Whistling Through the COVID-19 Pandemic: Optimism Bias and Political Beliefs in the United States

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Abstract
Utilizing a nationally representative survey of Americans from December 2020, we consider the degree to which COVID-19 risk perceptions are related to political factors. We examine the likelihood that one believes they will be infected with COVID-19, the likelihood that a peer will be infected, and the difference between the individual and peer perceived risks, known as optimism bias, and compare these perceptions across partisan characteristics. Results show that Trump voting category is the most important contributor to perceived COVID-19 risks. We find similar partisan differences as prior research, note that these differences persisted through the end of 2020, despite the post-Thanksgiving surge with high and growing rates of COVID in all regions of the United States. Contrary to prior expectations, partisanship does not strongly predict the level of optimism bias, as both assessed personal and general health risks track closely with one another by both political party and ideology.

Keywords
COVID-19, optimism bias, risk perception, partisanship

Introduction
Public health experts opined from the outset of the COVID-19 pandemic that optimism bias, the view that one’s personal risk of an adverse event is lower than others’ risks, would impede efforts to contain the outbreak (Bottemanne et al., 2020). This concern is grounded in evidence; optimism bias has been correlated with more risky behaviors in an epidemic context (Fragkaki et al., 2020). In the context of the current pandemic, political orientation is another factor correlated with health. A growing literature has linked political ideology and party affiliation to the uptake of preventive measures (Allcott et al., 2020; Andersen, 2020; Barrios & Hochberg, 2020; Clinton et al., 2021; Fan et al., 2020; Gadarian et al., 2020; Gollwitzer et al., 2020; Grossman et al., 2020), with conservatives consistently being less likely than liberals to engage in social distancing, mask wearing, and other such behaviors. These effects are largely robust to the local severity of the epidemic, demographic, and policy differences. In light of these observations linking both political factors and optimism bias to different behavioral responses, we ask whether political orientation and optimism bias are also linked.

Political leaders have been inconsistent in their messaging both about the efficacy of the mitigation measures and the risks of the virus itself. Part of the partisan divide in behaviors is very likely due to the fact that political elites from different parties have sent divergent messages to the public (Green et al., 2020); then-President Donald Trump asserted that one day the virus would just disappear while political leaders in the Democratic party framed the risk of Covid-19 transmission as very high. At the state level, Republican governors and other leaders were mixed in their responses, with some emphasizing the health risks and others following Trump’s lead in downplaying them. Does elite messaging from political leaders affect optimism bias? Moreover, given the divergence between national and state Republican leaders’ messaging, do conservatives and/or Republicans have higher perceived COVID risks in states with Republican governors who sent strong public health messages?

We employ an indirect measure of optimism bias by comparing the difference between an individual’s estimate of the risks to another person similar to themselves and their own level of risk. Using this indirect measure allows us to also examine the individual components of optimism bias, that is, general versus personal risk perceptions, separately.

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Some levels of optimism bias may be rational; to the extent that an individual can control the risk to himself/herself better than others can control their risks, the optimism may reflect true differences in risks.

This paper makes several contributions to our understanding of beliefs about the possibility of COVID-19 infection and its derived parts. A primary contribution is examining the political factors that shape risk perceptions and optimism bias. Determining whether there are partisan differences in levels of optimism bias could have important implications for public health messaging as the pandemic continues, especially in crafting messages to encourage vaccinations. An additional contribution of this study is that we extend the analysis further in time from previous studies, as our surveys were fielded in the first week of December 2020 whereas others have been fielded prior to this date. The timing is important because it coincides with the post-Thanksgiving, nationwide surge in cases which were not limited to specific regions. Finally, we compare different measures of partisanship, ideology, and support for Trump and their effects on assessed risks and levels of optimism bias.

Our findings show that political factors affect perceptions about one’s own risk and the population risk, but only affect average levels of optimism bias when political differences are measured by Trump voter status. We find that Democrats rate both their personal risk and the population risks higher than Republicans; however, these differences are not robust to the inclusion of controls for voting for Trump. Voting for Trump in 2016, but not in 2020 (Trump Defectors), is associated with higher estimated risks to both themselves and similar persons. Thus, Trump trumps party when it comes to self-assessed risk of COVID-19.

Unexpectedly, however, we do not find robust effects due to political party or ideology on optimism bias: Democrats/liberals and Republicans/conservatives have similar levels of optimism bias, on average. There are some interesting effects of Trump voting status on optimism bias. Trump Defectors have both the lowest level of optimism bias and the highest rated risks to both themselves and to the general population. In what follows, we discuss the literature, provide the primary hypotheses we test in this analysis, discuss the data and results, and conclude with a short discussion of these findings.

**Literature Review**

*Evidence of Partisan Divergence in COVID Risk Views and Behaviors*

The nascent literature on partisanship and COVID-19 behavioral responses in the United States is just beginning to theorize and empirically test the mechanisms through which political identity affects behavioral responses. Certainly, the messaging from political leaders at the national level has differed by party, with Trump generally downplaying the pandemic, delivering inconsistent messaging about public health measures, and disregarding public health recommendations in his own behaviors (Beauchamp, 2020; Coppins, 2020; McCarthy, 2020; Stanley-Becker & Janes, 2020). At the state level, Democratic governors have consistently sent cautionary messages and implemented stay-at-home orders and other preventive measures. While some Republican governors have also done so, others have refused or delayed similar messaging and policies (Grossman et al., 2020).

With preliminary evidence indicating that there are partisan differences in COVID risk perception in the United States, we theorize that an additional, related factor may also be important in explaining the divergent behavioral responses. Optimism bias in particular is another possible mediating factor. As far as we have been able to determine, to date, no one has directly tested whether political factors are related to an individual’s level of optimism bias. Fan et al. (2020), Allcott et al. (2020), and Gadarian et al. (2020) find that conservatives/Republicans express beliefs that COVID is less widespread than liberals/Democrats do, with Allcott et al. (2020) also documenting that Republicans rate their personal chances of contracting COVID as lower than Democrats. However, this is different than comparing one’s perception of their individual risk relative to a peer’s risk. Pushing the research in this direction is an important next step as personal beliefs about risk shape behavioral responses to this and future pandemics and to other crises.

*Evidence on Risk Assessment and Optimism Bias*

Humans tend to assess risk through two different pathways: affective (emotional) and cognitive (risk as analysis); further, our perceptions of a particular risk may shift over time as we gain more experience with that risk (Jang et al., 2020). Jang et al. (2020) detail these changes in risk perception and how they relate to individuals’ trust in government in South Korea over the course of the MERS outbreak in 2015. In this outbreak, both affective and cognitive assessments of risk initially increased and subsequently declined over time, although affective risk was reduced less than cognitive risks. These trends lagged the actual changes in new case numbers. In terms of partisan differences, respondents who affiliated with the opposition party expressed more worry than respondents affiliated with the ruling party. In contrast, Cowling et al. (2010), found low rates of affective risk in Hong Kong during the 2009 H1N1 outbreak, although respondents who expressed higher levels of anxiety engaged in more preventive behaviors.

With respect to general risk perceptions in the current pandemic, Dryhurst et al. (2020) surveyed respondents in 10 countries across Europe, America, and Asia regarding COVID risk perceptions. Their measure, an index combining measures of both affective and cognitive risks, was rated highly across all of the samples. They did not identify strong
Partisan differences in perceived risks in other countries, but did not find an association between conservatism and lower perceived risks in the US sample, although the correlation was not as strong as in the U.S. studies of partisan differences cited in the introduction. One possible explanation is Dryhurst et al.’s (2020) data are from relatively early in the pandemic, and the politicization of the pandemic was in its earlier stages; another possibility is that the first outbreaks in the U.S. were in blue areas, and the initial partisan divide may reflect local conditions.

Optimism bias measures the difference between one’s assessed personal risk relative to other similar individuals. Thus, an individual with optimism bias believes their personal probabilities of a negative (positive) outcome are lower (higher) than the chances for a similar person. Several studies have already documented optimism bias regarding COVID-19 risks throughout the world (Dolinski et al., 2020; Druică et al., 2020; Fragkaki et al., 2020; Kuper-Smith et al., 2020; Park et al., 2021; Wise et al., 2020). The data collected, however, is from fairly early in the pandemic; as we continue to experience the pandemic and gain more information, risk perceptions, and therefore optimism bias may also change. Wise et al. (2020), for example, find that perceived risks were higher after the WHO declared COVID-19 a pandemic. On the other hand, as we continue to experience the disease, it becomes more familiar and normalized, and our perception of risks may decrease (Bottemanne et al., 2020).

A variety of other factors have been shown to affect optimism bias. For example, males express more optimism bias on average than females (Dolinski et al., 2020; Fragkaki et al., 2020). To the extent that there is a gender gap in political party affiliation (Pew Research Center, 2018), our analysis will include gender and other demographic controls to separate those effects from partisanship. Individuals who believe they have more control over risks also have higher levels of optimism bias, and this correlation seems to be stronger in the U.S. than elsewhere (Klein & Helweg-Larsen, 2002).

Underlying Causes of Partisan Differences in Views

Differences in information and beliefs by political affiliation may be an important mediator. Fan et al. (2020) find that the independent effect of political party on COVID-precautions disappears when beliefs about the severity of the epidemic are included; this result is consistent with the hypothesis that the partisan differences are driven by different perceptions of the risks. Allcott et al. (2020) find that both personally assessed risk and estimated future new case counts are lower for Republicans than for Democrats. Interestingly, Allcott et al. (2020) use an experimental treatment, offering roughly half of their respondents a financial incentive for more accurate predictions of future COVID case counts. The partisan gap in these predictions remained the same for the group given a financial incentive for accuracy, which they interpret as evidence indicating true belief differences by party, rather than merely political cheerleading. Similarly, conservatives are less likely to believe they or someone they know will become infected (Rothgerber et al., 2020).

Partisans are also receiving information from different sources which are likely to affect both risk perceptions and compliance with public health measures. Because COVID-19 was a genuinely new phenomenon, the public has relied more on the politically fragmented media for information (Gollust et al., 2020). A few papers examine differing information sources and views on risks by party as mediating factors. Jamieson and Albarracin (2020) and Gollwitzer et al. (2020) find that more consumption of conservative media is associated with less accurate information about COVID-19 risks and more conspiracy theory beliefs. Similarly, Pennycook et al. (2021) find that greater trust in conservative media is associated with increased skepticism to the COVID-19 vaccine and Zhao et al. (2020) found increased trust in Fox news relative to CNN was correlated with engaging in fewer mitigation behaviors, an effect that increased between March and June of 2020.

In addition to differences in information sources and elite messaging, the literature on partisan differences presents several theories as to why there may be gaps in perceived risks across party lines/political affiliations. The personality traits of fear and anxiety are hypothesized to be associated with conservatism, while others more associated with liberalism (Oxley et al., 2008). Others posit that cultural values affect our perception of risks; to the extent that conservatives prize individualism (Wildavsky & Dake, 1990), the restrictions imposed by public health mandates may be perceived as a bigger risk than COVID itself. If personality traits are more important, conservatives may have higher perceptions of the COVID health risks, if cultural values are more important, then conservatives may downplay the health risks in order to justify not adhering to the restrictions.

Social amplification theory, on the other hand, theorizes that individuals interpret risks through the responses of their social (including political) groups (see Gierlach et al., 2010 for a review). Given the chasm in messaging across political parties in the United States, one would expect conservatives to have lower perceived risks from COVID. There is support consistent with party elite messaging in the U.S. being an important contributor to the partisan divide. Pennycook et al. (2021) compare the views of partisans in the U.S., U.K., and Canada and find that partisanship is a more important predictor of COVID-19 risk in the U.S. than the other two countries. Furthermore, they document that the effects are stronger for individuals with more mistrust of liberal and more trust of conservative media, which lends credence to the hypothesis that messaging matters. Rothgerber et al. (2020) also find strong partisan differences in the U.S. in social distancing behaviors, which they link to the mediating effect of differences in the belief of the severity of the pandemic.
along partisan lines and measures of trust in the media and science. 

One complication in the analysis of impact of party elite messaging around COVID-19 is that there is some divergence within the Republican Party. At the national level, former president Trump by and large downplayed the health risk, with occasional lapses. At the state level, however, a subset of Republican governors consistently emphasized the public health risks and implemented policies to control the spread. Grossman et al. (2020) document that governors’ messaging led to reductions in mobility (a.k.a. stay-at-home compliance) for respondents. However, they find that the behavioral responses were greater in Democratic-leaning counties than in Republican-leaning counties (as measured by Trump vote share), and that difference was greater for states with Republican governors. Although Republican voters did respond to governors’ messaging, Grossman et al. (2020) interpret the more muted response in Republican-leaning counties as consistent with a Republican voter “backlash” against the local party elites whose messages diverged from the national leadership. Another theory on the effect of policies is that in the absence of state and local mitigation policies partisan perceptions will be larger (Young & Bleakley, 2020).

**Research Hypotheses**

Based on the discussion outlined in the last section, we pose the following hypotheses:

**Hypothesis 1:** Given the elite messaging and the evidence that conservatives/Republicans fear threats to individual liberties, conservatives/Republicans/Trump voters will have lower levels of self-assessed risk of personally contracting COVID-19 and lower levels of risk of COVID in the population than liberals/Democrats/non-Trump voters.

**Hypothesis 2:** In states where Republican governors took more proactive public health measures, conservatives/Republicans/Trump voters will have higher ratings of personal and population COVID risks in response to the local elite messaging.

**Hypothesis 3:** Given the prior observed correlation between optimism bias and riskier behaviors and the evidence that conservatives/Republicans/Trump voters are far less likely to adhere to public health recommendations, this group will exhibit higher levels of optimism bias than liberals/Democrats/non-Trump voters.

**Hypothesis 4:** Higher local prevalence of COVID-19 should be associated with higher levels of assessed personal and population risk because individuals will be more likely to have direct observations of COVID infections.

In addition to examining these formal hypotheses, we examine not just differences in the averages across groups, but present evidence about the distribution of perceived risks and the resulting levels of optimism bias. Second, in some cases, we have clear hypotheses (1, 2, and 4) about the effects of partisanship on perceived personal and population risks, but as the predictions for both factors are in the same direction, the level of optimism bias will differ by political orientation only if the magnitude of the effect on perceived personal risk is different than the magnitude of the effect on perceived population risk. We therefore do not have strong a priori expectations about the impact of political factors on optimism bias beyond the logic of hypothesis 3.

**Data**

Our data are from 1200 respondents from December 3rd to 7th, 2020 Bucknell Institute for Public Policy survey conducted by YouGov. The experiment was conducted with an original survey using a number of different means of selection (random-digit-dialing, direct mail, and web advertising) with each respondent randomly invited to participate in the survey. Respondents were selected to be representative of the U.S. population based on gender, race, age, and education. The poll includes political party affiliation, a five-point political ideology scale from Very Liberal to Very Conservative, and the 2016 and 2020 presidential vote choice of the candidate. The data also include an indicator for the state of residence for the respondent. Due to missing values for individual variables, the working sample for the regression analysis drops to 1062.

We construct an indirect measure of optimistic bias from the following two questions: “On a scale from 0 to 10 where 0 is this event certainly will not happen and 10 is this event will certainly happen”

1. How probable do you think it is that you will become infected with COVID-19?
2. How probable do you think it is that an average person of your age and sex will become infected with COVID-19?

This indirect method of measuring optimism bias allows us to examine both the level of that bias, and whether/how much partisans view their personal risks versus the general severity of the disease. The measure of optimism bias is the rating of risk to oneself subtracted from the estimated risk to another, similar person. Positive numbers represent optimism, negative numbers represent pessimism. The question about personal risk was not asked of the 43 respondents who indicated they had tested positive for COVID-19, but these individuals were asked to rate the risk to another person similar to themselves. These observations are also excluded from the optimism bias measure.

Optimism bias could alternatively be measured directly, with a question along the lines of “Relative to an average
person of your age and sex, what is your personal risk of becoming infected with COVID-19” with possible responses ranging from much more likely to much less likely, as an example. Generally, the literature finds that optimism bias is larger when measured directly versus indirectly (Fife-Schaw & Barnett, 2004), so our measure will tend towards lower levels of optimism bias. The literature is inconsistent on whether there are ordering effects in the indirect measure, with some finding no ordering effects (Clarke et al., 2000). When ordering effects are found, optimism bias means are higher when the respondent is asked to assess the population risk first (Fife-Schaw & Barnett, 2004), which could further depress our measure relative to alternatives. We have no reason to expect that the ordering effects would differ along political factors, however, and since our main interest is in the comparison across the political divides, we are not concerned that order effects will bias our comparisons.

The data contain information on whether the respondent has been tested in the past year for COVID-19, and whether they have undertaken six actions in response to COVID. These are wearing masks, washing hands more frequently, avoiding family gatherings, bulk buying groceries to reduce number of shopping trips, avoiding crowds, and avoiding eating indoors in restaurants. We created a variable representing the total number of these activities that respondents engaged in and included this scale in our regression analyses. Alternative specifications which include controls for each of the six indicators separately are shown in the Appendix.

**Measures of State-Level Political Culture**

To control for local political culture surrounding COVID-19, we create indicator variables for Republican or split control of the state legislature and Republican governorship. To capture state policy differences which will relate to the messaging from state leaders, we include indicators for whether there is a mask mandate in the state and construct indicators for how quickly stay-at-home orders, if any, were issued in the state after the first reported COVID-19 case in the state. The timing is divided into four categories—orders 21 days or fewer after the first case, between 21 and 30 days, 31 or more days, or no stay-at-home order ever issued. Because New York, Washington, and California had early reported cases and there was some time before the severity of the outbreak was generally realized, we also ran regressions that included indicators for these states; for brevity, the results are not shown, but they did not qualitatively change the results for the other variables. The states that never issued stay-at-home orders are all led by Republican governors.

Since the most marked within party splits in messaging and policy approach were among Republicans, we create four categories of states to capture different levels of messaging about the severity of COVID-19. One category is states with a Republican governor that either issued a stay-at-home order more than 30 days after the first case or that never issued a stay-at-home order, and that also did not mandate mask wearing. This category represents the strongest policy messaging that the public health risks are minimal. The second, to capture mixed messaging about the seriousness of the health risk, represents states with a Republican governor in a state that either issued a mask mandate or that issued a stay-at-home order in 30 days or less after the first case in the state but did not institute both measures. The third, to capture the states where Republican leaders were consistent in sending a message that COVID is a serious problem, are states with Republican governors who both implemented mask mandates and issued stay-at-home orders in 30 days or less of the first reported case in the state. The final category is states with Democratic governors.

**State-Level Measures of COVID-19 Outbreak**

The local disease conditions may impact the respondent’s views on their risk and the general risk to the population. To control for these impacts, we include the 7-day average caseload per 10,000 population and the 7-day average death rate per 100,000 in the week coinciding with the survey date. We note that by around this date, the per capita cases were high in 3114 counties, representing 99.1% of United States counties (Lee et al., 2021), and that by this time in the pandemic, there is therefore a high degree of likelihood that the respondents were in areas concurrently (to the survey) impacted by COVID-19, regardless of their residence.

**Methods**

As a first step, we test for simple differences in the population weighted means of the separate risk measures and the optimistic bias measure by party affiliation, political ideology scale, and presidential vote choice. For the latter measure, we create a categorical variable divided into never voting for Trump, voting for Trump only in 2016, voting for Trump only in 2020, and voting for Trump in both 2016 and 2020. We also compare the full distribution of responses by these measures of partisanship.

Because party affiliation, ideology, and likelihood of voting for Trump are also correlated with other demographic characteristics that may affect risk perceptions and optimistic bias, we also perform three sets of multivariate Ordinary Least Squares regressions of the following form

\[ Y_i = \alpha + \beta_{\text{Republican}} + \beta_{\text{Independent}} + \beta_{\text{Otherparty}} + \beta_{\text{Covid}} + \beta_2X_i + \epsilon_i, \]

where \( Y_i \) is self-assessed risk of contracting COVID-19, assessed risk of another, similar person contracting COVID-19, or the level of optimism bias for individual i. The indicators of interest for the hypotheses are the indicators for party affiliation (omitting Democrats), Covid are the testing and behavior measures described above, and \( X \) is a vector of
demographic controls, including age, education, gender, family income, marital status, church attendance, news interest, and employment status, and $\varepsilon_i$ is an error term. We repeat the analysis by adding the Trump voter categories as additional. Additional robustness checks which use political ideology as the measure of partisanship are included in the Appendix; these results are qualitatively similar to those shown here.

To further test the robustness of the results, a second set of analyses adds the state political party leadership information, COVID-19 policy controls, and state-level COVID conditions; the third uses the interaction between state governorship and messaging as proxied by policy choices to examine whether there are any differences due to differences in state political culture. These robustness checks are presented in the Appendix and are included in our test of the state political culture on the subset of Trump voters.

**Results**

Republicans and Democrats diverge in their views about the severity of the risk to themselves as individuals ($p = 0.0055$), and the general risk to other, similar persons from the virus ($p = 0.00$) as shown in Figure 1. There are similar although somewhat more pronounced patterns when political affiliation is measured by the ideology scale. Interestingly, however, the level of optimism bias, that is, the difference in one’s rating of personal risk relative to another similar person’s risk, does not statistically significantly differ between Democrats and Republicans ($p = 0.16$). Optimism bias does diverge along the political ideology scale, however, with liberal and very liberal persons having statistically significantly higher levels of optimism bias than conservatives and very conservative persons. When the underlying averages are examined, most of this increased optimism bias is due to liberal/very liberal persons’ increased ratings of the risk to the general population, rather than rating their personal risk as lower than conservative/very conservative persons. The percent of persons who have been tested for COVID-19 is not statistically significantly different by party. Only very liberal persons are more likely than other groups to report having had a COVID test.

These differences could be due to a variety of factors, including differences in cultural values and differences in the elite messaging. To the extent that liberals/Democrats are more communally oriented, rather than individualistic (Kahan, 2012), these higher ratings of the population risk could reflect those differences in cultural values. Green et al. (2020) found that Democratic leaders emphasized public health and helping American workers, while Republican leaders emphasized China and threats to business. This dichotomy in messaging could help explain the higher population risk estimates among Democrats.

The patterns among the categories of Trump voters mostly reflect the same trends, with one notable exception. Of all of the groups, Trump Defectors (those who voted for Trump in 2016 but not 2020) have the highest assessment of their own personal risk and the risks to other, similar persons. The Trump Defectors also have the highest reported rate of COVID-19 tests, although the difference between this group and the others is not statistically significant from the others. While the sample size of this group is quite small (40 observations), it seems highly likely that they represent a group of Trump voters who view the disease more seriously and
broke with the former President over his characterization of the pandemic and policy response. Other Trump voters (new votes in 2020 and those who voted for Trump in both elections) rate the risks of the pandemic for themselves and others lower, mirroring the former President’s statements about and treatment of COVID-19.

While there is certainly a correlation between Trump voting status and political party, it is not a one-to-one correlation. To examine how much overlap there is between political party affiliation and Trump voting status, Table 1 shows the weighted presidential vote shares by the respondent’s reported party affiliation. The former president received 2.5% and 3.6% of Democrats’ votes and 25.6% and 35.2% of Other/No Party Affiliation votes in 2016 and 2020, respectively. On the other hand, he received 65.5% and 81.3% of Republicans votes based on our sample, with 28.5% and 9% of Republicans not voting in each of these elections. The data indicate that Trump voting status is largely a subset of the most committed conservative/Republican voters in addition to support from other party or unaffiliated voters. It also represents a political action, rather than a self-reported identification, and is therefore worthy of examination separately from and in conjunction with the other measures of political orientation. Recent work has examined the question of party loyalty and ideology finding that low-knowledge Republicans, Trump-approving respondents, and those that describe themselves as conservative are likely to be party loyalists following Trump cues whether those cues are liberal or conservative in nature (Barber & Pope, 2019). Our results fit into this space as they show that support for Trump is driven by the most conservative voters which is consistent with Barber and Pope’s (2019) findings.

While the mean differences provide an interesting perspective, further examination of the distribution of responses reveals even more nuance. Figure 2 displays the distribution of optimism bias measure between Democrats and Republicans.

Table 1. Relationship Between Party Affiliation and Presidential Vote.

| Vote                | Democrat, % | Republican, % | Other/No Party, % |
|---------------------|-------------|---------------|-------------------|
| Clinton 2016        | 64.4        | 4.3           | 19.1             |
| Trump 2016          | 2.5         | 65.5          | 25.6             |
| Other candidate 2016| 2.6         | 1.7           | 5.5              |
| No vote 2016        | 30.5        | 28.5          | 49.8             |
| Biden 2020          | 80.1        | 8.6           | 19.3             |
| Trump 2020          | 3.6         | 81.3          | 35.2             |
| Other candidate 2020| 0.8         | 1.1           | 2.8              |
| No vote 2020        | 15.5        | 9.0           | 33.4             |

Source: Authors’ calculations from December 2020 YouGov Survey.
The strong modal response of Republicans is to rate their own risk as the same as their assessed risk to another, similar person. While the mode for Democrats is also 0, it represents only 26% of Democrats versus 37% of Republicans. There is a wider range of values of optimism bias for Democrats versus Republicans. These general patterns are repeated when the measures of partisanship are by ideology and by Trump voter category, with Trump 2016 only voters more closely aligning in beliefs with liberals/Democrats.

To disentangle the underlying distributional differences in optimism bias, Figure 3 shows the distribution of responses for personal risk and risk to another, similar person between Democrats and Republicans. To simplify the description, let us examine the proportions on either side of the midpoint on the risk scale. There are substantial fractions of both Republicans and Democrats on both sides of the personal risk scale with a spike of Republicans who indicate they believe there is no chance they will contract COVID. The stronger difference is evidenced by the assessed risk to other, similar persons—only 14% of Democrats view the general risk as below 5, while 27% of Republicans do so. Sixty-five percent of Democrats rate the general risk at above 5, compared to 47% of Republicans. Another notable difference is that Republicans are roughly twice as likely as Democrats to say there is no chance either they or a peer would be infected with COVID.

These figures may speak to the split in messaging across party lines in the United States. As Democratic leaders have been more uniform in their message that COVID-19 is a serious public health problem, only a small percent of Democrats/liberals assess the general risk as low. Many national Republican leaders have sent mixed messaging about the health risks over time, and there are additional splits at the state and local level, with some Republican governors sending a consistent message about the health risks, for example. To test whether partisan messaging differences at the state level could contribute to the relatively even distribution of risk assessments by Republicans, Figure 4 shows the distribution of responses to the risk to another, similar person by the four COVID messaging categories described above. There is some support for the hypothesis that Republicans’ views do respond to the state leaders’ COVID messaging. In states where there is a mixed or weak public health policy regarding COVID, 61% and 56% of the Republican respondents rate the general risk below 5, compared to 40% of Republicans in states with Republican governors who implemented strong public health policies and 46% of Republicans in states with Democratic governors.

Some of these descriptive differences could be explained by differences in the intensity of the epidemic itself, which could be correlated with the governor’s political party and/or policy responses. They could also be due to reverse causality,
with more moderate Republican voters electing less conservative governors. The sets of regression analyses, which control for personal demographic characteristics as well as these state-level leader messaging/policy differences, shed further light on this point.

**Partisanship, Behaviors and Assessed COVID Risk**

There are interesting partisan differences on assessed risk, and the influences differ depending on how partisanship is measured. Turning to the multivariate regression analysis, which also controls for other demographic factors, in Table 2, Republicans rate both their own risk of contracting COVID 0.75 points (on the 11 points scale) lower and the risk to another, similar person just over half a point lower than Democrats. More strikingly, these differences by party affiliation disappear when the additional controls for Trump voter status are added to the regressions.

Trump voting status, on the other hand, is a more robust predictor of risk assessment. The results for model specification 2 in the table show that the coefficients for Trump voting category are large and statistically significant with and without the controls for party affiliation. Compared to those who have never voted for Trump, the ratings of own risk and risk to others for Trump 2016 only voters are 1.83 points and 1.07 points higher. Consistent Trump voters (those who voted for Trump in both elections) rate their own chances of contracting COVID at a little under 1 point lower than never Trump voters, and the risk to another, similar person at 0.865 points lower. This combination of results implies that the Trump effect is greater than the effect of affiliation to a political party. These results are qualitatively similar to alternative specifications which add the state political and policy measures and the state COVID case and death rates, shown in the Appendix.

The impact of the controls for individual COVID-related behaviors should be treated with caution, as they are likely to be subject to reverse causality and omitted variable biases. Having been tested for COVID-19 is positively related to perceptions of both personal and peer risks. Since there is very little random testing for COVID in the U.S., this correlation at least in part would reflect exposure to and/or suspected symptoms of COVID, which logically would then increase one’s perception of the risk. Testing does not statistically significantly affect the level of optimism bias, however. The more protective actions taken by respondents is

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*Figure 4. Republican voters’ ratings of risk of another, similar person contracting COVID, by political culture category.*
positively correlated with both measure of risk and with the level of optimism bias. The most likely interpretation of this correlation is that individuals who engage in more protective behaviors also know that there are significant portions of the population not doing so, and rating their risks lower than their peers’ accordingly.

**Partisanship and Optimism Bias**

The only measure of partisanship that has a fairly robust impact on the level of optimism bias is the Trump voter measure. Party affiliation does not predict differences in optimism bias. Trump 2016 only voters have 0.847 points lower levels of optimism than never Trump voters, even when also controlling for the other measures of partisanship. This effect is large and robust to different specifications (see the Appendix for additional specifications), ranging from 0.80 to 1.05 points increase on the 22-point scale.

These regression results point to an intriguing insight into the small group of Trump deserters. The simplest, most logical explanation for this correlation is that this pessimism about the pandemic disillusioned those former Trump voters and contributed to their desertion of Trump at the polls in 2020. What is not fully captured in the optimism bias regression, but is very likely also an important factor, is that these voters rate both their personal risks as much closer to the general risk than all other groups and have the highest perceived risks both for themselves and the general population. The sample size is small, but further examination of the data reveals that 29 of the 40 voters switched votes and 11 did not turn out in the 2020 election. Most of these switched votes (27) went to President Biden. These striking differences in COVID-19 risks are highly suggestive that this must be a contributor to their change in presidential vote.

**Impact of State-Level Measures**

The addition of controls for the 7-day average new COVID case rate and death rate in the state and state policy and political leadership have no qualitative effect on the estimated impact of the partisan measures on the assessment of personal and population COVID risk. These results for the full sample are included in the Appendix materials; we will focus our attention on the subsample results in Table 3. Similar to prior research (Allcott et al., 2020; Andersen, 2020; Barrios & Hochberg, 2020; Clinton et al., 2021; Fan et al., 2020; Gadarian et al., 2020; Gollwitzer et al., 2020; Grossman et al., 2020), the effects of personal political views are more important than other factors, including the severity of the pandemic in the respondent’s own state. While our results confirm that partisanship is a strong, perhaps the strongest, factor in perceived COVID health risks as this prior research, it is noteworthy that this relationship endured even into the nationwide surge of cases and deaths in early December when new cases were well over twice that of the summer second wave peak.

**Political Culture Tests**

As one possible avenue for partisan differences in views is that citizens take cues from the elites in their group and that the national and state Republican/conservative leaders

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**Table 2. Relationship Between Risk Perception Measures and Party, Trump Voter Status and COVID-19 Behaviors.**

| Variables                        | Personal Risk Model 1 | Personal Risk Model 2 | General Risk Model 1 | General Risk Model 2 | Optimism Bias Model 1 | Optimism Bias Model 2 |
|----------------------------------|-----------------------|-----------------------|----------------------|----------------------|-----------------------|-----------------------|
|                                  | 0.131                 | 0.208                 | 0.243                | 0.0498               | 0.0757                | 0.180                 |
| Independent                      | −0.422* (0.217)       | −0.208 (0.221)        | −0.421** (0.202)     | −0.243 (0.208)       | 0.0498 (0.167)        | 0.0757 (0.180)        |
| Republican                       | −0.752*** (0.268)     | −0.219 (0.325)        | −0.550*** (0.208)    | −0.0847 (0.277)      | 0.183 (0.213)         | 0.233 (0.254)         |
| Other party                      | −0.506 (0.357)        | −0.327 (0.363)        | −0.142 (0.340)       | 0.0359 (0.347)       | 0.432* (0.240)        | 0.466* (0.251)        |
| Tested for COVID                 | 0.525*** (0.200)      | 0.492*** (0.194)      | 0.705*** (0.166)     | 0.679*** (0.162)     | 0.0146 (0.156)        | 0.0185 (0.156)        |
| Number of protective actions     | 0.149** (0.0671)      | 0.0939 (0.0674)       | 0.383*** (0.0656)    | 0.332*** (0.0655)    | 0.259*** (0.0461)     | 0.256*** (0.0460)     |
| R-squared                        | 0.131                 | 0.156                 | 0.175                | 0.193                | 0.110                 | 0.114                 |

Source: Author’s calculations from December 2020 U.S. Data. Regressions also include controls for gender, age, race/ethnicity, education, employment status, marital status, church attendance, and news interest.

Statistical significance: ***p < 0.01, **p < 0.05, *p < 0.10.
messaging regarding the public health risk of COVID has been inconsistent, we test whether these state-level measures might have different effects on the subset of Trump voters. These results are shown in Table 3; we focus on Trump voters as this was the strongest partisan measure in the initial analyses, but additional regressions on the Republican voters are included in the Appendix. As these represent a smaller sample size of 400, to simplify the analysis we focus not on the entire scale of risk assessments, but create two indicators: the first indicator counts only responses greater than 5 as a serious risk; the second counts responses of 5 or greater as viewing the risk of contracting COVID as serious. Our main hypothesis of interest is whether Trump voters rate the pandemic as serious; the coefficient estimates translate into a marginal increase of 15 percentage points in the probability the respondent views the public health risk of COVID as serious. In states where Republican governors instituted both a mask mandate and a quick stay-at-home order, the probability the respondent views the public health risk of COVID-19 as serious is higher. Partisan voters responded more strongly to the Trump messaging that downplayed the seriousness of the pandemic than the other two groups, but the effects are much more pronounced among the consistent Trump voters. This difference would be consistent with the former group having lower concerns about COVID and voting for the candidate that matched their views and with the latter group, in addition to their underlying worldview, also responding to the former president’s messaging. In other words, the evidence is consistent with both elites responding to constituent preferences

Table 3. Serious Risk of Another, Similar Person Contracting COVID, Trump Voter Subsamples.

| β (Standard error) | Risk to Another > 5 | Risk to Another ≥ 5 |
|-------------------|---------------------|---------------------|
| Trump voter, 2020 only | —                  | —                   |
| Consistent Trump voter | —                  | —                   |
| Republican controlled State Legislature 7-day case rate per 100,000 | 0.366* (0.192) | 0.386** (0.192) |
| (0.00473) | (0.00488) |
| 7-day death rate per 10,000 | 0.000189 (0.0194) | 0.0000328 (0.0196) |
| Interaction, Governor party and political culture category | 0.0388 (0.229) | 0.0406 (0.233) |
| Republican Governor*Mandate and Quick stay-at-home order | 0.432** (0.217) | 0.457** (0.217) |
| Republican Governor*Mixed policy | —0.432** (0.217) | —0.457** (0.217) |
| Republican Governor*No mask requirement, late/no stay-at-home order | —0.0861 (0.223) | —0.0784 (0.220) |
| Observations | 400                | 400                 |

Notes. Probit regressions include demographic controls. Standard errors in parentheses. Significantly different from the omitted category = *** p < 0.01, ** p < 0.05, * p < 0.10. Statistically significantly different from indicator for Republican governor with Mandate and quick stay-at-home order. † p < 0.05, ‡ p < 0.10.
and with voters responding to elite messaging. The results also point to a larger impact from the former president’s influence than from state Republican leaders on conservatives/Republicans.

**Limitations**

Our analysis is limited in the ability to disentangle the effects of elite messaging from other sources of differences in risk perceptions across political lines. The stronger impact of Trump voter status than the other measures of political identification could be due the impact of his messages, but it could also be due to omitted variable bias. Voting could be proxying for stronger partisan allegiance than the self-reported identification measures. In effect, the political actions taken by respondents may be better indicators for the underlying strength of beliefs, rather than elite messaging. As our data are a single cross-section, we cannot employ panel techniques and track changes in beliefs before and after the elite cues have been sent.

Similarly, we did not have any ability to control for the main source of news media preferred by the respondents. Work from earlier in the pandemic has found that there are more conspiracy theory beliefs among Fox News viewers (Jamieson & Albarracin, 2020) and Simonov et al. (2020) found lower levels of compliance with social distancing in regions with higher Fox News viewership level. Future work could test the impact of different news outlets on perceptions of risk and whether including these controls weakens the impact of partisanship on those perceptions.

The finding that partisan measures are more important than the actual rates of COVID-19 cases and deaths in the state is troubling, especially as the data coincide with the highest and fastest growth in these rates at the time. However, there is and was considerable variation in these rates across localities within the states, and this weak effect may be due mismatches between the local (unmeasured) and state (measured) conditions. Similarly, other than age, we do not have information about the individuals’ risk of exposure (for example occupational hazards) to COVID and/or their relative risk for severe consequences from contracting the disease (for example co-morbidities). These factors would undoubtedly affect risk perceptions; it is unclear whether how these factors might be correlated with our measures of partisanship.

Finally, the extent to which our results would generalize to other issues such as effects of climate change or gun violence is unknown. The literature on trust in the scientific consensus finds that there are differences along partisan orientation more for issues that have been politicized than for neutral issues (Pasek, 2018). If one were to find partisan differences in risk perceptions and optimism bias, they would be most likely to occur on issues where there has been political polarization. We do find differences by party and Trump voter status in the levels of risk perception, but not optimism bias. Weinstein (1980) posits that events that are new, rarer, and ones that individuals view as being controllable are likely to have higher levels of optimism bias. It is a puzzle that Democrats/non-Trump voters, who engage in more mitigation behaviors (and therefore some control) on average do not also have higher levels of optimism bias.

**Conclusion**

Taken as a whole, consistent with previous work, the results imply that partisanship is the most important contributor to views on the health risks presented by COVID-19 in the United States. Furthermore, the measure of partisanship that is most strongly and consistently associated with these views is the Trump voter category—more so than political party affiliation or political ideology. While our results find similar partisan differences in risk perception as prior research, we emphasize that our results provide evidence that these differences have persisted through the end of 2020, despite the post-Thanksgiving surge increasing the likelihood that respondents would know someone who had contracted COVID. That partisan effects so strongly persist in the face of the steep growth in per capita cases and deaths throughout the United States is remarkable and disconcerting.

For the most part, however, these partisan differences do not result in large differences in the level of optimism bias in the regression models, as both assessed personal and general health risks track closely with one another. It is interesting that the perceptions of risk to self and risk to another, similar, person move in lock-step, producing little to no differences in optimism bias along partisan measures once demographic controls are included. There are statistically significant differences in optimism bias along Trump voter categories, however, with Trump 2016 only voters exhibiting the lowest levels of optimism due to their proportionally higher ratings of the risk to themselves.

There are documented partisan differences in the likelihood of a person engaging in more protective activities, such as mask wearing and physical distancing, and the public health literature has linked more optimism bias with fewer of these activities. Our results, however, do not indicate that the higher rates of risky behaviors by conservatives are due to...
higher levels of optimism bias. Indeed, optimism bias in our sample is correlated with more protective behaviors, implying a reverse causality. In other words, respondents recognize that engaging in more protective behaviors lowers their risks relative to their peers.

The differences in the levels of perceived health risk, both to oneself and to others, are much more important in explaining the partisan differences in behaviors. Beyond previously documented differences in the average levels of assessed risk, there are interesting differences along the entire distribution of responses, with liberals/Democratic voters’ largely rating the general risk above the middle value in the scale, and conservative/Republican voters’ ratings of the general more evenly populating either side of the scale’s midpoint.

To the best of our knowledge, the concept of optimism bias is not widely examined in association with political polarization. While we did not find many differences in optimism bias regarding COVID-19 along partisan measures, there are a number of other policy issues that could be examined. Are voter preferences for policies are affected by optimism bias with respect to uncertain events, for example terrorism, natural disasters, or financial risks? Is the overall level of perceived risks more important than optimism bias for these types of risks, as they seem to be for COVID-19?

The general recommendation in public health to counter the harmful effects of optimism bias is to provide accurate assessments of risks and/or to provide comparisons to peers (Soofi et al., 2020). Our experiment was not designed to identify the source of the difference in perceptions, but they are consistent with messaging from political elites being an important factor in shaping individuals’ risk perceptions. Our results are also consistent with a stronger effect from messages sent by the former president than from other Republican leaders.

These polarized risk perceptions may at this point be “baked in” and resilient to data on the spread of COVID-19. If this is the case, the effectiveness of using persuasion to increase compliance with protective behaviors, which now include vaccinations, may be limited. Policies requiring masking and vaccination may be the only route to controlling the epidemic in the United States. Given that a large proportion of the Republican leadership are not likely to endorse these policies, however, it seems that movement may only come from the willingness of private enterprises and individual localities.

**Appendix Robustness Checks and Additional Information.**

![Appendix Figure 1. Distribution of optimism bias, by ideology.](image-url)
Appendix Figure 2. Distribution of risk of COVID-19 infection for self and another similar person, by ideology.

Appendix Table 1. OLS Model of Self-Assessed Risk of Contracting COVID, Additional Specification Tests.

|                | Model 1         | Model 2         | Model 3         | Model 4         | Model 5         |
|----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| β (Standard error) | Model 1         | Model 2         | Model 3         | Model 4         | Model 5         |
| Independent    | –0.603*** (0.212) | –0.593*** (0.211) | –0.595*** (0.210) | —               | –0.249 (0.215)  |
| Republican     | –0.863*** (0.252) | –0.877*** (0.248) | –0.877*** (0.247) | —               | –0.123 (0.318)  |
| Other party    | –0.730** (0.351)  | –0.726** (0.344)  | –0.727** (0.343)  | —               | –0.454 (0.353)  |
| Trump voter, 2016 only | —               | —               | 1.574** (0.779)  | 1.797*** (0.769) |
| Trump voter, 2020 only     | —               | —               | 0.539 (0.409)   | 0.827** (0.421) |
| Consistent Trump voter       | —               | —               | 1.130*** (0.216) | 1.138*** (0.295) |
| Republican Governor          | –0.0913 (0.243)  | —               | 0.0784 (0.232)  | 0.118 (0.239)   |
| Republican controlled State Legislature | 0.142 (0.250)  | 0.119 (0.264)  | 0.192 (0.244)  | 0.210 (0.249)   |
| Gap between first state case and stay-at-home order |                     |                   |                   |                   |                   |
| 21–30 days   | –0.350 (0.260)   | –0.353 (0.263)   | –0.355 (0.257)   | –0.376 (0.263)  |
| 31–65 days   | –0.249 (0.226)   | –0.299 (0.311)   | –0.280 (0.223)   | –0.275 (0.227)  |
| No stay-at-home-order | –0.173 (0.482)  | –0.268 (0.622)  | 0.128 (0.587)    | 0.245 (0.458)   |
| Mask requirement       | –0.117 (0.277)   | –0.0522 (0.596)  | 0.167 (0.270)    | 0.170 (0.275)   |
| 7-day case rate per 100,000 | –0.00381 (0.0063) | –0.00316 (0.0066) | –0.00502 (0.00613) | –0.00413 (0.00623) |

(continued)
Appendix Table 1. OLS Model of Self-Assessed Risk of Contracting COVID, Additional Specification Tests. (continued)

| β (Standard error)       | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 |
|--------------------------|---------|---------|---------|---------|---------|
| 7-day death rate per 10,000 | -0.0161 (0.0282) | -0.0184 (0.0298) | -0.0146 (0.0258) | -0.0238 (0.0258) |
| Interaction, Governor party and political culture category | | | | | |
| Republican Governor*Mandate and Quick stay-at-home-order | -0.151 (0.269) | — | — | — |
| Republican Governor*Mixed policy | -0.0104 (0.400) | — | — | — |
| Republican Governor*No mask requirement, late/no stay-at-home order | 0.00902 (0.821) | — | — | — |
| Observations            | 1085    | 1085    | —       | —       | —       |
| R-squared               | 0.094   | 0.096   | 0.096   | 0.115   | 0.130   |

Notes. Regressions include demographic controls.

***p < 0.01, **p < 0.05, *p < 0.10.

Appendix Table 2. OLS Models of Assessed Risks to Another, Similar Person of Contracting COVID, Specification Tests.

| β (Standard error)       | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 |
|--------------------------|---------|---------|---------|---------|---------|
| 7-day death rate per 10,000 | -0.771*** (0.204) | -0.777*** (0.204) | -0.771*** (0.204) | —       | -0.386* (0.207) |
| Republican               | -0.930*** (0.220) | -0.959*** (0.222) | -0.957*** (0.220) | —       | -0.0645 (0.286) |
| Other party              | -0.630 (0.363)   | 0.625 (0.353)    | 0.621 (0.352)    | —       | -0.253 (0.360)  |
| Trump voter, 2016 only   | —       | —       | 0.781* (0.472)  | —       | 0.882* (0.478)  |
| Trump voter, 2020 only   | —       | —       | —       | 0.667*** (0.312) | -0.752*** (0.371) |
| Consistent Trump voter   | —       | —       | —       | 1.417*** (0.217) | 1.423*** (0.286) |
| Republican Governor      | -0.0625 (0.227) | —       | —       | -0.0632 (0.215) | -0.0719 (0.219) |
| Republican Legislature   | 0.274 (0.213)   | 0.339 (0.228)   | 0.201 (0.209)   | —       | 0.324 (0.212)  |
| Gap between first state case and stay-at-home order | | | | | |
| 21–30 days               | -0.240 (0.243) | -0.237 (0.245) | -0.217 (0.241) | -0.241 (0.250) |
| 31–65 days               | -0.300 (0.212) | -0.152 (0.268) | -0.352* (0.206) | -0.323 (0.213) |
| No stay-at-home-order    | -0.615 (0.468) | -0.337 (0.577) | -0.484 (0.534) | -0.739 (0.451) |
| Mask requirement         | 0.00690 (0.270) | -0.217 (0.591) | -0.126 (0.256) | -0.0233 (0.268) |
| 7-day case rate per 100,000 | -0.00116 (0.00613) | -0.00310 (0.0064) | -7.33 × 10^-4 (0.00615) | -0.00114 (0.00624) |
| 7-day death rate per 10,000 | -0.00803 (0.0249) | -0.00102 (0.0255) | -0.0105 (0.0240) | -0.0103 (0.0243) |
| Interaction, Governor party and political culture category | | | | | |
| Republican Governor*Mandate and Quick stay-at-home-order | 0.0960 (0.269) | — | — | — |
| Republican Governor*Mixed policy | -0.286 (0.359) | — | — | — |
| Republican Governor*No mask requirement, late/no stay-at-home order | -0.403 (0.777) | — | — | — |
| Observations            | 1125    | 1125    | 1125    | 1200    | 1125    |
| R-squared               | 0.062   | 0.067   | 0.068   | 0.093   | 0.107   |

Notes. Regressions include demographic controls.

***p < 0.01, **p < 0.05, *p < 0.10.
**Appendix Table 3. OLS Models of Risk Using Ideology As Measure of Partisanship.**

| Variables                      | β (Standard error) | Risk to Self | Risk to Others | Optimism Bias |
|-------------------------------|--------------------|--------------|----------------|---------------|
| **Model 1**                   |                    |              |                |               |
| Liberal                       | **0.564*** (0.247)** | **0.538** (0.248) | **0.594** (0.231) | **0.547** (0.232) | 0.0272 (0.210) | 0.00938 (0.210) |
| Moderate                      | 0.397 (0.256)      | **0.539** (0.250) | 0.0977 (0.218)  | 0.252 (0.216)  | −0.323 (0.204) | −0.268 (0.208)  |
| Conservative                  | −0.382 (0.303)     | 0.127 (0.362)  | −**0.715*** (0.268) | −0.173 (0.330)  | −0.394* (0.231) | −0.257 (0.278)  |
| Very conservative             | −0.506 (0.323)     | 0.162 (0.409)  | −**0.946*** (0.292) | −0.256 (0.363)  | **−0.603*** (0.254) | −0.459 (0.321)  |
| Trump voter, 2016 only        | **1.607*** (0.800) | —            | 0.901* (0.500)  | —             | **−0.797*** (0.390) |
| Trump voter, 2020 only        | −0.498 (0.442)     | —            | −0.462 (0.355)  | —             | −0.223 (0.341)  |
| Consistent Trump voter        | −**1.003*** (0.330) | —          | −**1.081*** (0.309) | —          | −0.203 (0.244)  |
| Observations                  | 1156               | 1200         | —              | 1156          | —              |
| R-squared                     | 0.099              | 0.122        | 0.079          | 0.102         | 0.079          | 0.083          |

Notes. Regressions also control for demographic characteristics, state political leadership, state COVID policies, and 7-day average COVID new cases and death rate per 10,000.  
***p < 0.01, **p < 0.05, *p < 0.10.

**Appendix Table 4. Linearized Party Affiliation/Political Ideology Scale.**

| Variables                                      | Personal Risk | General Risk | Optimism Bias |
|-----------------------------------------------|---------------|--------------|---------------|
|                                               | Model 1       | Model 2      | Model 1       | Model 2      | Model 1       | Model 2      |
| Party Affiliation Scale                       | −0.404***     | −0.391***    | −0.275***     | −0.286***    | 0.0271        | 0.0245       |
|                                               | (0.131)       | (0.134)      | (0.103)       | (0.105)      | (0.164)       |              |
| Tested for COVID-19 in past year              | 0.556***      | 0.603***     | 0.716***      | 0.754***     | −0.00848      |              |
|                                               | (0.201)       | (0.207)      | (0.166)       | (0.171)      |              |              |
| Mask                                          | 0.580 (0.380) | —            | 0.764***      | (0.352)      | —             |              |
| Wash hands                                    | −0.538 (0.389) | —        | −0.0450 (0.320) | —             |              |              |
| Avoid family gatherings                        | 0.388 (0.347) | —            | 0.700***      | (0.308)      | —             |              |
| Bulk buy to reduce trips                      | 0.0888 (0.184) | —        | 0.116 (0.160)  | —             | 0.00848       |              |
| Avoid crowds                                  | 0.615 (0.383) | —            | 0.551 (0.344)  | —             | 0.0908 (0.253) | —              |
| Less eating indoors in restaurants            | −0.261 (0.257) | —      | 0.231 (0.229)  | —             |              | 0.403***     |
|                                               |               |              |               |              | (0.194)       |              |
| Number of protective actions                  | —             | 0.131* (0.0707) | —             | 0.372*** (0.0684) | —             | 0.267*** (0.0490) |
| Observations                                  | 1005          | 1005         | 1044           | 1044          | 1005          | 1005          |
| R-squared                                     | 0.139         | 0.127        | 0.180          | 0.171         | 0.114         | 0.109         |

Notes. ***p < 0.01, **p < 0.05, *p < 0.10.
### Appendix Table 5. Robustness Checks: Effect of Adding Personal Behaviors to the Analysis.

| Variables                      | Personal Risk | General Risk | Optimism Bias |
|--------------------------------|---------------|--------------|---------------|
|                                | Model 1       | Model 2      | Model 1       | Model 2      | Model 1      | Model 2      |
| Independent                    | -0.416* (0.217) | -0.422* (0.217) | -0.397** (0.201) | -0.421** (0.202) | 0.0784 (0.168) | 0.0498 (0.167) |
| Republican                     | -0.780*** (0.261) | -0.752*** (0.268) | -0.528*** (0.205) | -0.550*** (0.208) | 0.230 (0.212) | 0.183 (0.213) |
| Other party                    | -0.411 (0.365) | -0.506 (0.357) | -0.0581 (0.337) | -0.142 (0.340) | 0.437* (0.235) | 0.432* (0.240) |
| Tested for COVID               | 0.480** (0.194) | 0.525*** (0.200) | 0.668*** (0.161) | 0.705*** (0.166) | 0.0131 (0.157) | 0.0146 (0.156) |
| Mask                           | 0.567 (0.365) | —             | 0.753** (0.337) | —             | 0.304 (0.221) | —             |
| Wash hands                     | -0.514 (0.377) | —             | 0.0106 (0.308) | —             | 0.541* (0.283) | —             |
| Avoid family gatherings         | 0.463 (0.335) | —             | 0.751** (0.295) | —             | 0.301 (0.226) | —             |
| Bulk buy to reduce trips       | 0.109 (0.180) | —             | 0.104 (0.156) | —             | 0.0231 (0.145) | —             |
| Avoid crowds                   | 0.533 (0.380) | —             | 0.497 (0.337) | —             | 0.116 (0.241) | —             |
| Less eating indoors in         | -0.210 (0.251) | —             | 0.249 (0.223) | —             | 0.373** (0.187) | —             |
| restaurants                    | —             | 0.149*** (0.0671) | —             | 0.383*** (0.0656) | —             | 0.259*** (0.0461) |
| Number of protective actions   | —             | —             | —             | —             | —             | —             |
| R-squared                      | 0.131         | 0.131        | 0.183         | 0.175        | 0.114         | 0.110         |

### Appendix Table 6. Robustness Check: Alternative Specification, OLS Model of Optimism Bias Regarding Contracting COVID.

| β (standard error) | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 |
|-------------------|---------|---------|---------|---------|---------|
| Independent       | -0.144 (0.165) | -0.150 (0.165) | -0.0177 (0.0189) | —       | -0.000992 (0.179) |
| Republican        | -0.151 (0.196) | -0.159 (0.192) | 0.00200 (0.0223) | —       | 0.161 (0.240) |
| Other party       | 0.118 (0.247) | 0.124 (0.245) | -0.0269 (0.0283) | —       | 0.324 (0.255) |
| Trump voter, 2016 only | —       | —       | —       | -0.891** (0.393) | -1.047*** (0.392) |
| Trump voter, 2020 only | —       | —       | —       | -0.378 (0.331) | -0.224 (0.327) |
| Consistent Trump voter | —       | —       | —       | -0.413*** (0.159) | -0.464** (0.215) |
| Republican Governor | -0.0564 (0.190) | —       | —       | -0.0703 (0.185) | -0.0425 (0.188) |
| Republican controlled State | 0.131 (0.187) | —       | -0.0138 (0.0225) | 0.0427 (0.182) | 0.134 (0.186) |
| Gap between first state case and stay-at-home order | —       | —       | —       | —       | —       |
| 21–30 days        | 0.0721 (0.217) | —       | -0.00610 (0.0251) | 0.0813 (0.214) | 0.0877 (0.217) |
| 31–65 days        | -0.0111 (0.178) | —       | -0.0604 (0.0397) | -0.0811 (0.179) | -0.0165 (0.179) |
| No stay-at-home-order | -0.288 (0.375) | —       | -0.0689 (0.0641) | -0.400 (0.354) | -0.328 (0.371) |
| Mask requirement   | 0.00205 (0.229) | 0.0844 (0.0631) | -0.120 (0.231) | 0.0116 (0.226) | —       |
| 7-day case rate per 100,000 | 0.00103 (0.00505) | 8.61 × 10^{-4} (6.69 × 10^{-6}) | 0.00179 (0.00486) | 5.62 × 10^{-4} (0.00503) | —       |
| 7-day death rate per 10,000 | 0.00254 (0.0199) | -0.00362 (0.00298) | -0.00235 (0.0194) | 0.00708 (0.0195) | —       |
| Interaction, Governor party and political culture category | —       | —       | —       | —       | —       |
| Republican Governor*Mandate and Quick stay-at-home order | —       | —       | —       | —       | —       |
| Republican Governor*Mixed policy | 0.0825* (0.0436) | —       | —       | —       | —       |
| Republican Governor*No mask requirement, late/no stay-at-home order | 0.151* (0.0906) | —       | —       | —       | —       |
| Observations       | 1085     | 1085     | 1085     | 1085     | 1085     |
| R-squared          | 0.075    | 0.075    | 0.081    | 0.079    | 0.084    |

Notes. Regressions include demographic controls.

*** p < 0.01, ** p < 0.05, * p < 0.10.


**Appendix Table 7.** Serious Risk of Contracting COVID, Republican Voter Subsamples.

|                          | Risk to another > 5 | Risk to another ≥ 5 |
|--------------------------|----------------------|----------------------|
| Trump voter, 2016 only   | —                    | 0.904* (0.463)       |
| Trump voter, 2020 only   | —                    | —                    |
| Consistent Trump voter   | —                    | —                    |
| Republican controlled State Legislature | 0.159 (0.212) | —                    |
| 7-day case rate per 100,000 | —                    | 0.00409 (0.00501)    |
| 7-day death rate per 10,000 | 0.0230 (0.0212)     | 0.0189 (0.0209)      |
| Republican Governor*Mandate and Quick stay-at-home order | 0.202 (0.249) | 0.217 (0.253) |
| Republican Governor*Mixed policy | —                    | —                    |
| Republican Governor*No mask requirement, late/no stay-at-home order | 0.0159 (0.238) | 0.0168 (0.238) |

Observations 361

Notes. Probit regressions include demographic controls. Standard errors in parentheses. Significantly different form the omitted category = ***p < 0.01, **p < 0.05, *p < 0.10. Statistically significantly different from indicator for Republican governor with Mandate and quick stay-at-home order †p < 0.05, ‡p < 0.10.

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The authors intend to upload the research data to the journal as supplementary materials.

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**Notes**

1. As the risk variables are integers, Poisson regressions were another option. Poisson versions produce nearly identical estimated marginal effects (results not shown – available upon request). We present the OLS models for two reasons. First, to use a Poisson model for the optimism bias variable which includes negative values required a transformation of that variable. Second, in the OLS models the coefficients are marginal effects and do not require further transformation to discuss the results.

2. The p values in the text are from Adjusted Wald tests of the weighted mean differences.

**References**

Allcott, H., Boxell, L., Conway, J., Gentzkow, M., Thaler, M., & Yang, D. (2020). Polarization and public health: Partisan differences in social distancing during the coronavirus pandemic. *Journal of Public Economics*, 191, 104254. [https://doi.org/10.1016/j.jspueco.2020.104254](https://doi.org/10.1016/j.jspueco.2020.104254)

Andersen, M. (2020). Early evidence on social distancing in response to COVID-19 in the United States. SSRN 3569368.

Barber, M., & Pope, J. C. (2019). Does party trump ideology? Disentangling party and ideology in America. *American Political Science Review*, 113(1), 38–54. [https://doi.org/10.1017/s0003055518000795](https://doi.org/10.1017/s0003055518000795)

Barrios, J. M., & Hochberg, Y. (2020). Risk perception through the lens of politics in the time of the COVID-19 pandemic. NBER Working Paper no. 27008.

Beauchamp, Z. (2020). The stunning contrast between Biden and Trump on coronavirus. Vox.Com. [https://www.vox.com/2020/3/12/21177135/coronavirus-covid-19-pandemic-trump-biden-speeches](https://www.vox.com/2020/3/12/21177135/coronavirus-covid-19-pandemic-trump-biden-speeches)

Bottemanne, H., Morla`as, O., Fossati, P., & Schmidt, L. (2020). Disentangling party and ideology in America. *American Political Science Review*, 113(1), 38–54. [https://doi.org/10.1017/s0003055518000795](https://doi.org/10.1017/s0003055518000795)

Coppins, M. (2020, March 11). Trump’s dangerously effective coronavirus propaganda. The Atlantic. [https://www.theatlantic.com/politics/archive/2020/03/trump-coronavirus-threat/607825/](https://www.theatlantic.com/politics/archive/2020/03/trump-coronavirus-threat/607825/)
Gollwitzer, A., Martel, C., Brady, W. J., Parnamets, P., Freedman, Gollust, S. E., Nagler, R. H., & Fowler, E. F. (2020). The emergence of COVID-19 in the US: A public health and political communication crisis. *Journal of Health Politics, Policy and Law, 45*(6), 967–981. https://doi.org/10.1215/03616878-8641506

Gollwitzer, A., Martel, C., Brady, W. J., Parnamets, P., Freedman, I. G., Knowles, E. D., & Van Bavel, J. J. (2020). Partisan differences in political stances are linked to health outcomes during the COVID-19 pandemic. *Nature Human Behaviour*, 4(1), 1186–1197. https://doi.org/10.1038/s41562-020-00977-7

Green, J., Edgerton, J., Naftel, D., Shoub, K., & Cranmer, S. J. (2020). Elusive consensus: Polarization in elite communication on the COVID-19 pandemic. *Science Advances*, 6(28), eabc2717. https://doi.org/10.1126/sciadv.abc2717

Grossman, G., Kim, S., Roper, J. M., & Thirumurthy, H. (2020). Political partisanship influences behavioral responses to governors’ recommendations for COVID-19 prevention in the United States. *Proceedings of the National Academy of Sciences USA*, 117(39), 24144–24153. https://doi.org/10.1073/pnas.2007835117

Jamieson, K. H., & Alharracin, D. (2020). The relation between media consumption and misinformation at the outset of the SARS-CoV-2 pandemic in the US. *The Harvard Kennedy School Misinformation Review*, 1(2). https://doi.org/10.37016/mr-2020-012

Jang, W. M., Kim, U.-N., Jang, D. H., Jung, H., Cho, S., Eun, S. J., & Lee, J. Y. (2020). Influence of trust on two different risk perceptions as an affective and cognitive dimension during middle east respiratory syndrome coronavirus (MERS-CoV) outbreak in South Korea: Serial cross-sectional surveys. *BMJ Open, 10*(3), e033026. https://doi.org/10.1136/bmjopen-2019-033026

Kahan, D. M. (2012). Ideology, motivated reasoning, and cognitive reflection: An experimental study. *Judgment and Decision Making*, 8, 407–424. https://doi.org/10.2139/ssrn.2182588

Klein, C. T. F., & Helweg-Larsen, M. (2002). Perceived control and the optimistic bias: A meta-analytic review. *Psychology & Health, 17*(4), 437–446. https://doi.org/10.1080/08870400200004920

Kuper-Smith, B. J., Doppelhofer, L. M., Oganian, Y., Rosenblau, G., & Korn, C. (2020). Optimistic beliefs about the personal impact of COVID-19. PsyArXiv Preprints. https://doi.org/10.31234/osf.io/epcyb

Lee, F. C., Adams, L., Graves, S. J., Massetti, G. M., Calanan, R. M., Penman-Aguilar, A., Henley, S. J., Annor, F. B., Van Handel, M., Aleshire, N., Durant, T., Fuld, J., Griffin, S., Mattocks, L., & Liburd, L. (2021). Counties with high COVID-19 incidence and relatively large racial and ethnic minority populations—United States, April 1–December 22, 2020. *MMWR Morbidity and Mortality Weekly Report, 70*(13), 483–489. https://doi.org/10.15585/mmwr.mm7013e1

McCarthy, T. (2020, March 29). *Disunited states of America: Responses to coronavirus shaped by hyper-partisan politics*. The Guardian. https://www.theguardian.com/us-news/2020/mar/29/america-states-coronavirus-red-blue-different-approaches

Oxley, D. R., Smith, K. B., Alford, J. R., Hibbing, M. V., Miller, J. L., Scalora, M., Hatemi, P. K.P.K., & Hibbing, J. R. (2008). Political attitudes vary with physiological traits. *Science, 321*(5896), 1667–1670. https://doi.org/10.1126/science.1157627

Park, T., Ju, I., Ohs, J. E., & Hinsley, A. (2021). Optimistic bias and preventive behavioral engagement in the context of COVID-19. *Research in Social and Administrative Pharmacy, 17*(1), 1859–1866. https://doi.org/10.1016/j.sapharm.2020.06.004

Pasek, J. (2018). It’s not my consensus: Motivated reasoning and the sources of scientific illiteracy. *Public Understanding of Science, 27*(7), 787–806. https://doi.org/10.1177/0963662517733368

Pennycook, G., McPhetres, J., Bago, B., & Rand, D. G. (2021). Beliefs about COVID-19 in Canada, the UK, and the USA: A novel test of political polarization and motivated reasoning. PsyArXiv Preprints. https://doi.org/10.31234/osf.io/zhkp

Pew Research Center. (2018). *Wide gender gap, growing educational divide in voters’ party identification*. https://www.
Rothgerber, H., Wilson, T., Whaley, D., Rosenfeld, D. L., Humphrey, M., Moore, A., & Bihl, A. (2020). Politicizing the covid-19 pandemic: Ideological differences in adherence to social distancing. PsyArXiv Preprints. https://doi.org/10.31234/osf.io/k23cv

Simonov, A., Sacher, S. K., Dubé, J. P. H., & Biswas, S. (2020). The persuasive effect of fox news: Non-compliance with social distancing during the covid-19 pandemic (No. w27237). National Bureau of Economic Research. Working paper.

Sooﬁ, M., Najaf, F., & Karami-Matin, B. (2020). Using insights from behavioral economics to mitigate the spread of COVID-19. Applied Health Economics and Health Policy, 18, 345–350. https://doi.org/10.1007/s40258-020-00595-4

Stanley-Becker, I., & Janes, C. (2020, April 2). As virus takes hold, resistance to stay-at-home orders remains widespread – exposing political and social rifts. Washington Post. https://www.washingtonpost.com/politics/as-virus-takes-hold-resistance-to-stay-at-home-orders-remains-widespread–exposing-political-and-social-riffs/2020/04/02/d87314e07436-11ea-85cb-8670579b863d_story.html

Weinstein, N. D. (1980). Unrealistic optimism about future life events. Journal of Personality and Social Psychology, 39(5), 806–820. https://doi.org/10.1037/0022-3514.39.5.806

Wildavsky, A., & Dake, K. (1990). Theories of risk perception: Who fears what and why? Daedalus, 119, 41–60.

Wise, T., Zbozinek, T. D., Michelini, G., Hagan, C. C., & Mobbs, D. (2020). Changes in risk perception and self-reported protective behaviour during the first week of the COVID-19 pandemic in the United States. Royal Society Open Science, 7(9), 200742. https://doi.org/10.1098/rsos.200742

Young, D. G., & Bleakley, A. (2020). Ideological health spirals: An integrated political and health communication approach to COVID interventions. International Journal of Communication, 14, 3508–3524.

Zhao, E., Wu, Q., Crimmins, E. M., & Ailshire, J. A. (2020). Media trust and infection mitigating behaviours during the COVID-19 pandemic in the USA. BMJ Global Health, 5(10), e003323. https://doi.org/10.1136/bmjgh-2020-003323