

The Institutional Origins of Vaccines Distrust: Evidence from Former-Communist Countries

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Article

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The Institutional Origins of Vaccines Distrust: Evidence from Former-Communist Countries *

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Abstract

How is trust in vaccines affected by exposure to Soviet communism? Using individual level evidence on vaccine trust with regards to its efficiency and safety from a long list of world countries, we document that exposure to Soviet communism reduces trust in vaccination. We show that exposure to socio-political regimes can explain limited trust in vaccines, which is explained by weak trust in government, medical personnel, medical advice from doctors as well as in people from the neighbourhood. These results suggest that roots of vaccine distrust lie in a wider distrust in public and state institutions resulting from the exposure to Soviet communism.

Keywords: vaccine trust, communism exposure, vaccines acceptance, government health system, trust in institutions, trust in medical personal

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Institutional legacies can influence our health care preferences by influencing trust in key health care inputs such as vaccines. In this paper we examine one particular form of institutions related to politico-economic regime, namely the institutions of the Soviet communism. The exposure to Soviet communism is found to be relevant for the formation on preferences [6, 1] and exerts detrimental effects on various forms of trust (political, generalized, in public institutions, etc.) [13, 22, 5, 11]. The world maps of vaccination trust (see Figure 1) suggest that similar effects of Soviet communism might concern vaccination trust. Poland, Hungary and Russia are today the European countries with the highest COVID-19 vaccine hesitancy according to IPSOS survey [20]. This paper inquires about what are the effects of the exposure to Soviet communism on the trust in vaccines efficiency and in vaccines safety. Using the Wellcome Global Monitor (WGM) dataset, we examine whether exposure to communism explains different dimensions of vaccine trust.

Vaccines are protective interventions that can have a long-lasting impact on our health, and vaccination is a pro-social behaviour as it helps to protect others. However, vaccine availability does not necessarily entail widespread vaccination as some shares of the population refuse to vaccine. This can compromise herd immunity objectives, which is the COVID-19 recovery strategy in almost every western country.

Compliance with vaccination plans is a barrier to overcome. For instance, the anti-H1N1 vaccine during the 2009 influenza pandemic was low [4]. The World Health Organization (WHO) already in 2019 identified vaccine hesitancy as one of the top ten global health threats, which they define as the delay in acceptance or refusal of vaccination despite availability of vaccination services. Nonetheless, other explanations of the divide between Eastern and Western Europe lie in that vaccines are mostly developed in Western Europe, and in weaker health system reaction to COVID-19. Another explanation lies in that mass vaccination as a pillar of public health care system was widely used in former Soviet Union (Union of Soviet Socialist Republics) [18]. Hungary managed to set the benchmark model used by the WHO to fight for polio and Czechoslovakia was among the first countries to eradicate it [10]. Communist officials contrasted the polio-free world of Eastern Europe with struggling western nations [21]. However, the military-like organisation of vaccinations and its compulsory participation lead to a questioning of such campaigns after transition.

1 Results

1.1 Trust in vaccines

The maps in Figure 1 depict the scale of trust in vaccination, specifically in vaccines' efficiency and vaccines' safety at a country level. Geographical regions formerly belonging to or aligned with the Soviet Union stand out from the rest of the world. The trust in vaccination in these regions seems to be the lowest in the world, despite the fact that individuals in vast majority agree with the

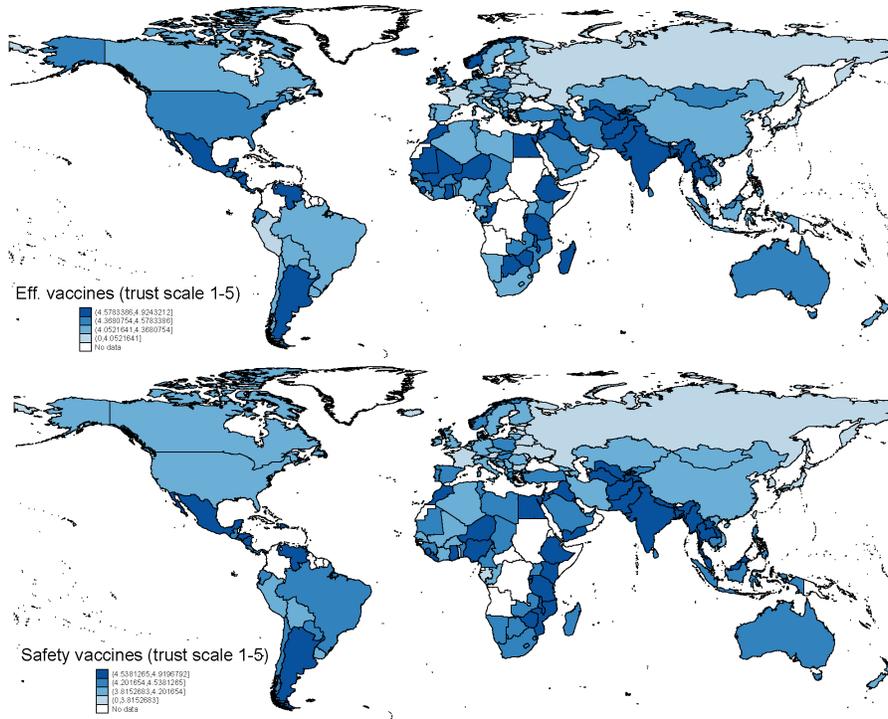


Figure 1: Trust in Vaccine Efficiency (top) and Vaccine Safety (bottom).

Source: WGM 2018.

statements that vaccines are safe and efficient (cf. Table 1 in the Appendix).

In our multivariate analysis, we document (cf. Figure 2) that the exposure to Soviet communism reduces trust in vaccination. We find negative effects on trust in vaccines' efficiency as well as on their safety. Controlling for year of birth, gender, country of residence and time trends specific to the country of residence, we find that individuals ever exposed to Soviet communism report lower by 2 per cent on average trust in vaccines efficiency and safety measured on 5-point scale. The effects size depends on the length of the exposure to communism.

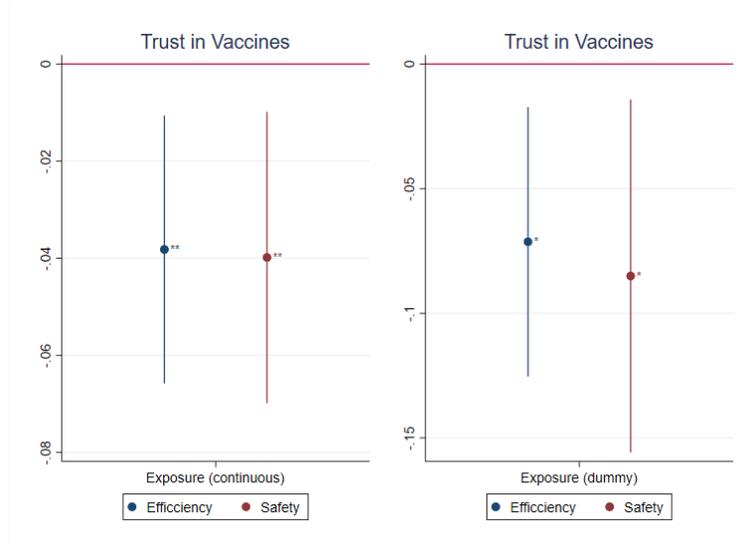


Figure 2: Effects of the Exposure to Soviet Communism on Trust in Vaccines' Efficiency and Safety

Notes: Control variables: age fixed-effects, gender, country fixed-effects and country-specific time trend. Standard errors clustered by country. The treatment variable is the length of exposure to Soviet communism in years smoothed with inverse hyperbolic sine function. * – $p < 0.10$, ** – $p < 0.05$, *** – $p < 0.01$.

Source: WGM 2018.

1.2 Underlying mechanisms

The mechanisms contributing to our understanding of the deterioration of trust in vaccines due to the exposure to Soviet communism are reported in Figure 3. We find that individuals who lived under Soviet communism are significantly less likely to trust in health advice given by their governments and by medical doctors in their country. We confirm reduced generalized interpersonal trust and confidence in government due to Soviet communism. The reduction of government trust is twice as big as the reduction of interpersonal trust for individuals with any exposure to Soviet communism. This result shows that the detrimental effects of the Soviet regime on trust are most pronounced as far as the confidence in public state institutions is concerned.

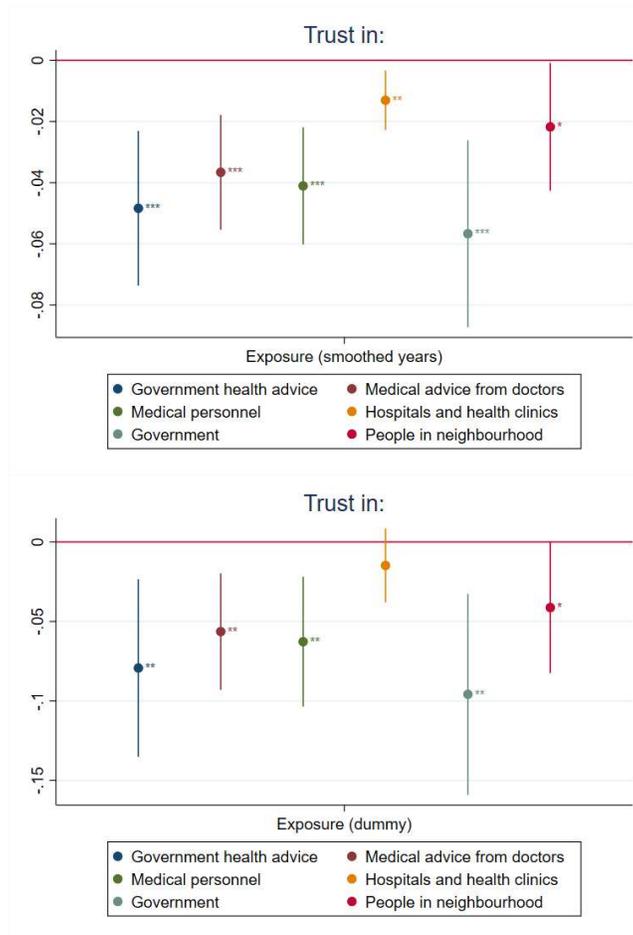


Figure 3: Effects of the Exposure to Soviet Communism on Generalized Trust and Trust in Medical Care

Notes: Control variables: age fixed-effects, gender, country fixed-effects and country-specific time trend. Standard errors clustered by country. The treatment variable is the length of exposure to Soviet communism in years smoothed with inverse hyperbolic sine function. * – $p < 0.10$, ** – $p < 0.05$, *** – $p < 0.01$.

Source: WGM 2018.

2 Discussion

As in most vaccine-preventable diseases, their extension is challenged by groups of individuals who a) refuse to vaccinate on religious and political grounds, and in some cases even with some scientific backing [23], and b) who are ‘vaccine hesitant’ [16], either due to its limited knowledge of vaccine side effects or a more general distrust of the health system. Accordingly, limited adoption of

a vaccine is driven by a belief that risks are exaggerated, and/or that vaccine encompasses limited benefits, or even concerns about the value of vaccines [9] and especially its side effects and safety [15]. Risk seeking and less pro-social individuals [3] are less likely to vaccinate, and women are generally less likely to support vaccinations than men [15]. However, a central determinant is limited trust in medicine, which varies significantly among certain groups and between countries and cultures.

A recent survey of COVID-19 intentions to vaccinate [12] shows that 71.5% of participants reported that they would be very or somewhat likely to take a COVID-19 vaccine. Consistently, Neumann-Böhme et al. [15] estimate that 73.9% of individuals in a number of European countries (Denmark, France, Germany, Italy, Portugal, the Netherlands, and the UK) stated that they would be willing to get vaccinated. Evidence from Australian attitudes to COVID-19 survey suggests that about 86% respondents reported they intended to get the vaccine, and almost half (44%) of those who would not were more likely to believe the threat of COVID-19 has been exaggerated [8]. Sherman et al. [19] show that in July about 64% of the UK population were willing to be vaccinated when a COVID-19 vaccine becomes available.

Limited knowledge and wider family opposition play an important role in cross-country vaccine hesitancy [17]. However, a central issue refers to government trust. Indeed, given that knowledge on vaccination is generally limited both between individuals who take vaccines as well as those that refuse them, in making the decision on vaccination individuals tend to rely on trust as in the case of other decisions made when knowledge is limited [7]. An environment of distrust in institutions and “experts” additionally prompts public acceptability of vaccines, and more specifically evidence suggest that distrust with the medical profession seems to be driving attitudes to vaccination [2]. In addition, institutional environment affects trust and detrimental link between communist regimes and trust has been established in the existing literature [13].

Swift vaccination is an essential part of a COVID-19 recovery strategy in almost every country. Although COVID-19 vaccination trials indicate the available vaccines are safe and produce the expected effects on the immune response, a significant share of the population is unwilling to take the vaccine. We show that individuals’ trust in vaccines is influenced by the exposure to socio-political regimes that would have made vaccination compulsory using military like organisations [14]. We argue that one of the effects of communism exposure extends to the legacies of mass compulsory vaccination during Soviet communism, which impact on current trust in vaccines during COVID-19 times.

One lesson to learn is that compulsory vaccinations might backfire as they might remind individuals of their legacies. In contrast, actions undertaken by international independent bodies as well as the way in which governmental vaccination programs are implemented by local authorities or even, non-profit organisations, can reduce the effects of government distrust enhancing the vaccine hesitancy.

3 Methods

3.1 Data

We refer to the recent pre-pandemic data on trust in general in vaccines’ safety and efficiency. The data used in the analysis comes from the WGM 2018 survey, which asks respondents from more than 100 countries about their attitudes towards science and health challenges, and trust in science and health professionals in particular. In addition, it provides baseline socio-economic characteristics of respondents. We refer to the data on trust in vaccines efficiency and safety, asked in the two following questions: “Do you agree, disagree, or neither agree nor disagree with the following statement?”: “Vaccines are efficient.”; “Vaccines are safe”. Respondents who agreed or disagreed with the statements, were asked how strong are their opinions, which yielded a 5-point scale “strongly agree”, “somewhat agree”, “neither agree nor disagree”, “somewhat disagree”, “strongly disagree”. The answers are re-coded in our study so that the higher score denotes the higher trust in vaccines.

Measures of general confidence in medical authorities and their advice, as well as generalized trust and confidence in government observed in our data provide interesting context to the trust in vaccination. We use questions pertaining to trust in ‘hospitals and health clinics’ measured on binary scale and in ‘doctors and nurses in this country’ measured on 4-point scale. Two separate questions specifically ask about trust in ‘medical and health advice from the government in this country’ and ‘from medical workers, such as doctors and nurses, in this country? A lot, some, not much, or not at all?’. Generalized trust in neighbours and in government are measured on 4-point scale using respectively the two following questions: ‘How about the people in your neighborhood? Do you trust them a lot, some, not much, or not at all?’; ‘How about the national government in this country? Do you trust them a lot, some, not much, or not at all?’.

Table 1 in the Appendix provides descriptive statistics of these measures. A substantial portion (15%) of the examined population was exposed to Soviet communism despite the study took place 27 years after the fall of the Berlin Wall and the average age of respondents was about 43 years. We measure the number of years individuals lived under communism ranging from 0 to 70, to find that globally average respondent lived for 3.7 years under Soviet communism.

Figure 4 (for more details see Table 2 in the Appendix) reports the dates of entry to and exit from the Soviet communism regime. Because the WGM data do not allow for distinction between communist and non-communist parts of Germany, we decided to exclude Germany from the analysis. Similarly, we restrict our analysis by excluding countries exposed to other than Soviet (Marxist-Leninist) types of communism¹.

¹These are: Burkina Faso, Chad, China, Congo, Egypt, Ghana, Guinea, Iraq, Laos, Libya, Madagascar, Mali, Mauritania, Nicaragua, Vietnam, Venezuela, Senegal, Sierra Leone, Tunisia, Zambia.

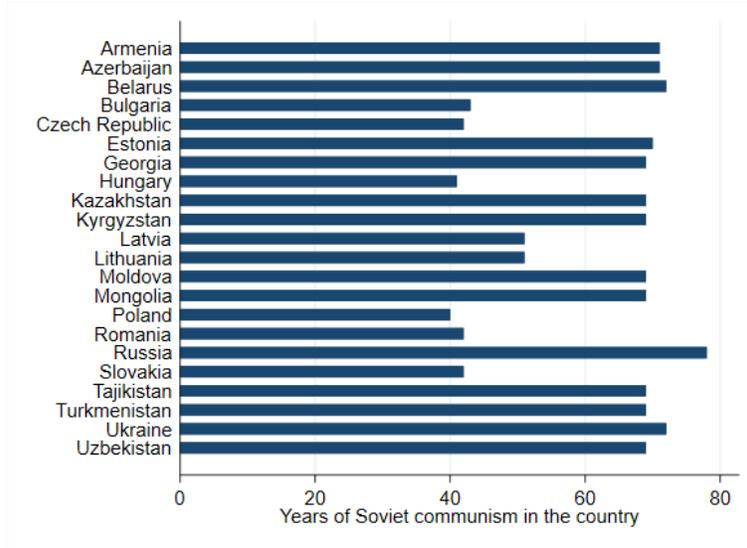


Figure 4: Number of years countries were ruled by Soviet communist regimes

Note: The above figure shows the number of years each country was ruled by a Soviet communist regime and *not* the average number of years respondents in a country lived under the Soviet rule. For the latter, see Table 1 in the Appendix.

3.2 Identification strategy

To estimate the effect of exposure to communism on our measures of trust, we estimate the following regression:

$$\begin{aligned}
 \text{Trust in Vaccines}_{ict} = & \beta_0 + \beta_1 \text{Exposure to communism}_{ict} + \text{Year of birth } FE_t \\
 & + \text{Country } FE_c + \text{Country-specific trends}_{ct} + X_{ict} \\
 & + \varepsilon_{ict}
 \end{aligned}
 \tag{1}$$

where $\text{Trust in Vaccines}_{ict}$ measures the degree of trust in the safety and effectiveness of vaccines of individual i , living in country c and born in year t . $\text{Exposure to communism}_{ict}$ measures the degree of exposure to communism of individual i which is determined by country of residence c and year of birth t . We measure exposure in two different ways: either as the number of years lived under a communist regime (intensive margin) or as a dichotomous variable equal to 1 if individual lived at some point during life in a communist regime (extensive margin). β_1 yields the effect of the intensive and the extensive margin of exposure to communism. The specification includes year of birth and country of residence fixed effects, country-specific time trends and a set of control variables including gender. ε_{ict} is the error term and standard errors are clustered at the country level.

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A Appendix

Table 1: The Descriptive Statistics of the WGM 2018 Research Sample.

	Count	Mean	St. Dev.	Min	Max
<i>Trust in:</i>					
Vaccine Efficiency	108275	4.378139	.9665941	1	5
Vaccine Safety	108142	4.246269	1.087924	1	5
Government health advice	115673	3.008368	.8722813	1	4
Medical advice from doctors	119827	3.247465	.7681014	1	4
Medical personnel	121799	3.204534	.8222881	1	4
Hospitals and health clinics	118854	.7531593	.431175	0	1
Government	112645	2.557956	1.051136	1	4
People in neighbourhood	121222	3.00881	.9001539	1	4
Age	123789	42.60589	18.13372	15	99
Female	124349	.5423204	.4982078	0	1
Any exposure to Soviet communism	124349	.1514045	.3584442	0	1
Years under Soviet communism	124349	3.724726	10.53305	0	70

Source: Authors' own tabulation based on WGM 2018.

Table 2: The Dates of the Beginning and the End of the Exposure to Soviet Communism in Analysed Post-Communist Counties.

Exit	1917	1919	1920	1921	Entry 1922	1939	1940	1947	1948	1949	1952
1989								Romania		Poland	
1990				Georgia		Lithuania		Bulgaria	Czech Republic, Slovakia	Hungary	
1991		Belarus, Ukraine	Armenia, Azerbaijan		remaining USSR Republics		Latvia				
1992					Estonia						
1995	Russia										

Source: Authors' own tabulation based on dates of the socialist constitution and first free democratic elections. For the remaining USSR Republics, dates of 1936 and 1991 used as the beginning and end of communism.

Notes: Remaining USSR republics are: Kazakhstan, Kyrgyzstan, Moldova, Mongolia, Tajikistan, Turkmenistan, Uzbekistan. The total sample is comprised also of the following countries: Afghanistan, Albania, Algeria, Argentina, Australia, Austria, Bangladesh, Belgium, Benin, Bolivia, Botswana, Bosnia and Herzegovina, Brazil, Burundi, Cambodia, Cameroon, Canada, Chile, Colombia, Comoros, Costa Rica, Cyprus, Denmark, Dominican Republic, Ecuador, El Salvador, Eswatini, Ethiopia, Finland, France, Gabon, Gambia, Greece, Guatemala, Haiti, Honduras, Iceland, India, Indonesia, Iran, Ireland, Israel, Italy, Ivory Coast, Japan, Jordan, Kosovo, Kuwait, Kenya, Lebanon, Liberia, Luxembourg, Macedonia, Malawi, Malaysia, Malta, Mauritius, Mexico, Montenegro, Morocco, Mozambique, Myanmar, Namibia, Nepal, Netherlands, New Zealand, Niger, Nigeria, Northern Cyprus, Norway, Pakistan, Palestinian Territories, Panama, Paraguay, Peru, Philippines, Portugal, Rwanda, Saudi Arabia, Serbia, Singapore, South Africa, Spain, Sri Lanka, Sweden, Switzerland, Taiwan, Tanzania, Thailand, Togo, Turkey, Uganda, United Arab Emirates, United Kingdom, United States, Uruguay, Yemen, Zimbabwe.

Figures

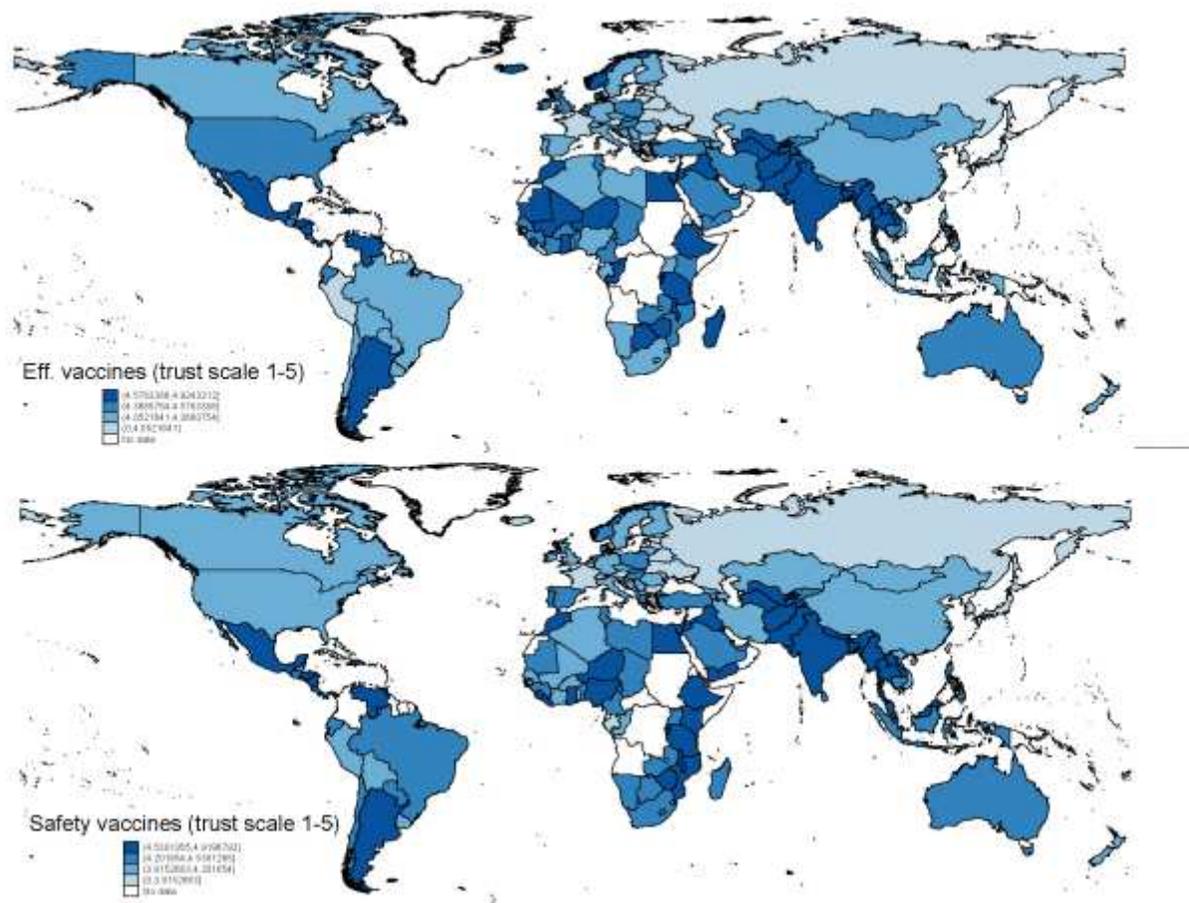


Figure 1

Trust in Vaccine Efficiency (top) and Vaccine Safety (bottom). Source: WGM 2018. Note: The designations employed and the presentation of the material on this map do not imply the expression of any opinion whatsoever on the part of Research Square concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. This map has been provided by the authors.

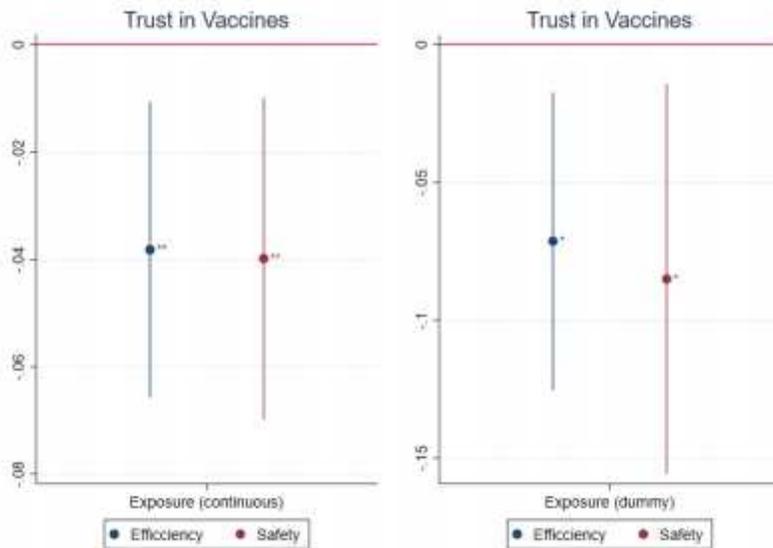


Figure 2

Effects of the Exposure to Soviet Communism on Trust in Vaccines' Efficiency and Safety

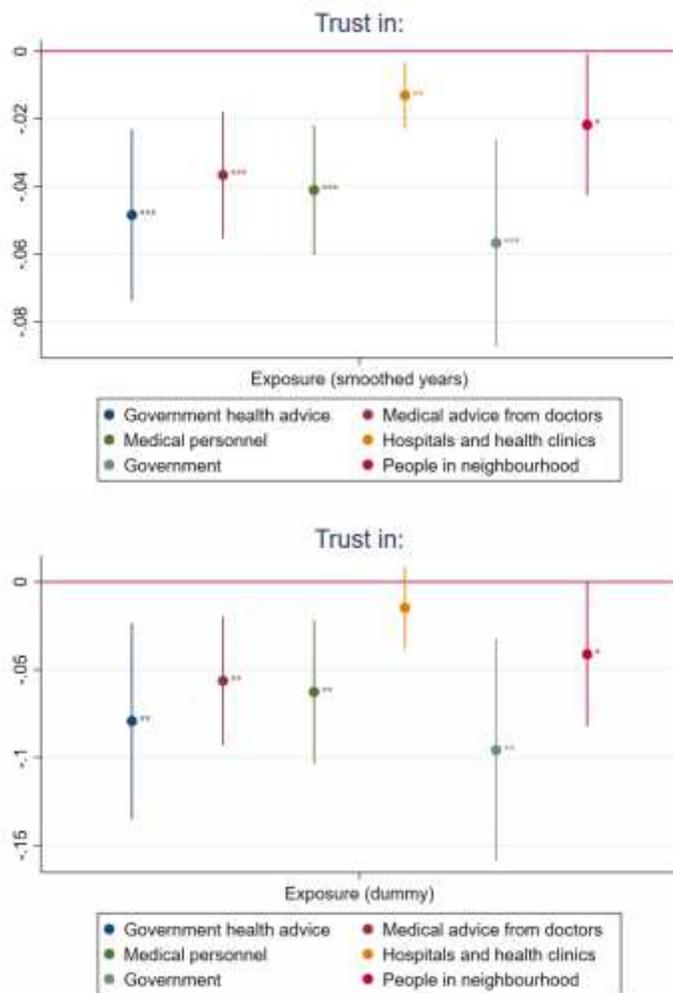


Figure 3

Effects of the Exposure to Soviet Communism on Generalized Trust and Trust in Medical Care

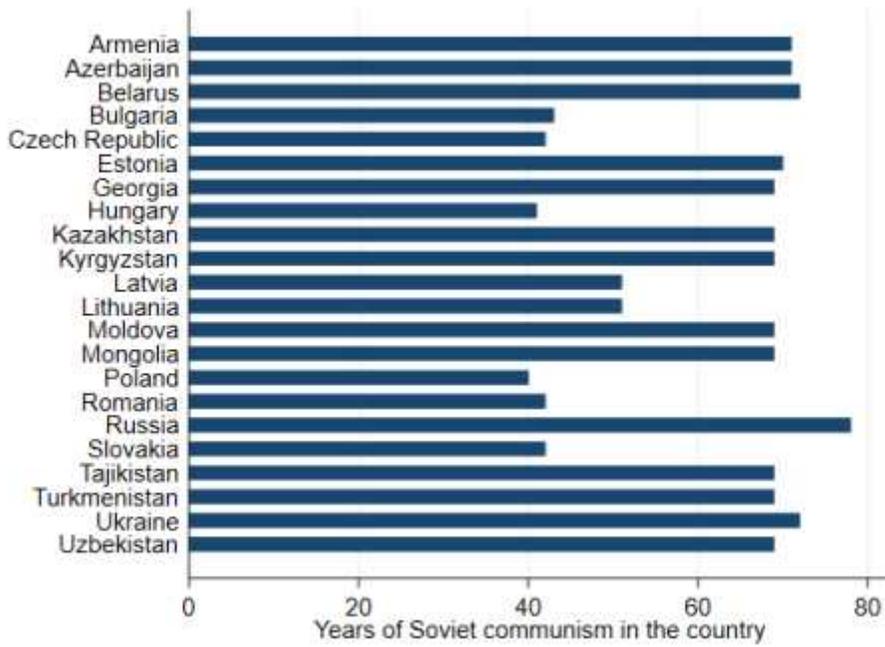


Figure 4

Number of years countries were ruled by Soviet communist regimes