Trust in physicians and trust in government predict COVID-19 vaccine uptake

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Abstract
Objective: We consider how trust in government, trust in physicians, and interpersonal trust affect the likelihood of COVID-19 vaccine uptake.

Methods: A survey of 3057 registered South Dakota voters was fielded in April 2021 that measured COVID-19 vaccine uptake, three aspects of trust, and several other factors related to vaccine hesitancy. Logistic regression was utilized to analyze the responses.

Results: We found positive, statistically significant, and substantively impactful effects for trust in government and trust in physicians on the likelihood of COVID-19 vaccine uptake, and null results for interpersonal trust.

Conclusions: Our findings provide a more nuanced understanding of the relationship between trust and COVID-19 vaccine uptake, and suggest that public health officials as well as physicians should strive to increase the public’s trust in the medical community.

THE CHALLENGE OF COVID-19 VACCINE HESITANCY

Vaccination is considered the most effective protection against COVID-19 and the best way to prevent further COVID-19 caused deaths. Governments and public health officials in the United States and around the world have been striving to vaccinate a critical portion of the population. Despite an abundance and availability of Food and Drug Administration (FDA)-approved vaccines and evidence of their high effectiveness, the pace of vaccination has slowed down throughout many parts of the United States. In 2021, President Biden did not succeed in reaching the goal of having 70 percent of adults receive at least the first dose of a vaccine by Independence Day despite making it a priority. More worryingly, large portions of the American society, such as evangelical Christians and residents of rural areas, report an unwillingness to be vaccinated (Dias and Graham 2021). According to a Gallup poll, the total number of people who do not want to get vaccinated could be over 1 billion globally (Ray 2021). Unwillingness to vaccinate, or in some cases hostility toward vaccination, is one of the central challenges of bringing the COVID-19 pandemic under control. Discovering underlying contributors to citizens’ unwillingness to receive a COVID-19 vaccination is necessary to address vaccine hesitancy.
We argue that absence of trust is one of the root causes of COVID-19 vaccine hesitancy. The COVID-19 pandemic includes unknowns and people do not have detailed knowledge about the virus or vaccines. The decision to get vaccinated is complex and takes place under the condition of incomplete information. For this reason, this decision is to a large degree driven by the extent of trust a person has in the efficacy and safety of vaccines, the authorities approving these vaccines, and the people administering them. Absence of trust, on the other hand, can translate into vaccine hesitancy.

This paper makes two contributions to the existing literature on COVID-19 vaccine hesitancy. First, we examine the relationship between three aspects of trust—trust in government, trust in physicians, and interpersonal trust—and COVID-19 vaccination. Second, we go beyond vaccination intentions as the dependent variable as seen in existing studies and use vaccination status. This innovative approach provides a more accurate measure. To investigate how various aspects of trust relate to COVID-19 vaccine uptake, we conducted a survey from April 12 to 25, 2021 on a sample of 3057 registered voters in South Dakota. We found positive and statistically significant relationships between trust in physicians and COVID-19 vaccine uptake as well as between trust in government and vaccination. However, the relationship between interpersonal trust and vaccine uptake is more complex. We hope public health officials and physicians themselves will continue to boost the public’s trust in the medical community in order to increase COVID-19 vaccination rate. Our evidence supports that this boost in trust should have a positive effect on vaccine uptake.

TRUST AND COVID-19 VACCINE HESITANCY

The decision to receive a vaccination is a complex issue involving a combination of information about the safety and effectiveness of the vaccine, perceptions about the danger of the disease, and (mis)beliefs about the vaccine—all of which are shaped in a highly polarized environment (Larson et al. 2014). Scholars found that inaccurate beliefs about medically relevant topics, including vaccines, are prevalent in all sectors of the society (Motta and Callaghan 2020). Lack of accurate information about vaccines plays a central role in shaping vaccination attitudes. For example, parents who hold inaccurate beliefs about autism are more likely to support policies that would allow unvaccinated children attend school and proposals that would make the decision to vaccinate children optional for parents (Joslyn and Sylvester 2019). Rather than placing value in scientific findings and medical expertise, people often find comfort in anti-vaccine conspiracy theories; as a consequence, those people are less likely to receive vaccinations and to vaccinate their children (Jolley and Douglas 2014). Unfortunately, those individuals with least knowledge about vaccines not only think they are better informed than the rest of the population, but also show greater opposition to mandatory vaccination and skepticism in medical professionals (Motta, Callaghan, and Sylvester 2018). Similar to other scientific issues such as climate change, vaccination became politicized in our society, and both political ideology and political partisanship are linked to vaccine attitudes (Joslyn and Sylvester 2019; Rabinowitz et al. 2016).

In addition to other factors, scholars have identified the role trust plays in vaccine decision-making, and demonstrated how trust shapes attitudes toward vaccination as well as vaccination intentions (Quinn et al. 2019). In situations that include risk and unknowns, such as vaccination, trust becomes central in decision-making (Siegrist and Cvetkovich 2000). People contemplating vaccination generally do not have detailed knowledge of vaccines, rather the decision is based on their trust in the science behind the vaccine and the persons approving and administering vaccines. A study conducted in the United States found that parents who distrust the government are less likely to trust vaccine information they received from health-care providers (Lee et al. 2016). A similar study from England found that patients’ lack of trust in medical authorities was linked to reluctance to have their children receive Measles, Mumps, and Rubella (MMR) vaccine (Casiday et al. 2006). Scholars also reported a relationship between trust in government medical experts, a closely related concept, and attitudes toward pertussis, influenza, and measles vaccinations (Baumgaertner, Carlisle, and Justwan 2018; Justwan et al. 2019). On the other hand, those individuals
with low trust in medical authorities are more likely to believe vaccine misinformation (Stecula, Kuru, and Jamieson 2020).

Trust plays an even more salient role in people’s vaccine decision-making during the present COVID-19 pandemic due to greater presence of misinformation about COVID-19 and increased polarization of the society (Gollust, Nagler, and Fowler 2020). Scholars have found strong evidence that trust is closely linked to various health mitigation measures, including COVID-19 vaccination attitudes and intentions. For example, trust in the World Health Organization (Bayram and Shields 2021) and trust in science (Kreps and Kriner 2020; Sulik et al. 2021) predict adherence to COVID-19 social distancing guidelines. A study conducted in 17 countries found a link between trust in scientists and health-care professionals and vaccine hesitancy (Rozek et al. 2021). Similarly, trust in experts as well as trust in mainstream media news sources was positively correlated with COVID-19 vaccination intentions (Callaghan et al. 2021; Woko, Siegel, and Hornik 2020). On the other hand, distrust of experts and intellectuals lowered public’s compliance with COVID-19 mitigation behaviors (Merkley and Loewen 2021). Besides trust in medical personnel, trust in government also affects willingness to receive a COVID-19 vaccine (Lazarus et al. 2020). Studies conducted in Austria (Schernhammer et al. 2021), the United States (Daly, Andrew, and Eric 2021), and simultaneously in multiple countries (Trent et al. 2021) found that people with greater trust and confidence in their government were more willing to receive a COVID-19 vaccination. Overall, trust plays a key role in people’s health behavior during the COVID-19 pandemic and absence of trust appears to be central to understanding why there has been such a significant resistance to COVID-19 vaccination.

We make two contributions to the growing literature linking trust to COVID-19 vaccine hesitancy. First, we investigate the relationship between three aspects of trust and COVID-19 vaccine uptake. Trust is a complex and multifaceted phenomenon that is difficult to define and measure (Guillemin et al. 2016; Hupcey et al. 2001; Li 2007). It is plausible that low trust of the public in vaccines, people who administer them, and the government institutions providing vaccines all drive attitudes on COVID-19 vaccination. However, this nuance is often overlooked in the scholarship. Studies that investigated the relationship between trust and COVID-19 vaccine hesitancy mostly focused on only one aspect of trust, such as trust in government (Daly, Andrew, and Eric 2021; Lazarus et al. 2020; Schernhammer et al. 2021) or trust in science (Kreps and Kriner 2020). For this reason, it might be difficult to evaluate the relative importance of different aspects of trust when it comes to the decision to receive a COVID-19 vaccination. In our study, we simultaneously investigate the relationship between three facets of trust and COVID-19 vaccine hesitancy—trust in physicians, trust in government, and interpersonal trust. We hope these fine-grained results will help clarify the relationship between trust and COVID-19 vaccination behaviors.

Our second contribution to the scientific literature is the use of actual vaccination behavior as a measure of vaccination status. Most existing studies examining the relationship between trust and COVID-19 vaccination use vaccine willingness or vaccine intentions as dependent variables (Daly, Andrew, and Eric 2021; Jennings et al. 2021; Reiter, Pennell, and Katz 2020; Rozek et al. 2021; Schernhammer et al. 2021). Vaccines were not universally available at the time when these studies were conducted, so scholars could understandably only measure interest or likelihood of receiving vaccination. Nevertheless, evidence exists that there can often be a disconnect between behavioral intentions and actual behavior (Webb and Sheeran 2006). For this reason, the dependent variable in our study is vaccination status—whether or not a person has received a COVID-19 vaccination. Incorporation of this measurement strategy can help add clarity to understanding the relationship between trust and COVID-19 vaccination.

**ASPECTS OF TRUST AND COVID-19 VACCINE UPTAKE**

Based on the existing literature, we derive several expectations of how trust might affect COVID-19 vaccination behavior. First, we suggest that trust in physicians will play a central role in whether a person

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1 Some studies examine multiple aspects of trust simultaneously but these studies use willingness of receive vaccination rather than the actual behavior as the dependent variable (Jennings et al. 2021; Rozek et al. 2021).
has received a COVID-19 vaccination. Given the newness of COVID-19 vaccines and the complexity of evaluating their safety and efficacy, the decision to get a vaccination depends largely on trust in medical doctors as a profession. Individuals who are most trustful of physicians overall are more likely to defer to the consensus of the medical community on the safety and efficacy of the authorized vaccines (at the time of the study). Existing research has linked trust in physicians to positive attitudes toward the H1N1 vaccination (Borah and Hwang 2021). On the other hand, those who distrust physicians are likely unwilling to get vaccinated, because they might believe that physicians do not have their best interest in mind, or are in league with pharmaceutical companies against patient interests (Yaqub et al. 2014). Scholars reported a robust link between distrust of the medical community held by parents as one of the obstacles to child vaccination (Casiday et al. 2006; Mills et al. 2005). Trust in physicians will likely be central to explaining people’s COVID-19 vaccination status. Several studies already reported a positive relationship between trust in health-care professionals and willingness to receive a COVID-19 vaccination (Allington et al. 2021; Rozek et al. 2021). Therefore,

H1: People with high levels of trust in physicians are more likely to have received a COVID-19 vaccination than those with low levels of trust in physicians.

Trust in government is also likely linked to COVID-19 vaccine uptake. Information on vaccines, particularly the COVID-19 vaccine, is often presented in a very technical way and most people do not have the expert knowledge to evaluate the veracity of information for themselves. The credibility of the government in endorsement of information about vaccines, including their efficacy and safety, rather than the actual content of that information is paramount in the decision to get vaccinated. If people have trust and confidence in the government, then they are more likely to accept the information and receive a vaccination. If they do not have trust in governmental institutions, then they are less likely to trust the information disseminated by the government on the vaccine. Those individuals who distrust the government are less likely to seek advice from health-care personnel regarding vaccines and do not trust information about vaccines (Lee et al. 2016). For example, a study in the Netherlands linked distrust of government to influenza vaccine hesitancy (Zijtregtop et al. 2009). Scholarship suggested that trust in the government might also play an important role when it came to COVID-19 acceptance of a possible vaccine before they were available (Seale et al. 2020). A global survey linked high trust in government to greater acceptance of a potential COVID-19 vaccine (Lazarus et al. 2020). Low trust in government has been linked to lower likelihood of receiving a COVID-19 vaccination after it becomes available (Daly, Andrew, and Eric 2021; Fisher et al. 2020; Jennings et al. 2021). Thus, we propose that,

H2: People with high levels of trust in government are more likely to have received a COVID-19 vaccination than those with low levels of trust in government.

Interpersonal trust might also affect the decision to receive a COVID-19 vaccination. Scholars define interpersonal trust as a belief that statements provided by others can be relied upon (Kasperson, Golding, and Tuler 1992). People who have high interpersonal trust are more likely to trust the government providing vaccines and the health-care professionals who are administering them. Interpersonal trust is considered important in battling some of the conspiracy theories that surround the COVID-19 pandemic (Flaskerud 2021). Nevertheless, the empirical findings on the link between interpersonal trust and COVID-19 vaccine hesitancy are decidedly mixed. On the one hand, high levels of interpersonal trust have been linked to acceptance of COVID-19 vaccine (Altay et al. 2021; Lindholdt et al. 2021). On the other hand, a large international survey found no relationship between interpersonal trust and following COVID-19 mitigation guidelines (Becher et al. 2020). Jennings et al. (2021) found a positive, but nonstatistically significant effect of interpersonal trust on COVID-19 vaccine willingness. Despite these inconsistent findings, we believe the extant literature points toward a positive relationship between interpersonal trust and COVID-19. Therefore,
H3: People with high levels of interpersonal trust are more likely to have received a COVID-19 vaccination than those with low levels of interpersonal trust.

RESEARCH DESIGN

Sample

We conducted a survey to evaluate how trust affects COVID-19 vaccination propensity, which was fielded from April 12 to 25, 2021 on a sample of 3,057 registered voters in South Dakota. The voter data file is publicly available for purchase for the purpose of political polling from the Secretary of State’s office. The poll was conducted by The SDSU Poll, and received funding from South Dakota State University. Using registration-based sampling (Barber et al. 2014), we randomly selected 44,000 registered voters in the state who were mailed an invitation letter to complete an online survey on the impact of the COVID-19 pandemic on their lives. No incentives for participation were offered. The survey was administered via the QuestionPro survey platform. The response rate for the survey was 6.9 percent, which is higher than similar statewide surveys using this method of participant recruitment (Barber et al. 2014).

As a conservative, predominantly rural state, South Dakota provides a good setting to study many aspects of COVID-19 vaccine hesitancy. In many respects, South Dakota population represents a “least-likely case” to study, since both the demographics (race, religion, and rurality) and politics of the state bias our sample toward those that are most distrustful of physicians and the government. Though there was a relatively quick rollout of the vaccine initially, the proportion of the vaccinated population was (and is) below the national average, thus allowing us to maximize leverage on the population in question. At the time of the survey’s fielding, South Dakota reached the 50 percent mark of eligible population with at least one dose of an authorized vaccine.

In general, the survey was quite representative of the population of registered voters. The sample was well balanced on partisan identification relative to the voter file (South Dakota has partisan registration), though Republicans were slightly undersampled (by 3.6 percent) and independents oversampled (by 4.1 percent). Regional balance was very close, as was gender balance (see Table A8 in the Supporting Information Appendix). One weakness of our sample was a rather distinct overrepresentation of those aged 45 and older, due to lower voter registration rates among younger residents. Response rates for younger voters (18–24) were lower than their proportion of the population, as were response rates for those aged 25–44. This age skew also led to an oversampling of vaccinated respondents. To correct for these imbalances, entropy balancing was employed on political party, gender, region, age, and COVID-19 vaccination status (Hainmueller 2012).

Measures

The dependent variable in the survey was vaccination status. We asked participants if they received at least one dose of one of the authorized vaccines. By the time of the survey’s fielding, South Dakota had opened vaccinations to all residents aged 16 years and older. It was widely available in community vaccination centers, pharmacies, grocery stores, hospitals, and clinics, at no cost to the patient. Given that just over half of those sampled in our survey had been vaccinated, we assume that most respondents that had not received at least one dose at that time were exhibiting at least a degree of vaccination hesitancy.²

The primary independent variables were trust in government, interpersonal trust, and trust in physicians. Trust in government was measured with a single question that has often been used in the literature.

² South Dakota’s vaccine roll-out was ahead of most other states. By the time of the survey’s fielding, vaccines were free, widely available, and free of extended waiting periods. In the intervening 6 months since the survey and this writing, the percentage vaccinated in the same subset of the population went up by less than 10% suggesting that the vast majority of those who wanted to get vaccinated had done so by the time of the survey.
TABLE 1  Logistic regression on likelihood of vaccination

| Trust in physicians | 0.172*** |
|---------------------|----------|
|                     | (0.024)  |
| Trust in government | 0.574*** |
|                     | (0.098)  |
| Interpersonal trust | −0.173*  |
|                     | (0.084)  |
| Party ID (3 = Republican) | −0.649*** |
|                     | (0.102)  |
| Age                 | 0.050*** |
|                     | (0.005)  |
| Gender (male = 1)   | −0.112   |
|                     | (0.139)  |
| Education           | 0.173**  |
|                     | (0.060)  |
| Evangelical Christian | −0.630*** |
|                     | (0.148)  |
| Know someone who died of COVID | 0.098 |
|                     | (0.136)  |
| Constant            | −5.328***|
|                     | (0.665)  |
| Number of cases     | 2641     |
| Pseudo $R^2$        | 0.313    |

*p/|t| < 0.05 two-tailed; **p/|t| < 0.01 two-tailed; ***p/|t| < 0.001 two-tailed.

(Morris and Klesner 2010; Woo and Choi 2018): “How often can you trust the government to do what is right?” Interpersonal trust was measured with a single question that is also frequently used by scholars (Bayram 2017; Bougher 2018): “Generally speaking, how often can you trust other people?” Answer options for both of these questions were on a 1–5 scale ranging from “always” to “never.” Trust in physicians was measured with a 5-item instrument. Participants were asked to indicate their agreement with statements about medical doctors with the options of 1–5 ranging from “strongly disagree” to “strongly agree” (Table A3 in the Supporting Information Appendix).

The survey also included variables that have been associated with vaccination attitudes and COVID-19 attitudes more generally—partisan identification (1 = Democrat, 2 = independent, 3 = Republican), age (in years), gender (1 = male), education (1–6 “no diploma” to “post graduate degree”), knowing someone who died due to COVID-19, and evangelical identity (1 “born again” or “evangelical”). The survey also included an instructional manipulation check, which 98.7 percent participants answered correctly.3

RESULTS

We estimated a logistic regression model to investigate the relationship between different aspects of trust and vaccine status. The results are presented in Table 1, which show that the relationship between trust

3 See Tables A4–A7 in the Supporting Information Appendix for the full text of survey questions.
in government and trust in physicians and the likelihood of vaccination is positive and statistically significant. These results are broadly supportive of H1 and H2. The relationship between interpersonal trust and vaccination is statistically significant and negative, forcing us to reject H3. We also find statistically significant relationships between age, education, party affiliation, religious identity, and vaccination status.

To get a more fine-grained understanding of the substantive relationship between our primary independent variables and vaccination, we estimated and plotted predicted probabilities for our independent variables of interest (Long and Freese 2014). Our results show that the variable with the most substantive impact on the probability of getting a COVID-19 vaccination is a respondent’s trust in physicians. As shown in Figure 1, respondents at the lowest end of our index show a probability of vaccination of 0.11, whereas those most trusting physicians have a probability of 0.80 (all other variables held to their means). Again, these results give strong support to H1. Trust in government also has dramatic impact on the probability of vaccination as shown in Figure 2. Respondents who identified as “never” trusting the government to do the right thing have a probability of vaccination of 0.34. Respondent who trust the government to do the right thing “most of the time” have a vaccination probability of 0.74. These results provide strong support for H2.

Our results for interpersonal trust run in stark contrast to our theoretical expectations. For those who said that other people can be trusted “some of the time,” the probability of vaccination is 0.58, while the probability is 0.50 for those who stated that others can be trusted “most of the time.” Though this finding was in the opposite direction as we expected, Figure A1 in the Supporting Information Appendix shows that this effect is rather small relative to trust in government or trust in physicians. As such, we find no supporting evidence for H3. Additionally, the results for the control variables on age, education, religious identity, and party affiliation are consistent with previous findings.

Our findings about trust in physicians and government, and their association with the likelihood of vaccination, remain robust across the various demographic groups that were controlled for. This pattern is particularly true among both evangelicals and Republicans—groups with previously identified strong vaccination hesitancy. Figures A2–A5 in the Supporting Information Appendix show the profound importance of these variables on shaping vaccination behaviors. For example, among evangelicals who “never” trust the government, the probability of vaccine uptake is 0.20, whereas for those that trust the government

4 We also estimated models with unweighted data and the results were nearly identical.
“most of the time,” it is 0.58. The respective probabilities of vaccination among non-evangelicals are 0.40 and 0.79. Partisan identification has a similar additive effect with the least trustful Republicans showing a 0.20 probability of uptake, while the least trustful Democrats’ probability is 0.68. Among the most trusting of government, the probability of uptake is 0.59 for Republicans and 0.92 for Democrats. Independents closely parallel Republicans with slightly higher probabilities throughout the range of trust. These results demonstrate that trust in government and physicians is still instrumental in shaping vaccination decision, even among groups that have high levels of hesitancy.

DISCUSSION

Our results show that the relationship between trust and COVID-19 vaccine uptake is indeed rather complex. Early work on COVID-19 vaccination attitudes is largely confirmed with our data on actual vaccine uptake. As we expected, people’s faith in the medical profession is an important driver of this decision. It is important to note that our measure of trust in physicians was about the profession broadly, not about a respondent’s trust in their personal physician. At the time of the survey’s fielding, COVID-19 vaccination was rather new, only a few months old. Most respondents were likely unable to discuss the details of the vaccines with their physicians after the vaccines were made available and prior to their decision to get vaccinated. Moreover, due to COVID-19 pandemic, total primary care visits decreased by more than 20 percent in the second quarter of 2020 compared to the previous 2 years (Caleb et al. 2021). Absent that personal physician contact, it is expected that respondents would fall back on the trust they extend to the medical community responsible for developing and delivering the vaccine. Trust in government seemingly has a similar mechanism, though to a slightly lesser degree. Given the central place of public agencies at the federal, state, and local levels promoting COVID-19 mitigation practices and vaccination, people’s trust in those institutions were central in their decision to vaccinate. Those that are trustful of government institutions deferred to the expertise of public officials.

While in many respects, the positive associations between trust in government and physicians is entirely expected, the negative association between interpersonal trust and vaccine uptake shows that many of the determinants of the vaccination decision are working at cross purposes. As we have shown, the substantive effects of interpersonal trust on vaccination likelihood are rather muted, yet they are not negligible.
 Upon further analysis, we find that higher levels of religiosity are associated with some extent with higher degrees of interpersonal trust, with a correlation of 0.13. Once a measure of religiosity is placed in the logistic regression, the interpersonal trust variable falls out of conventional thresholds of statistical significance, with minimal consequence to the other parameters (Table A2 in the Supporting Information Appendix). While this is certainly deserving of more research attention, we believe that the relationship between interpersonal trust and vaccination is at best, quite marginal.

Besides scholars and researchers, the findings of our study should be of interest to both public health officials and the medical community. Given the strong link between trust in physicians and COVID-19 vaccination, authorities should strive to increase the trust the public has of the medical community using the already established trust between patients and their doctors as a bridge. Public health officials and health-care system administrators must have a strong communication plan in place to present a united front to the public they serve when implementing frequent changes. It is important to provide accurate public education, dispelling misinformation and disinformation. Public health officials should promote health and technology literacy in the public-school systems to prepare future patients to recognize reliable sources of information and avoid fake news. Promoting trust through public health officials and health-care administrators, as well as capitalizing on the individual trust within the patient–provider relationship is encouraged to reach the remaining unvaccinated population. It is encouraging that some authorities have already made this goal a priority. White House COVID-19 response coordinator Jeff Zients underscored the goal of the government to “strengthen the public’s trust in government and increase their confidence in the vaccines” (The White House 2021).

In addition to public health officials, physicians themselves are the key actors when it comes to increasing the public’s trust in the medical community. It is well supported that a vaccine recommendation from a provider is one of the most effective tools for vaccine uptake. Providers must remember or realize their impact on patient’s vaccine decision-making, and their unique position to shape people’s COVID-19 vaccination attitudes. Additional focus may be needed on specific patients with lower levels of trust, often due to communication challenges such as patients with English as a second language and immigrant workers. On the other hand, if physicians or other staff express uncertainty during interactions with a patient, this will undermine the level of trust patients have built. In times of constant change with release of new information such as during the COVID pandemic, it is often difficult to stay up to date with facility, state, and federal recommendations and requirements. The resulting confusion can send mixed messages to patients, decreasing their confidence in the health-care system. Given the importance of trust in physicians in COVID-19 attitudes, public health officials and physicians themselves should continue to develop the trust public has in the medical community.

CONCLUSION

Overcoming vaccine resistance is an essential component in efforts to increase COVID-19 vaccination rates. Nevertheless, despite the availability of highly effective vaccines, vaccination pace has slowed down in parts of the United States and in other countries. The issue of trust appears to be a key element when it comes to understanding the resistance to COVID-19 vaccination. This study made two contributions to the emerging scholarship. First, we distinguished between three aspects of trust—trust in physicians, trust in government, and interpersonal trust—and COVID-19 vaccination. Second, we used the actual vaccination status of respondents as opposed to intentions to get vaccinated as the dependent variable. The findings show a strong relationship between trust in the government and the trust in physicians and vaccination. On the other hand, the negative relationship between interpersonal trust and vaccination was unexpected.

Despite the contributions to the scholarly literature, this study is not without limitations. The sample is composed of registered voters of one state in the United States—South Dakota. We feel that the sizeable rural and evangelical Christian population, which has on average expressed greater vaccine hesitancy, makes South Dakota a good empirical case to study that subpopulation. On the other hand, other groups
associated with greater vaccine hesitancy, such as Black and Hispanic communities are underrepresented in South Dakota compared to the rest of the country, which might limit the generalizability of the results. Future work should consider exploring the relationship between trust in pharmacists and COVID-19 vaccination. A large proportion of vaccination sites are located in pharmacies, and therefore the level of trust people have in pharmacists might affect their willingness to receive a COVID-19 vaccination.

CONFLICT OF INTEREST
The authors declare no conflict of interest.

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**SUPPORTING INFORMATION**

Additional supporting information may be found in the online version of the article at the publisher’s website.

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