Big Research Idea

Incorporating Trust into Pandemic Preparedness and Response

World Health Organization

R&DBlueprint
Powering research to prevent epidemics

Overview

- The essential role of trust in health emergency response (e.g., H1N1, SARS, Ebola)
- The need for a practical agenda for incorporating trust into pandemic preparedness and response planning
- Two strategies:
    - Sustaining the trust that already exist in a community during a crisis
    - Fostering cooperation in communities that have historical reasons to mistrust
- Supported by regular monitoring of trust at national and local level as part of pandemic preparedness
- A community platform for research, knowledge sharing, and exchange of best practice

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

COVID-19 National Preparedness Collaborators

Summary

Background National rates of COVID-19 infection and fatality have varied dramatically since the onset of the pandemic. Understanding the conditions associated with this cross-country variation is essential to guiding investment in more effective preparedness and response for future pandemics.

Methods Daily SARS-CoV-2 infections and COVID-19 deaths for 177 countries and territories and 181 subnational locations were extracted from the Institute for Health Metrics and Evaluation's modelling database. Cumulative infection rate and infection-fatality ratio (IFR) were estimated and standardised for environmental, demographic, biological, and economic factors. For infections, we included factors associated with environmental seasonality (measured as the relative risk of pneumonia), population density, gross domestic product (GDP) per capita, proportion of the population living below 100 m, and a proxy for previous exposure to other betacoronaviruses. For IFR, factors were age distribution of the population, mean body-mass index (BMI), exposure to air pollution, smoking rates, the proxy for previous exposure to other betacoronaviruses, population density, age-standardised prevalence of chronic obstructive pulmonary disease and cancer, and GDP per capita. These were standardised using indirect age standardisation and multivariate linear models. Standardised national cumulative infection rates and IFRs were tested for associations with 12 pandemic preparedness indices, seven health-care capacity indicators, and ten other demographic, social, and political conditions using linear regression. To investigate pathways by which important factors might affect infections with SARS-CoV-2, we also assessed the relationship between interpersonal and governmental trust and corruption and changes in mobility patterns and COVID-19 vaccination rates.

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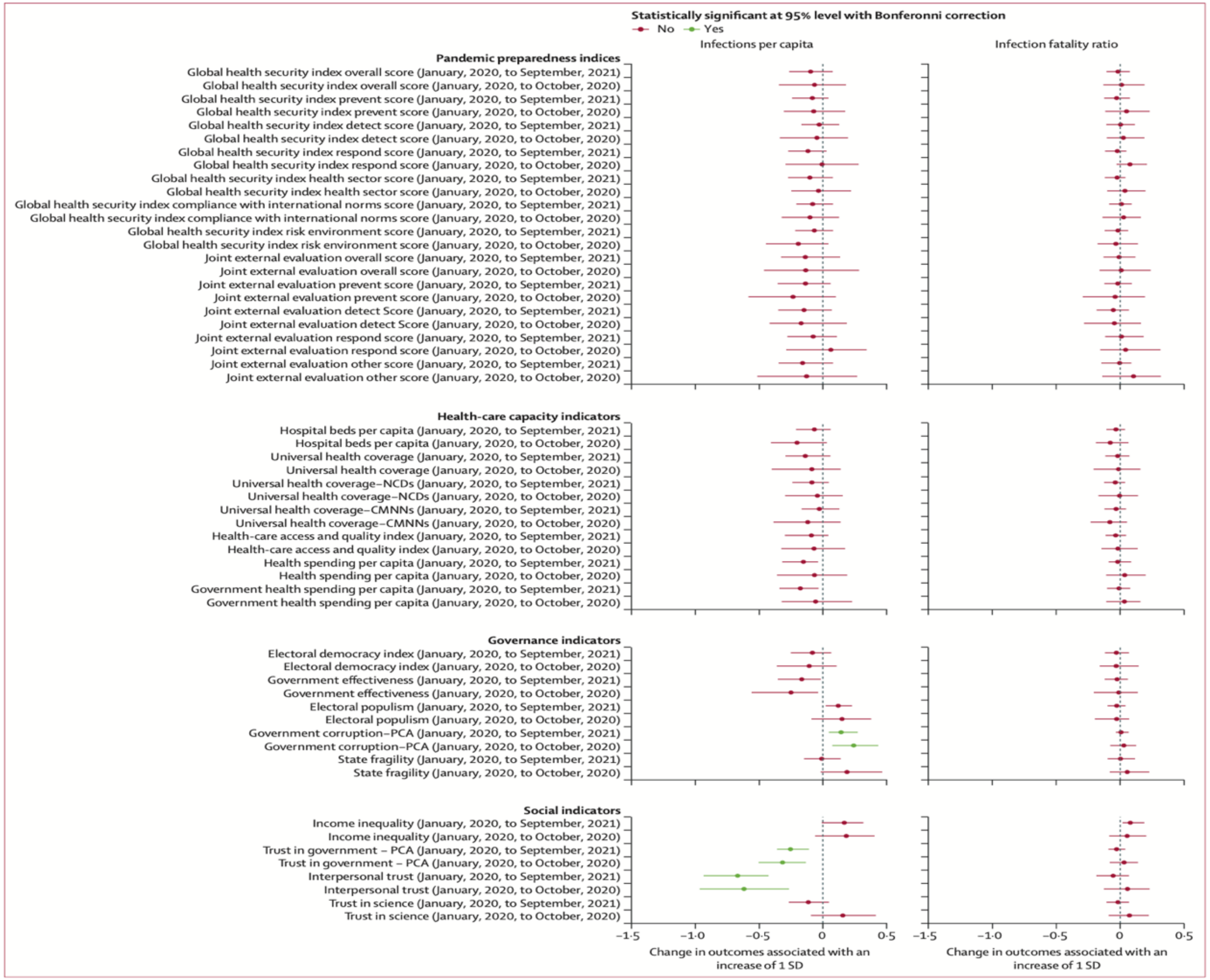
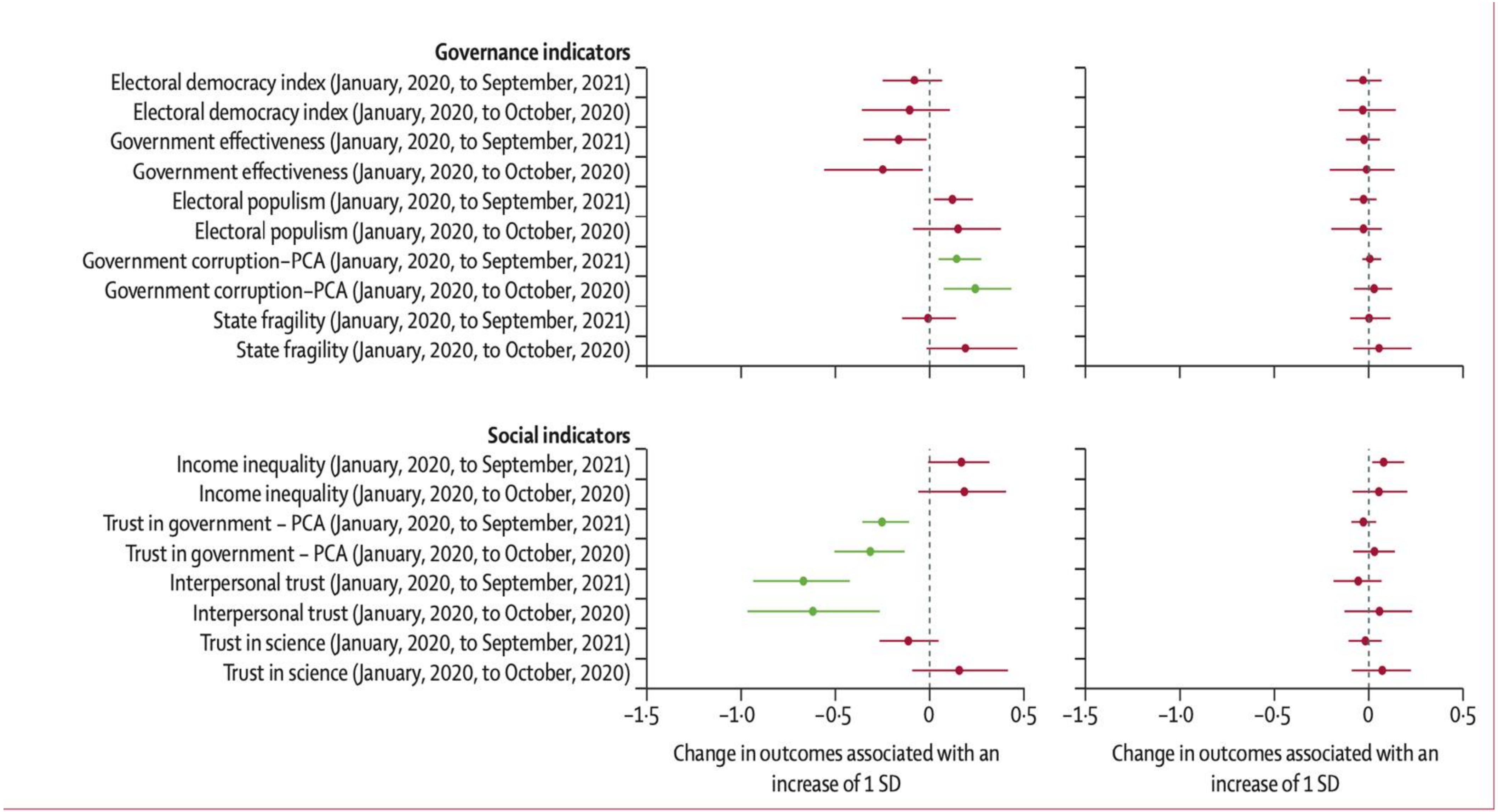


Figure 3: **Associations between key preparedness, capacity, governance, and social indicators and infection rates and IFR**
The left column shows estimated associations between indicators of key contextual factors (pandemic preparedness indices, health-care capacity indicators, governance indicators, and social indicators) and infections per capita. The right column shows estimated associations between key contextual factors and the infection-fatality ratio. Red indicates the association is not significant and

Bollyky et al. *Lancet (2022)*



Bollyky et al. *Lancet (2022)*

	Variation in infections per capita explained by each factor, % (95% UI)	Variation in IFR explained by each factor, % (95% UI)	Reduction in global infections each country's level of trust had exceeded 75th percentile across countries, % (95% UI)	Reduction in global IFR if each county's mean BMI was less than the 25th percentile across all countries, % (95% UI)
Seasonality	2·1% (1·7–2·7)*	··	··	··
Age structure	··	46·7% (18·1–67·6)*	··	··
GDP per capita	4·2% (1·8–6·6)*	3·1% (0·3–8·6)*	··	··
Population density	1·8% (0·8–3·2)	1·7% (0·3–5·6)	··	··
Altitude	5·4% (4·0–7·9)*	··	··	··
Pre-exposure to betacoronavirus	2·1% (1·1–3·1)	0·7% (0·1–2·1)	··	··
Body-mass index	··	1·1% (0·2–2·6)*	··	11·1% (2·1–20·6)*
Smoking prevalence	··	0·3% (0·1–3)	··	··
Air pollution	··	0·3% (0·1–2·1)	··	··
COPD prevalence	··	0·2% (0·0–0·7)	··	··
Cancer prevalence	··	1·6% (0·1–4·8)	··	··
Trust in government†	7·4% (5·4–9·6)*	··	12·9% (5·7–17·8)*	··
Interpersonal trust†	16·5% (12·3–19·5)*	··	40·3% (24·3–51·4)*	··
Unexplained variation	60·6% (55·6–65·2)	44·4% (29·2–61·7)	··	··

BMI=body-mass index. COPD=chronic obstructive pulmonary disease. IFR=infection-fatality ratio. UI=uncertainty interval. *Estimated parameters that are statistically different from zero. †These covariates are assumed to be independent from each other and all other covariates. Further, a few countries had incomplete reporting of these covariates. Corresponding figures reflect those countries where the respective covariate was present.

***Table 2*: Factors associated with variation in cross-country cumulative infections per capita, IFR, and hypothetical levels of trust and prevalence of risk factors**

Bollyky et al. *Lancet (2022)*

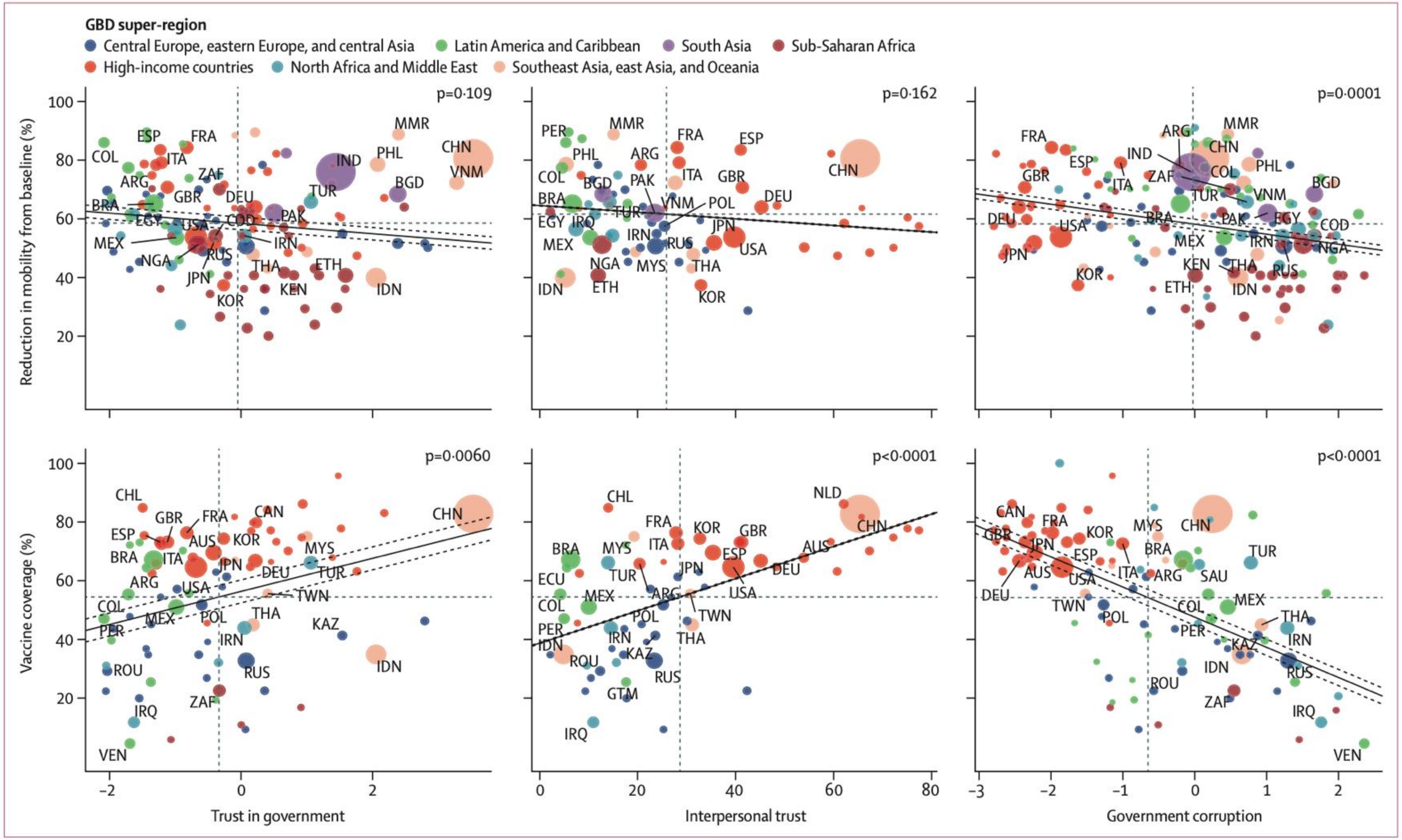


Figure 4: Association between trust and government corruption, and vaccine coverage and change in mobility

The size of each circle represents total population. The solid line represents the fit of the linear regression for the two variables, and dotted lines represent the 95% CI. GBD=Global Burden of Diseases, Injuries, and Risk Factors Study.

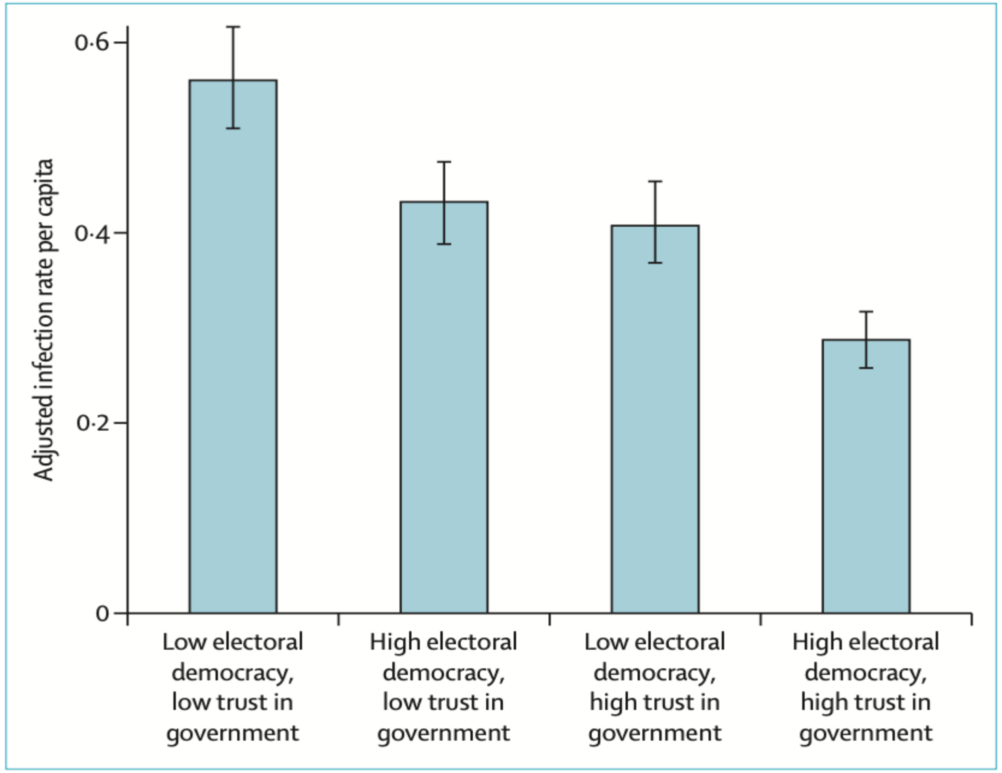


***Figure:* Adjusted SARS-CoV-2 infection rate given low and high levels of electoral democracy and trust in government, from Jan 1, 2020, to Sept 30, 2021**

This figure shows adjusted infection rates based on the average observed association between infections and electoral democracy and trust in government during the specified time period. Adjusted infection rate reflects cumulative infections per capita that cannot be accounted for by seasonality, altitude, gross domestic product per capita, population density, and a proxy for pre-exposure to betacoronavirus. Low levels of a measure are defined as the 25th percentile of observed values; high levels are the 75th percentile. The heights of the bars are the median values with accompanying error bars representing 95% uncertainty intervals.

Assessing COVID-19 pandemic policies and behaviours and their economic and educational trade-offs across US states from Jan 1, 2020, to July 31, 2022: an observational analysis

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Summary

Background The USA struggled in responding to the COVID-19 pandemic, but not all states struggled equally. Identifying the factors associated with cross-state variation in infection and mortality rates could help to improve responses to this and future pandemics. We sought to answer five key policy-relevant questions regarding the following: 1) what roles social, economic, and racial inequities had in interstate variation in COVID-19 outcomes; 2) whether states with greater health-care and public health capacity had better outcomes; 3) how politics influenced the results; 4) whether states that imposed more policy mandates and sustained them longer had better outcomes; and 5) whether there were trade-offs between a state having fewer cumulative SARS-CoV-2 infections and total COVID-19 deaths and its economic and educational outcomes.

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Takeaways

- When confronted with a novel virus, the most effective way for a government to protect citizens is by convincing and enabling those citizens to take voluntary measures to protect themselves.
- This is especially true when benefits and cost of public health measures are asymmetric
- This asymmetry is likely to exist for other crisis (e.g. climate)
- Especially in democracies, the success of those efforts depends on trust—between citizens and their governments and among citizens themselves—that many communities no longer have.
- Restoring faith in public health institutions and one another is essential, but governments must also prepare for advancing cooperation in communities as they currently are
- Governments should monitor low trust as a pandemic risk, developing localized response plans that can succeed even where distrust runs the deepest

Early research on cooperation in communities with low levels of trust

- Lessons from the limited research that exists on cooperation in low-trust societies and in response to extreme events and disasters:

1. Limited use of mandates, minimizing police engagement

2. Ongoing community engagement of local kinship and social networks, alignment with local values, and coproduction of strategy with vulnerable, marginalized, partisan communities

3. Policies to facilitate opportunity for pro-social crisis response (paid sick, family leave).

4. Transparent, timely risk communication, emphasizing fairness and consistency in application, regularly updated, culturally appropriate

5. Clear criteria for an exit strategy

Principles of monitoring

- Use existing validated measures of trust
- Collect and analyze in real-time with high-resolution
- Combine multiple methods: Surveys, social media, and ethnography
- Partner with researchers and establish infrastructures that deliver insights to all decision-making levels