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RESEARCH ARTICLE

Can Policy Responses to Pandemics Reduce Mass Fear?

Michael M. Bechtel[1,2]*, William O'Brochta[3] and Margit Tavits[4]

[1]Department of Political Science and European Affairs and Cologne Center for Comparative Politics, University of Cologne, 80870 Cologne, Germany, [2]Swiss Institute for International Economics and Applied Economic Research, St. Gallen, Switzerland, [3]School of History and Social Science, Louisiana Tech University, 1308 West Railroad Avenue, Ruston, LA 71272, USA and [4]Department of Political Science, Washington University in St. Louis, One Brookings Drive, Campus Box 1063, St. Louis, MO 63130-4899, USA
*Corresponding author: m.bechtel@uni-koeln.de; Twitter: @mm_bechtel

Abstract

To successfully address large-scale public health threats such as the novel coronavirus outbreak, policymakers need to limit feelings of fear that threaten social order and political stability. We study how policy responses to an infectious disease affect mass fear using data from a survey experiment conducted on a representative sample of the adult population in the USA (N = 5,461). We find that fear is affected strongly by the final policy outcome, mildly by the severity of the initial outbreak, and minimally by policy response type and rapidity. These results hold across alternative measures of fear and various subgroups of individuals regardless of their level of exposure to coronavirus, knowledge of the virus, and several other theoretically relevant characteristics. Remarkably, despite accumulating evidence of intense partisan conflict over pandemic-related attitudes and behaviors, we show that effective government policy reduces fear among Democrats, Republicans, and Independents alike.

The outbreak of the novel coronavirus (COVID-19) has caused one of the largest public health threats in human history. The ability of governments to cope with this challenge hinges on designing and successfully implementing policies that curb the pandemic and, as a result, minimize the likelihood of fear and resulting social instability. Mass fear undermines human well-being and can cause individuals to seek a sense of security and political stability (Hetherington and Suhay 2011; Lupia and

Menning 2009). This may increase trust in political institutions (Bol et al. 2021), but it could also undermine norm compliance (Jørgensen, Bor, and Petersen 2021) and raise support for authoritarian leaders and restrictive, aggressive, even antidemocratic policies (Feldman and Stenner 1997; Hetherington and Suhay 2011; Kakkar and Sivanthan 2017).

Prior research on the political drivers of mass fear has focused on terrorism (Boscarino, Figley, and Adams 2003; Duckitt and Fisher 2003; Vasilopoulos, Marcus, and Foucault 2018) and economic insecurity (Kakkar and Sivanthan 2017). This literature has largely ignored other types of threats, such as public health emergencies. Existing research on COVID-19 has established links between the virus, perceptions of fear (Didar-Ul Islam et al. 2020), and panic-related behavior (Prentice, Chen, and Stantic 2020) but has not explored whether government responses to infectious disease, e.g., SARS, Ebola, or Nipah virus, could prevent these outcomes. A related area of research has examined how policy responses to natural disasters affect evaluations of incumbent performance (Bechtel and Mannino 2020; Bol et al. 2021; Chen 2013; Healy and Malhotra 2009) rather than fear as the outcome. As a result, we lack systematic knowledge about whether government responses during crises can reduce feelings of fear among the mass public. The urgency of finding answers to this question is underscored by the repeated spikes in COVID-19 infections occurring across the globe. At the same time and beyond its relevance for the current crisis, our study carries broader implications for our understanding of the linkages between government action, mass fear, and incumbent approval.

Policy responses and feelings of fear

Policy responses to a public health threat can be conceptualized as a dynamic policy decision under uncertainty, with three phases of policymaking (Gilligan and Krehbiel 1987). The first phase represents the initial conditions, which, in the case of an infectious disease, refer to the severity of the initial outbreak. The second phase is the policy response, where policymakers decide (a) how quickly to act and (b) what action to take. Actions include doing nothing, responding with a mild intervention (e.g., social distancing), or with a strong intervention (e.g., full lockdown). The third phase represents the outcome, i.e., the effectiveness of the policy decision in terms of whether the infection rates are decreasing, remaining constant, or increasing.

We are interested in how the three phases of policy response affect individuals' feelings of fear in the context of a public health crisis. We define fear in the conventional way as "a basic, intense emotion aroused by the detection of imminent threat" (VandenBos, 2015, 413). While previous work has not studied the relationship between fear and policy responses to pandemics, research on both natural disasters (including pandemics) and terrorism demonstrates that collective threats induce feelings of fear because of heightened uncertainty and loss of control (e.g., Brooks et al. 2020; Vasilopoulos and Brouard 2020). This suggests that government responses that restore a sense of order, control, and predictability have the potential to reduce fear amid a pandemic.

Which phase of policymaking is likely to matter and why? Prior work on the consequences of collective threats argues that to cope with the fear that major threats produce, people tend to prefer restrictive, even authoritarian policies (Hetherington and Suhay 2011; Jost et al. 2003). This suggests that policy design (phase two of the policy response) should affect feelings of fear: a rapid and strong response (with severe restrictions) offers a coping mechanism – a promise to restore control and predictability – and should thereby reduce fear.

However, policy design choices are only an effort by the government to try to restore order, not a guarantee. Arguably, a clear policy effort may heighten expectations about the ability to alleviate threat-related uncertainty. Yet, even very invasive policy responses can sometimes prove insufficient to curb the spread of a collective threat such as an infectious disease. Therefore, the third phase – the effectiveness of the government policy – may offer the highest potential to affect fear. Interventions followed by a falling rate of infections reduce beliefs about the severity of the collective threat, restore a sense of control and predictability, and may thereby effectively reduce feelings of fear. In short, we expect that the effectiveness of the policy response (phase 3) matters more for reducing fear than the precise policy measures that have been implemented (phase 2). Our focus on how policy responses impact fear does not take away from potential individual-level differences, which we take care to control for in the empirical analysis.

Methods and data

Disentangling the potentially competing effects of the outbreak of an infectious disease, the policy response, and the policy outcome is difficult with non-experimental data. This is because incumbents will likely implement policy measures that are endogenous to the initial severity of the outbreak and a multitude of political, social, and economic factors that are related to the causes of the public health emergency, its expected impact, and the anticipated effectiveness of the policy response. To overcome this problem, we devised a randomized vignette experiment embedded in a survey that we fielded in June 2020 to a representative sample of the adult population in the USA (N = 5,461); see the Supplemental Information 1 (SI.1) for details on sampling, design, and measurement.[1] The research questions, experimental design, and survey questions were pre-registered with EGAP (Preregistration Plan #20200529AB). The modeling strategy was not pre-registered. The survey instrument contained several items to evaluate a range of research questions, some of which we have not explored yet. Here, we document how the design of policy responses to public health threats affects mass fear and policy support using a randomized experiment (see Q3.3 and 3.4 in the Preregistration Plan).

Our experimental design avoids deception while providing information that is both theoretically plausible and able to capture scenarios that were relevant empirically at the time that the survey was fielded. The experiment described the outbreak of a hypothetical, potentially deadly infectious disease, and provided information about how the state government responded and the impact of that response. The

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[1]Table S1 reports sociodemographic margins for the raw sample and the weighted sample along with population margins.

study field period (June 2020) represented the period immediately after the first wave of coronavirus cases in the USA. Initial stay-at-home orders had just or were in the process of expiring for many states while coronavirus cases had begun to reach rural areas with previously low exposure. In other words, the pandemic was in its early stages, and state governments were grappling with decisions regarding whether and how to act, meaning that the hypothetical experiment was plausible.

Fielding our study during an actual pandemic is important given our interest in how policy responses to infectious diseases affect mass fear. In contrast, if one were to perform the same study during nonpandemic times, one would attempt to answer the illogical question of how policy responses to a pandemic would affect mass fear in the absence of a pandemic. Moreover, this would potentially confuse respondents who might deem the scenarios unrealistic.

Our focus on policy action at the state level is based upon state governments' abilities to implement direct policy responses to potentially curb the spread of infection. This was followed by information about the three phases of policymaking (outbreak severity, policy response, and policy outcome) that randomly varied the precise attributes of the scenario, using values that were empirically observable or plausible in the summer of 2020. The question wording we used for this monadic vignette experiment was as follows:

1. Outbreak Phase: "Suppose there has been an outbreak of an infectious, potentially deadly disease such as the coronavirus. The disease is spreading [**very slowly/at a moderate rate/very quickly**]. So far, [**10,000/100,000/1,000,000**] individuals have been infected in the U.S."
2. Policy Response Phase: "The state government has been monitoring the outbreak for [**10/30/60**] days without taking action. It has then decided to implement the following measure: [**do nothing/social distancing order with businesses and schools allowed to remain open (no large gatherings)/stay-at-home order with only essential businesses allowed to remain open**]."
3. Outcome Phase: "Two weeks later the number of new cases has [**decreased a lot/remained the same/increased a lot**]."

For each attribute, we randomly selected one level that was presented to respondents and each respondent sequentially assessed four scenarios.

For each scenario, participants indicated their level of agreement with several statements on a 5-point scale ranging from "strongly disagree" to "strongly agree." We used four measures to capture feelings of fear and closely related mental states and behavior. Two statements captured feelings of fear (Forsell et al. 2019): "I feel worried, fearful, or frightened" and "I have thoughts of losing control or bad things happening." A third item expressed feelings of fear about the future: "I am afraid that the situation could worsen." The fourth statement captured fear-related behavior in the form of panic buying: "I feel the need to stock up on essential products (for example, food)." Finally, we included a statement to elicit government approval: "The state government is handling the situation well." Each respondent assessed four scenarios. For the empirical estimation, we generated agreement indicator

variables that equaled one if the answer was "somewhat agree" or "strongly agree" and zero otherwise.[2] We also created a fear index that equaled the average level of agreement across the four items and a binary fear indicator that is one if the average exceeded the midpoint of the scale and zero otherwise. All results remain substantively unchanged when we use the raw outcome variables, see Figure S1.

Results

We estimate the causal effects nonparametrically by regressing measures of fear on indicator variables for each attribute level (using one level as the reference category). All regressions include sociodemographic covariates that control for four age groups, four education levels, five income groups, and three residence categories (rural, urban, and suburban). To simplify exposition, Figure 1 shows the causal effects on our binary fear index indicator along with 95% and 99% respondent-clustered confidence intervals. Focusing on this index is justifiable given the very high inter-item correlation and the homogeneity of the results when estimating the effects separately for each of the four constitutive fear measures (see Figure S1).[3] We find that the initial outbreak severity increases all four measures of fear by about 2 to 8 percentage points when moving from a scenario where the rate of infections increases very slowly to one where the rate of infections increases very quickly. We find similar sensitivities when conceptualizing outbreak severity in terms of the number of infections.

When exploring the effect of the policy response, we find that the rapidity of action significantly reduces fear, while the precise measure that is implemented in response to the outbreak has little to no systematic effect. The strongest effects, by far, come from the policy outcome, i.e., the impact of the policy response on how the infection develops. If the policy response stabilizes the rate of infections, fear decreases substantially and significantly. A decreasing rate of infections further reduces average levels of fear by 30 to 35 percentage points. These results can be viewed as consistent with the attentive electorate argument, given that feelings of fear appear to be strongly linked to the policy outcome.[4]

Effects by partisanship and other subgroups

We explored various factors that might account for our findings. First, we considered partisanship. The COVID-19 crisis hit the USA during a period with very high partisan polarization (e.g., Baldassarri and Park 2020; Martherus, Martinez, Piff and Theodoridis 2021; Simas, Clifford, and Kirkland 2020). Indeed, emerging research on COVID-19 documents strong partisan differences in elite communication (Green et al. 2020) as well as mass attitudes toward the virus and public health

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[2]The means of our raw fear measures are: Feel Fear = 3.5, Lose Control = 3.2, Concern: Worsen = 3.8, Stock Up = 3.4. The fear index average is 3.5. The correlations between the individual fear measures range from 0.62 to 0.78 and are all significant at the 1% level. Cronbach's alpha is also very high: 0.9.

[3]The few exceptions include: (a) stricter policy responses increase the desire to stock up on supplies and (b) the policy outcome has a somewhat stronger effect on feeling fearful than on other items (see Figure S1).

[4]Our findings remain unchanged when computing Bonferroni-corrected p-values, see Table S2.
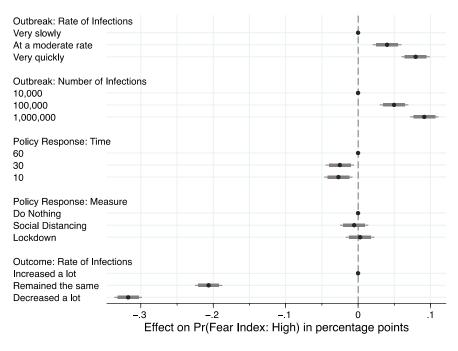
Figure 1
Causal Effects of Pandemic Policy Response on Fear.
Note: Dots with horizontal lines are point estimates with 95% and 99% respondent-clustered confidence intervals from a linear least squares regression of a binary indicator of fear (that equals 1 if the average level of fear across four fear measures exceeds 3, which is the midpoint of the underlying 1 to 5 (strongly disagree to strongly agree) scale) on randomly assigned infection scenario and policy response attributes. N(scenarios) = 21,844, N(respondents) = 5,461. The results are very similar when analyzing the continuous fear index (Figure S1) and when re-estimating the effects separately for each of the four individual fear items (Figure S2). The results are also very similar when using survey weights (Figure S3).

measures (Druckman et al. 2021, Gagan 2020; Pickup, Stecula, and van der Linden 2020), leading pollsters to declare the sharp partisan divide "the biggest takeaway about U.S. public opinion in the first year of the coronavirus outbreak" (Deane et al. 2021). Republicans have been considerably more skeptical of the severity of the virus; they tend to share a general preference for limiting government intervention and reducing public spending (Rudolph and Evans 2005); and they may be more likely to perceive government responses to public health threats as imposing overly fierce restrictions on civil liberties. It is therefore possible that fear among Republicans is not as sensitive to either the type or outcome of the policy response or the initial infection severity.

Figure 2, however, shows that the estimated effects are strikingly similar for Democrats, Republicans, and Independents, indicating that partisanship plays no systematic role in how policy interventions affect feelings of fear. Table S3 offers statistical tests of the null hypothesis of no partisan differences in the treatment
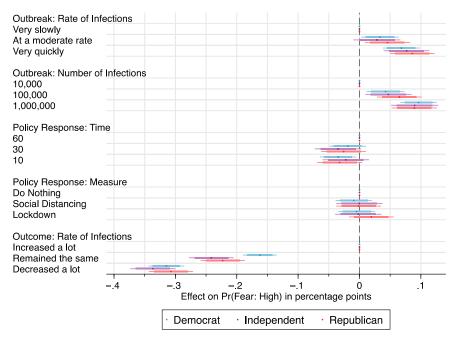
Figure 2
Causal Effects of Pandemic Policy Response on Fear by Partisanship.
Note: Dots with horizontal lines are point estimates with 95% and 99% respondent-clustered confidence intervals from a linear least squares regression of a binary fear indicator variable on randomly assigned policy design and infection scenario attributes. N(scenarios | Democrats) = 7,728; N(respondents | Democrats) = 1,932; N(scenarios | Independents) = 5,972; N(respondents | Independents) = 1,439; N(scenarios | Republicans) = 6,724; N(respondents | Republicans) = 1,681.

effects. These results further confirm that the impact of pandemic policy features on fear is quite similar for Democrats and Republicans.[5] This is a noteworthy null finding given the high levels of partisan polarization in the USA in general (e.g., Baldassarri and Park 2020; Martherus, Martinez, Piff and Theodoridis 2021; Simas, Clifford, and Kirkland 2020) and regarding the pandemic in particular (Deane et al. 2021). While Democrats and Republicans are often strongly divided in political attitudes and behavior, it appears that they are united in how government failure to contain the virus affects their feelings of fear. This, of course, does not demonstrate that respondents are immune to partisan biases in how the media communicates large-scale public health threats. Therefore, we further explore the effect of a closely related phenomenon – exposure to partisan news (Green et al. 2020; Hart, Chinn, and Soroka 2020) – and find no profound differences between consumers of right-wing media (Fox News or One America News Network) and other respondents (see Figure S7). Better understanding the reasons behind these null findings requires a separate study. It is possible that the sources of a primal

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[5]The only significantly different causal effect is that fear is reduced more strongly in response to an unchanged rate of infections among Republicans than among Democrats.

emotion such as fear were less subject to the kinds of biases that affect expressed attitudes, especially early in the pandemic when the nature of partisan divisions on the coronavirus response had not yet fully formed.

We further investigate heterogeneity in the main results across a number of other theoretically interesting subgroups (see SI.2). Moreover, we assess whether the causal effects we document are themselves conditioned by outbreak severity (Figures S12 to S14) and policy measures (Figure S15). The exploration of these interactions between context and policy response indicates that while outbreak severity does shift feelings of fear somewhat, the policy outcome remains far more influential.

We find that the treatment effects do not systematically vary by exposure to COVID-19 (Figure S8) or knowledge of COVID-19 symptoms (Figure S9). The effects are also strikingly similar when grouping respondents by gender (Figure S10), age (Figure S11), and subjective perceptions of COVID-19 infection risk (Figure S16). Fear is most strongly driven by the effectiveness of the policy response to the outbreak of an infectious disease for all of these subgroups of respondents. In terms of race, we find that the effects are somewhat less pronounced for non-white respondents but are generally in the same direction (Figure S17). We also explore the stability of the treatment effects by performing the split-by-round test (Bechtel and Liesch 2021) and find that the effects are quite similar across rounds (Figure S18).

Finally, we assess whether the design of pandemic policy responses also drives government approval (Figure S19). Consistent with our main results, we find that the policy outcome is the most powerful driver of incumbent approval, as a successful response increases government support by 26 percentage points. At the same time, respondents are also quite sensitive to outbreak severity as well as response rapidity and type. The only striking difference is that Democratic respondents are considerably more supportive of more invasive policy interventions. Yet, we note that the sensitivities are still in the same direction, i.e., individuals generally prefer stricter interventions irrespective of their partisan identity.

Conclusion

How can governments effectively respond to large-scale societal threats that evolve over time and require repeated interventions? Answering this question is challenging using observational data. Our approach relied on a randomized experiment that distinguished between outbreak, response, and outcome to offer a comparative perspective on how these features affect feelings of fear and policy approval. The results reveal several key findings. First, policymakers can reduce fear among the public during a crisis if their interventions prove effective. In contrast, the rapidity and type of policy response remain largely inconsequential. Such a pattern is consistent with a modified attentive electorate model. While voters do pay attention to policy responses, design features such as response type and rapidity have smaller effects on fear than policy effectiveness. This may reflect that the latter (i.e., the impact of government policy on the rate of infections) is the most informative feature of a policy response for relatively uninformed individuals. Other features such as the

appropriateness of the response type and rapidity of the response are more difficult for citizens to assess without having access to highly specialized knowledge (e.g., knowing the particular characteristics of the disease, how it is transmitted, and how it affects humans) which most individuals lack. These features are therefore less likely to matter for emotional reactions such as fear as well as for policy approval.

Second, and perhaps most importantly, our null effects on partisanship are particularly interesting in the context of a growing literature that has documented widespread and intensifying partisan differences in public attitudes, behavior, and evaluations in general (Bisgaard 2015) as well as very noticeably in the context of the pandemic (Deane et al. 2021). Here, we unearth a rare instance where such differences are absent. While further research is needed to fully understand the reasons behind the absence of partisan differences, taken together, our findings have important practical implications. They suggest that an outcome-oriented policy response to pandemics that prioritizes policy effectiveness is likely to result in decreased fear (and, possibly, improved social stability) even across partisan divides. This knowledge may provide incentives for opposing political sides to work together to produce an effective response. At the same time, an unfavorable policy outcome incentivizes incumbents to obfuscate information that would reveal their policy failure while office-seeking opposition parties may attempt to discredit policy responses even if they have been effective. Overall, this would imply that partisan cleavages over policy responses to public health threats originate from polarized political elites, not from voters applying different evaluative standards depending on their own partisan identity. Recent research documenting that elite communication on the COVID-19 pandemic is strongly polarized along party lines (Green et al. 2020) is consistent with this argument.

Last but not least, our study provides an example for how to study a complex and important phenomenon – dynamic policy response to a pandemic – in a tractable and realistic way. Fielding a randomized survey experiment during a global health crisis allows scholars to draw causal inferences while maintaining a level of realism that would be absent during non-pandemic times. Future work can employ this design and its logic to study the consequences of crises responses in different contexts.

Ethics statement. The study was approved by the Institutional Review Board at Washington University in St. Louis (Protocol #202004256). See the Supplemental Information 1 (SI.1) for details on sampling, recruitment of subjects, data collection, experimental design, and measurement.

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