disproportionately increase professional opportunities for employees who are older, male and higher-educated (Bonacini et al. 2021).

The pandemic response also increased the risks of forced labour exploitation and modern slavery (Washburn et al. 2022), although the exact proportion is unclear. Private forced labour exploitation and sexual exploitation increased by an estimated 1.3 million and 1.5 million (to 27.6 million total) from 2016 to 2021 (ILO et al. 2022). Estimates suggest that 9 million additional children were at risk of being pushed into child labour by the end of 2022 (ILO and UNICEF, 2021), with emerging empirical data confirming an increase due to the pandemic response in some countries (Mohammed, 2023; Nuwematsiko et al. 2022).

3.2. Household income

The World Bank's *Poverty and Global Prosperity Report* (2022) estimated that global median income declined by 4% in 2020. Large-scale empirical surveys found that pandemic policies caused 30% to 65% of the global population to suffer financially in 2020 (Bundervoet et al. 2022; Egger et al. 2021; Khetan et al. 2022). The magnitude of income losses were substantial (Miguel and Mobarak, 2022), disproportionately affected lower income earners and countries (Chen et al. 2022; Khetan et al. 2022), and were associated with the stringency of public health policies (Hammond et al. 2022; Maredia et al. 2022). A large-scale World Bank study (n=41,000, 34 LMICs countries) found 64% of households reported decreased income and 36% stopped working during the first wave (42% of women lost their job, compared to 31% of men) (Bundervoet et al. 2022). This is roughly equivalent to other studies (Bottan et al. 2020; Egger et al. 2021; Kesar et al. 2021; Josephson et al. 2021; Wellcome, 2021). A retrospective survey across 16 countries found 32% reported suffering financially during the pandemic (higher in lower income countries) and included: job loss (8%), inability to meet essential needs (15%) and the use of savings (16%) (Khetan et al. 2022).¹⁷ World Bank survey data suggests household income continued to be below pre-pandemic levels in 2021: 30% of respondents in high-income countries and 70% in low-income countries reported some income losses compared to pre-pandemic levels (World Bank, 2022; Brunckhorst et al. 2023). Longitudinal household data exploring the longer term effects of the lockdown recession and other NPIs are limited but show lingering impacts on household income and poverty (Jha and Lahoti, 2022; Mahmud and Riley, 2022; Rönkkö et al. 2022).

Individual research studies support the conclusion of a World Bank (2022) report: income losses were largest among youth, women, those in the informal sector, small business owners and casual workers (Bonaccorsi et al. 2021; Blundell et al. 2022; Barletta et al. 2022; Flor et al. 2022; Ge et al. 2022; Gummerson et al. 2021; Oyando et al. 2021; Richter and Patel, 2022; Schotte and Zizzamia, 2022). Some show larger adverse effects in urban areas, suggesting agricultural households were less negatively affected overall

¹⁷ This study excluded low-income countries, where impacts reported by other surveys were more severe.

(Bundervoet et al. 2022; McDermott and Swinnen 2022). Few (1-15%) households in low- and middle-income countries (LMICs) received government or NGO assistance in 2020 (Egger et al. 2021; Maredia et al. 2022), although some data suggests this rose significantly in 2021 reaching an estimated 19% in low-income countries and 52% in upper-middle-income countries (Brunckhorst et al. 2023). According to Ratha et al. (2022), predictions that global remittances (worth \$500 billion in 2019) would fall by 20% in 2020 did not occur (est growth rate +0.6%), although they declined by 8% in Africa and 7% in East Asia; however, the decline in informal transfers due to NPI restrictions means that the absolute reduction is likely much larger than official estimates (Dinarte et al. 2021).

3.3. Poverty

Global poverty increased for the first time in a generation in 2020 (Mahler et al. 2022; World Bank, 2022). Precise model estimates vary depending on the poverty metric used (Moyer et al. 2022; Sumner et al. 2022).¹⁸ The most comprehensive estimates were provided by the World Bank's *Poverty and Shared Prosperity Report 2022*, using three different poverty lines to account for differences between countries. They estimated that 90 million fell into extreme poverty (<\$2.15, used in low-income countries), 167 million fell below the \$3.65 poverty line (used in low-middle income countries) and 152 million fell below the \$6.85 poverty line (used in upper-middle income countries). This would suggest that 409 million more people were below one of three global poverty lines in 2020 due to the crisis. In an earlier analysis, Ferreira et al. (2021) estimated that 300 million fell into poverty in 2020 based on national poverty lines.¹⁹ While some recovery occurred in 2021, current data suggests that food price increases and other factors stalled

¹⁸ It is worth noting that nearly half of the global human population (over 3 billion people) live on less than \$6.85 per day (World Bank, 2022).

¹⁹ Another way to estimate global poverty is the societal poverty rate, which is a population-weighted average of the country-specific poverty line. The World Bank (2022) report does not provide a global estimate of changes in the societal poverty rate. The authors provided one on request; they estimated: 222 million people fell below the societal poverty line in 2020: 120 million in South Asia, 75 million in East Asia and the Pacific, 19 million in Sub-Saharan Africa, 10 million in the Middle East and North Africa, 8 million in Europe and Central Asia, 4 million in Latin America and the Caribbean and -13 million in the rest of the world (unpublished data, communication with the authors).

the recovery in 2022, with absolute numbers remaining roughly similar to those from 2020 (World Bank, 2022). Other analyses suggest larger increases in poverty. Laborde et al. (2021) estimated an additional 150 million people fell below the extreme poverty line in 2020 (a 20% increase), concentrated in urban areas of South Asia and sub-Saharan Africa. UNICEF (2021) estimated 100 million additional children were in multidimensional poverty in 2021, compared to 2019. Survey results from Maredia et al. (2022) suggested 19 million more people were living in extreme poverty in July 2020 in five African countries; by comparison, the World Bank (2022) analysis mentioned above estimated only 7.5 million fell into extreme poverty across all of Africa in 2020.²⁰ A recent report by Oxfam (2022a,b) estimated that 263 million more people (compared to 2019) were pushed into poverty by 2022 due to the combined impact of Covid and increases in inequality and food prices.

4. Food security

Hunger and food insecurity increased worldwide, with varying estimates across emerging and developing economies. According to the UN's flagship report, *The State of Food Security and Nutrition in the World* (FAO et al. 2022), 350 million more people were pushed into food insecurity from 2019 to 2021: 207 million became severely food insecure (especially in Africa) and 143 million moderately food insecurity. Food insecurity trends were increasing before the pandemic, however. A study by Balistreri et al. (2022) estimated that in 2020, 63% of an estimated 263 million additional food insecure people were due to the economic shock of the pandemic, and concentrated in Asia (India, Bangladesh, Pakistan), Sub-Saharan Africa and Latin America and the Caribbean. The study estimated 174 million more people remained food-insecure in 2021. *The Global Network Against Food Crises* (2022) estimated that 58 million more people (193 million total) were in acute food crisis or worse in 2021 compared to 2019, with 15 million more in emergency food crises (39 million total) and 460,000 more at

²⁰ These five countries account for 25% of the total population of Africa. Extrapolating the survey results from Maredia et al. (2022) would suggest 76 million people fell below the extreme poverty line in July 2020 in Africa. This is a very rough estimate but points to some of the methodological problems with understanding poverty impacts during the crisis.

famine levels (570,000 total). More than half of the increase in severe food insecurity was attributed to the pandemic economic shock. Additional estimates of increasing food insecurity were provided by Baquedano et al. (2021) and Laborde et al. (2021).

Empirical studies show that food access was disrupted much more significantly than food availability, due primarily to the recession and household socio-economic decline (Bene et al. 2021; McDermott and Swinnen, 2022; Vos et al. 2022). Large-scale surveys in low- and middle-income countries found that 45% of households were forced to miss or reduce meals during the 2020 lockdown period (Bundervoet et al. 2022; Egger et al. 2021), and that food insecurity was strongly associated with pandemic restrictions (Hammond et al. 2022).²¹ Although most studies show a sharp initial decline followed by a gradual recovery (Rudin-Rush, 2022), food insecurity remained below 2019 levels in most studies (Bloem and Farris, 2022) and some research suggests declines continued in 2021 (Orjakor et al. 2023).

Food systems did show resilience in 2020, although the vast majority of small-scale farmers and those in the informal sector faced serious economic difficulties. Widespread and severe impacts occurred on food purchasing, sales and access to crop inputs and markets (Hammond et al. 2022). A review by Bene et al. (2021) noted that the pandemic redistributed food system profits away from small-scale outlets, markets and informal enterprises and towards larger grocery stores and supermarkets. According to the UN Food and Agricultural Organization, global food prices remained stable in 2020 but then rose sharply in early 2021, reaching their highest ever recorded level in 2022 (FAO, 2023), after having been compounded by the Russian-Ukrainian war.²²

²¹ Methodological issues with pandemic phone-surveys and food security in Africa are discussed in Bruck and Regassa (2022).

²² Diop and Asongu (2022) found that while both the Covid pandemic and Russian-Ukrainian war increased food prices across 25 fragile states, the war led to a much higher increase.

5. Education and learning loss

The pandemic crisis has been described as “*the most severe disruption to global education in history*”, with 1.6 billion students across 190 countries impacted in 2020 and in-person education closed for 141 days on average between 2020-2021 (UNICEF, 2022). An estimated 771 million children missed 1.5 years or more of school (Schady et al. 2023). A modeling study by UNICEF (2022) estimated a sharp 13% increase in global learning poverty, which rose from 57% in 2019 to 70% in 2022. They estimated that pandemic school closures led to 1 out of every 8 children in LMICs dropping into learning poverty, erasing all global educational gains achieved since 2000. Effects were largest in regions with the longest school closures including South Asia (average of 273 days) and Latin America and the Caribbean (average of 225 days).²³

UNICEF’s model assumes that one year of school closures is equivalent to 80-95% annual lost learning. A review by Moscoviz and Evans (2022) found that empirical studies showed less impact, although students from low socioeconomic households and in lower income countries suffered disproportionately.²⁴ A meta-analysis by Patrinos et al. (2022) found an average 0.17 standard deviation learning loss, roughly equivalent to one-half year of learning. A second by Betthäuser et al. (2022) found an average learning loss of 35% of a school year’s worth of learning. However, most studies were from high-income countries. A study from Brazil found a 0.32 standard deviation decrease in test scores in 2020, equivalent to three-quarter of a year’s worth of learning (Lichand et al. 2022), roughly equivalent to a study from South Africa (Ardington et al. 2021). An assessment by the World Bank estimated that 30 days of school closures led to 32 days of learning loss in low- and middle-income countries, which accounted for the erosion of

²³ Within these regions, there was substantial variation between countries. For example, schools were closed for 510 days in the Philippines, 448 days in Uganda and 326 days in Saudi Arabia; but only 47 days in Vietnam, 61 in Tanzania and 107 in Morocco (Schady et al. 2023).

²⁴ A large body of research has explored how educational systems adapted to remote schooling and the implication of this for post-pandemic education. It is worth noting, however, that an estimated two-thirds of children worldwide lack internet access at home (Schady et al. 2023). Research studies also question the effectiveness of remote learning even during short-term school closures in high-income countries (e.g. Netherlands) with high internet connectivity (Engzell et al. 2021).

previous learning (Schady et al. 2023). As noted by Schady et al. (2023), the 14.5 months of school closures in Bangladesh led to nearly 26 months of learning lost, when accounting for forgone learning and forgotten learning. Interestingly, a study in Swedish primary schools, which remained open, found no effect of the pandemic on reading comprehension scores (Hallin et al. 2022).

Early estimates by UNESCO (2020) predicted 24 million students were at risk of not returning to educational institutions in 2020 due to higher dropout rates and lower enrolment, especially in South and West Asia and sub-Saharan Africa: 11 million at primary and secondary levels, 8 million in tertiary education and 5 million in pre-primary. The only review of empirical data found dropout rates ranging from 1% to 35%, and highest for households with lower socioeconomic status, adolescents and females (Moscoviz and Evans 2022). For example, a study from Malawi found 14% of students did not return to school, rising to over 30% for girls aged 17-19 (Kidman et al. 2022). No recent comprehensive global estimate was available. A recent analysis found that 150,000 students (K-12) were unaccounted for and likely dropped out across 21 US states (Dee, 2023). A study from South Africa estimated an additional 725,000 learners were out of school in April/May 2021, four times larger than pre-pandemic years (Shepherd and Mohohlwane, 2022).

Learning loss and early school dropout are estimated to have long-term consequences. UNICEF (2022) called pandemic school closures an ‘intergenerational inequality shock’ and estimated the current generation of students may lose upwards of \$21 trillion in earnings during their lifetime. Learning deficits could accumulate in Africa to more than 2 years of lost learning by grade 10 (Angrist et al. 2021), with intergenerational mobility in educational attainment decreasing by 10% (Neidhofer et al. 2022). Some data is more re-assuring; Singh et al. (2022) found that two-thirds of learning loss was made up within 6 months of schools reopening in Tamil Nadu, India.²⁵ De la Maisonnette et al. (2022) estimated productivity losses built up over a lifetime of 0.4% to 2.1% after 45

²⁵ It is worth noting that Tamil Nadu has long had much higher overall social development scores compared to most other Indian states.

years; Fuchs-Schündeln et al. (2022) found average losses of 3.3%. A World Bank report suggested that children affected by the pandemic, especially due to learning loss, could have earnings in adulthood that are roughly 25% lower than expected in the absence of pandemic disruptions (Schady et al. 2023).

6. Lifestyle changes

6.1. Sedentary behaviour

Multiple systematic reviews show reductions in physical activity across all age groups due to pandemic restrictions (Kharel et al. 2022; Larson et al. 2021; López-Valenciano et al. 2021; Oliveira et al. 2022; Stockwell et al. 2021; Wilms et al. 2022; Wunsch et al. 2022). Meta-analyses found average decreases in physical exercise among children in 2020 of 20% (Neville et al. 2022) and 26% (Chaabna et al. 2022), ranging from reductions of 11mins/day to 91mins/day compared to pre-pandemic levels (Rossi et al. 2021). Decreases in physical activity were greatest among children dependent on school and sports-based programs (Do et al. 2022) and in homes/neighbourhoods with less access to outdoor space (Liu et al. 2022; Yomoda and Kurita, 2021). Nature contact and soundscapes (noise levels) changed, with adverse consequences reported depending on the severity of restrictions and neighbourhood geography (Hasegawa and Lau, 2022; Labib et al. 2022). The transition to working from home may have increased musculoskeletal disorders due to poor ergonomics (Cruz-Ausejo et al. 2022). Greater physical activity during the pandemic was associated with better mental health (Marconcin et al. 2022). There are few longitudinal studies currently available; one US study found that reductions in physical activity persisted into late 2021, after most restrictions were removed (Desine et al. 2023).

6.2. Sleep and screens

Lifestyle changes included sleep disturbances and increases in screen use and eye problems. A meta-analysis found a 41% global prevalence of sleep disturbances during 2020-21, higher during lockdown and for children and adolescents (Jahrami et al. 2022).

Sleep duration, quality and dream state were negatively affected (Drumheller and Fan, 2022; Gorgoni et al. 2022). An estimated 17% of people worldwide suffered from insomnia (14% moderate and 2.5% severe insomnia) (AlRasheed et al. 2022) which was associated with the level of NPI restrictions (Scarpelli et al. 2022). A meta-analysis by Madigan et al. (2022) found a 52% pooled increase in screen time among children (especially adolescents) in 2020, rising from 2.7 hours/day to 4.1 hours/day. Trott et al. (2022) found larger increases in primary aged children (1.4 hours/day) compared to adolescents and adults (~1 hour/day). Increases in screen use were associated with the stringency of lockdown (Kharel et al. 2022) and with risks for metabolic syndromes in adolescents (Musa et al. 2022). According to a small US study, screen use remained elevated by 1.1 hours/day in May-August 2021 (Hedderston et al. 2023). Increases in myopia (average 0.46 dioptre change) and other eye problems were found in systematic reviews, especially among children and those with pre-existing myopia (Abounoori et al. 2022; Cortes-Albornoz et al. 2022; Li et al. 2022).

6.3. Diet

Systematic reviews on diet show varied results. A review by Gonzalez-Monroy et al. (2021) found a decrease in healthy diets and increase in ultra-processed foods, while Mignogna et al. (2022) found improvements in nutritious food consumption, especially in some high-income countries. Pourghazi et al. (2022) found decreases in fruit and vegetable consumption among children. In general, studies show decreases in fast food but increased overall food intake, snacking, calorie-dense carbohydrates and sweets (Bakaloudi et al. 2022; Gligoric et al. 2022). Some negative dietary habits were maintained in the post-lockdown period (Mekanna et al. 2022). The large increase in food insecurity in low- and middle-income countries (LMICs) noted above drove many households to switch to cheaper and less nutritious (staples) foods, reducing dietary diversity, including less animal protein, legumes and nuts (Bloem and Farris, 2022; Picchioni et al. 2021). Exact estimates are unavailable. It is unclear what effects social distancing and lifestyle changes had on the human microbiome and the implications of reduced microbial diversity on human health (Finlay et al. 2021; Hurley et al. 2023).

6.4. Obesity

Pandemic lifestyle changes increased risks for obesity (Daniels et al. 2022). A review of longitudinal cohort studies by Anderson et al. (2023) found a 2% increase in childhood obesity and a 1% increase among adults in 2020 (low certainty evidence), as well as an average increase of 1.65 kg for children and 0.93 kg for adults. A study from the US found a 3% increase in adult obesity prevalence in 2020 compared to 2019 (Restrepo, 2022). In Israel, Shalitin et al. (2022) found that 11% of children with normal pre-pandemic weight became overweight or obese during 2020, highest in those 2-6 years old; in the US, Koebnick et al. (2022) showed larger weight gain among Black and Hispanic youth. Other reviews by Khan et al. (2022), Bakaloudi et al. (2022) and Chang et al. (2021) found that weight gain and body mass index (BMI) increases from pandemic confinements occurred predominately among already overweight or obese people, including those with type 2 diabetes (Ojo et al. 2022). There is evidence that weight gain was maintained among children after most restrictions were removed in 2021, although no review was available (Azrak et al. 2022; Long et al. 2022; Siegel et al. 2022; Hernandez-Vasquez et al. 2022; Koebnick et al. 2022).

6.5. Child development

Research studies show adverse effects on child growth and development. A meta-analysis of 8 studies (all from high-income countries) found communication and personal-social impairments at age 12-months for children born in 2020 compared to pre-pandemic cohorts (Hessami et al. 2022). Other studies have shown reductions in early learning and motor skills (Byrne et al. 2023; Deoni et al. 2021). Since relative risk reductions were small in most studies, some have assumed impacts may be quickly reversed. One uncertainty relates to any possible increase in more severe disorders (e.g. autism spectrum disorder or schizophrenia), only noticeable in the future (Lavallee and Dumitriu 2022). Child development may have been adversely affected by the high rate of perinatal maternal depression and other related mental health deteriorations (Federica et al. 2023; Kokkinaki and Hatzidaki, 2022; Shorey et al. 2021), with some recent studies associating this with infant negative affect and temperament (Buthmann et al. 2022; Lopez-Morales

et al. 2022). Some studies suggest effects on early child development and socialization from mask wearing (Carnevali et al. 2022; Gori et al. 2021; Ramdani et al. 2022), although no comprehensive review was available. A study on school closures from Uruguay with children (4-6 years) found reductions in motor and cognitive development as well as attitudes towards learning compared to pre-pandemic cohorts (Gonzalez et al. 2022). A Chinese study found reductions in height growth after school closures (Wen et al. 2021).

Early modelling by Osendarp et al. (2021) and Headey and Ruel (2022) estimated that millions more children could suffer from wasting by 2022. However, there was no review available on childhood stunting and wasting and it is not possible to validate these model predictions with current data. Some empirical studies do show various negative effects (Alam et al. 2022; Jayatissa et al. 2021; Miller et al. 2022; Win et al. 2022; Zhu et al. 2022). Results from Win et al. (2022) suggest that food relief and rapid employment recovery likely helped to prevent severe population-level effects in Bangladesh.

6.6. Personality

Only a few studies have explored personality change during the pandemic. In the US, Sutin et al. (2022) found small declines in extraversion, openness, agreeableness and conscientiousness (2019-2022), equivalent to roughly one decade of normal personality change. Young people showed disrupted maturity (increased neuroticism, decreased agreeableness and conscientiousness). Interestingly, these changes were not apparent in the 2020 data but only emerged in 2021 and 2022. Smaller studies from Germany found slightly different results (Krautter et al. 2022; Rudolph and Zacher (2023)). A review of personality type found neuroticism and anti-social personality traits were impacted more negatively during the crisis (Starcevic and Janca, 2022).

6.7. Frailty

Research also suggests an increase in frailty among the elderly, including various functional impairments (Hirose et al. 2023; Felipe et al. 2023; Saraiva et al. 2021; Richardson et al. 2022) and cognitive decline including a worsening of dementia (Noguchi et al. 2021; Prommas et al. 2022). Data on the magnitude of these effects were not readily available.

6.8. Addiction and drug use

A review of addiction disorders found that food, social media and internet addictions increased during the lockdown period (Alimoradi et al. 2022). Gaming addictions and disorders also appear to have increased among some children and adolescents (Han et al. 2022). Although alcohol, smoking and other drug use did not increase at a population-level in 2020, increases did occur in a proportion of the population, especially among those with addictive disorders (Marsden et al. 2022). A meta-analysis by Acuff et al. (2022) based on studies from 56 countries found alcohol consumption increased for 23% of people in 2020 and decreased for 23%. Some countries did experience overall increases (e.g. USA) while others (e.g. Australia) showed a decrease (Sohi et al. 2022). Heavy-drinking patterns intensified in some countries in 2020, with alcohol-related deaths increasing by 25%, 20% and 5% in the US, UK and Germany (Card-Gowers et al. 2021; Kilian et al. 2022a,b; White et al. 2022). Consumption of hard drugs, such as opioids, and drug-related mortality also increased in North America (Imtiaz et al. 2021; Simha et al. 2022). Similar trends occurred with smoking. A meta-analysis by Sarich et al. (2022) found 27% of people who smoked increased their smoking in 2020, while 21% decreased and 50% remained unchanged (2% of non-smokers started smoking). Almeda and Gómez-Gómez (2022) found an overall decrease in smoking. A review by Chong et al. (2022) found youth substance use (alcohol, cannabis, tobacco, e-cigarettes/vaping, and recreational drugs) declined in 2020, although increases were found among sub-groups (Layman et al. 2022).

7. Intimate relationships

7.1. Child abuse

Concerns that NPIs would increase child abuse and maltreatment (WHO, 2020) are in general supported by research findings, although the precise magnitude continues to be debated (Katz and Fallon, 2022; Klika et al. 2023). Research shows heterogenous results from different countries and unresolved discrepancies between a decrease in official reports and, in some studies, pediatric hospital visits and increases in self-reported abuse and risk factors (Klika et al. 2023; Letourneau et al. 2022). A meta-analysis by Lee and Kim (2022) estimated an 18% and 39% global prevalence of physical and psychological child abuse in 2020, both of which were greatest in low-income countries, but the limited number of studies and lack of baseline data prevented estimates regarding pandemic effects. Reviews by Huang et al. (2022) and Rapp et al. (2021) found increases in physical, psychological and sexual abuse. These analyses, and others (Katz et al. 2022; Marmor et al. 2021), suggest associations between increased child maltreatment and lockdown measures, a decline in official child maltreatment reporting and increases in the severity of reported cases. For example, Shusterman et al. (2022) found a 39% drop in child maltreatment reporting in 2020 in the United States, equivalent to 191,000 fewer reports, especially due to drops from educational personnel and daycare providers. Ribeiro et al. (2022) reported a 13% increase in requests for help in Portugal from child and adolescent victims in 2020 compared with 2019, which rose to a 101% increase during the lockdown period. Research from pediatric hospital studies are varied (Brown, 2022). In France, Obry et al. (2023) found a doubling of abusive infant head trauma during lockdown while Brown (2023) found a lag-time, with rates only increasing in 2021.

7.2. Domestic violence

Empirical data supports an increase in intimate partner violence (IPV), including emotional and sexual violence (Bhuptani et al. 2022; Macy, 2022; Thiel et al. 2022), as well as under-reporting in official police and emergency department records (Anderberg et al. 2022; Letourneau et al. 2022). This has been called the ‘shadow pandemic.’ In April

2020, modeling by the United Nations Population Fund (UNFPA) predicted 31 million additional IPV cases due to lockdown over 6 months, mostly in low- and middle-income countries. Data is currently unavailable to sufficiently evaluate this claim (Kim and Royle, 2023) and shortcomings of this model were discussed in Lokot et al. (2021). A meta-analysis by Piquero et al. (2021) based on early studies mostly from the United States found a 8% increase in IPV during lockdown and stay-at-home orders in 2020. A study across 13 LMICs by *UN Women* (2021) in mid-2021 found that 68% of women believed the incidence of physical or verbal abuse had increased during the pandemic. Studies from LMICs are limited. Research from India found a 135% increase in domestic violence complaints in May 2020 in districts with the strictest lockdown measures, which remained elevated in 2021 (Ravindran and Shah, 2023).²⁶

7.3. Intimate relationships and family

Intimate partner and family relations experienced substantial stress during the crisis. Andrade et al. (2022), Bevan et al. (2023), Estlein et al. (2022) and Yates and Mantler (2023) reviewed a large body of qualitative research on changes to intimate family, sibling and romantic relationships, finding both positive and negative consequences, including increases in the care responsibility of women that widened gender inequality (Flor et al. 2022; Moyano et al. 2022). Pandemic restrictions had some negative impacts on the experience of new parents during pregnancy, childbirth and in newborn bonding and attachment (Adesanya et al. 2022; Zheng et al. 2022). No global systematic review was found on marriage and divorce rates. Data from the US (Manning and Payne, 2021; Westrick-Payne et al. 2022) and Japan (Ghaznavi et al. 2022; Komura and Ogawa 2022) found that new marriages in 2020 reduced by 10% while divorce rates declined by 12% (US) and 27% (Japan). According to the *International Labour Organization* (ILO) et al. (2022), the number of forced marriages rose globally by nearly 7 million between 2016 and 2021, to 22 million; however, data on specific pandemic-related increases were unavailable. Child marriages likely rose. Predictions by UNFPA in early 2020 estimated

²⁶ This study also found a decrease in rape and sexual assault complaints, which they ascribed to reductions in human mobility, although reporting issues may also be involved.

that child marriages would increase by upwards of 13 million (UNICEF, 2021). Yukich et al. (2021) modeled increases in five countries responsible for 50% of all child marriages (Bangladesh, Brazil, Ethiopia, India, and Nigeria) and estimated that total global increases until 2035 would range from 3.6 to 10 million. Empirical data remain sparse (Esho et al. 2022), which complicates current estimates (Lokot et al. 2021).

7.4. Fertility and sex

Research from high-income countries suggests that a drop in birth rates occurred in some countries during the pandemic. Other data show that sexual activity among women reduced significantly and unwanted pregnancies likely increased. Pomar et al. (2022) found a 14% reduction in live births in January 2021 across 24 European countries, associated with the stringency of lockdown (no reduction occurred in Sweden). Sobotka et al. (2022) analyzed birth trends across 37 high-income countries and found two short-term reductions in births, in January 2021 and early 2022. They hypothesize that the pandemic may have small but lasting effects on fertility rates, depending on future economic recovery. Wolff and Mykhnenko (2023) found a 4% drop in births across 900 European cities in 2020. A US study found that declines in birth rates were associated with the stringency of NPIs, and were higher in democrat-controlled states (Adelman et al. 2023). Silverio-Murillo et al. (2023) found a 12% reduction in fertility in Mexico, which returned to pre-pandemic levels by end of 2021. Some data suggests fertility declines were disproportionately among wealthier and older women (Mooi-Reci et al. 2022; Silverman et al. 2022). No review was available, however.

Consistent reductions in women's sexual activity was reported across multiple systematic reviews, with most reporting decreases in sexual intercourse and increases in solitary sexual behavior (de Oliveira and Carvalho, 2021; Toldam et al. 2022; Hessami et al. 2022; Gleason et al. 2022). Individual studies found an increase in sex toy sales (Qalati et al. 2022) and pornography use (Lau et al. 2021). Reviews have also found small reported changes in menstrual cycles (Tayyaba Rehan et al. 2022), erectile dysfunction (Bakr and

El-Sakka, 2022) and earlier average onset and progress of puberty among girls (Prosperi et al. 2022). No review was available on sexual activity outside the home during lockdown; however, a UK study found 10% of respondents reported disobeying lockdown rules to have sex with someone outside their household (Maxwell et al. 2022).

Early estimates by UNFPA suggested that upwards of 15 million additional unwanted pregnancies would occur across 132 low- and middle-income countries (LMICs), based on a 10% drop in sexual and reproductive health services (Riley et al. 2020). This was revised in January 2021 after data suggested much lower disruptions to family planning services; UNFPA (2021) then estimated only 1.4 million unintended pregnancies across 115 LMICs (range 500,000 to 2.7 million). This lower estimate assumed an average of 12 million women (range 4 to 23 million) were unable to access family planning services, mostly during the first 4 months of the pandemic. However, there are few studies available to evaluate these estimates. Some studies show reductions in fertility intention (Rahman et al. 2022) while others found increases in unwanted pregnancies (Druetz et al. 2022; Molla et al. 2022). A few studies show drops in abortion during lockdown including a 25% decline in Italy and 40% decline in Mexico, suggesting a reduction in unwanted pregnancies in some countries (Marquez-Padilla and Saavedra 2022; Guzzetti et al. 2022).

8. Community

8.1. Social relationships

A large body of research during the pandemic focused on how to promote compliance with public health recommendations by altering social norms and interactions; however, much less is known about their adverse effects on social relationships. The crisis functioned as a *social shock* disrupting social networks, support, interaction and intimacy, and reshaping cultural etiquettes and routines of work, school, care, social life and meaningful events (e.g. marriage, birth, adulthood, illness and death) (Lannutti and Bevan, 2022; Long et al. 2022). Quantitative data on changes to social relationships are limited. A review by Buecker and Horstmann (2021) found increases in loneliness

compared to pre-pandemic data and a deterioration in the quality of social relationships. Despite a transition to digital platforms, longitudinal data from 23 countries showed that online connection did not address feelings of loneliness and isolation for most people (Van Breen et al. 2022). Qualitative reviews have been published on specific changes; for example, the adverse consequences of blanket hospital visitation policies (Iness et al. 2022), restrictions at long-term care facilities (Saad et al. 2022; Veiga-Seijo et al. 2022) and regulations associated with mourning and funerals (MacNeil et al. 2021; Van Schaik et al. 2022). Some studies from North America and Europe suggest a decline in adolescent and young adult interpersonal connections and friendship (Kulcar et al. 2022; Kozak et al. 2023; Lowe et al. 2023; Smith et al. 2022); however, others suggest some strengthening effects (Juvonen et al. 2022; Lee et al. 2023). A longitudinal US study found decreased feelings of friendship and increased social hostility in May 2020 compared to pre-pandemic data (Philpot et al. 2021). Two studies from the Netherlands found that social networks became smaller and more focused on family ties in 2020 (Steijvers et al. 2022; Volker, 2023). A longitudinal qualitative study from the UK and Colombia found that a *belongingness gap* emerged and persisted among roughly one-third of older adults, who also experienced a loss of autonomy (Derrer-Merk et al. 2022a,b). Reduced social contact was especially difficult for more vulnerable populations, including people with disabilities and the elderly (de Vries et al. 2022; Li et al. 2023), as well as young families (Zeduri et al. 2022). Although research is limited, some studies suggest that posttraumatic growth may be inhibited by the increase in social isolation that occurred during the pandemic period (Collazo-Castineira et al. 2022; Matos et al. 2021; Ulset et al. 2022).

8.2. Stigma

The crisis generated negative psychosocial reactions, partially driven by media narratives, heightened fear and social conformity to NPI rules. A meta-analysis found 35% of people had experienced some form of stigma and social stereotyping and avoidance, higher among Covid patients, those with lower income and health care workers (Yuan et al. 2022). Another review explored heightened xenophobia among migrants (Silva et al. 2022). Although no review is available, individual studies suggest that social pressure to

conform to NPI rules played a role in stigma as well as hostile vigilantism (Biswas et al. 2021; Doucet et al. 2022; Graso et al. 2022; Peters et al. 2022; Tei and Fujino, 2022). Studies on media representations from Canada and the UK found a strong moralization discourse that blamed and shamed specific groups (e.g. Asians, young people, non-conforming individuals) and divided the population into: “the virtuous” rule followers (considered selfless and smart) and the deviants (e.g. Covidiot; immoral, stupid and selfish), who questioned or criticized the NPI rules and/or did not respect the rules (Capurro et al. 2022; Lennon and Gill, 2022; Labbe et al. 2022). Other studies have explored the emergence of *essentialism* in public discourse: children were framed “as a risk” (e.g. vector) rather than at risk of adverse consequences from NPIs (Ciotti et al. 2022) and the elderly were framed as a homogenous group of “vulnerable” people, reinforcing prolonged isolation and paternalism (Derrer-Merk et al. 2022b).

8.3. Mobility

Pandemic policies led to changes in every-day mobility and international and domestic migration flows. Over 100,000 international travel restrictions were implemented globally in 2020, with significant impacts on economic migrants, asylum seekers, refugees, international students and others (McAuliffe and Triandafyllidou, 2021). No comprehensive review or meta-analysis was available on this topic. An analysis of 15 advanced economies found declines in immigration in 2020 in all but Finland, highest in Australia (60%), Spain (45%) and Sweden (36%) (Gonzalez-Leonardo et al. 2023). NPIs also had variable effects on human mobility patterns across and within countries. Geospatial studies show less reductions in mobility in lower-income areas with higher population density and more informal livelihoods; this is sometimes referred to as the “luxury of social distancing” (Castells-Quintana et al. 2021; Long and Ren, 2022; Jiang et al. 2022). Some research from North America suggest that mobility reductions were short-lived (only 3-6 weeks) despite them remaining legally in place for much longer (Navazi et al. 2022). Lockdown conditions were particularly difficult for internal migrants, which are estimated at 100 million in India alone, many of which were unable to return home and placed into relief camps with poor living conditions (Jesilne et al.

2021). Using Google data from 124 countries, Czech et al. (2021) found that countries with a higher *Human Development Index* (HDI) had greater internal human mobility reductions in 2020-21 compared to countries with a lower HDI.

Anecdotal reports of an *urban exodus* are supported by research findings in some countries. A large-scale analysis of European cities found that population growth slowed to -0.03% in 2020, with 28% of cities experiencing significant population loss due to reduced in/out-migration (773,000), excess deaths (300,000) and lower births (4%, ~150,000) (Wolff and Mykhnenko, 2023). A study of 62 cities across North America found that only 27% of downtown cores had recovered to 75% of their pre-pandemic mobility levels in May 2022, with 44% remaining 50% or below (Chapple et al. 2022). Mobility reductions were highest for larger vs medium cities and those in the north vs southern cities. While some studies suggest this trend may be temporary (Gonzalez-Leonardo et al. 2023; Rowe et al. 2023), others suggest urban flight from downtown cores will continue, partially due to inflated property markets and work-from-home trends (Borsellino et al. 2022; Colomb and Gallent, 2022; Gupta et al. 2022; Kotsubo and Nakaya, 2022). Data from the US (2021-22) show large out-migration in California and New York (with more restrictive NPIs) and in-migration in Florida and Texas, which had less restrictive NPIs (Zinberg et al. 2023).

8.4. Crime

No systematic review was available on crime and law enforcement. Across 23 countries, Nivette et al. (2021) found an average 37% reduction in police-recorded crime during the 2020 lockdown period, with larger reductions associated with more stringent movement policies. While property-based crimes decreased, homicide was relatively unchanged and crime increased to pre-Covid levels after lockdown in mid-2020. Other studies have been country and/or issue specific. The homicide rate in the US increased by 45% from 2019 to 2021 (equivalent to 6,000 additional deaths in 2021 alone) (Kegler et al. 2022; Murray and Davies, 2022; Simon et al. 2022). Massenkoff and Chalfin (2022) found that although most violent crimes declined in the US, the risk of street crime (robbery and

assault) actually rose 15-30% in 2020. Studies from India found lockdowns directly and indirectly contributed to increased property crime and missing person cases (Paramasivan et al. 2022a,b). A qualitative study from Nigeria found that crime increased due to the economic crisis in 2020 (Ardo et al. 2022).

There is evidence of a global increase in cybercriminal activity (Buil-Gil et al. 2021; Regalado et al. 2022) and online and financial fraud, especially related to historic government assistance programmes (Levi and Smith, 2022; Valiquette L'Heureux, 2022; Zhang et al. 2022). Griffin et al. (2022) estimated 10-15% of loans from the \$800 billion Paycheck Protection Program (PPP) in the US, a relief program for businesses (operational from April 2020-May 2021), engaged in potential fraud. It is unclear how much of the total \$6 trillion spent by the US government was misappropriated by fraudsters. Although there are major concerns that the pandemic led to a rise in corruption, including in the healthcare sector (Teremetskyi et al. 2021), there is a lack of data available for analysis (Moya-Espinoza, et al. 2022).

Pandemic policies also criminalized social behaviour and expanded police powers to arrest and fine the public for non-compliance. Again, no review was available. An *Amnesty International* (2020) report documented police abuses across 60 countries, including allegedly detaining 85,000 people for non-compliance with curfew in the Dominican Republic and 100,000 in the Philippines. The *Policing the Pandemic Mapping Project* found over 10,000 Covid police enforcement incidents across Canada in the first half of 2020 (totaling \$13 million in fines) related to social distancing rules (McClelland and Luscombe, 2021). Studies from Argentina, Nigeria and Australia highlight increases in “resistance to authorities” arrests, growing distrust of police due to selective enforcement and corruption and police discrimination (Shodunke 2022; Perez-Vincent et al. 2021; Russell et al. 2022).

8.5. The legal system

Covid policies impacted the criminal and legal justice system, although the available data is limited. A unique study by Godfrey et al. (2022) from the UK found a backlog of half-

a-million court cases in May 2021, with outstanding Crown cases increasing by 30% from a 2019 baseline. They noted the substantial impact on all court users of this backlog: victims, witnesses and defendants, the legal professions, and overall public trust in the law system. A study from Brazil also found a large increase in court backlogs (Castelliano et al. 2021). Other studies have explored the impact of the crisis on policing (Maskaly et al. 2021; Martin et al. 2022) and norms in jurisprudence (Berger, 2022). Less than 6% of the global prison population benefited from efforts during the first Covid wave to promote decarceration to prevent infection; studies have shown a severe deterioration in global prison system conditions in 2020, including increases in solitary confinement and prison riots (Buchanan et al. 2020; Johnson et al. 2021; Maruna et al. 2022; Penal Reform International, 2021).

8.6. Trust

Trust has been a central concept during the crisis, although only one early review was available (Devine et al. 2021). Most research has focused on the correlates of trust for compliance and disease control (Bollyky et al. 2022; Sulik et al. 2021) rather than longitudinal societal trends. There are significant methodological problems with trust measurement and analysis that have been discussed (Brosius et al. 2022; Wollebaek et al. 2021). Nonetheless, some general trends are discernable. A meta-analysis of surveys across 27 high-income countries in 2020-21 found trust in government increased by roughly 4% (to 44%) whereas support for democracy declined by the same amount (to 65%) (Foa et al. 2022). According to the *Wellcome Global Monitor Project*, high degrees of trust in science (41% of respondents) and scientists (43%) increased worldwide by 10%, comparing 2018 with late 2020, whereas trust in ones neighbours (29%) decreased by 5% (Wellcome, 2021). An analysis of data from 46 countries found that average trust in media increased by 6% (44% reported they trust news most of the time) (Newman et al. 2021).

Heightened trust in 2020 contributed to a ‘rally-around-the-flag’ effect (Bol et al. 2021), increasing trust in political leaders, healthcare workers, the media and scientific experts

(Algan et al. 2021), partially associated with public levels of fear (Eggers et al. 2022; Van der Meer et al. 2023). However, increased political discontent, perceptions of competence and economic concerns decreased trust over time in 2020, which has been shown to have been associated with socio-economic status, personality type and political affiliation (Algan et al. 2021; Bromme et al. 2022; Gualano et al. 2022; Graffigna et al. 2021; Davies et al. 2021; Nielsen et al. 2021; Jorgensen et al. 2022; Starevic et al. 2022; Wu et al. 2022). A longitudinal Canadian study found those who had *less* trust in society before the pandemic lost more trust (roughly 20% of respondents, correlated with lower socio-economic status) while those with *more* pre-existing trust (typically with higher socio-economic status) *gained* more trust (Wu et al. 2022). There are few studies about public perceptions of scientific policy advice during the crisis (Schultz and Ward, 2021). Pandemic policies have also contributed to increases in social polarization, although no review was available; a survey by PEW found 61% of respondents across 19 countries believed their country was more divided in 2022 compared to prior to the pandemic (rising to >70% in USA, Netherlands, Germany, Canada and France), compared to 32% who believed society was more united (highest in Singapore, Sweden and Malaysia). A large-body of research has explored the associations between low social and political trust and alternative explanations (or conspiracy theories) during the pandemic (Tsamakis et al. 2022; van Mulukom et al. 2022). The influence of public health restrictions in driving social polarization and distrust is not well characterized in the academic literature.

8.7. Mass protests

According to a global assessment by the *Armed Conflict Location and Event Data Project* (ACLED, 2021; 2022), public demonstration activities rose globally by 3% in 2020 (vs. 2019) and 9% in 2021 (vs. 2020). While the first four months of the pandemic (lockdown period) saw a 35% drop, this was followed by quick reversals and overall increases especially in anti-government protests and, in the US, Black Lives Matter protests in the summer of 2020. An estimated 19% of global protests were pandemic-related in 2020, and 16% in 2021 (with significant increases in Europe). Studies in

Germany found 20% of people were sympathetic to anti-containment protests and 10% had participated (Hunger et al. 2023; Borbath, 2023). However other studies suggest that polling data has over-simplified public support for lockdown and other NPIs and under-emphasised concerns about their side effects (Foad et al. 2021). Covid-related protests continued in early 2022 in North America and Europe, initially sparked by the *Canadian Freedom Convoy*. The pandemic's indirect effects on protest movements and civil unrest may also play out in the medium term (Bank et al. 2022).

8.8. Media

Research has generally shown that the pandemic increased public consumption of media while also challenging journalistic standards and exacerbating threats to media freedom, including in established democracies (Edgell et al. 2021; Papadopoulou and Maniou, 2021; Pajnik and Hrzenjak, 2022; Holtz-Bacha, 2022). Media watchdogs, such as the *International Press Institute*, documented incidents of verbal and physical attacks, arrests and criminal investigations, information restrictions, censorship, and excessive fake news regulation (Palmer, 2022; Pomeranz and Schwid, 2021).²⁷ The weakening of press independence also occurred through new economic pressures, which saw significant job insecurity, declining advertising revenue, outlet closures and dependence on government funding, which some studies suggest was disproportionately available to pro-government outlets (Holtz-Bacha, 2022; Papadopoulou and Maniou, 2021; Libert et al. 2022; Posetti et al. 2020; Santos and Mare, 2021).

Studies show an increase in global news consumption in 2020, mainly for TV news (including live briefings), social media and Internet news (Mihelj et al. 2022; Newman et al. 2021; Van Aelst et al. 2021). Increases in media use were associated with a decline in mental health (Strasser et al. 2022; Marciano et al. 2022). Studies generally show that political sources dominated the crisis reporting, revealing the central influence of the state and biomedical experts in constructing pandemic news, with some indication that critical scrutiny of policy decisions were minimal (Matthews et al. 2023; Mellado et al.

²⁷ See: <https://ipi.media/covid-19-tracker-in-graphics/>

2021; Morani et al. 2022). A review of risk communication found that uncertainty was not adequately communicated to the public in the early stages of the pandemic (Ratcliff et al. 2022) while some research also shows widespread inadequacies in journalistic reporting of epidemiological data (Ratcliff et al. 2022). There was a sharp decline in print newspapers, especially local outlets, due to lockdown and fears about infection control. Some studies suggest this may hasten the demise of printed newspapers and local and/or small-scale news outlets (Santos and Mare, 2021; Mihelj et al. 2022; Newman et al. 2021; Van Aelst et al. 2021).

There is wide agreement that the crisis represented a pivotal moment for digital journalism (Quandt and Wahl-Jorgensen, 2021; Papadopoulou and Maniou, 2021). The pandemic response involved unprecedented steps at controlling the spread of online information with warning labels, bans and removal for ‘misinformation’ (Krishnan et al. 2021); a large-body of research has been focused on the psychology of misinformation susceptibility (Chu et al. 2022; Nan et al. 2022; Yu et al. 2022). However, recent scientific data shows that the alarmist narrative about misinformation has been overblown (Altay et al. 2023). One large-scale analysis found that only 2% of web traffic and 14% of Facebook engagement in 2020 went to untrustworthy news outlets (Altay et al. 2022).²⁸ The dominant framing of the ‘infodemic’ appears to have provided a cover for governments to strengthened misinformation laws, censorship and Internet blackouts (Rodrigues and Xu, 2020; Pomeranz and Schwid, 2021), which may have long-term effects on media independence and free speech.

8.9. Elections and political attitudes

According to the *International Institute for Democracy and Electoral Assistance* (IDEA), at least 80 countries postponed elections, mostly in 2020. Of 108 elections, 66% had lower voter turnout in 2020-21 with a 10% mean decline (declines >20% in Venezuela, Iran, Kyrgyzstan, Benin, Bahamas, Central African Republic, Hong Kong, Gibraltar, Syria); 34% had higher turnouts (8% mean increase, >20% in Togo and Zambia) (IDEA,

²⁸ The authors rely on the News Guard rating system, and acknowledge that “sharp, binary distinctions between trustworthy and untrustworthy sources are fraught, and people will have strong views about how some brands are labeled.”

2022). Various studies have explored impacts of the crisis on political campaigning and voter sentiment, although no review was available. Some studies from France and the US suggest restrictions led the public to rally around the incumbent politician or ‘safe candidates’ (Bisbee and Honig, 2022; Giommoni and Loumean, 2022). Research has found different results regarding the pandemic’s effect on the 2020 US election (Mitchell, 2022; Algara et al. 2022) and populism (Bayerlein and Metten, 2022). In some cases Covid restrictions were used as a pretense for the arbitrary detention of opposition candidate (Oswald, 2021). A body of research suggests heightened fear was associated with increases in authoritarian attitudes and political orientation (Filsinger and Freitag, 2022; Graso et al. 2022; Hirsch, 2022; Volk and Weisskircher, 2023; Winter et al. 2022). Political scientists have also highlighted the potential impacts on public sentiment related to globalization, expanding state power and trust in multilateral institutions (Bieber 2022; Ciravegna and Michailova, 2022).

9. Environment and ecosystems

Reviews on the environmental effects of the pandemic response show both positive and negative consequences for global ecosystems (Bates et al. 2021; Jiang et al. 2022; Primack et al. 2021). Air pollution and greenhouse gas (GHG) emissions reduced significantly during the lockdown period (Bakola et al. 2022). However, the overall growth rates of greenhouse gases did not decrease and increases in methane and ozone occurred in 2020-21, the reasons for which are still not fully understood (Laughner et al. 2021; Guevara et al. 2022; Qu et al. 2022). Ecological studies found some transient improvements for wildlife populations and natural ecosystems, sometimes referred to as the ‘*anthropopause*’ (Manenti et al. 2020; Soto et al. 2021; Warrington et al. 2022). However, other studies have shown adverse consequences. Souza et al. (2021) found that public interest in national parks declined globally due to mobility restrictions and park closures, reducing revenue and increasing vulnerability to development pressures. In Italy, Manenti et al. (2020) found that invasive species increased during lockdown due to reduced wildlife conservation and management activities. Although no review was available, studies from India and Nepal showed increased wildlife hunting and poaching

during lockdown (Aditya et al. 2021; Behera et al. 2022; Koju et al. 2021). Some studies have also found increases in illegal forestry practices (Tleimat et al. 2022) and illegal commercial and recreational fishing (Ben et al. 2022; Quimbayo et al. 2022). A large-scale study found that deforestation trends did not deviate from historical projections in the Americas and Asia in 2020, although increases were found in Peru and Africa (Cespedes et al. 2022).

A number of studies suggest that the pandemic reversed a decade-long momentum to reduce plastic waste pollution (Li et al. 2022; Peng et al. 2021; Yuan et al. 2021). Precise effects on global plastic pollution are unclear due to data limitations, although there is agreement that personal protective equipment (PPE) waste and single use plastics substantially increased. Peng et al. (2021) estimated more than 8 million tons of mis-managed pandemic-associated plastic waste was generated by mid-2021 (especially from hospital medical waste, and from Asia), and that 26,000 tons were discharged into the ocean (representing 1.5% of all riverine plastic discharge). However the OECD's (2022) *Global Plastic Outlook* analysis estimated that plastics declined worldwide by 4.5% in 2020, equivalent to 10 million less tons. The analysis found that declines were largely driven by the economic contraction in manufacturing and construction; by comparison, they found that household plastic use, medical waste and municipal waste increased; they also found that recycling and waste management was negatively impacted (OECD, 2022).²⁹ Precise estimates of the number of face masks used in 2020 also vary widely, from 450 billion (Li et al. 2022) to 126 billion (OECD, 2022). A number of studies raise concerns about the increased discharge of micro-plastics from PPE and medical waste into aquatic ecosystems (OECD, 2022; Peng et al. 2021; Oliveira et al. 2023) as well as the health and environmental consequences of an increase in the use of various disinfectant chemicals, especially for children (Dewey et al. 2021).

²⁹ The two estimates by Peng et al. (2021) and OECD (2022) are not necessarily mutually exclusive; it is possible that the decline of plastics in manufacturing (10 million tons, as estimated by OECD, 2022) was offset by the growth of plastics in the medical sector (8 million tons) (as estimated by Peng et al. 2021).

10. Governance

10.1 Political violence

Security experts predicted a rise in violent conflict and insecurity in 2020, although others hoped the crisis would promote global ceasefires (Basedau and Deitch, 2021). According to the *Armed Conflict Location and Event Data Project* (ACLED, 2021, 2022), total worldwide political violence decreased by 16% in 2020 and 17% in 2021 compared to 2019, although few conflicts ended. However, this aggregated data hides significant worsening of conflict dynamics in Southeast Asia, Africa and South America and shifts in the activity of non-state actors, who appear to have used the crisis to their advantage (ACLED, 2021; Ide, 2021). Studies consistently found increased political violence in Africa (Bank et al. 2022; Gutiérrez-Romero 2022); according to ACLED (2021), violent conflict in Africa rose by 40% in 2020 and 48% in 2021 compared to 2019. Violence against civilians by state military and police forces increased during lockdown (Bank et al. 2022); a rise in coup attempts (known as ‘*Covid coups*’) and successful coups was reported by Chin (2021). While the exact contribution of the pandemic response is hard to isolate (Basedau and Deitch, 2021; Hanieh and Ziadah, 2022; Hilhorst and Mena, 2021) the crisis does appear to have played some role in igniting coups (e.g. Tunisia) and armed conflict (e.g. Ethiopia) (Bank et al. 2022; Chin, 2021) and increasing vulnerabilities in ongoing conflict zones (e.g. Afghanistan and Yemen) (Rahmat et al. 2022; Islam et al. 2022). The legacy of the pandemic response and ongoing global economic crisis may increase conflict and instability in the years ahead (Basedau and Deitch, 2021).

10.2. Democracy and freedom

According to *The Economist’s Democracy Index* (2020), the world experienced the largest rollback of individual freedom in 2020 “*ever undertaken by governments during peacetime (and perhaps even wartime).*” The index found that 70% of countries experienced declines in governance scores due primarily to government-imposed restrictions. Analysis by *Freedom House* (2021) also found the largest annual decline in democracy and freedom of the last two decades: 73 countries experienced declines in

2020 while only 28 showed improvements.³⁰ This downward trend continued in 2021 (Boese et al. 2022; Democracy Index, 2021). Other measurements, such as the *Human Development Index* (2022) and the *Ibrahim Index of African Governance* (2023), show declining or stagnating progress in governance since 2019. Analysis of the *Pandemic Violations of Democratic Standards Index* across 144 countries found most governments engaged in some violation of democratic standards in 2020 (Edgell et al. 2021): roughly 70% implemented restrictions on media freedom, 50% engaged in abusive enforcement, 40% did not have time limits on states of emergency, 30% engaged in official disinformation campaigns, 20% limited the legislature, 20% engaged in discrimination measures and 10% suppressed non-derogable rights. A large-scale meta-analysis of public surveys across 27 countries in 2020-21 found an erosion of support for core democratic attitudes (Foa et al. 2022). Some studies suggest that fear played a fundamental role in driving public acceptance for civil liberty restrictions (Vasilopoulos et al. 2022). Reviews of the legal basis for pandemic states of emergency have found that they sometimes went *against* legal precedence and expanded executive power (Grogan 2022; Bjørnskov and Voigt, 2022); however, courts, legislatures and sub-national governments did employ some checks and balances on executive power (Ginsburg and Versteeg, 2021).

According to *Transparency International* (2022), 27 countries had historically low progress fighting public sector corruption in 2021. Some studies show a reduction in government transparency and violation in laws ensuring public access to information (Cifuentes-Faura, 2022; Marti, 2022). The crisis opened up opportunities to abuse state resources for political and financial gain (Guasti and Bustikova, 2022) as well as for lobbying and corporate influence, although this is not well characterized in the academic literature.

³⁰ Between 2019 and 2021, the percentage of ‘free countries’ and ‘partly free countries’ dropped 1% and 3% while ‘not free countries’ rose 4%. An estimated 156 million people living in partly free countries were downgraded to not free while 1.48 billion people transitioned from free to partly free, largely due to the historic downgrading of India.

10.3. Human rights

Covid policies generated a large body of descriptive work on how they adversely impacted basic human rights including restrictions to individual freedom of movement and assembly (Chiozza and King 2022). The *Human Rights Measurement Initiative* found that nearly all of 39 sampled countries experienced declines in respect for human rights in 2020 (Clay et al. 2022). In total, 89% of human rights practitioners noted decreases in economic and social rights (work, education, food, health, housing), 82% in civil liberties (freedom of assembly, expression and political participation) and 63% in physical integrity rights (freedom from torture, arbitrary arrest, and disappearance). A review on human rights and Covid policies in Africa noted the exclusion of vulnerable people from policy decisions and increased socio-economic vulnerability and precarity (Manderson et al. 2022). A survey by *Amnesty International* (2021) across civil society groups in 28 countries emphasized the increase in criminalization, stigma and discrimination experienced by socially marginalized people due to pandemic restrictions. A review of emergency orders from 39 countries found half included criminal sanctions for lockdown violations, and few fully complied with human rights legal requirements (Sun et al. 2022). Research has also highlighted the negative human rights implications of new mass surveillance technologies (e.g. digital health passes used as part of track and trace systems in China) and use of data for financial profit, known as ‘datafication’ (Boersma et al. 2022).

10.4. Scientific advice and research

The pandemic response involved an unprecedented expansion of scientific advice and research into crisis management and everyday life. While no comprehensive meta-study was available, four main consequences are worth noting from the literature, mostly from high-income countries. First, policy studies from 2020 largely agree that Covid task forces over-represented biomedical experts and excluded many forms of scientific expertise, including in mental health, ethics and economics (Bruat et al. 2022; Colman et al. 2021; Camporesi et al. 2022; Mulgan et al. 2022; Rajan et al. 2020; Pykett et al. 2022; Wenham and Herten-Crabb, 2021). In many countries, power was concentrated in a

select number of science advisors who disproportionately shaped policy and public narratives, revealing the inadequacies of ad hoc science advisory mechanisms (Pielke, 2023; Rangel et al. 2022; van Dorren and Noordegraf, 2020).³¹ Second, decisions to lockdown and implement other restrictive NPIs heavily politicized science, blurring the lines between science and politics and challenging scientific norms and ethical frameworks (Boin and Lodge, 2021; Christensen and Laegreid, 2022; Van Dooren and Noordegraaf, 2020). Research from the sociology of science has shown that ‘normal science’ was suspended and, in its place, a ‘scientific consensus’ was manufactured to support mainstream political narratives motivated by urgency, precaution and imperatives for social control (Askim and Christensen, 2022; Berger, 2022; Cairney, 2021; Rangel et al. 2022). This privileged certain scientific *interpretations*, represented in simplistic slogans, models and images (e.g. ‘following the science’), most of which promoted a maximalist approach to NPIs and downplayed concerns about their social harms (Hodges et al. 2022; Pykett et al. 2022). Ethical analyses suggest that many policies would be considered unacceptable according to pre-pandemic public health ethical principles (Jamrozik, 2022),³² although it is unclear exactly how the crisis has re-shaped ethical decision-making frameworks.³³

Third, some studies on science networks show that experts who opposed government policy and the mainstream consensus were marginalized and denigrated, including in government-led censorship campaigns (Gesser-Edelsburg et al. 2021; Ioannidis 2022; Shir-Raz et al. 2022). This narrowed the range of acceptable scientific opinion for much of 2020-21 and obscured legitimate expert disagreements about alternative policy options and levels of uncertainty, evidence and policy trade-offs (Askim and Christensen, 2022; Caceres, 2022; Mormina, 2022). The unfavourable framing of the Swedish pandemic

³¹ This included, for example: Anthony Fauci in the US, Christian Drosten in Germany, Jerome Salomon in France and Jaap van Dissel in the Netherlands (van Dorren and Noordegraf, 2020).

³² This includes: proportionality, transparency, the need for evidence, the least restrictive alternative, equity, reciprocity, and due legal process (see Jamrozik, 2022).

³³ For example, despite mask mandates having been widely implemented around the world, a recent meta-analysis showed that the evidence for community mask mandates is weak and few RCTs have been conducted (Jefferson et al. 2023). The evidence-base for the effectiveness of lockdown and many other NPIs are similarly disputed as are the various risk communication strategies used by government to influence and shape public perceptions and behaviours, including fear-based and nudge techniques.

approach in English-language Western media is a good example of this polarization. Fourth, the crisis drove a massive increase in Covid-specific scientific publications and research. There are concerns about research quality and the normalization of ‘fast science’ on overall scientific integrity (Bramstedt, 2020; Khatter et al. 2021; Vickery et al. 2022) and the dominance of Covid in the broader scientific research ecosystem (Ioannidis et al. 2022).

Overall, it is unclear what effect these dynamics have had on viewpoint diversity in higher education, science-based policymaking and the public understanding of science.

Discussion

There are many lessons that can be drawn from this analysis. Five key issues are worth briefly discussing here.

1. Harms are known, far-reaching and alarming

The promotion of lengthy social distancing restrictions by governments and scientific experts during the Covid crisis had severe consequences for hundreds of millions of people. Many original predictions are broadly supported by the cumulative research data presented above: a rise in non-Covid excess mortality, mental health deterioration, child abuse and domestic violence, widening global inequality, large increases in debt, food insecurity, lost educational opportunities, unhealthy lifestyle behaviours, increased loneliness and social polarization, democratic backsliding and human rights violations. These harms are multifaceted. Some are short-term and more discernable, while others are harder to apprehend and will shape individual and collective lives and livelihoods for many years ahead. Research on the social determinants of health has shown how adverse changes in life opportunities, especially in younger ages, shape future health outcomes and socio-economic well-being during an individual’s lifespan. Lost human capital are hard to recover, and can create downward spirals of lost opportunity. The pandemic response leaves behind a legacy of poverty, mental health illness, learning loss, debt, food insecurity, social polarization, erosion of respect for human rights and elevated

excess mortality for non-Covid health conditions. These consequences are unequally distributed: the younger generation, individuals and countries with lower socioeconomic status, women and those with pre-existing vulnerabilities were hit hardest and will bear the brunt of future consequences.

2. Important knowledge gaps need to be filled

Academic knowledge about this harm is contingent on the availability and quality of research studies and the range of expert debate and agreement.³⁴ This analysis has highlighted large gaps in the existing research data and differences between scientific fields and countries. For many issues, there is a noticeable lack of data from low- and middle-income countries. Some areas of research, e.g. mental health and lifestyle changes, have a disproportionate number of meta-analyses and systematic reviews while other areas lack them altogether. This is partially due to the fact that some social effects are simpler to measure and understand in comparison to others, especially over time (e.g. obesity is easier to measure compared to democracy). However it also reflects the lack of longitudinal cohort studies in many countries for important social issues such as household income, social relationships and political attitudes. In addition, very few systematic reviews of qualitative and ethnographic studies were found, which provide a vital source of knowledge to deepen and triangulate quantitative social changes. In particular, it was surprising to find a lack of comprehensive evidence syntheses for the following areas: non-Covid excess mortality, business failures, unemployment and household income, food insecurity, childhood malnutrition, intimate relationships, trust and democratic backsliding. Future systematic reviews should be conducted on these topics.

There are also incongruities between studies, expert disagreements and polarized debates in some fields, which were discussed to some degree in the analysis above. For example, systematic reviews of systematic reviews were available for mental health, domestic violence and child abuse, and highlighted the wide range of variation in research design, methodologies, findings and gaps in current knowledge. Social distancing itself shaped

³⁴ Other forms of knowledge, such as artistic and creative expression, personal experience and work from the humanities are also important sources of knowledge that should not be discarded.

data quality by disrupting the ability for in-person research. This precipitated a high dependence on online surveys and observational and cross-sectional studies with high-risk of bias. Large variation in study designs and period of data collection was also a problem noted in many reviews, and this influenced selection bias and levels of confidence in data analysis. As discussed in the methods section, and when possible in the analysis above, there is also a need to account for how societal harms were influenced by existing trends in place prior to the pandemic and other confounding factors, and how different levels of resilience mediated their impacts. Further work should engage with the methodological issues of the data presented in this paper.

There were temporal limitations to the available research. The data on changes during the initial few months of the crisis, e.g. the first lockdown, were much more numerous than other periods. Limited research followed changes through time in the same cohort or using representative samples. Another challenge relates to the sheer volume of new research being published on the pandemic. For this reason, publications from 2022 and 2023 were prioritized during the analysis. Further important analyses will be available after the publication of this paper, and a future update may be warranted.

Further work is required to monitor and follow changes through time in the recovery phase that can be traced back to the pandemic response and specific policies. This includes longer-term effects on mental health, chronic diseases, household income, government debt and austerity, financial markets, poverty and food insecurity, educational outcomes, child development, obesity and screen use, among many others. A challenge for this type of research will be the ability to account for feedback loops and non-pandemic related systemic vulnerabilities (e.g. to pick one example: the effect of the Russian-Ukrainian war on global food insecurity).

The sheer range of harms that occurred across different spatial, temporal and social scales are at times difficult to integrate and appreciate in general terms. Attempting to evaluate the 'global' impact of the Covid pandemic response comes with inherent epistemological challenges, and many important nuances and interpretative judgements could not be

adequately discussed in this analysis. Although the analysis attempted to outline as many societal impacts as possible, it is likely some were missed or not given the full attention they deserved. Individual country-level and comparative studies that engage with the complexity of these impacts, in their unique socio-cultural context, are important to advancing theoretical and practical debates. For this reason, future research should use this report and societal harm framework to systematically review research evidence at a country level, preferably comparing a select number of countries. This would help provide more granularity and nuance, and could also be useful to inform national pandemic evaluations, social policy, capacity building efforts to support better academic research and planning for future health emergencies.

3. Harms should challenge our mental model of the pandemic

The Covid pandemic response created a distinct set of policy narratives that shaped public opinion and human behaviour in ways that justified the use of very disruptive non-pharmaceutical interventions by governments. These policies were unprecedented in their scope, duration and consequence. The research data presented above questions foundational aspects of these original narratives, and has significant implications for the historical memory and interpretation of the crisis, as well as efforts to prepare for the next global crisis. Certain public and scientific narratives have grown-up around the pandemic, but many of these do not adequately engage with the myriad of harms created by the Covid response itself. There are two important lessons from the harm research in this regard.

First, the pandemic was not only a Covid health emergency but should rather be interpreted as a *whole-of-society crisis* that required a much broader set of policy expertise and public engagement beyond biomedicine. The pandemic response was based on assumptions that frequently ignored social conditions and inequalities. From a global perspective, and based on this analysis, older individuals from wealthy countries benefited the most from mandatory NPIs while younger individuals from poorer countries were most harmed. Many of the larger systemic risks and vulnerabilities that were created or exacerbated will remain for many years, shaping the individual lifespans

of hundreds of millions of people and broader sociocultural, economic and political realities.

Societal harms occurred in the *name* of public health, and were promoted through a ‘global’ policy domino effect. Pandemic policies were based on fundamental contradictions: isolate yourself to stay healthy. As discussed above, not all people are safe at home, nor are most able to stay home. Social distancing has social consequences. Constant public messaging about death and hospitalization statistics, especially when they are not accompanied by risk stratification, have psychological consequences. The creation of a state of exception for much of 2020-21 and the promotion of a ‘new normal’ of mandatory social distancing regulations, and social conformity to them, created a set of *unhealthy* social conditions.

Second, the use of lockdown itself and other NPIs went against many pre-Covid pandemic plans and public health consensus. In general, these supported more targeted and less draconian interventions during a respiratory virus pandemic, including promoting voluntary behavior change and protection of the most vulnerable rather than blanket government laws and restrictions. This conventional wisdom emphasized the need to maintain the normal functioning of society, reduce exaggerated levels of fear and panic, communicate uncertainty and risk distribution, minimize scapegoating and moralization and avoid collateral damage. What happened? Why? And how can it be prevented in the future? Many of the harms described above were and should have been anticipated.

Further research should help clarify how pandemic policies were formulated and how the perceived social consensus was manufactured or curated, including through public opinion polls, special interest groups and group psychology.

4. More research on trade-offs is needed

The aim of this analysis was to document the type and magnitude of societal harms from the Covid response based on the existing academic literature. Future research should compare and contrast the real-world benefits of non-pharmaceutical interventions with the findings in this paper. While some efforts have been made in this regard, it is not readily apparent how existing frameworks for cost-benefit assessments (e.g. econometric methods, quality-of-life assessments and sociological analysis) can meaningfully engage with the range of data documented above. Further work is needed in this regard, and should draw more substantially from ethics, political philosophy, anthropology, economics and law. Interdisciplinary dialogue is also critical with epidemiologists, modellers, public health professionals, physicians and virologists.

This analysis lays the groundwork, a *societal harm framework*, for a more rigorous real-world evaluation of the multifaceted costs vs benefits of government policies during the crisis. It is highly likely that many Covid policies caused more harm than benefit, although further research is needed to explore policy trade-offs, especially at a country-level. This is not to say that NPIs had no beneficial effects or that they were not needed or justified. It is essential that public debate move beyond the false dichotomies that have clouded rational discourse and debate. These are the product of tribalistic impulses and epistemic gatekeeping hiding under the guise of scientific thinking. Specific policies may have been more beneficial in some countries and at certain times than in other countries and at different times. There is no one-size-fits-all approach to a global crisis. Additional research on trade-offs may be able to define a range of preventable social harms that could have been mitigated had certain countries pursued less strict or different types of NPIs or certain social protection policies. This would require counter-factual analysis and other methodologies. It should also consider the appropriateness of a *shielding* or *focused protection* strategy that sought to prioritize social distancing measures for high-risk vulnerable groups in order to minimize harms. There is also a need for more research to engage with data on social protection policies from a comparative perspective.

The ignoring of state dictates and civil disobedience (sometimes called *creative compliance*) to strict government mandates likely buffered the effects of socio-economic impoverishment in many communities, as well as a range of other harms. Some forms of non-compliance can be viewed, counter-intuitively, as *health enhancing*, or beneficial. Meta-studies of human behavior during the crisis (especially of qualitative and ethnographic data) are needed to understand actual levels of compliance and coping strategies; research has been over-reliant on online surveys subject to significant biases.

Any trade-off analysis of costs and benefits of NPIs will face substantial challenges deciding the range of metrics to include and excluded, and how to compare interventions with marginal, medium or large benefits with marginal, medium or large societal harms. The temporal, spatial and social scale of the analysis will also be important. There is a spectrum of current expert opinion about the effectiveness of most Covid policies. This includes analysis of school closures, mask mandates, lockdowns and an assortment of other NPIs (e.g. closing businesses, small gatherings bans, track and trace, psychological nudge techniques, bans on worship, etc). Some early models and even empirical analyses that found benefits from specific NPIs were used to promote maximum Covid suppression (e.g. Zero Covid) and prolonged non-pharmaceutical interventions. However, greater availability of data, new analyses and multi-country comparisons continue to be published, some of which question previous assumptions. The benefits of NPIs have likely been over-stated in many early studies. Scientists have generally been in support of NPIs in line with the perceived societal and government consensus. The scientific community must be willing to relinquish strong past assumptions about hypothetical benefits and recognize the excesses of non-pharmaceutical interventions as they were implemented in the real world rather than in idealized models focused exclusively on Covid disease.

Finally, there is a need to review studies that attempt to isolate the impact of government policies from one another and from voluntary behavior change. It is difficult to disentangle one NPI from a range of policy responses, although this can be achieved through country comparisons or unique natural experiments. As noted above, studies that

attempt to distinguish between restrictions and voluntary behavior change must account for the role of government risk communication in shaping behavioral responses and public opinion through feedback loops. These studies also struggle with empirical data on the actual level of population compliance and behavioural practices, and instead rely on models or assumed levels which may over-state real-world conditions. These types of analyses are relevant both for knowledge about societal harms and the benefits of NPIs. One priority in this regard is to compare and contrast countries that did not pursue stringent Covid policies (e.g. Sweden, Nicaragua, Tanzania, etc) with their neighbours both in terms of Covid epidemiology and the range of societal harms. There is also a need to consider the relationships between NPI policies and Covid vaccine programs.³⁵

The various research priorities mentioned above are essential to ongoing efforts to better prepare for future health emergencies, including epidemics and pandemics, and should be integrated into current global and national policy debates.

5. There are many lessons beyond the Covid pandemic

There are numerous lessons from the pandemic response for health and social policy, emergency management and our understanding of human societies more generally. It is not possible to summarize them all here but a few particular issues are worth noting. First, the data on harms should promote a greater awareness about the complexity of large-scale policy experiments in social distancing and government management of social life. This should support a higher level of healthy skepticism about simplistic narratives and technocratic governance that aim for unrealistic goals presented to the public as urgent moral imperatives. There are certainly many lessons about the need for a rejuvenated civil society, academic freedom and a broader range of mechanisms for more diverse expert policy advice in times of social crises. The pandemic also offers us a mirror into contemporary social trends and problems, and there are many opportunities for scholars to use the pandemic as a natural experiment to re-think fundamental assumptions about social life and human nature. There is also a need to rectify the many harms described in this report in the years ahead through deliberate social policy to

³⁵ The social consequences of Covid vaccine mandates and passports have been outlined in Bardosh et al. (2022).

mitigate the collateral damage, especially in low- and middle-income countries. This will not be easy, but is essential to ensuring a future of human flourishing.

Acknowledgements

I would like to thank the thousands of scholars whose research I document in this report. My analysis is, first and foremost, a summary of your painstaking research, undoubtedly conducted under duress. I would also like to thank the many people from around the world who I have had the privilege to interact with during the pandemic (including on *Twitter*), and who have shared their ideas and stories with me. I would like to sincerely thank the unique group of scholars at *Collateral Global*, who provided an intellectual home for this project. The analysis and writing of this report was conducted with absolute independence, which means that all mistakes are mine alone. In particular, I would like to thank Alex Caccia, Michael Jackson, Ellen Townsend, Toby Green, Jay Bhattacharya and Sunetra Gupta. I would also like to thank the Wellcome Trust, which provided flexible research funding to me during the early part of the pandemic as part of a Society and Ethics Fellowship (10892/B/15/ZE). Finally, and most importantly, I would like to thank my wife, Danica Thiessen, because without her encouragement and courage this project would never have begun.

Funding

This project was supported by *Collateral Global*, a UK registered Charity (No. 1195125), dedicated to researching, understanding and communicating the effectiveness and collateral impacts of the mandatory NPIs taken by governments worldwide in response to the Covid pandemic.

References

- Abramowitz, S. A., McLean, K. E., McKune, S. L., Bardosh, K. L., Fallah, M., Monger, J. et al. (2015). Community-centered responses to Ebola in urban Liberia: the view from below. *PLoS neglected tropical diseases*, 9(4), e0003706.
- Abounoori, M., Aghajani, A., Chaibakhsh, S., Babakhanian, M., Pourazizi, M., & Peyman, A. (2022). Paediatric myopia shift during the COVID-19 pandemic home quarantine: a systematic review and meta-analysis. *BMJ Paediatrics Open*, 6(1), e001755.
- ACLED (2021). ACLED Annual Report 2020. Available: https://acleddata.com/acleddatanew/wp-content/uploads/2021/08/ACLED_Annual-Report-2020_Upd2021.pdf
- ACLED (2022). ACLED Annual Report 2021. Available: https://acleddata.com/acleddatanew/wp-content/uploads/2022/03/ACLED_Annual_Year-in-Review-2021_Web_Pub.pdf
- Acuff, S. F., Strickland, J. C., Tucker, J. A., & Murphy, J. G. (2022). Changes in alcohol use during COVID-19 and associations with contextual and individual difference variables: A systematic review and meta-analysis. *Psychology of Addictive Behaviors*, 36(1), 1.
- Adarov, A., Guénette, J. D., & Ohnsorge, F. (2022). Another legacy of the COVID-19 pandemic: Income divergence. *Journal of Policy Modeling*, 44(4), 842-854.
- Adelman, S., Charifson, M., Seok, E., Mehta-Lee, S. S., Brubaker, S. G., Liu, M., & Kahn, L. G. (2023). State-specific fertility rate changes across the USA following the first two waves of COVID-19. *Human Reproduction*, dead055.
- Adesanya, A. M., Barrett, S., Moffat, M., Aquino, M. R. J., Nicholson, W., Turner, G. et al. (2022). Impact of the COVID-19 pandemic on expectant and new parents' experience of pregnancy, childbirth, breast feeding, parental responsiveness and sensitivity, and bonding and attunement in high-income countries: a systematic review of the evidence. *BMJ open*, 12(12), e066963.
- Aditya, V., Goswami, R., Mendis, A., & Roopa, R. (2021). Scale of the issue: Mapping the impact of the COVID-19 lockdown on pangolin trade across India. *Biological Conservation*, 257, 109136.
- Aebi, M. F., Molnar, L., & Baquerizas, F. (2021). Against all odds, femicide did not increase during the first year of the COVID-19 pandemic: Evidence from six spanish-speaking countries. *Journal of Contemporary Criminal Justice*, 37(4), 615-644.

Aga, G., & Maemir, H. (2022). COVID-19 and Sub-Saharan Africa Firms: Impact and Coping Strategies. *The Journal of Development Studies*, 58(12), 2415-2443.

Ahmed, T., Roberton, T., Vergeer, P., Hansen, P. M., Peters, M. A., Ofori, A. A. et al. (2022). Healthcare utilization and maternal and child mortality during the COVID-19 pandemic in 18 low-and middle-income countries: An interrupted time-series analysis with mathematical modeling of administrative data. *PLoS medicine*, 19(8), e1004070.

Alam, M. B., Shahid, M., Alzghoul, B. I., Yang, J., Zakar, R., Malik, N. I. et al. (2022). The Effects of Financial Stress and Household Socio-Economic Deprivation on the Malnutrition Statuses of Children under Five during the COVID-19 Lockdown in a Marginalized Region of South Punjab, Pakistan. *Children*, 10(1), 12.

Aldred, J. (2022). Guiding Covid policy: cost-benefit analysis and beyond. *Cambridge Journal of Economics*, 46(3), 589-608.

Alekseev, G., Amer, S., Gopal, M., Kuchler, T., Schneider, J. W., Stroebel, J., & Wernerfelt, N. (2023). The effects of COVID-19 on US small businesses: evidence from owners, managers, and employees. *Management Science*, 69(1), 7-24.

Algan, Y., Cohen, D., Davoine, E., Foucault, M., & Stantcheva, S. (2021). Trust in scientists in times of pandemic: Panel evidence from 12 countries. *Proceedings of the National Academy of Sciences*, 118(40), e2108576118.

Algara, C., Amlani, S., Collitt, S., Hale, I., & Kazemian, S. (2022). Nail in the Coffin or Lifeline? Evaluating the Electoral Impact of COVID-19 on President Trump in the 2020 Election. *Political behavior*, 1-29.

Alimoradi, Z., Lotfi, A., Lin, C. Y., Griffiths, M. D., & Pakpour, A. H. (2022). Estimation of behavioral addiction prevalence during COVID-19 pandemic: a systematic review and meta-analysis. *Current addiction reports*, 1-32.

Allen, D. (2022). Covid-19 lockdown cost/benefits: A critical assessment of the literature. *International Journal of the Economics of Business*, 29(1), 1-32.

Allen-Scott, L. K., Hatfield, J. M., & McIntyre, L. (2014). A scoping review of unintended harm associated with public health interventions: towards a typology and an understanding of underlying factors. *International journal of public health*, 59(1), 3-14.

Almeda, N., & Gómez-Gómez, I. (2022). The Impact of the COVID-19 Pandemic on Smoking Consumption: A Systematic Review of Longitudinal Studies. *Frontiers in psychiatry*, 13.

Alon, T., Kim, M., Lagakos, D., & Van Vuren, M. (2022). Macroeconomic effects of covid-19 across the world income distribution. *IMF Economic Review*, 1-49.

AlRasheed, M. M., Fekih-Romdhane, F., Jahrami, H., Pires, G. N., Saif, Z., Alenezi, A. F. et al. (2022). The prevalence and severity of insomnia symptoms during COVID-19: A global systematic review and individual participant data meta-analysis. *Sleep medicine*, 100, 7e23.

Altay, S., Berriche, M., & Acerbi, A. (2023). Misinformation on misinformation: Conceptual and methodological challenges. *Social Media & Society*, 9(1), 20563051221150412.

Altay, S., Nielsen, R. K., & Fletcher, R. (2022). Quantifying the “infodemic”: People turned to trustworthy news outlets during the 2020 coronavirus pandemic. *Journal of Quantitative Description: Digital Media*, 2.

Amnesty International (2020) COVID-19 crackdowns: Police abuse and the global pandemic. Available: <https://www.amnesty.org/en/documents/act30/3443/2020/en/>

Amnesty International (2021) “There is no help for our community”: The impact of states’ Covid-19 responses on groups affected by unjust criminalization. Available: <https://www.amnesty.org/en/documents/pol30/5477/2022/en/>

Anderson, L. N., Yoshida-Montezuma, Y., Dewart, N., Jalil, E., Khattar, J., De Rubeis, V. et al. (2023). Obesity and weight change during the COVID-19 pandemic in children and adults: A systematic review and meta-analysis. *Obesity Reviews*, e13550.

Andrade, C., Gillen, M., Molina, J. A., & Wilmarth, M. J. (2022). The social and economic impact of Covid-19 on family functioning and well-being: Where do we go from here?. *Journal of Family and Economic Issues*, 43(2), 205-212.

Angrist, N., de Barros, A., Bhula, R., Chakera, S., Cummiskey, C., DeStefano, J. et al. (2021). Building back better to avert a learning catastrophe: Estimating learning loss from COVID-19 school shutdowns in Africa and facilitating short-term and long-term learning recovery. *International Journal of Educational Development*, 84, 102397.

Apedo-Amah, M. C., Avdiu, B., Cirera, X., Cruz, M., Davies, E., Grover, A. et al. (2020). Unmasking the Impact of COVID-19 on Businesses. *Policy Research Working Paper* World Bank. Available: <https://openknowledge.worldbank.org/entities/publication/27b4409d-cf0b-5f4a-b578-b2c0e46d2326>

Ardington, C., Wills, G., & Kotze, J. (2021). COVID-19 learning losses: Early grade reading in South Africa. *International Journal of Educational Development*, 86, 102480.

Ardo, I. M., Lenshie, N. E., Amuchie, A. A., Ezeibe, C., Udeogu, C., & Nneka, O. (2022). COVID-19 pandemic, policy-intensified economic crisis and declining state control in Nigeria. *Democracy and Security*, 1-24.

Arsenault, C., Gage, A., Kim, M. K., Kapoor, N. R., Akweongo, P., Amponsah, F. et al. (2022). COVID-19 and resilience of healthcare systems in ten countries. *Nature Medicine*, 28(6), 1314-1324.

Askim, J., & Christensen, T. (2022). Crisis decision-making inside the core executive: Rationality, bureaucratic politics, standard procedures and the COVID-19 lockdown. *Public Policy and Administration*, 09520767221129676.

Auerbach, A., Gorodnichenko, Y., Murphy, D., & McCrory, P. B. (2022). Fiscal multipliers in the COVID19 recession. *Journal of International Money and Finance*, 102669.

Azrak, M. Á., Fasano, M. V., Avico, A. J., Sala, M., Casado, C., Padula, M., ... & Andreoli, M. F. (2022). Prolonged body weight gain, lifestyle changes and health-related quality of life in children during the COVID-19 pandemic lockdown: A follow-up study. *European Journal of Clinical Nutrition*, 1-8.

Bakaloudi, D. R., Jeyakumar, D. T., Jayawardena, R., & Chourdakis, M. (2022). The impact of COVID-19 lockdown on snacking habits, fast-food and alcohol consumption: A systematic review of the evidence. *Clinical Nutrition*, 41(12), 3038-3045.

Bakola, M., Hernandez Carballo, I., Jelastopulu, E., & Stuckler, D. (2022). The impact of COVID-19 lockdown on air pollution in Europe and North America: a systematic review. *European Journal of Public Health*, 32(6), 962-968.

Bakr, A. M., & El-Sakka, A. I. (2022). Erectile dysfunction among patients and health care providers during COVID-19 pandemic: a systematic review. *International Journal of Impotence Research*, 34(2), 145-151.

Balistreri, E., Baquedano, F., & Beghin, J. C. (2022). The impact of COVID-19 and associated policy responses on global food security. *Agricultural Economics*, 53(6), 855-869.

Ban, N. C., Miltner, C., Matthews, C., Ankenman, M., Stelte, S., Haggarty, D. et al. (2022). Decrease in recreational fisher compliance during the COVID-19 pandemic: the case of Rockfish Conservation Areas. *ICES Journal of Marine Science*, 79(8), 2277-2285.

Banerjee, A., Chen, S., Pasea, L., Lai, A. G., Katsoulis, M., Denaxas, S. et al. (2021). Excess deaths in people with cardiovascular diseases during the COVID-19 pandemic. *European journal of preventive cardiology*, 28(14), 1599-1609.

Bank, A., Deepen, Y., Grauvogel, J., & Kurtenbach, S. (2022). COVID-19 and violent actors in the global south: An inter-and cross-regional comparison. GIGA Working Papers, No. 329. Hamburg, Germany.

Baquedano F, Zereyesus Y, Christensen C, Valdes C. (2021). International food security assessment, 2020–2030: Covid-19 update and impacts on food insecurity. U.S. Department of Agriculture, Economic Research Service. Washington, DC.

Baral, S., Rao, A., Rwema, J. O. T., Lyons, C., Cevik, M., Kågesten, A. E. et al. (2022). Competing health risks associated with the COVID-19 pandemic and early response: A scoping review. *Plos one*, 17(8), e0273389.

Bardosh, K., De Figueiredo, A., Gur-Arie, R., Jamrozik, E., Doidge, J., Lemmens, T. et al. (2022). The unintended consequences of COVID-19 vaccine policy: why mandates, passports and restrictions may cause more harm than good. *BMJ Global Health*, 7(5), e008684.

Bardosh, K. L., de Vries, D. H., Abramowitz, S., Thorlie, A., Cremers, L., Kinsman, J. et al. (2020). Integrating the social sciences in epidemic preparedness and response: a strategic framework to strengthen capacities and improve global health security. *Globalization and Health*, 16, 1-18.

Barletta, G., Castigo, F., Egger, E. M., Keller, M., Salvucci, V., & Tarp, F. (2022). The impact of COVID-19 on consumption poverty in Mozambique. *Journal of International Development*, 34(4), 771-802.

Barnes, M., & Edelberg, W. (2022). Tracking the Robust Recovery in the Business Sector Since 2020. Economic Analysis. The Hamilton Project, Brookings Institution, Washington, DC.

Barrero, J. M., Bloom, N., & Davis, S. J. (2021). Why working from home will stick. National Bureau of Economic Research, Working Paper 28731. DOI 10.3386/w28731

Barry, J. W., Campello, M., Graham, J. R., & Ma, Y. (2022). Corporate flexibility in a time of crisis. *Journal of Financial Economics*, 144(3), 780-806.

Basedau, M., & Deitch, M. (2021). One year after: Has the COVID-19 pandemic increased violence in sub-Saharan Africa?. GIGA Working Paper, No. 327. Hamburg, Germany.

Bates, A. E., Primack, R. B., Biggar, B. S., Bird, T. J., Clinton, M. E., Command, R. J. et al. (2021). Global COVID-19 lockdown highlights humans as both threats and custodians of the environment. *Biological conservation*, 263, 109175.

Bayerlein, M., & Metten, A. (2022). The Impact of COVID-19 on the Support for the German AfD: Jumping the Populist Ship or Staying the Course?. *Politische Vierteljahresschrift*, 63(3), 405-440.

Bavli, I., Sutton, B., & Galea, S. (2020). Harms of public health interventions against covid-19 must not be ignored. *BMJ*, 371.

Beaney, T., Clarke, J. M., Jain, V., Golestaneh, A. K., Lyons, G., Salman, D., & Majeed, A. (2020). Excess mortality: the gold standard in measuring the impact of COVID-19 worldwide?. *Journal of the Royal Society of Medicine*, 113(9), 329-334.

Beesoon, S., Bakal, J. A., Youngson, E., Williams, K. P., Berzins, S. A., Brindle, M. E., & Joffe, A. M. (2022). Excess deaths during the COVID-19 pandemic in Alberta, Canada. *IJID Regions*, 5, 62-67.

Behera, A. K., Kumar, P. R., Priya, M. M., Ramesh, T., & Kalle, R. (2022). The impacts of COVID-19 lockdown on wildlife in Deccan Plateau, India. *Science of The Total Environment*, 822, 153268.

Belitski, M., Guenther, C., Kritikos, A. S., & Thurik, R. (2022). Economic effects of the COVID-19 pandemic on entrepreneurship and small businesses. *Small Business Economics*, 58(2), 593.

Bello-Chavolla, O. Y., Antonio-Villa, N. E., Fermín-Martínez, C. A., Fernández-Chirino, L., Vargas-Vázquez, A., Ramírez-García, D. et al. (2022). Diabetes-related excess mortality in Mexico: a comparative analysis of national death registries between 2017–2019 and 2020. *Diabetes care*, 45(12), 2957-2966.

Béné, C., Bakker, D., Chavarro, M. J., Even, B., Melo, J., & Sonneveld, A. (2021). Global assessment of the impacts of COVID-19 on food security. *Global Food Security*, 31, 100575.

Berger, P. (2022). Proportionality, Evidence and the COVID-19-Jurisprudence in Germany. *European Journal for Security Research*. Available: <https://doi.org/10.1007/s41125-022-00087-7>

Bethhäuser, B. A., Bach-Mortensen, A., & Engzell, P. (2022). A systematic review and meta-analysis of the impact of the COVID-19 pandemic on learning. *LIEPP Working Paper*, 2022, 134. hal-03681201

Bevan, J. L., Murphy, M. K., Lannutti, P. J., Slatcher, R. B., & Balzarini, R. N. (2023). A descriptive literature review of early research on COVID-19 and close relationships. *Journal of Social and Personal Relationships*, 40(1), 201-253.

Bieber, F. (2022). Global nationalism in times of the COVID-19 pandemic. *Nationalities Papers*, 50(1), 13-25.

Bisbee, J., & Honig, D. (2022). Flight to safety: COVID-induced changes in the intensity of status quo preference and voting behavior. *American Political Science Review*, 116(1), 70-86.

Biswas, D., Chatterjee, S., & Sultana, P. (2021). Stigma and fear during COVID-19: essentializing religion in an Indian context. *Humanities and Social Sciences Communications*, 8(1).

Bjørnskov, C., & Voigt, S. (2022). This time is different?—on the use of emergency measures during the corona pandemic. *European Journal of Law and Economics*, 54(1), 63-81

Bloem, J. R., & Farris, J. (2022). The COVID-19 pandemic and food security in low-and middle-income countries: a review. *Agriculture & Food Security*, 11(1), 1-14.

Blundell, R., Costa Dias, M., Cribb, J., Joyce, R., Waters, T., Wernham, T., & Xu, X. (2022). Inequality and the COVID-19 Crisis in the United Kingdom. *Annual Review of Economics*, 14, 607-636.

Boersma, K., Büscher, M., & Fonio, C. (2022). Crisis management, surveillance, and digital ethics in the COVID-19 era. *Journal of Contingencies and Crisis Management*, 30(1), 2-9.

Boese, V. A., Alizada, N., Lundstedt, M., Morrison, K., Natsika, N., Sato, Y. et al. (2022). Autocratization changing nature? Democracy report 2022. Varieties of Democracy Institute (V-Dem). Available: https://systemorienteddesign.net/wp-content/uploads/2022/10/dr_2022_ipyOpLP.pdf

Boin, A., & Lodge, M. (2021). Responding to the COVID-19 crisis: a principled or pragmatist approach?. *Journal of European Public Policy*, 28(8), 1131-1152.

Bol, D., Giani, M., Blais, A., & Loewen, P. J. (2021). The effect of COVID-19 lockdowns on political support: Some good news for democracy?. *European journal of political research*, 60(2), 497-505.

Bollyky, T. J., Hulland, E. N., Barber, R. M., Collins, J. K., Kiernan, S., Moses, M. et al. (2022). Pandemic preparedness and COVID-19: an exploratory analysis of infection and fatality rates, and contextual factors associated with preparedness in 177 countries, from Jan 1, 2020, to Sept 30, 2021. *The Lancet*, 399(10334), 1489-1512.

Bonaccorsi, G., Pierri, F., Scotti, F., Flori, A., Manaresi, F., Ceri, S., & Pammolli, F. (2021). Socioeconomic differences and persistent segregation of Italian territories during COVID-19 pandemic. *Scientific reports*, 11(1), 1-15.

Bonacini, L., Gallo, G., & Scicchitano, S. (2021). Working from home and income inequality: risks of a 'new normal' with COVID-19. *Journal of population economics*, 34(1), 303-360.

Bonell, C., Jamal, F., Melendez-Torres, G. J., & Cummins, S. (2015). 'Dark logic': theorising the harmful consequences of public health interventions. *J Epidemiol Community Health*, 69(1), 95-98.

Borbáth, E. (2023). Differentiation in protest politics: participation by political insiders and outsiders. *Political Behavior*, 1-24.

Borges, G., Garcia, J. A., Sinyor, M., Spittal, M. J., Lopez-Arellano, O., & Pirkis, J. (2022). Suicide after and during the COVID-19 pandemic in Mexico City. *Brazilian Journal of Psychiatry*, 44, 409-415.

Borsellino, R., Bernard, A., Charles-Edwards, E., & Corcoran, J. (2022). A regional renaissance? The shifting geography of internal migration under COVID-19. *Australian Geographer*, 53(4), 405-423.

Bottan, N., Hoffmann, B., & Vera-Cossio, D. (2020). The unequal impact of the coronavirus pandemic: Evidence from seventeen developing countries. *PloS one*, 15(10), e0239797.

Bozkurt, İ., & Kaya, M. V. (2022). Foremost features affecting financial distress and Bankruptcy in the acute stage of COVID-19 crisis. *Applied Economics Letters*, 1-12.

Bramstedt, K. A. (2020). The carnage of substandard research during the COVID-19 pandemic: a call for quality. *Journal of Medical Ethics*, 46(12), 803-807.

Briggs, D., Telford, L., Ellis, A., Lloyd, A., & Kotzé, J. (2021). Lockdown: Social harm in the Covid-19 era. Springer Nature.

Broadbent, A., Walker, D., Chalkidou, K., Sullivan, R., & Glassman, A. (2020). Lockdown is not egalitarian: the costs fall on the global poor. *The lancet*, 396(10243), 21-22.

Brodeur, A., Gray, D., Islam, A., & Bhuiyan, S. (2021). A literature review of the economics of COVID-19. *Journal of Economic Surveys*, 35(4), 1007-1044.

Bromme, R., Mede, N. G., Thomm, E., Kremer, B., & Ziegler, R. (2022). An anchor in troubled times: Trust in science before and within the COVID-19 pandemic. *PloS one*, 17(2), e0262823.

Brosius, A., Hameleers, M., & van der Meer, T. G. (2022). Can we trust measures of trust? a comparison of results from open and closed questions. *Quality & Quantity*, 1-18.

Brown, E. C. (2022). Delayed Increase in Abusive Head Trauma in Paris During COVID-19 Pandemic. *JAMA Network Open*, 5(8), e2226188-e2226188.

Bruat, C., Monnet, E., Azanowsky, J. M., Faliu, B., Mansour, Z., & Chauvin, F. (2022). Interaction between science advice and policymaking in time of COVID-19: a French perspective. *European Journal of Public Health*, 32(3), 468-473.

Brück, T., & Regassa, M. D. (2022). Usefulness and misrepresentation of phone surveys on COVID-19 and food security in Africa. *Food Security*, 1-31.

Bruhn, M., Demirguc-Kunt, A., & Singer, D. (2021). Competition and Firm Recovery Post-COVID-19. Policy Research Working Paper, no. 9851. World Bank, Washington, DC. Available: <https://openknowledge.worldbank.org/entities/publication/99882a10-b45b-57c4-a2b9-dcd91c143f5b>

Brunckhorst, B. J., Cojocar, A., Hill, R., Kim, Y. S., & Kugler, M. D. (2023). Long COVID: The Evolution of Household Welfare in Developing Countries during the Pandemic. Policy Research Working Papers, no. 10300. World Bank, Washington, DC. Available: <https://openknowledge.worldbank.org/entities/publication/22597930-8cb7-404a-9854-6f44cbe9924f>

Buecker, S., & Horstmann, K. T. (2021). Loneliness and Social Isolation During the COVID-19 Pandemic. *European Psychologist*, 26(4), 272-284.

Bueno-Notivol, J., Gracia-García, P., Olaya, B., Lasheras, I., López-Antón, R., & Santabárbara, J. (2021). Prevalence of depression during the COVID-19 outbreak: A meta-analysis of community-based studies. *International journal of clinical and health psychology*, 21(1), 100196.

Buil-Gil, D., Zeng, Y., & Kemp, S. (2021). Offline crime bounces back to pre-COVID levels, cyber stays high: Interrupted time-series analysis in Northern Ireland. *Crime science*, 10(1), 1-16.

Bundervoet, T., Dávalos, M. E., & Garcia, N. (2022). The short-term impacts of COVID-19 on households in developing countries: an overview based on a harmonized dataset of high-frequency surveys. *World development*, 105844.

Buthmann, J. L., Miller, J. G., & Gotlib, I. H. (2022). Maternal–prenatal stress and depression predict infant temperament during the COVID-19 pandemic. *Development and Psychopathology*, 1-9. DOI: <https://doi.org/10.1017/S0954579422001055>

Byrne, S., Sledge, H., Franklin, R., Boland, F., Murray, D. M., & Hourihane, J. (2023). Social communication skill attainment in babies born during the COVID-19 pandemic: a birth cohort study. *Archives of disease in childhood*, 108(1), 20-24.

Cáceres, C. F. (2022). Unresolved COVID Controversies: ‘Normal science’ and potential non-scientific influences. *Global Public Health*, 17(4), 622-640.

Cairney, P. (2021). The UK government's COVID-19 policy: What does "guided by the science" mean in practice?. *Frontiers in Political Science*, 3, 624068.

Cajachagua-Torres, K. N., Quezada-Pinedo, H. G., Huayanay-Espinoza, C. A., Obeso-Manrique, J. A., Peña-Rodríguez, V. A., Vidal, E., & Huicho, L. (2022). COVID-19 and drivers of excess death rate in Peru: A longitudinal ecological study. *Heliyon*, 8(12), e11948.

Camara, C., Surkan, P. J., Van Der Waerden, J., Tortelli, A., Downes, N., Vuillermoz, C., & Melchior, M. (2022). COVID-19-related mental health difficulties among marginalised populations: A literature review. *Cambridge Prisms: Global Mental Health*, 10, e2.

Camporesi, S., Angeli, F., & Fabbro, G. D. (2022). Mobilization of expert knowledge and advice for the management of the Covid-19 emergency in Italy in 2020. *Humanities and Social Sciences Communications*, 9(1), 1-14.

Canning, V., & Tombs, S. (2021). *From social harm to zemiology: A critical introduction*. Routledge.

Capurro, G., Jardine, C. G., Tustin, J., & Driedger, M. (2022). Moral panic about "covidiot" in Canadian newspaper coverage of COVID-19. *Plos one*, 17(1), e0261942.

Card-Gowers, J., Boniface, S., Martin, A., Retat, L., & Webber, L. (2021). Estimating the long-term health impacts of changes in alcohol consumption in England during the COVID-19 pandemic. Institute of Alcohol Studies. Available: <https://www.healthlumen.com/wp-content/uploads/2022/08/HealthLumen-NIHR-Report.pdf>

Cardona, M., Millward, J., Gemmill, A., Jison Yoo, K., & Bishai, D. M. (2022). Estimated impact of the 2020 economic downturn on under-5 mortality for 129 countries. *Plos one*, 17(2), e0263245.

Cardoso Pinto, A., Ranasinghe, L., Dodd, P. J., Budhathoki, S. S., Seddon, J. A., & Whittaker, E. (2022). Disruptions to routine childhood vaccinations in low-and middle-income countries during the COVID-19 pandemic: A systematic review. *Frontiers in Pediatrics*, 1349.

Carnevali, L., Gui, A., Jones, E. J., & Farroni, T. (2022). Face processing in early development: a systematic review of behavioral studies and considerations in times of COVID-19 pandemic. *Frontiers in Psychology*, 388.

Carvalho, S., Coelho, C. G., Kluwe-Schiavon, B., Magalhães, J., & Leite, J. (2022). The acute impact of the early stages of COVID-19 pandemic in people with pre-existing psychiatric disorders: A systematic review. *International Journal of Environmental Research and Public Health*, 19(9), 5140.

Castelliano, C., Grajzl, P., & Watanabe, E. (2021). How has the Covid19 pandemic impacted the courts of law? Evidence from Brazil. *International Review of law and Economics*, 66, 105989.

Castells-Quintana, D., Herrera-Idárraga, P., Quintero, L., & Sinisterra, G. (2021). Unequal Response to Mobility Restrictions: Evidence from COVID-19 Lockdown in the City of Bogotá. UNDP COVID-19 Policy Documents Series.

Cénat, J. M., Farahi, S. M. M. M., Dalexis, R. D., Darius, W. P., Bekarkhanechi, F. M., Poisson, H. et al. (2022). The global evolution of mental health problems during the COVID-19 pandemic: A systematic review and meta-analysis of longitudinal studies. *Journal of Affective Disorders*, 315, 70.

Céspedes, J., Sylvester, J. M., Pérez-Marulanda, L., Paz-Garcia, P., Reymondin, L., Khodadadi, M., ... & Castro-Nunez, A. (2022). Has global deforestation accelerated due to the COVID-19 pandemic?. *Journal of Forestry Research*, 1-13.

Chaabna, K., Chaabane, S., Jithesh, A., Doraiswamy, S., Mamtani, R., & Cheema, S. (2022). Effect of the COVID-19 pandemic on the proportion of physically active children and adults worldwide: A systematic review and meta-analysis. *Frontiers in Public Health*, 10.

Chan, E. Y., Cheng, D., & Martin, J. (2021). Impact of COVID-19 on excess mortality, life expectancy, and years of life lost in the United States. *PloS one*, 16(9), e0256835.

Chang, S. E., Brown, C., Handmer, J., Helgeson, J., Kajitani, Y., Keating, A., ... & Roa-Henriquez, A. (2022). Business recovery from disasters: Lessons from natural hazards and the COVID-19 pandemic. *International Journal of Disaster Risk Reduction*, 80, 103191.

Chang, T. H., Chen, Y. C., Chen, W. Y., Chen, C. Y., Hsu, W. Y., Chou, Y., & Chang, Y. H. (2021). Weight gain associated with COVID-19 lockdown in children and adolescents: A systematic review and meta-analysis. *Nutrients*, 13(10), 3668.

Chapple, K., Leong, M., Huang, D., Moore, H., Schmahmann, L., & Wang, J. (2022). The death of downtown? Pandemic recovery trajectories across 62 North American Cities. Institute of Governance Studies, University of California, Berkeley. Available: <https://escholarship.org/content/qt9sj175mr/qt9sj175mr.pdf>

Chen, M. A., Grapsa, E., Ismail, G., Rogan, M., Valdivia, M., Alfors, L. et al. (2022). Covid-19 and informal work: Evidence from 11 cities. *International Labour Review*, 161(1), 29-58.

Chin, J. J. (2021). Coups d'Etat in the Covid-19 Era. *Brown J. World Aff.*, 28, 161.

Chiozza, G., & King, J. (2022). The state of human rights in a (post) COVID-19 world. *Journal of Human Rights*, 21(3), 246-262.

Chmielewska, B., Barratt, I., Townsend, R., Kalafat, E., van der Meulen, J., Gurol-Urganci, I. et al. (2021). Effects of the COVID-19 pandemic on maternal and perinatal outcomes: a systematic review and meta-analysis. *The Lancet Global Health*, 9(6), e759-e772.

Chodorow-Reich, G., Iverson, B., and Sunderam A. (2022). Lessons Learned from Support to Business during COVID-19. The Hamilton Project, Brookings Institution, Washington, DC.

Chong, W. W. Y., Acar, Z. I., West, M. L., & Wong, F. (2022). A scoping review on the medical and recreational use of cannabis during the COVID-19 pandemic. *Cannabis and cannabinoid research*, 7(5), 591-602.

Christensen, M. B., Hallum, C., Maitland, A., Parrinello, Q., & Putaturo, C. (2023). Survival of the Richest: How we must tax the super-rich now to fight inequality. Oxfam. Available: <https://apo.org.au/sites/default/files/resource-files/2023-01/apo-nid321353.pdf>

Christensen, T., & Lægreid, P. (2022). Scientization under pressure—The problematic role of expert bodies during the handling of the COVID-19 pandemic. *Public Organization Review*, 22(2), 291-307.

Chu, T. H., Yeo, T. E. D., & Su, Y. (2022). Effects of exposure to COVID-19 news and information: a meta-analysis of media use and uncertainty-related responses during the pandemic. *Journalism & Mass Communication Quarterly*, 99(1), 89-112.

Cifuentes-Faura, J. (2022). Transparency in Spanish government in times of covid-19. *Public Integrity*, 24(7), 644-653.

Ciotti, S., Moore, S. A., Connolly, M., & Newmeyer, T. (2022). Super-Spreaders or Victims of Circumstance? Childhood in Canadian Media Reporting of the COVID-19 Pandemic: A Critical Content Analysis. *Healthcare*, 10(1).

Ciravegna, L., & Michailova, S. (2022). Why the world economy needs, but will not get, more globalization in the post-COVID-19 decade. *Journal of international business studies*, 53(1), 172-186.

Cirera, X., Cruz, M., Grover, A., Iacovone, L., Medvedev, D., Pereira-Lopez, M., & Reyes, S. (2021). Firm recovery during covid-19. Policy Research Working Paper, no. 9810. World Bank, Washington, DC. Available: <https://openknowledge.worldbank.org/entities/publication/25301e28-a1d1-5c77-8187-7d2d617a08c5>

Clay, K. C., Abdelwahab, M., Bagwell, S., Barney, M., Burkle, E., Hawley, T. et al. (2022). The effect of the COVID-19 pandemic on human rights practices: Findings from

the Human Rights Measurement Initiative's 2021 Practitioner Survey. *Journal of Human Rights*, 21(3), 317-333.

Cohen, R., Ashman, M., Taha, M. K., Varon, E., Angoulvant, F., Levy, C. et al. (2021). Pediatric Infectious Disease Group (GPIP) position paper on the immune debt of the COVID-19 pandemic in childhood, how can we fill the immunity gap?. *Infectious Diseases Now*, 51(5), 418-423.

Cohen, R., Levy, C., Rybak, A., Angoulvant, F., Ouldali, N., & Grimprel, E. Immune debt: Recrudescence of disease and confirmation of a contested concept. *Infectious diseases now*, S2666-9919.

Collaborative, C. (2021). Effect of COVID-19 pandemic lockdowns on planned cancer surgery for 15 tumour types in 61 countries: an international, prospective, cohort study. *Lancet Oncol*, 22, 1507-17.

Condra, L. N., & Shapiro, J. N. (2012). Who takes the blame? The strategic effects of collateral damage. *American journal of political science*, 56(1), 167-187.

Collazo-Castañeira, P., Rodríguez-Rey, R., Garrido-Hernansaiz, H., & Collado, S. (2022). Prediction of post-traumatic growth in the face of the COVID-19 crisis based on resilience, post-traumatic stress and social participation: A longitudinal study. *Frontiers in Psychology*, 13.

Colman, E., Wanat, M., Goossens, H., Tonkin-Crine, S., & Anthierens, S. (2021). Following the science? Views from scientists on government advisory boards during the COVID-19 pandemic: a qualitative interview study in five European countries. *BMJ global health*, 6(9), e006928.

Colomb, C., & Gallent, N. (2022). Post-COVID-19 mobilities and the housing crisis in European urban and rural destinations. Policy challenges and research agenda. *Planning Practice & Research*, 37(5), 624-641.

Cornwall, W. (2020). Can you put a price on COVID-19 options? Experts weigh lives versus economics. *Science*. DOI: doi: 10.1126/science.abb9969

Cortés-Albornoz, M. C., Ramírez-Guerrero, S., Rojas-Carabali, W., de-la-Torre, A., & Talero-Gutiérrez, C. (2022). Effects of remote learning during the COVID-19 lockdown on children's visual health: a systematic review. *BMJ open*, 12(8), e062388.

Crane, L. D., Decker, R. A., Flaaen, A., Hamins-Puertolas, A., & Kurz, C. (2022). Business exit during the COVID-19 pandemic: Non-traditional measures in historical context. *Journal of Macroeconomics*, 72, 103419.

Crescenzi, R., Giua, M., & Rigo, D. (2022). How many jobs can be done at home? Not as many as you think!. London School of Economics and Political Science. Available: https://eprints.lse.ac.uk/117523/1/How_many_jobs_can_be_done_at_home.pdf

Cronin, C. J., & Evans, W. N. (2021). Excess mortality from COVID and non-COVID causes in minority populations. *Proceedings of the National Academy of Sciences*, 118(39), e2101386118.

Cruz-Ausejo, L., Copez-Lonzoy, A., Vilela-Estrada, A. L., Valverde, J. J., Bohórquez, M., & Moscoso-Porras, M. (2022). Can working at home be a hazard? Ergonomic factors associated with musculoskeletal disorders among teleworkers during the COVID-19 pandemic: A scoping review. *International Journal of Occupational Safety and Ergonomics*, 1-10.

Czech, K., Davy, A., & Wielechowski, M. (2021). Does the COVID-19 pandemic change human mobility equally worldwide? Cross-country cluster analysis. *Economies*, 9(4), 182.

Dai, R., Feng, H., Hu, J., Jin, Q., Li, H., Wang, R. et al. (2021). The impact of COVID-19 on small and medium-sized enterprises (SMEs): Evidence from two-wave phone surveys in China. *China Economic Review*, 67, 101607.

Dang, A., Thakker, R., Li, S., Hommel, E., Mehta, H. B., & Goodwin, J. S. (2022). Hospitalizations and mortality from non-SARS-CoV-2 causes among Medicare beneficiaries at US hospitals during the SARS-CoV-2 pandemic. *JAMA network open*, 5(3), e221754-e221754.

Dang, H. A., Oseni, G., Zezza, A., & Abanokova, K. (2022). *Learning Inequalities during COVID-19: Evidence from Longitudinal Surveys from Sub-Saharan Africa*. Institute of Labor Economics (IZA), Bonn, Germany.

Daniels, N. F., Burrin, C., Chan, T., & Fusco, F. (2022). A systematic review of the impact of the first year of COVID-19 on obesity risk factors: a pandemic fueling a pandemic?. *Current Developments in Nutrition*, 6(4), nzac011.

Davies, B., Lalot, F., Peitz, L., Heering, M. S., Ozkececi, H., Babaian, J. et al. (2021). Changes in political trust in Britain during the COVID-19 pandemic in 2020: integrated public opinion evidence and implications. *Humanities and Social Sciences Communications*, 8(1).

de la Maisonneuve, C., B. Égert and D. Turner (2022). Quantifying the macroeconomic impact of COVID-19-related school closures through the human capital channel. *OECD Economics Department Working Papers*, No. 1729, OECD Publishing, Paris. Available: <https://doi.org/10.1787/eea048c5-en>.

de Oliveira, A. M. B., Mandal, A., & Power, G. J. (2022). Impact of COVID-19 on Stock Indices Volatility: Long-Memory Persistence, Structural Breaks, or Both?. *Annals of Data Science*, 1-28.

de Vries, D., Pols, J., M'charek, A., & van Weert, J. (2022). The impact of physical distancing on socially vulnerable people needing care during the COVID-19 pandemic in the Netherlands. *International Journal of Care and Caring*, 6(1-2), 123-140.

De Zwart, F. (2015). Unintended but not unanticipated consequences. *Theory and Society*, 44(3), 283-297.

Decker, R. A., & Haltiwanger, J. (2022). Business entry and exit in the COVID-19 pandemic: A preliminary look at official data. Board of Governors of the Federal Reserve System (US). Available: <https://www.federalreserve.gov/econres/notes/feds-notes/business-entry-and-exit-in-the-covid-19-pandemic-a-preliminary-look-at-official-data-20220506.html>

Dee, T. (2023). Where the Kids Went: Nonpublic Schooling and Demographic Change during the Pandemic Exodus from Public Schools. The Urban Institute. Available: https://www.urban.org/sites/default/files/2023-02/Where%20the%20Kids%20Went-%20Nonpublic%20Schooling%20and%20Demographic%20Change%20during%20the%20Pandemic%20Exodus%20from%20Public%20Schools_0.pdf

Delardas, O., Kechagias, K. S., Pontikos, P. N., & Giannos, P. (2022). Socio-Economic Impacts and Challenges of the Coronavirus Pandemic (COVID-19): An Updated Review. *Sustainability*, 14(15), 9699.

Democracy Index (2020). In *Sickness and in Health*. The Economist Intelligence Unit. Democracy Index. Available <https://www.eiu.com/n/campaigns/democracy-index-2020/>

Democracy Index (2021). *The China Challenge*. The Economist Intelligence Unit. Democracy Index. Available <https://www.eiu.com/n/campaigns/democracy-index-2021/>

Deng, J., Zhou, F., Hou, W., Heybati, K., Lohit, S., Abbas, U. et al. (2022). Prevalence of mental health symptoms in children and adolescents during the COVID-19 pandemic: A meta-analysis. *Annals of the New York Academy of Sciences*, 1520(1), 53-73.

Deoni, S. C., Beauchemin, J., Volpe, A., D'Sa, V., RESONANCE Consortium, & RESONANCE Consortium (2021). The COVID-19 pandemic and early child cognitive development: a comparison of development in children born during the pandemic and historical references. medRxiv, 2021-08.

Derrer-Merk, E., Ferson, S., Mannis, A., Bentall, R. P., & Bennett, K. M. (2022a). Belongingness challenged: Exploring the impact on older adults during the COVID-19 pandemic. *Plos one*, 17(10), e0276561.

Derrer-Merk, E., Reyes-Rodriguez, M. F., Salazar, A. M., Guevara, M., Rodríguez, G., Fonseca, A. M. et al. (2022b). Is protecting older adults from COVID-19 ageism? A comparative cross-cultural constructive grounded theory from the United Kingdom and Colombia. *Journal of Social Issues*, 78(4), 900-923.

Desine, S., Master, H., Annis, J., Hughes, A., Roden, D. M., Harris, P. A., & Brittain, E. L. (2023). Daily Step Counts Before and After the COVID-19 Pandemic Among All of Us Research Participants. *JAMA Network Open*, 6(3), e233526-e233526.

Devine, D., Gaskell, J., Jennings, W., & Stoker, G. (2021). Trust and the coronavirus pandemic: What are the consequences of and for trust? An early review of the literature. *Political Studies Review*, 19(2), 274-285.

Devoe, D., Han, A., Anderson, A., Katzman, D. K., Patten, S. B., Soumbasis, A. et al. (2023). The impact of the COVID-19 pandemic on eating disorders: A systematic review. *International Journal of Eating Disorders*, 56(1), 5-25.

Dewey, H. M., Jones, J. M., Keating, M. R., & Budhathoki-Uprety, J. (2021). Increased use of disinfectants during the COVID-19 pandemic and its potential impacts on health and safety. *ACS Chemical Health & Safety*, 29(1), 27-38.

Dinarte, L., Jaume, D., Medina-Cortina, E., & Winkler, H. (2021). Neither by Land nor by Sea: The Rise of Electronic Remittances during COVID-19. The World Bank, Washington, DC. Available: <https://devpolicy.org/Events/2021/Not-by-land-nor-by-sea-the-rise-of-formal-remittances-during-COVID-19-Dinarte-13Apr/full-paper-updated13Apr.pdf>

Dingel, J. I., & Neiman, B. (2020). How many jobs can be done at home?. *Journal of Public Economics*, 189, 104235.

Diop, S., & Asongu, S. (2022). The impact of Covid-19 and Russia-Ukraine war on food prices in fragile countries: misfortunes never come singly. Working Papers 22/055, European Xtramile Centre of African Studies (EXCAS).

Do, B., Kirkland, C., Besenyi, G. M., Smock, M. C., & Lanza, K. (2022). Youth physical activity and the COVID-19 pandemic: A systematic review. *Preventive medicine reports*, 101959.

Dore, T., & Mach, T. (2022). Economic Restrictions during the COVID-19 Pandemic and Measures of Small Business Health. Board of Governors of the Federal Reserve System (US). Available: <https://www.federalreserve.gov/econres/notes/feds-notes/economic-restrictions-during-the-covid-19-pandemic-and-measures-of-small-business-health-20220601.html>

Dörr, J. O., Licht, G., & Murmann, S. (2022). Small firms and the COVID-19 insolvency gap. *Small Business Economics*, 58(2), 887-917.

Doucet, M. H., Songbono, C. T., Plazy, M., Martin, C., Fritzell, C., Sow, M. S. et al. (2022). Perceptions of COVID-19 among communities of Conakry (Guinea): a

qualitative study exploring the context of the ANRS COV33 Coverage-Africa therapeutic trial. *BMJ open*, 12(12), e061715.

Drumheller, K., & Fan, C. W. (2022). Unprecedented times and uncertain connections: A systematic review examining sleep problems and screentime during the COVID-19 pandemic. *Sleep Epidemiology*, 100029.

Dupraz, J., Le Pogam, M. A., & Peytremann-Bridevaux, I. (2022). Early impact of the COVID-19 pandemic on in-person outpatient care utilisation: a rapid review. *BMJ open*, 12(3), e056086.

Durizzo, K., Asiedu, E., Van der Merwe, A., & Günther, I. (2022). Economic recovery but stagnating mental health during a global pandemic? evidence from Ghana and South Africa. *Review of Income and Wealth*, 68(2), 563-589.

Eba, P. M. (2014). Ebola and human rights in West Africa. *The Lancet*, 384(9960), 2091-2093.

Ebbinghaus, B., & Lehner, L. (2022). Cui bono—business or labour? Job retention policies during the COVID-19 pandemic in Europe. *Transfer: European Review of Labour and Research*, 10242589221079151.

Economist (2022). All over the rich world new businesses are springing to life. Available: <https://www.economist.com/finance-and-economics/2022/04/23/all-over-the-rich-world-new-businesses-are-springing-to-life>

Edgell, A. B., Lachapelle, J., Lührmann, A., & Maerz, S. F. (2021). Pandemic backsliding: Violations of democratic standards during Covid-19. *Social Science & Medicine*, 285, 114244.

Egger, D., Miguel, E., Warren, S. S., Shenoy, A., Collins, E., Karlan, D. et al. (2021). Falling living standards during the COVID-19 crisis: Quantitative evidence from nine developing countries. *Science advances*, 7(6), eabe0997.

Eggers, A. C., & Harding, R. (2022). Rallying in fear? Estimating the effect of the UK COVID-19 lockdown with a natural experiment. *European Journal of Political Research*, 61(2), 586-600.

Engzell, P., Frey, A., & Verhagen, M. D. (2021). Learning loss due to school closures during the COVID-19 pandemic. *Proceedings of the National Academy of Sciences*, 118(17), e2022376118.

Eslami Jahromi, M., & Ayatollahi, H. (2023). Utilization of telehealth to manage the Covid-19 pandemic in low-and middle-income countries: a scoping review. *Journal of the American Medical Informatics Association*, 30(4), 738-751.

Estlein, R., Gewirtz-Meydan, A., & Opuda, E. (2022). Love in the time of COVID-19: A systematic mapping review of empirical research on romantic relationships one year into the COVID-19 pandemic. *Family process*, 61(3), 1208-1228.

Eurostat (2023a). Excess mortality statistics, March 2023. Available: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Excess_mortality_-_statistics#Excess_mortality_in_the_EU_between_January_2020_and_December_2022

Eurostat (2023b). Q4 2022: Business bankruptcies highest since 2015. Available: <https://ec.europa.eu/eurostat/web/products-eurostat-news/w/DDN-20220217-2>

Facebook/OECD/World Bank (2020). The Future of Business Survey. Available: <https://dataforgood.fb.com/global-state-of-smb>

Fairlie, R., Fossen, F. M., Johnsen, R., & Droboniku, G. (2022). Were small businesses more likely to permanently close in the pandemic?. *Small Business Economics*, 1-17. DOI: <https://doi.org/10.1007/s11187-022-00662-1>

Fang, Y., Shao, Z., & Zhao, Y. (2023). Risk spillovers in global financial markets: Evidence from the COVID-19 crisis. *International Review of Economics & Finance*, 83, 821-840.

FAO, IFAD, UNICEF, WFP and WHO (2022). The state of food security and nutrition in the world 2022: Repurposing food and agricultural policies to make healthy diets more affordable. Rome: UN Food and Agricultural Organization.

FAO (2023). World food situation: FAO food price index. Available: <https://www.fao.org/worldfoodsituation/foodpricesindex/en>

Federica, G., Renata, T., & Marzilli, E. (2023). Parental Postnatal Depression in the Time of the COVID-19 Pandemic: A Systematic Review of Its Effects on the Parent–Child Relationship and the Child’s Developmental Outcomes. *International Journal of Environmental Research and Public Health*, 20(3), 2018.

Felipe, S. G. B., Parreira Batista, P., da Silva, C. C. R., de Melo, R. C., de Assumpção, D., & Perracini, M. R. (2023). Impact of COVID-19 pandemic on mobility of older adults: A scoping review. *International Journal of Older People Nursing*, 18(1), e12496.

Fernández, R. S., Crivelli, L., Guimet, N. M., Allegri, R. F., Picco, S., & Pedreira, M. E. (2022). Psychological distress and mental health trajectories during the COVID-19 pandemic in Argentina: A longitudinal study. *Scientific reports*, 12(1), 5632.

Ferrara, P., Dallagiaco, G., Alberti, F., Gentile, L., Bertuccio, P., & Odone, A. (2022). Prevention, diagnosis and treatment of cervical cancer: A systematic review of the impact of COVID-19 on patient care. *Preventive medicine*, 107264.

Ferreira, F. H., Sterck, O., Mahler, D. G., & Decerf, B. (2021). Death and Destitution: The Global Distribution of Welfare Losses from the COVID-19 Pandemic. *LSE Public Policy Review*, 1(4).

Fillmore, N. R., Szalat, R. E., La, J., Branch-Elliman, W., Monach, P. A., Nguyen, V. et al. (2022). Recent common human coronavirus infection protects against severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection: A Veterans Affairs cohort study. *Proceedings of the National Academy of Sciences*, 119(46), e2213783119.

Filsinger, M., & Freitag, M. (2022). Pandemic threat and authoritarian attitudes in Europe: An empirical analysis of the exposure to COVID-19. *European Union Politics*, 23(3), 417-436.

Fink, G., Tediosi, F., & Felder, S. (2022). Burden of COVID-19 restrictions: National, regional and global estimates. *EClinicalMedicine*, 45, 101305.

Finlay, B. B., Amato, K. R., Azad, M., Blaser, M. J., Bosch, T. C., Chu, H. et al. (2021). The hygiene hypothesis, the COVID pandemic, and consequences for the human microbiome. *Proceedings of the National Academy of Sciences*, 118(6), e2010217118.

Flor, L. S., Friedman, J., Spencer, C. N., Cagney, J., Arrieta, A., Herbert, M. E. et al. (2022). Quantifying the effects of the COVID-19 pandemic on gender equality on health, social, and economic indicators: a comprehensive review of data from March, 2020, to September, 2021. *Lancet*, 399(10344), 2381.

Foa, R.S., Romero-Vidal, X., Klassen, A.J., Fuenzalida Concha, J., Quednau, M. and Fenner, L.S. (2022). *The Great Reset: Public Opinion, Populism, and the Pandemic*. Cambridge, United Kingdom: Centre for the Future of Democracy.

Foad, C. M., Whitmarsh, L., Hanel, P. H., & Haddock, G. (2021). The limitations of polling data in understanding public support for COVID-19 lockdown policies. *Royal Society Open Science*, 8(7), 210678.

Freedom House (2020). Democracy under lockdown: the impact of COVID-19 on the global struggle for freedom. Available: <https://freedomhouse.org/report/special-report/2020/democracy-under-lockdown>

Friis, N. U., Martin-Bertelsen, T., Pedersen, R. K., Nielsen, J., Krause, T. G., Andreasen, V., & Vestergaard, L. S. (2023). COVID-19 mortality attenuated during widespread Omicron transmission, Denmark, 2020 to 2022. *Eurosurveillance*, 28(3), 2200547.

Frounfelker, R. L., Li, Z. Y., Santavicca, T., Miconi, D., & Rousseau, C. (2022). Latent class analysis of COVID-19 experiences, social distancing, and mental health. *American Journal of Orthopsychiatry*, 92(1), 121.

Gagnon, J., Kamin, S., & Kearns, J. (2023). The Impact of the COVID-19 Pandemic on Global GDP Growth. *Journal of the Japanese and International Economies*, 101258.

García-Azorín, D., Seeher, K. M., Newton, C. R., Okubadejo, N. U., Pilotto, A., Saylor, D. et al. (2021). Disruptions of neurological services, its causes and mitigation strategies during COVID-19: a global review. *Journal of neurology*, 268(11), 3947-3960.

Gasch-Illescas, A., Calle-Serrano, M., Vallejo-Vaz, A. J., Praena-Fernández, J. M., Guerrero, J. A., Calderón, E. J. et al. (2023). Impact of the first wave of the COVID-19 pandemic on non-COVID inpatient care in southern Spain. *Scientific Reports*, 13(1), 1634.

Gaspar, V., Medas, P., & Perrelli, R. (2021). Global debt reaches a record \$226 trillion. IMF Blog. Available: <https://blogs.imf.org/2021/12/15/global-debt-reaches-a-record-226-trillion/>

Ge, Y., Liu, M., Hu, S., Wang, D., Wang, J., Wang, X., ... & Lai, S. (2022). Who and which regions are at high risk of returning to poverty during the COVID-19 pandemic?. *Humanities and Social Sciences Communications*, 9(1).

Gesser-Edelsburg, A., Zemach, M., & Hijazi, R. (2021). Who are the “real” experts? The debate surrounding COVID-19 health risk management: an Israeli Case Study. *Risk Management and Healthcare Policy*, 2553-2569.

Ginsburg, T., & Versteeg, M. (2021). The bound executive: Emergency powers during the pandemic. *International Journal of Constitutional Law*, 19(5), 1498-1535.

Giommoni, T., & Loumeau, G. (2022). Lockdown and voting behaviour: a natural experiment on postponed elections during the COVID-19 pandemic. *Economic Policy*, 37(111), 547-599.

Gligorić, K., Chiolero, A., Kiciman, E., White, R. W., & West, R. (2022). Population-scale dietary interests during the COVID-19 pandemic. *Nature communications*, 13(1), 1073.

Global Network Against Food Crises (2022) Global report on food crises 2022: Joint analysis for better decisions. Food security information network and global network against food crises. Available: https://docs.wfp.org/api/documents/WFP-0000138913/download/?_ga=2.4237111.588268225.1680033636-2135122799.1680033636

Glozier, N., Morris, R., & Schurer, S. (2023). What happened to the predicted COVID-19-induced suicide epidemic, and why?. *Australian & New Zealand Journal of Psychiatry*, 57(1), 11-16.

Gold, A., Phayal, A., & Prins, B. (2023). The unexpected consequences of the COVID-19 pandemic on maritime crime: Evidence from Indonesia and Nigeria. *International Area Studies Review*, 22338659221151130.

Gonçalves, H. S., & Moro, S. (2023). On the economic impacts of COVID-19: A text mining literature analysis. *Review of Development Economics*, 27(1), 375-394.

González-Leonardo, M., Potančoková, M., Yildiz, D., & Rowe, F. (2023). Quantifying the impact of COVID-19 on immigration in receiving high-income countries. *PloS one*, 18(1), e0280324.

González-Leonardo, M., Rowe, F., & Fresolone-Caparrós, A. (2022). Rural revival? The rise in internal migration to rural areas during the COVID-19 pandemic. Who moved and Where?. *Journal of Rural Studies*, 96, 332-342.

González-Monroy, C., Gómez-Gómez, I., Olarte-Sánchez, C. M., & Motrico, E. (2021). Eating behaviour changes during the COVID-19 pandemic: A systematic review of longitudinal studies. *International journal of environmental research and public health*, 18(21), 11130.

González, M., Loose, T., Liz, M., Pérez, M., Rodríguez-Vinçon, J. I., Tomás-Llerena, C., & Vásquez-Echeverría, A. (2022). School readiness losses during the COVID-19 outbreak. A comparison of two cohorts of young children. *Child Development*, 93(4), 910-924.

Gorgoni, M., Scarpelli, S., Alfonsi, V., & De Gennaro, L. (2022). Dreaming during the COVID-19 pandemic: A narrative review. *Neuroscience & Biobehavioral Reviews*, 104710.

Gori, M., Schiatti, L., & Amadeo, M. B. (2021). Masking emotions: Face masks impair how we read emotions. *Frontiers in Psychology*, 1541.

Graffigna, G., Palamenghi, L., Savarese, M., Castellini, G., & Barello, S. (2021). Effects of the COVID-19 emergency and national lockdown on Italian citizens' economic concerns, government trust, and health engagement: Evidence from a two-wave panel study. *The Milbank Quarterly*, 99(2), 369-392.

Granja, J., Makridis, C., Yannelis, C., & Zwick, E. (2022). Did the paycheck protection program hit the target?. *Journal of financial economics*, 145(3), 725-761.

Graso, M. (2022). The new normal: Covid-19 risk perceptions and support for continuing restrictions past vaccinations. *PloS one*, 17(4), e0266602.

Graso, M., Henwood, A., Aquino, K., Dolan, P., & Chen, F. X. (2022). The dark side of belief in COVID-19 scientists and scientific evidence. *Personality and Individual Differences*, 193, 111594.

Green, T., & Fazi, T. (2023). *The Covid Consensus: The Global Assault on Democracy and the Poor? A Critique from the Left*. Oxford University Press.

Griffin, J. M., Kruger, S., & Mahajan, P. (2022). Did FinTech lenders facilitate PPP fraud?. *Journal of Finance*, In press.

Grogan, J. (2022). COVID-19, The Rule of Law and Democracy. Analysis of Legal Responses to a Global Health Crisis. *Hague Journal on the Rule of Law*, 14, 349-369.

Gualano, M. R., Moro, G. L., Voglino, G., Bert, F., & Siliquini, R. (2022). Is the pandemic leading to a crisis of trust? Insights from an Italian nationwide study. *Public Health*, 202, 32-34.

Guasti, P., & Bustikova, L. (2022). Pandemic power grab. *East European Politics*, 38(4), 529-550.

Guerrero-Amezaga, M. E., Humphries, J. E., Neilson, C. A., Shimberg, N., & Ulyseas, G. (2022). Small firms and the pandemic: Evidence from Latin America. *Journal of Development Economics*, 155, 102775.

Guevara, M., Petetin, H., Jorba, O., Denier van der Gon, H., Kuenen, J., Super, I. et al. (2022). European primary emissions of criteria pollutants and greenhouse gases in 2020 modulated by the COVID-19 pandemic disruptions. *Earth System Science Data*, 14(6), 2521-2552.

Guimarães, R. M., Oliveira, M. & Dutra, V. (2022). Excess mortality according to group of causes in the first year of the COVID-19 pandemic in Brazil. *Revista Brasileira de Epidemiologia*, 25, e220029.

Gummerson, E., Cardona, C., Anglewicz, P., Zachary, B., Guiella, G., & Radloff, S. (2021). The wealth gradient and the effect of COVID-19 restrictions on income loss, food insecurity and health care access in four sub-Saharan African geographies. *PloS one*, 16(12), e0260823.

Gupta, A., Mittal, V., Peeters, J., & Van Nieuwerburgh, S. (2022). Flattening the curve: pandemic-induced revaluation of urban real estate. *Journal of Financial Economics*, 146(2), 594-636.

Gutiérrez-Romero, R. (2022). Conflicts increased in Africa shortly after COVID-19 lockdowns, but welfare assistance reduced fatalities. *Economic Modelling*, 116, 105991.

Habibdoust, A., Tatar, M., & Wilson, F. A. (2022). Estimating Excess Deaths by Race/Ethnicity in the State of California During the COVID-19 Pandemic. *Journal of Racial and Ethnic Health Disparities*, DOI: <https://doi.org/10.1007/s40615-022-01349-9>.

- Hale, T., Angrist, N., Goldszmidt, R., Kira, B., Petherick, A., Phillips, T. et al. (2021). A global panel database of pandemic policies (Oxford COVID-19 Government Response Tracker). *Nature human behaviour*, 5(4), 529-538.
- Hall, S. G., Tavlas, G. S., & Wang, Y. (2023). Drivers and spillover effects of inflation: The United States, the euro area, and the United Kingdom. *Journal of International Money and Finance*, 131, 102776.
- Hallin, A. E., Danielsson, H., Nordström, T., & Fälth, L. (2022). No learning loss in Sweden during the pandemic evidence from primary school reading assessments. *International Journal of Educational Research*, 114, 102011.
- Hammond, J., Siegal, K., Milner, D., Elimu, E., Vail, T., Cathala, P. et al. (2022). Perceived effects of COVID-19 restrictions on smallholder farmers: Evidence from seven lower-and middle-income countries. *Agricultural Systems*, 198, 103367.
- Han, T. S., Cho, H., Sung, D., & Park, M. H. (2022). A systematic review of the impact of COVID-19 on the game addiction of children and adolescents. *Frontiers in Psychiatry*, 13, 976601.
- Hanieh, A., & Ziadah, R. (2022). Pandemic Effects: COVID-19 and the Crisis of Development in the Middle East. *Development and Change*, 53(6), 1308-1334.
- Harrison, L., Carducci, B., Klein, J. D., & Bhutta, Z. A. (2022). Indirect effects of COVID-19 on child and adolescent mental health: an overview of systematic reviews. *BMJ Global Health*, 7(12), e010713.
- Hasegawa, Y., & Lau, S. K. (2022). A qualitative and quantitative synthesis of the impacts of COVID-19 on soundscapes: A systematic review and meta-analysis. *Science of The Total Environment*, 157223.
- He, Y., Narayan, A., Olinto, P., Roy, S. and Sarma, N. (2023) Synthesis of the Impacts of Covid-19 on India's labour market. Policy Research Working Paper, The World Bank. Available: <https://documents1.worldbank.org/curated/en/099335003162316683/pdf/IDU0033327e00090c04ed90b88900e2290079692.pdf>
- Headey, D. D., & Ruel, M. T. (2022). Economic shocks predict increases in child wasting prevalence. *Nature Communications*, 13(1), 2157.
- Heinzerling, L. (2000). The rights of statistical people. *Harv. Envtl. L. Rev.*, 24, 189.
- Hernández-Vásquez, A., & Vargas-Fernández, R. (2022). Changes in the Prevalence of Overweight and Obesity among Peruvian Children under Five Years before and during the COVID-19 Pandemic: Findings from a Nationwide Population-Based

Study. *International Journal of Environmental Research and Public Health*, 19(19), 12390.

Hessami, K., Norooznejhad, A. H., Monteiro, S., Barrozo, E. R., Abdolmaleki, A. S., Arian, S. E. et al. (2022). COVID-19 pandemic and infant neurodevelopmental impairment: a systematic review and meta-analysis. *JAMA network open*, 5(10), e2238941-e2238941.

Hilhorst, D., & Mena, R. (2021). When Covid-19 meets conflict: politics of the pandemic response in fragile and conflict-affected states. *Disasters*, 45, S174-S194.

Hill, S., Ionescu-Somers, A., Coduras, A., Guerrero, M., Roomi, M. A., Bosma, N., ... & Shay, J. (2022). Global entrepreneurship monitor 2021/2022 global report: Opportunity amid disruption. Available: <https://gemconsortium.org/report/gem-20212022-global-report-opportunity-amid-disruption>

Hillyard, P., Pantazis, C., Tombs, S., & Gordon, D. (Eds), (2004) *Beyond criminology: Taking harm seriously*. London: Pluto Press.

Hirose, T., Sawaya, Y., Ishizaka, M., Hashimoto, N., Kubo, A., & Urano, T. Frailty under COVID-19 pandemic in Japan: Changes in prevalence of frailty from 2017 to 2021. *Journal of the American Geriatrics Society*. DOI: <https://doi.org/10.1111/jgs.18237>

Hirsch, M. (2022). Becoming authoritarian for the greater good? Authoritarian attitudes in context of the societal crises of COVID-19 and climate change. *Frontiers in Political Science*, 4, 929991.

Hodges, R., Caperchione, E., Van Helden, J., Reichard, C., & Sorrentino, D. (2022). The role of scientific expertise in COVID-19 policy-making: evidence from four European countries. *Public Organization Review*, 22(2), 249-267.

Hodkinson, A., Tyler, N., Ashcroft, D. M., Keers, R. N., Khan, K., Phipps, D., ... & Panagioti, M. (2020). Preventable medication harm across health care settings: a systematic review and meta-analysis. *BMC medicine*, 18(1), 1-13.

Hoffart, A., Bauer, D. J., Johnson, S. U., & Ebrahimi, O. V. (2022). Anxiety in the adult population from the onset to termination of social distancing protocols during the COVID-19: a 20-month longitudinal study. *Scientific Reports*, 12(1), 17846.

Holtz-Bacha, C. (2022). More than just collateral damage. Ramifications of the pandemic for freedom of the press. *Publizistik*, 67(1), 31.

Honda, T., Hosono, K., Miyakawa, D., Ono, A., & Uesugi, I. (2023). Determinants and effects of the use of COVID-19 business support programs in Japan. *Journal of the Japanese and International Economies*, 67, 101239.

Horney, J. A., Karaye, I. M., Abuabara, A., Gearhart, S., Grabich, S., & Perez-Patron, M. (2021). The impact of natural disasters on suicide in the United States, 2003–2015. *Crisis: The Journal of Crisis Intervention and Suicide Prevention*, 42(5), 328.

Huang, N., Yang, F., Liu, X., Bai, Y., Guo, J., & Riem, M. M. (2022). The prevalences, changes, and related factors of child maltreatment during the COVID-19 pandemic: A systematic review. *Child Abuse & Neglect*, 105992.

Hunger, S., Hutter, S., & Kanol, E. (2023). The mobilisation potential of anti-containment protests in Germany. *West European Politics*, 1-29.

Husky, M. M., Pietrzak, R. H., Marx, B. P., & Mazure, C. M. (2021). Research on Posttraumatic Stress Disorder in the Context of the COVID-19 Pandemic: A Review of Methods and Implications in General Population Samples. *Chronic Stress*, 5, 24705470211051327.

Hurley, S., Franklin, R., Murray, D., Venter, C., & O’B Hourihane, J. (2023). Changes in food sensitization with changing allergy practice in Ireland. *Clinical & Experimental Allergy*, 53(3), 372-375.

Ide, T. (2021). COVID-19 and armed conflict. *World development*, 140, 105355.

IDEA (2022) Global overview of Covid-19 impact on elections. Available: <https://www.idea.int/news-media/multimedia-reports/global-overview-covid-19-impact-elections>.

Illich, I (1976). *Medical Nemesis*. Pantheon Books: New York.

ILO (2022a) ILO Monitor on the world of work. 10th edition. Geneva: International Labour Office.

ILO (2022b) Global Wage Report 2022–23: The impact of inflation and COVID-19 on wages and purchasing power. Geneva: International Labour Office.

ILO. (2021a) COVID-19 and the world of work. 7th edition. Geneva: International Labour Office.

ILO. (2021b) COVID-19 and the world of work. 8th edition. Geneva: International Labour Office.

ILO (2021c) From potential to practice: Preliminary findings on the numbers of workers working from home during the COVID-19 pandemic. Geneva: International Labour Office.

Inglesby, T. V., Nuzzo, J. B., O'Toole, T., & Henderson, D. A. (2006). Disease mitigation measures in the control of pandemic influenza. *Biosecurity and Bioterrorism: Biodefense Strategy, Practice, and Science*, 4(4), 366-375.

International Labour Office and United Nations Children's Fund (2021). *Child Labour: Global estimates 2020, trends and the road forward*. ILO and UNICEF, New York.

International Labour Organization (ILO), Walk Free, and International Organization for Migration (IOM) (2022). *Global Estimates of Modern Slavery: Forced Labour and Forced Marriage*. Geneva: International Labour Office.

IMF (2023) *World Economic Outlook – Update January 2023*. World Bank: Washington, DC. Available: <https://www.imf.org/en/Publications/WEO/Issues/2023/01/31/world-economic-outlook-update-january-2023>

Imtiaz, S., Nafeh, F., Russell, C., Ali, F., Elton-Marshall, T., & Rehm, J. (2021). The impact of the novel coronavirus disease (COVID-19) pandemic on drug overdose-related deaths in the United States and Canada: a systematic review of observational studies and analysis of public health surveillance data. *Substance abuse treatment, prevention, and policy*, 16(1), 1-14.

Iness, A. N., Abaricia, J. O., Sawadogo, W., Iness, C. M., Duesberg, M., Cyrus, J., & Prasad, V. (2022). The Effect of hospital visitor policies on patients, their visitors, and health care providers during the COVID-19 pandemic: a systematic review. *The American Journal of Medicine* 135(10), 1158-1167.

International Monetary Fund (2023). *World Economic Outlook Update: Inflation peaking amid low growth*. Washington, DC.

International Monetary Fund (2022). *World Economic Outlook: Countering the Cost-of-Living Crisis*. Washington, DC.

Ioannidis, J. P. (2021). Over-and under-estimation of COVID-19 deaths. *European journal of epidemiology*, 36, 581-588.

Ioannidis, J. P. (2022). Citation impact and social media visibility of Great Barrington and John Snow signatories for COVID-19 strategy. *BMJ open*, 12(2), e052891.

Ioannidis, J. P., Bendavid, E., Salholz-Hillel, M., Boyack, K. W., & Baas, J. (2022). Massive covidization of research citations and the citation elite. *Proceedings of the National Academy of Sciences*, 119(28), e2204074119.

Islam, A. (2022). Work-from/at/for-home: CoVID-19 and the future of work—A critical review. *Geoforum*, 128, 33-36.

- Islam, Z., Kokash, D. M., Babar, M. S., Uday, U., Hasan, M. M., Rackimuthu, S. et al. (2022). Food security, conflict, and COVID-19: perspective from Afghanistan. *The American journal of tropical medicine and hygiene*, 106(1), 21.
- Jahrami, H. A., Alhaj, O. A., Humood, A. M., Alenezi, A. F., Fekih-Romdhane, F., AlRasheed, M. M. et al. (2022). Sleep disturbances during the COVID-19 pandemic: a systematic review, meta-analysis, and meta-regression. *Sleep medicine reviews*, 101591.
- Jain, R., & Kumar, R. (2023). Effect of COVID-19 Lockdown on the Profitability of Firms in India. *Economic Papers*, 42(1), 54-71.
- Jamrozik, E. (2022). Public health ethics: critiques of the “new normal”. *Monash Bioethics Review*, 40(1), 1-16.
- Jana, R. K., Ghosh, I., & Goyal, V. (2022). Spillover nexus of financial stress during black Swan events. *Finance Research Letters*, 48, 102892.
- Janzen, B., & Radulescu, D. (2022). Effects of COVID-19 related government response stringency and support policies: Evidence from European firms. *Economic analysis and policy*, 76, 129-145.
- Jayatissa, R., Herath, H. P., Perera, A. G., Dayaratne, T. T., De Alwis, N. D., & Nanayakkara, H. (2021). Impact of COVID-19 on child malnutrition, obesity in women and household food insecurity in underserved urban settlements in Sri Lanka: a prospective follow-up study. *Public Health Nutrition*, 24(11), 3233-3241.
- Jebabli, I., Kouaissah, N., & Arouri, M. (2022). Volatility spillovers between stock and energy markets during crises: A comparative assessment between the 2008 global financial crisis and the COVID-19 pandemic crisis. *Finance Research Letters*, 46, 102363.
- Jefferson, T., Dooley, L., Ferroni, E., Al-Ansary, L. A., van Driel, M. L., Bawazeer, G. A. et al. (2023). Physical interventions to interrupt or reduce the spread of respiratory viruses. Cochrane database of systematic reviews. DOI: 10.1002/14651858.CD006207.pub6.
- Jesline, J., Romate, J., Rajkumar, E., & George, A. J. (2021). The plight of migrants during COVID-19 and the impact of circular migration in India: A systematic review. *Humanities and Social Sciences Communications*, 8(1).
- Jha, M., & Lahoti, R. (2022). Who was impacted and how? The COVID-19 pandemic and the long uneven recovery in India. *WIDER Working Paper 2022/105*, 1-55.
- Jiang, Q., Xu, Z., Ye, G., Pahlow, M., Hu, M., & Qu, S. (2022). A systematic scoping review of environmental and socio-economic effects of COVID-19 on the global ocean-human system. *Science of The Total Environment*, 157925.

Jiang, Y., Laranjo, J. R., & Thomas, M. (2022). COVID-19 lockdown policy and heterogeneous responses of urban mobility: Evidence from the Philippines. *Plos one*, 17(6), e0270555.

Jørgensen, F., Bor, A., Rasmussen, M. S., Lindholt, M. F., & Petersen, M. B. (2022). Pandemic fatigue fueled political discontent during the COVID-19 pandemic. *Proceedings of the National Academy of Sciences*, 119(48), e2201266119.

Josephson, A., Kilic, T., & Michler, J. D. (2021). Socioeconomic impacts of COVID-19 in low-income countries. *Nature Human Behaviour*, 5(5), 557-565.

Juvonen, J., Lessard, L. M., Kline, N. G., & Graham, S. (2022). Young adult adaptability to the social challenges of the COVID-19 pandemic: The protective role of friendships. *Journal of Youth and Adolescence*, 51(3), 585-597.

Kalemli-Ozcan, S., Gourinchas, P. O., Penciakova, V., & Sander, N. (2020). COVID-19 and SME failures. IMF Working Paper 207. Washington, DC.

Katz, C., & Fallon, B. (2022). Two years into COVID-19: What do we know so far about child maltreatment in times of a pandemic and what else should be explored?. *Child Abuse & Neglect*, 130, 105546.

Katz, I., Priolo-Filho, S., Katz, C., Andresen, S., Bérubé, A., Cohen, N. et al. (2022). One year into COVID-19: What have we learned about child maltreatment reports and child protective service responses?. *Child Abuse & Neglect*, 130, 105473.

Kauhanen, L., Wan Mohd Yunus, W. M. A., Lempinen, L., Peltonen, K., Gyllenberg, D., Mishina, K. et al. (2022). A systematic review of the mental health changes of children and young people before and during the COVID-19 pandemic. *European child & adolescent psychiatry*, 1-19.

Kegler, S. R., Simon, T. R., Zwald, M. L., Chen, M. S., Mercy, J. A., Jones, C. M. et al. (2022). Vital signs: changes in firearm homicide and suicide rates—United States, 2019–2020. *Morbidity and Mortality Weekly Report*, 71(19), 656.

Kentikelenis, A., & Stubbs, T. (2022). Austerity Redux: The Post-pandemic Wave of Budget Cuts and the Future of Global Public Health. *Global Policy*, 13(1), 5-17.

Kepp, K. P., Björk, J., Kontis, V., Parks, R. M., Bæk, K. T., Emilsson, L., & Lallukka, T. (2022). Estimates of excess mortality for the five Nordic countries during the COVID-19 pandemic 2020–2021. *International Journal of Epidemiology*, 51(6), 1722-1732.

Kesar, S., Abraham, R., Lahoti, R., Nath, P., & Basole, A. (2021). Pandemic, informality, and vulnerability: Impact of COVID-19 on livelihoods in India. *Canadian Journal of Development Studies*, 42(1-2), 145-164.

Kessler, R. C., Chiu, W. T., Hwang, I. H., Puac-Polanco, V., Sampson, N. A., Ziobrowski, H. N., & Zaslavsky, A. M. (2022). Changes in prevalence of mental illness among US adults during compared with before the COVID-19 pandemic. *Psychiatric Clinics*, 45(1), 1-28.

Khan, M. A., Menon, P., Govender, R., Samra, A. M. A., Allaham, K. K., Nauman, J. et al. (2022). Systematic review of the effects of pandemic confinements on body weight and their determinants. *British Journal of Nutrition*, 127(2), 298-317.

Kharel, M., Sakamoto, J. L., Carandang, R. R., Ulambayar, S., Shibanuma, A., Yarotskaya, E. et al. (2022). Impact of COVID-19 pandemic lockdown on movement behaviours of children and adolescents: a systematic review. *BMJ global health*, 7(1), e007190.

Khatter, A., Naughton, M., Dambha-Miller, H., & Redmond, P. (2021). Is rapid scientific publication also high quality? Bibliometric analysis of highly disseminated COVID-19 research papers. *Learned Publishing*, 34(4), 568-577.

Khetan, A. K., Yusuf, S., Lopez-Jaramillo, P., Szuba, A., Orlandini, A., Mat-Nasir, N. et al. (2022). Variations in the financial impact of the COVID-19 pandemic across 5 continents: A cross-sectional, individual level analysis. *EClinicalMedicine*, 44, 101284.

Kidman, R., Breton, E., Behrman, J., & Kohler, H. P. (2022). Returning to school after COVID-19 closures: Who is missing in Malawi?. *International Journal of Educational Development*, 93, 102645.

Kilian, C., Carr, S., Schulte, B., & Manthey, J. (2022a). Increased alcohol-specific mortality in Germany during COVID-19: State-level trends from 2010 to 2020. *Drug and Alcohol Review*, 42(3), 633-640.

Kilian, C., O'Donnell, A., Potapova, N., López-Pelayo, H., Schulte, B., Miquel, L. et al. (2022b). Changes in alcohol use during the COVID-19 pandemic in Europe: A meta-analysis of observational studies. *Drug and Alcohol Review*, 41(4), 918-931.

Kim, B., & Royle, M. (2023). Domestic violence in the context of the COVID-19 pandemic: a synthesis of systematic reviews. *Trauma, Violence, & Abuse*, 15248380231155530.

Kim, J., & Kwan, M. P. (2021). The impact of the COVID-19 pandemic on people's mobility: A longitudinal study of the US from March to September of 2020. *Journal of Transport Geography*, 93, 103039.

Klika, J. B., Merrick, M. T., & Jones, J. (2023). Child maltreatment during the pandemic. *Child maltreatment*, 28(1), 3-6.

- Knipe, D., John, A., Padmanathan, P., Eyles, E., Dekel, D., Higgins, J. et al. (2022). Suicide and self-harm in low-and middle-income countries during the COVID-19 pandemic: A systematic review. *PLoS Global Public Health*, 2(6), e0000282.
- Koebnick, C., Sidell, M. A., Li, X., Resnicow, K., Kunani, P., Young, D. R., & Woolford, S. J. (2023). Disparities in weight changes during the COVID-19 pandemic-related lockdown in youths. *Obesity*, 31(3), 789-801.
- Koju, N. P., Kandel, R. C., Acharya, H. B., Dhakal, B. K., & Bhujju, D. R. (2021). COVID-19 lockdown frees wildlife to roam but increases poaching threats in Nepal. *Ecology and Evolution*, 11(14), 9198-9205.
- Kokkinaki, T., & Hatzidaki, E. (2022). COVID-19 Pandemic-Related Restrictions: Factors That May Affect Perinatal Maternal Mental Health and Implications for Infant Development. *Frontiers in Pediatrics*, 10.
- Kondilis, E., Tarantilis, F., & Benos, A. (2021). Essential public healthcare services utilization and excess non-COVID-19 mortality in Greece. *Public health*, 198, 85-88.
- Kontopantelis, E., Mamas, M. A., Webb, R. T., Castro, A., Rutter, M. K., Gale, C. et al. (2021). Excess deaths from COVID-19 and other causes by region, neighbourhood deprivation level and place of death during the first 30 weeks of the pandemic in England and Wales: A retrospective registry study. *The Lancet Regional Health-Europe*, 7, 100144.
- Kose, M. A., Nagle, P. S. O., Ohnsorge, F., & Sugawara, N. (2021a). What has Been the Impact of COVID-19 on Debt? Turning a Wave into a Tsunami. Policy Research Working Paper 9871. World Bank, Washington, DC.
- Kose, M. A., Nagle, P., Ohnsorge, F., & Sugawara, N. (2021b). Global waves of debt: Causes and consequences. World Bank, Washington, DC.
- Kotsubo, M., & Nakaya, T. (2022). Trends in internal migration in Japan, 2012–2020: The impact of the COVID-19 pandemic. *Population, Space and Place*, e34.
- Kozák, M., Bakken, A., & von Soest, T. (2023). Psychosocial well-being before, during and after the COVID-19 pandemic: a nationwide study of more than half a million Norwegian adolescents. *Researchsquare*, pre-print.
- Krautter, K., Friese, M., Hart, A., & Reis, D. (2022). No party no joy?—Changes in university students' extraversion, neuroticism, and subjective well-being during two COVID-19 lockdowns. *Applied Psychology: Health and Well-Being*, 14(4), 1314-1332.

Krishnan, N., Gu, J., Tromble, R., & Abrams, L. C. (2021). Examining how various social media platforms have responded to COVID-19 misinformation. *Harvard Kennedy School Misinformation Review*, 2(6), 1-25.

Kruczkiewicz, A., Klopp, J., Fisher, J., Mason, S., McClain, S., Sheekh, N. M., et al. (2021). Compound risks and complex emergencies require new approaches to preparedness. *Proceedings of the National Academy of Sciences*, 118(19), e2106795118.

Kulcar, V., Bork-Hüffer, T., & Schneider, A. M. (2022). Getting Through the Crisis Together: Do Friendships Contribute to University Students' Resilience During the COVID-19 Pandemic?. *Frontiers in Psychology*, 13.

Labbé, F., Pelletier, C., Bettinger, J. A., Curran, J., Graham, J. E., Greyson, D. et al. (2022). Stigma and blame related to COVID-19 pandemic: A case-study of editorial cartoons in Canada. *Social Science & Medicine*, 296, 114803.

Labib, S. M., Browning, M. H., Rigolon, A., Helbich, M., & James, P. (2022). Nature's contributions in coping with a pandemic in the 21st century: A narrative review of evidence during COVID-19. *Science of The Total Environment*, 155095.

Laborde, D., Herforth, A., Headey, D., & de Pee, S. (2021). COVID-19 pandemic leads to greater depth of unaffordability of healthy and nutrient-adequate diets in low-and middle-income countries. *Nature Food*, 2(7), 473-475.

Laborde, D., Martin, W., & Vos, R. (2021). Impacts of COVID-19 on global poverty, food security, and diets: Insights from global model scenario analysis. *Agricultural Economics*, 52(3), 375-390.

Lally, M. (2022). A cost–benefit analysis of COVID-19 lockdowns in Australia. *Monash Bioethics Review*, 1-32.

Lannutti, P. J., & Bevan, J. L. (2022). Relationships in the time of COVID-19: Examining the effects of the global pandemic on personal relationships. *Journal of Social and Personal Relationships*, 39(1), 80-91.

Larson, E. A., Bader-Larsen, K. S., & Magkos, F. (2021). The effect of COVID-19-related lockdowns on diet and physical activity in older adults: A systematic review. *Aging and disease*, 12(8), 1935.

Lau, V. I., Dhanoa, S., Cheema, H., Lewis, K., Geeraert, P., Lu, D. et al. (2022). Non-COVID outcomes associated with the coronavirus disease-2019 (COVID-19) pandemic effects study (COPEs): A systematic review and meta-analysis. *Plos one*, 17(6), e0269871.

Laughner, J. L., Neu, J. L., Schimel, D., Wennberg, P. O., Barsanti, K., Bowman, K. W. et al. (2021). Societal shifts due to COVID-19 reveal large-scale complexities and

feedbacks between atmospheric chemistry and climate change. *Proceedings of the National Academy of Sciences*, 118(46), e2109481118.

Lavallée, A., & Dumitriu, D. (2022). Low Risk of Neurodevelopmental Impairment in the COVID-19 Generation Should Not Make Researchers Complacent. *JAMA Network Open*, 5(10), e2238958-e2238958.

Lawler, M., Davies, L., Oberst, S., Oliver, K., Eggermont, A., Schmutz, A. et al. (2023). European Groundshot—addressing Europe's cancer research challenges: a Lancet Oncology Commission. *The Lancet Oncology*, 24(1), e11-e56.

Layman, H. M., Thorisdottir, I. E., Halldorsdottir, T., Sigfusdottir, I. D., Allegrante, J. P., & Kristjansson, A. L. (2022). Substance use among youth during the COVID-19 pandemic: a systematic review. *Current psychiatry reports*, 24(6), 307-324.

Lăzărescu, A. M., Benichi, S., Blauwblomme, T., Beccaria, K., Bourgeois, M., Roux, C. J. et al. (2022). Abusive head trauma in infants during the COVID-19 pandemic in the Paris metropolitan area. *JAMA Network Open*, 5(8), e2226182-e2226182.

Lee, H., & Kim, E. (2022). Global prevalence of physical and psychological child abuse during COVID-19: A systematic review and meta-analysis. *Child Abuse & Neglect*, 105984.

Lee, S. S., Shim, Y., Choi, J., & Choi, I. (2023). Paradoxical Impacts of Social Relationship on Well-Being During the COVID-19 Pandemic. *Journal of Happiness Studies*, 24, 745-767.

Lee, W. E., Park, S. W., Weinberger, D. M., Olson, D., Simonsen, L., Grenfell, B. T., & Viboud, C. (2023). Direct and indirect mortality impacts of the COVID-19 pandemic in the United States, March 1, 2020 to January 1, 2022. *Elife*, 12, e77562.

Lennon, H., & Gill, K. (2022). Conformity Through Fear: A Multimodal Critical Discourse Analysis of COVID-19 Information Adverts. *Critical Approaches to Discourse Analysis across Disciplines*, 14(1), 22-44.

Letourneau, N., Luis, M. A., Kurbatfinski, S., Ferrara, H. J., Pohl, C., Marabotti, F., & Hayden, K. A. (2022). COVID-19 and family violence: A rapid review of literature published up to 1 year after the pandemic declaration. *EClinicalMedicine*, 53, 101634.

Leung, C., Ho, M. K., Bharwani, A. A., Cogo-Moreira, H., Wang, Y., Chow, M. S. et al. (2022). Mental disorders following COVID-19 and other epidemics: a systematic review and meta-analysis. *Translational psychiatry*, 12(1), 1-12.

Levi, M., & Smith, R. G. (2022). Fraud and pandemics. *Journal of Financial Crime*, 29(2), 413-432.

- Levitt, M., Zonta, F., & Ioannidis, J. P. (2022). Comparison of pandemic excess mortality in 2020–2021 across different empirical calculations. *Environmental Research*, 213, 113754.
- Li, B., Huang, Y., Guo, D., Liu, Y., Liu, Z., Han, J. C. et al. (2022). Environmental risks of disposable face masks during the pandemic of COVID-19: Challenges and management. *Science of the Total Environment*, 825, 153880.
- Li, L., Taeihagh, A., & Tan, S. Y. (2023). A scoping review of the impacts of COVID-19 physical distancing measures on vulnerable population groups. *Nature Communications*, 14(1), 599.
- Li, M., Xu, L., Tan, C. S., Lanca, C., Foo, L. L., Sabanayagam, C., & Saw, S. M. (2022). Systematic Review and Meta-Analysis on the Impact of COVID-19 Pandemic-Related Lifestyle on Myopia. *The Asia-Pacific Journal of Ophthalmology*, 11(5), 470-480.
- Li, T., Nickel, B., Ngo, P., McFadden, K., Brennan, M., Marinovich, M. L., & Houssami, N. (2023). A systematic review of the impact of the COVID-19 pandemic on breast cancer screening and diagnosis. *The Breast*, 67, 78-88.
- Libert, M., Le Cam, F., & Domingo, D. (2022). Belgian journalists in lockdown: survey on employment and working conditions and representations of their role. *Journalism Studies*, 23(5-6), 588-610.
- Lichand, G., Doria, C. A., Leal-Neto, O., & Fernandes, J. P. C. (2022). The impacts of remote learning in secondary education during the pandemic in Brazil. *Nature Human Behaviour*, 1-8.
- Liu, J., Wyver, S., & Chutiyami, M. (2022). Impacts of COVID-19 Restrictions on Young Children's Outdoor Activity: A Systematic Review. *Children*, 9(10), 1564.
- Liu, Y., Wei, Y., Wang, Q., & Liu, Y. (2022). International stock market risk contagion during the COVID-19 pandemic. *Finance Research Letters*, 45, 102145.
- Long, E., Patterson, S., Maxwell, K., Blake, C., Pérez, R. B., Lewis, R. et al. (2022). COVID-19 pandemic and its impact on social relationships and health. *J Epidemiol Community Health*, 76(2), 128-132.
- Long, J. A., & Ren, C. (2022). Associations between mobility and socio-economic indicators vary across the timeline of the Covid-19 pandemic. *Computers, environment and urban systems*, 91, 101710.
- Long, X., Li, X. Y., Jiang, H., Shen, L. D., Zhang, L. F., Pu, Z. et al. (2022). Impact of the COVID-19 kindergarten closure on overweight and obesity among 3-to 7-year-old children. *World Journal of Pediatrics*. DOI: <https://doi.org/10.1007/s12519-022-00651-0>

López-Morales, H., Gelpi Trudo, R., Del-Valle, M. V., Canet-Juric, L., Biota, M., Andrés, M. L., & Urquijo, S. (2022). The Pandemial babies: effects of maternal stress on temperament of babies gestated and born during the pandemic. *Current Psychology*. DOI: <https://doi.org/10.1007/s12144-022-03976-1>

López-Valenciano, A., Suárez-Iglesias, D., Sanchez-Lastra, M. A., & Ayán, C. (2021). Impact of COVID-19 pandemic on university students' physical activity levels: an early systematic review. *Frontiers in psychology*, 3787.

Lorenc, T., & Oliver, K. (2014). Adverse effects of public health interventions: a conceptual framework. *J Epidemiol Community Health*, 68(3), 288-290.

Lowe, C., Rafiq, M., MacKay, L. J., Letourneau, N., Ng, C. F., Keown-Gerrard, J. et al. (2023). Impact of the COVID-19 Pandemic on Canadian Social Connections: A Thematic Analysis. *Journal of Social and Personal Relationships*, 40(1), 76-101.

Lu, D., Dhanoa, S., Cheema, H., Lewis, K., Geeraert, P., Merrick, B. et al. (2022). Coronavirus disease 2019 (COVID-19) excess mortality outcomes associated with pandemic effects study (COPES): A systematic review and meta-analysis. *Frontiers in Medicine*, 9.

Luck, A. N., Preston, S. H., Elo, I. T., & Stokes, A. C. (2022). The unequal burden of the Covid-19 pandemic: Capturing racial/ethnic disparities in US cause-specific mortality. *SSM-Population Health*, 17, 101012.

M. Mitchell, D. (2022). Covid-19 and the 2020 presidential election. *Constitutional Political Economy*. DOI: <https://doi.org/10.1007/s10602-022-09371-z>

MacNeil, A., Findlay, B., Bimman, R., Hocking, T., Barclay, T., & Ho, J. (2021). Exploring the Use of virtual funerals during the COVID-19 pandemic: A scoping review. *OMEGA-Journal of Death and Dying*, 00302228211045288.

Madigan, S., Eirich, R., Pador, P., McArthur, B. A., & Neville, R. D. (2022). Assessment of Changes in Child and Adolescent Screen Time During the COVID-19 Pandemic: A Systematic Review and Meta-analysis. *JAMA pediatrics*, 176(12), 1188-1198.

Madigan, S., Korczak, D. J., Vaillancourt, T., Racine, N., Hopkins, W. G., Pador, P. et al. (2023). Comparison of paediatric emergency department visits for attempted suicide, self-harm, and suicidal ideation before and during the COVID-19 pandemic: a systematic review and meta-analysis. *The Lancet Psychiatry*. DOI: [https://doi.org/10.1016/S2215-0366\(23\)00036-6](https://doi.org/10.1016/S2215-0366(23)00036-6)

Mahler, D. G., Yonzan, N., & Lakner, C. (2022). The impact of COVID-19 on global inequality and poverty. Policy Research Working Papers. World Bank, Washington, DC.

Mahmud, M., & Riley, E. (2023). Adapting to an aggregate shock: The impact of the Covid-19 crisis on rural households. *Review of Economics of the Household*, 21(1), 19-36.

Makary, M. A., & Daniel, M. (2016). Medical error—the third leading cause of death in the US. *Bmj*, 353.

Manderson, L., Chavarro, D., Kaunda-Khangamwa, B., Kagaha, A., & Zakumumpa, H. (2022). Containing COVID-19 and the social costs on human rights in African countries. *Humanities and Social Sciences Communications*, 9(1), 1-11.

Manenti, R., Mori, E., Di Canio, V., Mercurio, S., Picone, M., Caffi, M. et al. (2020). The good, the bad and the ugly of COVID-19 lockdown effects on wildlife conservation: Insights from the first European locked down country. *Biological conservation*, 249, 108728.

Marciano, L., Ostroumova, M., Schulz, P. J., & Camerini, A. L. (2022). Digital media use and adolescents' mental health during the COVID-19 pandemic: a systematic review and meta-analysis. *Frontiers in public health*, 9, 2208.

Marconcin, P., Werneck, A. O., Peralta, M., Ihle, A., Gouveia, É. R., Ferrari, G. et al. (2022). The association between physical activity and mental health during the first year of the COVID-19 pandemic: a systematic review. *BMC Public Health*, 22(1), 209.

Maredia, M. K., Adenikinju, A., Belton, B., Chapoto, A., Faye, N. F., Liverpool-Tasie, S. et al. (2022). COVID-19's impacts on incomes and food consumption in urban and rural areas are surprisingly similar: Evidence from five African countries. *Global food security*, 100633.

Marmor, A., Cohen, N., & Katz, C. (2021). Child maltreatment during COVID-19: Key conclusions and future directions based on a systematic literature review. *Trauma, Violence, & Abuse*, 15248380211043818.

Marsden, J., Brown, J., Clark, L., Cousijn, J., Hall, W., Hickman, M. et al. (2022). The impact of the COVID-19 pandemic on addictive disorders—an update. *Addiction*, 117(11), 2762-2766. <https://doi.org/10.1111/add.16033>

Marti, N. V. (2022). The Force of Law? Transparency of Scientific Advice in Times of Covid-19. *Jus Cogens*, 4(3), 237-262.

Martin, D., Leslie, N., & Graham, W. (2022). Policing the pandemic: Frontline officers' perspectives on organisational justice. *International Journal of Police Science & Management*, 14613557221132492.

Maskály, J., Ivković, S. K., & Neyroud, P. (2021). Policing the COVID-19 pandemic: Exploratory study of the types of organizational changes and police activities across the globe. *International Criminal Justice Review*, 31(3), 266-285.

Massenkoff, M., & Chalfin, A. (2022). Activity-adjusted crime rates show that public safety worsened in 2020. *Proceedings of the National Academy of Sciences*, 119(46), e2208598119.

Matos, M., McEwan, K., Kanovský, M., Halamová, J., Steindl, S. R., Ferreira, N., ... & Gilbert, P. (2021). The role of social connection on the experience of COVID-19 related post-traumatic growth and stress. *PLoS One*, 16(12), e0261384.

Matthews, J., Zhao, X., Jackson, D., Thorsen, E., Mellado, C., Abuali, Y., & Glück, A. (2023). Sourcing UK COVID-19 News: An Analysis of Sourcing Patterns of 15 UK News Outlets Reporting on COVID-19 Across Facebook, Twitter, and Instagram. *Health Communication*. DOI: <https://doi.org/10.1080/10410236.2022.2162702>

Maxwell, K. J., Bosó Pérez, R., Reid, D., Freeman, L., Menezes, D., Sonnenberg, P., ... & Mitchell, K. R. (2022). Balancing risk, intimacy and (non) compliance: a qualitative study of sex across household during COVID-19 social restrictions. *Culture, Health & Sexuality*. DOI: <https://doi.org/10.1080/13691058.2022.2078507>

McAuliffe, M. and A. Triandafyllidou (eds.) (2021). World Migration Report 2022. International Organization for Migration (IOM), Geneva.

McClelland, A., & Luscombe, A. (2021). Policing the pandemic: Counter-mapping policing responses to COVID-19 across Canada. *Annual Review of Interdisciplinary Justice Research*, 10, 195-231.

McDermott, J., & Swinnen, J. (Eds.). (2022). COVID-19 and global food security: Two years later. Intl Food Policy Res Inst. Washington, DC.

McGrail, K. (2022). Excess mortality, COVID-19 and health care systems in Canada. *Cmaj*, 194(21), E741-E745.

Meier, K., van Hoeken, D., & Hoek, H. W. (2022). Review of the unprecedented impact of the COVID-19 pandemic on the occurrence of eating disorders. *Current opinion in psychiatry*, 35(6), 353-361.

Mekanna, A. N., Panchal, S. K., & Li, L. (2022). Beyond lockdowns: a systematic review of the impacts of COVID-19 lockdowns on dietary pattern, physical activity, body weight, and food security. *Nutrition Reviews*. DOI: <https://doi.org/10.1093/nutrit/nuac088>

Mellado, C., Hallin, D., Cárcamo, L., Alfaro, R., Jackson, D., Humanes, M. L. et al. (2021). Sourcing pandemic news: A cross-national computational analysis of mainstream media coverage of COVID-19 on Facebook, Twitter, and Instagram. *Digital Journalism*, 9(9), 1261-1285.

Meyerowitz-Katz, G., Bhatt, S., Ratmann, O., Brauner, J. M., Flaxman, S., Mishra, S. et al. (2021). Is the cure really worse than the disease? The health impacts of lockdowns during COVID-19. *BMJ global health*, 6(8), e006653.

Mignogna, C., Costanzo, S., Ghulam, A., Cerletti, C., Donati, M. B., de Gaetano, G. et al. (2022). Impact of Nationwide Lockdowns Resulting from the First Wave of the COVID-19 Pandemic on Food Intake, Eating Behaviors, and Diet Quality: A Systematic Review. *Advances in Nutrition*, 13(2), 388-423.

Miguel, E., & Mobarak, A. M. (2022). The economics of the COVID-19 pandemic in poor countries. *Annual Review of Economics*, 14, 253-285.

Mihelj, S., Kondor, K., & Štětka, V. (2022). Audience engagement with COVID-19 news: The impact of lockdown and live coverage, and the role of polarization. *Journalism Studies*, 23(5-6), 569-587.

Milea-Milea, A. C., Fernández-Pérez, D., & Toledano-González, A. (2023). The psychological impact of the COVID-19 pandemic on children/adolescents with ASD and their family environment: a systematic review. *European Child & Adolescent Psychiatry*. DOI: <https://doi.org/10.1007/s00787-023-02151-6>.

Miles, D. K., Stedman, M., & Heald, A. H. (2021). “Stay at Home, Protect the National Health Service, Save Lives”: A cost benefit analysis of the lockdown in the United Kingdom. *International Journal of Clinical Practice*, 75(3), e13674.

Miller, L. C., Neupane, S., Joshi, N., Lohani, M., & Shrestha, B. (2022). Trajectories of child growth, child development, and home child-rearing quality during the Covid pandemic in rural Nepal. *Child: Care, Health and Development*. DOI: <https://doi.org/10.1111/cch.13078>.

Miyakawa, D., Oikawa, K., & Ueda, K. (2021). Firm exit during the COVID-19 pandemic: Evidence from Japan. *Journal of the Japanese and International Economies*, 59, 101118.

Moeti, M., Makubalo, L., Gueye, A. S., Balde, T., Karamagi, H., Awandare, G. et al. (2023). Conflicting COVID-19 excess mortality estimates. *The Lancet*, 401(10375), 431.

Mogharab, V., Ostovar, M., Ruszkowski, J., Hussain, S. Z. M., Shrestha, R., Yaqoob, U. et al. (2022). Global burden of the COVID-19 associated patient-related delay in emergency healthcare: a panel of systematic review and meta-analyses. *Globalization and Health*, 18(1), 1-18.

Mohammed, A. R. (2023). Children's lives in an era of school closures: Exploring the implications of COVID-19 for child labour in Ghana. *Children & Society*, 37(1), 91-106.

Mohana, A. A., Islam, M. M., Rahman, M., Pramanik, S. K., Haque, N., Gao, L., & Pramanik, B. K. (2022). Generation and consequence of nano/microplastics from medical waste and household plastic during the COVID-19 pandemic. *Chemosphere*, 137014.

Montazersaheb, S., Hosseiniyan Khatibi, S. M., Hejazi, M. S., Tarhriz, V., Farjami, A., Ghasemian Sorbeni, F. et al. (2022). COVID-19 infection: An overview on cytokine storm and related interventions. *Virology Journal*, 19(1), 1-15.

Molla, W., Hailemariam, S., Mengistu, N., Madoro, D., Bayisa, Y., Tilahun, R. et al. (2022). Unintended pregnancy and associated factors during COVID-19 pandemic in Ethiopia: Community-based cross-sectional study. *Women's Health*, 18, 17455057221118170.

Morani, M., Cushion, S., Kyriakidou, M., & Soo, N. (2022). Expert voices in the news reporting of the coronavirus pandemic: A study of UK television news bulletins and their audiences. *Journalism*, 23(12), 2513-2532.

Mormina, M. (2022). Knowledge, Expertise and Science Advice During COVID-19: In Search of Epistemic Justice for the 'Wicked' Problems of Post-Normal Times. *Social Epistemology*, 36(6), 671-685.

Moscoviz, L., & Evans, D. K. (2022). Learning loss and student dropouts during the covid-19 pandemic: A review of the evidence two years after schools shut down. Center for Global Development, Working Paper, 609.

Moyano, D. L., Martínez, M. L., & Martínez, L. L. (2022). Gender and social protection and health policies promoted during the COVID-19 pandemic: Global scoping review and future challenges. *Journal of Global Health*, 12 (05056).

Moyer, J. D., Verhagen, W., Mapes, B., Bohl, D. K., Xiong, Y., Yang, V. et al. (2022). How many people is the COVID-19 pandemic pushing into poverty? A long-term forecast to 2050 with alternative scenarios. *Plos one*, 17(7), e0270846.

Moynihan R, Sanders S, Michaleff ZA, et al. (2021). Impact of COVID-19 pandemic on utilisation of healthcare services: a systematic review. *BMJ Open*, 11:e045343.

Msemburi, W., Karlinsky, A., Knutson, V., Aleshin-Guendel, S., Chatterji, S., & Wakefield, J. (2023). The WHO estimates of excess mortality associated with the COVID-19 pandemic. *Nature*, 613(7942), 130-137.

Mulgan, G., Marsh, O., & Henggeler, A. (2022). Navigating the Crisis: How Governments Used Intelligence for Decision Making During the COVID-19 Pandemic. Available at SSRN 4304021.

Muller, A. E., Himmels, J. P. W., & Van de Velde, S. (2021). Instruments to measure fear of COVID-19: a diagnostic systematic review. *BMC medical research methodology*, 21(1), 1-14.

Mulligan, C. B., & Arnott, R. D. (2022). The young were not spared: what death certificates reveal about non-covid excess deaths. *INQUIRY: The Journal of Health Care Organization, Provision, and Financing*, 59, 00469580221139016.

Murray, G. R., & Davies, K. (2022). Assessing the effects of COVID-19-related stay-at-home orders on homicide rates in selected US Cities. *Homicide studies*, 26(4), 419-444.
Musa, S., Elyamani, R., & Dergaa, I. (2022). COVID-19 and screen-based sedentary behaviour: systematic review of digital screen time and metabolic syndrome in adolescents. *PLoS One*, 17(3), e0265560.

Muzi, S., Jolevski, F., Ueda, K., & Viganola, D. (2022). Productivity and firm Exit during the COVID-19 Crisis: Cross-country evidence. *Small Business Economics*. DOI: <https://doi.org/10.1007/s11187-022-00675-w>

Nadarajah, R., Wu, J., Hurdus, B., Asma, S., Bhatt, D. L., Biondi-Zoccai, G. et al. (2022). The collateral damage of COVID-19 to cardiovascular services: a meta-analysis. *European Heart Journal*, 43(33), 3164-3178.

Nan, X., Wang, Y., & Thier, K. (2022). Why people believe health misinformation and who are at risk? A systematic review of individual differences in susceptibility to health misinformation. *Social Science & Medicine*, 115398.

Narayan, A., Cojocaru, A., Agrawal, S., Bundervoet, T., Davalos, M., Garcia, N. et al. (2022). COVID-19 and Economic Inequality: Short-Term Impacts with Long-Term Consequences. Policy Research Working Paper. World Bank, Washington, DC. <https://openknowledge.worldbank.org/entities/publication/a72a0ec9-cd61-5aa4-b245-b19392b4e54d>

Navazi, F., Yuan, Y., & Archer, N. (2022). The effect of the Ontario stay-at-home order on Covid-19 third wave infections including vaccination considerations: An interrupted time series analysis. *Plos one*, 17(4), e0265549.

Neidhöfer, G., Lustig, N., & Larroulet, P. (2022). Nowcasting the impact of COVID-19 on education, intergenerational mobility and earnings inequality in Sub-Saharan Africa. ZEW-Centre for European Economic Research Discussion Paper, (22-022).

Nepomuceno, M. R., Klimkin, I., Jdanov, D. A., Alustiza-Galarza, A., & Shkolnikov, V. M. (2022). Sensitivity Analysis of Excess Mortality due to the COVID-19 Pandemic. *Population and Development Review*, 48(2), 279-302.

Neville, R. D., Lakes, K. D., Hopkins, W. G., Tarantino, G., Draper, C. E., Beck, R., & Madigan, S. (2022). Global changes in child and adolescent physical activity during the COVID-19 pandemic: a systematic review and meta-analysis. *JAMA pediatrics*, 176(9): 886-894.

Newlove-Delgado, T., Russell, A. E., Mathews, F., Cross, L., Bryant, E., Gudka, R. et al. (2023). The impact of Covid-19 on psychopathology in children and young people worldwide: systematic review of studies with pre-and within-pandemic data. *Journal of Child Psychology and Psychiatry*, 64(4), 611-640.

Newman, A., Eva, N., Bindl, U. K., & Stoverink, A. C. (2022). Organizational and vocational behavior in times of crisis: A review of empirical work undertaken during the COVID-19 pandemic and introduction to the special issue. *Applied Psychology*, 71(3), 743-764.

Newman, N., Fletcher, R., Schulz, A., Andi, S., Robertson, C. T., & Nielsen, R. K. (2021). Reuters Institute digital news report 2021. Reuters Institute for the study of Journalism. Available: <https://reutersinstitute.politics.ox.ac.uk/digital-news-report/2021>

Nielsen, R. K., Schulz, A., & Fletcher, R. (2021). An ongoing infodemic: how people in eight countries access news and information about coronavirus a year into the pandemic. Reuters Institute for the Study of Journalism. Available: <https://reutersinstitute.politics.ox.ac.uk/ongoing-infodemic-how-people-eight-countries-access-news-and-information-about-coronavirus-year>

Nivette, A. E., Zahnow, R., Aguilar, R., Ahven, A., Amram, S., Ariel, B. et al. (2021). A global analysis of the impact of COVID-19 stay-at-home restrictions on crime. *Nature Human Behaviour*, 5(7), 868-877.

Nochaiwong, S., Ruengorn, C., Thavorn, K., Hutton, B., Awiphan, R., Phosuya, C. et al. (2021). Global prevalence of mental health issues among the general population during the coronavirus disease-2019 pandemic: a systematic review and meta-analysis. *Scientific Reports*, 11(1), 1-18.

Noguchi, T., Kubo, Y., Hayashi, T., Tomiyama, N., Ochi, A., & Hayashi, H. (2021). Social isolation and self-reported cognitive decline among older adults in Japan: a longitudinal study in the COVID-19 pandemic. *Journal of the American Medical Directors Association*, 22(7), 1352-1356.

Nuwematsiko, R., Nabiryo, M., Bomboka, J. B., Nalinya, S., Musoke, D., Okello, D., & Wanyenze, R. K. (2022). Unintended socio-economic and health consequences of COVID-19 among slum dwellers in Kampala, Uganda. *BMC public health*, 22, 1-13.

Obry, S., Roman, E., Tavernier, E., Boutry, N., Delval, A., Blouet, M. et al. (2023). The monthly incidence of abusive head trauma, inflicted skeletal trauma, and unexplained skin lesion in children in six French university hospitals during the COVID-19 pandemic. *Child Abuse & Neglect*, 138, 106063.

Odone, A., Delmonte, D., Gaetti, G., & Signorelli, C. (2021). Doubled mortality rate during the COVID-19 pandemic in Italy: Quantifying what is not captured by surveillance. *Public Health*, 190, 108-115.

OECD (2022) Confronting the crisis: OECD economic outlook, November 2022. OECD Publishing. Available: <https://www.oecd.org/economic-outlook/november-2022/>

OECD (2022). Global Plastics Outlook: Economic Drivers, Environmental Impacts and Policy Options. OECD Publishing. Available: https://www.oecd-ilibrary.org/environment/global-plastics-outlook_de747aef-en

Ojo, O., Wang, X. H., Ojo, O. O., Orjih, E., Pavithran, N., Adegboye, A. et al. (2022). The effects of COVID-19 lockdown on glycaemic control and lipid profile in patients with type 2 diabetes: a systematic review and meta-analysis. *International Journal of Environmental Research and Public Health*, 19(3), 1095.

Oliveira, A. M., Patrício-Silva, A. L., Soares, A. M. V. M., Barceló, D., Armando, D., & Rocha-Santos, T. (2023). Current knowledge on the presence, biodegradation, and toxicity of discarded face masks in the environment. *Journal of Environmental Chemical Engineering*, 109308.

Oliveira, M. R., Sudati, I. P., Konzen, V. D. M., de Campos, A. C., Wibelinger, L. M., Correa, C. et al. (2022). Covid-19 and the impact on the physical activity level of elderly people: a systematic review. *Experimental gerontology*, 159, 111675.

Orjiakor, E. C., Adediran, A., Ugwu, J. O., & Nwachukwu, W. (2023). Household living conditions and food insecurity in Nigeria: a longitudinal study during COVID-19 pandemic. *BMJ open*, 13(1), e066810.

Ortiz, I., & Cummins, M. (2021). Global austerity alert: looming budget cuts in 2021-25 and alternative pathways. Available at SSRN 3856299.

Osendarp, S., Akuoku, J. K., Black, R. E., Headey, D., Ruel, M., Scott, N. et al. (2021). The COVID-19 crisis will exacerbate maternal and child undernutrition and child mortality in low-and middle-income countries. *Nature Food*, 2(7), 476-484.

Oswald, M. (2022) Covid-19 Pandemic and Electoral Participation in Africa Likelihood of Ugandans Voting in the 2021 'Pandemic Elections'. *Journal of African Elections*, 21(2).

Oxfam. (2022a). First crisis, then catastrophe. Oxfam Media Briefing. Available: <https://www.oxfam.org/en/research/first-crisis-then-catastrophe>

Oxfam (2022b) Inequality Kills: The unparalleled action needed to combat unprecedented inequality in the wake of COVID-19. Oxfam International. Available: <https://oxfamilibrary.openrepository.com/bitstream/handle/10546/621341/bp-inequality-kills-170122-en.pdf?sequence=9>

Oyando, R., Orangi, S., Mwangi, D., Pinchoff, J., Abuya, T., Muluve, E. et al. (2021). Assessing equity and the determinants of socio-economic impacts of COVID-19: results

from a cross-sectional survey in three counties in Kenya. *Wellcome Open Research*, 6, 339

Pajnik, M., & Hrženjak, M. (2022). The intertwining of the Covid-19 pandemic with democracy backlash: Making sense of journalism in crisis. *Journalism Practice*. DOI: 10.1080/17512786.2022.2077806

Palacio-Mejía, L. S., Hernández-Ávila, J. E., Hernández-Ávila, M., Dyer-Leal, D., Barranco, A., Quezada-Sánchez, A. D. et al. (2022). Leading causes of excess mortality in Mexico during the COVID-19 pandemic 2020–2021: A death certificates study in a middle-income country. *The Lancet Regional Health-Americas*, 13, 100303.

Palmer, L. (2022). Press Freedom during Covid-19: The Digital Discourses of the International Press Institute, Reporters Sans Frontières, and the Committee to Protect Journalists. *Digital Journalism*, 10(6), 1079-1097.

Panagioti, M., Khan, K., Keers, R. N., Abuzour, A., Phipps, D., Kontopantelis, E. et al. (2019). Prevalence, severity, and nature of preventable patient harm across medical care settings: systematic review and meta-analysis. *BMJ*, 366.

Panda, P. K., Gupta, J., Chowdhury, S. R., Kumar, R., Meena, A. K., Madaan, P. et al. (2021). Psychological and behavioral impact of lockdown and quarantine measures for COVID-19 pandemic on children, adolescents and caregivers: a systematic review and meta-analysis. *Journal of tropical pediatrics*, 67(1), fmaa122.

Panwar, R., Pinkse, J., & De Marchi, V. (2022). The future of global supply chains in a post-COVID-19 world. *California Management Review*, 64(2), 5-23.

Papadopoulou, L., & Maniou, T. A. (2021). ‘Lockdown’ on Digital Journalism? Mapping Threats to Press Freedom During the COVID-19 Pandemic Crisis. *Digital Journalism*, 9(9), 1344-1366.

Paramasivan, K., Subburaj, R., Jaiswal, S., & Sudarsanam, N. (2022a). Empirical evidence of the impact of mobility on property crimes during the first two waves of the COVID-19 pandemic. *Humanities and Social Sciences Communications*, 9(1), 1-14.

Paramasivan, K., Subramani, B., & Sudarsanam, N. (2022b). Counterfactual analysis of the impact of the first two waves of the COVID-19 pandemic on the reporting and registration of missing people in India. *Humanities and Social Sciences Communications*, 9(1), 1-14.

Patel, K., Robertson, E., Kwong, A. S., Griffith, G. J., Willan, K., Green, M. et al. (2022). Psychological distress before and during the COVID-19 pandemic among adults in the United Kingdom based on coordinated analyses of 11 longitudinal studies. *JAMA Network open*, 5(4), e227629-e227629.

Patrinos, H. A., Vegas, E., & Carter-Rau, R. (2022). An Analysis of COVID-19 Student Learning Loss. Policy Research Working Paper. World Bank, Washington, DC. Available: <https://openknowledge.worldbank.org/entities/publication/ce21738f-72d5-55ac-9876-23ac39efffea>

Penal Reform International (2021) Global Prison Trends 2021. Available: <https://cdn.penalreform.org/wp-content/uploads/2021/05/Global-prison-trends-2021.pdf>

Perez-Vincent, S. M., Schargrotsky, E., & García Mejía, M. (2021). Crime under lockdown: The impact of COVID-19 on citizen security in the city of Buenos Aires. *Criminology & Public Policy*, 20(3), 463-492.

Peters, L., Burkert, S., Brenner, C., & Grüner, B. (2022). Experienced stigma and applied coping strategies during the COVID-19 pandemic in Germany: a mixed-methods study. *BMJ open*, 12(8), e059472.

Pew (2022). Partisanship Colors Views of COVID-19 Handling Across Advanced Economies Available: <https://www.pewresearch.org/global/2022/08/11/partisanship-colors-views-of-covid-19-handling-across-advanced-economies/>

Philpot, L. M., Ramar, P., Roellinger, D. L., Barry, B. A., Sharma, P., & Ebbert, J. O. (2021). Changes in social relationships during an initial “stay-at-home” phase of the COVID-19 pandemic: A longitudinal survey study in the US. *Social Science & Medicine*, 274, 113779.

Picchioni, F., Goulao, L. F., & Roberfroid, D. (2022). The impact of COVID-19 on diet quality, food security and nutrition in low and middle income countries: A systematic review of the evidence. *Clinical Nutrition*, 41(12), 2955-2964.

Pielke Jr, R. (2023). Improve how science advice is provided to governments by learning from “experts in expert advice”. *Plos Biology*, 21(2), e3002004.

Pikala, M., Krzywicka, M., & Burzyńska, M. (2022). Excess mortality in Poland during the first and second wave of the COVID-19 pandemic in 2020. *Frontiers in Public Health*, 10.

Pirkis, J., Gunnell, D., Shin, S., Del Pozo-Banos, M., Arya, V., Aguilar, P. A., ... & Spittal, M. J. (2022). Suicide numbers during the first 9-15 months of the COVID-19 pandemic compared with pre-existing trends: An interrupted time series analysis in 33 countries. *EClinicalMedicine*, 51, 101573.

Pomar, L., Favre, G., De Labrusse, C., Contier, A., Boulvain, M., & Baud, D. (2022). Impact of the first wave of the COVID-19 pandemic on birth rates in Europe: a time series analysis in 24 countries. *Human Reproduction*, 37(12), 2921-2931.

Pomeranz, J. L., & Schwid, A. R. (2021). Governmental actions to address COVID-19 misinformation. *Journal of public health policy*, 42, 201-210.

Posetti, J., Bell, E., & Brown, P. (2020). Journalism and the pandemic: A global snapshot of impacts. International Center for Journalists (ICFJ) and the Tow Center for Digital Journalism at Columbia University. Available: https://www.icfj.org/sites/default/files/2020-10/Journalism%20and%20the%20Pandemic%20Project%20Report%201%202020_FINAL.pdf

Pourghazi, F., Eslami, M., Ehsani, A., Ejtahed, H., & Qorbani, M. (2022). Eating habits of children and adolescents during the COVID-19 era: A systematic review. *Frontiers in nutrition*, 9.

Prati, G., & Mancini, A. D. (2021). The psychological impact of COVID-19 pandemic lockdowns: a review and meta-analysis of longitudinal studies and natural experiments. *Psychological medicine*, 51(2), 201-211.

Primack, R. B., Bates, A. E., & Duarte, C. M. (2021). The conservation and ecological impacts of the COVID-19 pandemic. *Biological Conservation*, 260, 109204.

Prommas, P., Lwin, K. S., Chen, Y. C., Hyakutake, M., Ghaznavi, C., Sakamoto, H., ... & Nomura, S. (2022). The impact of social isolation from COVID-19-related public health measures on cognitive function and mental health among older adults: a systematic review and meta-analysis. *Ageing Research Reviews*, 101839.

Prosperi, S., & Chiarelli, F. (2022). Early and precocious puberty during the COVID-19 pandemic. *Frontiers in Endocrinology*, 13.

Pykett, J., Ball, S., Dingwall, R., Lepenies, R., Sommer, T., Strassheim, H., & Wenzel, L. (2022). Ethical moments and institutional expertise in UK Government COVID-19 pandemic policy responses: where, when and how is ethical advice sought?. *Evidence & Policy*. DOI: 10.1332/174426421X16596928051179

Qu, Z., Jacob, D. J., Zhang, Y., Shen, L., Varon, D. J., Lu, X. et al. (2022). Attribution of the 2020 surge in atmospheric methane by inverse analysis of GOSAT observations. *Environmental Research Letters*, 17(9), 094003.

Quandt, T., & Wahl-Jorgensen, K. (2021). The coronavirus pandemic as a critical moment for digital journalism: Introduction to special issue: Covering Covid-19: The coronavirus pandemic as a critical moment for digital journalism. *Digital Journalism*, 9(9), 1199-1207.

Quimbayo, J. P., Silva, F. C., Barreto, C. R., Pavone, C. B., Lefcheck, J. S., Leite, K. et al. (2022). The COVID-19 pandemic has altered illegal fishing activities inside and outside a marine protected area. *Current Biology*, 32(14), R765-R766.

Racine, N., Eirich, R., Cooke, J., Zhu, J., Pador, P., Dunnewold, N., & Madigan, S. (2022). When the bough breaks: A systematic review and meta-analysis of mental health symptoms in mothers of young children during the COVID-19 pandemic. *Infant Mental Health Journal*, 43(1), 36-54.

Rahimi-Ardabili, H., Feng, X., Nguyen, P. Y., & Astell-Burt, T. (2022). Have Deaths of Despair Risen during the COVID-19 Pandemic? A Systematic Review. *International Journal of Environmental Research and Public Health*, 19(19), 12835.

Rahmat, Z. S., Islam, Z., Mohanan, P., Kokash, D. M., Essar, M. Y., Hasan, M. et al. (2022). Food Insecurity during COVID-19 in Yemen. *The American Journal of Tropical Medicine and Hygiene*, 106(6), 1589.

Rajan, D., Koch, K., Rohrer, K., Bajnoczki, C., Socha, A., Voss, M. et al. (2020). Governance of the Covid-19 response: a call for more inclusive and transparent decision-making. *BMJ global health*, 5(5), e002655.

Ramdani, C., Ogier, M., & Coutrot, A. (2022). Communicating and reading emotion with masked faces in the Covid era: A short review of the literature. *Psychiatry Research*, 114755.

Rangel, J. C., Crath, R. D., & Renade, S. (2022). A breach in the social contract: Limited participation and limited evidence in COVID-19 responses. *Journal of Evaluation in Clinical Practice*, 28(6), 934-940.

Rapp, A., Fall, G., Radomsky, A. C., & Santarossa, S. (2021). Child maltreatment during the COVID-19 pandemic: a systematic rapid review. *Pediatric Clinics*, 68(5), 991-1009.

Ratcliff, C. L., Wicke, R., & Harvill, B. (2022). Communicating uncertainty to the public during the COVID-19 pandemic: A scoping review of the literature. *Annals of the International Communication Association*. DOI: <https://doi.org/10.1080/23808985.2022.2085136>

Ratha, D., Kim, E., Plaza, S., Riordan, E., and Chandra, V. (2022). Migration and Development Brief 36: A War in a Pandemic: Implications of the Russian invasion of Ukraine and the COVID-19 crisis on Global Governance of Migration and Remittance Flows. KNOMAD-World Bank, Washington, DC

Ravindran, S., & Shah, M. (2023). Unintended consequences of lockdowns, COVID-19 and the Shadow Pandemic in India. *Nature Human Behaviour*, 7, 323-331.

Regalado, J., Timmer, A., & Jawaid, A. (2022). Crime and deviance during the COVID-19 pandemic. *Sociology compass*, 16(4), e12974.

Restrepo, B. J. (2022). Obesity prevalence among US adults during the COVID-19 pandemic. *American Journal of Preventive Medicine*, 63(1), 102-106.

Richardson, D. L., Tallis, J., Duncan, M. J., Clarke, N. D., & Myers, T. D. (2022). The ongoing effects of the COVID-19 pandemic on perceived physical activity, physical function and mood of older adults in the UK: a follow-up study (March 2020–June 2021). *Experimental gerontology*, 165, 111838.

Richter, J. I., & Patel, P. C. (2022). Impact of the COVID-19 pandemic on the hours lost by self-employed racial minorities: Evidence from Brazil. *Small Business Economics*, 58(2), 769-805.

Riley, T., Sully, E., Ahmed, Z., & Biddlecom, A. (2020). Estimates of the potential impact of the COVID-19 pandemic on sexual and reproductive health in low-and middle-income countries. *International perspectives on sexual and reproductive health*, 46, 73-76.

Robinson, E., Sutin, A. R., Daly, M., & Jones, A. (2022). A systematic review and meta-analysis of longitudinal cohort studies comparing mental health before versus during the COVID-19 pandemic in 2020. *Journal of affective disorders*, 296, 567-576.

Rodrigues, U. M., & Xu, J. (2020). Regulation of COVID-19 fake news infodemic in China and India. *Media International Australia*, 177(1), 125-131.

Rönkkö, R., Rutherford, S., & Sen, K. (2022). The impact of the COVID-19 pandemic on the poor: Insights from the Hrishipara diaries. *World Development*, 149, 105689.

Rosén, F. (2016). *Collateral damage: A candid history of a peculiar form of death*. Hurst.

Rossi, L., Behme, N., & Breuer, C. (2021). Physical activity of children and adolescents during the COVID-19 pandemic—A scoping review. *International journal of environmental research and public health*, 18(21), 11440.

Rowe, F., Calafiore, A., Arribas-Bel, D., Samardzhiev, K., & Fleischmann, M. (2023). Urban exodus? Understanding human mobility in Britain during the COVID-19 pandemic using Meta-Facebook data. *Population, Space and Place*, 29(1), e2637.

Rudin-Rush, L., Michler, J. D., Josephson, A., & Bloem, J. R. (2022). Food insecurity during the first year of the COVID-19 pandemic in four African countries. *Food policy*, 111, 102306.

Rudolph, C.W., & Zacher, H. (2023). Individual differences and changes in personality during the COVID-19 pandemic. *Social and Personality Psychology Compass*, e12742.

Russell, E. K., Phillips, T., Gaylor, A., & Trabsky, M. (2022). ‘It is not about punishment, it’s about protection’: Policing ‘vulnerabilities’ and the securitisation of

public health in the COVID-19 pandemic. *Criminology & Criminal Justice*, 17488958221120480.

Saad, A., Magwood, O., Benjamin, J., Haridas, R., Hashmi, S. S., Girard, V. et al. (2022). Health equity implications of the COVID-19 lockdown and visitation strategies in long-term care homes in Ontario: A mixed method study. *International Journal of Environmental Research and Public Health*, 19(7), 4275.

Salanti, G., Peter, N., Tonia, T., Holloway, A., White, I. R., Darwish, L. et al. (2022). The Impact of the COVID-19 Pandemic and Associated Control Measures on the Mental Health of the General Population: A Systematic Review and Dose–Response Meta-analysis. *Annals of internal medicine*, 175(11), 1560-1571.

Santabárbara, J., Lasheras, I., Lipnicki, D. M., Bueno-Notivol, J., Pérez-Moreno, M., López-Antón, R. et al. (2021). Prevalence of anxiety in the COVID-19 pandemic: An updated meta-analysis of community-based studies. *Progress in Neuro-Psychopharmacology and Biological Psychiatry*, 109, 110207.

Santomauro, D. F., Herrera, A. M. M., Shadid, J., Zheng, P., Ashbaugh, C., Pigott, D. et al. (2021). Global prevalence and burden of depressive and anxiety disorders in 204 countries and territories in 2020 due to the COVID-19 pandemic. *The Lancet*, 398(10312), 1700-1712.

Santos, P., & Mare, A. (2021). The Reconfiguration of News Work in Southern Africa during the COVID-19 Pandemic. *Digital Journalism*, 9(9), 1391-1410.

Saraiva, M. D., Apolinario, D., Avelino-Silva, T. J., de Assis Moura Tavares, C., Gattás-Vernaglia, I. F., Marques Fernandes, C. et al. (2021). The impact of frailty on the relationship between life-space mobility and quality of life in older adults during the COVID-19 pandemic. *The journal of nutrition, health & aging*, 25, 440-447.

Sarich, P., Cabasag, C. J., Liebermann, E., Vaneckova, P., Carle, C., Hughes, S., ... & Soerjomataram, I. (2022). Tobacco smoking changes during the first pre-vaccination phases of the COVID-19 pandemic: A systematic review and meta-analysis. *EClinicalMedicine*, 101375.

Scarpelli, S., Zagaria, A., Ratti, P. L., Albano, A., Fazio, V., Musetti, A. et al. (2022). Subjective sleep alterations in healthy subjects worldwide during COVID-19 pandemic: A systematic review, meta-analysis and meta-regression. *Sleep Medicine*, 100, 89-102.

Schneider-Petsinger, M. (2023). Global trade in 2023: What's driving reglobalization? Chatham House. Available: <https://www.chathamhouse.org/sites/default/files/2023-01/2023-01-30-global-trade-2023-schneider-petsinger.pdf>

Schotte, S., & Zizzamia, R. (2023). The livelihood impacts of COVID-19 in urban South Africa: a view from below. *Social indicators research*, 165(1), 1-30.

Schultz, É., & Ward, J. K. (2021). Public perceptions of scientific advice: toward a science savvy public culture?. *Public Health*, 194, 86-88.

Shalitin, S., Phillip, M., & Yackobovitch-Gavan, M. (2022). Changes in body mass index in children and adolescents in Israel during the COVID-19 pandemic. *International Journal of Obesity*, 46(6), 1160-1167.

Shang, W., Wang, Y., Yuan, J., Guo, Z., Liu, J., & Liu, M. (2022). Global excess mortality during COVID-19 pandemic: a systematic review and meta-analysis. *Vaccines*, 10(10), 1702.

Shapira, G., de Walque, D., & Friedman, J. (2021). How many infants may have died in low-income and middle-income countries in 2020 due to the economic contraction accompanying the COVID-19 pandemic? Mortality projections based on forecasted declines in economic growth. *BMJ open*, 11(8), e050551.

Shepherd, D., & Mohohlwane, N. (2022). A generational catastrophe: COVID-19 and children's access to education and food in South Africa. *Development Southern Africa*, 39(5), 762-780.

Shir-Raz, Y., Elisha, E., Martin, B., Ronel, N., & Guetzkow, J. (2022). Censorship and Suppression of Covid-19 Heterodoxy: Tactics and Counter-Tactics. *Minerva*. DOI: <https://doi.org/10.1007/s11024-022-09479-4>

Shirmohammadi, M., Chan Au, W., & Beigi, M. (2022). Antecedents and outcomes of work-life balance while working from home: A review of the research conducted during the COVID-19 pandemic. *Human Resource Development Review*, 21(4), 473-516.

Shodunke, A. O. (2022). Enforcement of COVID-19 pandemic lockdown orders in Nigeria: Evidence of public (non) compliance and police illegalities. *International Journal of Disaster Risk Reduction*, 77, 103082.

Shorey, S. Y., Ng, E. D., & Chee, C. Y. (2021). Anxiety and depressive symptoms of women in the perinatal period during the COVID-19 pandemic: A systematic review and meta-analysis. *Scandinavian Journal of Public Health*, 14034948211011793.

Shusterman, G. R., Fluke, J. D., Nunez, J. J., Fettig, N. B., & Kebede, B. K. (2022). Child maltreatment reporting during the initial weeks of COVID-19 in the US: Findings from NCANDS. *Child Abuse & Neglect*, 105929.

Siegel, R., Houry, P., Spooner, S. A., Stackpole, K., Allen, N., Kirk, S., & Kharofa, R. (2022). Body Mass Index Increased at a Large Midwestern Children's Hospital during the COVID-19 Pandemic. *Childhood Obesity*. DOI: <https://doi.org/10.1089/chi.2022.0037>

Silva, T. M., Alves, M., Figueiras, A., Roque, F., Herdeiro, M. T., & Devakumar, D. (2022). Impact of infectious disease epidemics on xenophobia: a systematic review. *Journal of Migration and Health*, 100085.

Silverio-Murillo, A., Hoehn-Velasco, L., Balmori de la Miyar, J. R., & Méndez Méndez, J. S. (2023). The (temporary) Covid-19 baby bust in Mexico. *Population Studies*. DOI: <https://doi.org/10.1080/00324728.2023.2168298>

Simha, S., Ahmed, Y., Brummett, C. M., Waljee, J. F., Englesbe, M. J., & Bicket, M. C. (2023). Impact of the COVID-19 pandemic on opioid overdose and other adverse events in the USA and Canada: a systematic review. *Regional Anesthesia & Pain Medicine*, 48(1), 37-43.

Simon, T. R. (2022). Notes from the Field: Increases in Firearm Homicide and Suicide Rates—United States, 2020–2021. *MMWR. Morbidity and Mortality Weekly Report*, 71.

Singh, A., Romero, M., & Muralidharan, K. (2022). COVID-19 Learning loss and recovery: Panel data evidence from India. National Bureau of Economic Research, No.w30552.

Smith, R. A., Brown, M. G., Grady, K. A., Sowl, S., & Schulz, J. M. (2022). Patterns of undergraduate student interpersonal interaction network change during the COVID-19 pandemic. *AERA Open*, 8, 23328584211073160.

Sobotka, T., Jasilioniene, A., Zeman, K., Winkler-Dworak, M., Brzozowska, Z., Galarza, A. et al. (2022). From bust to boom? Birth and fertility responses to the COVID-19 pandemic. SocArXiv, pre-print. DOI: 10.31235/osf.io/87acb

Sohi, I., Chrystoja, B. R., Rehm, J., Wells, S., Monteiro, M., Ali, S., & Shield, K. D. (2022). Changes in alcohol use during the COVID-19 pandemic and previous pandemics: A systematic review. *Alcoholism: clinical and experimental research*, 46(4), 498-513.

Soto, E. H., Botero, C. M., Milanés, C. B., Rodríguez-Santiago, A., Palacios-Moreno, M., Díaz-Ferguson, E. et al. (2021). How does the beach ecosystem change without tourists during COVID-19 lockdown?. *Biological Conservation*, 255, 108972.

Souza, C. N., Rodrigues, A. C., Correia, R. A., Normande, I. C., Costa, H. C., Guedes-Santos, J. et al. (2021). No visit, no interest: How COVID-19 has affected public interest in world's national parks. *Biological Conservation*, 256, 109015.

Starcevic, V., & Janca, A. (2022). Personality dimensions and disorders and coping with the COVID-19 pandemic. *Current opinion in psychiatry*, 35(1), 73.

Steijvers, L. C., Brinkhues, S., Tilburg, T. G. V., Hoebe, C. J., Stijnen, M. M., Vries, N. D. et al. (2022). Changes in structure and function of social networks of independently

living middle-aged and older adults in diverse sociodemographic subgroups during the COVID-19 pandemic: a longitudinal study. *BMC Public Health*, 22(1), 2253.

Stockwell, S., Trott, M., Tully, M., Shin, J., Barnett, Y., Butler, L. et al. (2021). Changes in physical activity and sedentary behaviours from before to during the COVID-19 pandemic lockdown: a systematic review. *BMJ open sport & exercise medicine*, 7(1), e000960.

Stokes AC, Lundberg DJ, Elo IT, Hempstead K, Bor J, Preston SH. (2021). COVID-19 and excess mortality in the United States: a county-level analysis. *PLoS Med*, 18(5).

Strasser, M. A., Sumner, P. J., & Meyer, D. (2022). COVID-19 news consumption and distress in young people: A systematic review. *Journal of affective disorders*, 300, 481-491.

Sulik, J., Deroy, O., Dezechache, G., Newson, M., Zhao, Y., El Zein, M., & Tunçgenç, B. (2021). Facing the pandemic with trust in science. *Humanities and Social Sciences Communications*, 8(1).

Sumner, A., Ortiz-Juarez, E., & Hoy, C. (2022). Measuring global poverty before and during the pandemic: a political economy of overoptimism. *Third World Quarterly*, 43(1), 1-17.

Sun, N., Christie, E., Cabal, L., & Amon, J. J. (2022). Human rights in pandemics: criminal and punitive approaches to COVID-19. *BMJ Global Health*, 7(2), e008232.

Sutin, A. R., Stephan, Y., Luchetti, M., Aschwanden, D., Lee, J. H., Sesker, A. A., & Terracciano, A. (2022). Differential personality change earlier and later in the coronavirus pandemic in a longitudinal sample of adults in the United States. *Plos one*, 17(9), e0274542.

Takeda, A., Igarashi, T., & Sonobe, T. (2022). Unfolding impacts of the COVID-19 pandemic on micro, small, and medium-sized enterprises in Asia. *Journal of the Asia Pacific Economy*. DOI: <https://doi.org/10.1080/13547860.2022.2129637>

Tamale, N. (2021). Adding Fuel to Fire: How IMF demands for austerity will drive up inequality worldwide. Oxfam Briefing Note. DOI: 10.21201/2021.7864

Tayyaba Rehan, S., Imran, L., Mansoor, H., Sayyeda, Q., Hussain, H. U., Cheema, M. et al. (2022). Effects of SARS-CoV-2 infection and COVID-19 pandemic on menstrual health of women: A systematic review. *Health Science Reports*, 5(6), e881.

Teglia, F., Angelini, M., Astolfi, L., Casolari, G., & Boffetta, P. (2022). Global association of COVID-19 pandemic measures with cancer screening: a systematic review and meta-analysis. *JAMA oncology*, 8(9), 1287-1293.

Tei, S., & Fujino, J. (2022). Social ties, fears and bias during the COVID-19 pandemic: Fragile and flexible mindsets. *Humanities and Social Sciences Communications*, 9(1).

Teremetskyi, V., Duliba, Y., Kroitor, V., Korchak, N., & Makarenko, O. (2021). Corruption and strengthening anti-corruption efforts in healthcare during the pandemic of Covid-19. *Medico-Legal Journal*, 89(1), 25-28.

Theberath, M., Bauer, D., Chen, W., Salinas, M., Mohabbat, A. B., Yang, J. et al. (2022). Effects of COVID-19 pandemic on mental health of children and adolescents: A systematic review of survey studies. *SAGE open medicine*, 10, 20503121221086712.

Tleimat, J. M., Fritts, S. R., Brunner, R. M., Rodriguez, D., Lynch, R. L., & McCracken, S. F. (2022). Economic pressures of Covid-19 lockdowns result in increased timber extraction within a critically endangered region: A case study from the Pacific Forest of Ecuador. *Ecology and Evolution*, 12(11), e9550.

Todd, M., & Scheeres, A. (2022). Excess Mortality From Non-COVID-19 Causes During the COVID-19 Pandemic in Philadelphia, Pennsylvania, 2020–2021. *American journal of public health*, 112(12), 1800-1803.

Transparency International (2022). Corruption Perception Index 2021. Available: https://images.transparencycdn.org/images/CPI2021_Report_EN-web.pdf

Trott, M., Driscoll, R., Irlado, E., & Pardhan, S. (2022). Changes and correlates of screen time in adults and children during the COVID-19 pandemic: A systematic review and meta-analysis. *EClinicalMedicine*, 48, 101452.

Tsamakis, K., Tsiptsios, D., Stubbs, B., Ma, R., Romano, E., Mueller, C. et al. (2022). Summarising data and factors associated with COVID-19 related conspiracy theories in the first year of the pandemic: a systematic review and narrative synthesis. *BMC psychology*, 10(1), 244.

Turco, R., Russo, M., Lenta, S., Apicella, A., Gagliardo, T., Savoia, F. et al. (2023). Pediatric emergency care admissions for somatic symptom disorders during the COVID-19 pandemic. *European Journal of Pediatrics*, 182(2), 957-964.

Turcotte-Tremblay, A. M., Gali Gali, I. A., & Ridde, V. (2021). The unintended consequences of COVID-19 mitigation measures matter: practical guidance for investigating them. *BMC medical research methodology*, 21, 1-17.

Ulset, V. S., & von Soest, T. (2022). Posttraumatic growth during the COVID-19 lockdown: A large-scale population-based study among Norwegian adolescents. *Journal of Traumatic Stress*, 35(3), 941-954.

UN Women (2022). Measuring the shadow pandemic: violence against women during the Covid-19 pandemic. Available:

<https://data.unwomen.org/sites/default/files/documents/Publications/Measuring-shadow-pandemic.pdf>

UNDP (2022) Human Development Report 2021/2022. Available: https://hdr.undp.org/system/files/documents/global-report-document/hdr2021-22pdf_1.pdf

UNESCO. (2020). How Many Students Are at Risk of Not Returning to School?. UNESCO COVID-19 Education Response, Advocacy Paper. Available: <https://unesdoc.unesco.org/ark:/48223/pf0000373992>

UNFPA (2021) Impact of COVID-19 on family planning: what we know one year into the pandemic. Available: https://www.unfpa.org/sites/default/files/resource-pdf/COVID_Impact_FP_V5.pdf

UNICEF (2021). Preventing a lost decade: Urgent action to reverse the devastating impact of COVID-19 on children and young people. Available: <https://www.unicef.org/media/112891/file/UNICEF%2075%20report.pdf>

UNICEF (2022). The State of Global Learning Poverty. Available: <https://thedocs.worldbank.org/en/doc/e52f55322528903b27f1b7e61238e416-0200022022/original/Learning-poverty-report-2022-06-21-final-V7-0-conferenceEdition.pdf>

UNIDO (2022) World Manufacturing Production. Available: <https://stat.unido.org/content/publications/world-manufacturing-production>

US Bureau of Labor Statistics (2022). The Economics Daily, 2.5 million unable to work in March 2022 because employer closed or lost business due to COVID-19 Available: <https://www.bls.gov/opub/ted/2022/2-5-million-unable-to-work-in-march-2022-because-employer-closed-or-lost-business-due-to-covid-19.htm>

Valabhji, J., Barron, E., Gorton, T., Bakhai, C., Kar, P., Young, B. et al. (2022). Associations between reductions in routine care delivery and non-COVID-19-related mortality in people with diabetes in England during the COVID-19 pandemic: a population-based parallel cohort study. *The Lancet Diabetes & Endocrinology*, 10(8), 561-570.

Valiquette L'Heureux, A. (2022). The Case Study of Los Angeles City & County Fraud, Embezzlement and Corruption Safeguards during times of pandemic. *Public Organization Review*, 22(3), 593-610.

Van Aelst, P., Toth, F., Castro, L., Štětka, V., Vreese, C. D., Aalberg, T. et al. (2021). Does a crisis change news habits? A comparative study of the effects of COVID-19 on news media use in 17 European countries. *Digital Journalism*, 9(9), 1208-1238.

Van Breen, J. A., Kutlaca, M., Koç, Y., Jeronimus, B. F., Reitsema, A. M., Jovanović, V. et al. (2022). Lockdown lives: A longitudinal study of inter-relationships among feelings of loneliness, social contacts, and solidarity during the COVID-19 lockdown in early 2020. *Personality and Social Psychology Bulletin*, 48(9), 1315-1330.

van der Meer, T., Steenvoorden, E., & Ouattara, E. (2023). Fear and the COVID-19 rally round the flag: a panel study on political trust. *West European Politics*. DOI: <https://doi.org/10.1080/01402382.2023.2171220>

Van Dooren, W., & Noordegraaf, M. (2020). Staging science: Authoritativeness and fragility of models and measurement in the COVID-19 crisis. *Public Administration Review*, 80(4), 610-615.

van Mulukom, V., Pummerer, L. J., Alper, S., Bai, H., Čavojeová, V., Farias, J. et al. (2022). Antecedents and consequences of COVID-19 conspiracy beliefs: A systematic review. *Social Science & Medicine*, 114912.

van Schaik, T., Brouwer, M. A., Knibbe, N. E., Knibbe, H. J., & Teunissen, S. C. (2022). The Effect of the COVID-19 Pandemic on Grief Experiences of Bereaved Relatives: An Overview Review. *OMEGA-Journal of Death and Dying*, 00302228221143861.

van Vliet, E. D., Eijkelboom, A. H., Van Giessen, A., Siesling, S., & De Wit, G. A. (2023). Physical and mental health outcomes of COVID-19 induced delay in oncological care: A systematic review. *Frontiers in oncology*, 13.

Vasilopoulos, P., McAvay, H., Brouard, S., & Foucault, M. (2022). Emotions, governmental trust and support for the restriction of civil liberties during the covid-19 pandemic. *European Journal of Political Research*. DOI: <https://doi.org/10.1111/1475-6765.12513>

Veiga-Seijo, R., Miranda-Duro, M. D. C., & Veiga-Seijo, S. (2022). Strategies and actions to enable meaningful family connections in nursing homes during the COVID-19: A Scoping Review. *Clinical Gerontologist*, 45(1), 20-30.

Vickery, J., Atkinson, P., Lin, L., Rubin, O., Upshur, R., Yeoh, E. K., ... & Errett, N. A. (2022). Challenges to evidence-informed decision-making in the context of pandemics: qualitative study of COVID-19 policy advisor perspectives. *BMJ global health*, 7(4), e008268.

Vieira, A., Peixoto, V. R., Aguiar, P., & Abrantes, A. (2020). Rapid estimation of excess mortality during the COVID-19 pandemic in Portugal-beyond reported deaths. *Journal of epidemiology and global health*, 10(3), 209.

Volk, S., & Weisskircher, M. (2023). Defending democracy against the ‘Corona dictatorship’? Far-right PEGIDA during the COVID-19 pandemic. *Social Movement Studies*. DOI: <https://doi.org/10.1080/14742837.2023.2171385>

Völker, B. (2023). Networks in lockdown: The consequences of COVID-19 for social relationships and feelings of loneliness. *Social Networks*, 72, 1-12.

Vos, R., McDermott, J., & Swinnen, J. (2022). COVID-19 and Global Poverty and Food Security. *Annual Review of Resource Economics*, 14.

Wade, M., Prime, H., & Browne, D. (2023). Why we still need longitudinal mental health research with children and youth during (and after) the COVID-19 pandemic. *Psychiatry Research*, 323:115126.

Walker, J., Martin, M., Seery, E., Abdo, N., Kamande, A., Lawson, M. (2022) The commitment to reducing inequality index 2022. Oxfam Press. Available: <https://oxfamilibrary.openrepository.com/bitstream/handle/10546/621419/rr-cri-2022-111022-en.pdf;jsessionid=302C036561323984E3651C5A30D0893D?sequence=33>

Wang, H., Paulson, K. R., Pease, S. A., Watson, S., Comfort, H., Zheng, P. et al. (2022). Estimating excess mortality due to the COVID-19 pandemic: a systematic analysis of COVID-19-related mortality, 2020–21. *The Lancet*, 399(10334), 1513-1536.

Wang, Q., Li, S., Zhang, M., & Li, R. (2022). Impact of COVID-19 pandemic on oil consumption in the United States: a new estimation approach. *Energy*, 239, 122280.

Warrington, M. H., Schrimpf, M. B., Des Brisay, P., Taylor, M. E., & Koper, N. (2022). Avian behaviour changes in response to human activity during the COVID-19 lockdown in the United Kingdom. *Proceedings of the Royal Society B*, 289(1983), 20212740.

Washburn, T., Diener, M. L., Curtis, D. S., & Wright, C. A. (2022). Modern slavery and labor exploitation during the COVID-19 pandemic: a conceptual model. *Global health action*, 15(1), 2074784.

Webb, R. T., John, A., Knipe, D., Bojanić, L., Dekel, D., Eyles, E. et al. (2022). Has the COVID-19 pandemic influenced suicide rates differentially according to socioeconomic indices and ethnicity? More evidence is needed globally. *Epidemiology and psychiatric sciences*, 31, e72.

Wellcome (2021) Wellcome Global Monitor: How covid-19 affected people's lives and their views about science. Available: <https://cms.wellcome.org/sites/default/files/2021-11/Wellcome-Global-Monitor-Covid.pdf>

Wen, J., Zhu, L., & Ji, C. (2021). Changes in weight and height among Chinese preschool children during COVID-19 school closures. *International Journal of Obesity*, 45(10), 2269-2273.

Wenham, C., & Herten-Crabb, A. (2021). Why we need a gender advisor on SAGE. *LSE Public Policy Review*, 1(4).

White, A. M., Castle, I. J. P., Powell, P. A., Hingson, R. W., & Koob, G. F. (2022). Alcohol-related deaths during the COVID-19 pandemic. *JAMA*, 327(17), 1704-1706.

White, P., Crowe, C., Bowe, A., Brennan, A., Bruton, O., O'Sullivan, M. et al. (2022). An audit of COVID-19 death reporting in counties Cork and Kerry, Ireland, winter 2021–2022. *Irish Journal of Medical Science* (1971-), 1-6.

WHO and IBRD (2021) Tracking Universal Health Coverage: 2021 global monitoring report. Geneva: World Health Organization and International Bank for Reconstruction and Development.

WHO (2019). *Non-pharmaceutical public health measures for mitigating the risk and impact of epidemic and pandemic influenza: report of systematic literature reviews*. Geneva: World Health Organization.

Wilms, P., Schröder, J., Reer, R., & Scheit, L. (2022). The impact of “Home Office” work on physical activity and sedentary behavior during the COVID-19 pandemic: a systematic review. *International Journal of Environmental Research and Public Health*, 19(19), 12344.

Winter, T., Jose, P. E., Riordan, B. C., Bizumic, B., Ruffman, T., Hunter, J. et al. (2022). Left-wing support of authoritarian submission to protect against societal threat. *PLoS one*, 17(7), e0269930.

Witchell, S. & Webster, D (2023). Company insolvency statistics, October to December 2022. The Insolvency Service, UK. Available: <https://www.gov.uk/government/statistics/company-insolvency-statistics-october-to-december-2022/commentary-company-insolvency-statistics-october-to-december-2022>

Wolff, M., & Mykhnenko, V. (2023). COVID-19 as a game-changer? The impact of the pandemic on urban trajectories. *Cities*, 134, 104162.

Wollebæk, D., Fladmoe, A., & Steen-Johnsen, K. (2021). ‘You can’t be careful enough’: Measuring interpersonal trust during a pandemic. *Journal of Trust Research*, 11(2), 75-93.

Woolf, S. H., Chapman, D. A., Sabo, R. T., & Zimmerman, E. B. (2021). Excess deaths from COVID-19 and other causes in the US, March 1, 2020, to January 2, 2021. *JAMA*, 325(17), 1786-1789.

World Bank (2022) Poverty and Shared Prosperity 2022: Correcting Course. Washington, DC: World Bank. doi:10.1596/978-1-4648-1893-6.

World Bank-UNESCO (2022). Education Finance Watch 2022. Available: <https://thedocs.worldbank.org/en/doc/5c5cdd4c96799335e263023fa96db454-0200022022/related/EFW-2022-Dec21.pdf>

World Bank. 2022. World Development Report 2022: Finance for an Equitable Recovery. Washington, DC: World Bank.

World Bank. 2023. Global Economic Prospects, January 2023. Washington, DC: World Bank.

World Health Organization. (2020). Global status report on preventing violence against children 2020. Geneva: World Health Organization.

World Health Organization (2021). Second round of the national pulse survey on continuity of essential health services during the COVID-19 pandemic: January-March 2021: interim report, 22 April 2021. Geneva: World Health Organization.

World Health Organization (2022). Implications of the COVID-19 pandemic for patient safety: a rapid review. Geneva: World Health Organization.

Wu, C., Bierman, A., & Schieman, S. (2022). Socioeconomic stratification and trajectories of social trust during COVID-19. *Social Science Research*, 108, 102750.

Wu, R. (2023). COVID-19's impacts on business activities and female workers: Empirical evidence from global developing economies. *Journal of International Development*, 35(1), 163-197.

Wunsch, K., Kienberger, K., & Niessner, C. (2022). Changes in physical activity patterns due to the COVID-19 pandemic: A systematic review and meta-analysis. *International journal of environmental research and public health*, 19(4), 2250.

Yakusheva, O., van den Broek-Altensburg, E., Brekke, G., & Atherly, A. (2022). Lives saved and lost in the first six month of the US COVID-19 pandemic: A retrospective cost-benefit analysis. *Plos one*, 17(1), e0261759.

Yates, J., & Mantler, T. (2023). The Resilience of Caregivers and Children in the Context of COVID-19: A Systematic Review. *Journal of Child & Adolescent Trauma*. DOI: <https://doi.org/10.1007/s40653-022-00514-w>

Yomoda, K., & Kurita, S. (2021). Influence of social distancing during the COVID-19 pandemic on physical activity in children: A scoping review of the literature. *Journal of Exercise Science & Fitness*, 19(3), 195-203.

Yonemoto, N., & Kawashima, Y. (2023). Help-seeking behaviors for mental health problems during the COVID-19 pandemic: A systematic review. *Journal of Affective Disorders*, 323, 85.

Yu, W., Payton, B., Sun, M., Jia, W., & Huang, G. (2022). Toward an integrated framework for misinformation and correction sharing: A systematic review across domains. *New Media & Society*, 14614448221116569

Yuan, K., Huang, X. L., Yan, W., Zhang, Y. X., Gong, Y. M., Su, S. Z., ... & Lu, L. (2022). A systematic review and meta-analysis on the prevalence of stigma in infectious diseases, including COVID-19: a call to action. *Molecular psychiatry*, 27(1), 19-33.

Yuan, X., Wang, X., Sarkar, B., & Ok, Y. S. (2021). The COVID-19 pandemic necessitates a shift to a plastic circular economy. *Nature Reviews Earth & Environment*, 2(10), 659-660.

Zalla, L. C., Mulholland, G. E., Filiatreau, L. M., & Edwards, J. K. (2022). Racial/Ethnic and Age Differences in the Direct and Indirect Effects of the COVID-19 Pandemic on US Mortality. *American Journal of Public Health*, 112(1), 154-164.

Zeduri, M., Vigezzi, G. P., Carioli, G., Lugo, A., Stival, C., Amerio, A. et al. (2022). COVID-19 lockdown impact on familial relationships and mental health in a large representative sample of Italian adults. *Social Psychiatry and Psychiatric Epidemiology*, 57(8), 1543-1555.

Zhang, Y., Wu, Q., Zhang, T., & Yang, L. (2022). Vulnerability and fraud: evidence from the COVID-19 pandemic. *Humanities and Social Sciences Communications*, 9(1), 1-12.

Zheng, X., Zhang, J., Ye, X., Lin, X., Liu, H., Qin, Z. et al. (2022). Navigating through motherhood in pregnancy and postpartum periods during the COVID-19 pandemic: A systematic review and qualitative meta-synthesis. *Journal of Nursing Management*. DOI: <https://doi.org/10.1111/jonm.13846>

Zhu, P. H., Mhango, S. N., Vinnakota, A., Mansour, M., & Coss-Bu, J. A. (2022). Effects of COVID-19 Pandemic on Nutritional Status, Feeding Practices, and Access to Food Among Infants and Children in Lower and Middle-Income Countries: a Narrative Review. *Current Tropical Medicine Reports*, 9(4), 197-206.

Zinberg, J., Blasé, B., Case, E.S., Mulligan, C. (2023). Freedom wins: states with less restrictive covid policies outperformed states with more restrictive covid policies. Paragon Health Institute. Available: https://paragoninstitute.org/wp-content/uploads/2023/02/20230201_Zinberg_FreedomWinsStateswithLessRestrictiveCOVIDPoliciesOutperformedStateswithMoreRestrictiveCOVIDPolicies_FINAL_202302091645.pdf