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# THE POLITICAL SCAR OF EPIDEMICS

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The Political Scar of Epidemics
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## ABSTRACT

Epidemic exposure in an individual's "impressionable years" (ages 18 to 25) has a persistent negative effect on confidence in political institutions and leaders. This loss of trust is associated with epidemic-induced economic difficulties, such as lower income and unemployment later in life. It is observed for political institutions and leaders only and does not carry over to other institutions and individuals. A key exception is a strong negative effect on confidence in public health systems. This suggests that the distrust in political institutions and leaders is associated with the (in)effectiveness of a government's healthcare-related response to epidemics. We show that the loss of political trust is largest for individuals who experienced epidemics under weak governments with low policymaking capacity, and confirm that weak governments in fact took longer to introduce policy interventions in response to COVID-19. We report evidence that the epidemic-induced loss of political trust discourages electoral participation in the long term.

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## 1. Introduction

Epidemics are stress tests for governments. Public officials and institutions face the challenge of assembling information and mounting interventions against a rapidly spreading, potentially fatal disease. They must communicate that information, describe their policies, and convince the public of their trustworthiness. Fukuyama (2020) argues that 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 greater early success at containing the COVID-19 in the Nordic countries than Italy to greater trust in government.

Trust in government is not a given, however; there is reason to ask how epidemic exposure itself affects such trust. On the one hand, there is the "rally 'round the flag hypothesis." Trust in and support for political institutions and leaders tend to rise in the wake of disasters (Mueller 1970, Baum 2002). On the other hand, trust in government may decline because public institutions and those charged with their operation fail to prevent or contain the epidemic. In both cases, moreover, the persistence of the effect is unclear.

Here we provide the first large-scale evidence on the effects of epidemics on political trust.[2] We use novel data on trust and confidence in governments, elections, and national leaders from the 2006-2018 Gallup World Polls (GWP) fielded in up to 140 countries annually, together with data on the incidence of epidemics since 1970 as tabulated in the EM-DAT International Disasters Database. We show that exposure to epidemics, specifically when an individual at the time of exposure is in his or her "impressionable years" (ages 18 to 25) during which attitudes and outlooks are indelibly formed, durably shapes confidence in governments, elections and leaders.

Our empirical strategy exploits within-country-year between-cohort variation. We ask whether cohorts of individuals exposed to epidemics during their impressionable years display less

[2] There is some evidence on other political impacts of epidemics and containment efforts. Flückiger et al. (2019) show that the intensity of the West African Ebola is associated with greater trust in government. (We return to this study below.) Campante et al. (2020) find that heightened concern about Ebola led to lower voter turnout in the United States. 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 found that 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.

political trust than other cohorts surveyed in the same country and same year. The estimated effect is substantial: an individual with the highest exposure to an epidemic (relative to zero exposure) is 5.1 percentage points less likely to have confidence in the national government; 7.2 percentage points less likely to have confidence in the honesty of elections; and 6.2 percentage points less likely to approve of the performance of the national leader. These effects represent the average treatment values for the remainder of life. They are up to four times larger for age groups that are close to their impressionable years and decay only gradually as individuals age.

We obtain these estimates controlling for country, year, cohort, and age fixed effects, as well as for country-by-year fixed effects in our more demanding specifications. We further address identification concerns in four ways. First, we show that a country's epidemic experience has no analogous impact on political trust for individuals who are older or younger at the time of exposure; the effect is specific to the exposure in the impressionable years. Second, we show that our epidemic exposure has no impact on social trust and trust in a variety of non-political institutions; the impact is specific to political institutions and leaders. Third, by creating an event-study setting around the dates since early 2000s when a pandemic was declared by the World Health Organisation, we show that countries with and without a pandemic shock share a common trend in levels of trust in the pre-event window; that the divergence starts only after the shock. We also confirm that our impressionable-year results carry over when we employ this alternative pandemic dataset. Finally, to verify that we are capturing the effects of epidemic exposure and perceptions of the adequacy of the associated public-policy response, as distinct from general health conditions, we compare the effects of communicable and non-communicable disease exposure and show that our results obtain only for the former.

Our results are not driven by other observable economic, social and political exposures that individuals may have simultaneously experienced in their impressionable years (such as growth and stability of the economy, inflation, GDP per capita, internal conflict, external conflict, corruption scandals, democratic accountability, revolutions, assassinations, purges, riots, anti-government demonstrations). A test proposed by Oster (2019) indicates that our results are unlikely to be driven by the unobserved variation potentially related to omitted factors. Our estimates are robust to different measures of epidemic exposure (such as a population-unadjusted treatment variable or various threshold dummies for high exposures) and across a variety of specification checks (excluding potentially bad controls, multiple hypothesis testing, ruling out the importance of influential observations, constructing a dependent variable based

on principal component analysis). As a falsification exercise, we present results focusing on our baseline sample, but randomly allocating each individual to a different country where they could have spent their impressionable years. We find no effect.

Finally, we provide evidence that epidemic exposure alters not just reported political attitudes but also actual political behavior: respondents with epidemic exposure in their impressionable years are less likely to have voted in recent national elections, more likely to have taken part in lawful/peaceful public demonstrations, and more likely to have signed a petition.

The second part of the paper explores the mechanisms behind our results. We show that these negative attitudinal changes are accompanied by negative changes in economic outcomes: epidemic exposure in an individual's impressionable years is associated with lower subsequent incomes and a lower likelihood of employment later in life. We show that individuals exposed to epidemics in their impressionable years are less likely to have confidence in public health systems, suggesting that the perceived adequacy of health-related government interventions during epidemics is important for trust in government generally.

We investigate whether an effective and timely policy response at the time of the epidemic matters for how citizens adjust their political trust. In the absence of an international dataset on policy reactions to past epidemics, we make this point in two steps. First, we validate the conjecture that the prior strength of a government positively predicts the speed of its policy response to the recent COVID-19 pandemic. Second, we show that when individuals experience epidemics under weak governments, the negative impact on trust is larger and more persistent. This is consistent with the idea that governments lacking unity and legislative capacity are also less capable of reacting effectively to national health crises, producing a more substantial long-term decline in their citizens' political trust.

Section 2 reviews kindred literatures. Sections 3 through 5 describe our data, empirical strategy, and model. Section 6 and 7 present the baseline results and mechanism at play, after which Section 8 concludes.

## 2. Literature

Our analysis connects up to several literatures. First, there is work in economics on the determinants and correlates of trust. Contributions here (e.g. Alesina and La Ferrara 2000,

Nunn and Wantchekon, 2011) tend to focus on social trust (trust in other individuals, both in-group and out-group trust) rather than trust in political institutions and leaders. There are also a few studies of trust in political institutions and leaders (Becker et al. 2016, Algan et al. 2017, and Dustmann et al. 2017), but these tend to focus either on the impact of political circumstances long past or of relatively recent economic variables, such as growth and unemployment. Ours is the first study to present global evidence for the adverse impact on trust of health-related concerns and to consider the long-term impact of health crises experienced at an early stage of an individual's lifecycle.

Second, there is the literature on the "impressionable years." A seminal study pointing to the importance of this stage of the lifecycle in durably shaping attitudes and values 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.

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 data from Chile, Etchegaray et al. (2018) show that individuals in their impressionable years in 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 experiencing the Iran-Iraq War in their impressionable years are more likely to prioritize a strong defense. In our paper, we control for many aspects of economic, social and political experience during an individual's impressionable years to establish that our results are not spuriously driven by the factors detected in these previous studies. Our contribution is not only to add evidence for yet another adverse shock (i.e., epidemics) but also to document its persistence in the long term and to identify a novel mechanism (i.e., government policy (in)effectiveness) through which individuals update their beliefs.

Third, there is the recent pandemic-related literature. Flückiger et al. (2019) focus on the Ebola outbreak in West Africa from 2013 to 2016 and show that state legitimacy — proxied by trust in central government (parliament and president) and police — increased disproportionately in regions with higher exposure to the epidemic. The authors further show that the effects are

more pronounced in areas where governments responded more successfully to the epidemic. Aasve et al. (2020) use the approach of Algan et al. (2017) to study the impact of the 1918-19 Spanish flu pandemic on social trust. Analyzing the General Social Survey for the United States, they find that individuals whose families emigrated to the United States from a country with many Spanish flu victims display less trust in other people. Fetzer et al. (2020) use an experimental research design to establish that individuals' beliefs about pandemic risk factors associated with Covid-19 are causally related to their economic anxieties. In contrast to the single-epidemic focus of these and other recent studies, ours is the first (to the best of our knowledge) to bring large-scale international evidence and generalize the impact of a large set of historical epidemic episodes on individiual beliefs and behaviour.

Finally, there is our own work (Eichengreen, Aksoy and Saka 2021), where we investigate whether exposure to previous epidemics affected young people's trust in science and scientists. An obvious difference between the two papers is the focus, science and scientists versus politics and politicians. Another important difference lies in the channels or mechanisms linking epidemic exposure to distrust in distinct political and scientific spheres. Here, where we show that epidemic exposure during early stages of life matters for political trust, the mechanism is the (lack of) effective and timely government policy response. In our companion paper, where we demonstrate that epidemic exposure reduces trust in scientists and in the benefits of their work, the mechanism is lack of consistent scientific communication during past epidemics. The adequacy of the public-policy response and problems of scientific communication are entirely different mechanisms. These two papers also differ in terms of illustrating how distrust translates into changes in actual behaviour in the respective spheres. While we show in our companion paper that epidemic-induced scientific distrust translates into negative views towards vaccines and lower rates of child vaccination, we report evidence in the current paper that individuals with lower political trust after past epidemics reduce their electoral participation and prefer voicing their opinions via alternative means (such as attending demonstrations and signing petitions).

## 3. Data

Our principal data sources are the 2006-2018 Gallup World Polls (GWP) and the EM-DAT International Disasters Database. GWP are nationally representative surveys fielded annually

from 2006 in about 150 countries, with responses from approximately 1,000 individuals in each country. Our full sample (depending on outcome variable) covers some 750,000 respondents in 142 countries.

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 national government?" (ii) "In (this country), do you have confidence in each of the following, or not: … How about the honesty of elections?" (iii) "Do you approve or disapprove of the job performance of the leadership of this country?"

GWP provides information on respondents' age, gender, educational attainment, marital status, religion, urban/rural residence, labor market status, and income.

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

Our dataset includes 47 epidemics and pandemics since 1970. This includes large outbreaks of Cholera, Ebola, and H1N1 and also more limited epidemics. Averaged across available years, H1N1, Ebola, Dysentery, Measles, Meningitis, Cholera, Yellow Fever, Diarrhoeal Syndromes, Marburg Virus, and Pneumonia were the top 10 diseases causing epidemic mortality worldwide. Many of these epidemics and pandemics affected multiple countries. Note that the EM-DAT International Disasters Database does not include data on non-communicable diseases. We employ separate data on non-communicable diseases below.

We provide the full country-year-epidemic list in **Online Appendix E**. 137 countries experienced at least one epidemic, so measured, since 1970. This includes 51 countries in

Africa, 40 in Asia, 22 in the Americas, 19 in Europe, and 5 in Oceania.[3] Each epidemic is tagged with the country where it took place. When an epidemic affects several countries, the database contains separate entries for each. 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. We aggregate all epidemic-related information in this database at the country-year level and merge it with Gallup World Polls.

In robustness checks, we also employ a disaggregated panel dataset on communicable as well as non-communicable diseases from Institute for Health Metrics and Evaluation (IHME) and a dataset on recent WHO-declared epidemics from Ma et al. (2020).[4]

## 4. Empirical Model

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

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

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

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. Responses to all three questions are coded as dummy variables, with

[3] Manipulation of case/death numbers by national authorities could be an issue, especially if such manipulation is associated with relevant country characteristics (such as trust in national authorities, etc.). Most plausible is that countries with ex ante low political trust underreport individuals affected by epidemic events. Measurement bias would therefore indicate a positive relationship between political trust and case/death numbers. It follows that we may potentially be underestimating the negative effect of epidemics on political trust. In any case, the estimations using *incidence* rather than *intensity* of epidemics (**Appendix Table B.11**) are unlikely to suffer from this form of mismeasurement error, as it is much more difficult to hide the incidence of an epidemic than the case/death numbers. Additionally, thanks to a referee who noticed 16 observations in **Online Appendix E** where death numbers seem to exceed affected people, we have confirmed that our results do not depend on the exclusion of these few inconsistent observations.

[4] To explore underlying mechanisms, we use data from the Google Trends, the European Center for Disease Prevention Control, the Johns Hopkins Coronavirus Resource Center, and the Oxford COVID-19 Government Response Tracker. **Online Appendix D** summarises the additional data sources. **Online Appendix Table A.1** shows descriptive statistics for the outcome variables, country characteristics, and individual characteristics.

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 respondent the number of persons affected by an epidemic as a share of the population, averaged over the 8 years when the respondent was aged 18 to 25, consistent with the "impressionable years" hypothesis. The vector of individual controls $X_i$ includes indicator variables for urban residence and the presence of children under the age of 15 in the household, and dummy variables for gender, marital status, employment status, religion, educational attainment, and within-country-year income deciles. *People affected contemporaneously* controls for whether or not the individual is also exposed to an epidemic at the time surveyed. This is also calculated as the number of individuals affected by an epidemic as a share of the population in the country of residence in the year immediately prior to the interview. This variable is lagged to ensure that the independent variable is realized before the dependent variable.

We also control for income before taxes in both log and log squared form. Prior epidemic exposure may possibly affect an individual's responses by affecting his or her subsequent income. But, by controlling for household income separately, we can rule out that prior exposure affects an individual's responses solely via this income channel. A sense of the relative importance of this and other channels can be gained by comparing specifications with and without this income variable.

We include fixed effects 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 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 ($B_b$). A fully saturated specification includes also 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.). In this case we drop contemporaneous epidemic exposure, because it is perfectly correlated with the country-year dummies. We cluster standard errors by country and use sample weights provided by Gallup to make the data representative at the country level. Finally,

we limit our sample to individuals born in the same country in which they were interviewed by Gallup.[5]

## 5. Threats to Identification

One can imagine several potential threats to identification. First, 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 may vest less trust in political institutions and leaders, for example, because they experienced the widespread protests against political repression in the late 1960s, their impressionable years. We therefore include dummies for year of birth so as to compare the individuals only within the same birth cohort.[6]

Second, independent of cohort, individuals may exhibit differential behavior across the life cycle. They may become more (or less) trusting as they age, for example. Political views and ideologies may change from more liberal when young to more conservative when older (Niemi and Sobieszek 1977). Age-specific factors also may matter if different generations were exposed to epidemics with different probabilities; given advances in science and improvements in national healthcare systems, one might anticipate that epidemics are less likely to be experienced by younger generations. We therefore include 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,

[5] 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. Furthermore, to the extent that large epidemics push individuals to migrate to other countries not affected by the same epidemic, survivorship bias may lead us to underestimate the true negative effect of a past epidemic experience. We also estimated models using two alternative weightings, one that adjusts the previous weights using time-varying country population and another that adjusts the previous weights using time-invariant country population (averaged across available years). The results remain qualitatively unchanged.

[6] 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 variation in past epidemics only when they strike countries at different points in time. This empirical design cannot be considered as staggered since epidemic exposure across subsequent cohorts is not permanent. The fact that a cohort of individuals born in year X in Country A had epidemic exposure during their impressionable years does not necessarily mean that the following cohort born in year X+1 (or X+2, etc.) in the same Country A will also face a similar exposure during their impressionable years.

leading to larger differences across generations. We therefore include country-specific age trends.

Third, an omitted variable that varies across countries and years can bias estimates even when conventional country and year fixed effects are included separately. This issue arises, for example, when we observe individuals' attitudes toward national political institutions and leaders. Because the identity of those leaders and the structure of those institutions may change, 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 by including dummies for each country-year pair. This eliminates all heterogeneity in our outcome variables traceable to country-specific time-varying factors, such as changes in the government or leader. Thus, the treatment only compares individuals within the same country and survey year, ensuring that these individuals face the same political institutions and leaders. This mitigates concerns that the 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 persistent. This, after all, is 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 of no effect. We explore this by tracing the impact of past epidemic exposure across different age groups and show that the effect persists for at least two decades while decaying only gradually as individuals age. Hence, the full-sample estimates represent the average treatment effect across the whole life cycle after the impressionable years.

Although we fully saturate our specifications with fixed effects, there could still be other past exposures correlated with epidemics. To address this, we control for observable economic, political and social factors in the country in question during the individual's impressionable years. Including these controls for other past conditions has no impact on the stability of our coefficients of interest. In addition, we use the methodology developed by Oster (2019). The results suggest that our findings are unlikely to be driven by unobserved variation.

## 6. Results

**Table 1** reports estimates of Equation (1). The dependent variables are a dummy indicating that the respondent "has confidence in the national government" (**first panel**), that the respondent "approves of the performance of the leadership of his or her country" (**second panel**), that the respondent "has confidence in the honesty of elections" (**third panel**), the average of all three outcome variables (**fourth panel**), and the first principal component of responses (**fifth panel**). 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.

Column 1 shows a negative, statistically significant relationship between exposure to an epidemic in an individual's impressionable years and current confidence in the national government. Column 5 restricts all variation to within country-year observations The point estimates shrink (while remaining significant at the 1 percent level) because both treatment and control groups in this setting will have experienced the same epidemics but at different points in of the life cycle. Hence, to the extent that epidemics carry negative effects for other experience windows, we are only estimating the differential impact on individuals who were in their impressionable years (vs. not) at the time of epidemic exposure.

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 5.1 percentage points (-1.592*0.032) less confidence in the national government after his or her impressionable years.[7] Given that the mean level of this outcome variable is 50 percent, the effect is sizable.

[7] 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 when discussing effect size.

The second and third panels of the table report results for approval of the performance of the leader and confidence in the honesty of elections. The results on impressionable-year epidemic exposure have the same sign, statistical significance, and magnitude (a 6.2 percentage point decrease in approval of the political leader and a 7.2 percentage point decrease in the honesty of elections, where the mean outcome levels are 51 percent in both cases). When we use the average and the first principal component of these variables (as a way of identifying their common element) in the fourth and fifth panels, respectively, we again obtain very similar results.

***Do impressionable-year effects persist as individuals age?***

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

**Figure 1**, based on Column 4 of **Table 1**, shows the effect of epidemic exposure on the outcome variables. The effects on the base subsample (i.e., 26-35) are up to four 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 time between the past experience window (median age: 21.5 years) and the subsample (median age: 30.5 years) is 9 years, 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 estimates following the base sample before decaying gradually. It comes close to vanishing only estimated on the subsample of individuals aged 36 to 45, at which point the median time distance between the experience window and the subsample is 19 years. Evidently, epidemic experience during the impressionable years has persistent effects

on political trust that can remain for two decades of adult life.[8]

***Are the results unique to impressionable years?***

One could argue that our treatment effect can be influenced by the potential differential response in individuals who may have experienced the same epidemics not during their impressionable-years but in other close-by experience windows. Since these individuals will be categorised as counterfactuals in our setting, their potential differential response may drive our estimates upwards or downwards. In order to check this possibility, we re-estimate our specification on these alternative windows.

**Figure 2** shows the effect of exposure in successive eight-year age windows (analogous to the eight-year window of ages 18 to 25). We repeat the analysis only for the first four windows after birth to make sure we have age-wise comparable samples across separate estimations. It is important to keep in mind that as we check the later experience windows, respondents' age at the time of the survey has to be restricted to those older than the corresponding experience window. The analysis focuses on two composite dependent variables: the average of the three outcome variables (Panel A) and the first principal component of the responses (Panel B).

In both cases, the negative effect is only evident when epidemic exposure occurs in the individual's impressionable years. This alleviates the concern that an individual who experiences the same epidemic a little earlier or later than the impressionable age window may produce a differential response compared to an individual who has not experienced any epidemics at any of these windows.

In Panels C and D, we examine alternative experience windows, rolling them forward by one year each time from the ages of 10-17 to 18-25. We find that the effects increase in older age windows and reach their maximum during the ages of 16-23 before declining. This suggests that the impressionable ages during which young people are most responsive to epidemic

[8] Additional analysis (available upon request) shows that our results are qualitatively the same when we include country-specific squared and cubed age trends as additional controls in our baseline specification. It is also possible that individuals dissatisfied with the country's political system immigrate, and thus that older age-windows contain individuals who remain in the country because they are relatively more satisfied (compared to those who move out). We therefore use a survey question from Gallup World Polls that asks each individual whether or not they would like to move permanently to another country in the next 12 months. In unreported results (available upon request), we fail to find evidence supporting this possibility.

experience could be slightly earlier than the conventional definition used in the previous literature.

***Additional analysis and robustness checks***

Additional analyses, reported in the **Online Appendix**, document the robustness of our findings. These include: (i) controlling in various ways for additional economic, social and political exposures that individuals may have experienced in their impressionable years; (ii) conducting an Oster (2019) omitted variables test; (iii) estimating models for placebo outcomes related to non-political institutional or social trust; (iv) restricting the analysis only to overlapping samples for alternative measures of political trust; (v) using an alternative dataset for epidemic events; (vi) confirming that countries experiencing pandemics exhibit the same pre-trends in terms of political trust as other countries; (vii) focusing on large epidemics; (viii) distinguishing between extensive and intensive margin of the treatment effects; (ix) comparing the effects of communicable vs. non-communicable diseases during impressionable years; (x) conducting falsification analyses; (xi) implementing multiple hypothesis tests; (xii) excluding potential "bad controls"; (xiii) experimenting with alternative treatment definitions; (xiv) ruling out influential observations; (xv) employing an alternative estimator to take into account the potential negative weights and the heterogenous treatment effects; and (xvi) providing additional evidence for the changes in individuals' political behaviour after past epidemic exposure.

## 7. Evidence on Mechanisms

Our finding of less trust in governments and leaders will be lent additional plausibility if not just self-reported survey responses but also actual socioeconomic outcomes are negatively affected by impressionable-year epidemic exposure. Therefore, with the aim of exploring the potential economic channels behind the loss of trust documented in the previous section, we implement our strictest specification in **Table 2** but substitute dependent variables with log of the income level (in International Dollars), employment status (a dummy indicating employment) and educational attainment (two dummies indicating different levels of education). We find that treated individuals have lower incomes later in life and are less likely to be employed post epidemic exposure. These impacts on economic outcomes may indeed

constitute some of the channels through which epidemic exposure leads treated individuals to revise their views of political institutions in negative directions.[9]

Despite the null results documented previously on outcomes related to trust in non-political institutions, there exists an important exception. As reported in **Appendix Table C.1**, we identify a negative relationship between individuals' impressionable-year exposure to epidemics and their trust in the country's healthcare system. This suggests that the loss of trust in political institutions may be related to the governments' healthcare-related policy responses during past epidemics.

Weak, unstable governments with limited legislative strength, limited unity, and limited popular support are least able to mount effective responses to epidemics. If they are 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, we use ICRG data on government strength. They measure, for the period since 1984, the unity of the government, its legislative strength, and its popular support.

As a first step toward identifying the underlying mechanism, we exploit the recent COVID-19 setting and show in **Appendix C** that government strength is associated with a statistically significant improvement in policy response time (see **Appendix Table C.2** and **Appendix Figures C.1-C.3**). Given this, we conjecture that weak governments, so measured, also performed poorly during past epidemics, and that individuals in such settings downgrade their confidence in government and trust in its leaders more severely as a result. Hence, in our second step, we calculate the average score for government strength in the individual's impressionable years. We then construct an indicator that takes the value of 1 for this past experience if the observation is in the bottom half/tercile/quartile of impressionable-year government strength index scores across all respondents. We include this variable categorically rather than in continuous form to limit the likelihood of a response to pandemic experience. 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.

[9] We also find that they are more likely to have graduated from university. Thus, a side effect of unfavorable labour market conditions appears to be heightened incentive for human capital accumulation in the form of tertiary education, given the decrease in the opportunity cost of time. One would not expect to see similar effects on lower levels of education, since such decisions are made before individuals experience the impressionable-year epidemic shock. Reassuringly, we find no such effect.

This leads to the following specification:

$$Y_{i,c,t,a,b} = \beta_{10}\text{Exposure to epidemic}_{icb} \text{ x Government strength }_{icb} \quad (2)$$

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

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

The results reported in **Table 3** suggest that the effect of exposure to an epidemic on political trust is more than twice as large if the epidemic is experienced under a weak government. These findings suggest that our effects are mostly driven by individuals that experienced epidemics under weak governments who are less able to mount effective responses to epidemics.[10]

Importantly, the point estimates for the weak government dummy itself are small and mostly insignificant. This suggests that we are identifying not a "weak government effect" per se but rather the effect of epidemic exposure in the presence of a weak government.[11]

## 8. Conclusion

We have shown that experiencing an epidemic can negatively affect an individual's confidence in political institutions and trust in political leaders. This negative effect is large, statistically significant and persistent. Its largest and most enduring impact is on the attitudes of individuals in their impressionable late-adolescent and early-adult years when experiencing an epidemic. It is limited to infectious or communicable diseases, where a government's response is especially important. It is the largest in settings where there already exist doubts about the strength and effectiveness of government.

[10] Similar mechanisms are identified by Flückiger et al. (2019) in the context of Ebola outbreak in West Africa. The authors show that the effects of Ebola exposure on perceived state legitimacy are more pronounced in areas where governments responded relatively well to the epidemic.

[11] **Online Appendix Figures B.1-B.3** 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.

The implications are unsettling. Imagine that more trust in government is important for containment, but that failure of containment harms trust in government. 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."

**References**


Aasve, A., G. Alfani, F. Gaondolfi and M. Le Moglie (2020), "Epidemics and Trust: The Case of the Spanish Flu," unpublished manuscript, Bocconi University.

Alesina, A. and E. La Ferrara (2000), "The determinants of trust," NBER Working Paper no.621.

Algan, Y., S. Guriev, E. Papaioannou and E. Passari (2017). "The European trust crisis and the rise of populism," *Brookings Papers on Economic Activity*, 2017(2): 309-400.

Amat, F., A. Arenas, A. Falcó-Gimeno, and J. Muñoz (2020). "Pandemics meet democracy. Experimental evidence from the COVID-19 crisis in Spain," unpublished manuscript.

Bawn, K. and F. Rosenbluth (2006), "Short versus long coalitions: electoral accountability and the size of the public sector," American Journal of Political Science 50(2): 251-265.

Becker, S. O., K. Boeckh., C. Hainz and L. Woessmann, (2016), "The empire is dead, long live the empire! Long-run persistence of trust and corruption in the bureaucracy," *Economic Journal* 126(590): 40-74.

Campante, F. R., E. Depetris-Chauvin R. Durante (2020), "The Virus of fear: The political impact of Ebola in the US," NBER Working Paper no.26897.

Bol, D., M. Giani, A. Blais, A. and P.J. Loewen, "The effect of COVID-19 lockdowns on political support: Some good news for democracy?" *European Journal of Political Research*. Forthcoming.

Dawson, R. and K. Prewitt (1969), *Political socialization*, Boston: Little, Brown & Co.

Dustmann, C., B. Eichengreen, S. Otten, A. Sapir, G. Tabellini and G. Zoega (2017), *Europe's trust deficit: causes and remedies*, London: CEPR Press.

Etchegaray, N., A. Scherman and S. Valenzuela (2018), "Testing the hypothesis of 'impressionable years' with willingness to self-sensor in Chile," *International Journal of Public Opinion Research* 31: 331-348.

Farzanegan, M. and H. Gholipour (2019), "Growing up in the Iran-Iraq war and preferences for strong defense," MAGKS Joint Discussion Paper Series in Economics No.07-219, Philipps-University Marburg.

Fetzer, T., Hensel, L., Hermle, J., & Roth, C. (2020). Coronavirus perceptions and economic anxiety. *Review of Economics and Statistics*, 1-36.

Fukuyama, F. (2020), "The thing that determines a country's resistance to the coronavirus," *The Atlantic* (30 March), https://www.theatlantic.com/ideas/archive/2020/03/thing-determines-how-well-countries-respond-coronavirus/609025/

Flückiger, M., Ludwig, M. and Sina Önder, A., 2019. Ebola and state legitimacy. *The Economic Journal*, 129(621), pp.2064-2089.

Giuliano, P., & A. Spilimbergo, (2013). "Growing up in a recession," *Review of Economic Studies 81*(2), 787-817.

Krosnick, J. and D. Alwin (1989), "Aging and susceptibility to attitude change," *Journal of Personality and Social Psychology* 57: 416-425.

Ma, C., J.H. Rogers and S. Zhou (2020). "Global economic and financial effects of 21st century pandemics and epidemics," unpublished manuscript.

Marlow, L., J. Waller & J. Wardle (2007), "Trust and experience as predictors of HPV vaccine acceptance," *Human Vaccines and Immunotherapeutics* 3(5): 171-175.

Mueller, J. (1970), "Presidential popularity from Truman to Johnson," *American Political Science Review* 64: 18-34.

Newcomb, T. (1943), Personality and social change: Attitude formation in a student community, New York: Dryden.

Newcomb, T., K. Koenig, R. Flacks and D. Warwick (1967), Persistence and change: Bennington College and its students after 25 years, New York: Wiley.

Niemi, R. and B. Sobieszek (1977), "Political Socialization," Annual Review of Sociology 3: 209-233.

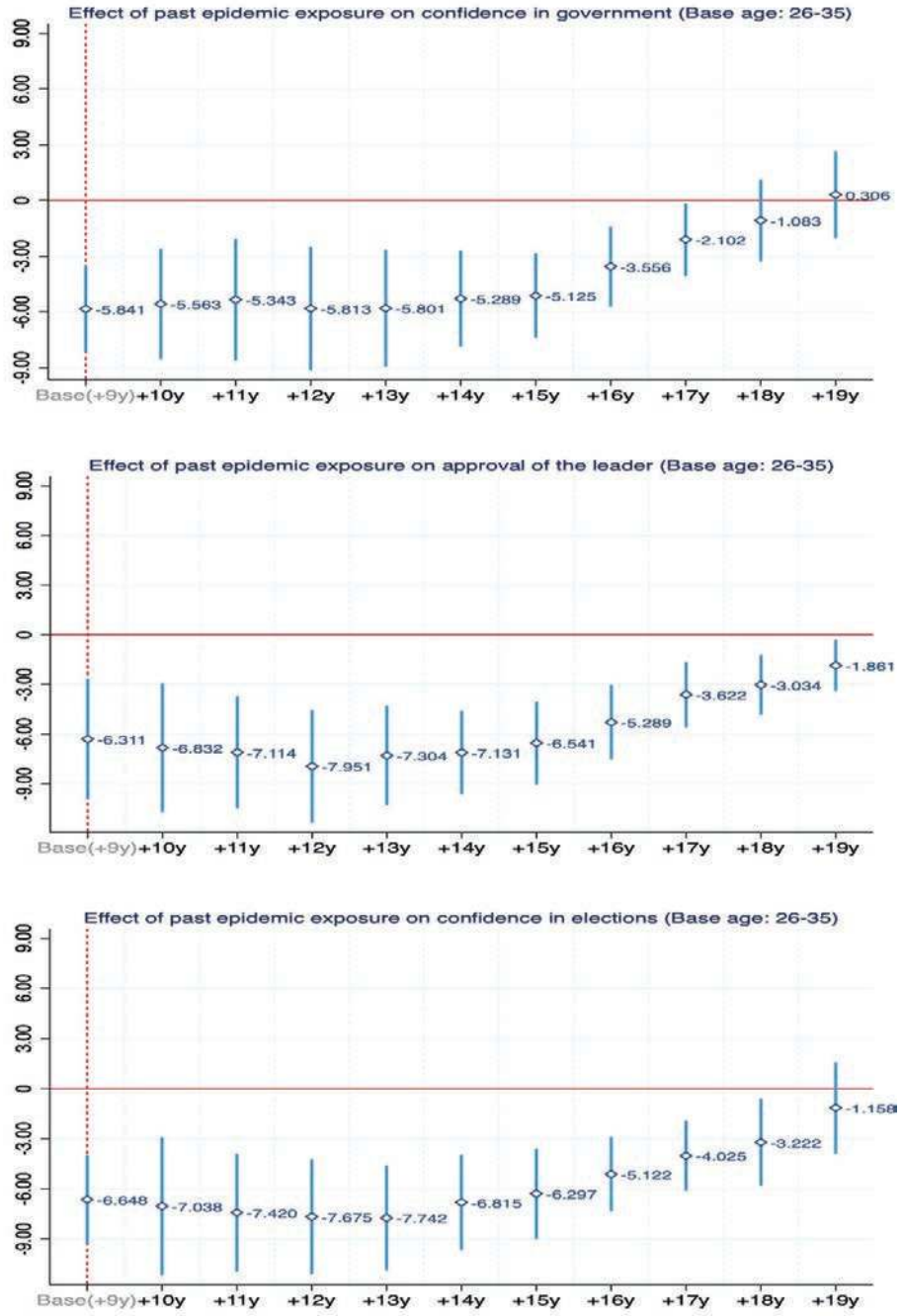
Nunn, N., and L.Wantchekon (2011), "The slave trade and the origins of mistrust in Africa," American Economic Review 101(7): 3221-52.

Oster, E. (2019). Unobservable selection and coefficient stability: Theory and evidence. Journal of Business & Economic Statistics, 37(2), 187-204.

Rothstein, B. (2020), "Trust is the key to fighting the pandemic," *Scientific American* (24 March), https://blogs.scientificamerican.com/observations/trust-is-the-key-to-fighting-the-pandemic/.

Schmitt, M. (2020), "In the wake of its COVID-19 failure, how do we restore trust in government?" *New America Weekly* (23 April).

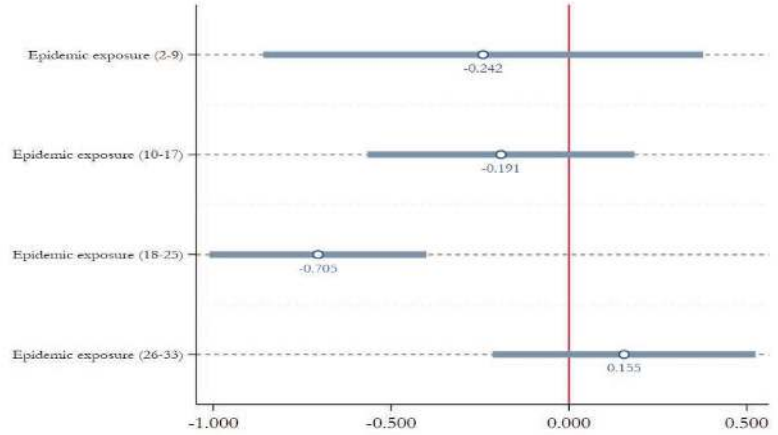
**Figure 1: Effects of Epidemics in Impressionable Years over Subsamples with Rolling Age-Windows**



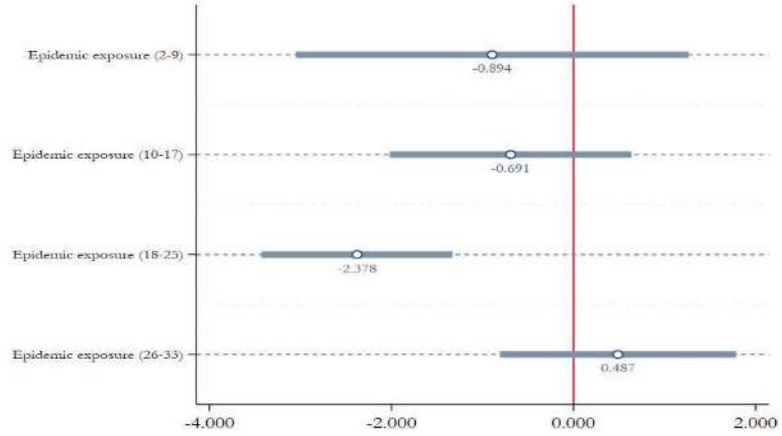

Note: This figure shows the persistency of the effects on three main outcome variables by restricting the observations to the respondents who are in the 26-35 age range at the time of the survey (Base sample) and then repeatedly rolling this age window forward by one year for each separate estimation. The specification is Column 4 of Table 1 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 2: Effects of Epidemics in Alternative Treatment Years**

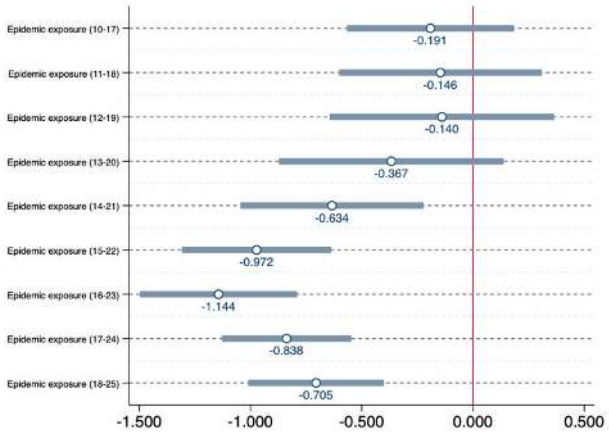
*Panel A: Dependent variable is the average of all three outcome variables*



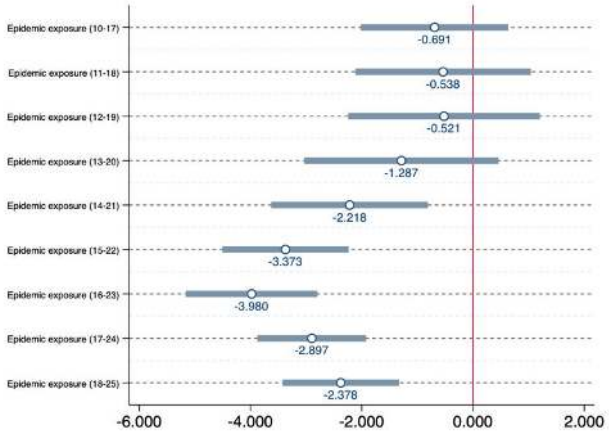

*Panel B: Dependent variable is the 1st principal component of responses*




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




*Panel D: 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 1. Confidence intervals are at 95% significance level. 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 1: The Impact of Exposure to Epidemic (18-25) on Political Trust

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| Outcome ➔ | Have confidence in national government | Have confidence in national government | Have confidence in national government | Have confidence in national government | 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) |
| Observations | 760099 | 760099 | 760099 | 760099 | 760099 |
| Outcome ➔ | Approval of the leader | Approval of the leader | Approval of the leader | Approval of the leader | 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) |
| Observations | 719742 | 719742 | 719742 | 719742 | 719742 |
| Outcome ➔ | Have confidence in honesty of elections | Have confidence in honesty of elections | Have confidence in honesty of elections | Have confidence in honesty of elections | 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) |
| Observations | 736679 | 736679 | 736679 | 736679 | 736679 |
| Outcome ➔ | Average of all three outcome variables | Average of all three outcome variables | Average of all three outcome variables | Average of all three outcome variables | 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) |
| Observations | 636156 | 636156 | 636156 | 636156 | 636156 |
| Outcome ➔ | the 1st Principal Component of Responses | the 1st Principal Component of Responses | the 1st Principal Component of Responses | the 1st Principal Component of Responses | 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) |
| Observations | 636156 | 636156 | 636156 | 636156 | 636156 |
| Country fixed effects | Yes | Yes | Yes | Yes | No |
| Year fixed effects | Yes | Yes | Yes | Yes | No |
| Age group fixed effects | Yes | Yes | Yes | Yes | Yes |
| Labor market cont. & individual income | No | Yes | Yes | Yes | Yes |
| Demographic cont. & income decile fixed effects | 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 |

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. The main three outcome variables come from the following questions: (i) "In (this country), do you have confidence in each of the following, or not: … How about the national government?" (ii) "Do you approve or disapprove of the job performance of the leadership of this country?" (iii) "In (this country), do you have confidence in each of the following, or not: … How about the honesty of elections?". *Exposure to epidemic (18-25)* corresponds to the number of persons affected by an epidemic as a share of the population, averaged over the 8 years when the respondent was aged 18 to 25. Responses to all three outcome questions are coded as dummy variables, with one representing a positive answer and linear probability models are estimated for ease of interpretation. For example, according to Column 4, an individual with the highest *Exposure to epidemic (18-25)* relative to individuals with no exposure has on average 5.1 percentage points (-1.592*0.032) less confidence in the national government after their impressionable years. 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 2: The Impact of Exposure to Epidemic (18-25) on Potential Economic Channels**

| Outcome ➔ | (1) Income | (2) Employed | (3) Tertiary education | (4) Secondary education |
|---|---|---|---|---|
| Exposure to epidemic (18-25) | -1.634*** | -0.946*** | 0.358** | -0.099 |
| | (0.431) | (0.205) | (0.153) | (0.393) |
| Country fixed effects | No | No | No | No |
| Year fixed effects | No | No | No | No |
| Age group fixed effects | Yes | Yes | Yes | Yes |
| Labor cont. & individual income | No | No | Yes | Yes |
| Demog. cont. & inc. decile fixed effects | Yes | Yes | No | No |
| Country*Age trends | Yes | Yes | Yes | Yes |
| Cohort fixed effects | Yes | Yes | Yes | Yes |
| Country*Year fixed effects | Yes | Yes | Yes | Yes |
| Observations | 636,156 | 636,156 | 636,156 | 636,156 |
| $R^2$ | 0.959 | 0.337 | 0.181 | 0.222 |

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. The outcome variables are (i) log of the income level (in International Dollars) (ii) a dummy indicating employment status with one representing a positive answer (iii) a dummy indicating tertiary education status with one representing a positive answer (iv) a dummy indicating secondary education status with one representing a positive answer. *Exposure to epidemic (18-25)* corresponds to the number of persons affected by an epidemic as a share of the population, averaged over the 8 years when the respondent was aged 18 to 25. Linear probability models are estimated for binary outcome variables for ease of interpretation. For example, according to Column 1, an individual with the highest *Exposure to epidemic (18-25)* relative to individuals with no exposure has on average 5.2 percentage points (-1.634*0.032) less income and, according to Column 2, the same individual is on average 3 percentage points (-0.946*0.032) less likely to be employed after their impressionable years. Outcome variables are not included as controls in the same estimation. 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 Role of Government Strength

| Outcome ➔ | (1) Have confidence in national government | (2) Approval of the leader | (3) Have confidence in honesty of elections | (4) Average of all three outcome variables | (5) the 1st Principal Component of Responses |
|---|---|---|---|---|---|
| Exp. to epidemic (18-25)*BelowMedianGov.Strength | -4.033*** | -1.092 | -2.987*** | -2.471*** | -8.609*** |
| | (0.876) | (0.849) | (0.618) | (0.705) | (2.461) |
| Exposure to epidemic (18-25) | -0.235 | -3.018*** | -1.901** | -1.770* | -5.998* |
| | (1.038) | (1.044) | (0.833) | (0.988) | (3.447) |
| BelowMedianGov.Strength | 0.014* | 0.015* | -0.000 | 0.009 | 0.033 |
| | (0.008) | (0.009) | (0.007) | (0.008) | (0.027) |
| Exp. to epidemic (18-25)*BottomTercileGov.Strength | -3.919*** | -2.230*** | -4.863*** | -3.479*** | -11.955*** |
| | (0.719) | (0.629) | (0.559) | (0.565) | (1.964) |
| Exposure to epidemic (18-25) | -1.048 | -2.514*** | -1.183* | -1.560** | -5.377** |
| | (0.808) | (0.693) | (0.698) | (0.724) | (2.521) |
| BottomTercileGov.Strength | 0.013* | 0.023*** | 0.002 | 0.014* | 0.051* |
| | (0.008) | (0.008) | (0.007) | (0.007) | (0.026) |
| Exp. to epidemic (18-25)*BottomQuartileGov.Strength | -3.578*** | -2.027*** | -4.643*** | -3.184*** | -10.924*** |
| | (0.748) | (0.542) | (0.521) | (0.518) | (1.803) |
| Exposure to epidemic (18-25) | -1.289 | -2.657*** | -1.373* | -1.777** | -6.130** |
| | (0.889) | (0.640) | (0.800) | (0.784) | (2.724) |
| BottomQuartileGov.Strength | -0.000 | 0.010 | -0.002 | 0.004 | 0.015 |
| | (0.008) | (0.010) | (0.008) | (0.008) | (0.028) |
| Observations | 422523 | 394323 | 412051 | 358772 | 358772 |

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. The specification is Equation 2 and results reported in each column and panel come from separate models. The main three outcome variables come from the following questions: (i) "In (this country), do you have confidence in each of the following, or not: … How about the national government?" (ii) "Do you approve or disapprove of the job performance of the leadership of this country?" (iii) "In (this country), do you have confidence in each of the following, or not: … How about the honesty of elections?". *Exposure to epidemic (18-25)* corresponds to the number of persons affected by an epidemic as a share of the population, averaged over the 8 years when the respondent was aged 18 to 25. *Government Strength*, included as a categorical variable, measures the unity of the government, its legislative strength, and its popular support, averaged over the 8 years when the respondent was aged 18 to 25. Responses to all three outcome questions are coded as dummy variables, with one representing a positive answer and linear probability models are estimated for ease of interpretation. For example, according to the first panel in Column 1, an individual with the highest *Exposure to epidemic (18-25)* who had a weak government in charge at the time (relative to individuals with no exposure or with similar exposure but a strong government in charge) has on average 12.9 percentage points (-4.033*0.032) additional drop in confidence in the national government after their impressionable years. 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, EM-DAT International Disaster Database, 1970-2017, and the International Country Risk Guide.

# Online Appendix for

## The Political Scar of Epidemics

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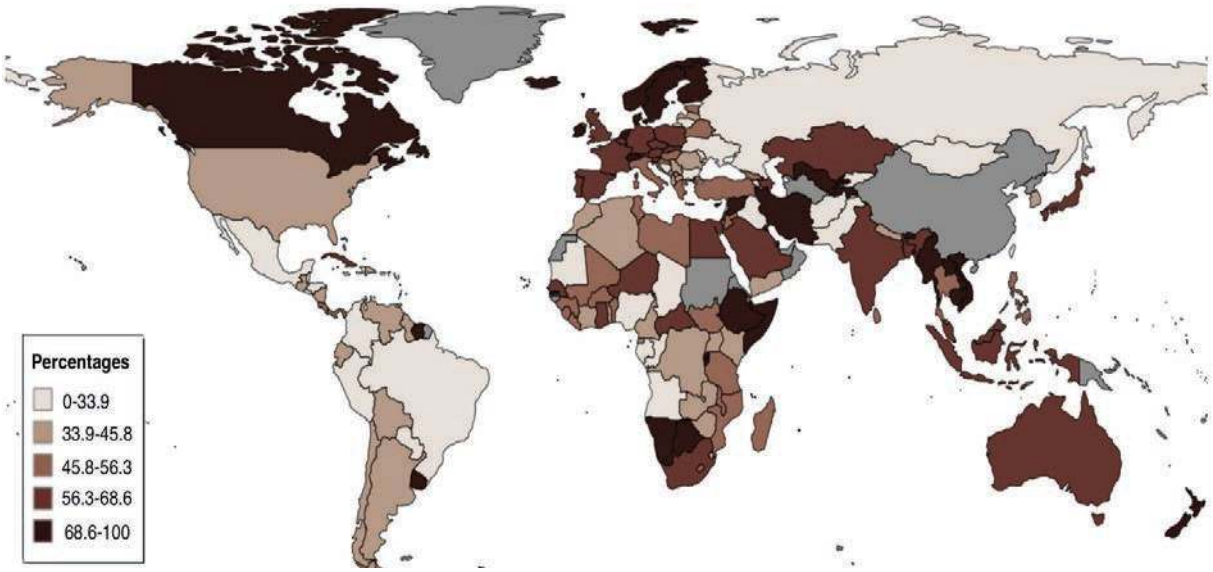
# Online Appendix A: Descriptive Characteristics

## Appendix Table A.1: Sample Characteristics

| Variables | (1)<br>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) |

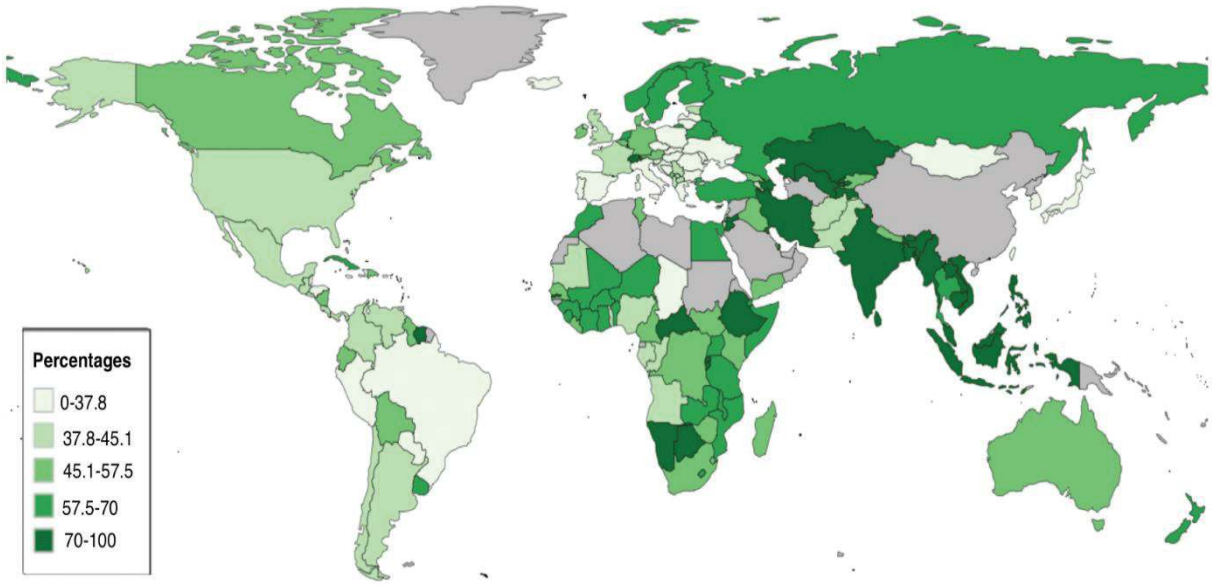
Notes: Means (standard deviations). This table provides individual and aggregate level variables averaged across the 13 years (2006-2018) used in the analysis. The sample sizes for some variables are different either due to missing data or because they were not asked in every year.

## Appendix Figure A.1: Share of Respondents Who Have Confidence in Honesty of Elections



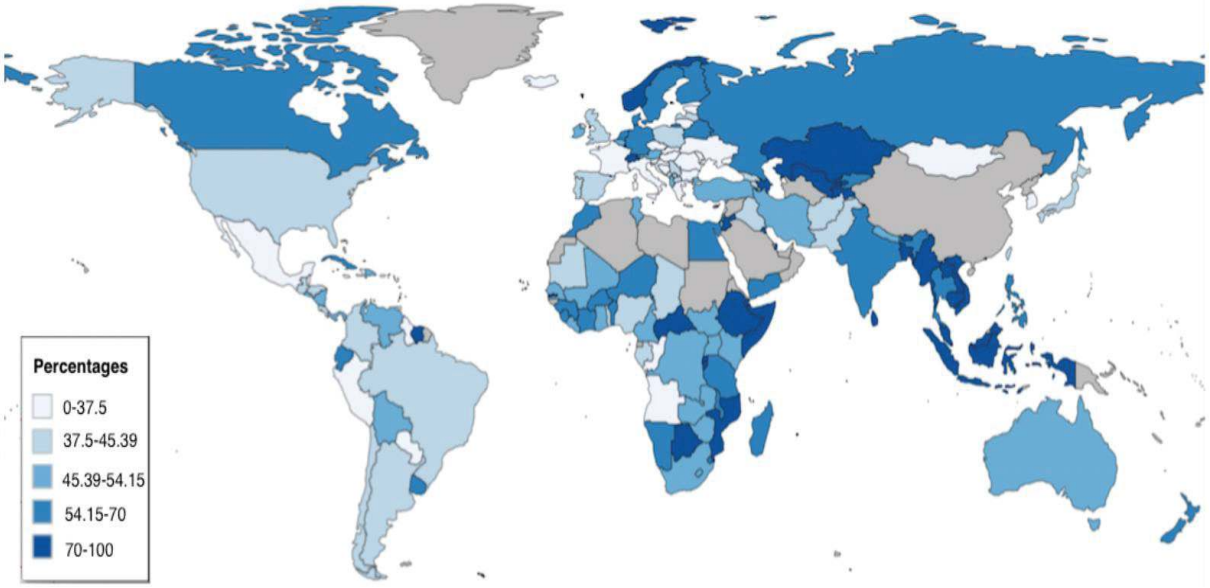

Notes: This figure shows the share of respondents who have confidence in honesty of elections, averaged across all available years. Source: Gallup World Polls, 2006-2018.

## Appendix Figure A.2: Share of Respondents Who Have Confidence in National Government



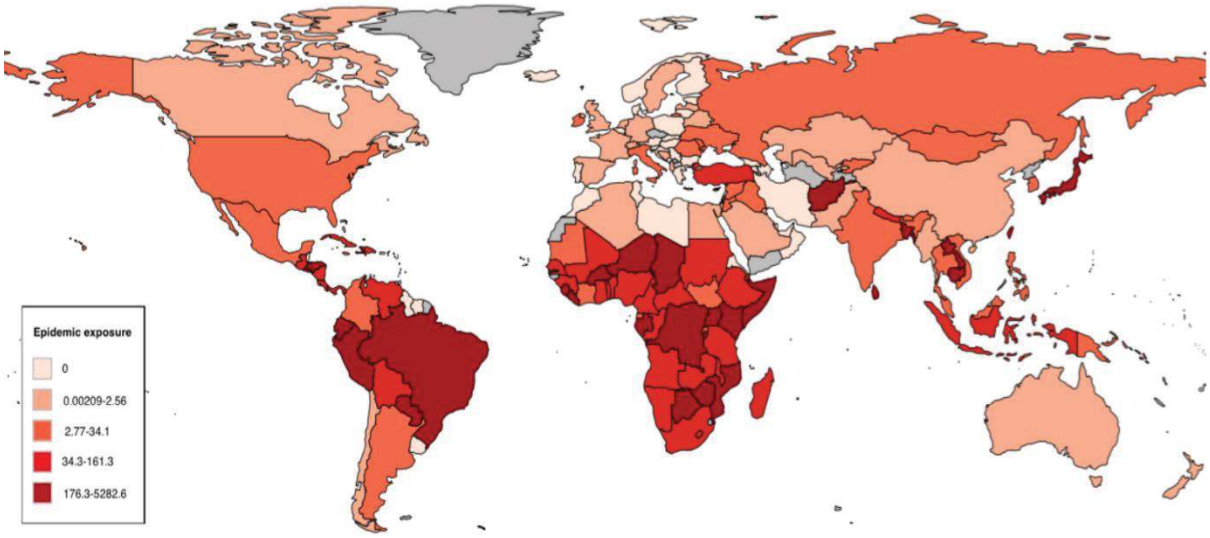

Notes: This figure shows the share of respondents who have confidence in national government, averaged across all available years. Source: Gallup World Polls, 2006-2018.

**Appendix Figure A.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.

**Appendix Figure A.4: 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.

## Online Appendix B: The Role of Country Characteristics and Robustness Checks

### The role of country characteristics

We consider the baseline specification (Column 4 of **Table 1**) for various country subsamples. Each cell of **Appendix Table B.1** 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 negative impact of epidemic exposure on confidence in the government and its leader is larger in low-income countries, although the difference across groups is not always statistically significant. This pattern is in line with evidence from Gómez et al. (2020), who find that people in low-income countries see their governments as more untrustworthy and unreliable in the context of public reactions to the COVID-19 pandemic.

The negative impact of an epidemic also tends to be larger in countries with democratic political systems; the difference in coefficients for democracies and non-democracies is consistently significant at standard confidence levels.[2] An interpretation is that respondents expect democratically-elected governments to be responsive to their needs and 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. In addition, democratic regimes may have 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.[3]

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

[3] This finding could also be explained by preference falsification, a phenomenon in which individuals' responses to public surveys might be affected by social desirability or implicit

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.

**Robustness checks**

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

***Are the results driven by other past experiences?***

The literature suggests that economic conditions (Hetherington and Rudolph, 2008), social conflict (De Juan and Pierskalla, 2016), and corruption (Anderson and Tverdova, 2003) also affect political trust. **Appendix Tables B.2 and B.3**, therefore, consider whether our results are driven by other omitted economic, social and political exposures that individuals may have experienced in their impressionable years.

In **Appendix Table B.2** we include measures from the ICRG data set, which captures 12 aspects of national economic and political conditions.[4] In particular, we

authoritarian pressures (Kuran, 1987). Such biases could naturally arise more often in non-democratic countries where survey participants feel the urge to hide their true beliefs, reducing the heterogeneity across respondents within the same country and time point. In an unreported robustness check, we dropped ten per cent of the highest-ranking observations (in terms of approval of the leader) at the country-year level in our sample assuming that preference falsification -if exists- would be prevalent especially on these observations. We obtain similar results implying that preference falsification by itself is unlikely to explain the difference between democracies and autocracies.

[4] 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

include the following 12 indices to account for past economic, political, and social conditions: government strength, socio-economic conditions, investment profile, internal conflict, external conflict, corruption, military presence in politics, religious tensions, law and order, ethnic tensions, democratic accountability, and bureaucracy quality.

In **Appendix Table B.3**, we control for GDP growth, GDP per capita, inflation rate, political regime (Polity2 scores), assassinations, general strikes, terrorism/guerrilla warfare, purges, riots, revolutions, and anti-government demonstrations during the individual's impressionable years. For all non-economic variables (excluding Polity2), we use the CNTS dataset in order to capture as many aspects of political conflict as possible. 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 and CNTS cover only some of the countries and years in our main sample.

None of these additional controls has much impact on the coefficients for past epidemics. Both the point estimates and statistical significance remain stable.[5] Note that we cannot directly control for pre-epidemic levels of social and political trust due to lack of data availability.[6] However, we do control for various factors that

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of whether a single religious group seeks to replace civil law by religious law and to exclude other 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.

[5] In addition **Appendix Tables B.4 and B.5** show that we get similar results if we were to control for the pre-existing values in the past (i.e., ages 10-17) instead of impressionable years (i.e., ages 18-25) in order to make sure that the past controls themselves are not influenced by the epidemic in the same experience window. Furthermore, our results remain qualitatively unchanged in **Appendix Tables B.6 and B.7** after controlling for both impressionable-year experiences and country*year fixed effects at the same time (à la Model 5 in **Table 1**).

[6] By interpolating the corresponding values across all historical waves of the World Values Surveys, we have created a country panel dataset on various social and political trust variables for the purpose of using them to control for pre-epidemic levels of trust in a country. However, due to poor country-year coverage in the old editions of the WVS, the size of our main Gallup sample falls by 95 percent to about 35,000 respondents. We, therefore, do not report the results as we lack statistical power due to very small sample size in these analyses.

can explain both social and economic trust, therefore it is unlikely that our results can be explained by omitted variables bias or reverse causality.

Nevertheless, we follow the method proposed by Oster (2019) to shed light on the importance of unobservables in **Appendix Table B.8,** where Panel A is based on the models with past exposure controls as in **Table B.2** and Panel B is based on the models with past exposure controls as in **Table B.3**.

We first reprint the baseline estimates for our main outcomes in the top row for comparison purposes. The second row of each panel then presents the estimation bounds where we define $R_{max}$ upper bound as 1.3 times the R-squared in specifications that control for observables following Oster (2019). The bottom row presents Oster's delta, which indicates the degree of selection on unobservables relative to observables that would be needed to fully explain our results by omitted variable bias.

The results in **Appendix Table B.8** show very limited movement in the coefficients. The high delta values (between 12 and 24 depending on the outcome) are reassuring: given the wide range of controls we include in our models, it seems implausible that unobserved factors are 12 to 24 times more important than the observables included in our preferred specification.[7]

***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 social institutions and social trust (both in-group and out-group). If exposure to past epidemics worsens attitudes toward all national institutions and reduces social trust generally, it would be misleading to interpret the findings in

[7] The rule of thumb to be able to argue that unobservables cannot fully explain the treatment effect is for Oster's delta to be over the value of one.

**Table 1** as the effect of the epidemic exposure specifically on trust in political institutions and leaders narrowly defined.

We, therefore, estimate similar models for outcomes related to views of other institutions. In **Appendix Table B.9,** 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); has relatives or friends to count on – a proxy for in-group trust (column 4); and has helped a stranger in the past month – a proxy for out-group trust (column 5). The first three variables represent the confidence in non-political institutions in the same country, while the last two capture the potential change in individuals' trust towards their in-group or out-group peers.[8]

There are no meaningful relationships between past epidemic exposure and any of these variables, consistent with our hypothesis that loss of trust by individuals with epidemic experience is specific to political institutions and leaders, and not a reflection of the general loss of trust in society and its institutions.[9]

***Are the results driven by non-comparable samples?***

Not all Gallup respondents answered all trust-related questions. Thus, the results could conceivably be biased by heterogenous, non-comparable samples across various response variables. We therefore also consider only individuals who

[8] As Gallup does not have direct questions on generalized (social) trust, we refer to these two variables as the closest proxies to measure the in-group and out-group trust. Alternatively, using a measure of individual donations or the civic engagement index in Gallup generates very similar results.

[9] We understand that one could be concerned with media freedom in countries with low political trust and its potentially negative relationship with individuals' confidence in media. However the media is not a political institution strictly defined, even though it can be influenced by politics. We have no priors about how individuals might change their opinions about the media in the midst of a health crisis. One could easily argue that individuals' confidence in media may *rise* instead of falling if it functions well as a transmitter of life-saving information during the epidemic. Our results show that there is not much change in the long-term confidence in media, consistent with this - a priori - ambiguous direction of the relationship.

answered all seven questions in our setting. The results, reported in **Appendix Table B.10**, confirm that our findings are robust across overlapping samples.

***Are the results robust to alternative data for epidemics?***

We also analyze the recent large-scale epidemics reported in Ma et al. (2020), which constructs a country panel dataset starting in the early 2000s. This list of countries affected by post-2000 epidemics includes, at some point, almost all the countries in the world. For instance, H1N1 in 2009 alone infected more than 200 countries.

Several aspects of this dataset make it less than ideal for our purposes. 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.[10] Another is that the dataset does not contain country-specific intensity measures and thus only can be used in a dichotomous form. As will be clear later, epidemic intensity matters, in that only large epidemics in EMDAT dataset have a significant impact on political trust. At the same time, this list of recent epidemics buttresses our assumption of the exogeneity of our treatment variable, since the *occurrence/start* of an epidemic (as opposed to its *intensity*) is likely to be uncorrelated with country or cohort characteristics.[11]

In **Appendix Table B.11,** where we utilize this dataset, *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 confidence in elections and approval of the leader (as well as average and principal component proxies for political trust) are robust to the use of these alternative data. In line with our earlier results (see **Appendix Table B.1**), the adverse impact of past epidemics is only evident in democratic countries. These results thus provide further evidence

[10] 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.
[11] As we show below, there is no evidence of a differential pre-trend in political trust between countries that were recently hit by an epidemic and those that were not.

that the causal direction of the relationship runs from past epidemic experience to political trust later in life.

***Do countries with and without a pandemic display similar pre-trends?***

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 whether countries experiencing pandemics exhibit the same pre-trends as other countries. We can also analyze how quickly the overall level of political trust changes after a pandemic.

To do this, we estimate the following model:

$$Y_{i,\,c,\,t,\,a,\,b} = \beta_1 \text{LaggedPandemic}_{ict} + \beta_2 X_i \qquad \text{(B1)}$$

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

*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 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).[12]

**Appendix Table B.12** shows that political trust starts declining immediately. In **Figure B.4**, we re-estimate the model changing the timing of the variable of interest. This helps to visualize the short-term response and also to check if the

[12] 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. In additional analysis (not reported here), we interact leads and lags of our event dummy with an indicator variable for individuals in their impressionable years at the time of the epidemic. Doing so shows that the short-term response of the impressionable-age group is indistinguishable from that of the rest of society. Evidently, the longer-term differences we detect stem from the tendency for the negative opinions of impressionable-age individuals to persist, whereas the initial negative revisions of other individuals do not.

countries that were struck by a pandemic and those that were not shared similar trends in terms of their political trust levels before the pandemic hit the former.[13] Countries with and without a pandemic share a common trend in the pre-event window; the divergence starts only after the pandemic hits. This supports the exogeneity assumption we made in a previous section in which we employed the *occurrence* (rather than *intensity*) of recent epidemics as a shock to individuals' impressionable years.

Whereas there is no pre-trend prior to an epidemic infecting a country for the first time, the approval of the leader declines by more than 6 percentage points two years after. This aggregate effect is large. It is comparable to the lifetime effect that we previously found for impressionable-year exposures.

***Are large epidemics different?***

The effects we identify are larger for more severe epidemics. In **Appendix Table B.13**, we re-estimate our baseline model where, instead of the continuous variable reported in the top row, we 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. An epidemic exposure in the top 0.5, 1, or 2 percent of exposures leads to a significant fall in an individual's confidence in elections, the national government, and its leader.[14]

Moreover, the magnitude of the effect linearly increases with more intense experiences, which leads us to undertake the next analysis.

[13] 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 identification in larger event windows.

[14] Readers may wonder how many democracies are included among the top 2 per cent of most severe epidemics. It turns out that there are more democracies than autocracies in this limited sample. Democratic cases include Japan (1978), Botswana (1988), Bangladesh (1991), Peru (1991), Mozambique (1992), Paraguay (2006) and Haiti (2010). In **Appendix Table B.14**, we estimate an interacted model and find that the loss of political trust is larger in those experience windows during which the epidemic-stricken country was relatively more democratic.

***Are the results driven by the intensive or extensive margin?***

In **Appendix Table B.15**, we distinguish the intensive and extensive margins of the treatment. For the extensive margin, we mean whether the effect is due to any level of epidemic exposure. To capture this, 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. 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.

**Appendix Table B.15** shows that the treatment works via the intensive margin. It is not simply being exposed to an epidemic that generates the effect; 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.

***Is the response specific to communicable diseases?***

Poor public-policy responses to communicable diseases may have a negative effect on trust in political institutions because such diseases spread contagiously, heightening the urgency of a rapid response. Non-communicable diseases, in contrast, develop over longer periods and are driven by individual decisions and characteristics such as lifestyles and demographics. Whether an individual develops liver disease as a result of alcohol consumption may be affected by public policy (for example, by the rate at which sales of alcoholic beverages are taxed), but sharp changes in such policies are unusual. The incidence of these problems is mainly a function of individual failings (addictive behavior) as opposed to public-health policy. Thus, showing that non-communicable diseases do not have equally powerful long-term negative effects on trust in political institutions is a way of establishing that the decline in trust is due to the perceived inadequacy of the public-policy response and not to the simple experience of disease. This also ensures that

our epidemic results are not driven by country populations with generally worse health conditions.

Since the EM-DAT International Disasters Database does not include data on non-communicable diseases, we use data from IHME for the period 1990 to 2016. (This dataset is more limited than the EMDAT data that spans a much longer time period from the 1970s.) The communicable and non-communicable disease measures are population-adjusted and expressed in terms of Disability Adjusted Life Years Lost (DALYs). 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. As explained by Roser and Ritchie (2020), DALYs are a standardized metric allowing for direct comparison and summing of the burden of different diseases.

Applying this distinction in **Appendix Table B.16**, we find that past exposure to communicable diseases has a significant negative impact on confidence in governments and elections. In contrast, there is no association between exposure to non-communicable diseases in the impressionable years and trust in these political institutions. The results thus confirm that the association we document is unique to communicable diseases.

***Falsification***

**Appendix Table B.17** assigns all individuals in the full our baseline sample to a random country for the calculation of their experience during impressionable years while keeping all else the same as in **Table 1**. We find no effect of these "randomly-assigned" treatments on political trust.

***Multiple hypothesis testing***

We also conducted multiple hypothesis testing by employing a randomization inference technique recently suggested by Young (2019). This helps to establish the robustness of our results both for individual treatment coefficients in separate estimations and also for the null that our treatment does not have any effect across any of the outcome variables (i.e., treatment is irrelevant), taking into account the multiplicity of the hypothesis testing procedure. The method builds on repeatedly randomizing the treatment variable in each estimation and comparing the pool of randomized estimates to the estimates derived via the true treatment variable. The results presented in **Appendix Table B.18** show that our findings remain robust both for the individual coefficients and the joint tests of treatment significance.

***Excluding potential "bad controls"***

One might worry that some of the individual characteristics (such as household income) are themselves affected by epidemic-related economic shocks. We checked for potential "bad controls" (Angrist and Pischke, 2008) by excluding these individual characteristics. Doing so does not substantively change the point estimates for our variables of interest (see **Appendix Table B.19**).[15]

***Robustness to Alternative Treatment Definitions***

One might be concerned that population size may be endogenous to the intensity of the epidemic as the epidemic experience may affect the population counts (through both mortality and immigration). We, therefore, checked the robustness of our results using a population *unadjusted* treatment variable: the number of individuals affected by an epidemic averaged over the 8 years when the individual was aged 18 to 25. The results presented in **Appendix Table B.20** show that our results are robust to this alternative definition.

***Ruling Out Influential Observations***

[15] We therefore keep these controls in our baseline specification to avoid omitted variable bias.

We rule out the importance of influential observations by plotting the coefficients of our preferred specifications as one year is omitted at a time. **Appendix Figure B.5** shows that our coefficient estimates are quite stable even as a specific survey year is eliminated from our main sample in each iteration.

We repeat a similar analysis with **Appendix Figure B.6** in which we drop one random country at a time in each estimation for 15 consecutive trials (for illustration purposes) and again find that our estimates are not driven by any single country.[16]

***Alternative difference-in-differences estimator***

Recent econometrics literature has emphasised the unsuitability of fixed-effect settings when treatment effects are likely to be heterogenous across different events (Chaisemartin and D'Haultfoeuille, 2020). Despite the fact that we find little evidence for such heterogeneity in our baseline results (see **Appendix Table B.1**), we hereby take a more careful look so as to further alleviate this concern.

Negative weights arise predominantly in cases where there is large imbalance of treatment across time or between groups. This is typically the case in the canonical staggered setting, where units start receiving treatment one by one over time: some units are treated throughout the panel, and some only in the latest time periods. However, our case is different: epidemics are relatively balanced over time (see **Online Appendix E**) and thus over cohorts. Variation in our treatment is at the country-cohort level, and thus we can treat cohorts as the time dimension (de Chaisemartin and D'Haultfoeuille (2022) note: "The data could also be a cross-section where cohort of birth plays the role of time.").

As a first step, we reduce the multi-dimensionality in our fixed-effects and employ only the two dimensions that our treatment necessitates (that is, separate country

[16] We have also undertaken a dfbeta analysis (unreported here) on all three main outcome variables and confirmed that the highest absolute dfbeta value among all observations in our sample is 0.04 and thus much smaller than the standard threshold of 1.00 further alleviating the concerns about influential outliers.

and cohort fixed-effects) in order to replicate the two-way fixed effect (TWFE) design as in de Chaisemartin and D'Haultfoeuille (2020). **Appendix Table B.21** confirms that estimates obtained in this TWFE setting are very similar those in **Table 1**. We then explore the role that negative weights might play in generating the negative average treatment effects for each outcome variable. **Appendix Table B.21** differentiates between negative and positive weights using "twowayfeweights" command in Stata. The sum of such negative weights never exceeds 1.1%, while the corresponding sum of positive weights is around 101% across five outcome variables (sum of positive and negative weights equal to one). These findings should mitigate the concern that negative weights are driving our results.

Building on this TWFE setting, we also employ an alternative estimator proposed by de Chaisemartin and D'Haultfoeuille (2020) that corrects for heterogenous treatment effects in difference-in-differences settings ("did_multiplegt" command in Stata). This estimator is built on the idea of matching treatment-switching units with the non-switching counterfactuals that have the same pre-switch treatment value; hence continuous treatment variables (such as ours) do not perform well with this estimator and generally fail to generate any output, which is also the case in our setting. Therefore, in line with the suggestions in Chaisemartin and D'Haultfoeuille (2022) and following our intuition in the paper of focusing on large epidemics (see **Appendix Table B.13**), we discretize our treatment variable by creating a dummy that focuses on 2% of the largest impressionable-year exposures across individuals in our sample.

**Appendix Table B.22** confirms that TWFE estimates with a discrete treatment variable are very similar to those in **Appendix Table B.13** while containing no negative weights, which ensures that treatment heterogeneity is not a concern for the average treatment effect in this setting. In **Appendix Table B.23**, we employ the alternative diff-in-diff estimator. This reduces the sample size, since it requires the treated and counterfactual units to have the same pre-treatment value in order

to be included in the estimation. Nonetheless, estimates are similar to the OLS results in **Appendix Table B.22** albeit statistically less precise.

As a final robustness check, we aggregate the individual observations in our dataset at the country-year level and calculate the weighted average for each of our variables by using individual weights that render our dataset representative at the country-year level. Here, we can construct a canonical TWFE setting by using country and year fixed-effects. In this case, the within-country variation in our treatment variable comes from the change in the composition of different cohorts in a country from one year to another. **Appendix Table B.24** discretizes the treatment by creating a dummy that focuses on 2% of the largest impressionable-year exposures across countries and years in our sample. While the coefficient estimates are sizable, they are not precisely estimated. On the other hand, the sum of negative weights are just 1%, which mitigates concern that they may be driving the results.

In **Appendix Table B.25**, we employ the alternative DiD estimator at the country-year level and find similarly negative estimates, which are also statistically significant this time. In **Appendix Tables B.26** and **B.27**, we use an alternative dummy variable focusing on the top 1% of exposures at the country-year level (à la **Appendix Table B.13**). Results are comparable (as well as more precise) and confirm that the relationship between impressionable-year epidemic exposure and loss of political trust later in life is not an artifact of negative weights or the heterogenous treatment effects in our empirical setting.

***Evidence on Political Behavior***

Even if epidemic exposure in one's impressionable years affects self-reported trust in government, elections, and political leadership, it is not obvious that it also alters actual behavior. For example, one might expect that less confidence in elections leads individuals to vote less and take more political action through non-electoral

means, (by participating taking place in demonstrations, participating in boycotts, and signing petitions, for example).[17]

GWP lacks information on such behavior. We, therefore, turn to the World Values Survey (WVS) and the European Social Survey (ESS). We use all available waves of the WVS covering the period 1981-2014, as administered in more than 80 countries, where we focus on the democracies. We also consider annual waves of the ESS for the period 2002-2018 in over 30 countries. The WVS and ESS give us as many as 103,000 and 171,000 responses, respectively, depending on the question. We estimate our baseline model (Column 4 of **Table 1**) on several outcome variables related to individuals' political behavior.

Some of the results, in **Appendix Table B.28**, are consistent with the preceding conjecture.[18] ESS respondents with epidemic exposure in their impressionable years are significantly less likely to have voted in recent national elections. Both WVS and ESS respondents are significantly more likely to have attended or taken part in lawful/peaceful public demonstrations. WWS respondents are significantly more likely to have joined boycotts and signed a petition. These are the type of responses one would expect from individuals who render less confidence in elections and other conventional governmental institutions.[19]

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[17] Early evidence in the context of the recent COVID-19 crisis suggests that the young generation in US is more likely to sympathise with the George Floyd protests and more critical of the way US government is handling the health crisis (Pew Research Center, 2020).

[18] Note that we are not describing the self-reported behavior of the same individuals who, we showed above, self-reported less confidence and trust in elections, the national government, and the national leader (where one might worry, there could be selective misreporting to minimize cognitive dissonance). Rather, we are analyzing completely different data sets where respondents are asked about actual political behavior and actions. This fact makes these additional findings especially striking.

[19] Other results are insignificant. There is no difference in the likelihood of never voting in national elections among WVS respondents as a function of impressionable year epidemic exposure. Nor is there any difference among WWS respondents in the likelihood of having joined unofficial strikes or occupying buildings or factories. Our analysis of these variables is necessarily based on smaller samples, which may account for the contrast. However, the majority of the results where we have larger samples are consistent with the idea that not just self-reported trust but actual political behavior are affected by epidemic exposure in the expected manner.

**Appendix Table B.1: Heterogeneity**

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

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. Specification is Column 4 of Table 1. See notes to Table 1. [A] indicates statistically significant difference in each pair of means at p<.05. 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.

## Appendix Table B.2: Robustness to Controlling for Other Economic and Political Shocks

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| Outcome ➔ | Have confidence in national government | Have confidence in national government | Approval of the leader | Approval of the leader | Have confidence in honesty of elections | Have confidence in honesty of elections |
| Exposure to Epidemic (18-25) | -3.589*** | -3.417*** | -3.926*** | -3.944*** | -4.373*** | -4.219*** |
| | (0.585) | (0.787) | (0.487) | (0.746) | (0.636) | (0.0849) |
| Government strength (18-25) | -- | -0.001 | -- | -0.012* | -- | 0.006 |
| | | (0.005) | | (0.007) | | (0.005) |
| Socioeconomic conditions (18-25) | -- | -0.018*** | -- | -0.007 | -- | -0.018*** |
| | | (0.006) | | (0.007) | | (0.006) |
| Investment profile (18-25) | -- | 0.007 | -- | 0.010* | -- | 0.002 |
| | | (0.006) | | (0.006) | | (0.006) |
| Internal conflict (18-25) | -- | -0.007 | -- | -0.013** | -- | -0.002 |
| | | (0.005) | | (0.006) | | (0.005) |
| External conflict (18-25) | -- | 0.002 | -- | -0.001 | -- | 0.006 |
| | | (0.005) | | (0.006) | | (0.004) |
| Corruption (18-25) | -- | -0.009 | -- | -0.010 | -- | -0.005 |
| | | (0.010) | | (0.010) | | (0.009) |
| Military in politics (18-25) | -- | 0.021** | -- | 0.019* | -- | 0.010 |
| | | (0.009) | | (0.011) | | (0.009) |
| Religious tensions (18-25) | -- | -0.003 | -- | -0.005 | -- | -0.003 |
| | | (0.011) | | (0.014) | | (0.010) |
| Law and order (18-25) | -- | 0.030** | -- | 0.045** | -- | 0.041*** |
| | | (0.015) | | (0.017) | | (0.014) |
| Ethnic tensions (18-25) | -- | 0.011 | -- | 0.013 | -- | 0.005 |
| | | (0.008) | | (0.010) | | (0.007) |
| Democratic accountability (18-25) | -- | -0.005 | -- | -0.009 | -- | -0.016** |
| | | (0.007) | | (0.010) | | (0.006) |
| Bureaucracy quality (18-25) | -- | -0.017 | -- | -0.024 | -- | -0.022 |
| | | (0.016) | | (0.021) | | (0.014) |
| Observations | 422523 | 422523 | 408564 | 408564 | 412051 | 412051 |
| $R^2$ | 0.136 | 0.137 | 0.139 | 0.140 | 0.137 | 0.137 |

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. Specification is Column 4 of Table 1. See notes to Table 1. Results use the Gallup sampling weights and robust standard errors are clustered at the country level. Source: Gallup World Polls, 2006-2018, EM-DAT International Disaster Database, 1984-2017, and ICRG 1984-2017.

**Appendix Table B.3: Robustness to Controlling for Other Economic and Political Shocks**

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| Outcome ➔ | Have confidence in national government | Have confidence in national government | Approval of the leader | Approval of the leader | Have confidence in honesty of elections | Have confidence in honesty of elections |
| Exposure to Epidemic (18-25) | -1.879*** | -1.743*** | -2.274*** | -2.204*** | -2.519*** | -2.185*** |
| | (0.502) | (0.632) | (0.515) | (0.576) | (0.348) | (0.544) |
| Assassinations (18-25) | -- | 0.006 | -- | 0.008* | -- | 0.002 |
| | | (0.005) | | (0.004) | | (0.005) |
| General Strikes (18-25) | -- | 0.010 | -- | 0.012 | -- | 0.005 |
| | | (0.007) | | (0.009) | | (0.007) |
| Terror./Guerrilla Warfare (18-25) | -- | -0.023* | -- | -0.015 | -- | -0.024** |
| | | (0.012) | | (0.020) | | (0.011) |
| Purges (18-25) | -- | 0.021 | -- | 0.035* | -- | 0.019 |
| | | (0.015) | | (0.018) | | (0.015) |
| Riots (18-25) | -- | -0.003 | -- | -0.000 | -- | -0.001 |
| | | (0.004) | | (0.006) | | (0.003) |
| Revolutions (18-25) | -- | 0.014 | -- | -0.006 | -- | 0.019* |
| | | (0.013) | | (0.014) | | (0.011) |
| Anti-gov. Demons. (18-25) | -- | -0.002 | -- | -0.001 | -- | -0.001 |
| | | (0.002) | | (0.002) | | (0.002) |
| GDP Growth (18-25) | -- | 0.001 | -- | 0.002 | -- | 0.001 |
| | | (0.002) | | (0.002) | | (0.001) |
| GDP Per Capita (18-25) | -- | -0.000 | -- | 0.000* | -- | -0.000 |
| | | (0.000) | | (0.000) | | (0.000) |
| Inflation (18-25) | -- | 0.000 | -- | 0.000 | -- | 0.000 |
| | | (0.000) | | (0.000) | | (0.000) |
| Polity (18-25) | -- | -0.001 | -- | -0.001 | -- | 0.001 |
| | | (0.002) | | (0.002) | | (0.002) |
| Observations | 429204 | 429204 | 398284 | 398284 | 415441 | 415441 |
| $R^2$ | 0.134 | 0.134 | 0.123 | 0.123 | 0.159 | 0.159 |

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. Specification is Column 4 of Table 1. See notes to Table 1. Results use the Gallup sampling weights and robust standard errors are clustered at the country level. Source: Gallup World Polls, 2006-2018, EM-DAT International Disaster Database, 1970-2017, and CNTS 1970-2017.

**Appendix Table B.4: Robustness to Controlling for Other Economic and Political Shocks (Ages 10-17)**

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| Outcome ➔ | Have confidence in national government | Have confidence in national government | Approval of the leader | Approval of the leader | Have confidence in honesty of elections | Have confidence in honesty of elections |
| Exposure to Epidemic (18-25) | -3.478*** | -2.205* | -5.000*** | -3.627*** | -4.496*** | -3.839*** |
| | (1.182) | (1.153) | (0.813) | (1.040) | (1.132) | (1.002) |
| Government strength (10-17) | -- | 0.002 | -- | -0.017** | -- | 0.010 |
| | | (0.007) | | (0.008) | | -0.007 |
| Socioeconomic conditions (10-17) | -- | -0.010 | -- | 0.006 | -- | -0.011 |
| | | (0.009) | | (0.012) | | -0.008 |
| Investment profile (10-17) | -- | -0.005 | -- | -0.002 | -- | -0.012 |
| | | (0.009) | | (0.012) | | -0.008 |
| Internal conflict (10-17) | -- | -0.003 | -- | -0.003 | -- | -0.011* |
| | | (0.007) | | (0.007) | | -0.006 |
| External conflict (10-17) | -- | -0.008 | -- | -0.019*** | -- | -0.002 |
| | | (0.006) | | (0.007) | | -0.006 |
| Corruption (10-17) | -- | -0.009 | -- | -0.015 | -- | -0.015 |
| | | (0.015) | | (0.015) | | -0.015 |
| Military in politics (10-17) | -- | 0.035* | -- | 0.034* | -- | 0.016 |
| | | (0.014) | | (0.017) | | -0.012 |
| Religious tensions (10-17) | -- | -0.036** | -- | -0.051** | -- | -0.034** |
| | | (0.017) | | (0.020) | | -0.015 |
| Law and order (10-17) | -- | 0.037** | -- | 0.059*** | -- | 0.049*** |
| | | (0.019) | | (0.022) | | -0.016 |
| Ethnic tensions (10-17) | -- | 0.015 | -- | 0.033** | -- | 0.012 |
| | | (0.011) | | (0.016) | | -0.012 |
| Democratic accountability (10-17) | -- | 0.001 | -- | -0.007 | -- | 0.004 |
| | | (0.013) | | (0.016) | | -0.012 |
| Bureaucracy quality (10-17) | -- | -0.036* | -- | -0.048** | -- | -0.03 |
| | | (0.019) | | (0.024) | | -0.019 |
| Observations | 274953 | 274953 | 257901 | 257901 | 268600 | 268600 |
| $R^2$ | 0.135 | 0.137 | 0.113 | 0.116 | 0.135 | 0.137 |

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. Specification is Column 4 of Table 1. See notes to Table 1. Results use the Gallup sampling weights and robust standard errors are clustered at the country level. Source: Gallup World Polls, 2006-2018, EM-DAT International Disaster Database, 1984-2017, and ICRG 1984-2017.

**Appendix Table B.5: Robustness to Controlling for Other Economic and Political Shocks (Ages 10-17)**

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| Outcome ➔ | Have confidence in national government | Have confidence in national government | Approval of the leader | Approval of the leader | Have confidence in honesty of elections | Have confidence in honesty of elections |
| Exposure to Epidemic (18-25) | -1.622*** | -1.639*** | -2.465*** | -2.811*** | -2.657*** | -2.748*** |
| | (0.349) | (0.537) | (0.419) | (0.596) | (0.277) | (0.430) |
| Assassinations (10-17) | -- | 0.006 | -- | 0.016 | -- | 0.012** |
| | | (0.010) | | (0.013) | | (0.005) |
| General Strikes (10-17) | -- | 0.028** | -- | 0.047*** | -- | 0.022** |
| | | (0.013) | | (0.012) | | (0.010) |
| Terror./Guerrilla Warfare (10-17) | -- | -0.042* | -- | -0.061** | -- | -0.004 |
| | | (0.025) | | (0.027) | | (0.022) |
| Purges (10-17) | -- | 0.012 | -- | 0.010 | -- | 0.02 |
| | | (0.022) | | (0.021) | | (0.019) |
| Riots (10-17) | -- | -0.001 | -- | -0.014 | -- | -0.005 |
| | | (0.006) | | (0.008) | | (0.005) |
| Revolutions (10-17) | -- | -0.054*** | -- | -0.039* | -- | -0.037** |
| | | (0.019) | | (0.022) | | (0.015) |
| Anti-gov. Demons. (10-17) | -- | -0.005 | -- | 0.003 | -- | 0.001 |
| | | (0.007) | | (0.005) | | (0.005) |
| GDP Growth (10-17) | -- | 0.003 | -- | 0.004 | -- | 0.004* |
| | | (0.002) | | (0.003) | | (0.002) |
| GDP Per Capita (10-17) | -- | -0.000 | -- | 0.000 | -- | -0.000 |
| | | (0.000) | | (0.000) | | (0.000) |
| Inflation (10-17) | -- | 0.000 | -- | 0.000 | -- | 0.000 |
| | | (0.000) | | (0.000) | | (0.000) |
| Polity (10-17) | -- | -0.001 | -- | -0.004 | -- | -0.003 |
| | | (0.002) | | (0.003) | | (0.002) |
| Observations | 315587 | 315587 | 293751 | 293751 | 306094 | 306094 |
| $R^2$ | 0.126 | 0.127 | 0.116 | 0.117 | 0.158 | 0.159 |

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. Specification is Column 4 of Table 1. See notes to Table 1. Results use the Gallup sampling weights and robust standard errors are clustered at the country level. Source: Gallup World Polls, 2006-2018, EM-DAT International Disaster Database, 1970-2017, and CNTS 1970-2017.

**Appendix Table B.6: Robustness to Controlling for Other Economic and Political Shocks and Country*Year Fixed Effects**

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| Outcome ➔ | Have confidence in national government | Have confidence in national government | Approval of the leader | Approval of the leader | Have confidence in honesty of elections | Have confidence in honesty of elections |
| Exposure to Epidemic (18-25) | -0.613** | -0.577** | -0.502** | -0.529** | -1.269*** | -1.293*** |
| | (0.253) | (0.286) | (0.197) | (0.259) | (0.191) | (0.192) |
| Government strength (18-25) | -- | 0.002 | -- | 0.006*** | -- | 0.002 |
| | | (0.002) | | (0.002) | | (0.002) |
| Socioeconomic conditions (18-25) | -- | -0.002 | -- | -0.001 | -- | -0.003 |
| | | (0.002) | | (0.002) | | (0.002) |
| Investment profile (18-25) | -- | 0.002 | -- | 0.002 | -- | 0.001 |
| | | (0.002) | | (0.002) | | (0.002) |
| Internal conflict (18-25) | -- | -0.002 | -- | -0.001 | -- | 0.003 |
| | | (0.002) | | (0.002) | | (0.002) |
| External conflict (18-25) | -- | 0.001 | -- | 0.002 | -- | 0.002 |
| | | (0.002) | | (0.002) | | (0.002) |
| Corruption (18-25) | -- | -0.005* | -- | -0.003 | -- | -0.003 |
| | | (0.003) | | (0.003) | | (0.003) |
| Military in politics (18-25) | -- | -0.002 | -- | -0.000 | -- | 0.002 |
| | | (0.003) | | (0.003) | | (0.003) |
| Religious tensions (18-25) | -- | 0.002 | -- | 0.007** | -- | -0.003 |
| | | (0.003) | | (0.003) | | (0.004) |
| Law and order (18-25) | -- | 0.003 | -- | -0.004 | -- | 0.006 |
| | | (0.004) | | (0.004) | | (0.004) |
| Ethnic tensions (18-25) | -- | 0.002 | -- | 0.000 | -- | -0.002 |
| | | (0.003) | | (0.002) | | (0.003) |
| Democratic accountability (18-25) | -- | -0.002 | -- | 0.001 | -- | -0.009*** |
| | | (0.002) | | (0.003) | | (0.003) |
| Bureaucracy quality (18-25) | -- | 0.009 | -- | 0.011* | -- | 0.009* |
| | | (0.006) | | (0.006) | | (0.005) |
| Observations | 422523 | 422523 | 408564 | 408564 | 412051 | 412051 |
| $R^2$ | 0.174 | 0.174 | 0.166 | 0.166 | 0.170 | 0.170 |

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. Specification is Column 5 of Table 1 with country*year fixed effects. See notes to Table 1. Results use the Gallup sampling weights and robust standard errors are clustered at the country level. Source: Gallup World Polls, 2006-2018, EM-DAT International Disaster Database, 1984-2017, and ICRG 1984-2017.

**Appendix Table B.7: Robustness to Controlling for Other Economic and Political Shocks and Country*Year Fixed Effects**

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| Outcome ➔ | Have confidence in national government | Have confidence in national government | Approval of the leader | Approval of the leader | Have confidence in honesty of elections | Have confidence in honesty of elections |
| Exposure to Epidemic (18-25) | -0.630*** | -0.607*** | -0.765*** | -0.623*** | -1.346*** | -1.198*** |
| | (0.184) | (0.217) | (0.158) | (0.200) | (0.159) | (0.205) |
| Assassinations (18-25) | -- | -0.001 | -- | 0.000 | -- | -0.004 |
| | | (0.003) | | (0.002) | | (0.003) |
| General Strikes (18-25) | -- | 0.002 | -- | -0.000 | -- | -0.003 |
| | | (0.004) | | (0.005) | | (0.004) |
| Terror./Guerrilla Warfare (18-25) | -- | -0.002 | -- | -0.006 | -- | -0.015*** |
| | | (0.006) | | (0.004) | | (0.005) |
| Purges (18-25) | -- | 0.025* | -- | 0.025 | -- | 0.007 |
| | | (0.013) | | (0.018) | | (0.016) |
| Riots (18-25) | -- | -0.003 | -- | 0.000 | -- | -0.001 |
| | | (0.002) | | (0.002) | | (0.002) |
| Revolutions (18-25) | -- | 0.016** | -- | 0.009 | -- | 0.021*** |
| | | (0.007) | | (0.007) | | (0.007) |
| Anti-gov. Demons. (18-25) | -- | 0.001 | -- | -0.001 | -- | 0.001 |
| | | (0.001) | | (0.001) | | (0.001) |
| GDP Growth (18-25) | -- | 0.000 | -- | 0.001** | -- | 0.000 |
| | | (0.001) | | (0.001) | | (0.001) |
| GDP Per Capita (18-25) | -- | -0.000 | -- | 0.000** | -- | 0.000 |
| | | (0.000) | | (0.000) | | (0.000) |
| Inflation (18-25) | -- | 0.000 | -- | 0.000 | -- | 0.000 |
| | | (0.000) | | (0.000) | | (0.000) |
| Polity (18-25) | -- | -0.001 | -- | 0.000 | -- | 0.001 |
| | | (0.001) | | (0.001) | | (0.001) |
| Observations | 429204 | 429204 | 398284 | 398284 | 415441 | 415441 |
| $R^2$ | 0.134 | 0.170 | 0.171 | 0.171 | 0.192 | 0.192 |

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. Specification is Column 5 of Table 1 with country*year fixed effects. See notes to Table 1. Results use the Gallup sampling weights and robust standard errors are clustered at the country level. Source: Gallup World Polls, 2006-2018, EM-DAT International Disaster Database, 1970-2017, and CNTS 1970-2017.

**Appendix Table B.8: Robustness to Omitted Variables Bias**

| | (1) | (2) | (3) |
|---|---|---|---|
| Outcome variable ➔ | Have confidence in national government | Approval of the Leader | Have confidence in honesty of elections |
| ***Panel A: Estimation model: Columns 2, 4 and 6 of Appendix Table B.2, which controls for various past economic and political shocks*** | | | |
| Exposure to Epidemic (18-25) | -3.417*** | -3.944*** | -4.219*** |
| | (0.787) | (0.746) | (0.849) |
| Bounds on the treatment effect (δ=1, Rmax=1.3*R) | (-3.417, -3.844) | (-3.944, -4.120) | (-4.219, -4.635) |
| Treatment effect excludes 0 | Yes | Yes | Yes |
| Delta (Rmax=1.3*R) | 11.60 | 24.24 | 19.02 |
| ***Panel B: Estimation model: Columns 2, 4 and 6 of Appendix Table B.3, which controls for various past economic and political shocks*** | | | |
| Exposure to Epidemic (18-25) | -1.743*** | -2.204*** | -2.185*** |
| | (0.632) | (0.576) | (0.544) |
| Bounds on the treatment effect (δ=1, Rmax=1.3*R) | (-1.743, -1.943) | (-2.204, -2.317) | (-2.185, -2.556) |
| Treatment effect excludes 0 | Yes | Yes | Yes |
| Delta (Rmax=1.3*R) | 12.72 | 21.34 | 12.34 |

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. Bounds on the Exposure to Epidemic (18-25) effect are calculated using Stata code psacalc, which calculates estimates of treatment effects and relative degree of selection in linear models as proposed in Oster (2019). Delta, δ, calculates an estimate of the proportional degree of selection given a maximum value of the R-squared. Rmax specifies the maximum R-squared which would result if all unobservables were included in the regression. We define Rmax upper bound as 1.3 times the R-squared from the main specification that controls for all observables. Oster's delta indicates the degree of selection on unobservables relative to observables that would be needed to fully explain our results by omitted variable bias. 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.

**Appendix Table B.9: Placebo Outcomes**

| Outcome ➔ | (1) Have confidence in the military | (2) Have confidence in banks | (3) Have confidence in media | (4) Have relatives or friends to count on | (5) Have helped to a stranger |
|---|---|---|---|---|---|
| Exposure to epidemic (18-25) | -0.542 | 0.147 | -0.652 | 0.290 | 0.021 |
| | (0.442) | (0.193) | (0.610) | (0.851) | (0.281) |
| 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 | Yes | Yes | Yes | Yes | Yes |
| Demographic characteristics | Yes | Yes | Yes | Yes | Yes |
| Income decile fixed effects | Yes | Yes | Yes | Yes | Yes |
| Labor market controls | Yes | Yes | Yes | Yes | Yes |
| Country*Age trends | Yes | Yes | Yes | Yes | Yes |
| Cohort fixed effects | Yes | Yes | Yes | Yes | Yes |
| Observations | 730156 | 809972 | 190167 | 902066 | 889981 |
| $R^2$ | 0.141 | 0.136 | 0.104 | 0.122 | 0.074 |

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". Specification is Column 4 of Table 1. See notes to Table 1. 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.

**Appendix Table B.10: Robustness to Using Comparable Samples (i.e. sample of individuals who have responded to all 7 questions)**

| Outcome ➔ | (1) Have confidence in national government | (2) Approval of the Leader | (3) Have confidence in honesty of elections | (4) Have confidence in the military | (5) Have confidence in the banks | (6) Have relatives or friends to count on | (7) Have helped to a stranger |
|---|---|---|---|---|---|---|---|
| Exposure to epidemic (18-25) | -0.570** | -0.420*** | -1.282*** | -0.374 | 0.598** | 0.454 | -0.095 |
| | (0.242) | (0.112) | (0.224) | (0.291) | (0.249) | (0.577) | (0.239) |
| Observations | 558299 | 558299 | 558299 | 558299 | 558299 | 558299 | 558299 |
| Country fixed effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year fixed effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Age group fixed effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Individual income | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Demographic characteristics | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Income decile fixed effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Labor market controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Country*Age trends | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Cohort fixed effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Country*Year fixed effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. 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.

**Appendix Table B.11: Robustness to Alternative Epidemic Exposure Measure - Exposure to SARS, H1N1, MERS, Ebola, or Zika**

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| | Coefficient on Exposure to Epidemic (18-25) (standard error) | Coefficient on Exposure to Epidemic (18-25) (standard error) | Coefficient on Exposure to Epidemic (18-25) (standard error) | Coefficient on Exposure to Epidemic (18-25) (standard error) | Coefficient on Exposure to Epidemic (18-25) (standard error) |
| Outcome ➔ | Have confidence in national government | Approval of the leader | Have confidence in honesty of elections | Average of all three outcome variables | the 1st Principal Component of Responses |
| Sample: Democratic countries | | | | | |
| Exposure to epidemic (18-25) | -0.022 | -0.044*A | -0.041**A | -0.038** | -0.132**A |
| | (0.020) | (0.024) | (0.017) | (0.019) | (0.066) |
| Observations | 106530 | 102838 | 103551 | 94695 | 94695 |
| $R^2$ | 0.137 | 0.108 | 0.135 | 0.171 | 0.171 |
| Sample: Non-democratic countries | | | | | |
| Exposure to epidemic (18-25) | 0.029 | 0.029* | 0.022 | 0.030* | 0.104* |
| | (0.021) | (0.016) | (0.022) | (0.016) | (0.056) |
| Observations | 47796 | 44273 | 45566 | 37849 | 37849 |
| $R^2$ | 0.187 | 0.183 | 0.192 | 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 1. See notes to Table 1. Results use the Gallup sampling weights and robust standard errors are clustered at the country level. A indicates statistically significant difference in each pair of means at p<.05. Source: Gallup World Polls, 2006-2018 and Ma et al., 2020.

**Appendix Table B.12: Contemporaneous Effects of Pandemic on Political Trust**

| | (1) | (2) | (3) |
|---|---|---|---|
| Outcome ➔ | Have confidence in national government | Approval of the leader | Have confidence in honesty of elections |
| Lagged pandemic | -0.028* | -0.037** | -0.015 |
| | (0.016) | (0.018) | (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 |
| Observations | 987864 | 931469 | 950827 |
| $R^2$ | 0.142 | 0.131 | 0.147 |

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. Specification is Equation B1. Results use the Gallup sampling weights and robust standard errors are clustered at the country level. Source: Gallup World Polls, 2006-2018 and Ma et al., 2020.

**Appendix Table B.13: The Impact of Exposure to Epidemic (Ages 18-25) on Political Trust by Exposure Thresholds**

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

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. Specification is Column 4 of Table 1. 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 1. 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.14: The Role of Democracy at the Time of the Epidemic**

| Outcome ➔ | (1) Have confidence in national government | (2) Approval of the leader | (3) Have confidence in honesty of elections |
|---|---|---|---|
| Exposure to epidemic (18-25) * Democracy (18-25) | -4.199** | -3.624 | -3.379** |
| | (1.685) | (3.143) | (1.592) |
| Exposure to epidemic (18-25) | -1.504*** | -2.112*** | -2.110*** |
| | (0.420) | (0.419) | (0.406) |
| Democracy (18-25) | 0.007 | -0.003 | 0.015 |
| | (0.010) | (0.011) | (0.010) |
| Observations | 523072 | 489155 | 504686 |
| *R*2 | 0.140 | 0.127 | 0.154 |

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. The specification is Column 4 of Table 1. Results reported in each column come from separate models. Results use the Gallup sampling weights and robust standard errors are clustered at the country level. Source: Gallup World Polls, 2006-2018, EM-DAT International Disaster Database, 1970-2017, and the Polity5 dataset.

**Appendix Table B.15: Impact of Exposure to Epidemics (Ages 18-25) on Political Trust – Intensive and Extensive Margins**

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| | Intensive margin | Intensive margin | Intensive margin | Extensive margin | Extensive margin | Extensive margin |
| Outcome ➔ | Have confidence in national government | Approval of the leader | Have confidence in honesty of elections | Have confidence in national government | Approval of the leader | Have confidence in honesty of elections |
| Exposure to Epidemic (18-25) | -2.779*** | -3.241*** | -3.329*** | -0.001 | -0.009*** | 0.001 |
| | (0.519) | (0.735) | (0.505) | (0.003) | (0.003) | (0.003) |
| Observations | 351733 | 340226 | 342209 | 760099 | 719742 | 736679 |
| $R^2$ | 0.138 | 0.119 | 0.133 | 0.145 | 0.133 | 0.146 |

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 1. 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 1. See notes to Table 1. 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.

**Appendix Table B.16: Impact of Communicable and Non-Communicable Diseases on the Political Trust**

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| Outcome ➔ | Have confidence in national government | Approval of the leader | Have confidence in honesty of elections | Average of all three outcome variables | the 1st Principal Component of Responses |
| Exposure to communicable dis. (18-25) | -0.368** | -0.111 | -0.515*** | -0.328** | -1.117** |
| | (0.152) | (0.179) | (0.176) | (0.159) | (0.551) |
| Exposure to non-communicable dis. (18-25) | 0.175 | 0.123 | 0.553* | 0.315 | 1.064 |
| | (0.303) | (0.336) | (0.305) | (0.308) | (1.069) |
| Observations | 389882 | 370749 | 377838 | 330034 | 330034 |
| 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 |
| Labor market cont. & individual income | Yes | Yes | Yes | Yes | Yes |
| Demog. cont. & income decile fixed effects | Yes | Yes | Yes | Yes | Yes |
| Country*Age trends | Yes | Yes | Yes | Yes | Yes |
| Cohort fixed effects | Yes | Yes | Yes | Yes | Yes |

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. See Table 1 for variable definitions. Results use the Gallup sampling weights and robust standard errors are clustered at the country level. Source: Gallup World Polls, 2006-2018 and Institute for Health Metrics and Evaluation, 1990-2016.

**Appendix Table B.17: Impact of "Randomly-Assigned" Exposure on Political Trust**

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| Outcome ➔ | Have confidence in national government | Approval of the leader | Have confidence in honesty of elections | Average of all three outcome variables | the 1st Principal Component of Responses |
| Exposure to epidemic (18-25) | 0.210 | -0.250 | -0.238 | -0.040 | -0.109 |
| | (0.390) | (0.488) | (0.439) | (0.389) | (1.348) |
| Observations | 668022 | 632661 | 647417 | 559274 | 559274 |
| $R^2$ | 0.146 | 0.133 | 0.145 | 0.180 | 0.180 |

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. Specification is Column 4 of Table 1. 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.

**Appendix Table B.18: Multiple Hypothesis Testing**

| Outcome ➔ | (1) Have confidence in national government | (2) Approval of the leader | (3) Have confidence in honesty of elections | |
|---|---|---|---|---|
| Exposure to epidemic (18-25) | -1.592*** | -1.957*** | -2.258*** | |
| | (0.262) | (0.330) | (0.339) | |
| 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 | 760099 | 719742 | 736679 | |
| $R^2$ | 0.145 | 0.133 | 0.146 | |
| Mean of outcome | 0.50 | 0.51 | 0.51 | |
| Randomization-c p-values | 0.020** | 0.007*** | 0.007*** | |
| Randomization-t p-values | 0.006*** | 0.007*** | 0.007*** | |
| Randomization-c p-values (joint test of treatment significance) | | | | 0.008*** |
| Randomization-t p-values (joint test of treatment significance) | | | | N/A |
| Randomization-c p-values (Westfall-Young multiple testing of treatment significance) | | | | 0.013** |
| Randomization-t p-values (Westfall-Young multiple testing of treatment significance) | | | | 0.003*** |

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. Randomization-t technique does not produce p-values for the joint test of treatment significance. Results are derived from 100 iterations. Specification is Column 4 of Table 1. 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

**Appendix Table B.19: Robustness to Excluding Potentially Bad Controls**

| 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 |
|---|---|---|---|---|
| Exposure to epidemic (18-25) | -1.073* | -1.733*** | -1.728*** | -0.506** |
| | (0.594) | (0.262) | (0.258) | (0.223) |
| Observations | 760099 | 760099 | 760099 | 760099 |
| Outcome ➔ | Approval of the Leader | Approval of the Leader | Approval of the Leader | Approval of the Leader |
| Exposure to epidemic (18-25) | -1.521*** | -1.933*** | -1.991*** | -0.580*** |
| | (0.380) | (0.313) | (0.316) | (0.123) |
| Observations | 719742 | 719742 | 719742 | 719742 |
| Outcome ➔ | Have confidence in honesty of elections | Have confidence in honesty of elections | Have confidence in honesty of elections | Have confidence in honesty of elections |
| Exposure to epidemic (18-25) | -1.643** | -2.322*** | -2.367*** | -1.117*** |
| | (0.794) | (0.362) | (0.355) | (0.255) |
| Observations | 736679 | 736679 | 736679 | 736679 |
| Country fixed effects | Yes | Yes | Yes | Yes |
| Year fixed effects | Yes | Yes | Yes | Yes |
| Age group fixed effects | Yes | Yes | Yes | Yes |
| Country*Age trends | No | Yes | Yes | Yes |
| Cohort fixed effects | No | No | Yes | Yes |
| Country*Year fixed effects | No | No | No | Yes |

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. 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.

**Appendix Table B.20: Robustness to Alternative Treatment (i.e., Population *Unadjusted* Number of Affected People)**

| Outcome ➔ | (1) Have confidence in the government | (2) Approval of the Leader | (3) Have confidence in honesty of elections | (4) Average of all three outcome variables | (5) the 1st Principal Component of Responses |
|---|---|---|---|---|---|
| Exposure to epidemic (18-25) | -0.081*** | -0.100** | -0.090*** | -0.091*** | -0.313*** |
| | (0.029) | (0.043) | (0.014) | (0.030) | (0.105) |
| 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 | Yes | Yes | Yes | Yes | Yes |
| Demographic characteristics | Yes | Yes | Yes | Yes | Yes |
| Income decile fixed effects | Yes | Yes | Yes | Yes | Yes |
| Labor market controls | Yes | Yes | Yes | Yes | Yes |
| Country*Age trends | Yes | Yes | Yes | Yes | Yes |
| Cohort fixed effects | Yes | Yes | Yes | Yes | Yes |
| Observations | 770836 | 731758 | 746610 | 644795 | 644795 |
| $R^2$ | 0.149 | 0.135 | 0.146 | 0.184 | 0.184 |

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. 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.

**Appendix Table B.21: The Impact of Exposure to Epidemic (18-25) on Political Trust – TWFE setting with continuous treatment**

| Outcome ➔ | (1) Have confidence in national government | (2) Approval of the leader | (3) Have confidence in honesty of elections | (4) Average of all three outcome variables | (5) the 1st Principal Component of Responses |
|---|---|---|---|---|---|
| Exposure to epidemic (18-25) | -1.023* | -1.590*** | -1.614** | -1.369** | -4.687** |
| | [0.605] | [0.378] | [0.801] | [0.553] | [1.891] |
| Sum of negative weights | -0.010 | -0.011 | -0.010 | -0.010 | -0.010 |
| Sum of positive weights | +1.010 | +1.011 | +1.010 | +1.010 | +1.010 |
| Country fixed effects | Yes | Yes | Yes | Yes | Yes |
| Cohort fixed effects | Yes | Yes | Yes | Yes | Yes |
| Observations | 760,099 | 719,742 | 736,679 | 636,156 | 636,156 |
| $R^2$ | 0.136 | 0.125 | 0.136 | 0.167 | 0.229 |

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. 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.

**Appendix Table B.22: The Impact of Exposure to Epidemic (18-25) on Political Trust – TWFE setting with discrete treatment**

| Outcome ➔ | (1) Have confidence in national government | (2) Approval of the leader | (3) Have confidence in honesty of elections | (4) Average of all three outcome variables | (5) the 1st Principal Component of Responses |
|---|---|---|---|---|---|
| Top 2 per cent (*exposure to epidemic, 18-25*) | -0.046** | -0.047** | -0.053** | -0.050** | -0.171** |
| | [0.020] | [0.019] | [0.023] | [0.021] | [0.072] |
| Sum of negative weights | 0 | 0 | 0 | 0 | 0 |
| Sum of positive weights | +1 | +1 | +1 | +1 | +1 |
| Country fixed effects | Yes | Yes | Yes | Yes | Yes |
| Cohort fixed effects | Yes | Yes | Yes | Yes | Yes |
| Observations | 760,099 | 719,742 | 736,679 | 636,156 | 636,156 |
| $R^2$ | 0.136 | 0.125 | 0.136 | 0.167 | 0.229 |

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. 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.

**Appendix Table B.23: The Impact of Exposure to Epidemic (18-25) on Political Trust – TWFE setting with discrete treatment and alternative DiD estimator**

| Outcome ➔ | (1) Have confidence in national government | (2) Approval of the leader | (3) Have confidence in honesty of elections | (4) Average of all three outcome variables | (5) the 1st Principal Component of Responses |
|---|---|---|---|---|---|
| Top 2 per cent (*exposure to epidemic, 18-25*) | -0.034* | -0.032** | -0.027 | -0.034* | -0.118* |
| | [0.019] | [0.014] | [0.022] | [0.018] | [0.063] |
| Country fixed effects | Yes | Yes | Yes | Yes | Yes |
| Cohort fixed effects | Yes | Yes | Yes | Yes | Yes |
| Observations | 130,785 | 124,701 | 127,805 | 110,064 | 110,064 |
| $R^2$ | - | - | - | - | - |

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. 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.

**Appendix Table B.24: The Impact of Exposure to Epidemic (18-25) on Political Trust – Country-Year Level TWFE setting with discrete treatment**

| Outcome ➔ | (1) Have confidence in national government | (2) Approval of the leader | (3) Have confidence in honesty of elections | (4) Average of all three outcome variables | (5) the 1st Principal Component of Responses |
|---|---|---|---|---|---|
| Top 2 per cent (*exposure to epidemic, 18-25*) | -0.074* | -0.058 | -0.072 | -0.068 | -0.235 |
| | [0.039] | [0.037] | [0.063] | [0.048] | [0.165] |
| Sum of negative weights | -0.010 | -0.010 | -0.010 | -0.010 | -0.010 |
| Sum of positive weights | +1.010 | +1.010 | +1.010 | +1.010 | +1.010 |
| Country fixed effects | Yes | Yes | Yes | Yes | Yes |
| Year fixed effects | Yes | Yes | Yes | Yes | Yes |
| Observations | 1,320 | 1,316 | 1,320 | 1,274 | 1,274 |
| $R^2$ | 0.736 | 0.688 | 0.776 | 0.725 | 0.724 |

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. Results use the Gallup sampling weights when aggregating the data at the country-year level and robust standard errors are clustered at the country level. Source: Gallup World Polls, 2006-2018 and EM-DAT International Disaster Database, 1970-2017.

**Appendix Table B.25: The Impact of Exposure to Epidemic (18-25) on Political Trust – Country-Year Level TWFE setting with discrete treatment and alternative DiD estimator**

| Outcome ➔ | (1) Have confidence in national government | (2) Approval of the leader | (3) Have confidence in honesty of elections | (4) Average of all three outcome variables | (5) the 1st Principal Component of Responses |
|---|---|---|---|---|---|
| Top 2 per cent (*exposure to epidemic, 18-25*) | -0.081** | -0.084** | -0.071** | -0.086** | -0.297** |
| | [0.038] | [0.034] | [0.029] | [0.037] | [0.128] |
| Country fixed effects | Yes | Yes | Yes | Yes | Yes |
| Year fixed effects | Yes | Yes | Yes | Yes | Yes |
| Observations | 427 | 433 | 426 | 415 | 415 |
| $R^2$ | - | - | - | - | - |

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. Results use the Gallup sampling weights when aggregating the data at the country-year level and robust standard errors are clustered at the country level. Source: Gallup World Polls, 2006-2018 and EM-DAT International Disaster Database, 1970-2017.

**Appendix Table B.26: The Impact of Exposure to Epidemic (18-25) on Political Trust – Country-Year Level TWFE setting with alternative discrete treatment**

| Outcome ➔ | (1) Have confidence in national government | (2) Approval of the leader | (3) Have confidence in honesty of elections | (4) Average of all three outcome variables | (5) the 1st Principal Component of Responses |
|---|---|---|---|---|---|
| Top 1 per cent (*exposure to epidemic, 18-25*) | -0.096*** | -0.104*** | -0.172*** | -0.126*** | -0.430*** |
| | [0.010] | [0.010] | [0.009] | [0.009] | [0.031] |
| Sum of negative weights | 0 | -0.010 | 0 | -0.010 | 0 |
| Sum of positive weights | +1 | +1.010 | +1 | +1.010 | +1 |
| Country fixed effects | Yes | Yes | Yes | Yes | Yes |
| Year fixed effects | Yes | Yes | Yes | Yes | Yes |
| Observations | 1,320 | 1,316 | 1,320 | 1,274 | 1,274 |
| $R^2$ | 0.736 | 0.688 | 0.776 | 0.725 | 0.723 |

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. Results use the Gallup sampling weights when aggregating the data at the country-year level and robust standard errors are clustered at the country level. Source: Gallup World Polls, 2006-2018 and EM-DAT International Disaster Database, 1970-2017.

**Appendix Table B.27: The Impact of Exposure to Epidemic (18-25) on Political Trust – Country-Year Level TWFE setting with alternative discrete treatment and alternative DiD estimator**

| Outcome ➔ | (1) Have confidence in national government | (2) Approval of the leader | (3) Have confidence in honesty of elections | (4) Average of all three outcome variables | (5) the 1st Principal Component of Responses |
|---|---|---|---|---|---|
| Top 1 per cent (*exposure to epidemic, 18-25*) | -0.036*** | -0.039*** | -0.134*** | -0.071*** | -0.237*** |
| | [0.007] | [0.007] | [0.008] | [0.007] | [0.024] |
| Country fixed effects | Yes | Yes | Yes | Yes | Yes |
| Year fixed effects | Yes | Yes | Yes | Yes | Yes |
| Observations | 122 | 122 | 120 | 119 | 119 |
| $R^2$ | - | - | - | - | - |

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. Results use the Gallup sampling weights when aggregating the data at the country-year level and robust standard errors are clustered at the country level. Source: Gallup World Polls, 2006-2018 and EM-DAT International Disaster Database, 1970-2017.

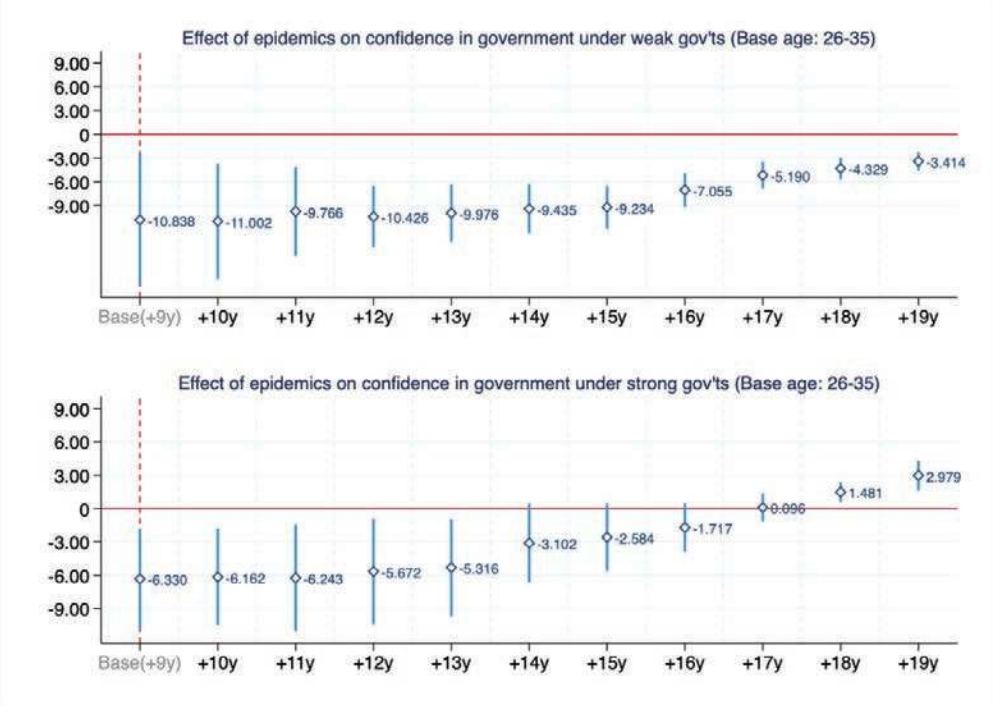
**Appendix Table B.28: Evidence on Political Behaviour**

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| Outcome is ➔ | WWS - Attending lawful/peaceful demonstrations | WWS – Never voted in national elections | ESS - Taken part in a lawful public demonstration | ESS - Voted in recent national elections |
| Exposure to epidemic (18-25) | 16.412* | 5.488 | 53.041** | -134.497** |
| | (9.736) | (7.014) | (12.811) | (59.276) |
| Observations | 103681 | 32448 | 171889 | 128836 |
| $R^2$ | 0.127 | 0.101 | 0.051 | 0.110 |

| Outcome is ➔ | WWS - Signed a petition | WWS - Joined in boycotts | WWS – Occupied buildings or factories | WWS - Joined unofficial strikes |
|---|---|---|---|---|
| Exposure to epidemic (18-25) | 18.944** | 19.322** | -2.481 | -4.982 |
| | (7.811) | (9.176) | (5.330) | (8.972) |
| Observations | 103851 | 101088 | 39440 | 71851 |
| $R^2$ | 0.226 | 0.198 | 0.081 | 0.132 |

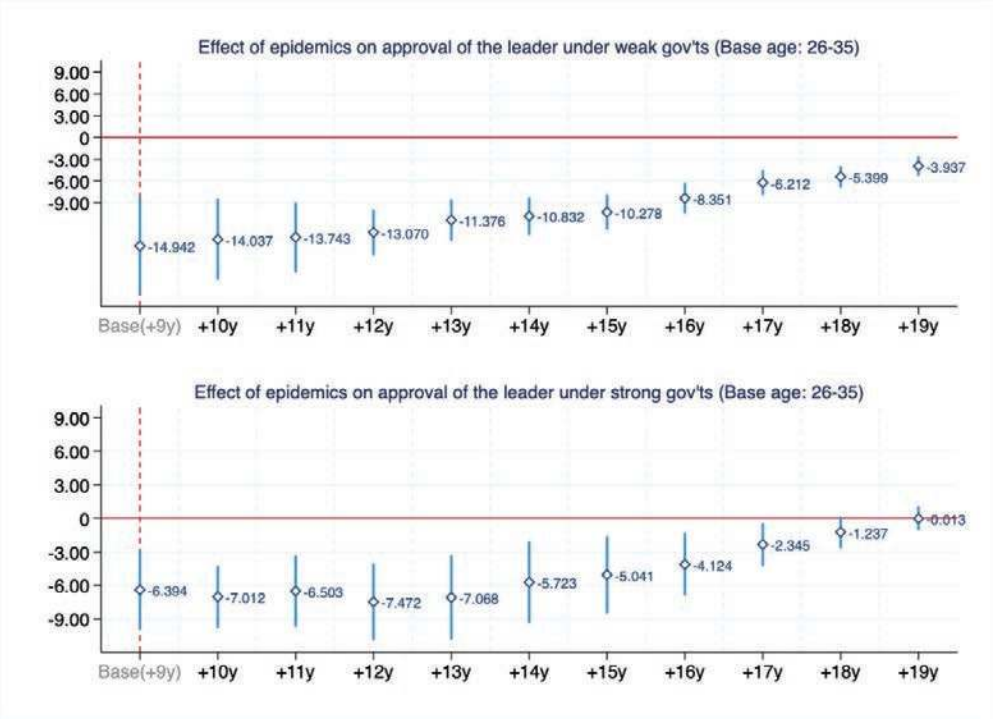
Notes: * significant at 10%; ** significant at 5%; *** significant at 1%.. Exposure to epidemic (18-25) defined as the average per capita number of people affected by an epidemic when the respondent was in their impressionable years (18-25 years). The number of people affected refers to people requiring 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. Results use the sampling weights and robust standard errors are clustered at the country-wave level. Source: World Values Survey (WVS), 1981-2014; European Social Survey (ESS), 2002-2018); and EM-DAT International Disaster Database, 1970-2017.

**Appendix Figure B.1: Effects of Epidemics on Confidence in Government over Subsamples with Rolling Age-windows (separately under weak and strong governments)**



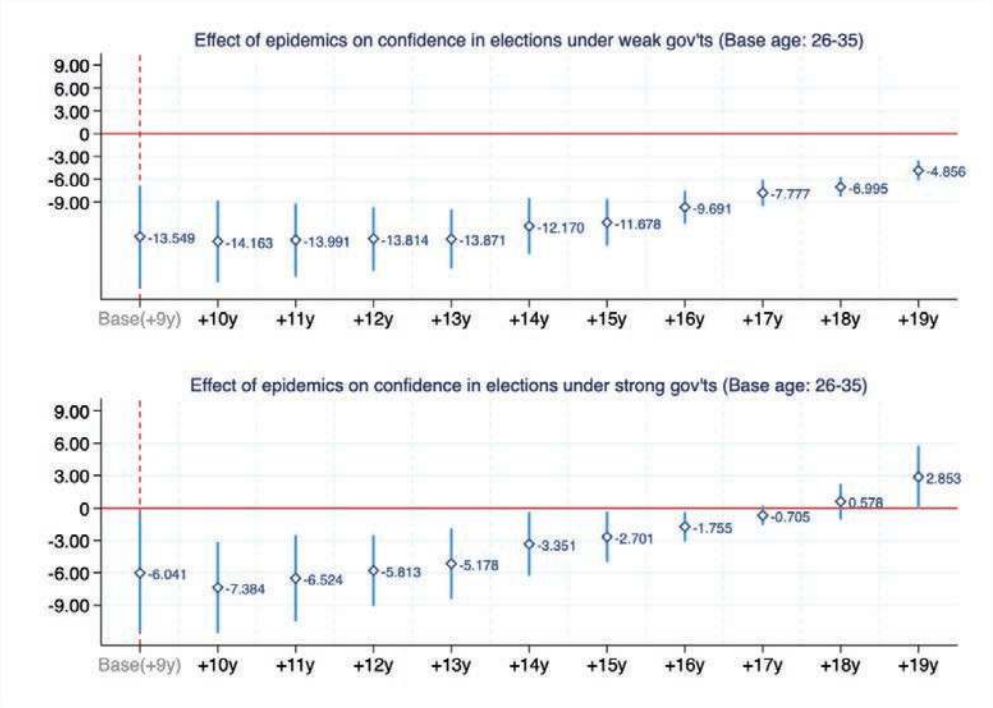

Note: This figure shows the persistency of the effects on three main outcome variables by restricting the observations to the respondents who are in the 26-35 age range at the time of the survey (Base sample) and then repeatedly rolling this age window forward by one year for each separate estimation. The specification is Panel 3 in Table 3. 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, EM-DAT International Disaster Database, 1970-2017, and the International Country Risk Guide.

**Appendix Figure B.2: Effects of Epidemics on Approval of the Leader Over Subsamples with Rolling Age-Windows (separately under weak and strong governments)**



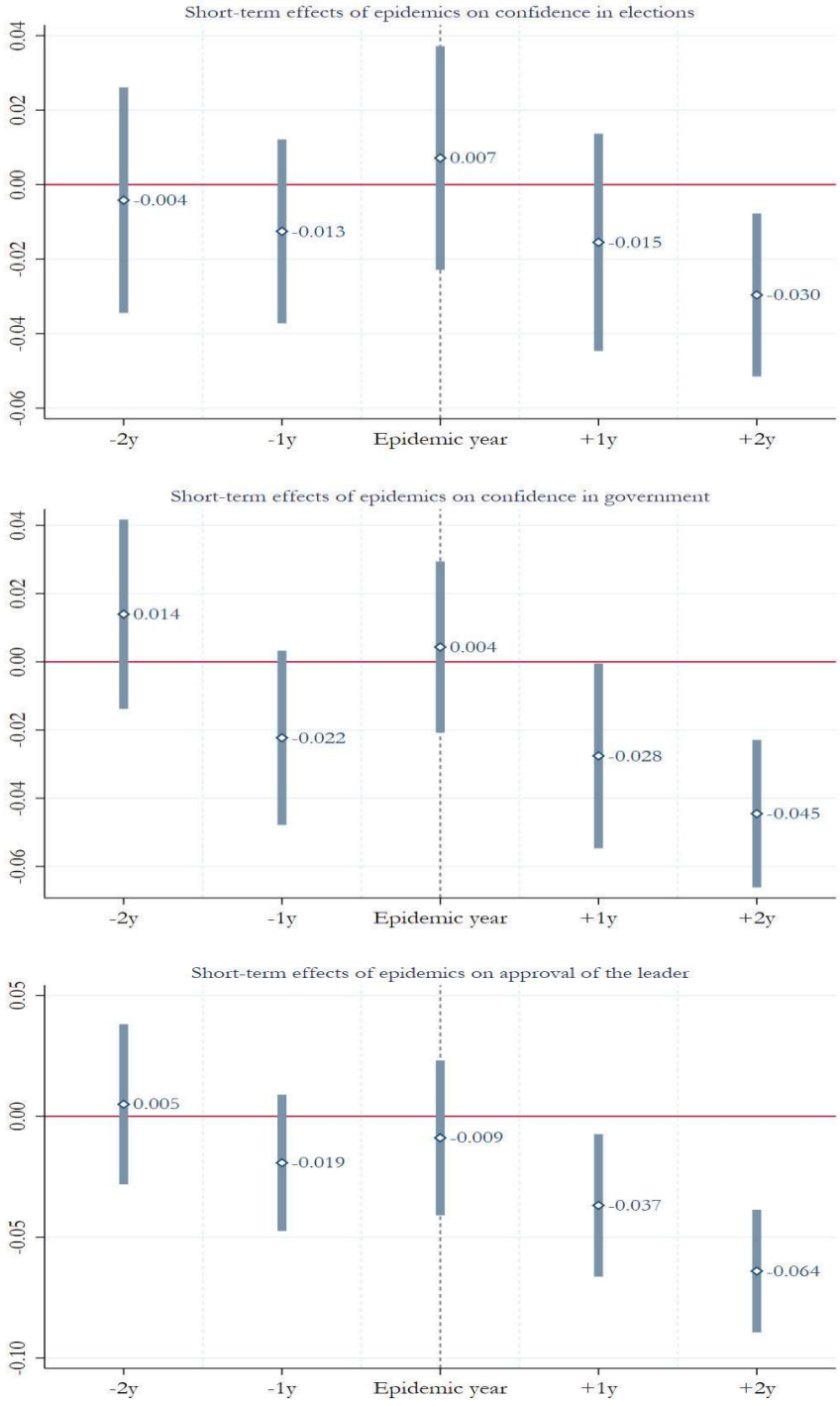

Note: This figure shows the persistency of the effects on three main outcome variables by restricting the observations to the respondents who are in the 26-35 age range at the time of the survey (Base sample) and then repeatedly rolling this age window forward by one year for each separate estimation. The specification is Panel 3 in Table 3. 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, EM-DAT International Disaster Database, 1970-2017, and the International Country Risk Guide.

**Appendix Figure B.3: Effects of Epidemics on Confidence in Elections over Subsamples with Rolling Age-Windows (separately under weak and strong governments)**



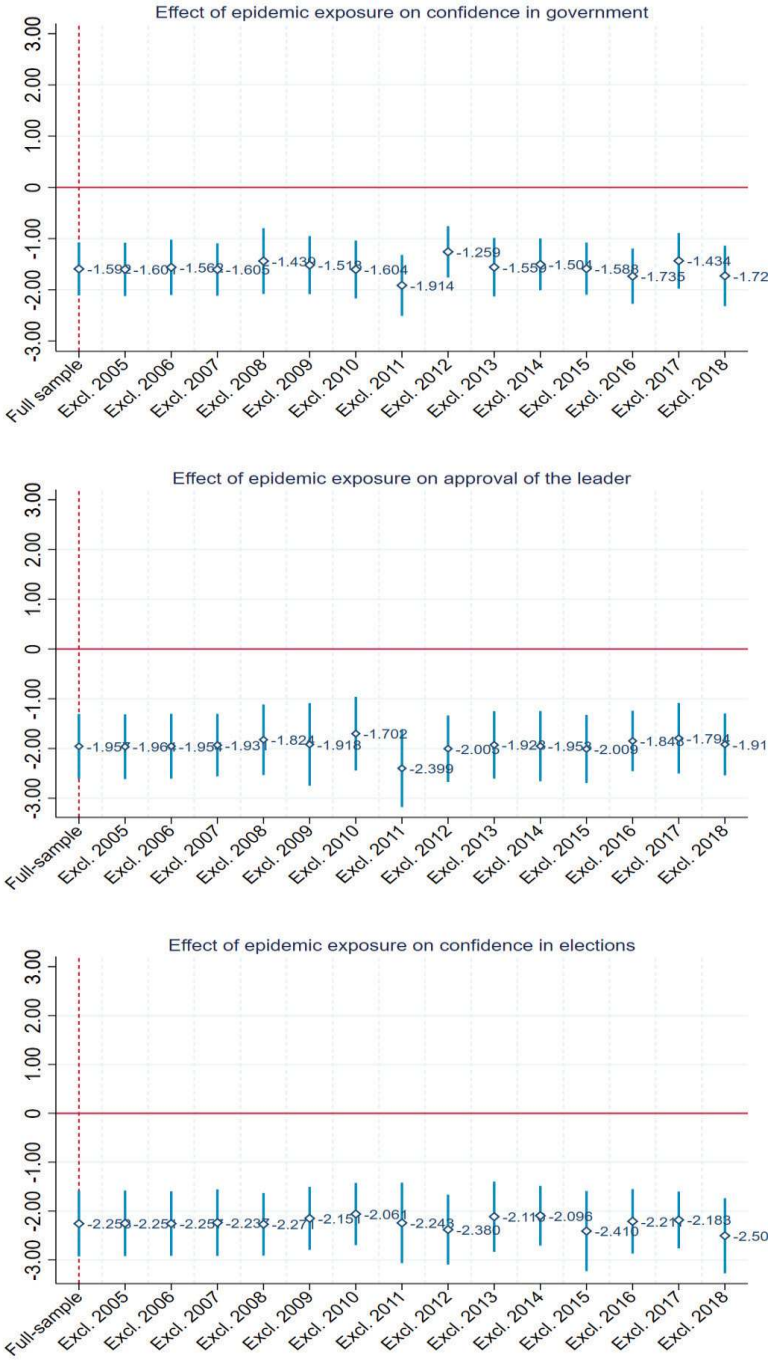

Note: This figure shows the persistency of the effects on three main outcome variables by restricting the observations to the respondents who are in the 26-35 age range at the time of the survey (Base sample) and then repeatedly rolling this age window forward by one year for each separate estimation. The specification is Panel 3 in Table 3. 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, EM-DAT International Disaster Database, 1970-2017, and the International Country Risk Guide.

## Appendix Figure B.4: Short-term Effect of Epidemics on Political Trust



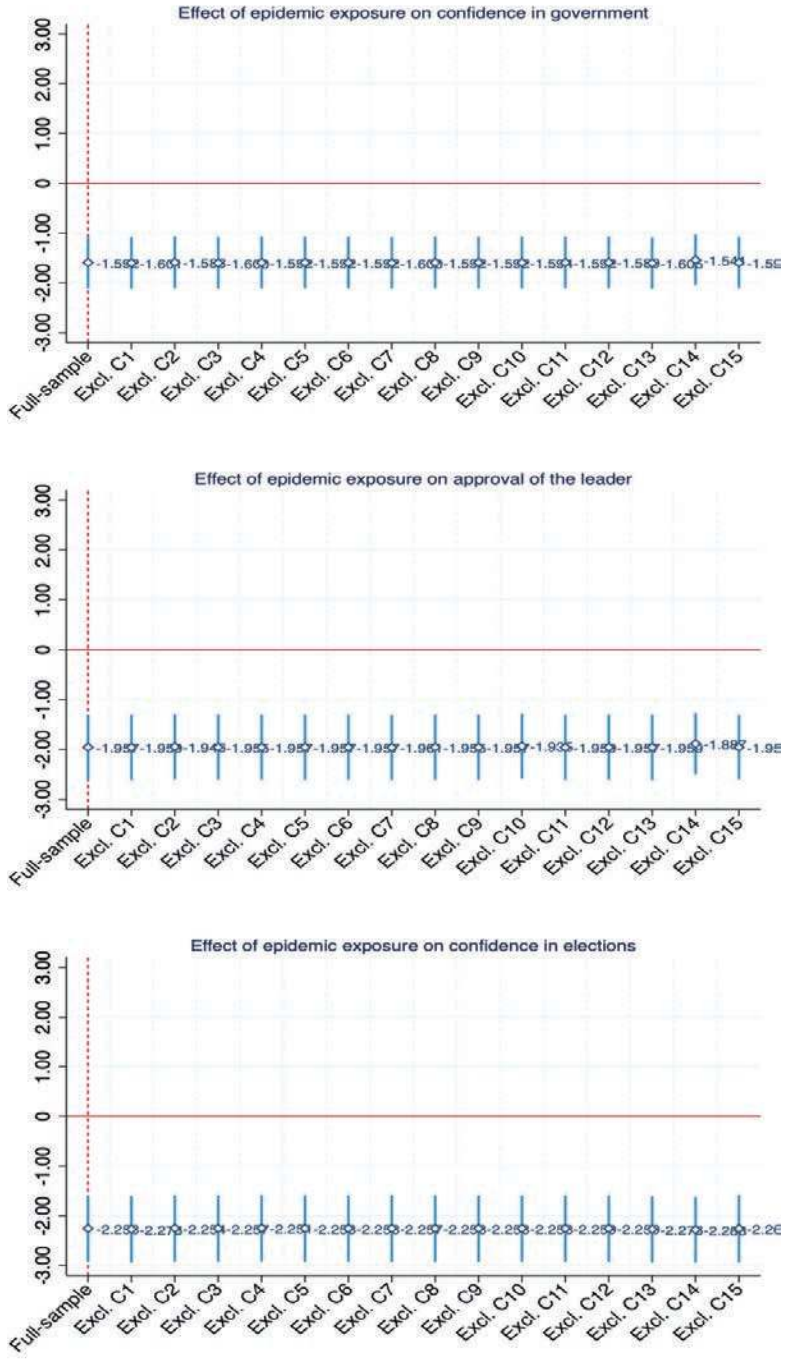

Note: Epidemic year corresponds to the year in which World Health Organisation (WHO) declared one of the following pandemic/epidemic outbreaks for the country in which Gallup respondent resides: SARS, H1N1, MERS, Ebola, or Zika. Specification is the same as in Equation B1. Confidence intervals are at 90% significance level. Results use the Gallup sampling weights and robust standard errors are clustered at the country level. Source: Gallup World Polls, 2006-2018 and Ma et al., 2020.

## Appendix Figure B.5: Robustness to Dropping One Year at a Time




Note: This figure shows the point estimates on Exposure to epidemic (18-25) variable on three main outcome variables while dropping one sample year at a time. The specification is Column 4 of Table 1. 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.

## Appendix Figure B.6: Robustness to Dropping One Country at a Time




Note: This figure shows the point estimates on Exposure to epidemic (18-25) variable on three main outcome variables while randomly dropping one sample country at a time. The specification is Column 4 of Table 1. 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.

## Online Appendix C: Identification of the Mechanism

### *Attitudes towards Public Healthcare Systems*

Governments' healthcare-related interventions may play an important role in the prevention of contagious diseases. Using data from GWP, we therefore analyze whether attitudes regarding the health system are affected by exposure to an epidemic in **Appendix Table C.1**. The results show that here too opinions are affected negatively by impressionable-year 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.

To the best of our knowledge, there is no international dataset consistently documenting government policy responses to past epidemics. Hence, in order to further explore this 'policymaking' mechanism, we follow a two-step procedure: we first validate the positive link between the (a priori) government strength and the effectiveness (i.e., timeliness) of government responses to COVID-19 outbreak and second, we employ a reduced-form specification to investigate how government strength at the time of the epidemic may change our previous results on the effects of impressionable-year epidemic exposure.

### *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.

To do so, we investigate the relationship between government strength 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 large sample of countries. We also provide case studies detailing the link between government strength and policy interventions for France, South Korea, and the United Kingdom below.

Our sample consists of 78 countries that adopted non-pharmaceutical interventions between January 1, 2020 and March 31, 2020. We estimate OLS models, 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.

**Appendix Table C.2** 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.[20] Although we make no causal claims, we find that 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.[21] This is a hint of why exposure to epidemic may lead 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 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.[22] 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.

## Case Studies on the Association of Government Strength with Policy Interventions in the Context of COVID-19

**Appendix Figures C.1-C.3** show COVID-19 related developments in South Korea, France, and the United Kingdom. We choose these countries because they followed very different

[20] 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.
[21] 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.
[22] See for example the discussion in Diamond (2020).

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.[23]

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-related non-pharmaceutical intervention.

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.[24] Still, these comparisons are suggestive of the idea that government strength is positively associated with the speed of response to the outbreak.

[23] The relatively low score for the UK may come as a surprise to readers but it is worth noting that: (i) it registered a significant fall since the Brexit Referendum (8.46 was the 2015 score); (ii) 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. Recent anecdotal evidence also reflects the low government strength score of the UK. For example, As the *Economist* wrote in June, 2020: "The painful conclusion is that Britain has the wrong sort of government for a pandemic—and, in Boris Johnson, the wrong sort of prime minister. Beating the coronavirus calls for attention to detail, consistency and implementation, but they are not his forte." See:
https://www.economist.com/leaders/2020/06/18/britain-has-the-wrong-government-for-the-covid-crisis

[24] Thus, it has been suggested that Asian countries responded quickly because of their past experience with Avian flu.

**Appendix Table C.1: Impact of Epidemic Exposure (Ages 18-25) on Confidence in Healthcare**

| | (1) |
|---|---|
| Outcome ➔ | Confidence in healthcare |
| Exposure to epidemic (18-25) | -6.760*** |
| | (1.270) |
| Observations | 95732 |
| Country fixed effects | Yes |
| Year fixed effects | Yes |
| Age group fixed effects | Yes |
| Labor market cont. & individual income | Yes |
| Demographic cont. & income decile fixed effects | Yes |
| Country*Age trends | Yes |
| Cohort fixed effects | Yes |

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. 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.

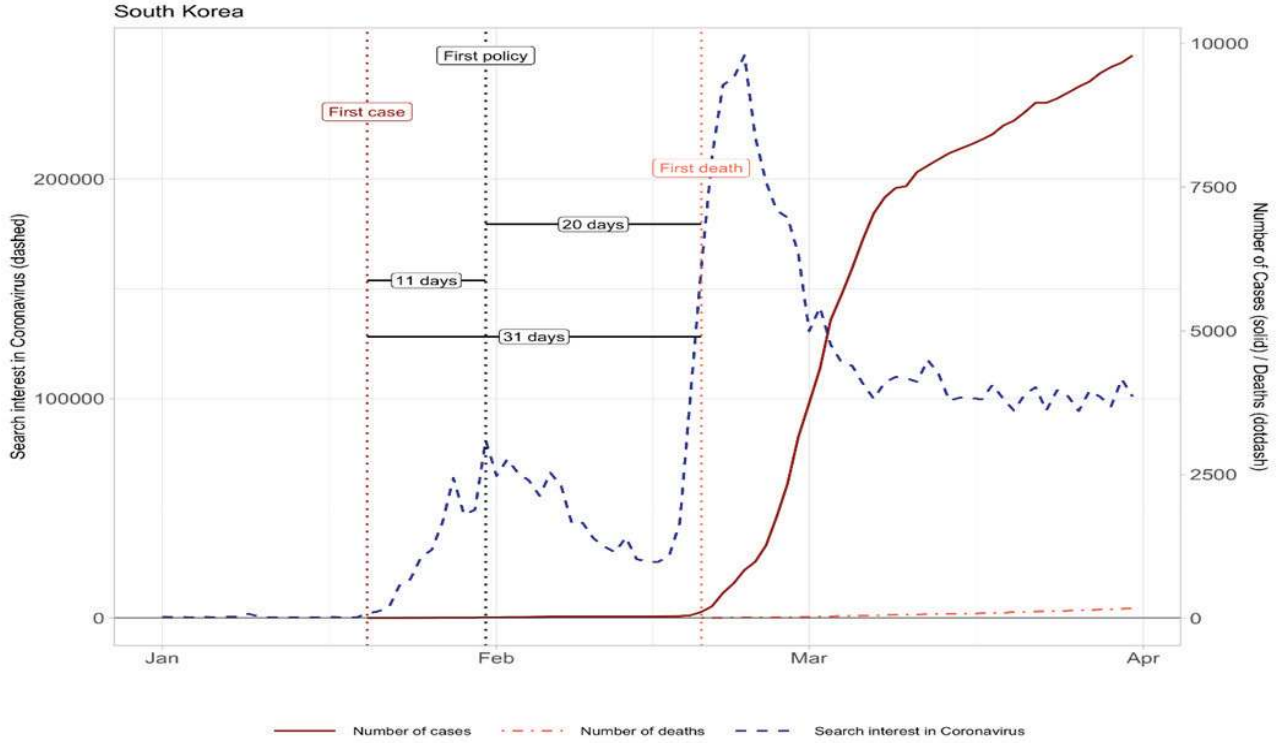
**Appendix Table C.2: Government Strength and Policy Response Time to COVID-19**

| | (1) | (2) | (3) |
|---|---|---|---|
| Sample ➔ | Full-sample | Above Median Polity Score | 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.

**Appendix Figure C.1: COVID-19 Related Developments in South Korea**

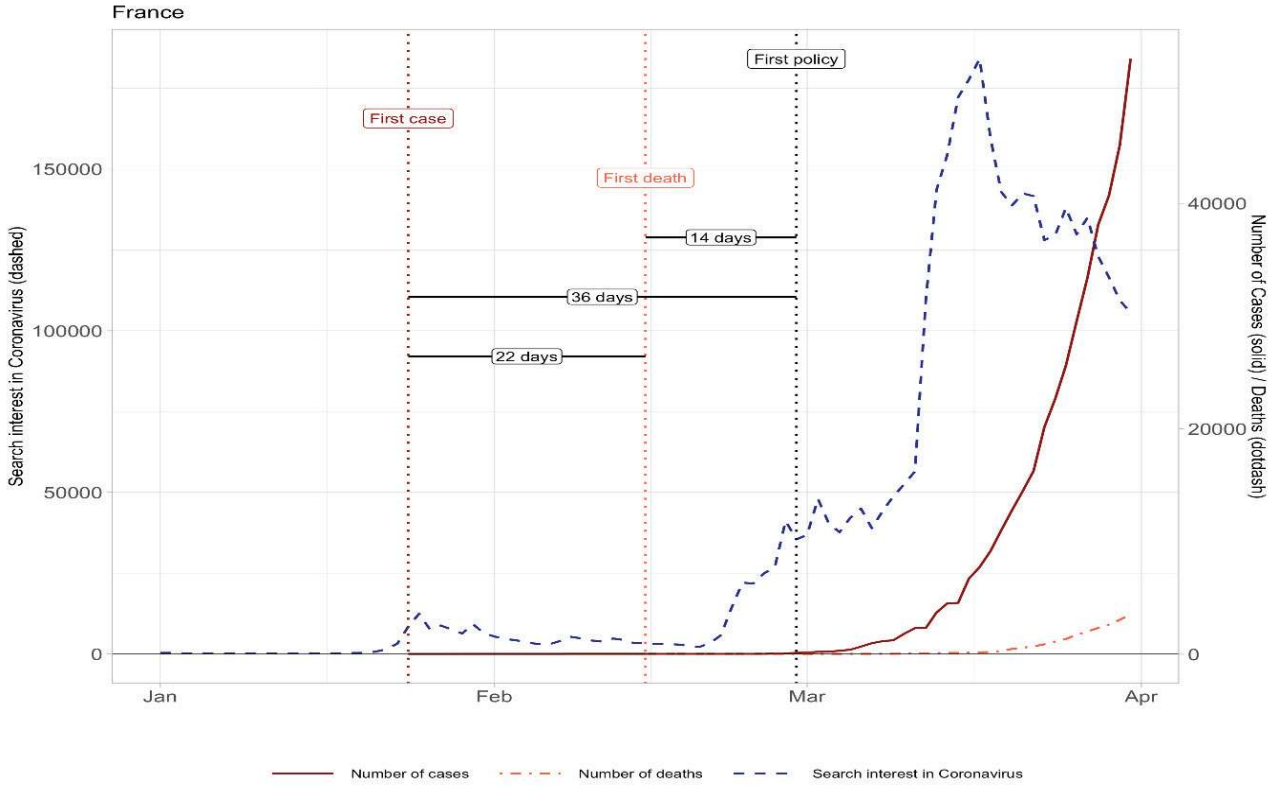
*ICRG Government Strength score: 8.25*




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).

**Appendix Figure C.2: COVID-19 Related Developments in France**

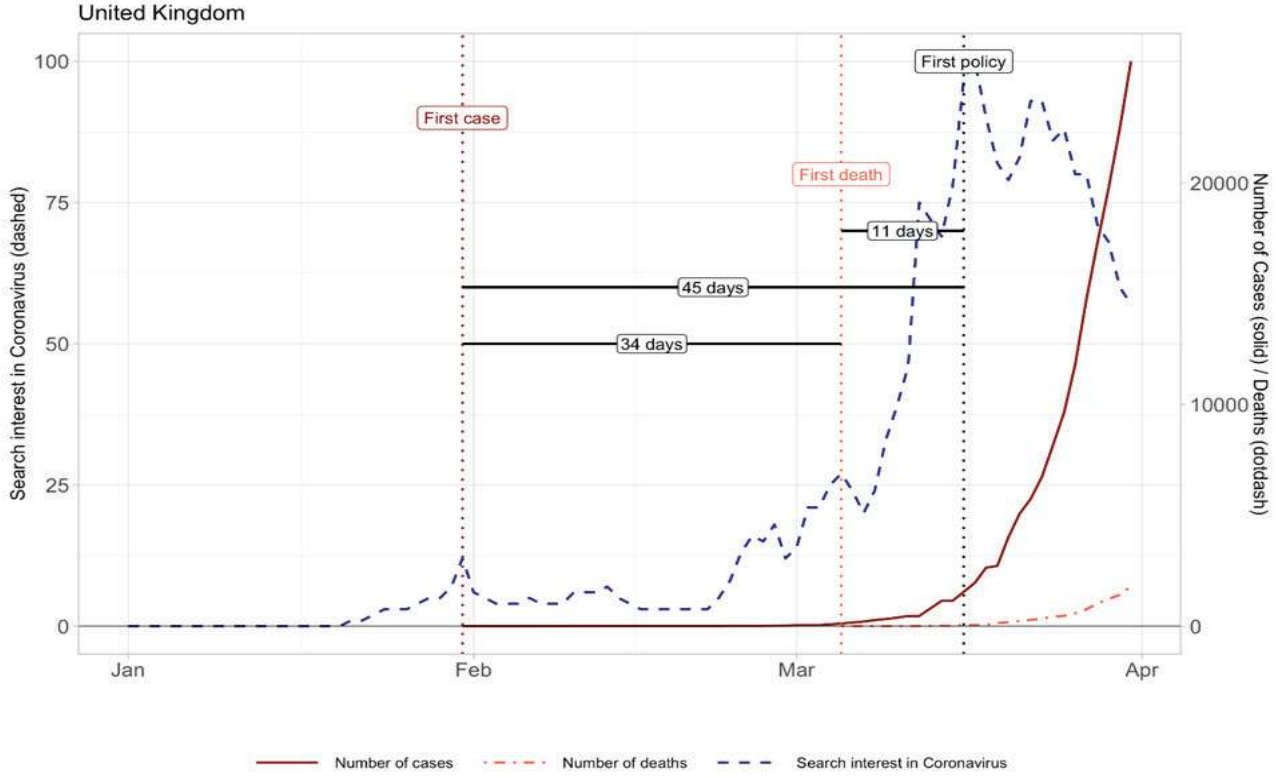
*ICRG Government Strength score: 7.5*




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).

**Appendix Figure C.3: 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).

## Online Appendix D: 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.[25] 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.

### *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 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 (Hale et al., 2020). Specifically, we use the

[25] 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.

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.

***Political Behaviour***

We use the World Values Survey (WVS) and the European Social Survey (ESS) to measure political behavior. We use all available waves of the World Values Survey from 1981 to 2014. The dataset covers more than 80 countries and we use 6 variables to capture political behavior. In particular, questions aim to capture some forms of political action that people can take and asked as follows: please indicate whether you have done any of these things, whether you might do it or would never under any circumstances do it: (i) attending lawful/peaceful demonstrations; (ii) the respondent signing petition; (iii) joining in boycotts; (v) occupying buildings or factories; (vi) joining unofficial strikes. We code “have done” and “might do” as

1 and zero otherwise. We also use the question on whether the respondent voted in recent parliament elections.

Additional data on political behavior come from the 2002-2018 European Social Surveys. These surveys are fielded biannually in over 30 European countries. The key outcome variables we use come from questions asked to all ESS respondents: (i) during the last 12 months, have you taken part in a lawful public demonstration?; (ii) did you vote in the last national election? We code "yes" as 1 and zero otherwise.

***The Cross-National Time-Series (CNTS) Data***

We use the following variables from CNTS data to control for individuals' past domestic political experiences. The variable definitions are as follows: (i) Assassinations: any politically motivated murder or attempted murder of a high government official or politician; (ii) General Strikes: any strike of 1,000 or more industrial or service workers that involves more than one employer and that is aimed at national government policies or authority; (iii) Terrorism/Guerrilla Warfare: any armed activity, sabotage, or bombings carried on by independent bands of citizens or irregular forces and aimed at the overthrow of the present regime. A country is also considered to have terrorism/guerrilla war when sporadic bombing, sabotage, or terrorism occurs; (iv) Purges: any systematic elimination by jailing or execution of political opposition within the ranks of the regime or the opposition; (v) Riots: any violent demonstration or clash of more than 100 citizens involving the use of physical force; (vi) Revolutions: any illegal or forced change in the top government elite, any attempt at such a change, or any successful or unsuccessful armed rebellion whose aim is independence from the central government; (vii) Anti-government Demonstrations: any peaceful public gathering of at least 100 people for the primary purpose of displaying or voicing their opposition to government policies or authority, excluding demonstrations of a distinctly anti-foreign nature.

## Online Appendix E: Full List of Epidemics from the EM-DAT Database

| Country | Year | Epidemic | Total no of affected people | Total no of deaths |
|---|---|---|---|---|
| Afghanistan | 1998 | cholera | 15783 | 185 |
| Afghanistan | 1999 | cholera | 20702 | 135 |
| Afghanistan | 2000 | cholera | 2228 | 50 |
| Afghanistan | 2001 | cholera | 4425 | 154 |
| Afghanistan | 2002 | leishmaniasis | 206834 | 102 |
| Afghanistan | 2005 | cholera | 3245 | 0 |
| Afghanistan | 2008 | cholera | 1100 | 17 |
| Albania | 1996 | poliovirus | 66 | 7 |
| Albania | 2002 | unknown | 226 | 0 |
| Algeria | 1991 | typhiod | 204 | 0 |
| Algeria | 1997 | typhiod | 364 | 1 |
| Angola | 1987 | cholera | 673 | 59 |
| Angola | 1989 | cholera | 15525 | 766 |
| Angola | 1995 | meningitis | 1007 | 0 |
| Angola | 1998 | meningitis | 1113 | 115 |
| Angola | 1999 | poliovirus | 873 | 188 |
| Angola | 2000 | meningitis | 117 | 18 |
| Angola | 2001 | meningitis | 420 | 39 |
| Angola | 2004 | marburg virus | 45 | 329 |
| Angola | 2006 | cholera | 57570 | 2354 |
| Angola | 2007 | cholera | 18343 | 515 |
| Angola | 2008 | cholera | 17437 | 363 |
| Angola | 2009 | diarrhoeal syndrome | 25938 | 116 |
| Angola | 2015 | yellow fever | 4599 | 384 |
| Angola | 2018 | cholera | 139 | 2 |
| Argentina | 1992 | cholera | 3883 | 67 |
| Argentina | 2009 | dengue and dengue haemorrhagic fever | 13366 | 6 |
| Australia | 2002 | sars | 6 | 0 |
| Australia | 2016 | dengue and dengue haemorrhagic fever | 2016 | 0 |
| Bangladesh | 1977 | cholera | 10461 | 260 |
| Bangladesh | 1982 | cholera | 173460 | 2696 |
| Bangladesh | 1986 | water-borne diseases | 52000 | 165 |
| Bangladesh | 1987 | | 601200 | 750 |
| Bangladesh | 1991 | | 1608000 | 2700 |
| Bangladesh | 1993 | | 5660 | 38 |
| Bangladesh | 1995 | | 21236 | 400 |
| Bangladesh | 1996 | | 10000 | 20 |
| Bangladesh | 1997 | | 14330 | 64 |
| Bangladesh | 1998 | | 185000 | 151 |
| Bangladesh | 2000 | | 26214 | 31 |
| Bangladesh | 2002 | | 49904 | 96 |
| Bangladesh | 2004 | nipah viral disease | 54 | 32 |
| Bangladesh | 2007 | cholera | 284910 | 86 |
| Bangladesh | 2017 | diphteria | 789 | 15 |
| Belarus | 1995 | | 282 | 13 |

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|---|---|---|---|---|
| Belarus | 1997 | | 605 | 0 |
| Belgium | 1945 | poliovirus | 104 | 0 |
| Benin | 1976 | poliovirus | 7 | 1 |
| Benin | 1987 | | 403 | 65 |
| Benin | 1989 | | 2411 | 228 |
| Benin | 1996 | yellow fever | 21 | 65 |
| Benin | 1997 | | 226 | 47 |
| Benin | 1998 | | 527 | 78 |
| Benin | 1999 | diarrhoeal syndrome | 241 | 9 |
| Benin | 2000 | meningitis | 7762 | 351 |
| Benin | 2001 | meningitis | 9760 | 378 |
| Benin | 2002 | | 452 | 50 |
| Benin | 2003 | cholera | 265 | 3 |
| Benin | 2005 | cholera | 206 | 4 |
| Benin | 2008 | cholera | 988 | 33 |
| Benin | 2010 | cholera | 1037 | 25 |
| Benin | 2013 | cholera | 486 | 6 |
| Benin | 2016 | cholera | 678 | 13 |
| Benin | 2019 | meningitis | 24 | 13 |
| Bhutan | 1985 | | 247 | 41 |
| Bhutan | 1992 | cholera | 494 | 0 |
| Bolivia | 1969 | poliovirus | 77 | 18 |
| Bolivia | 1989 | yellow fever | 97 | 67 |
| Bolivia | 1991 | cholera | 17665 | 329 |
| Bolivia | 1997 | cholera | 734 | 18 |
| Bolivia | 1998 | cholera | 165 | 5 |
| Bolivia | 1999 | yellow fever | 68 | 33 |
| Bolivia | 2007 | dengue and dengue haemorrhagic fever | 228 | 1 |
| Bolivia | 2008 | dengue and dengue haemorrhagic fever | 7202 | 27 |
| Bolivia | 2010 | dengue and dengue haemorrhagic fever | 25236 | 29 |
| Bolivia | 2018 | h1n1 | 1428 | 23 |
| Bosnia and Herzegovina | 2000 | hepatitis a | 400 | 0 |
| Botswana | 1988 | | 14618 | 183 |
| Botswana | 2006 | diarrhoeal syndrome | 22264 | 470 |
| Botswana | 2008 | cholera | 15 | 2 |
| Brazil | 1974 | | 30000 | 1500 |
| Brazil | 1975 | | 107 | 0 |
| Brazil | 1986 | dengue and dengue haemorrhagic fever | 34722 | 0 |
| Brazil | 1988 | | 170 | 0 |
| Brazil | 1991 | cholera | 15240 | 196 |
| Brazil | 1995 | dengue and dengue haemorrhagic fever | 112939 | 2 |
| Brazil | 1997 | | 25900 | 0 |
| Brazil | 1998 | dengue and dengue haemorrhagic fever | 214340 | 13 |
| Brazil | 1999 | cholera | 235 | 3 |
| Brazil | 2002 | dengue and dengue haemorrhagic fever | 317730 | 57 |
| Brazil | 2008 | dengue and dengue haemorrhagic fever | 162701 | 123 |
| Brazil | 2009 | dengue and dengue haemorrhagic fever | 126139 | 23 |
| Brazil | 2010 | dengue and dengue haemorrhagic fever | 942153 | 0 |

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|---|---|---|---|---|
| Brazil | 2016 | yellow fever | 777 | 261 |
| Brazil | 2017 | yellow fever | 310 | 154 |
| Burkina Faso | 1969 | meningitis | 4550 | 304 |
| Burkina Faso | 1979 | | 1612 | 241 |
| Burkina Faso | 1981 | | 10013 | 1091 |
| Burkina Faso | 1983 | yellow fever | 386 | 237 |
| Burkina Faso | 1984 | | 1000 | 0 |
| Burkina Faso | 1996 | | 40967 | 4135 |
| Burkina Faso | 1997 | | 17996 | 2274 |
| Burkina Faso | 1998 | cholera | 441 | 26 |
| Burkina Faso | 2001 | meningitis | 20820 | 2978 |
| Burkina Faso | 2003 | meningitis | 7146 | 1058 |
| Burkina Faso | 2004 | meningitis | 2783 | 527 |
| Burkina Faso | 2005 | cholera | 606 | 9 |
| Burkina Faso | 2006 | meningitis | 7402 | 784 |
| Burkina Faso | 2007 | meningitis | 20765 | 1490 |
| Burkina Faso | 2008 | measles | 53000 | 550 |
| Burkina Faso | 2009 | meningitis | 2892 | 389 |
| Burkina Faso | 2010 | meningitis | 5960 | 841 |
| Burkina Faso | 2017 | dengue and dengue haemorrhagic fever | 9029 | 18 |
| Burundi | 1978 | cholera | 1530 | 54 |
| Burundi | 1992 | | 2068 | 220 |
| Burundi | 1997 | typhus | 24350 | 21 |
| Burundi | 1999 | | 616434 | 80 |
| Burundi | 2000 | | 730691 | 308 |
| Burundi | 2002 | | 2163 | 87 |
| Burundi | 2003 | cholera | 230 | 6 |
| Burundi | 2011 | cholera | 600 | 12 |
| Burundi | 2016 | cholera | 193 | 1 |
| Cabo Verde | 1994 | cholera | 12344 | 245 |
| Cabo Verde | 2009 | dengue and dengue haemorrhagic fever | 20147 | 6 |
| Cambodia | 1992 | | 380400 | 50 |
| Cambodia | 1997 | dengue and dengue haemorrhagic fever | 227 | 3 |
| Cambodia | 1998 | dengue and dengue haemorrhagic fever | 15069 | 490 |
| Cambodia | 1999 | cholera | 874 | 56 |
| Cambodia | 2006 | dengue and dengue haemorrhagic fever | 4368 | 0 |
| Cambodia | 2007 | dengue and dengue haemorrhagic fever | 17000 | 182 |
| Cameroon | 1988 | | 340 | 39 |
| Cameroon | 1989 | | 550 | 100 |
| Cameroon | 1990 | yellow fever | 172 | 118 |
| Cameroon | 1991 | cholera | 1343 | 308 |
| Cameroon | 1992 | | 7865 | 731 |
| Cameroon | 1993 | | 4070 | 513 |
| Cameroon | 1996 | cholera | 2825 | 378 |
| Cameroon | 1997 | shigellosis | 479 | 109 |
| Cameroon | 1998 | cholera | 2086 | 239 |
| Cameroon | 1999 | | 105 | 14 |
| Cameroon | 2000 | meningitis | 65 | 22 |

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|---|---|---|---|---|
| Cameroon | 2001 | meningitis | 542 | 31 |
| Cameroon | 2004 | cholera | 2924 | 46 |
| Cameroon | 2005 | cholera | 1400 | 42 |
| Cameroon | 2006 | cholera | 71 | 8 |
| Cameroon | 2009 | cholera | 1456 | 109 |
| Cameroon | 2010 | cholera | 7869 | 515 |
| Cameroon | 2011 | cholera | 16706 | 639 |
| Cameroon | 2014 | cholera | 2056 | 111 |
| Cameroon | 2015 | measles | 858 | 0 |
| Cameroon | 2018 | cholera | 942 | 57 |
| Canada | 1918 | h1n1 | 2000000 | 50000 |
| Canada | 1953 | poliovirus | 8000 | 481 |
| Canada | 1991 | | 171 | 18 |
| Canada | 2001 | cryptosporidiosis | 399 | 1 |
| Canada | 2002 | sars | 347 | 45 |
| Central African Republic | 1992 | | 418 | 56 |
| Central African Republic | 1999 | | 86 | 14 |
| Central African Republic | 2000 | | 2572 | 448 |
| Central African Republic | 2001 | meningitis | 1473 | 343 |
| Central African Republic | 2002 | hepatitis e | 727 | 6 |
| Central African Republic | 2003 | shigellosis | 379 | 23 |
| Central African Republic | 2011 | cholera | 172 | 16 |
| Central African Republic | 2013 | measles | 63 | 0 |
| Central African Republic | 2016 | cholera | 266 | 21 |
| Central African Republic | 2018 | hepatitis e | 119 | 1 |
| Central African Republic | 2019 | measles | 3600 | 53 |
| Chad | 1971 | cholera | 7476 | 2312 |
| Chad | 1988 | | 6794 | 433 |
| Chad | 1991 | cholera | 12204 | 1262 |
| Chad | 1996 | cholera | 1317 | 94 |
| Chad | 1997 | | 2835 | 239 |
| Chad | 2000 | meningitis | 9673 | 1209 |
| Chad | 2001 | cholera | 3444 | 113 |
| Chad | 2003 | cholera | 131 | 11 |
| Chad | 2004 | cholera | 3567 | 144 |
| Chad | 2005 | | 6000 | 115 |
| Chad | 2006 | cholera | 216 | 20 |
| Chad | 2008 | hepatitis e | 1755 | 22 |
| Chad | 2009 | meningitis | 871 | 102 |
| Chad | 2010 | measles | 5319 | 239 |
| Chad | 2011 | cholera | 18123 | 557 |
| Chad | 2012 | meningitis | 1708 | 88 |
| Chad | 2017 | cholera | 652 | 58 |
| Chad | 2018 | measles | 4227 | 90 |
| Chile | 1991 | cholera | 40 | 1 |
| China | 1987 | rotavirus | 1000 | 0 |
| China | 1988 | | 2000 | 0 |
| China | 2002 | sars | 6652 | 369 |

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|---|---|---|---|---|
| China | 2004 | h5n1 | 9 | 16 |
| China | 2005 | septicaemia | 168 | 38 |
| Colombia | 1991 | cholera | 14137 | 350 |
| Colombia | 1996 | cholera | 3000 | 62 |
| Colombia | 2012 | dengue and dengue haemorrhagic fever | 23235 | 0 |
| Colombia | 2013 | dengue and dengue haemorrhagic fever | 1171 | 91 |
| Colombia | 2016 | yellow fever | 12 | 0 |
| Colombia | 2019 | dengue and dengue haemorrhagic fever | 79639 | 169 |
| Comoros (the) | 1989 | typhiod | 450 | 3 |
| Comoros (the) | 1998 | cholera | 3200 | 40 |
| Comoros (the) | 1999 | cholera | 140 | 14 |
| Comoros (the) | 2005 | chikungunya | 2282 | 0 |
| Comoros (the) | 2007 | cholera | 1490 | 29 |
| Congo (the Dem.Rep.) | 1976 | ebola | 262 | 245 |
| Congo (the Dem.Rep.) | 1996 | cholera | 1954 | 202 |
| Congo (the Dem.Rep.) | 1997 | cholera | 1411 | 54 |
| Congo (the Dem.Rep.) | 1998 | cholera | 13884 | 972 |
| Congo (the Dem.Rep.) | 1999 | marburg virus | 72 | 3 |
| Congo (the Dem.Rep.) | 2000 | | 63 | 26 |
| Congo (the Dem.Rep.) | 2001 | cholera | 11094 | 838 |
| Congo (the Dem.Rep.) | 2002 | h1n1 | 539375 | 2502 |
| Congo (the Dem.Rep.) | 2003 | cholera | 20401 | 786 |
| Congo (the Dem.Rep.) | 2004 | typhiod | 46220 | 406 |
| Congo (the Dem.Rep.) | 2005 | cholera | 4872 | 101 |
| Congo (the Dem.Rep.) | 2006 | cholera | 2986 | 151 |
| Congo (the Dem.Rep.) | 2007 | ebola | 419 | 172 |
| Congo (the Dem.Rep.) | 2009 | cholera | 15909 | 209 |
| Congo (the Dem.Rep.) | 2010 | cholera | 4342 | 56 |
| Congo (the Dem.Rep.) | 2011 | cholera | 28757 | 636 |
| Congo (the Dem.Rep.) | 2012 | cholera | 23626 | 608 |
| Congo (the Dem.Rep.) | 2014 | ebola | 17 | 49 |
| Congo (the Dem.Rep.) | 2016 | measles | 2638 | 55 |
| Congo (the Dem.Rep.) | 2017 | cholera | 1022 | 43 |
| Congo (the Dem.Rep.) | 2018 | ebola | 3454 | 2297 |
| Congo (the Dem.Rep.) | 2019 | measles | 277000 | 5872 |
| Congo (the) | 1997 | cholera | 485 | 83 |
| Congo (the) | 1999 | cholera | 99 | 15 |
| Congo (the) | 2001 | ebola | 13 | 19 |
| Congo (the) | 2002 | ebola | 15 | 128 |
| Congo (the) | 2003 | ebola | 2 | 29 |
| Congo (the) | 2005 | ebola | 2 | 10 |
| Congo (the) | 2006 | cholera | 3030 | 50 |
| Congo (the) | 2008 | cholera | 630 | 26 |
| Congo (the) | 2010 | poliovirus | 524 | 219 |
| Congo (the) | 2011 | chikungunya | 10819 | 65 |
| Congo (the) | 2012 | | 57 | 5 |
| Congo (the) | 2013 | cholera | 1071 | 16 |
| Congo (the) | 2019 | measles | 208246 | 3819 |

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| Costa Rica | 1995 | dengue and dengue haemorrhagic fever | 4786 | 0 |
| Costa Rica | 2013 | dengue and dengue haemorrhagic fever | 12000 | 3 |
| Costa Rica | 2019 | dengue and dengue haemorrhagic fever | 4852 | 0 |
| Cuba | 1993 | neuromyelopathy | 49358 | 0 |
| Cuba | 1997 | dengue and dengue haemorrhagic fever | 823 | 3 |
| Cyprus | 1996 | meningitis | 280 | 0 |
| Côte d'Ivoire | 1970 | cholera | 1500 | 120 |
| Côte d'Ivoire | 1991 | cholera | 50 | 16 |
| Côte d'Ivoire | 1995 | cholera | 2027 | 150 |
| Côte d'Ivoire | 2001 | cholera | 3180 | 196 |
| Côte d'Ivoire | 2002 | cholera | 861 | 77 |
| Côte d'Ivoire | 2005 | | 210 | 40 |
| Côte d'Ivoire | 2006 | cholera | 451 | 42 |
| Côte d'Ivoire | 2007 | meningitis | 150 | 30 |
| Côte d'Ivoire | 2017 | dengue and dengue haemorrhagic fever | 621 | 2 |
| Djibouti | 1994 | cholera | 239 | 10 |
| Djibouti | 1997 | cholera | 827 | 29 |
| Djibouti | 1998 | | 2000 | 43 |
| Djibouti | 2000 | cholera | 419 | 4 |
| Djibouti | 2007 | cholera | 562 | 6 |
| Dominican Republic (the) | 1995 | dengue and dengue haemorrhagic fever | 1252 | 2 |
| Dominican Republic (the) | 2009 | dengue and dengue haemorrhagic fever | 3270 | 25 |
| Dominican Republic (the) | 2010 | cholera | 17321 | 130 |
| Dominican Republic (the) | 2011 | cholera | 220 | 1 |
| Dominican Republic (the) | 2012 | cholera | 26090 | 167 |
| Dominican Republic (the) | 2019 | dengue and dengue haemorrhagic fever | 16907 | 34 |
| Ecuador | 1967 | poliovirus | 528 | 36 |
| Ecuador | 1969 | encephalitis syndrome (aes) | 40000 | 400 |
| Ecuador | 1977 | typhiod | 300 | 0 |
| Ecuador | 1991 | cholera | 15131 | 343 |
| Ecuador | 1995 | dengue and dengue haemorrhagic fever | 3399 | 0 |
| Ecuador | 1998 | cholera | 11 | 1 |
| Ecuador | 2000 | | 100220 | 8 |
| Ecuador | 2002 | unknown | 100 | 0 |
| Ecuador | 2010 | dengue and dengue haemorrhagic fever | 4000 | 4 |
| Ecuador | 2012 | dengue and dengue haemorrhagic fever | 6967 | 11 |
| Egypt | 2004 | hepatitis a | 143 | 15 |
| El Salvador | 1969 | encephalitis syndrome (aes) | 19 | 12 |
| El Salvador | 1991 | cholera | 5625 | 155 |
| El Salvador | 1992 | cholera | 350 | 0 |
| El Salvador | 1995 | dengue and dengue haemorrhagic fever | 9296 | 5 |
| El Salvador | 1998 | dengue and dengue haemorrhagic fever | 1670 | 0 |
| El Salvador | 2000 | dengue and dengue haemorrhagic fever | 211 | 24 |
| El Salvador | 2002 | dengue and dengue haemorrhagic fever | 2399 | 6 |
| El Salvador | 2003 | pneumonia | 50000 | 304 |
| El Salvador | 2009 | dengue and dengue haemorrhagic fever | 4598 | 7 |
| El Salvador | 2014 | dengue and dengue haemorrhagic fever | 12783 | 4 |
| El Salvador | 2019 | dengue and dengue haemorrhagic fever | 16573 | 5 |

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| Equatorial Guinea | 2004 | | 946 | 15 |
| Ethiopia | 1970 | cholera | 4000 | 500 |
| Ethiopia | 1980 | dysentery | 25000 | 157 |
| Ethiopia | 1981 | | 50000 | 990 |
| Ethiopia | 1985 | cholera | 4815 | 1101 |
| Ethiopia | 1988 | | 41304 | 7400 |
| Ethiopia | 1999 | | 276 | 9 |
| Ethiopia | 2000 | meningitis | 7033 | 371 |
| Ethiopia | 2001 | meningitis | 8166 | 429 |
| Ethiopia | 2005 | | 964 | 74 |
| Ethiopia | 2006 | diarrhoeal syndrome | 32848 | 351 |
| Ethiopia | 2008 | diarrhoeal syndrome | 3134 | 20 |
| Ethiopia | 2009 | cholera | 13652 | 135 |
| Ethiopia | 2010 | diarrhoeal syndrome | 967 | 16 |
| Ethiopia | 2013 | yellow fever | 288 | 110 |
| Ethiopia | 2018 | measles | 4000 | 0 |
| Ethiopia | 2019 | cholera | 1916 | 39 |
| Fiji | 2019 | measles | 14 | 0 |
| France | 2002 | sars | 6 | 1 |
| Gabon | 1988 | cholera | 132 | 0 |
| Gabon | 1996 | ebola | 15 | 45 |
| Gabon | 2001 | ebola | 10 | 50 |
| Gabon | 2004 | typhiod | 100 | 1 |
| Gabon | 2007 | chikungunya | 17900 | 0 |
| Gabon | 2010 | chikungunya | 551 | 0 |
| Gambia (the) | 1997 | | 793 | 120 |
| Gambia (the) | 2000 | meningitis | 116 | 21 |
| Germany | 2002 | | 609 | 0 |
| Ghana | 1977 | cholera | 6558 | 0 |
| Ghana | 1984 | | 1500 | 103 |
| Ghana | 1988 | | 138 | 15 |
| Ghana | 1989 | | 19 | 0 |
| Ghana | 1996 | | 3757 | 411 |
| Ghana | 1997 | | 159 | 26 |
| Ghana | 1998 | cholera | 1546 | 67 |
| Ghana | 1999 | diarrhoeal syndrome | 1196 | 24 |
| Ghana | 2001 | | 1141 | 12 |
| Ghana | 2005 | cholera | 2248 | 40 |
| Ghana | 2010 | meningitis | 100 | 27 |
| Ghana | 2011 | cholera | 10002 | 101 |
| Ghana | 2012 | cholera | 5441 | 76 |
| Ghana | 2013 | cholera | 560 | 18 |
| Ghana | 2014 | cholera | 56469 | 249 |
| Ghana | 2015 | meningitis | 465 | 85 |
| Ghana | 2016 | cholera | 172 | 0 |
| Guatemala | 1969 | encephalitis syndrome (aes) | 8 | 4 |
| Guatemala | 1991 | cholera | 26800 | 180 |
| Guatemala | 1995 | dengue and dengue haemorrhagic fever | 3402 | 0 |

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| Guatemala | 1998 | cholera | 1345 | 17 |
| Guatemala | 2002 | dengue and dengue haemorrhagic fever | 2042 | 1 |
| Guatemala | 2013 | dengue and dengue haemorrhagic fever | 1977 | 8 |
| Guatemala | 2015 | chikungunya | 15211 | 0 |
| Guatemala | 2019 | dengue and dengue haemorrhagic fever | 6264 | 17 |
| Guinea | 1987 | | 30 | 18 |
| Guinea | 1999 | cholera | 123 | 12 |
| Guinea | 2000 | yellow fever | 322 | 190 |
| Guinea | 2001 | cholera | 143 | 12 |
| Guinea | 2002 | | 123 | 23 |
| Guinea | 2003 | yellow fever | 43 | 24 |
| Guinea | 2006 | cholera | 298 | 129 |
| Guinea | 2007 | cholera | 2410 | 90 |
| Guinea | 2012 | cholera | 5523 | 105 |
| Guinea | 2013 | measles | 143 | 0 |
| Guinea | 2014 | ebola | 3814 | 2544 |
| Guinea | 2017 | measles | 122 | 0 |
| Guinea-Bissau | 1987 | cholera | 6000 | 68 |
| Guinea-Bissau | 1996 | cholera | 26967 | 961 |
| Guinea-Bissau | 1997 | cholera | 22299 | 781 |
| Guinea-Bissau | 1999 | | 2169 | 404 |
| Guinea-Bissau | 2008 | cholera | 14004 | 221 |
| Haiti | 1963 | | 2724 | 0 |
| Haiti | 2003 | typhiod | 200 | 40 |
| Haiti | 2010 | cholera | 513997 | 6908 |
| Haiti | 2012 | cholera | 5817 | 50 |
| Haiti | 2014 | chikungunya | 39343 | 0 |
| Haiti | 2015 | cholera | 20000 | 170 |
| Haiti | 2016 | cholera | 6096 | 0 |
| Honduras | 1965 | poliovirus | 170 | 7 |
| Honduras | 1995 | dengue and dengue haemorrhagic fever | 15998 | 5 |
| Honduras | 1998 | cholera | 2452 | 17 |
| Honduras | 2002 | dengue and dengue haemorrhagic fever | 4530 | 8 |
| Honduras | 2009 | dengue and dengue haemorrhagic fever | 11771 | 7 |
| Honduras | 2010 | dengue and dengue haemorrhagic fever | 27000 | 67 |
| Honduras | 2013 | dengue and dengue haemorrhagic fever | 34128 | 27 |
| Honduras | 2019 | dengue and dengue haemorrhagic fever | 71216 | 128 |
| Hong Kong | 2002 | sars | 1456 | 299 |
| India | 1967 | | 13576 | 3029 |
| India | 1977 | cholera | 9091 | 0 |
| India | 1978 | | 1000 | 48 |
| India | 1984 | dysentery | 27000 | 3290 |
| India | 1985 | | 6589 | 854 |
| India | 1986 | | 11600 | 265 |
| India | 1990 | diarrhoeal syndrome | 18000 | 90 |
| India | 1994 | pneumonia | 5150 | 53 |
| India | 1996 | dengue and dengue haemorrhagic fever | 8423 | 354 |
| India | 1997 | | 890 | 80 |

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|---|---|---|---|---|
| India | 1998 | cholera | 15238 | 807 |
| India | 1999 | | 79504 | 281 |
| India | 2000 | | 1851 | 191 |
| India | 2001 | cholera | 58889 | 89 |
| India | 2002 | | 5153 | 50 |
| India | 2003 | dengue and dengue haemorrhagic fever | 2185 | 0 |
| India | 2005 | chikungunya | 155813 | 640 |
| India | 2009 | encephalitis syndrome (aes) | 1521 | 311 |
| India | 2019 | dengue and dengue haemorrhagic fever | 1318 | 121 |
| Indonesia | 1968 | bubonic | 94 | 40 |
| Indonesia | 1977 | cholera | 29942 | 37 |
| Indonesia | 1978 | cholera | 70 | 11 |
| Indonesia | 1982 | cholera | 200 | 39 |
| Indonesia | 1984 | | 4000 | 105 |
| Indonesia | 1986 | | 500700 | 59 |
| Indonesia | 1991 | | 15000 | 170 |
| Indonesia | 1996 | dengue and dengue haemorrhagic fever | 5373 | 117 |
| Indonesia | 1998 | dengue and dengue haemorrhagic fever | 32665 | 777 |
| Indonesia | 1999 | dengue and dengue haemorrhagic fever | 4645 | 56 |
| Indonesia | 2000 | dengue and dengue haemorrhagic fever | 1719 | 25 |
| Indonesia | 2002 | shigellosis | 759 | 17 |
| Indonesia | 2004 | dengue and dengue haemorrhagic fever | 58322 | 745 |
| Indonesia | 2005 | poliovirus | 329 | 0 |
| Indonesia | 2007 | dengue and dengue haemorrhagic fever | 35211 | 403 |
| Iran (Islamic Republic of) | 1965 | cholera | 2500 | 288 |
| Iraq | 1978 | cholera | 51 | 1 |
| Iraq | 1997 | | 185 | 0 |
| Iraq | 2007 | cholera | 4696 | 24 |
| Iraq | 2008 | cholera | 892 | 11 |
| Iraq | 2015 | cholera | 2217 | 0 |
| Ireland | 2000 | | 1374 | 2 |
| Ireland | 2002 | sars | 1 | 0 |
| Israel | 2000 | west nile fever | 139 | 12 |
| Italy | 2002 | | 10001 | 3 |
| Jamaica | 1990 | typhiod | 300 | 0 |
| Jamaica | 2006 | | 280 | 3 |
| Japan | 1977 | cholera | 74 | 1 |
| Japan | 1978 | h1n1 | 2000000 | 0 |
| Japan | 1997 | campylobacter | 460 | 0 |
| Jordan | 1981 | cholera | 715 | 4 |
| Kazakhstan | 1998 | | 593 | 7 |
| Kazakhstan | 1999 | typhus | 166 | 0 |
| Kazakhstan | 2000 | typhus | 114 | 0 |
| Kenya | 1991 | | 200 | 26 |
| Kenya | 1994 | | 6500000 | 1000 |
| Kenya | 1997 | cholera | 33036 | 932 |
| Kenya | 1998 | cholera | 1025 | 27 |
| Kenya | 1999 | | 329570 | 1814 |

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|---|---|---|---|---|
| Kenya | 2000 | cholera | 721 | 50 |
| Kenya | 2001 | | 743 | 40 |
| Kenya | 2004 | | 141 | 8 |
| Kenya | 2005 | | 1645 | 53 |
| Kenya | 2006 | rift valley fever | 588 | 170 |
| Kenya | 2009 | cholera | 10446 | 251 |
| Kenya | 2010 | cholera | 3880 | 57 |
| Kenya | 2014 | cholera | 3459 | 72 |
| Kenya | 2017 | cholera | 4421 | 76 |
| Kenya | 2019 | cholera | 3847 | 26 |
| Korea (the Republic of) | 1969 | cholera | 1538 | 137 |
| Korea (the Republic of) | 1998 | shigellosis | 350 | 0 |
| Korea (the Republic of) | 2000 | | 39531 | 6 |
| Korea (the Republic of) | 2002 | sars | 3 | 0 |
| Korea (the Republic of) | 2015 | mers | 185 | 36 |
| Kuwait | 2002 | sars | 1 | 0 |
| Kyrgyzstan | 1997 | | 336 | 22 |
| Kyrgyzstan | 1998 | typhiod | 458 | 0 |
| Kyrgyzstan | 2010 | poliovirus | 141 | 0 |
| Lao People's Dem. Rep. | 1987 | dengue and dengue haemorrhagic fever | 2000 | 63 |
| Lao People's Dem. Rep. | 1994 | cholera | 8000 | 500 |
| Lao People's Dem. Rep. | 1995 | cholera | 244 | 34 |
| Lao People's Dem. Rep. | 2000 | | 9685 | 0 |
| Lao People's Dem. Rep. | 2013 | dengue and dengue haemorrhagic fever | 36000 | 77 |
| Latvia | 2000 | diphteria | 102 | 0 |
| Lesotho | 1974 | typhiod | 500 | 0 |
| Lesotho | 1999 | dysentery | 1862 | 28 |
| Lesotho | 2000 | | 1834 | 28 |
| Liberia | 1980 | cholera | 1887 | 466 |
| Liberia | 1995 | yellow fever | 359 | 9 |
| Liberia | 1998 | diarrhoeal syndrome | 560 | 12 |
| Liberia | 2000 | cholera | 112 | 3 |
| Liberia | 2002 | diarrhoeal syndrome | 661 | 0 |
| Liberia | 2003 | cholera | 19418 | 0 |
| Liberia | 2005 | cholera | 674 | 29 |
| Liberia | 2014 | ebola | 10682 | 4810 |
| Macao | 2002 | sars | 1 | 0 |
| Macedonia FYR | 2002 | unknown | 200 | 0 |
| Madagascar | 1999 | cholera | 18228 | 981 |
| Madagascar | 2002 | h1n1 | 21975 | 671 |
| Madagascar | 2008 | rift valley fever | 520 | 20 |
| Madagascar | 2009 | chikungunya | 702 | 0 |
| Madagascar | 2013 | pneumonia | 660 | 113 |
| Madagascar | 2017 | plague | 2384 | 207 |
| Madagascar | 2018 | measles | 98415 | 0 |
| Malawi | 1989 | | 444 | 35 |
| Malawi | 1997 | | 622 | 10 |
| Malawi | 2000 | cholera | 3323 | 83 |

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|---|---|---|---|---|
| Malawi | 2001 | cholera | 40266 | 1131 |
| Malawi | 2002 | cholera | 773 | 41 |
| Malawi | 2006 | cholera | 852 | 20 |
| Malawi | 2008 | cholera | 5269 | 113 |
| Malawi | 2009 | measles | 11461 | 62 |
| Malawi | 2014 | cholera | 693 | 11 |
| Malawi | 2017 | cholera | 450 | 6 |
| Malaysia | 1968 | cholera | 5 | 2 |
| Malaysia | 1977 | typhiod | 50 | 0 |
| Malaysia | 1991 | dengue and dengue haemorrhagic fever | 3750 | 263 |
| Malaysia | 1996 | dengue and dengue haemorrhagic fever | 5407 | 13 |
| Malaysia | 1997 | dengue and dengue haemorrhagic fever | 21684 | 78 |
| Malaysia | 1998 | encephalitis syndrome (aes) | 160 | 105 |
| Malaysia | 2000 | enterovirus | 988 | 4 |
| Malaysia | 2002 | sars | 3 | 2 |
| Maldives | 1978 | cholera | 11258 | 219 |
| Maldives | 2011 | dengue and dengue haemorrhagic fever | 1289 | 4 |
| Mali | 1969 | | 4023 | 513 |
| Mali | 1979 | | 80 | 30 |
| Mali | 1981 | | 4153 | 412 |
| Mali | 1984 | cholera | 4502 | 1022 |
| Mali | 1987 | yellow fever | 305 | 145 |
| Mali | 1988 | | 159 | 47 |
| Mali | 1996 | meningitis | 2208 | 345 |
| Mali | 1997 | | 9666 | 1098 |
| Mali | 2002 | | 282 | 33 |
| Mali | 2003 | cholera | 1216 | 106 |
| Mali | 2005 | cholera | 168 | 43 |
| Mali | 2006 | | 151 | 9 |
| Mali | 2009 | meningitis | 86 | 10 |
| Mali | 2011 | cholera | 1190 | 49 |
| Mali | 2014 | ebola | 7 | 6 |
| Mauritania | 1982 | | 12 | 5 |
| Mauritania | 1987 | yellow fever | 178 | 35 |
| Mauritania | 1988 | cholera | 575 | 38 |
| Mauritania | 1998 | rift valley fever | 344 | 6 |
| Mauritania | 2005 | cholera | 2585 | 55 |
| Mauritius | 1980 | typhiod | 108 | 0 |
| Mauritius | 2005 | chikungunya | 2553 | 0 |
| Mexico | 1991 | cholera | 5000 | 52 |
| Mexico | 1995 | dengue and dengue haemorrhagic fever | 6525 | 16 |
| Mexico | 2009 | dengue and dengue haemorrhagic fever | 41687 | 0 |
| Moldova | 1999 | | 1647 | 0 |
| Mongolia | 1996 | cholera | 108 | 8 |
| Mongolia | 2002 | sars | 9 | 0 |
| Mongolia | 2008 | enterovirus | 3151 | 0 |
| Morocco | 1966 | meningitis | 2942 | 200 |
| Mozambique | 1980 | cholera | 200 | 10 |

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| Mozambique | 1983 | cholera | 5679 | 189 |
| Mozambique | 1990 | cholera | 4000 | 588 |
| Mozambique | 1992 | cholera | 225673 | 587 |
| Mozambique | 1997 | cholera | 27201 | 637 |
| Mozambique | 1998 | cholera | 2600 | 209 |
| Mozambique | 2000 | | 18583 | 11 |
| Mozambique | 2001 | cholera | 611 | 7 |
| Mozambique | 2002 | cholera | 2028 | 17 |
| Mozambique | 2003 | cholera | 24134 | 159 |
| Mozambique | 2006 | cholera | 5692 | 27 |
| Mozambique | 2007 | cholera | 7547 | 78 |
| Mozambique | 2008 | cholera | 19310 | 155 |
| Mozambique | 2009 | cholera | 19776 | 198 |
| Mozambique | 2010 | cholera | 3188 | 44 |
| Mozambique | 2011 | cholera | 325 | 13 |
| Mozambique | 2013 | cholera | 317 | 2 |
| Mozambique | 2014 | cholera | 5118 | 43 |
| Mozambique | 2017 | cholera | 1799 | 1 |
| Mozambique | 2019 | cholera | 3577 | 0 |
| Myanmar | 1983 | | 800 | 10 |
| Namibia | 2000 | meningitis | 58 | 14 |
| Namibia | 2001 | | 12098 | 134 |
| Namibia | 2006 | poliovirus | 47 | 10 |
| Namibia | 2007 | cholera | 250 | 7 |
| Namibia | 2008 | cholera | 203 | 9 |
| Namibia | 2013 | cholera | 518 | 17 |
| Nepal | 1963 | | 5000 | 1000 |
| Nepal | 1967 | bubonic | 24 | 17 |
| Nepal | 1982 | | 1475 | 0 |
| Nepal | 1990 | cholera | 3800 | 150 |
| Nepal | 1991 | diarrhoeal syndrome | 45341 | 1334 |
| Nepal | 1992 | diarrhoeal syndrome | 50000 | 640 |
| Nepal | 1995 | encephalitis syndrome (aes) | 772 | 126 |
| Nepal | 1996 | encephalitis syndrome (aes) | 697 | 118 |
| Nepal | 1997 | encephalitis syndrome (aes) | 1364 | 84 |
| Nepal | 1998 | encephalitis syndrome (aes) | 300 | 52 |
| Nepal | 1999 | encephalitis syndrome (aes) | 944 | 150 |
| Nepal | 2000 | encephalitis syndrome (aes) | 592 | 69 |
| Nepal | 2001 | diarrhoeal syndrome | 242 | 13 |
| Nepal | 2009 | diarrhoeal syndrome | 58874 | 314 |
| Nepal | 2010 | diarrhoeal syndrome | 5372 | 73 |
| Netherlands (the) | 1999 | legionellosis | 200 | 13 |
| New Zealand | 2002 | sars | 1 | 0 |
| Nicaragua | 1967 | | 444 | 53 |
| Nicaragua | 1991 | cholera | 381 | 2 |
| Nicaragua | 1995 | dengue and dengue haemorrhagic fever | 13406 | 18 |
| Nicaragua | 1998 | cholera | 3356 | 7 |
| Nicaragua | 2009 | dengue and dengue haemorrhagic fever | 2050 | 8 |

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|---|---|---|---|---|
| Nicaragua | 2010 | leptospirosis | 395 | 16 |
| Nicaragua | 2013 | dengue and dengue haemorrhagic fever | 1310 | 3 |
| Nicaragua | 2019 | dengue and dengue haemorrhagic fever | 94513 | 15 |
| Niger (the) | 1969 | yellow fever | 5 | 2 |
| Niger (the) | 1970 | | 2677 | 319 |
| Niger (the) | 1989 | | 1785 | 186 |
| Niger (the) | 1991 | | 90147 | 2842 |
| Niger (the) | 1995 | | 63691 | 3022 |
| Niger (the) | 1996 | | 10475 | 882 |
| Niger (the) | 1997 | | 2156 | 262 |
| Niger (the) | 1999 | | 741 | 49 |
| Niger (the) | 2000 | | 1151 | 190 |
| Niger (the) | 2001 | | 48067 | 573 |
| Niger (the) | 2002 | meningitis | 3306 | 316 |
| Niger (the) | 2003 | | 1861 | 195 |
| Niger (the) | 2004 | | 20132 | 154 |
| Niger (the) | 2005 | cholera | 387 | 44 |
| Niger (the) | 2006 | meningitis | 784 | 62 |
| Niger (the) | 2008 | meningitis | 2805 | 173 |
| Niger (the) | 2009 | meningitis | 4513 | 169 |
| Niger (the) | 2010 | meningitis | 1217 | 103 |
| Niger (the) | 2011 | cholera | 2130 | 48 |
| Niger (the) | 2012 | cholera | 4874 | 97 |
| Niger (the) | 2014 | meningitis | 1639 | 153 |
| Niger (the) | 2015 | measles | 3370 | 6 |
| Niger (the) | 2016 | rift valley fever | 78 | 23 |
| Niger (the) | 2017 | meningitis | 2390 | 118 |
| Niger (the) | 2018 | cholera | 3824 | 78 |
| Nigeria | 1969 | yellow fever | 80000 | 2000 |
| Nigeria | 1986 | yellow fever | 1400 | 1073 |
| Nigeria | 1987 | | 120 | 100 |
| Nigeria | 1989 | haemorrhagic fever syndrome | 41 | 29 |
| Nigeria | 1991 | cholera | 11200 | 7689 |
| Nigeria | 1996 | cerebro spinal | 42586 | 5539 |
| Nigeria | 1998 | acute neurological syndrome | 211 | 39 |
| Nigeria | 1999 | diarrhoeal syndrome | 2977 | 486 |
| Nigeria | 2000 | cholera | 1255 | 87 |
| Nigeria | 2001 | cholera | 2636 | 204 |
| Nigeria | 2002 | diarrhoeal syndrome | 3903 | 229 |
| Nigeria | 2004 | cholera | 1897 | 172 |
| Nigeria | 2005 | | 23873 | 619 |
| Nigeria | 2008 | unknown | 66 | 46 |
| Nigeria | 2009 | meningitis | 35255 | 1701 |
| Nigeria | 2010 | cholera | 43287 | 1872 |
| Nigeria | 2011 | cholera | 21382 | 694 |
| Nigeria | 2012 | haemorrhagic fever syndrome | 29 | 10 |
| Nigeria | 2014 | cholera | 36017 | 763 |
| Nigeria | 2015 | cholera | 2108 | 97 |

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|---|---|---|---|---|
| Nigeria | 2016 | meningitis | 15432 | 1287 |
| Nigeria | 2017 | cholera | 1704 | 11 |
| Nigeria | 2018 | haemorrhagic fever syndrome | 1081 | 90 |
| Nigeria | 2019 | measles | 22834 | 98 |
| Nigeria | 2020 | haemorrhagic fever syndrome | 365 | 47 |
| Pakistan | 1968 | cholera | 1075 | 37 |
| Pakistan | 1998 | cholera | 9917 | 83 |
| Pakistan | 2000 | diarrhoeal syndrome | 258 | 14 |
| Pakistan | 2001 | leishmaniasis | 5000 | 0 |
| Pakistan | 2002 | unknown | 25 | 10 |
| Pakistan | 2004 | | 100 | 2 |
| Pakistan | 2005 | tetanos | 111 | 22 |
| Pakistan | 2017 | dengue and dengue haemorrhagic fever | 2492 | 25 |
| Pakistan | 2019 | dengue and dengue haemorrhagic fever | 53834 | 95 |
| Palestine, State of | 1983 | | 943 | 0 |
| Panama | 1964 | | 1200 | 0 |
| Panama | 1991 | cholera | 2057 | 43 |
| Panama | 1995 | dengue and dengue haemorrhagic fever | 2124 | 1 |
| Panama | 2002 | meningitis | 173 | 0 |
| Papua New Guinea | 2001 | | 1395 | 0 |
| Papua New Guinea | 2002 | | 2215 | 122 |
| Papua New Guinea | 2009 | h1n1 | 7391 | 192 |
| Paraguay | 1999 | dengue and dengue haemorrhagic fever | 2273 | 0 |
| Paraguay | 2006 | dengue and dengue haemorrhagic fever | 100000 | 17 |
| Paraguay | 2008 | dengue and dengue haemorrhagic fever | 5957 | 8 |
| Paraguay | 2009 | dengue and dengue haemorrhagic fever | 24 | 8 |
| Paraguay | 2010 | dengue and dengue haemorrhagic fever | 13681 | 0 |
| Paraguay | 2011 | dengue and dengue haemorrhagic fever | 16264 | 44 |
| Paraguay | 2020 | dengue and dengue haemorrhagic fever | 106127 | 20 |
| Peru | 1991 | cholera | 283353 | 1726 |
| Peru | 1997 | cholera | 174 | 1 |
| Peru | 1998 | cholera | 33763 | 16 |
| Peru | 2009 | dengue and dengue haemorrhagic fever | 14151 | 0 |
| Peru | 2010 | dengue and dengue haemorrhagic fever | 31703 | 13 |
| Peru | 2012 | dengue and dengue haemorrhagic fever | 20106 | 11 |
| Peru | 2016 | yellow fever | 54 | 26 |
| Philippines (the) | 1977 | | 681 | 57 |
| Philippines (the) | 1990 | | 200 | 21 |
| Philippines (the) | 1996 | dengue and dengue haemorrhagic fever | 1673 | 30 |
| Philippines (the) | 1998 | dengue and dengue haemorrhagic fever | 11000 | 202 |
| Philippines (the) | 1999 | dengue and dengue haemorrhagic fever | 402 | 10 |
| Philippines (the) | 2000 | diarrhoeal syndrome | 664 | 1 |
| Philippines (the) | 2002 | sars | 12 | 2 |
| Philippines (the) | 2004 | meningitis | 98 | 32 |
| Philippines (the) | 2010 | dengue and dengue haemorrhagic fever | 123939 | 737 |
| Philippines (the) | 2011 | dengue and dengue haemorrhagic fever | 7595 | 56 |
| Philippines (the) | 2012 | cholera | 3158 | 30 |
| Philippines (the) | 2018 | dengue and dengue haemorrhagic fever | 79376 | 519 |

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| Philippines (the) | 2019 | dengue and dengue haemorrhagic fever | 129597 | 825 |
| Romania | 1996 | | 527 | 0 |
| Romania | 1999 | | 4743 | 0 |
| Romania | 2002 | sars | 1 | 0 |
| Russian Federation | 1995 | | 150000 | 0 |
| Russian Federation | 1997 | haemorrhagic fever syndrome | 4538 | 0 |
| Russian Federation | 1999 | west nile fever | 765 | 33 |
| Russian Federation | 2000 | acute jaundice syndrome | 2942 | 0 |
| Russian Federation | 2002 | sars | 1 | 0 |
| Rwanda | 1978 | cholera | 2000 | 0 |
| Rwanda | 1991 | | 214 | 32 |
| Rwanda | 1996 | cholera | 106 | 10 |
| Rwanda | 1998 | cholera | 2951 | 55 |
| Rwanda | 1999 | | 488 | 76 |
| Rwanda | 2000 | meningitis | 164 | 10 |
| Rwanda | 2002 | meningitis | 636 | 83 |
| Rwanda | 2004 | typhiod | 540 | 4 |
| Rwanda | 2006 | cholera | 300 | 35 |
| Sao Tome and Principe | 1989 | cholera | 1063 | 31 |
| Sao Tome and Principe | 2005 | cholera | 1349 | 25 |
| Saudi Arabia | 2000 | rift valley fever | 497 | 133 |
| Saudi Arabia | 2001 | meningitis | 74 | 35 |
| Senegal | 1965 | yellow fever | 150 | 60 |
| Senegal | 1978 | cholera | 298 | 5 |
| Senegal | 1985 | cholera | 3100 | 300 |
| Senegal | 1995 | cholera | 3031 | 188 |
| Senegal | 1998 | | 2709 | 372 |
| Senegal | 2002 | | 181 | 18 |
| Senegal | 2004 | cholera | 861 | 6 |
| Senegal | 2005 | cholera | 23022 | 303 |
| Senegal | 2007 | cholera | 2825 | 16 |
| Senegal | 2014 | ebola | 1 | 0 |
| Seychelles | 2005 | chikungunya | 5461 | 0 |
| Seychelles | 2016 | dengue and dengue haemorrhagic fever | 253 | 0 |
| Sierra Leone | 1985 | cholera | 3000 | 352 |
| Sierra Leone | 1996 | haemorrhagic fever syndrome | 953 | 226 |
| Sierra Leone | 1997 | h1n1 | 2024 | 51 |
| Sierra Leone | 1998 | cholera | 1770 | 55 |
| Sierra Leone | 1999 | dysentery | 3228 | 133 |
| Sierra Leone | 2001 | meningitis | 3 | 12 |
| Sierra Leone | 2003 | yellow fever | 90 | 10 |
| Sierra Leone | 2004 | cholera | 633 | 56 |
| Sierra Leone | 2008 | cholera | 1746 | 170 |
| Sierra Leone | 2012 | cholera | 23009 | 300 |
| Sierra Leone | 2014 | ebola | 14124 | 3956 |
| Singapore | 1998 | encephalitis syndrome (aes) | 11 | 1 |
| Singapore | 2000 | enterovirus | 2022 | 2 |
| Singapore | 2002 | sars | 205 | 33 |

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|---|---|---|---|---|
| Singapore | 2016 | dengue and dengue haemorrhagic fever | 13051 | 0 |
| Solomon Islands | 2013 | dengue and dengue haemorrhagic fever | 6700 | 8 |
| Solomon Islands | 2016 | dengue and dengue haemorrhagic fever | 1212 | 0 |
| Somalia | 1977 | | 2671 | 0 |
| Somalia | 1985 | cholera | 4815 | 1262 |
| Somalia | 1986 | cholera | 7093 | 1307 |
| Somalia | 1994 | | 17000 | 100 |
| Somalia | 1996 | cholera | 5557 | 247 |
| Somalia | 1997 | cholera | 1044 | 0 |
| Somalia | 1998 | cholera | 14564 | 481 |
| Somalia | 1999 | cholera | 175 | 15 |
| Somalia | 2000 | cholera | 2490 | 244 |
| Somalia | 2001 | meningitis | 111 | 33 |
| Somalia | 2002 | cholera | 1191 | 63 |
| Somalia | 2005 | poliovirus | 199 | 0 |
| Somalia | 2006 | | 5876 | 103 |
| Somalia | 2007 | cholera | 35687 | 1133 |
| Somalia | 2008 | cholera | 663 | 13 |
| Somalia | 2016 | cholera | 14165 | 497 |
| Somalia | 2017 | cholera | 13126 | 302 |
| South Africa | 2000 | cholera | 86107 | 181 |
| South Africa | 2002 | cholera | 13352 | 84 |
| South Africa | 2004 | cholera | 174 | 5 |
| South Africa | 2008 | cholera | 12752 | 65 |
| South Sudan | 2013 | poliovirus | 3 | 0 |
| South Sudan | 2014 | cholera | 6486 | 149 |
| South Sudan | 2015 | cholera | 1818 | 47 |
| South Sudan | 2016 | cholera | 3826 | 68 |
| South Sudan | 2019 | measles | 937 | 7 |
| Spain | 1997 | meningitis | 1383 | 0 |
| Spain | 2001 | legionellosis | 751 | 2 |
| Spain | 2002 | sars | 1 | 0 |
| Sri Lanka | 1967 | | 200000 | 2 |
| Sri Lanka | 1977 | cholera | 728 | 0 |
| Sri Lanka | 1997 | cholera | 1695 | 36 |
| Sri Lanka | 1999 | | 5936 | 1 |
| Sri Lanka | 2000 | dengue and dengue haemorrhagic fever | 113 | 2 |
| Sri Lanka | 2004 | dengue and dengue haemorrhagic fever | 15000 | 88 |
| Sri Lanka | 2009 | dengue and dengue haemorrhagic fever | 35007 | 346 |
| Sri Lanka | 2011 | dengue and dengue haemorrhagic fever | 26343 | 167 |
| Sri Lanka | 2017 | dengue and dengue haemorrhagic fever | 155715 | 320 |
| Sri Lanka | 2019 | dengue and dengue haemorrhagic fever | 18760 | 28 |
| Sudan (the) | 1940 | yellow fever | 15000 | 1500 |
| Sudan (the) | 1950 | | 72162 | 0 |
| Sudan (the) | 1965 | | 2300 | 0 |
| Sudan (the) | 1976 | ebola | 299 | 150 |
| Sudan (the) | 1988 | | 38805 | 2770 |
| Sudan (the) | 1996 | cholera | 1800 | 700 |

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|---|---|---|---|---|
| Sudan (the) | 1998 | meningitis | 22403 | 1746 |
| Sudan (the) | 1999 | cholera | 3959 | 357 |
| Sudan (the) | 2000 | | 2363 | 186 |
| Sudan (the) | 2002 | leishmaniasis | 1281 | 49 |
| Sudan (the) | 2003 | yellow fever | 178 | 27 |
| Sudan (the) | 2004 | hepatitis e | 8114 | 98 |
| Sudan (the) | 2005 | meningitis | 7454 | 650 |
| Sudan (the) | 2006 | cholera | 28769 | 1142 |
| Sudan (the) | 2007 | meningitis | 7639 | 584 |
| Sudan (the) | 2008 | diarrhoeal syndrome | 212 | 15 |
| Sudan (the) | 2012 | yellow fever | 678 | 171 |
| Sudan (the) | 2016 | | 632 | 19 |
| Sudan (the) | 2017 | diarrhoeal syndrome | 30762 | 657 |
| Sudan (the) | 2019 | cholera | 510 | 24 |
| Swaziland | 1992 | cholera | 2228 | 30 |
| Swaziland | 2000 | cholera | 1449 | 32 |
| Sweden | 2002 | diarrhoeal syndrome | 350 | 0 |
| Switzerland | 2002 | sars | 1 | 0 |
| Syrian Arab Rep. | 1977 | cholera | 4165 | 88 |
| Taiwan (Prov. of China) | 1998 | encephalitis syndrome (aes) | 250000 | 54 |
| Taiwan (Prov. of China) | 2002 | sars | 309 | 37 |
| Tajikistan | 1996 | typhiod | 7516 | 0 |
| Tajikistan | 1997 | typhiod | 15618 | 168 |
| Tajikistan | 1999 | typhiod | 200 | 3 |
| Tajikistan | 2003 | typhiod | 256 | 0 |
| Tajikistan | 2010 | poliovirus | 456 | 21 |
| Tanzania | 1977 | cholera | 6050 | 500 |
| Tanzania | 1985 | bubonic | 118 | 10 |
| Tanzania | 1987 | cholera | 500 | 90 |
| Tanzania | 1991 | | 1733 | 284 |
| Tanzania | 1992 | cholera | 40249 | 2231 |
| Tanzania | 1997 | cholera | 42350 | 2329 |
| Tanzania | 1998 | cholera | 40677 | 2461 |
| Tanzania | 1999 | diarrhoeal syndrome | 529 | 56 |
| Tanzania | 2000 | | 898 | 37 |
| Tanzania | 2001 | diarrhoeal syndrome | 515 | 25 |
| Tanzania | 2002 | meningitis | 149 | 9 |
| Tanzania | 2005 | cholera | 576 | 6 |
| Tanzania | 2006 | cholera | 1410 | 70 |
| Tanzania | 2007 | rift valley fever | 284 | 119 |
| Tanzania | 2009 | cholera | 600 | 12 |
| Tanzania | 2015 | cholera | 37712 | 582 |
| Tanzania | 2019 | cholera | 216 | 3 |
| Thailand | 1977 | cholera | 2800 | 100 |
| Thailand | 2000 | | 1946 | 89 |
| Thailand | 2002 | sars | 7 | 2 |
| Thailand | 2003 | h5n1 | 4 | 7 |
| Thailand | 2004 | h5n1 | 8 | 14 |

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|---|---|---|---|---|
| Thailand | 2010 | dengue and dengue haemorrhagic fever | 880 | 2 |
| Thailand | 2011 | dengue and dengue haemorrhagic fever | 37728 | 27 |
| Timor-Leste | 2005 | dengue and dengue haemorrhagic fever | 336 | 22 |
| Timor-Leste | 2014 | dengue and dengue haemorrhagic fever | 197 | 2 |
| Togo | 1988 | | 1617 | 50 |
| Togo | 1996 | | 2619 | 360 |
| Togo | 1998 | cholera | 3669 | 239 |
| Togo | 2001 | meningitis | 1567 | 235 |
| Togo | 2002 | | 494 | 95 |
| Togo | 2003 | cholera | 790 | 40 |
| Togo | 2008 | cholera | 686 | 6 |
| Togo | 2010 | meningitis | 236 | 60 |
| Togo | 2013 | cholera | 168 | 7 |
| Togo | 2015 | meningitis | 324 | 24 |
| Turkey | 1964 | | 2500 | 19 |
| Turkey | 1965 | | 100000 | 461 |
| Turkey | 1968 | poliovirus | 1975 | 98 |
| Turkey | 1977 | | 100000 | 0 |
| Turkey | 1987 | cholera | 150 | 11 |
| Turkey | 2004 | h5n1 | 8 | 4 |
| Turkey | 2006 | haemorrhagic fever syndrome | 222 | 20 |
| Uganda | 1982 | plague | 153 | 3 |
| Uganda | 1986 | plague | 340 | 27 |
| Uganda | 1989 | meningitis | 961 | 156 |
| Uganda | 1990 | meningitis | 1170 | 197 |
| Uganda | 1997 | o'nyongnyong fever | 100300 | 0 |
| Uganda | 1998 | cholera | 600 | 30 |
| Uganda | 1999 | cholera | 2205 | 122 |
| Uganda | 2000 | ebola | 723 | 259 |
| Uganda | 2001 | | 9 | 14 |
| Uganda | 2003 | cholera | 242 | 35 |
| Uganda | 2004 | cholera | 53 | 3 |
| Uganda | 2005 | cholera | 726 | 21 |
| Uganda | 2006 | meningitis | 5702 | 203 |
| Uganda | 2007 | hepatitis e | 5937 | 132 |
| Uganda | 2008 | cholera | 388 | 28 |
| Uganda | 2009 | cholera | 544 | 17 |
| Uganda | 2010 | yellow fever | 190 | 48 |
| Uganda | 2012 | cholera | 5980 | 156 |
| Uganda | 2013 | cholera | 218497 | 28 |
| Uganda | 2018 | cholera | 1000 | 31 |
| Ukraine | 1994 | cholera | 1333 | 71 |
| Ukraine | 1995 | | 5336 | 204 |
| Ukraine | 1997 | | 102 | 0 |
| United Kingdom | 1984 | salmonella | 16 | 26 |
| United Kingdom | 1985 | legionellosis | 144 | 34 |
| United Kingdom | 2001 | meningitis | 30 | 11 |
| United Kingdom | 2002 | sars | 4 | 0 |

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| USA | 1990 | encephalitis syndrome (aes) | 50 | 3 |
| USA | 1993 | cryptosporidiosis | 403000 | 100 |
| USA | 2002 | west nile fever | 3653 | 214 |
| Uzbekistan | 1998 | | 148 | 40 |
| Venezuela | 1990 | dengue and dengue haemorrhagic fever | 9506 | 74 |
| Venezuela | 1991 | cholera | 967 | 18 |
| Venezuela | 1995 | dengue and dengue haemorrhagic fever | 32280 | 0 |
| Venezuela | 2010 | cholera | 118 | 0 |
| Viet Nam | 1964 | cholera | 10848 | 598 |
| Viet Nam | 1996 | dengue and dengue haemorrhagic fever | 9706 | 45 |
| Viet Nam | 1998 | dengue and dengue haemorrhagic fever | 8000 | 214 |
| Viet Nam | 2002 | sars | 58 | 5 |
| Viet Nam | 2003 | h5n1 | 8 | 15 |
| Viet Nam | 2004 | h5n1 | 51 | 42 |
| Viet Nam | 2005 | acute neurological syndrome | 83 | 16 |
| Viet Nam | 2016 | dengue and dengue haemorrhagic fever | 79204 | 27 |
| Yemen | 2000 | rift valley fever | 289 | 32 |
| Yemen | 2005 | poliovirus | 179 | 0 |
| Yemen | 2015 | | 3026 | 3 |
| Yemen | 2016 | cholera | 180 | 11 |
| Yemen | 2017 | diphteria | 298 | 35 |
| Yemen | 2019 | cholera | 521028 | 932 |
| Zambia | 1990 | yellow fever | 667 | 85 |
| Zambia | 1991 | cholera | 13154 | 0 |
| Zambia | 1992 | cholera | 11659 | 0 |
| Zambia | 1999 | cholera | 13083 | 462 |
| Zambia | 2000 | cholera | 1224 | 163 |
| Zambia | 2001 | plague | 425 | 11 |
| Zambia | 2003 | cholera | 3835 | 179 |
| Zambia | 2005 | cholera | 7615 | 21 |
| Zambia | 2006 | cholera | 105 | 5 |
| Zambia | 2007 | cholera | 115 | 5 |
| Zambia | 2008 | cholera | 8312 | 173 |
| Zambia | 2009 | cholera | 5198 | 87 |
| Zambia | 2012 | cholera | 153 | 2 |
| Zambia | 2017 | cholera | 4371 | 89 |
| Zimbabwe | 1992 | cholera | 5649 | 258 |
| Zimbabwe | 1996 | | 500000 | 1311 |
| Zimbabwe | 1998 | cholera | 377 | 22 |
| Zimbabwe | 1999 | cholera | 462 | 52 |
| Zimbabwe | 2000 | cholera | 2812 | 112 |
| Zimbabwe | 2002 | cholera | 452 | 4 |
| Zimbabwe | 2003 | cholera | 750 | 40 |
| Zimbabwe | 2005 | cholera | 1183 | 87 |
| Zimbabwe | 2007 | | 10000 | 67 |
| Zimbabwe | 2008 | cholera | 98349 | 4276 |
| Zimbabwe | 2009 | measles | 1346 | 55 |
| Zimbabwe | 2010 | typhiod | 258 | 8 |

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| Zimbabwe | 2011 | cholera | 1140 | 45 |
| Zimbabwe | 2014 | cholera | 11 | 0 |
| Zimbabwe | 2018 | typhiod | 5164 | 12 |

**References**


Anderson, C. J., and Y.V. Tverdova (2003), "Corruption, political allegiances, and attitudes toward government in contemporary democracies," American Journal of Political Science 47(1): 91-109.

Angrist, J. D., and J.S. Pischke. (2008). Mostly harmless econometrics: An empiricist's companion. Princeton: Princeton University Press.

De Chaisemartin, C., & d'Haultfoeuille, X. (2020). Two-way fixed effects estimators with heterogeneous treatment effects. *American Economic Review*, *110*(9), 2964-96.

De Chaisemartin, C., & d'Haultfoeuille, X. (2022). *Two-way fixed effects and differences-in-differences with heterogeneous treatment effects: A survey* (No. w29691). National Bureau of Economic Research.

De Juan, A., and J.H. Pierskalla (2016), "Civil war violence and political trust: Microlevel evidence from Nepal," Conflict Management and Peace Science 33(1): 67-88.

Gómez M, A. Ivchenko., E. Reutskaja and P. Soto-Mota (2020). "Behaviours, perceptions and mental wellbeing in high-income and low/middle-income countries at the beginning of COVID-19 pandemic," unpublished manuscript.

Hetherington, M. J., and T.J. Rudolph (2008), "Priming, performance, and the dynamics of political trust," The Journal of Politics 70(2), pp.498-512.

Kuran, T. (1987), "Preference falsification, policy continuity and collective conservatism," Economic Journal 97(387): 642-665.

Ma, C., J.H. Rogers and S. Zhou (2020). "Global economic and financial effects of 21st century pandemics and epidemics," unpublished manuscript.

Oster, E. (2019). Unobservable selection and coefficient stability: Theory and evidence. Journal of Business & Economic Statistics, 37(2), 187-204.

Pew Research Center (2020), "Younger adults differ from older ones in perceptions of news about COVID-19, George Floyd protests," https://www.pewresearch.org/fact-tank/2020/07/09/younger-adults-differ-from-older-ones-in-perceptions-of-news-about-covid-19-george-floyd-protests/ (20 July).

Roser, M. and H. Ritchie (2020), "Burden of disease". Retrieved from: https://ourworldindata.org/burden-of-disease

Young, A. (2019), "Channeling fisher: Randomization tests and the statistical insignificance of seemingly significant experimental results," The Quarterly Journal of Economics 134(2): 557-598.