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The political scar of epidemics

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Contents

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Abstract

What will be political legacy of the Coronavirus pandemic? We find that epidemic exposure in an individual's "impressionable years" (ages 18 to 25) has a persistent negative effect on confidence in political institutions and leaders. We find similar negative effects on confidence in public health systems, suggesting that the loss of confidence in political leadership and institutions is associated with healthcare-related policies at the time of the epidemic. In line with this argument, our results are mostly driven by individuals who experienced epidemics under weak governments with less capacity to act against the epidemic, disappointing their citizens. We provide evidence of this mechanism by showing that weak governments took longer to introduce policy interventions in response to the COVID-19 outbreak. These results imply that the Coronavirus may leave behind a long-lasting political scar on the current young generation ("Generation Z").

JEL codes: D72; F50; I19
Keywords: epidemics; trust; democracy, political approval

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1 Introduction

Epidemics are stress tests for governments. Public officials and institutions face the pressing challenge of assembling information and mounting effective interventions against a rapidly spreading and potentially catastrophic disease. They must communicate that information, describe their policies and, importantly, convince the public of their trustworthiness. Thus, Fukuyama (2020) argues that the keys to success in dealing with COVID-19 are "whether citizens trust their leaders, and whether those leaders preside over a competent and effective state." By way of example, Rothstein (2020) ascribes the greater success at containing the COVID-19 in the Nordic countries than in Italy in part to greater trust in government.

Trust in government is not a given, however, stereotypes about Nordics and Italians notwithstanding. Specifically, there is reason to ask whether COVID-19 itself will affect trust in political institutions and leaders, and if so how. On the one hand, there is the "rally 'round the flag hypothesis." Trust in and support for political institutions and leaders tends to rise in the wake of disasters (Mueller 1970, Baum 2002), although the persistence of this change is unclear.[1] On the other hand, trust and support for the government may be affected negatively because the authorities failed to limit the effects of the pandemic. In this case also, however, persistence is unclear.

In this paper, we provide the first evidence on the effects of epidemics on political trust.[2] We use individual-level data on confidence in political institutions and approval of political leaders from the 2006–2018 Gallup World Polls (GWP), fielded in nearly 140 countries annually. We link these individual responses to the incidence of epidemics since 1970 as tabulated in the EM-DAT International Disasters Database. Building on work suggesting that attitudes and behavior are durably molded in what psychologists refer to as the "impressionable" late-adolescent and early-adult years, we show that exposure to epidemics at this stage in the life course durably shapes confidence in political institutions and attitudes toward political leaders.

We find that individuals who experience epidemics in their impressionable years (specifically ages 18 to 25) display less confidence in political leaders, governments, and elections. The

[1] For example, Chanley (2002) shows that in the days after the 11 September 2001 attacks, public trust in the U.S. government rose to levels not seen since the mid-1960s.

[2] There is limited evidence on other political impacts of epidemics and containment efforts. Campante et al. (2020) find that heightened concern about Ebola led to lower voter turnout in the United States but no evidence of an anti-incumbent effect. Amat et al. (2020) show that following the COVID-19 outbreak in Spain, citizens expressed a stronger preference for technocratic governance and strong leadership. Bol et al. (2020) surveyed citizens of 15 European countries and find that the imposition of lockdown was associated with a 2 percent increase in trust in government. Another body of research examines the impact of trust in government on epidemics and containment efforts. Marlow et al. (2007) show that trust in government is a predictor of flu vaccine acceptance by mothers in the United States. Using survey evidence from Liberia during the Ebola epidemic, Blair et al. (2017) report that respondents who expressed low trust in government were less likely to take precautions in their homes or abide by government-mandated social distancing.

effects are substantial: an individual with the highest exposure to an epidemic (relative to zero exposure) is 7.2 percentage points less likely to have confidence in the honesty of elections; 5.1 percentage points less likely to have confidence in the national government; and 6.2 percentage points less likely to approve the performance of the political leader. (The respective averages of these three variables in our sample are 51 percent, 50 percent, and 50 percent.) These effects represent the average treatment values for the remainder of life. They decay only gradually and persist for at least two decades.

There is significant heterogeneity in these effects. Less educated individuals respond more strongly, adopting even more negative attitudes toward political institutions and leaders. Residents of urban areas respond more negatively than those residing in rural areas. Women display larger drops in confidence. The negative impact of epidemic exposure is larger in middle- and high-income countries.

We then explore amplification and transmission mechanisms. We show that the effects we identify are specific to communicable diseases, such as viruses, which can spread contagiously and where a timely and effective public policy response is critical for containment. For non-communicable diseases, in contrast, we do not see the same impact of past impressionable-year outbreaks on subsequent views of the trustworthiness of governments and leaders.

In addition, we document that individuals exposed to epidemics in their impressionable years are less likely to have confidence in the public health system and the safety and efficacy of vaccination. The former is indicative of trust in the overall health policies of the government, while the latter can be taken as reflecting attitudes specifically toward pharmaceutical interventions. These findings suggest that the perceived (in)adequacy of health-related government interventions during epidemics, both pharmaceutical and non-pharmaceutical, are important for trust in government more generally.

We also show that the magnitude of the effect we identify depends on the strength of the government at the time of the epidemic. When individuals experience epidemics under weak governments, the negative impact on trust is larger and more persistent. This is consistent with the idea that such governments are less capable of effectively responding to epidemics, hence leading to a long-term fall in political trust.

We substantiate this conjecture by considering this same conditioning factor, government strength, in the context of COVID-19. We show that government strength is associated with statistically significant improvements in policy response time (the number of days between the date of first confirmed case and the date of the first non-pharmaceutical intervention). This supports the

notion that government strength at the time of the epidemic is a predictor of effective policy responses and that its absence amplifies the negative revision of political trust in response to epidemics.

Finally, we show that our results are driven by the reaction to epidemic exposure in democracies. In democracies, residents sharply and persistently revise (downward) their political trust in the event of impressionable-year epidemic exposure. The same is not true in autocracies. Evidently, citizens expect democratic governments to be responsive to their health concerns, and where the public-sector response is not sufficient to head off the epidemic they revise their views in unfavorable ways.[3] In autocracies, in contrast, there may not exist a comparable expectation of responsiveness and hence no impact on political trust. In addition, democratic regimes may find consistent messaging more difficult. Because such regimes are open, they may allow for a cacophony of conflicting official views, resulting in a larger impact on trust when things go wrong.

Our analysis offers the broadest cross-national evidence to date on the relationship between exposure to epidemics and political trust. Where a few previous papers have considered individual countries and epidemics, our data cover some 750,000 respondents from 142 countries. This allows greater confidence in the generality of the findings. By incorporating a wide range of fixed effects, controlling various observable characteristics as well as past exposure to other economic and political shocks, we can address potential concerns with omitted variables.[4]

A word on terminology before proceeding. We group the terms confidence, trust, and approval under the general heading of trust. Confidence is the belief that certain future outcomes will obtain. Trust is vesting confidence in specific institutions or individuals for delivering those outcomes.[5] Approval is a function of trust and other factors, such as, in the present context, success in containing epidemics. In addition to analyzing individual questions that inquire about the respondent's confidence in, trust in, or approval of a political institution or leader, we use the average and first principal component of these variables as a way of better isolating their common element.

[3] Consistent with this, Economist (2020) shows that democracies typically respond more effectively to epidemics; our results suggest that when they disappoint this expectation, they are more severely punished.

[4] Our treatment variable, exposure to epidemics, is a natural disaster and as such is more plausibly exogenous than the man-made shocks employed in previous literature (described below) Note that it is commonplace in the law to regard epidemics and pandemics as "Acts of God" and to invoke escape clauses in contracts, whereby parties experiencing a natural disaster are no longer responsible for their obligations. To be sure, the number of people affected by a virus in different countries will still depend on country characteristics. That said, there is also a random component in natural infection and mortality rates across different types of epidemics, which changes from virus to virus and thus brings randomness to our setting. For example, Ebola was more deadly but less contagious than COVID-19). Additionally, the timing and the appearance of a virus can be regarded as random insofar as it is not possible to predict when a new virus may appear.

[5] Checkland, Marshall, and Harrison (2004) and Smith (2005), also working in a public health context, argue that confidence is something that is entrusted in systems (what we refer to here as institutions), whereas trust is vested in individuals (in the present context, leaders). A further discussion of the relationship between trust and confidence is Adams (2005).

The remainder of the paper is organized as follows. Section 2 reviews kindred literatures. Sections 3 through 5 describe our data, empirical strategy, and model. Section 6 presents the baseline results, while Section 7 reports a battery of robustness checks. Section 8 then offers evidence on mechanisms, after which Section 9 concludes.

2 Literature

Our analysis connects up to several literatures. First, there is previous work in economics on the determinants and correlates of trust.[6] Contributions here (e.g. Greif 1989, Alesina and La Ferrara 2000) tend to focus on trust in other individuals rather than in political institutions and leaders. Exceptions are Algan et al. (2017) and Dustmann et al. (2017).[7] Algan et al. study the implications of the Great Recession for voting for anti-establishment parties, as well as for general trust and political attitudes, using regional data for Europe. They show that lack of political trust tends to be associated with crisis-driven economic insecurity. Dustmann et al. (2017) use data from the European Social Survey to identify economic and social characteristics associated with a lack of trust in national parliaments and the European Parliament. They find that positive economic outcomes are important for trust in national parliaments, but that voters look to other competences when evaluating the trustworthiness of the European Parliament.

Another relevant literature analyzes how past experience shapes attitudes and behaviors. Malmandier and Nagel (2011) show how the stock market returns experienced by an individual affect his or her subsequent financial risk taking. Krosnick and Alwin (1989) and Osborne et al.

[6] In addition, there is work in political science and psychology. Levi and Stoker (2000) survey work in political science on how trust is conceptualized. They argue that trust is both relational and conditional. By relational, they mean that it involves an individual making herself vulnerable to another individual, group, or institution (such as government) that has the capacity to do her harm or to betray her. By conditional, they mean that trust is placed in specific individuals and institutions over specific domains. Citizens may entrust their lives to their government during wartime or in a public health emergency, for example, but not otherwise. Work in psychology proceeds along similar lines. Thus, Mayer et al. (1995) also distinguish three dimensions of trustworthiness, which they denote ability, benevolence, and integrity. By ability, they mean the perceived technical competence of the trustee in a particular domain of interest. Perceptions of ability, therefore, consist, as they put it, "of a subjective evaluation of the various skills and capabilities that may be needed for the trustee to actually accomplish what it is being trusted to do." Benevolence derives from the extent to which the trustor believes the trustee is prepared to expend effort to protect the trustor. Integrity refers to the perception that the trustee follows a set of internalized values acceptable to the trustor. All three aspects may be relevant to the problem at hand.

[7] Other recent papers also analyze approval of leaders and governments, but they consider different independent variables than we do here. Margalit (2011) shows that job losses from import competition depressed the vote share of the incumbent president in 2004 and 2008 in the United States. Jensen et al. (2017) also find that trade-related losses in manufacturing cost incumbents votes. Aksoy et al. (2018) show that trade shocks affect political approval of governments and leaders, Guriev et al. (2019) show that an increase in broadband mobile internet access reduces government approval, and Guriev and Treisman (2019) find that approval of leaders is higher in non-democracies when media and internet are restricted covertly, but approval ratings fall when citizens observe censorship.

(2011), among others, show that preferences vis-a-vis partisanship and party affiliation are affected by past experience and, once formed, remain stable for long periods.

Third, there is the literature on the importance of the "impressionable years" in durably shaping attitudes and values. An influential study pointing to the importance of this stage of the lifecycle for belief and value formation is the repeated survey of women who attended Bennington College between 1935 and 1939 (Newcomb 1943, Newcomb, Koenig, Flacks and Warwick 1967), among whom beliefs and values formed then remained stable for long periods. An early statement of the resulting hypothesis is Dawson and Prewitt (1969); Krosnick and Alwin (1989), among others, then pinpoint the impressionable years as running from ages 18 to 25.

The importance of the impressionable years has been rationalized in various ways. Some scholars draw on Mannheim's earlier concept of the "fresh encounter," suggesting that views are durably formed when late adolescents and early adults encounter new ideas or events for the first time. Others invoke Erikson (1968) to suggest that individuals at this age are especially open to new influences because they are at the stage of life when they are forming a sense of self and identity. Still, others suggest that attitudes are pliable at this stage of the lifecycle because views have not yet been hardened by confirmatory information (Converse, 1976). Spear (2000) links the literature on the impressionable years to work in neurology describing neurochemical and anatomical differences between the adolescent and adult brain, suggesting that these neurochemical and anatomical changes are associated with durable attitude formation.

In terms of applications, Giuliano and Spilimbergo (2014) establish that experiencing a recession between the ages of 18 and 25 has a significant impact on political preferences and beliefs about the economy. Using survey research from Chile, Etchegaray et al. (2018) show that individuals in their impressionable years during periods of political repression have a greater tendency to withhold their opinions, compared to those who grew up in less repressive times. Farzanegan and Gholipour (2019) find that Iranians who experienced the Iran-Iraq War in their impressionable years are more likely to prioritize a strong defense. Akbulut-Yuksel, Okoye, and Yuksel (2018) show that Germans in their impressionable years during the Nazi expulsion of Jews are less interested in politics later in adulthood, compared to the less exposed.

We now complement this literature on the durable effect of past experience, specifically in the impressionable years, by showing that exposure to epidemics between the ages of 18 and 25 has a negative effect on individuals' trust in political institutions and leaders that persists for many years.

3 Data

Our principal data sources are 2006–2018 Gallup World Polls (GWP) and the EM-DAT International Disasters Database. GWP are nationally representative surveys fielded each year starting in 2006 in about 150 countries, with responses from approximately 1,000 individuals in each country. Our full sample (depending on outcome variable) includes around 750,000 respondents in 142 countries.[8]

The outcome variables come from questions asked of all Gallup respondents about their confidence in the national government, their confidence in the honesty of elections, and their evaluation of the job performance of the incumbent leader: (i) "In (this country), do you have confidence in each of the following, or not: … How about the honesty of elections?" (ii) "In (this country), do you have confidence in each of the following, or not: … How about the national government?" (iii) "Do you approve or disapprove of the job performance of the leadership of this country?"[9] All three questions are coded as dummy variables, with one representing a positive answer and zero otherwise. A visual summary of these variables is in Appendix Figure B.1–B.3.

GWP provides information on respondents' age, gender, educational attainment, marital status, religion, urban/rural residence, labor market status, and income. Controlling for employment status and income allows us to measure the impact of past epidemics on confidence in political institutions and leaders free of any direct effect on material well-being.

We also examine responses to three parallel questions as placebo outcomes: whether respondents have confidence in the military; confidence in financial institutions or banks; and confidence in media freedom. This helps us to determine whether what we are capturing is the impact of epidemic exposure on trust and confidence in political institutions and political leaders specifically, as distinct from any impact on trust in society, its institutions, and its leaders generally.

Data on the worldwide epidemic occurrence and its effects are drawn from the EM-DAT International Disasters Database from 1970 to the present.[10] These data are compiled from UN agencies, non-governmental organizations, insurance companies, research institutes, press agencies, and

[8] We drop observations for Nagorno-Karabakh, Northern Cyprus, Somaliland, and Puerto Rico, as they are not international recognised independent states.

[9] These questions are part of the Gallup "national institutions index." If a respondent asks for clarification or interpretation of the question, Gallup surveyors are trained to answer "However *you* interpret the question," or "It is whatever the question means to *you*." If a respondent asks whether there is a more neutral response option than "yes" or "no," surveyors are trained to ask whether "there is one that you lean more towards."

[10] EM-DAT was established in 1973 as a non-profit within the School of Public Health of the Catholic University of Louvain; it subsequently became a collaborating center of the World Health Organization.

other sources.[11] The database includes epidemics (viral, bacterial, parasitic, fungal, and prion) meeting one or more of the following criteria:

- 10 or more deaths;
- 100 or more individuals affected;
- Declaration of a state of emergency;
- Calls for international assistance.

Each epidemic is tagged with the country where it took place. When an epidemic affects several countries, the database contains separate entries for each country. EM-DAT provides information on the start and end date of the epidemic, the number of deaths and the number of individuals affected, where the number of individuals affected is how many require assistance with basic survival needs such as food, water, shelter, sanitation, and immediate medical treatment during the period of emergency. Figure 1 is a visual summary of these data. We aggregate all epidemic-related information in this database at the county-year level and merge it with Gallup World Polls.

In some of our robustness checks, we employ an additional panel dataset on diseases from Institute for Health Metrics and Evaluation (IHME) and a dataset on recent epidemics from Ma et al. (2020). To explore underlying mechanisms, we use data from the Wellcome Global Monitor, Google Trends, the European Center for Disease Prevention Control, the Johns Hopkins Coronavirus Resource Center, and the Oxford COVID-19 Government Response Tracker.[12]

Table 1 shows descriptive statistics for the outcome variables, country characteristics, and individual characteristics. Averaging across all country-years, nearly 50 percent of respondents say they have confidence in the honesty of elections, have confidence in the national government, or approve of the performance of the leader. There of course is huge heterogeneity within and across countries.[13]

Our dataset includes 47 epidemics and pandemics since 1970. This includes large outbreaks of Cholera, Ebola, and H1N1 and also more limited epidemics.[14] Many of these epidemics and

[11] EM-DAT also gathers historical information on epidemics that took place before it was founded in early 1970s; however, those data are patchy and biased towards well-recorded epidemics. Hence we only focus on epidemic cases that EM-DAT "live" collected after it was founded in 1970s. We do not provide the full country-year-epidemic list here due to space constraints, but this is available upon request.

[12] See Appendix A for additional details on these data sources and our construction of variables.

[13] For comparison, 72 percent respondents had confidence in the military, while only 60 and 54 percent had confidence in banks and financial institutions and in the media, respectively, where we use responses to these questions in placebo tests.

[14] Averaged across available years, H1N1, Ebola, Dysentery, Measles, Meningitis, Cholera, Yellow Fever, Diarrhoeal Syndromes, Marburg Virus, and Pneumonia were the top 10 diseases causing the most epidemic mortality worldwide.

pandemics affected multiple countries. 137 countries experienced at least one epidemic since 1970.[15]

4 Identification

An ideal experiment (from the point of view of the analyst but not the victims) would randomly allocate epidemics across countries and measure the causal impact on political trust by comparing the change in individual attitudes in treated and untreated countries. In the (fortunate) absence of such an experiment, we resort to a strategy similar to that employed by Giuliano and Spilimbergo (2014).

Our main independent variable is an individual's exposure to epidemics during his or her impressionable years, that is, between the ages of 18 and 25. Specifically, we measure the average number of people in the individual's country of residence affected by an epidemic (relative to population) during that individual's impressionable years. We limit our sample to individuals born in the same country in which they were interviewed by Gallup.[16]

One can imagine several potential threats to this strategy. First, our estimates could be driven by factors that are specific to each cohort, since our treatment categorizes individuals in each country by year of birth. Some cohorts could have cohort-specific attitudes toward political institutions and leaders or be more or less trusting than others in general. Individuals born in the late 1940s and early 1950s, for example, may vest less trust in political institutions and leaders because they experienced the widespread protests against political repression in the late 1960s, their impressionable years. We therefore include dummies for the year of birth to compare the individuals only within the same birth cohort.[17]

Second, independent of the cohort effects, individuals may exhibit differential behavior across the life cycle. For instance, they may become more (or less) trusting as they age. Their political views and ideologies may change from more liberal when young to more conservative when older. Age-specific factors may also matter if different generations were exposed to epidemics with different probabilities. Given advances in science and improvements in national healthcare systems,

[15] This includes 51 countries in Africa, 40 in Asia, 22 in the Americas, 19 in Europe, and 5 in Oceania. The most epidemic-prone countries in the dataset are Niger (25), Nigeria (25), Congo (22), Cameroon (21), Mozambique (20), Sudan (20), Uganda (20) and India (19). Advanced countries in our sample all experienced 5 or fewer epidemics.

[16] We cannot guarantee that these individuals spent all of their impressionable years in their country of birth, but any measurement error arising from this concern only stacks the cards against us by lowering the precision of our estimates.

[17] Including these dummies biases our estimates downward if epidemics are correlated across countries and affect them simultaneously. In this case, any common effect of an epidemic on a specific cohort will be subsumed by these cohort-specific dummies, and our treatment will pick up the variation in past epidemics only when they were staggered across countries.

one might anticipate that epidemics are less likely to be experienced by younger generations. We address these concerns by including a full set of age-group dummies, which eliminates any influence on our outcome variables of purely age-related and generational effects.

Generational trends in political attitudes could also be heterogeneous across countries. Some national cultures may be more flexible and open to change in individual values and beliefs, leading to larger differences across generations. We therefore include country-specific linear age trends in our models.

Third, any relevant but omitted variable that varies across countries and years can bias estimates even when conventional country and year fixed effects are included. This issue arises in our setting where we observe individuals' attitudes toward national political institutions and leaders. Because the identity of those leaders and the structure of those institutions may change over time, it can be difficult to separate these shifts in identity and structure from the treatment (i.e., the epidemic). For instance, even when approval of a leader declines following an epidemic, we may not capture this effect if the epidemic simultaneously triggers a change in the identity of the leader, bringing in someone for whom approval levels are higher.

We address this problem by including dummies for each county-year pair. This eliminates all heterogeneity in our outcome variables that can be traced to country-specific time-varying factors, such as changes in the government or leader. Thus, our treatment only compares individuals within the same country and survey year, ensuring that these individuals face the same political institutions and leaders. This strategy also mitigates concerns that our results are driven by other structural differences between countries that are repeatedly exposed to epidemics and those that are not.

Fourth, in any study of the impact of past experience on current outcomes, the underlying assumption is that the effect is durable and can be observed later in time. This indeed constitutes the essence of the "impressionable years" hypothesis. To the extent that this is not the case because the effect has a relatively short half-life, our empirical strategy will be biased towards failing to reject the null hypothesis of no effect. We explore this later by tracing the impact of past epidemic experience across different age groups and show that the effect is persistent and decays only gradually as individuals age.

Fifth, although we fully saturate our specifications with fixed effects, there could still be other past experiences correlated with epidemics. We therefore also control for 12 aspects of political risk in the country in question during the individual's impressionable years. In a separate test where we can use long-span datasets on economic and political variables, we again condition the estimates on past GDP, inflation, growth and democracy. Including these additional controls for past experience has no impact on the coefficients of interest. Lastly, we control for contemporaneous

individual characteristics and economic circumstances captured by Gallup. These controls, detailed when we specify the model, minimize the possibility that the impact of a past epidemic is transferred to current outcomes via one of these variables.

5 Model

To assess the effect of past epidemic exposure on confidence in political institutions and trust in leaders, we estimate the following specification:

$$Y_{i,\,c,\,t,\,a,\,b} = \beta_1 \text{Exposure to epidemic (18-25)}_{icb} + \beta_2 X_i \quad (1)$$

$$+ \beta_3 \text{Number of people affected}_{ct-1} + \beta_4 C_c + \beta_5 T_t + \beta_6 A_a + \beta_7 B_b + \beta_8 C_c * \text{Age} + \varepsilon_{ict}$$

where Y_{ictab} is a dummy variable for whether or not respondent *i* of age *a* and birthyear *b* in country *c* at time *t* approves or has confidence in an aspect of their country's political institutions or leadership. We focus on approval of the job performance of the leader of the country, confidence in national government, and confidence in the honesty of elections., All three questions are coded as dummy variables, with one representing a positive answer and zero otherwise. We estimate linear probability models for ease of interpretation.

To measure the *Exposure to epidemic (18–25)*, we calculate for each individual the number of people affected by an epidemic as a share of the population, averaged over the 8 years when the individual was aged 18 to 25, consistent with the "impressionable years" hypothesis. When estimating the coefficient of interest β_1, we control for whether or not the individual is also exposed to an epidemic contemporaneously. This is operationalized as the number of people per capita affected by an epidemic in the country of residence in the year immediately prior to the year of the interview.[18]

We specify the vector of individual controls X_i as including indicator variables for living in an urban area and for the presence of children in the household (any child under 15), and dummy variables for gender, marital status, employment status, religion, educational attainment, and within-country-year income deciles. We control for income before taxes in both log and log squared form.[19]

We include fixed effects separately at the levels of country (C_c), year (T_t), and age (A_a). The country dummies control for time-invariant variation in the outcome variable caused by factors

[18] This variable is lagged to ensure that the independent variable is realized before the dependent variable, since Gallup World Polls may interview individuals at any point within the year of the interview.

[19] The income measure includes all wages and salaries, remittances from family members living elsewhere, and all other income sources. Gallup converts local income to International Dollars using the World Bank's individual consumption PPP conversion factor. This makes income estimates comparable across countries.

that vary cross-nationally. Year dummies capture the impact of global shocks that affect all countries simultaneously. Age dummies control for the variation in the outcome variable caused by factors that are heterogeneous across (but homogenous within) age groups. We also include country-specific age trends (C_c*Age) and cohort fixed-effects (B_b) for reasons explained in Section 4.

In a fully saturated specification, we also include country-year fixed effects, which account for possible omitted country features that may change with time (such as GDP per capita, population, political regime, etc.). We cluster standard errors by country and use sample weights provided by Gallup to make the data representative at the country level.

6 Results

Tables 2–4 report estimates of Equation (1). The dependent variable in Table 2 is a dummy indicating that the respondent has confidence in the honesty of elections. Table 3 reports analogous estimates where the dependent variable is a dummy indicating that the respondent has confidence in the national government. Table 4 presents results where the dependent variable is a dummy indicating that the respondent approves of the job performance of the leadership of his or her country. In all three tables, Column 1 reports estimates with country, year, and age group fixed effects. Column 2 adds the logarithm of individual income and its square, demographic characteristics, within country-year income decile fixed effects, and labor market controls. Column 3 adds country-specific age trends, while column 4 adds cohort fixed effects. Column 5 fully saturates the specification with country*year fixed-effects, non-parametrically controlling for all potentially omitted variables that can vary across countries and years.[20]

Column 1 of Table 2 shows a negative and statistically significant relationship between exposure to an epidemic in the individual's impressionable years and confidence in the honesty of elections. The measure of contemporaneous epidemics is also negatively associated with confidence in the honesty of elections; its coefficient differs significantly from zero at the 10 percent confidence level.[21] Columns 2 to 4 show that the estimated effects change little as controls are added.[22] Column

[20] This specification requires us to drop the contemporaneous measure of epidemics, since this only varies across countries and years.

[21] Readers may recall some discussion of how confidence in the presidential primary election in Wisconsin in 2020 might be affected by it occurring in the midst of COVID-19. Among the mechanisms highlighted in this debate is the possibility that mail-in balloting and other complications will slow the vote count and "invite a distrust of the election process" (Ad Hoc Committee for 2020 Election Fairness and Legitimacy 2020).

[22] We also checked for "bad controls" (Angrist and Pischke, 2008). One might worry that some of the individual characteristics (such as household income) are themselves affected by epidemic related economic shocks. However, excluding them completely or including them as ordinal variables does not substantively change the point estimates for our variables of interest (these results are available upon request). We keep these controls in our baseline specification to avoid omitted variable bias.

5 restricts all variation to within country-year observations and reports conservative estimates that are smaller in magnitude but still significant at 1 percent level. In our preferred model (Column 4), an individual with the highest exposure (0.032, that is, *the number of people affected by an epidemic as a share of the population* in individual's impressionable years) relative to individuals with no exposure has on average 7.2 percentage points (–2.258*0.032) less confidence in the honesty of elections in the remaining part of their lives after impressionable years.[23] Given that the mean level of this outcome variable is 51 percent, the effect is substantial.

Tables 3 and 4 report results for confidence in the national government and approval of the performance of the leader. The results on impressionable-year epidemic exposure have the same sign, same statistical significance, and similar magnitude (a 5.1 percentage point decrease in confidence in the national government, where the mean outcome level is 50 percent, and a 6.2 percentage point decrease in approval of the political leader, where the mean outcome level is 50 percent).[24]

How persistent are the effects?

We investigate persistence by first estimating our baseline specification on the subsample of individuals closest to their impressionable years (that is, ages 26 to 35) and then repeatedly rolling the age window forward by one year in a series of separate estimates. This permits us to observe how the coefficients change as we increase the distance between the age range in which impressionable individuals had exposure to epidemics and the age at which they are surveyed. If the effects are persistent, then the estimated coefficient should not change substantially as distance increases between time of exposure and time of observation.

Figure 2, based on Column 4 of Table 2–4, shows the effect of epidemic exposure on the outcome variables. The effects on the base subsample (i.e., 26–35) are more than three times larger than the point estimates for the full sample, confirming that the age groups closest to the experience window (i.e., 18–25) are disproportionately affected (compared to other age groups). For this base sample, the median distance between the past experience window (median age: 21.5 years) and the subsample (median age: 30.5 years) is 9 years, hence documenting the effect of past epidemics in the medium term.

When the model is re-estimated on successively older subsamples, the magnitude of the impact remains stable for the first six estimations following base sample but then decays gradually. It nearly vanishes when estimated on the subsample of individuals aged 36 to 45, when the median distance between the experience window and the subsample is 19 years. On this basis**,** we conclude

[23] Because epidemics are rare events and our main independent variable of interest, *Exposure to epidemic (18-25)*, is skewed to the right, it may not be appropriate to use its standard deviation or mean for understanding the effect size.
[24] Our results are also robust to excluding countries with very high approval ratings for their leaders and governments.

that epidemic experience during the impressionable years has persistent effects on political trust that persist for nearly two decades of adult life.

Heterogeneity

We consider the baseline specification (Column 4 of Table 2) for various subsamples. Each cell of Table 5 reports a separate regression. Each column shows the coefficient estimates for our main variable of interest: average epidemic exposure during the impressionable years. We report the baseline estimates for our main outcome variables in the top row. The subsequent rows show results by gender (rows 2 and 3); by per capita income of the country (rows 4 and 5); by the education of the individual (rows 6 and 7); by urban/rural residence (rows 8 and 9); by within country-year household income tercile (row rows 10, 11 and 12); and by the political regime (democratic or other) (rows 13 and 14).[25]

These results reveal considerable heterogeneity. Individuals with less than degree-level education (those who have completed fewer than four years of education beyond high school) respond to epidemics more strongly, adopting even more negative attitudes toward political institutions and leaders.[26] Individuals in urban areas have more strongly negative views of political institutions and leaders as a result of earlier epidemic exposure, compared to those residing in rural areas.[27] Women display larger drops in confidence in government and leaders.[28] Many of these differences are statistically significant at the 95 percent confidence level.

In addition, we observe differences in magnitudes and statistical significance as a function of country characteristics. The negative impact of epidemic exposure on confidence in the government and its leader is larger in middle- and high-income countries, although the difference across groups is not always statistically significant.

Importantly, the negative impact of an epidemic tends to be larger in countries with democratic political systems than in non-democracies; the difference in coefficients is consistently significant at standard confidence levels. An interpretation is that respondents expect democratically-elected governments to be responsive to their needs and that they are especially disappointed when such governments do not respond in ways that prevent or contain an epidemic. In contrast, the effect of prior epidemic exposure is insignificantly different from zero in non-democracies, where there may be no similar presumption of responsiveness. Alternatively, democratic regimes may have

[25] We classify political regimes based on the most recent Polity5 dataset. Countries with Polity scores 5 and above are classified as democracies.

[26] With the exception of attitudes toward political leadership.

[27] A conjecture here is that epidemics spread more contagiously in more urban areas, causing urban residents to more radically revise their attitudes regarding governments in the wake of an outbreak.

[28] In contrast, men and women respond similarly in terms of confidence in elections.

more difficulty with consistent messaging. Because such regimes are open, they may allow for a cacophony of conflicting official views, resulting in a larger impact on confidence and trust. Either way, our results are driven by respondents in democratic regimes.

These results go some way toward addressing the issue of external validity in the context of COVID-19. The effects we report here are not limited to low-income countries, autocratic governments, or fragile democracies – the kind of regimes that are popularly associated with prominent epidemics such as Ebola. This suggests that our results may also have broader applicability to global pandemics such as COVID.

7 Robustness

In this section we report further analyses establishing the robustness of our findings.

Are the results unique to political institutions and leaders?

It is important to establish that the relationship between epidemic exposure and subsequent views of political institutions and leaders is not simply part of a broader reassessment of national and social institutions. If exposure to past epidemics worsens attitudes toward all national institutions, it would be misleading to interpret the findings in Tables 2–4 as the effect of the epidemic exposure on trust in political institutions and leaders narrowly defined. To examine this, we estimate similar models for placebo outcomes related to views of other institutions.

Each column of Appendix Table B.1 reports a regression model for a different outcome variable. Outcome variables equal one if the individual has confidence in the military (column 1); in banks and financial institutions (column 2); and in media freedom (column 3). There are no meaningful relationships between past epidemic exposure and confidence in these institutions, consistent with our hypothesis that loss of trust by individuals with epidemic experience is specific to political institutions.

Are the results driven by non-comparable samples?

Another concern is the possibility of heterogenous, non-comparable samples across the three response variables because not all Gallup respondents answered all three questions. We therefore now consider only the individuals who answered all three questions. We construct a new variable ("political trust") that measures the average response of an individual across three main outcome variables. We construct a second dependent variable ("first principal component of trust") that is the first principal component of these three variables. The results, reported in Appendix Tables B.2–B.3, confirm that our findings are robust across overlapping samples and alternative measures of political trust.[29]

Are the results unique to impressionable years?

We also confirm that the effect of prior epidemic exposure on trust in political institutions and leaders is limited to epidemic exposure in the impressionable years. Appendix Figure B.4 shows the effect of exposure in different eight-year age windows (analogous to the eight-year window of ages 18 to 25).[30] The analysis again considers our two composite dependent variables: the average of the three outcome variables and the first principal component of the responses. In both cases, the negative effect is only evident when epidemic exposure occurs in the individual's impressionable years.[31]

Are the results robust to alternative data sets for epidemics?

We also confirm our results using alternative data for epidemics. We consider the recent large-scale epidemics reported in Ma et al. (2020), which constructs a country panel dataset starting in the early 2000s. Several aspects of this dataset make it less than ideal for our setting. One is its short time span, which allows us to consider only individuals young enough to be in their impressionable years between 2000 and 2018.[32] Another is that the dataset does not contain country-specific intensity measures and thus only can be used in dichotomous form. As will be clear later, epidemic intensity matters, in that only large epidemics have a significant impact on political trust.

With these concerns in mind, we re-estimate our baseline specification on this alternative dataset. In Appendix Table B.4, *exposure to an epidemic (18–25)* takes a value of 1 if the respondent experienced SARS, H1N1, MERS, Ebola, or Zika in his or her impressionable years. The results for

[29] Additional results available on request are very similar when re-estimated on the same sample with the three individual outcome variables.

[30] We repeat the analysis only for the first four windows after birth to make sure we have age-wise comparable samples across separate estimates.

[31] We again find the same for the three individual response variables. Results are available upon request.

[32] This also means that we must drop all observations in Gallup before 2008-9 to ensure that the first impressionable-years cycle (2000-2007) is calculated before we apply this variable onto individuals.

confidence in elections and approval of the leader are robust to the use of these alternative data. In line with our earlier results, the adverse impact of past epidemics is only evident in democratic countries.

Are communicable diseases special?

Poor public-policy responses to communicable diseases may have an especially powerful negative effect on trust in political institutions because of the danger that those diseases can spread contagiously, making that policy response especially urgent. In contrast, non-communicable diseases may develop over longer periods and be driven by individual decisions and characteristics, such as lifestyles and demographics, instead of or in addition to government policy. This suggests that non-communicable diseases may not have equally powerful long-term effects on trust in political institutions and that if they do such effects should be smaller.

In Appendix Table B.5 we distinguish communicable and non-communicable diseases using data from IHME for the period between 1990 and 2016.[33] The communicable and non-communicable disease measures are population-adjusted and expressed in terms of Disability Adjusted Life Years Lost (DALYs).[34] As explained by Roser and Ritchie (2020), DALYs are a standardized metric allowing for direct comparison and summing of the burden of different diseases. We present results for all countries in Column 1, for democratic countries in Column 2, and for non-democratic countries in Column 3. The top panel shows results for the outcome variable "confidence in the honesty of elections," the middle panel for "confidence in the national government," and the bottom panel for the "approval of the leader." Each column in each panel is a separate regression in which we simultaneously include both types of past exposure (exposure to communicable and noncommunicable diseases, respectively).

We continue to find a significant negative impact, as before, on confidence on the government and in elections of past exposure to communicable diseases. In contrast, we find no statistically significant association between trust in these political institutions and exposure to non-communicable diseases during the impressionable years. Thus, the results confirm that the association we document are unique to communicable diseases. It remains the case, as before, that the full sample results are driven by respondents in democratic countries.

[33] Similar to the previous exercise, this dataset is again restrictive compared to EMDAT which spans a much longer time period starting from 1970s.

[34] Communicable diseases include diarrhea, lower respiratory disease, other common infectious diseases, malaria & neglected tropical diseases, HIV/AIDS, and tuberculosis. Non-communicable diseases include cardiovascular diseases, cancers, respiratory disease, diabetes, blood and endocrine diseases, mental and substance use disorders, liver diseases, digestive diseases, musculoskeletal disorders, and neurological disorders.

Are large epidemic exposures different?

The effects we identify are larger for more severe epidemics. In Appendix Table B.6, we re-estimate our baseline model and, instead of the continuous variable reported in the top row, use indicators for the top 0.5 percent of exposures to epidemics, the top 1 percent, the top 2 percent, and the top 5 percent each in a separate estimation. Having an epidemic exposure that falls in the top 0.5, 1, or 2 percent of exposures causes a significant fall in an individual's confidence in elections, the national government, and its leader. Moreover, the magnitude of the effect linearly increases with more intense experiences, which leads us to undertake the next analysis.

Are the results driven by intensive or extensive margin?

In Appendix Table B.7, we distinguish the intensive and extensive margins of the treatment. For the extensive margin, we construct a binary variable based on whether the number of persons affected by epidemics during the individual's impressionable years is positive or zero. This captures whether the effect is due to having any level of epidemic exposure. For the intensive margin, we limit the sample to individuals with positive epidemic exposure in their impressionable years. Approximately 55 percent of respondents in our surveys have no exposure to epidemics when impressionable and hence are dropped.

The results in Table B.7 show that the treatment works via the intensive rather than the extensive margin. It is not simply being exposed to an epidemic that generates the previously-reported effects; rather, conditional on being exposed, the severity of the epidemic drives the results. When individuals with no epidemic exposure are excluded from the sample, the estimated effects of past exposure are, if anything, larger than in the full sample.

Are the results driven by other past experience?

Appendix Tables B.8 and B.9 analyze whether the results are driven by other omitted economic and political shocks that individuals may have experienced in their impressionable years. We use the ICRG dataset in Appendix Table B.8, which measures a country's economic and political conditions along 12 dimensions.[35] Appendix Table B.9 presents results after controlling for GDP growth, GDP per capita, inflation rate, and political regime (Polity2 scores).

[35] These are (1) government strength - an assessment both of the government's ability to carry out its declared programs and its ability to stay in office; (2) socioeconomic conditions - an assessment of the socioeconomic pressures in a society that could constrain government action or fuel social dissatisfaction; (3) investment profile - an assessment of factors affecting risks to investment not captured by other political, economic and financial risk components; (4) internal conflict - an assessment of political violence in the country and its actual or potential impact on governance; (5) external conflict - an assessment of the risk to the incumbent government from foreign action, including both non-violent external pressure and violent external pressure; (6) corruption - an assessment of corruption in the political system; (7) military in politics – an assessment of the military's involvement in politics, even at a peripheral level; (8) religious tensions – an assessment of whether a single religious group seeks to replace civil law by religious law and to exclude other

In both tables, we calculate the average values for each one of these dimensions during the impressionable years of each individual. Including these past experiences as controls makes for smaller samples, since ICRG covers only part of our period. Still, none of these additional controls has a meaningful impact on the coefficients for past epidemics.[36]

Falsification checks

We undertake two falsification exercises. Appendix Table B.10 focuses on the GWP subsample of individuals aged 30 or above who migrated to the country of interview in the previous 5 years. We can be sure that these individuals did not spend their impressionable years in the country of the interview. For falsification purposes, we assume that they did so (as opposed to spending those years in their country of origin). Second, Appendix Table B.11 assigns all individuals in the full sample to a random country for the calculation of their experience during impressionable years while keeping all else the same as in Tables 2–3–4.

In both cases, we find no effect of these "made-up" and "randomly-assigned" treatments on political trust.

Event study of short-term response to recent pandemics

As mentioned earlier, Ma et al. (2020) provide a comprehensive dataset of pandemic events in this century. By creating an event-study setting around the dates on which a pandemic was declared by the WHO for a specific country, we can investigate how the political trust of a country's population changes shortly after a pandemic. To do this, we slightly modify the model as follows:

$$Y_{i,\,c,\,t,\,a,\,b} = \beta_1 \text{LaggedPandemic}_{ict} + \beta_2 X_i \qquad (2)$$

$$+ \beta_3 C_c + \beta_4 T_t + \beta_5 A_a + \beta_6 B_b + \beta_7 C_c * \text{Age} + \varepsilon_{ict}$$

LaggedPandemic is a dummy taking on a value of 1 if the WHO announced a pandemic for the country *c* in the year immediately preceding survey year *t* and 0 otherwise. This variable is lagged

religions from the political and/or social process; (9) law and order – an assessment of the strength and impartiality of the legal system and popular observance of the law; (10) ethnic tensions - an assessment of the degree of tension within a country attributable to racial, national, or linguistic divisions; (11) democratic accountability - a measure of how responsive government is to the people; and (12) bureaucracy quality – an assessment of whether bureaucracy has the strength and expertise to govern without drastic changes in policy or interruptions in government services.

[36] Past epidemic exposure also has the same magnitude and significance when excluding the other past experience controls but estimating the specifications over the smaller, ICRG-compatible sample. These results are available on request.

by one year to ensure that all respondents in the country experienced the pandemic (since Gallup surveys could be undertaken at any point of a year).[37]

Table B.12 shows that political trust among a country's residents starts declining immediately after a pandemic. In Figure B.5, we re-estimate our model changing the timing of our main variable of interest.[38] The two types of countries (those with and without a pandemic) share a common trend in the pre-event window; the divergence starts only after the pandemic. Two years after the pandemic, approval of the leader has declined by more than 6 percentage points on average. This effect is substantial and persistent, consistent with the findings of our main analysis.

8 Evidence on mechanisms

Weak, unstable governments with limited legislative strength, limited unity, and limited popular support presumably are less able to mount effective responses to epidemics. If they are therefore most prone to disappointing their constituents, we would expect the effects we identify to be strongest when the government in office at the time of exposure is weak and unstable, other things equal.

To explore this hypothesis, we use ICRG data on government strength. These data, which start in 1984, measure the unity of the government, its legislative strength, and its popular support.[39] We expect weak governments to perform poorly in epidemics, and conjecture that individuals will downgrade their confidence in government and trust in its leaders more severely as a result.[40]

We first calculate the average score for government strength during the individual's impressionable years. We then construct an indicator variable that takes the value of 1 for this past experience if the observation is in the bottom half/tercile/quartile of the government strength index score.[41] We include this measure of impressionable-year government strength by itself in addition to interacting it with impressionable-year epidemic exposure to distinguish epidemic-specific and general effects. This leads to the following specification:

[37] Here we do not include the past epidemic exposure variable as we would like to capture the response of the whole population, rather only those for whom we can calculate the past experience window.

[38] This helps to visualise the short-term response and also to check if the countries that were struck by a pandemic and those that were not shared similar trends in terms political trust before the pandemic hit the former. We conservatively restrict the event window around the pandemic to plus/minus 2 years. This is because different pandemic events in Ma et al. (2020) may hit the same country in a matter of couple of years, which complicates the proper identification in larger event windows.

[39] Whereas in the ICRG dataset this index is labelled government stability, we refer to it as government strength, since we think this is a better name for what is essentially the implementation capacity of the incumbent government.

[40] Such a finding would be in line with other studies finding that weak and unstable governments suffer loss of support because of their limited capacity to take appropriate policy actions in the wake of financial crises and economic downturns (Caselli and Tesei, 2016; Cox and Weingast, 2018).

[41] It is crucial to include this variable categorically rather than in a continuous form to make sure that it is unlikely to respond to changes in the pandemic experience.

$$Y_{i,\,c,\,t,\,a,\,b} = \beta_{10}\text{Exposure to epidemic}_{icb} \times \text{Government strength}_{icb} \quad (3)$$

$$+ \beta_9\text{Government strength}_{icb} + \beta_0 + \beta_1 X_{ict} + \beta_2\text{Exposure to epidemic}_{icb}$$

$$+ \beta_3\text{Number of people affected}_{ct-1} + \beta_4 C_c + \beta_5 T_t + \beta_6 A_a + \beta_7 B_b + \beta_8 C_c * \text{Age} + \varepsilon_{ict}$$

Results of estimating Equation (3) are shown in Table 6. We find large effects for the interaction terms. The estimated effect of exposure to an epidemic is more than twice as large if the epidemic is experienced under a weak government.

Figures 3–5 show further evidence of the importance of government strength at the time of the epidemic. We again restrict the observations to the 26–35 age range and re-estimate the Equation (3) when rolling the age window forward. In each figure, the top panel shows the estimates for the total effect on individuals experiencing epidemics under weak governments, while the bottom panel shows the corresponding estimates for individuals experiencing epidemics under strong governments.

For all outcomes, the negative impact on trust is larger and more persistent for respondents who experienced epidemics under weak governments. Again, this is consistent with the notion that these individuals became and remained more disenchanted with their country's political institutions and leaders, insofar as those institutions and leaders failed to adequately respond to the country-wide public-health emergency.

Health policy at the time of the epidemic

The U.S. Centers for Disease Control and Prevention lists vaccination as one of the "Ten Great Public Health Achievements in the 20th Century" because of its impact on morbidity and mortality (Barraza et al., 2018). By implication, governments' pharmaceutical interventions, in particular their vaccination policies, have played an important role in the prevention of contagious disease. Using data from the Wellcome Global Monitor, we, therefore, analyze whether attitudes regarding the health system and vaccination are affected by exposure to an epidemic.

In the top panel of Table 7, the outcome is a dummy variable indicating that the respondent has confidence in the national healthcare system (via GWP). In the second panel, it is a dummy variable indicating that the respondent agrees or strongly agrees that "vaccines are effective." In the third panel, it is a dummy variable indicating the respondent agrees or strongly agrees that "vaccines are safe." In the fourth panel, it is a dummy variable indicating the respondents' "children received

a vaccine" that was supposed to prevent them from getting childhood diseases such as polio, measles, or mumps. In the final panel, it is whether the respondent agrees or strongly agrees that "vaccines are important for children to have." The specification is again similar to Column 4 of Table 2.

The results show that here too opinions are affected negatively and significantly by prior epidemic exposure. These results suggest that the same experience causing individuals to lose confidence in society's capacity specifically to deliver adequate health outcomes also causes them to lose confidence in the political system and its leaders more generally. In line with previous findings, Table 8 then shows that the negative impact of epidemic exposure is larger in countries with democratic political systems. These results are in line with Legido-Quigley et al. (2020), who argue that the integration of specific services like vaccination into the health system as a whole amplifies the capacity to absorb and adapt to health crises. Again consistent with earlier findings, individuals exposed to an epidemic in their impressionable years have more negative perceptions of health-related government policies if the epidemic was experienced under a weak government. 12 of the 15 different interactions here are significant at the 95% confidence level.

Evidence from COVID-19

Given the absence of internationally comparable data on policy interventions in response to past epidemics, we examine the association of government strength with policy interventions in the context of COVID-19. Following Aksoy et al. (2020), Figures 6–8 first show COVID-19 related developments in South Korea, France, and the United Kingdom. We choose these countries because they followed very different trajectories in terms of public attention, policy interventions, and the spread of the virus. South Korea, France, and the United Kingdom are broadly similar in terms of their GDP per capita, urbanization, and population age structure (median age in all three countries is roughly 41). But they differ in terms of government strength: the ICRG score is 8.25 for South Korea, 7.5 for France, and 6 for the United Kingdom.[42]

The figures show the number of confirmed COVID-19 cases and deaths, public attention to COVID-19 as measured by Google Trends, and the date of the first non-pharmaceutical intervention (school closure, workplace closure, public event cancellation, public transport closure, or restrictions on within-country movement in the own country). We also report the number of days between the date of the first confirmed case and the date of the first COVID-19 non-pharmaceutical intervention.

[42] The relatively low score for the UK may come as a surprise to readers. ICRG's government strength score include points for government unity, legislative strength and popular support. That the UK has had minority and coalition governments may therefore account for its ranking.

In South Korea, public attention rose rapidly after the first domestic case. The government responded within 11 days of the first case with domestic interventions aimed at curbing the epidemic. In France and the UK, in contrast, public attention remained low for several weeks after the first reported case. In France, domestic restrictions were imposed only after 36 days, while the UK government waited 45 days before imposing the first restrictions. These slow reactions were associated with rapid growth in confirmed cases and deaths in both countries. Simple comparisons among countries are complicated by the existence of other influences, such as past exposure to epidemics.[43] Still, these comparisons are suggestive of the idea that government strength is positively associated with speed of response to the outbreak.

We can investigate the relationship between government strength, measured as before, and the number of days between the date of first confirmed case and the date of the first COVID-19 policy (i.e. non-pharmaceutical intervention: school closure, workplace closure, public event cancellation, public transport closure, or restrictions on within-country movement) on a larger sample of countries. The sample consists of 78 countries that adopted non-pharmaceutical interventions between January 1, 2020 and March 31, 2012. We estimate OLS models while controlling for average Google search volume one week before the policy intervention to account for the possibility that public attention to COVID-19 accelerates the non-pharmaceutical response. We also control for (log) cumulative own country cases one week before the policy, (log) cumulative own country deaths one week before the policy, (log) GDP per capita, (log) urbanization rate, (log) total population, (log) share of the population age 65 and above, Polity2 score, and a dummy variable indicating whether a country experienced an epidemic since 2000.

Table 9 reports the results for the full sample in Column 1, for countries with above-median Polity2 scores in Column 2, and for countries with below-median Polity2 scores in Column 3.[44] Government strength is associated with a statistically significant improvement in policy response time: a one standard deviation (0.765) increase in government strength reduces policy response time by three days.[45] This is a strong hint of why exposure to epidemic leads to major negative revisions of confidence in governments and trust in political leaders when governments are weak.

According to Column 2, a one standard deviation (0.765) increase in government strength reduces the policy response time by four days in more democratic countries (those with above-median Polity2 scores). In contrast, there is little evidence that government strength reduces the

[43] Thus, it has been suggested that some countries responded quickly because of their past experience with SARS (Ru, Yang, Zou, 2020).

[44] We cannot split the sample into democracies vs. non-democracies because we have only 10 countries in the non-democracy sample. This is why we instead split the sample by below and above the median polity score.

[45] Three days can make a substantial difference in the context of COVID-19, given the infection's high rate of reproduction when no non-pharmaceutical intervention is put in place.

policy response time in countries with below-median Polity2 scores. It is sometimes suggested that more democratic countries, where it is necessary to build a political and social coalition in support of restrictive policies, found it more difficult to respond quickly to the outbreak of COVID-19, compared to less democratic countries where "pseudo-democratic" leaders can move unilaterally to limit traditional political and civil rights and short-circuit democratic processes.[46] Evidently, government weakness is mostly a problem in democratic societies, since this is there where it translates into a greater delay and less timely intervention.

9 Conclusion

Trust and confidence in government are important for the capacity of a society to organize an effective collective response to an epidemic. Yet there is also the possibility that experiencing an epidemic can negatively affect an individual's confidence in political institutions and trust in political leaders, with negative implications for this collective capacity. We have shown that this negative effect is statistically significant. It is large and persistent. Its largest and most enduring impact is on the attitudes of individuals who are in their impressionable late-adolescent and early-adult years when an epidemic breaks out. It is limited to infectious or communicable diseases, where a government's success or failure in responding is especially important. It is the largest in settings where there already exist doubts about the strength and effectiveness of government. By implication, countries where the strength of government is limited are the countries most at risk, not just from COVID-19 but also from future epidemics, insofar as the current epidemic can result in the further erosion of trust in political leaders and institutions.

We also find that epidemic exposure in one's impressionable years matters mainly for residents of democratic countries. Residents in democracies sharply revise downward their confidence and trust in political institutions and leaders following significant exposure, whereas the same is not true in autocracies. It may be that citizens expect democratic governments to be responsive to their concerns and that where the public-sector response is not adequate, they revise their attitudes unfavorably. In autocracies, there may not exist a comparable expectation of responsiveness. In addition, democratic regimes may find consistent messaging more difficult. Because such regimes are open, they may allow for a cacophony of conflicting official views, resulting in a larger impact on confidence and trust.

[46] See for example the discussion in Diamond (2020).

The implications are disturbing. Imagine that more trust in government is important for effective containment, but that failure of containment harms trust in government.[47] One can envisage a scenario where low levels of trust allow an epidemic to spread, and where the spread of the epidemic reduces trust in government still further, hindering the ability of the authorities to contain future epidemics and address other social problems. As Schmitt (2020) puts it, "lack of trust in government can be a circular, self-reinforcing phenomenon: Poor performance leads to deeper distrust, in turn leaving government in the hands of those with the least respect for it."

[47] A relevant study by Ajzenman et al. (2020) examines how political leader's words and actions affect people's behaviour in the context of COVID-19 pandemic. The authors show that after Brazil's president publicly and emphatically dismissed the risks associated with the COVID-19 virus and advises against isolation, social distancing by residents in pro-government localities fall relative to places in which pro-government sentiment is weaker.

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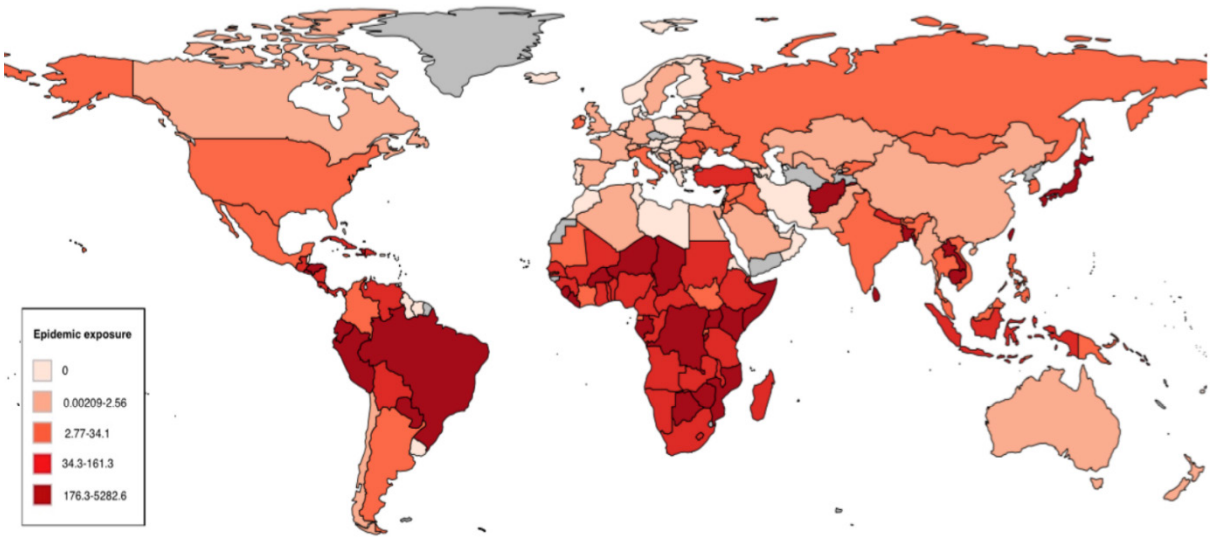
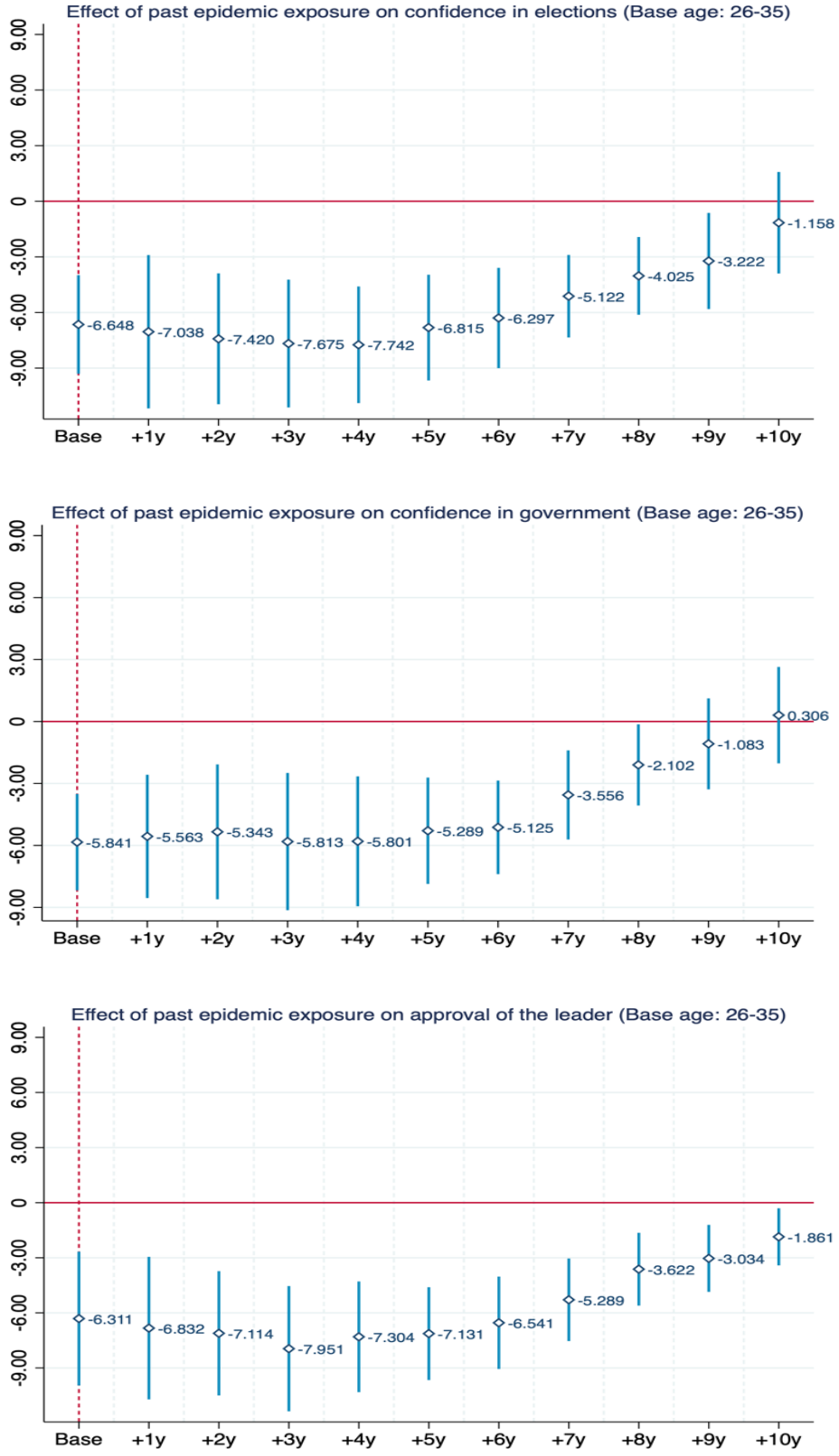
Figures and tables

Figure 1 Average number of people (per million) affected by epidemics, 1970-2017



Notes: This figure shows the number of people affected by epidemics (per million), averaged across all available years.
Source: EM-DAT International Disaster Database, 1970-2017, UN Population Database, 1970-2017, and authors' calculations.

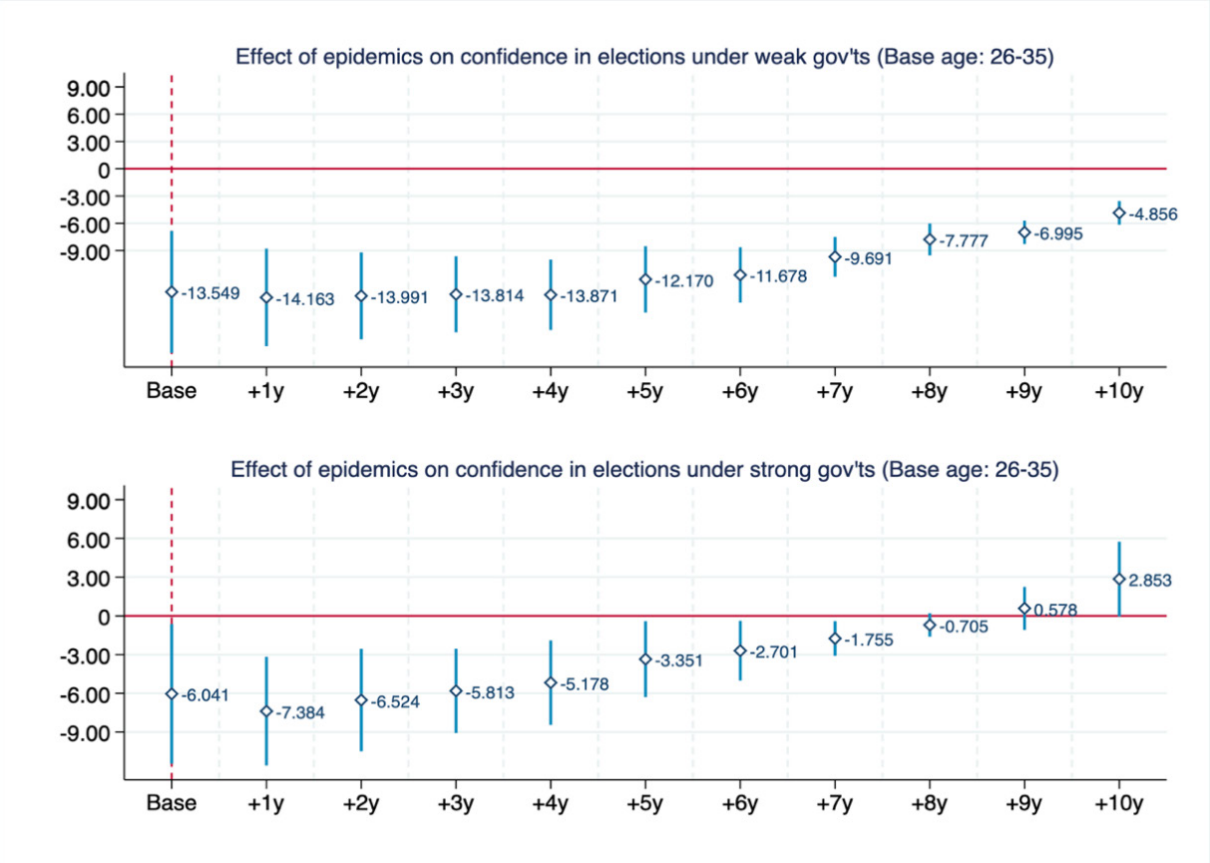
Figure 2 Effects of epidemics in impressionable years over subsamples with rolling age-windows



Note: This figure shows the persistency of the effects on three main outcome variables by restricting the observations to the respondents who are in the 26-35 age range at the time of the survey (Base sample) and then repeatedly rolling this age window forward by one year for each separate estimation. The specification is Column 4 of Table 2 and only the estimated coefficient on *Exposure to epidemic (18-25)* is plotted. Confidence intervals are at 95% significance level.

Source: Gallup World Polls, 2006-2018 and EM-DAT International Disaster Database, 1970-2017.

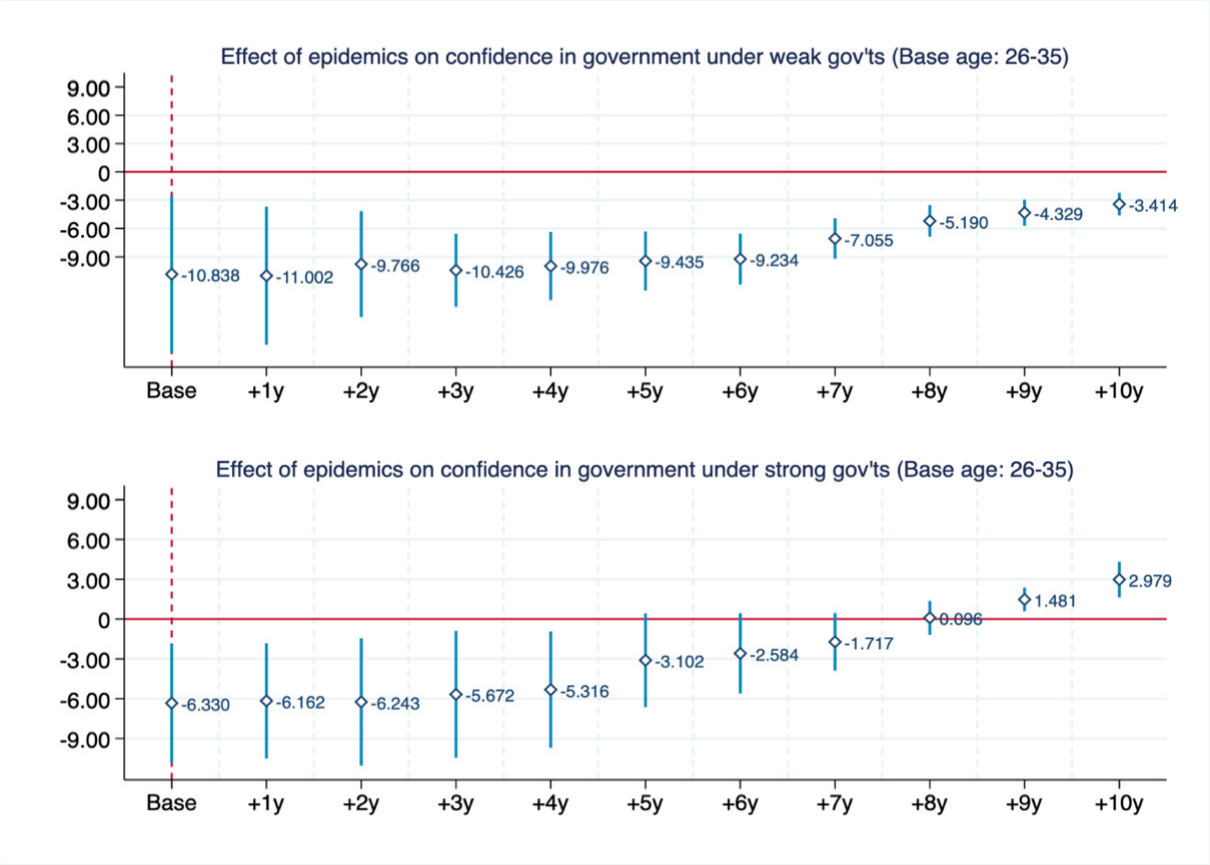
Figure 3 Effects of epidemics on confidence in elections over subsamples with rolling age-windows (separately under weak and strong governments)



Note: This figure shows the persistency of the effects on three main outcome variables by restricting the observations to the respondents who are in the 26-35 age range at the time of the survey (Base sample) and then repeatedly rolling this age window forward by one year for each separate estimation. The specification is Equation 3/Table 6. The lower panel only plots the coefficient on *Exposure to epidemic (18-25)* whereas the upper panel plots the sum of the coefficients on *Exposure to epidemic (18-25)* and its interaction with bottom quartile government strength dummy. Confidence intervals are at 95% significance level.

Source: Gallup World Polls, 2006-2018 and EM-DAT International Disaster Database, 1970-2017.

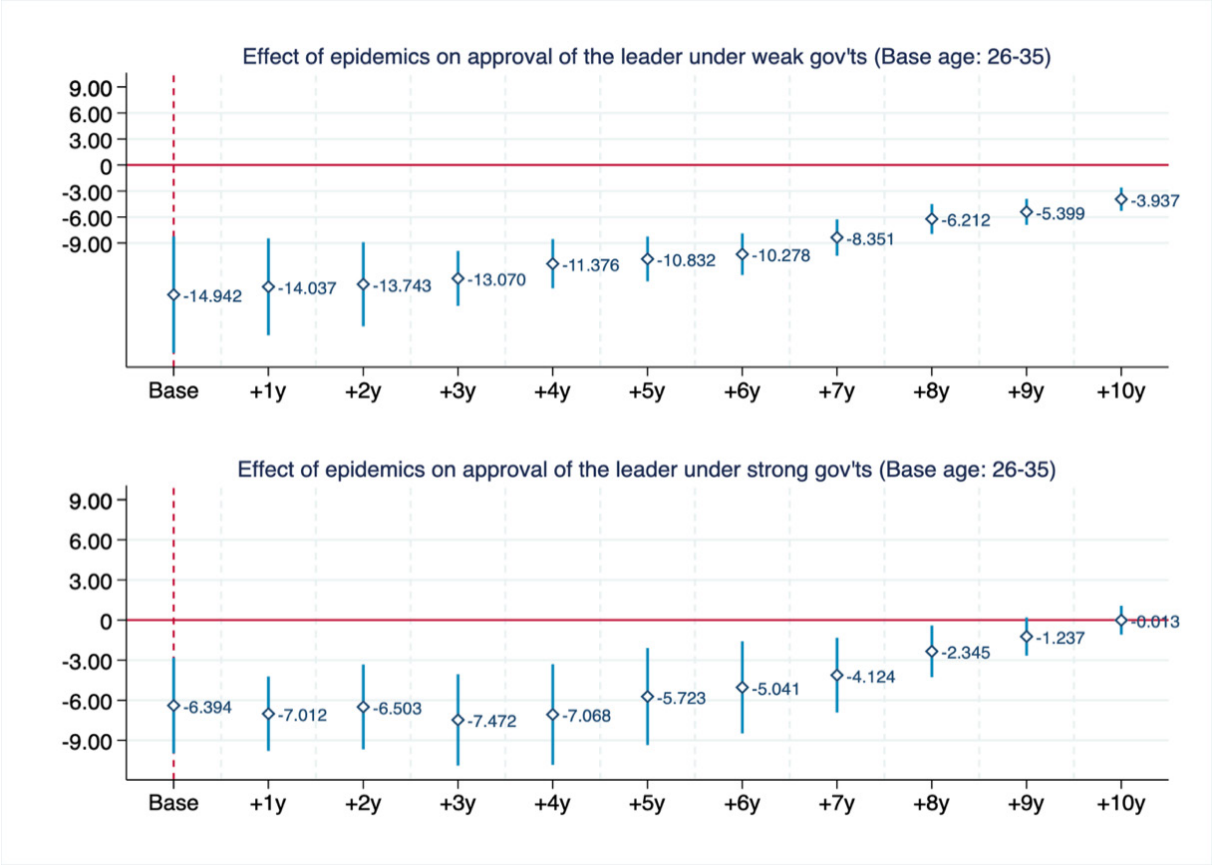
Figure 4 Effects of epidemics on confidence in government over subsamples with rolling age-windows (separately under weak and strong governments)



Note: This figure shows the persistency of the effects on three main outcome variables by restricting the observations to the respondents who are in the 26-35 age range at the time of the survey (Base sample) and then repeatedly rolling this age window forward by one year for each separate estimation. The specification is Equation 3/Table 6. The lower panel only plots the coefficient on *Exposure to epidemic (18-25)* whereas the upper panel plots the sum of the coefficients on *Exposure to epidemic (18-25)* and its interaction with bottom quartile government strength dummy. Confidence intervals are at 95% significance level.

Source: Gallup World Polls, 2006-2018 and EM-DAT International Disaster Database, 1970-2017.

Figure 5 Effects of epidemics on approval of the leader over subsamples with rolling age-windows (separately under weak and strong governments)

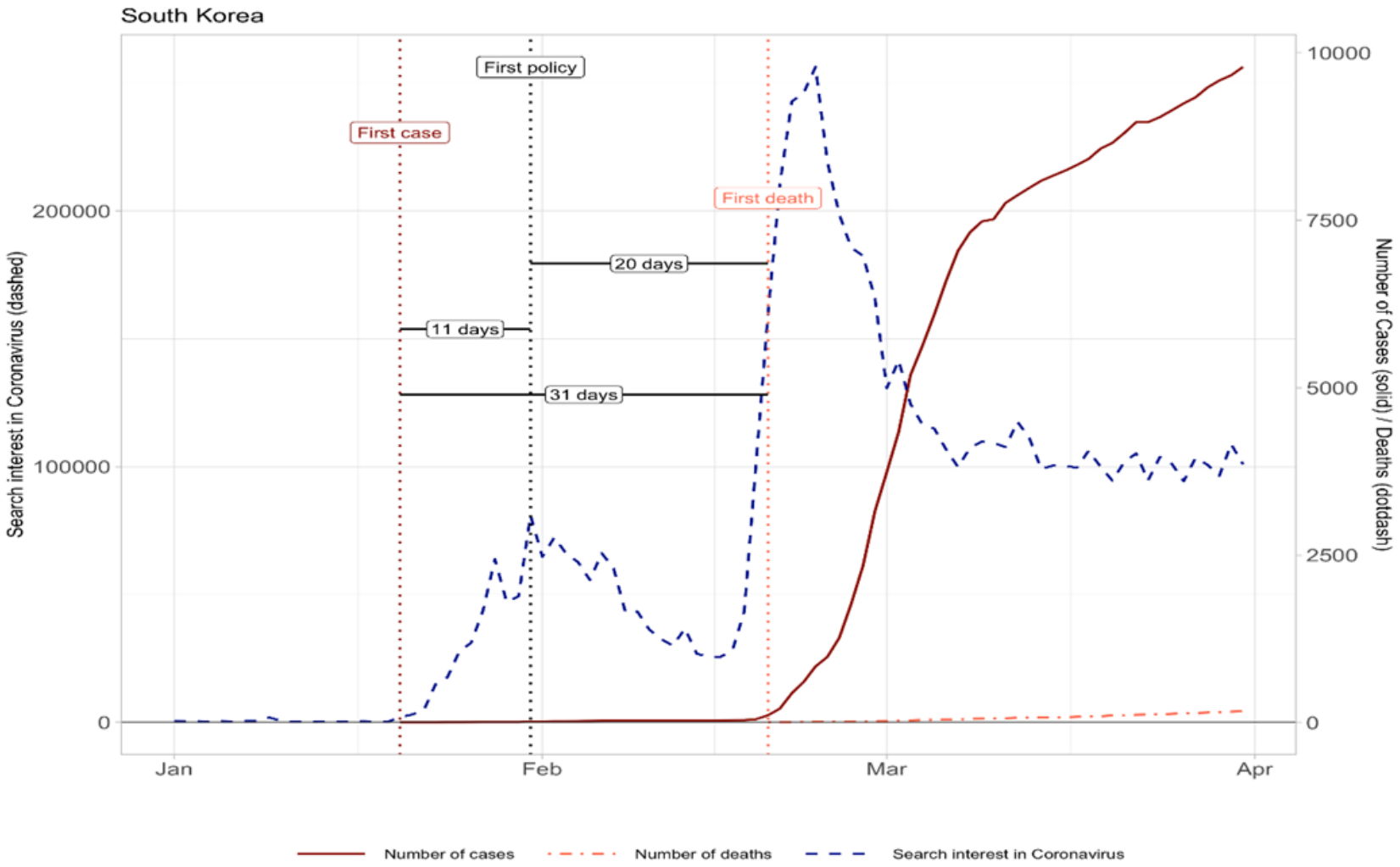


Note: This figure shows the persistency of the effects on three main outcome variables by restricting the observations to the respondents who are in the 26-35 age range at the time of the survey (Base sample) and then repeatedly rolling this age window forward by one year for each separate estimation. The specification is Equation 3/Table 6. The lower panel only plots the coefficient on *Exposure to epidemic (18-25)* whereas the upper panel plots the sum of the coefficients on *Exposure to epidemic (18-25)* and its interaction with bottom quartile government strength dummy. Confidence intervals are at 95% significance level.

Source: Gallup World Polls, 2006-2018 and EM-DAT International Disaster Database, 1970-2017.

Figure 6 COVID-19 related developments in South Korea

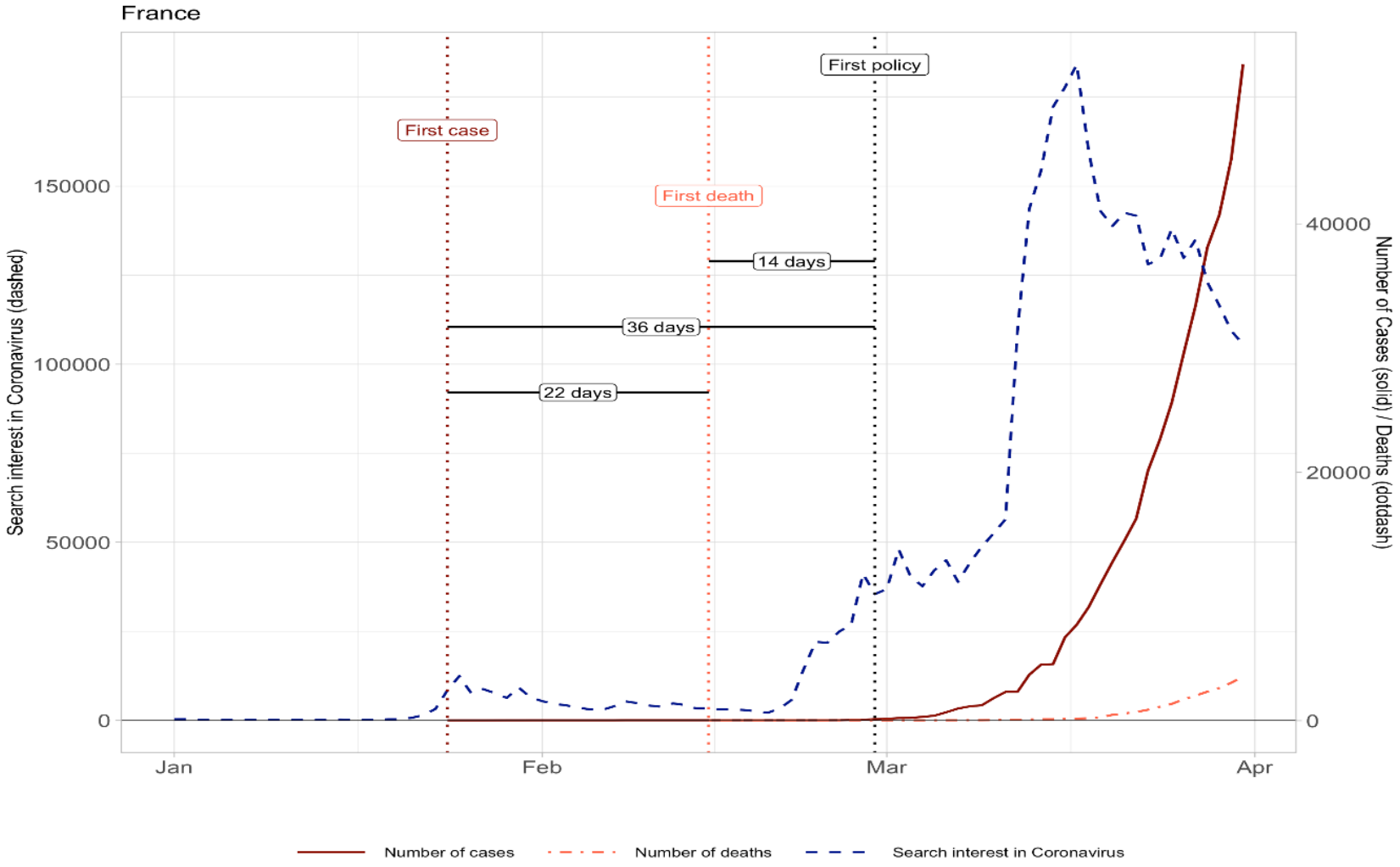
ICRG Government Strength score: 8.25



Note: This figure shows daily measures of public attention to COVID-19 measured as the share of Google searchers (left axis) and the number of COVID-19 cases and deaths (right axis), as well as the dates of the first case, first death, and first policy in South Korea. Source: Google Trends (1/1/2020–31/3/2010), JHCRC (1/1/2020–31/3/2010), and ICRG (2018).

Figure 7 COVID-19 related developments in France

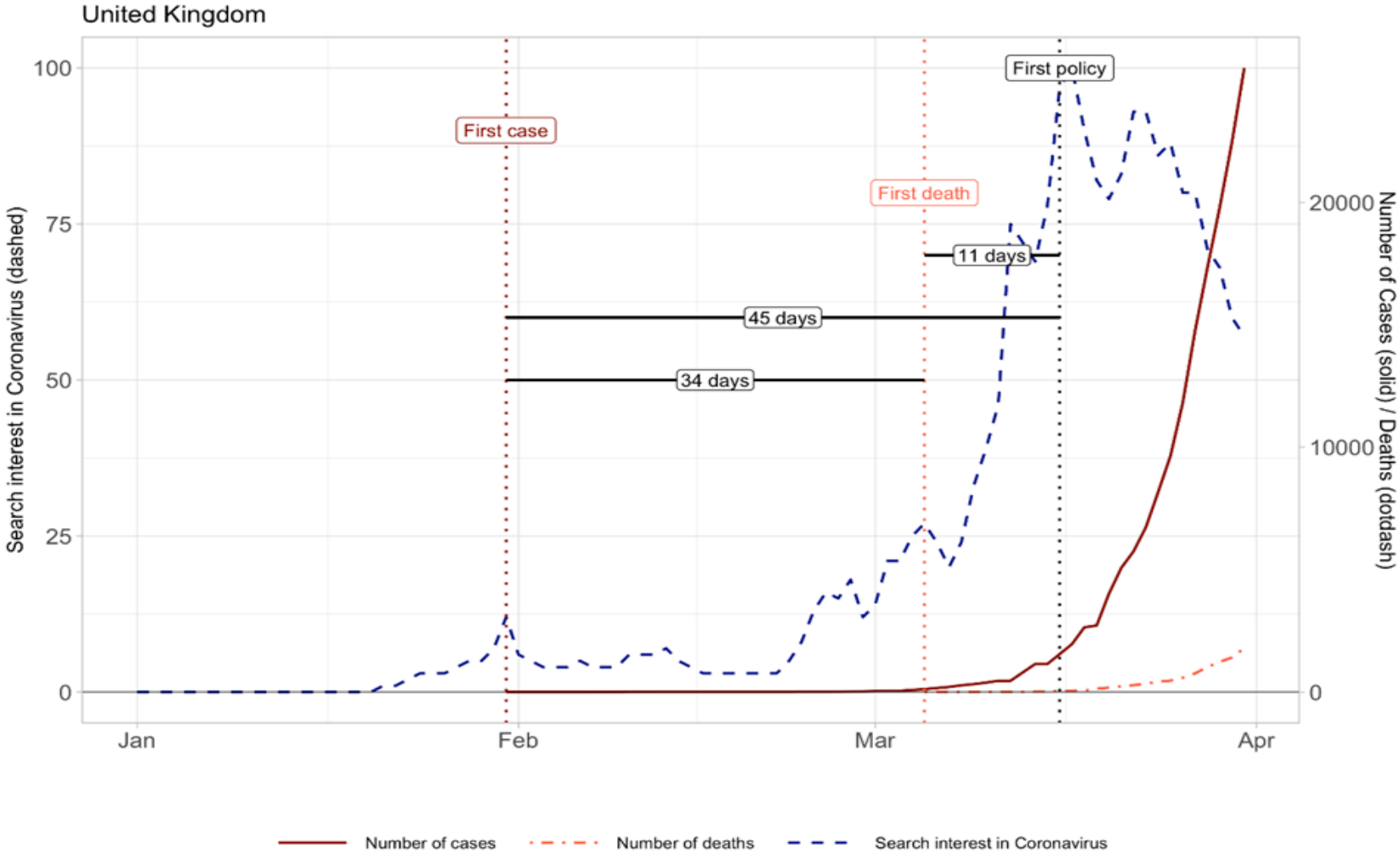
ICRG Government Strength score: 7.5



Note: This figure shows daily measures of public attention to COVID-19 measured as the share of Google searchers (left axis) and the number of COVID-19 cases and deaths (right axis), as well as the dates of the first case, first death, and first policy in France. Source: Google Trends (1/1/2020–31/3/2010), JHCRC (1/1/2020–31/3/2010), and ICRG (2018).

Figure 8 COVID-19 related developments in the United Kingdom

ICRG Government Strength score: 6



Note: This figure shows daily measures of public attention to COVID-19 measured as the share of Google searchers (left axis) and the number of COVID-19 cases and deaths (right axis), as well as the dates of the first case, first death, and first policy in the United Kingdom. Source: Google Trends (1/1/2020–31/3/2010), JHCRC (1/1/2020–31/3/2010), and ICRG (2018).

Table 1 Sample characteristics

Variables	(1) Mean (Standard deviation)
Main dependent variables	
Confidence in national government	0.50 (0.50) – N: 760099
Confidence in honestly of elections	0.51(0.49) – N: 736679
Approval of the leader	0.51 (0.49) – N: 719742
Have confidence in the health system	0.62 (0.49) – N: 98283
Placebo outcomes	
Have confidence in the military	0.72 (0.45) – N: 730156
Have confidence in the banks	0.59 (0.49) – N: 809972
Have confidence in the media	0.54 (0.50) – N: 190167
Individual-level characteristics	
Age	41.58 (10.41)
Male	0.47 (0.49)
Tertiary education	0.18 (0.38)
Secondary education	0.50 (0.50)
Married	0.63 (0.48)
Urban	0.40 (0.49)
Christian	0.57 (0.49)
Muslim	0.20 (0.40)
Country-level characteristics	
Exposure to epidemic	0.002 (0.0015)
Government strength	7.33 (1.26)

Notes: Means (standard deviations). This table provides individual and aggregate level variables averaged across the 13 years (2006–2018) used in the analysis. The sample sizes for some variables are different either due to missing data or because they were not asked in every year.

Table 2 The impact of exposure to epidemic (18–25) on confidence in elections

Outcome ➔	(1) Have confidence in honesty of elections	(2) Have confidence in honesty of elections	(3) Have confidence in honesty of elections	(4) Have confidence in honesty of elections	(5) Have confidence in honesty of elections
Exposure to Epidemic (18–25)	–1.643**	–1.481*	–2.226***	–2.258***	–1.181***
	(0.794)	(0.811)	(0.341)	(0.339)	(0.273)
The number of people affected $_{t-1}$	–3.734*	–3.582	–3.645*	–3.625*	--
	(2.203)	(2.187)	(2.195)	(2.182)	
Country fixed effects	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Age group fixed effects	Yes	Yes	Yes	Yes	Yes
Individual income	No	Yes	Yes	Yes	Yes
Demographic characteristics	No	Yes	Yes	Yes	Yes
Income decile fixed effects	No	Yes	Yes	Yes	Yes
Labor market controls	No	Yes	Yes	Yes	Yes
Country*Age trends	No	No	Yes	Yes	Yes
Cohort fixed effects	No	No	No	Yes	Yes
Country*Year fixed effects	No	No	No	No	Yes
Observations	736679	736679	736679	736679	736679
R^2	0.137	0.144	0.146	0.146	0.178
Mean of outcome	0.51	0.51	0.51	0.51	0.51

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. Outcome is a dummy variable indicating that the respondent has confidence in "honesty of elections". *Exposure to epidemic (18–25)* defined as the average per capita number of people affected by an epidemic when the respondent was in their impressionable years (18–25 years). *The number of people affected* refers to people requiring immediate assistance during a period of emergency (that is, requiring basic survival needs such as food, water, shelter, sanitation, and immediate medical assistance). Demographic characteristics include: a male dummy, a dummy for each age group, dummy variables for marital status (single, married), educational attainment (tertiary education, secondary education), religion dummies (Christian, Muslim, and other religions), employment status (full-time employed, part-time employed, unemployed), a dummy variable for living in an urban area and presence of children in the household (any child under 15). Income decile fixed-effects are constructed by grouping individuals into deciles based on their income relative to other individuals within the same country and year. Individual income includes all wages and salaries in the household, remittances from family members living elsewhere, and all other sources before taxes. Gallup converts local income to International Dollars using the World Bank's individual consumption PPP conversion factor, which makes it comparable across all countries. Results use the Gallup sampling weights and robust standard errors are clustered at the country level. Source: Gallup World Polls, 2006–2018 and EM-DAT International Disaster Database, 1970–2017.

Table 3 The impact of exposure to epidemic (18–25) on confidence in national government

Outcome ➔	(1) Have confidence in national government	(2) Have confidence in national government	(3) Have confidence in national government	(4) Have confidence in national government	(5) Have confidence in national government
Exposure to epidemic (18–25)	–1.073*	–0.924	–1.614***	–1.592***	–0.508**
	(0.594)	(0.576)	(0.265)	(0.262)	(0.219)
The number of people affected $_{t-1}$	0.548	0.739	0.733	0.740	--
	(3.478)	(3.484)	(3.457)	(3.452)	
Country fixed effects	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Age group fixed effects	Yes	Yes	Yes	Yes	Yes
Individual income	No	Yes	Yes	Yes	Yes
Demographic characteristics	No	Yes	Yes	Yes	Yes
Income decile fixed effects	No	Yes	Yes	Yes	Yes
Labor market controls	No	Yes	Yes	Yes	Yes
Country*Age trends	No	No	Yes	Yes	Yes
Cohort fixed effects	No	No	No	Yes	Yes
Country*Year fixed effects	No	No	No	No	Yes
Observations	760099	760099	760099	760099	760099
R^2	0.138	0.144	0.145	0.145	0.182
Mean of outcome	0.50	0.50	0.50	0.50	0.50

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. Outcome is a dummy variable indicating that the respondent has confidence in "national government". *Exposure to epidemic (18–25)* defined as the average per capita number of people affected by an epidemic when the respondent was in their impressionable years (18–25 years). *The number of people affected* refers to people requiring immediate assistance during a period of emergency (that is, requiring basic survival needs such as food, water, shelter, sanitation, and immediate medical assistance). Demographic characteristics include: a male dummy, a dummy for each age group, dummy variables for marital status (single, married), educational attainment (tertiary education, secondary education), religion dummies (Christian, Muslim, and other religions), employment status (full-time employed, part-time employed, unemployed), a dummy variable for living in an urban area and presence of children in the household (any child under 15). Income decile fixed-effects are constructed by grouping individuals into deciles based on their income relative to other individuals within the same country and year. Individual income includes all wages and salaries in the household, remittances from family members living elsewhere, and all other sources before taxes. Gallup converts local income to International Dollars using the World Bank's individual consumption PPP conversion factor, which makes it comparable across all countries. Results use the Gallup sampling weights and robust standard errors are clustered at the country level. Source: Gallup World Polls, 2006–2018 and EM-DAT International Disaster Database, 1970–2017.

Table 4 The Impact of exposure to epidemic (18–25) on approval of the leader

Outcome ➔	(1) Approval of the leader	(2) Approval of the leader	(3) Approval of the leader	(4) Approval of the leader	(5) Approval of the leader
Exposure to epidemic (18–25)	–1.521***	–1.501***	–1.916***	–1.957***	–0.583***
	(0.380)	(0.369)	(0.326)	(0.330)	(0.118)
The number of people affected $_{t-1}$	0.201	0.184	0.141	0.120	--
	(2.696)	(2.735)	(2.710)	(2.712)	
Country fixed effects	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Age group fixed effects	Yes	Yes	Yes	Yes	Yes
Individual income	No	Yes	Yes	Yes	Yes
Demographic characteristics	No	Yes	Yes	Yes	Yes
Income decile fixed effects	No	Yes	Yes	Yes	Yes
Labor market controls	No	Yes	Yes	Yes	Yes
Country*Age trends	No	No	Yes	Yes	Yes
Cohort fixed effects	No	No	No	Yes	Yes
Country*Year fixed effects	No	No	No	No	Yes
Observations	719742	719742	719742	719742	719742
R^2	0.127	0.132	0.133	0.133	0.182
Mean of outcome	0.51	0.51	0.51	0.51	0.51

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. Outcome is a dummy variable indicating that the respondent approves "the job performance of the leader". *Exposure to epidemic (18–25)* defined as the average per capita number of people affected by an epidemic when the respondent was in their impressionable years (18–25 years). *The number of people affected* refers to people requiring immediate assistance during a period of emergency (that is, requiring basic survival needs such as food, water, shelter, sanitation, and immediate medical assistance). Demographic characteristics include: a male dummy, a dummy for each age group, dummy variables for marital status (single, married), educational attainment (tertiary education, secondary education), religion dummies (Christian, Muslim, and other religions), employment status (full-time employed, part-time employed, unemployed), a dummy variable for living in an urban area and presence of children in the household (any child under 15). Income decile fixed-effects are constructed by grouping individuals into deciles based on their income relative to other individuals within the same country and year. Individual income includes all wages and salaries in the household, remittances from family members living elsewhere, and all other sources before taxes. Gallup converts local income to International Dollars using the World Bank's individual consumption PPP conversion factor, which makes it comparable across all countries. Results use the Gallup sampling weights and robust standard errors are clustered at the country level. Source: Gallup World Polls, 2006–2018 and EM-DAT International Disaster Database, 1970–2017.

Table 5 Heterogeneity

	(1) Coefficient on exposure to epidemic (18–25) (standard error)	(2) Coefficient on exposure to epidemic (18–25) (standard error)	(3) Coefficient on exposure to epidemic (18–25) (standard error)
Outcome ➔	Have confidence in honesty of elections	Have confidence in national government	Approval of the leader
Full sample	–2.258*** (0.339)	–1.592*** (0.262)	–1.957*** (0.330)
Males	–2.014*** (0.379)	–1.153** (0.470)	–1.351** (0.528)
Females	–2.551*** (0.413)	–2.042*** (0.416) [A]	–2.516*** (0.545) [A]
Low-income countries	–11.753*** (4.145)	–11.181 (7.577)	–20.701* (11.546)
High-income countries	–1.773*** (0.343) [A]	–1.212*** (0.262)	–1.503*** (0.260) [A]
Less than degree level	–2.249*** (0.330)	–1.657*** (0.285)	–1.753*** (0.295)
Degree level education	–1.071 (0.816) [A]	0.658 (1.242) [A]	–5.120*** (1.328) [A]
Rural	–1.967*** (0.357)	–1.518*** (0.268)	–1.377*** (0.265)
Urban	–4.049*** (0.893) [A]	–3.015*** (0.781) [A]	–6.195*** (1.452) [A]
Low-income HH	–2.527*** (0.485)	–0.226 (0.341)	–0.112 (0.339)
Middle-income HH	–2.207** (0.869)	–3.015*** (0.781)	–3.140*** (1.008)
High-income HH	–1.559*** (0.389)	–0.854* (0.457)	–3.572*** (0.455)
Democratic countries	–2.514*** (0.287)	–1.884*** (0.249)	–1.587*** (0.301)
Non-democratic countries	0.880 (3.480) [A]	3.097 (2.497) [A]	2.061 (2.529) [A]

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. Specification is Column 4 of Table 2. See notes to Table 2. [A] indicates statistically significant difference in each pair of means at p<.05. Source: Gallup World Polls, 2006–2018 and EM-DAT International Disaster Database, 1970–2017.

Table 6 The role of government strength

Outcome ➔	(1) Have confidence in honesty of elections	(2) Have confidence in national government	(3) Approval of the leader
Exposure to epidemic (18–25)*MedianGov.Strength	–2.987***	–4.033***	–1.092
	(0.618)	(0.876)	(0.849)
Exposure to epidemic (18–25)	–1.901**	–0.235	–3.018***
	(0.833)	(1.038)	(1.044)
MedianGov.Strength	–0.000	0.014*	0.015*
	(0.007)	(0.008)	(0.009)
Exposure to epidemic (18–25)*BottomTercileGov.Strength	–4.863***	–3.919***	–2.230***
	(0.559)	(0.719)	(0.629)
Exposure to epidemic (18–25)	–1.183*	–1.048	–2.514***
	(0.698)	(0.808)	(0.693)
BottomTercileGov.Strength	0.002	0.013*	0.023***
	(0.007)	(0.008)	(0.008)
Exposure to epidemic (18–25)*BottomQuartileGov.Strength	–4.643***	–3.578***	–2.027***
	(0.521)	(0.748)	(0.542)
Exposure to epidemic (18–25)	–1.373*	–1.289	–2.657***
	(0.800)	(0.889)	(0.640)
BottomQuartileGov.Strength	–0.002	–0.000	0.010
	(0.008)	(0.008)	(0.010)
Observations	412051	422523	394323
*R*2	0.136	0.136	0.115

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. The specification is Column 4 of Table 2. See notes to Table 2. Results reported in each panel come from separate models. Source: Gallup World Polls, 2006–2018, EM-DAT International Disaster Database, 1970–2017, and the International Country Risk Guide.

Table 7 The role of government strength and attitudes toward healthcare and vaccination

Outcome ➔	(1) Have confidence in healthcare	(2) Vaccines are effective	(3) Vaccines are safe	(4) Children received a vaccine	(5) Vaccines are important for children to have
Exposure to epidemic (18–25)*MedianGov.Strength	–16.783	0.862	–3.554**	–3.253***	–3.084***
	(29.181)	(0.981)	(1.772)	(0.610)	(0.777)
Exposure to epidemic (18–25)	1.071	–3.112***	–2.033	0.855	0.806
	(35.099)	(0.824)	(1.843)	(0.810)	(0.777)
MedianGov.Strength	0.023**	–0.013*	–0.011	–0.005	–0.003
	(0.011)	(0.007)	(0.009)	(0.004)	(0.005)
Exposure to epidemic (18–25)*BottomTerc.Gov.Strength	–19.117	–1.815**	–5.386***	–1.526***	–2.337***
	(27.583)	(0.762)	(1.585)	(0.405)	(0.797)
Exposure to epidemic (18–25)	–3.716	–0.921	–1.090	–0.577	0.056
	(26.485)	(1.046)	(1.510)	(0.586)	(0.585)
BottomTercileGov.Strength	0.001	–0.004	–0.006	–0.005	–0.007
	(0.009)	(0.007)	(0.008)	(0.005)	(0.006)
Exposure to epidemic (18–25)*BottomQuar.Gov.Strength	–49.140**	–2.142***	–5.987***	–1.926***	–2.058**
	(23.329)	(0.723)	(2.099)	(0.529)	(1.024)
Exposure to epidemic (18–25)	8.549	–1.057	–0.776	–0.350	–0.179
	(20.633)	(0.740)	(1.722)	(0.703)	(0.776)
BottomQuartileGov.Strength	0.004	0.005	–0.002	–0.001	–0.002
	(0.010)	(0.007)	(0.008)	(0.005)	(0.005)
Observations	49517	49799	49779	38702	50791
R^2	0.110	0.078	0.133	0.048	0.091

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. The specification is Column 4 of Table 2. See notes to Table 2. Results reported in each panel come from separate models. Source: EM-DAT International Disaster Database, 1970–2017, the Wellcome Global Monitor, 2018, and International Country Risk Guide.

Table 8 Impact of exposure (ages 18–25) on attitudes towards healthcare

	(1) Full-sample	(2) Democratic countries	(3) Non-democratic counties
Outcome ➔	Confidence in healthcare	Confidence in healthcare	Confidence in healthcare
Exposure to epidemic (18–25)	–6.760*** (1.270)	–6.543*** (1.649)	–5.964 (4.084)
Observations	95732	72793	22939
R^2	0.092	0.098	0.172
Outcome ➔	Vaccines are effective	Vaccines are effective	Vaccines are effective
Exposure to epidemic (18–25)	–1.178** (0.564)	–1.699*** (0.554)	–0.596 (0.470)
Observations	81930	52638	25258
R^2	0.092	0.072	0.139
Outcome ➔	Vaccines are safe	Vaccines are safe	Vaccines are safe
Exposure to epidemic (18–25)	–1.685 (1.039)	–2.703*** (0.672)	–0.618* (0.341)
Observations	81847	52612	25195
R^2	0.142	0.117	0.202
Outcome ➔	Children received a vaccine	Children received a vaccine	Children received a vaccine
Exposure to epidemic (18–25)	–0.339 (0.847)	–1.432*** (0.417)	0.941 (0.650)
Observations	67125	42415	21477
R^2	0.049	0.056	0.038
Outcome ➔	Vaccines are important for children to have	Vaccines are important for children to have	Vaccines are important for children to have
Exposure to epidemic (18–25)	–0.525 (0.566)	–1.037* (0.549)	–0.009 (0.295)
Observations	83666	53623	25928
R^2	0.091	0.084	0.110

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. Outcome is a dummy variable indicating that: the respondent agrees or strongly agrees that "vaccines are effective" in the top panel; the respondent agrees or strongly agrees that "vaccines are safe" in the second panel; the respondent reports that their "children received a vaccine" that was supposed to prevent them from getting childhood diseases such as (such as polio, measles or mumps)," in the third panel; the respondent agrees or strongly agrees that "vaccines are important for children to have" in the bottom panel. Exposure to epidemic (18–25) defined as the average per capita number of people affected by an epidemic when the respondent was in their impressionable years (18–25 years). The number of people affected refers to people requiring immediate assistance during a period of emergency (that is, requiring basic survival needs such as food, water, shelter, sanitation, and immediate medical assistance). Each specification includes country-fixed effects, year-fixed effects, demographic (a male dummy, a dummy for each age group, dummy variables for educational attainment (tertiary education, secondary education), religion dummies (Christian, Muslim, and other religions), and labor market (full-time employed, part-time employed, unemployed) characteristics, within-country income-deciles, dummy variables for living in an urban area and presence of children in the household (any child under 15). Results use the Gallup sampling weights and robust standard errors are clustered at the country level. Source: the Wellcome Global Monitor, 2018 and EM-DAT International Disaster Database, 1970–2017, and Polity5

Table 9 Government strength and policy response time to COVID-19

Sample ➔	(1) Full-sample	(2) Above Median Polity Score	(3) Below Median Polity Score
Government strength	–3.611**	–5.357** A	–.0837
	(1.731)	(2.560)	(2.077)
	[–2.764]	[–4.231]	[–0.062]
Continent fixed effects	Yes	Yes	Yes
Country characteristics	Yes	Yes	Yes
Average Google search volume one week before the policy	Yes	Yes	Yes
(log) cumulative own country cases one week before the policy	Yes	Yes	Yes
(log) cumulative own country deaths one week before the policy	Yes	Yes	Yes
Observations	78	39	39

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. OLS regressions. Outcome variable is *the number of days* between the date of the first confirmed case and the date of the first COVID-19 policy (i.e. non-pharmaceutical intervention: school closure, workplace closure, public event cancellation, public transport closure, or restrictions on within-country movement) in the own country. *Government strength* is an assessment of both the government's ability to carry out its declared programs and its ability to stay in office. It ranges between 12 (maximum score) and 0 (minimum score) with higher scores indicating better quality. Country characteristics include (log) GDP per capita, (log) urbanization rate, (log) total population, (log) share of population age 65 and above, Polity Score, and a dummy variable indicating whether a country experienced any epidemic since 2000. We add 1 to every country observation and then apply a logarithmic transformation. Brackets report point estimates for one standard deviation (0.765) increase in government strength index. Robust standard errors are clustered at the country level. [A] indicates statistically significant differences between the pair estimates. The sample consists of 78 countries that ever-adopted non-pharmaceutical policy between 1/1/2020 and 31/03/2012. Source: EM-DAT, European Centre for Disease Prevention Control, Google, Polity V, Oxford COVID-19 Government Response Tracker, the International Country Risk Guide, World Bank.

Appendices

Appendix A Additional data and sources

International Country Risk Guide

Our data on institutional quality are from the International Country Risk Guide (ICRG). This measures 12 political and social attributes for approximately 140 countries from 1984 to the present. We focus on *government strength*, which is an assessment both of the government's ability to carry out its declared programs and its ability to stay in office.[48] Specifically, the index score is the sum of three subcomponents: (i) Government Unity; (ii) Legislative Strength; and (iii) Popular Support. In the original ICRG dataset, this measure is called as government stability. Throughout the paper, we refer to government stability as *government strength* as it captures the policy-making strength of the incumbent government. Scores for government strength range from a maximum of 12 and a minimum of 0.

Wellcome Global Monitor

The Wellcome Global Monitor (WGM) is a nationally representative survey fielded in some 160 countries in 2018. It is the first global survey of how people think and feel about key health and science challenges, including attitudes towards vaccines; trust in doctors, nurses and scientists. WGM also provides information on respondents' demographic and labor market characteristics. We use the Wellcome Global Monitor (WGM) to explore the mechanisms underlying our findings, and specifically whether these run through attitudes and feeling about the public health response to epidemics.

Google Trends

We use Google Trends data on searches to measure public attention paid to the COVID-19 pandemic. More specifically, we collected data on the volume of Google searches for "corona; korona; Wuhan virus; COVID; COVID-19," translating these search terms into the official language of each country. We assemble these data on a daily basis at the country level for the period from January 1

[48] Other institutional quality index measures cover democratic accountability, socioeconomic conditions, investment profile, internal conflict, external conflict, corruption, military in politics, religious tensions, law and order, ethnic tensions, and bureaucracy quality.

through March 31, 2020. Observations are scaled from 0 (lowest attention) to 100 (highest attention). We exclude 21 countries where the internet is classified as "not free" according to Freedom House (2019).

Covid-19 Related Cases and Deaths

We obtain daily data on the coronavirus related cases and deaths by country from the European Center for Disease Prevention and Control (ECDC) and the Johns Hopkins Coronavirus Resource Center (JHCRC). There are minor reporting differences between the two sources. We use both datasets and create our measures of cases and deaths using the maximum value reported in either dataset.

Government Policy Responses

We rely on the Oxford COVID-19 Government Response Tracker (OxCGRT) for information on public policy responses to the outbreak (Thomas et al., 2020). Specifically, we use the information on the following responses: (i) closing of schools and universities; (ii) workplace closures; (iii) public event cancellations; (iv) closing of public transport; (v) restrictions on internal movement. We again gather these data for the period between January 1, and March 31, 2020.

Communicable and Non-Communicable Diseases

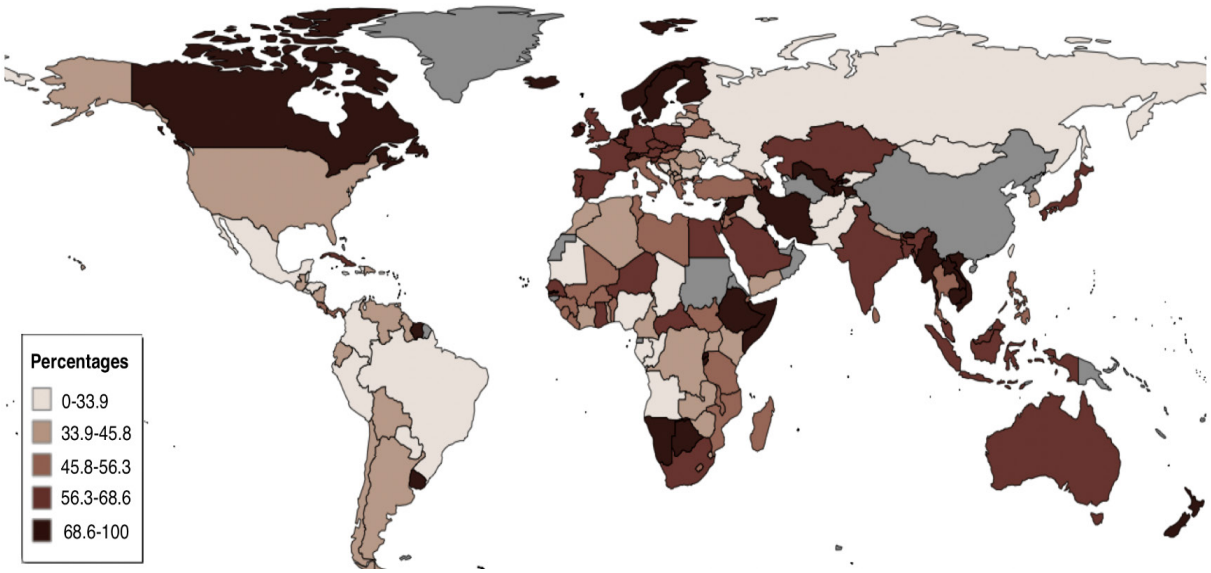
We distinguish communicable diseases (diarrhea, lower respiratory, other common infectious diseases, malaria and neglected tropical diseases, HIV/AIDS, tuberculosis, other communicable diseases) from non-communicable diseases (cardiovascular diseases, cancers, respiratory disease, diabetes, blood and endocrine diseases, mental and substance use disorders, liver diseases, digestive diseases, musculoskeletal disorders, neurological disorders, other non-communicable diseases) using data from the Institute for Health Metrics and Evaluation. These data are at the country-level data and cover the period 1990–2016. These measures are population-adjusted and expressed in Disability Adjusted Life Years Lost (DALYs), which is a standardized metric allowing for direct comparison and summing of burdens of different diseases (Roser and Ritchie, 2020). Conceptually, one DALY is the equivalent of one year in good health lost to premature mortality or disability (Murray et al. 2015).

Country Characteristics

Data on GDP per capita and urbanization rate come from the World Bank. We obtain the data on the total population and population by age from the United Nations. Data on political regime characteristics are from the Polity5 Series, with scores ranging from –10 to +10. We define 5 and above democracies.

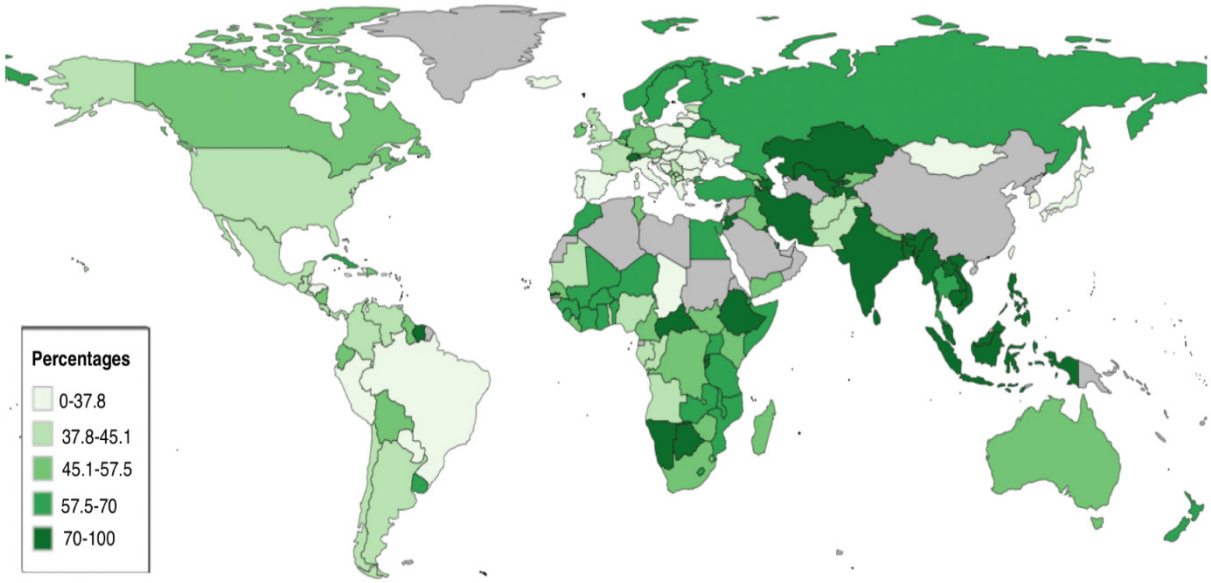
Appendix B Additional evidence and analysis

Figure B.1 Share of respondents who have confidence in honesty of elections



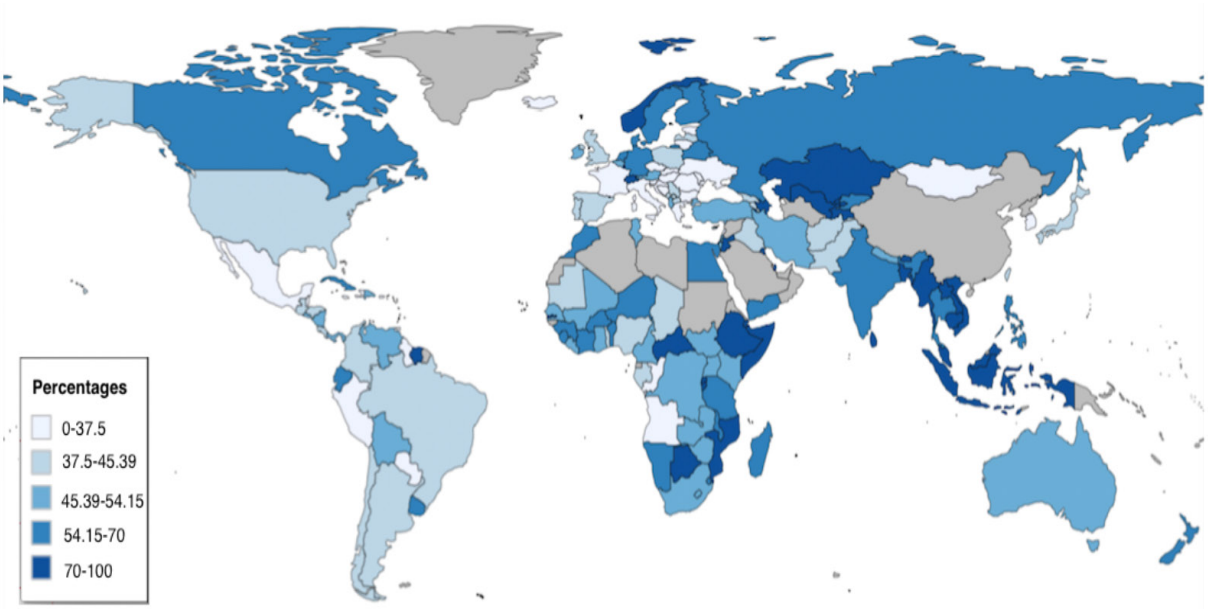
Notes: This figure shows the share of respondents who have confidence in honesty of elections, averaged across all available years. Source: Gallup World Polls, 2006–2018.

Figure B.2 Share of respondents who have confidence in national government



Notes: This figure shows the share of respondents who have confidence in national government, averaged across all available years. Source: Gallup World Polls, 2006–2018.

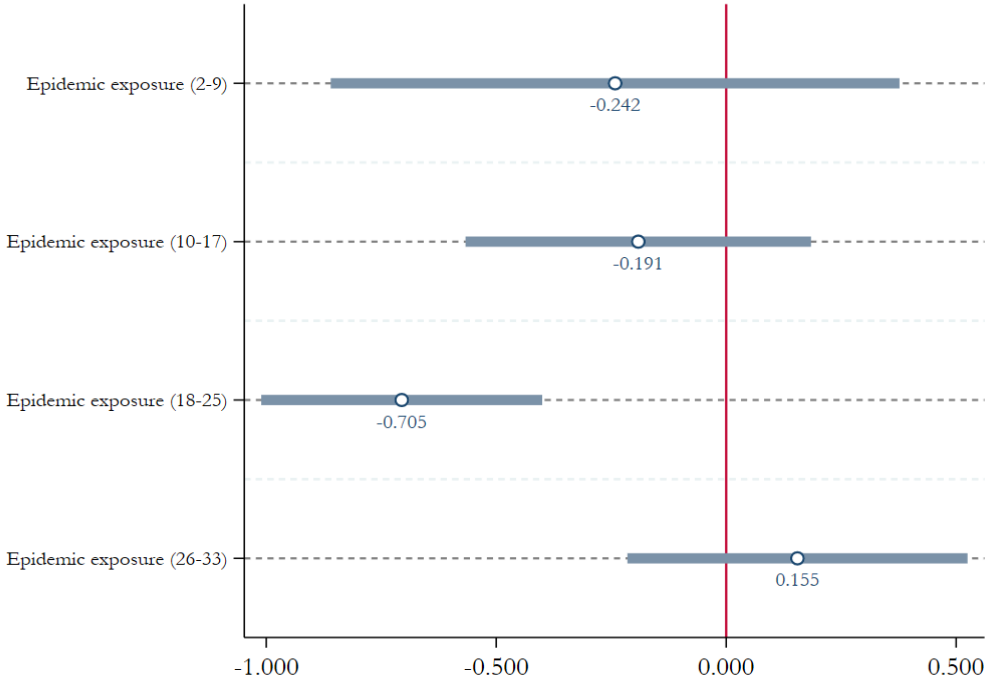
Figure B.3 Share of respondents who approve the performance of the leader



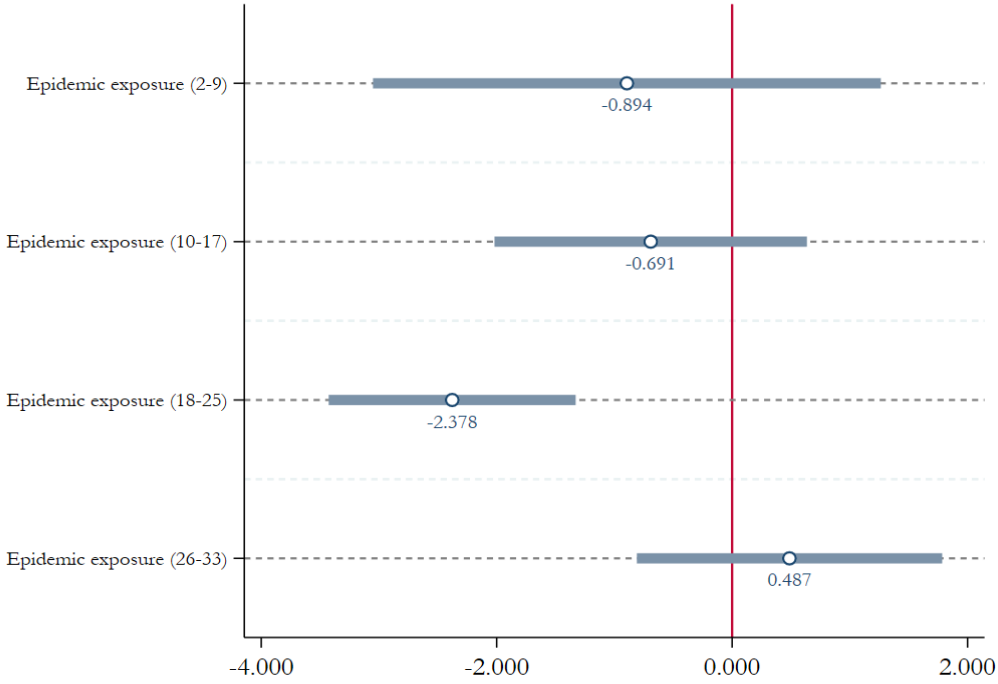
Notes: This figure shows the share of respondents who approve the performance of the leader, averaged across all available years. Source: Gallup World Polls, 2006–2018.

Figure B.4 Effects of epidemics in alternative treatment years

Panel A: Dependent variable is the average of all three outcome variables

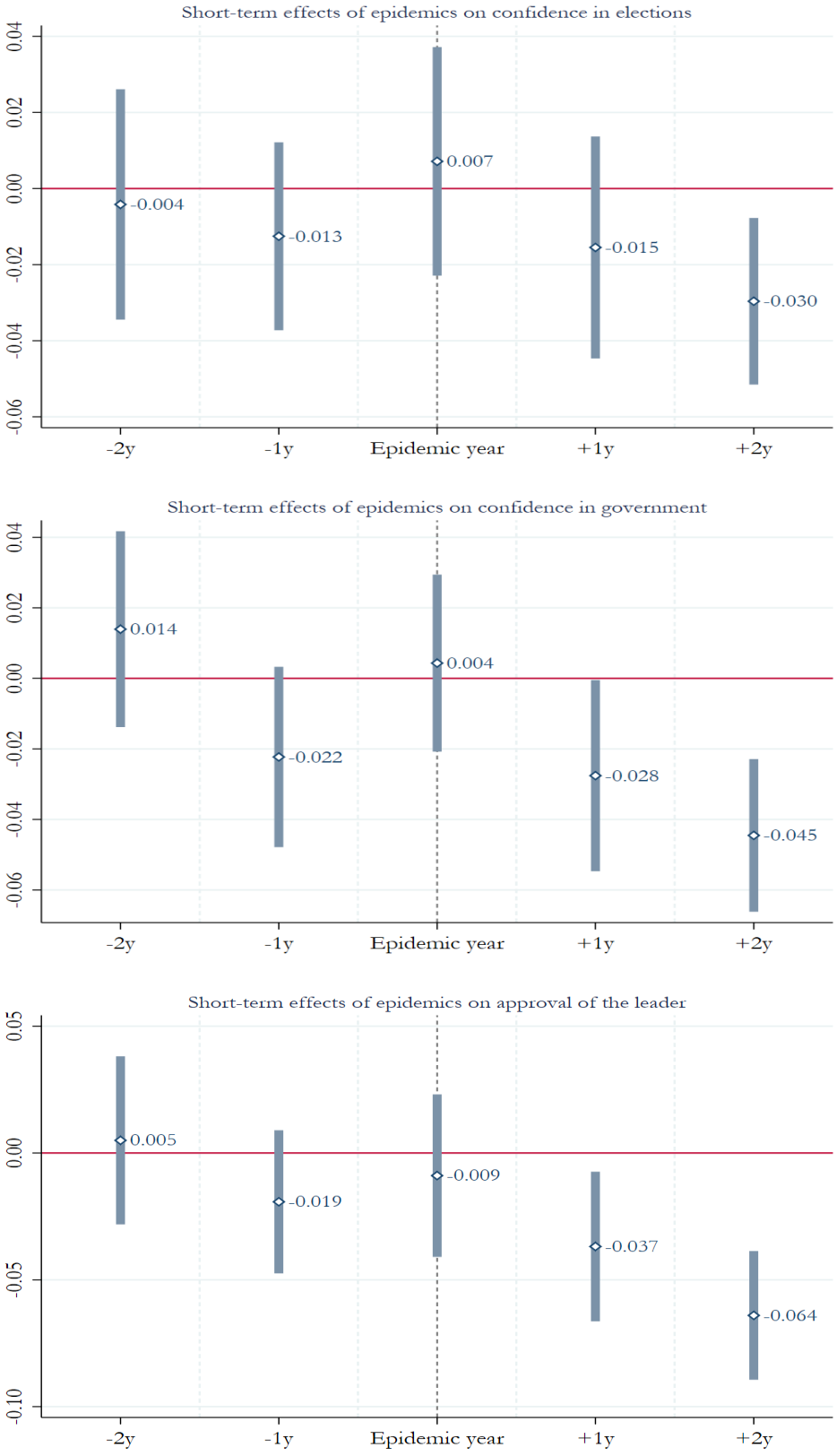


Panel B: Dependent variable is the 1st principal component of responses



Notes: This figure shows the treatment effect for various age bands. That is, we calculate for each individual the number of people affected by an epidemic as a share of the population, averaged over the 8 years when the individual was 2–9 years old, 10–17 years old, 18–25 years old, and 26–33 years old. Each point estimate comes from four separate models. Specification is Column 5 of Table 2. Confidence intervals are at 95% significance level. Source: Gallup World Polls, 2006–2018 and EM-DAT International Disaster Database, 1970–2017.

Figure B.5 Short-term effect of epidemics on political trust



Note: Epidemic year corresponds to the year in which World Health Organisation (WHO) declared one of the following pandemic/epidemic outbreaks for the country in which Gallup respondent resides: SARS, H1N1, MERS, Ebola, or Zika. Specification is the same as in Equation 2. Confidence intervals are at 90% significance level. Source: Gallup World Polls, 2006–2018 and Ma et al., 2020.

Table B.1 Placebo outcomes

Outcome ➔	(1) Have confidence in the military	(2) Have confidence in banks	(3) Have confidence in media
Exposure to epidemic (18–25)	–0.542	0.147	–0.652
	(0.442)	(0.193)	(0.610)
The number of people affected $_{t-1}$	2.210	0.118	–10.208**
	(3.284)	(2.038)	(4.817)
Country fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
Age group fixed effects	Yes	Yes	Yes
Individual income	Yes	Yes	Yes
Demographic characteristics	Yes	Yes	Yes
Income decile fixed effects	Yes	Yes	Yes
Labor market controls	Yes	Yes	Yes
Country*Age trends	Yes	Yes	Yes
Cohort fixed effects	Yes	Yes	Yes
Observations	730156	809972	190167
R^2	0.141	0.136	0.104
Mean of outcome	072	0.59	0.54

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. Outcome is a dummy variable indicating that the respondent has confidence in "military"; "banks and financial institutions"; "media freedom". The specification is Column 4 of Table 2. See notes to Table 2. Source: Gallup World Polls, 2006–2018 and EM-DAT International Disaster Database, 1970–2017.

Table B.2 The impact of exposure to epidemic (ages 18–25) on the average of all three outcome variables

Outcome ➔	(1) Average of all three outcome variables	(2) Average of all three outcome variables	(3) Average of all three outcome variables	(4) Average of all three outcome variables	(5) Average of all three outcome variables
Exposure to Epidemic (18–25)	–1.365**	–1.248**	–1.855***	–1.867***	–0.705***
	(0.565)	(0.539)	(0.264)	(0.264)	(0.155)
The number of people affected $_{t-1}$	–0.854	–0.779	–0.801	–0.803	--
	(3.086)	(3.065)	(3.056)	(3.051)	
Country fixed effects	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Age group fixed effects	Yes	Yes	Yes	Yes	Yes
Individual income	No	Yes	Yes	Yes	Yes
Demographic characteristics	No	Yes	Yes	Yes	Yes
Income decile fixed effects	No	Yes	Yes	Yes	Yes
Labor market controls	No	Yes	Yes	Yes	Yes
Country*Age trends	No	No	Yes	Yes	Yes
Cohort fixed effects	No	No	No	Yes	Yes
Country*Year fixed effects	No	No	No	No	Yes
Observations	636156	636156	636156	636156	636156
R^2	0.169	0.178	0.180	0.180	0.230

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. Outcome is an average of all three main dependent variables: "honesty of elections"; "confidence in national government"; "approval of the leader". *Exposure to epidemic (18–25)* defined as the average per capita number of people affected by an epidemic when the respondent was in their impressionable years (18–25 years). *The number of people affected* refers to people requiring immediate assistance during a period of emergency (that is, requiring basic survival needs such as food, water, shelter, sanitation, and immediate medical assistance). Demographic characteristics include: a male dummy, a dummy for each age group, dummy variables for marital status (single, married), educational attainment (tertiary education, secondary education), religion dummies (Christian, Muslim, and other religions), employment status (full-time employed, part-time employed, unemployed), a dummy variable for living in an urban area and presence of children in the household (any child under 15). Income decile fixed-effects are constructed by grouping individuals into deciles based on their income relative to other individuals within the same country and year. Individual income includes all wages and salaries in the household, remittances from family members living elsewhere, and all other sources before taxes. Gallup converts local income to International Dollars using the World Bank's individual consumption PPP conversion factor, which makes it comparable across all countries. Results use the Gallup sampling weights and robust standard errors are clustered at the country level. Source: Gallup World Polls, 2006–2018 and EM-DAT International Disaster Database, 1970–2017.

Table B.3 The Impact of Exposure to Epidemic (Ages 18–25) on the 1st Principal Component of Responses

Outcome ➔	(1) the 1st Principal Component of Responses	(2) the 1st Principal Component of Responses	(3) the 1st Principal Component of Responses	(4) the 1st Principal Component of Responses	(5) the 1st Principal Component of Responses
Exposure to Epidemic (18–25)	–4.672**	–4.269**	–6.361***	–6.400***	–2.378***
	(1.932)	(1.841)	(0.914)	(0.913)	(0.531)
The number of people affected $_{t-1}$	–2.619	–2.353	–2.424	–2.431	--
	(10.804)	(10.730)	(10.694)	(10.677)	
Country fixed effects	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Age group fixed effects	Yes	Yes	Yes	Yes	Yes
Individual income	No	Yes	Yes	Yes	Yes
Demographic characteristics	No	Yes	Yes	Yes	Yes
Income decile fixed effects	No	Yes	Yes	Yes	Yes
Labor market controls	No	Yes	Yes	Yes	Yes
Country*Age trends	No	No	Yes	Yes	Yes
Cohort fixed effects	No	No	No	Yes	Yes
Country*Year fixed effects	No	No	No	No	Yes
Observations	636156	636156	636156	636156	636156
R^2	0.169	0.178	0.180	0.180	0.230

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. Outcome is the 1st Principal Component of responses to the main dependent variables: "honesty of elections"; "confidence in national government"; "approval of the leader". *Exposure to epidemic (18–25)* defined as the average per capita number of people affected by an epidemic when the respondent was in their impressionable years (18–25 years). *The number of people affected* refers to people requiring immediate assistance during a period of emergency (that is, requiring basic survival needs such as food, water, shelter, sanitation, and immediate medical assistance). Demographic characteristics include: a male dummy, a dummy for each age group, dummy variables for marital status (single, married), educational attainment (tertiary education, secondary education), religion dummies (Christian, Muslim, and other religions), employment status (full-time employed, part-time employed, unemployed), a dummy variable for living in an urban area and presence of children in the household (any child under 15). Income decile fixed-effects are constructed by grouping individuals into deciles based on their income relative to other individuals within the same country and year. Individual income includes all wages and salaries in the household, remittances from family members living elsewhere, and all other sources before taxes. Gallup converts local income to International Dollars using the World Bank's individual consumption PPP conversion factor, which makes it comparable across all countries. Results use the Gallup sampling weights and robust standard errors are clustered at the country level. Source: Gallup World Polls, 2006–2018 and EM-DAT International Disaster Database, 1970–2017.

Table B.4 Robustness to alternative epidemic exposure measure – exposure to SARS, H1N1, MERS, Ebola, or Zika

	(1) Coefficient on Exposure to Epidemic (18–25) (standard error)	(2) Coefficient on Exposure to Epidemic (18–25) (standard error)	(3) Coefficient on Exposure to Epidemic (18–25) (standard error)	(4) Coefficient on Exposure to Epidemic (18–25) (standard error)	(5) Coefficient on Exposure to Epidemic (18–25) (standard error)
Outcome ➔	Have confidence in honesty of elections	Have confidence in national government	Approval of the leader	Average of all three outcome variables	the 1st Principal Component of Responses
Sample: Democratic countries	–0.041**[A]	–0.022	–0.044*A	–0.038**	–0.132**
	(0.017)	(0.020)	(0.024)	(0.019)	(0.066)
Observations	103551	106530	102838	94695	94695
R^2	0.135	0.137	0.108	0.171	0.171
Sample: Non-democratic countries	0.022	0.029	0.029*	0.030*	0.104*
	(0.022)	(0.021)	(0.016)	(0.016)	(0.056)
Observations	45566	47796	44273	37849	37849
R^2	0.192	0.187	0.183	0.254	0.253

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. Exposure to epidemic (18–25) takes a value of 1 if the respondent experienced SARS, H1N1, MERS, Ebola, or Zika when the respondent was in their impressionable years (18–25 years). Specification is Column 4 of Table 2. See notes to Table 2. [A] indicates statistically significant difference in each pair of means at p<.05. Source: Gallup World Polls, 2006–2018 and Ma et al., 2020.

Table B.5 Impact of communicable and non-communicable diseases on the political trust

Sample ➔	(1) Full-sample	(2) Democratic countries	(3) Non-democratic counties
Outcome ➔	Have confidence in honesty of elections	Have confidence in honesty of elections	Have confidence in honesty of elections
Exposure to communicable dis. (18–25)	–0.515***	–0.533**	–0.032
	(0.176)	(0.243)	(0.207)
Exposure to non-communicable dis. (18–25)	0.553*	0.525	0.191
	(0.305)	(0.379)	(0.373)
Observations	377838	259328	106387
R^2	0.147	0.130	0.194
Outcome ➔	Have confidence in national government	Have confidence in national government	Have confidence in national government
Exposure to communicable dis. (18–25)	–0.368**	–0.426**	–0.054
	(0.152)	(0.213)	(0.209)
Exposure to non-communicable dis. (18–25)	0.175	0.132	0.037
	(0.303)	(0.407)	(0.373)
Observations	389882	267544	109651
R^2	0.157	0.125	0.182
Outcome ➔	Approval of the leader	Approval of the leader	Approval of the leader
Exposure to communicable dis. (18–25)	–0.111	–0.152	–0.043
	(0.179)	(0.263)	(0.252)
Exposure to non-communicable dis. (18–25)	0.123	0.125	0.184
	(0.336)	(0.545)	(0.369)
Observations	370749	256154	100751
R^2	0.140	0.099	0.177

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. *Exposure to communicable diseases (18–25)* takes a value of 1 if the respondent experienced communicable diseases (diarrhea, lower respiratory, other common infectious diseases, malaria & neglected tropical diseases, HIV/AIDS, tuberculosis, other communicable diseases). *Exposure to non-communicable diseases* (18–25) takes a value of 1 if the respondent experienced non-communicable diseases (cardiovascular diseases, cancers, respiratory disease, diabetes, blood and endocrine diseases, mental and substance use disorders, liver diseases, digestive diseases, musculoskeletal disorders, neurological disorders, other non-communicable diseases). Both measures are population-adjusted and expressed in terms of *Disability Adjusted Life Years Lost (DALYs),* which is a standardized metric allowing for direct comparison and summing of burdens of different diseases. Conceptually, one DALY is the equivalent of one year in good health lost due to premature mortality or disability. Specification is Column 4 of Table 2. See notes to Table 2. [A] indicates statistically significant difference in each pair of means at p<.05. Source: Gallup World Polls, 2006–2018 and Institute for Health Metrics and Evaluation, 1990–2016

Table B.6 The impact of exposure to epidemic (ages 18–25) on political trust by exposure thresholds

	(1) Coefficient on dummy variable (standard error)	(2) Coefficient on dummy variable (standard error)	(3) Coefficient on dummy variable (standard error)
Outcome ➔	Have confidence in honesty of elections	Have confidence in national government	Approval of the leader
Baseline – Exposure to Epidemic (18–25)	–2.258*** (0.339)	–1.592*** (0.262)	–1.957*** (0.330)
Top 0.5 per cent (*exposure to epidemic, 18–25*)	–0.147*** (0.054)	–0.144*** (0.041)	–0.131*** (0.038)
Top 1 per cent (*exposure to epidemic, 18–25*)	–0.112*** (0.034)	–0.097** (0.038)	–0.084** (0.040)
Top 2 per cent (*exposure to epidemic, 18–25*)	–0.061*** (0.023)	–0.054** (0.024)	–0.051** (0.023)
Top 5 per cent (*exposure to epidemic, 18–25*)	–0.014 (0.014)	0.001 (0.016)	–0.007 (0.021)

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. Specification is Column 4 of Table 2. Results reported in each panel come from separate models. Threshold dummies in each row are defined based on the continuous treatment variable (Exposure to Epidemic, 18–25). See notes to Table 2. Source: Gallup World Polls, 2006–2018 and EM-DAT International Disaster Database, 1970–2017.

Table B.7 Impact of exposure to epidemics (ages 18–25) on political trust – intensive and extensive margins

	(1) Intensive margin	(2) Intensive margin	(3) Intensive margin	(4) Extensive margin	(5) Extensive margin	(6) Extensive margin
Outcome ➔	Have confidence in honesty of elections	Have confidence in national government	Approval of the leader	Have confidence in honesty of elections	Have confidence in national government	Approval of the leader
Exposure to Epidemic (18–25)	–3.329***	–2.779***	–3.241***	0.001	–0.001	–0.009***
	(0.505)	(0.519)	(0.735)	(0.003)	(0.003)	(0.003)
The number of people affected $_{t-1}$	–3.463	–0.004	–0.450	–3.574	0.773	0.138
	(2.779)	(4.959)	(4.043)	(2.182)	(3.457)	(2.718)
Observations	342209	351733	340226	736679	760099	719742
R^2	0.133	0.138	0.119	0.146	0.145	0.133

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. For intensive margin, the sample is restricted to respondents with any epidemic experience in their impressionable years, and models are re-estimated as in Column 4 of Table 2. For extensive margin, *Exposure to Epidemic (18–25)* is re-defined as a dummy taking the value of 1 when the continuous version is positive and zero otherwise; and models are re-estimated over the full sample as in Column 4 of Table 2. See notes to Table 2. Source: Gallup World Polls, 2006–2018 and EM-DAT International Disaster Database, 1970–2017.

Table B.8 Robustness to controlling for other economic and political shocks

Outcome ➔	(1) Have confidence in honesty of elections	(2) Have confidence in national government	(3) Approval of the leader
Exposure to Epidemic (18–25)	–4.219***	–3.417***	–3.944***
	(0.849)	(0.787)	(0.746)
The number of people affected $_{t-1}$	–3.354*	0.876	0.698
	(1.701)	(3.019)	(2.218)
Government strength (18–25)	0.006	–0.001	–0.012*
	(0.005)	(0.005)	(0.007)
Socioeconomic conditions (18–25)	–0.018***	–0.018***	–0.007
	(0.006)	(0.006)	(0.007)
Investment profile (18–25)	0.002	0.007	0.010*
	(0.006)	(0.006)	(0.006)
Internal conflict (18–25)	–0.002	–0.007	–0.013**
	(0.005)	(0.005)	(0.006)
External conflict (18–25)	0.006	0.002	–0.001
	(0.004)	(0.005)	(0.006)
Corruption (18–25)	–0.005	–0.009	–0.010
	(0.009)	(0.010)	(0.010)
Military in politics (18–25)	0.010	0.021**	0.019*
	(0.009)	(0.009)	(0.011)
Religious tensions (18–25)	–0.003	–0.003	–0.005
	(0.010)	(0.011)	(0.014)
Law and order (18–25)	0.041***	0.030**	0.045**
	(0.014)	(0.015)	(0.017)
Ethnic tensions (18–25)	0.005	0.011	0.013
	(0.007)	(0.008)	(0.010)
Democratic accountability (18–25)	–0.016**	–0.005	–0.009
	(0.006)	(0.007)	(0.010)
Bureaucracy quality (18–25)	–0.022	–0.017	–0.024
	(0.014)	(0.016)	(0.021)
Observations	412051	422523	408564
R^2	0.137	0.137	0.140

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. Specification is Column 4 of Table 2. See notes to Table 2. Source: Gallup World Polls, 2006–2018, EM-DAT International Disaster Database, 1984–2017, and ICRG 1984–2017.

Table B.9 Robustness to controlling for other economic and political shocks

Outcome ➔	(1) Have confidence in honesty of elections	(2) Have confidence in national government	(3) Approval of the leader
Exposure to Epidemic (18–25)	–2.387***	–1.979***	–2.396***
	(0.539)	(0.649)	(0.584)
The number of people affected $_{t-1}$	–1.890**	3.050**	1.455
	(0.786)	(1.393)	(1.511)
Inflation (18–25)	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)
GDP Growth (18–25)	0.001	0.001	0.001
	(0.001)	(0.002)	(0.002)
GDP Per Capita (18–25)	–0.000	–0.000	0.000*
	(0.000)	(0.000)	(0.000)
Polity (18–25)	0.001	–0.001	–0.001
	(0.001)	(0.002)	(0.002)
Observations	423121	437366	405430
R^2	0.158	0.133	0.122

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. Specification is Column 4 of Table 2. See notes to Table 2. Source: Gallup World Polls, 2006–2018, EM-DAT International Disaster Database, 1970–2017, and IMF, 1970–2017, the World Bank, 1970–2017 and Polity5, 1970–2017.

Table B.10 Impact of "made-up" exposure on immigrants' political trust

Outcome ➔	(1) Have confidence in honesty of elections	(2) Have confidence in national government	(3) Approval of the leader	(4) Average of all three outcome variables	(5) the 1st Principal Component of Responses
Exposure to epidemic (18–25)	–0.205	–0.919	–5.915	–1.475	–5.229
	(2.639)	(2.100)	(3.601)	(1.688)	(5.994)
The number of people affected $_{t-1}$	–13.788	–10.238	–13.867	–6.929	–24.679
	(16.258)	(15.302)	(15.535)	(11.686)	(41.658)
Observations	4118	4639	4306	3611	3611
R^2	0.282	0.229	0.229	0.322	0.321

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. Specification is Column 4 of Table 2. Exposure to epidemic (18–25) defined as the average per capita number of people affected by an epidemic when the respondent was in their impressionable years (18–25 years). The number of people affected refers to people requiring immediate assistance during a period of emergency (that is, requiring basic survival needs such as food, water, shelter, sanitation, and immediate medical assistance). Demographic characteristics include: a male dummy, a dummy for each age group, dummy variables for marital status (single, married), educational attainment (tertiary education, secondary education), religion dummies (Christian, Muslim, and other religions), employment status (full-time employed, part-time employed, unemployed), a dummy variable for living in an urban area and presence of children in the household (any child under 15). Income decile fixed-effects are constructed by grouping individuals into deciles based on their income relative to other individuals within the same country and year. Individual income includes all wages and salaries in the household, remittances from family members living elsewhere, and all other sources before taxes. Gallup converts local income to International Dollars using the World Bank's individual consumption PPP conversion factor, which makes it comparable across all countries. Results use the Gallup sampling weights and robust standard errors are clustered at the country level. Source: Gallup World Polls, 2006–2018 and EM-DAT International Disaster Database, 1970–2017.

Table B.11 Impact of "randomly-assigned" exposure on political trust

Outcome ➔	(1) Have confidence in honesty of elections	(2) Have confidence in national government	(3) Approval of the leader	(4) Average of all three outcome variables	(5) the 1st Principal Component of Responses
Exposure to epidemic (18–25)	–0.238	0.210	–0.250	–0.040	–0.109
	(0.439)	(0.390)	(0.488)	(0.389)	(1.348)
The number of people affected $_{t-1}$	–3.609*	0.734	0.320	–0.625	–1.802
	(2.157)	(3.450)	(2.660)	(2.996)	(10.483)
Observations	647417	668022	632661	559274	559274
R^2	0.145	0.146	0.133	0.180	0.180

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. Specification is Column 4 of Table 2. Exposure to epidemic (18–25) defined as the average per capita number of people affected by an epidemic when the respondent was in their impressionable years (18–25 years). The number of people affected refers to people requiring immediate assistance during a period of emergency (that is, requiring basic survival needs such as food, water, shelter, sanitation, and immediate medical assistance). Demographic characteristics include: a male dummy, a dummy for each age group, dummy variables for marital status (single, married), educational attainment (tertiary education, secondary education), religion dummies (Christian, Muslim, and other religions), employment status (full-time employed, part-time employed, unemployed), a dummy variable for living in an urban area and presence of children in the household (any child under 15). Income decile fixed-effects are constructed by grouping individuals into deciles based on their income relative to other individuals within the same country and year. Individual income includes all wages and salaries in the household, remittances from family members living elsewhere, and all other sources before taxes. Gallup converts local income to International Dollars using the World Bank's individual consumption PPP conversion factor, which makes it comparable across all countries. Results use the Gallup sampling weights and robust standard errors are clustered at the country level. Source: Gallup World Polls, 2006–2018 and EM-DAT International Disaster Database, 1970–2017

Table B.12 Contemporaneous effects of pandemic on political trust

Outcome ➔	(1) Have confidence in honesty of elections	(2) Have confidence in national government	(3) Approval of the leader
Lagged pandemic	–0.015	–0.028*	–0.037**
	(0.018)	(0.016)	(0.018)
Country fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
Age group fixed effects	Yes	Yes	Yes
Individual income	Yes	Yes	Yes
Demographic characteristics	Yes	Yes	Yes
Income decile fixed effects	Yes	Yes	Yes
Labor market controls	Yes	Yes	Yes
Country*Age trends	Yes	Yes	Yes
Cohort fixed effects	Yes	Yes	Yes
Country*Year fixed effects	Yes	Yes	Yes
Observations	950827	987864	931469
R^2	0.147	0.142	0.131

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. Specification is Equation 2. Source: Gallup World Polls, 2006–2018 and Ma et al., 2020.

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