


# COVID-19 Information Sources and Misinformation by Faith Community

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Richard Lee Rogers, PhD<sup>1,2</sup> and  
Nicolette Powe, DrPH, MS, MCHES<sup>1</sup> 

## Abstract

Faith communities support a variety of public health initiatives as conduits of information and service distribution points. However, with the onset of the coronavirus pandemic (COVID-19), there is concern that religious communities may be echo chambers for misinformation and conspiracy theories that are undercutting the adoption of precautions to prevent transmission and the use of COVID-19 vaccines. The purpose of this study is to identify the receptivity to and spread of misinformation about COVID-19 by faith communities and whether embracing these inaccuracies constitutes a uniquely religious effect. This study conducted three small analyses approach. First, we engaged in the automated text mining of approximately 2.3 million discussion posts from discussion forums noted for their conspiracism and extremism. Next, secondary quantitative analysis of two recent surveys from the American Trends Panels by Pew Research conducted in April 2020 (N = 9482) and February 2021 (N = 9429) were conducted to determine whether sources of information and preventive behaviors related to the pandemic were associated with uniquely religious effects or possibly mediated by other factors such as sociodemographic characteristics or political views. The association of White evangelicals with politicized misinformation was consistent across all three small studies. Prior to the availability of vaccines, religious themes consistently appeared in 15–19% of COVID-19 social media posts and were higher in subsets of the discourse tied to misinformation. The framing of COVID-19 using religious language was associated with the Christian right in about half of the religiously-themed posts. Religious themes fell below the 15% threshold once the vaccine was available. In the survey research, small, uniquely religious effects were found with White evangelical receptivity of COVID-19 information from Donald Trump and less reliance on information from public health experts, and small, uniquely religious associations were found with preventive measures. Among White nonevangelical Protestants and non-Hispanic Roman Catholics, there was found the same combination of a higher likelihood of reliance on messages from the Donald Trump Presidency and a lower likelihood for news-media use. Black Protestants showed a higher level of use and trust in state and local government officials. The study confirmed higher use of social media among non-Hispanic Roman Catholics but did not find this relationship among Hispanic Protestants. Faith communities are not always receptive to public health messages that promote the public good. This study indicates that the religion effects can appear early, giving time for health education specialists to address them, and that these effects can diminish once preventive measures are available.

<sup>1</sup>Youngstown State University, Youngstown, OH, USA

<sup>2</sup>Walden University, Minneapolis, MN, USA

## Corresponding Author:

Richard Lee Rogers, Department of Criminal Justice and Consumer Sciences, Youngstown State University, One University Plaza, Youngstown, OH 44555, USA.

Email: [rlrogers02@ysu.edu](mailto:rlrogers02@ysu.edu)



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## Keywords

COVID-19, faith community, misinformation, Internet, communication, public health

## Three-Question-and-Answer Highlights of Manuscript

### 1. What do we already know about this topic?

There is anecdotal evidence about the spread of COVID-19 misinformation in particular faith communities (e.g., White evangelicals, Black Protestants, and Hispanic churches) but systematic evidence of any uniquely religious effects is sparse.

### 2. How does your research contribute to the field?

We found patterns of information use and misinformation consistent with the politicization of the pandemic. The largest associations were small effects found consistently among White evangelicals after controlling for socio-demographic characteristics and political orientation.

### 3. What are your research's implications towards theory, practice, or policy?

Public health outreaches usually assume faith communities are cooperative, but the pandemic underscores the need to identify pockets of faith-based resistance that could undermine public health initiatives. We note that with the pandemic faith-based resistance appeared early, giving health education specialists time to respond if they had so desired, and that resistance appeared to wane with the availability of the vaccine.

## Background

Public health initiatives related to the current pandemic are combating a wave of misinformation.<sup>1-3</sup> Outside of the “normal” problems of managing facts in a crisis,<sup>4,5</sup> this recent spread of inaccuracies has been particularly acute because of the ongoing culture wars over science and the news media.<sup>6,7</sup> Unfortunately, this problem was amplified when then President Donald Trump communicated misinformation that the pandemic was a political hoax, major media outlets were spreading “fake news,” and the coronavirus disease (COVID-19) would just go away.<sup>2,8,9</sup>

Our research focuses on the dynamics of these events across faith communities. We seek to address the extent to which religious worldviews were connected with COVID-19 misinformation and whether this acceptance of inaccurate claims was a uniquely religious effect independent of underlying sociodemographic and political influences. Our findings have important implications for faith-based health-education initiatives.

### COVID-19 Misinformation

We classify pandemic misinformation broadly into two sets of ideas. The first set involves claims that statements made by public health experts and scientists were inaccurate.<sup>9</sup> Critics of this expertise contended that the pandemic was to be no more serious than the seasonal flu and would simply

disappear, either naturally, through herd immunity, or by miraculous causes.<sup>10-12</sup> Homeopathic remedies (e.g., sunshine and Vitamin D), it was argued, could boost the immune system and prevent a person from catching COVID-19.<sup>13,14</sup> Medical professionals and the Food and Drug Administration (FDA) were criticized for denying the preventive and/or curative powers of hydroxychloroquine and ivermectin or the effectiveness of ingesting bleach or colloidal silver.<sup>15-19</sup> Discussions of a COVID-19 vaccine reignited the anti-vaccination movement.<sup>20-22</sup>

The second set of misinformation involves conspiracy theories about the origin and spread of COVID-19.<sup>23</sup> The virus was seen as deliberately weaponized by the Chinese. Conspirators (globalists, socialists, Jews, and/or the Democratic Party) allegedly were taking advantage of the pandemic to strip away personal freedom, create a one-world government, and/or undermine the Trump presidency.<sup>24-26</sup>

### Responses of Faith Communities

Many faith communities responded to the pandemic with messages of hope, emotional support, and assistance to low income and unemployed families adversely impacted by the crisis.<sup>27-29</sup> However, some religious groups openly embraced elements of the misinformation described above. White evangelicals, or at least evangelicals identified with the religious right and Christian nationalism, are often portrayed as leading voices in the politicization of culture, education,

science, and medicine.<sup>30-33</sup> With the pandemic, they were accused of continuing worship services despite statewide lockdowns and recommendations to avoid large-group meetings, supporting organizations that challenged the efficacy and morality of a potential COVID-19 vaccine, and disregarding the use of face masks and other public health measures.<sup>34-39</sup> Early in the pandemic, prophets hinted that the virus would begin to diminish by Passover/Easter in April 2020 and be almost gone by the celebration of Pentecost in May 2020.<sup>40-42</sup> Ministries promoted the use of bleach or colloidal silver.<sup>43,44</sup> Religion-based conspiracy theories included claims regarding the weaponization of the virus and the use of the pandemic by the Chinese and Democratic Party to bring down Trump because of his support for Israel.<sup>45-47</sup> In its extreme, evangelical skepticism was expressed in apocalyptic terms as threats to religious freedom and the foundation for the future reign of the Antichrist.<sup>48,49</sup>

Misinformation also surfaced in minority churches, though often with a different emphasis than among White evangelicals. Black churches routinely deal with a mistrust of medical professionals perpetuated through the collective memory of the Tuskegee Syphilis Experiment.<sup>50,51</sup> Pew Research data indicated that Blacks were more skeptical than other groups about trusting medical professionals, and they questioned the safety and effectiveness of COVID-19 vaccines.<sup>52,53</sup> The high rate of COVID-19 deaths among Blacks and the need for minorities in clinical trials for COVID-19 vaccines perpetuated this skepticism about medical expertise with claims that the pandemic was a deliberate plot against minorities.<sup>54,55</sup>

In addition, we also suspected that health-care misinformation was spreading among Hispanic faith communities, and we believe that we are among the first to look at this issue with any depth in the USA. The 2020 presidential election highlighted the influence of misinformation among Hispanics,<sup>56</sup> and it was asserted that a distrust of authority among Hispanics was amplified by the lack of Spanish-language information about the pandemic.<sup>57</sup> Given the issues appearing in other faith communities, we investigated the possibility of misinformation emerging among Hispanic Protestants and Roman Catholics as part of our research.

## Methods

No single data source in the public domain could answer our research interests in their entirety. This study worked around this problem using three small analyses in order to establish consistent patterns related to faith-based involvement in the spread of misinformation related to COVID-19 and its vaccines. First, we examined COVID-related posts from conspiracy and extremist discussion forums in identify the presence of religious discourse. Second, we looked at the April 2020 American Trends Panel survey from Pew Research to examine by religious community use of information sources. Finally, we extended this analysis into the

willingness to use face masks and get vaccinated using the Pew's February 2021 American Trends Panel.

## COVID-19-Related Discussion Posts

We engaged in the automated text mining<sup>58</sup> of a data base with material scraped from 91 discussion forums and chat rooms across 5 platforms—8kun, Reddit, Stormfront, Telegram, and Win boards. The data was originally collected for use in the frame analyses of conspiracism and extremism generally, but it became readily apparent that the data collection was also capturing substantial commentary about the pandemic. While discussions on the platforms are usually not representative of the attitudes of the population as a whole, they were well suited as a starting point for our analysis because these platforms were major distribution points for COVID-19 misinformation and the organization of anti-vaccination protests.<sup>59-64</sup>

For this paper, our analysis focused on the presence of religious discourse within COVID-19 comments. We identified 2.3 million social-media posts on the pandemic written between January 2020 and November 2021. A religion frame and various subsets of it were seeded with user-defined key words, phrases, and word stems, which subsequently were expanded as part of an ongoing iterative process to audit the quality of the word associations. Particular attention in the analysis was given to a subset of the religion frame that highlighted themes commonly identified in the academic literature as the Christian right—a politicized form of White evangelicalism that includes Christian nationalism, the application of Bible prophecy to present time, spiritual warfare and Christian militarism, the New Apostolic Reformation, and antisemitism.<sup>65,66</sup> A total of 328,638 posts (14%) were classified as having religious themes, excluding religious words idiomatically used with non-religious intent (e.g., “God bless you”), and 171,247 (7%) were classified as Christian right.

We also operationalized the two kinds of misinformation mentioned earlier in this paper through 3 subsets of posts within these COVID-19 social-media discussions. Conversations about the accuracy of experts and scientists were measured using posts about science, research, and individual health experts and agencies (e.g., Fauci, Birx, and CDC). Conspiracies about the virus and vaccines were identified through two sets of posts, one identifying comments about COVID-19 hoaxes and plots and the other about vaccination. These subsets were not mutually exclusive, and a total of 1.7 million posts, or 75% of the COVID-19 sample, fell into at least one of them.

Automated text mining admittedly is an imperfect methodology. It is difficult to interpret the context regarding any specific use of a word, and so there could be error. For example, with the sources used in this study, the co-occurrence of COVID-19 and vaccine key words usually indicated opposition to vaccination, but in individual situations, the key words might be used to express exactly the opposite. The

strength of text mining derives from its probabilistic nature, which provides the ability to use likelihoods in the meaning of texts to identify long-term trends and clusters in the discourse.

The computer code for this analysis was written using Stata 17.0 SE. Because of the size of the program routines and the large number of key words, we have not included the code here and instead placed it online along with a public-use version data set in order to establish transparency for our process and allow for inspection and secondary analysis of our work [<https://drive.google.com/drive/folders/1-iy1GDpFtDyi4s-MXBwOe1Mr7FPmyhvz?usp=sharing>]. We cannot distribute texts of posts themselves because of the copyright privileges of others, but we can provide a list of our sources and parsing code for those wishing to replicate our work in the online directory.

### Pew Research Surveys

We used two surveys from the American Trends Panels (ATPs) conducted and distributed by Pew Research.<sup>67,68</sup> The April 2020 ATP, collected between April 20 and April 26, had 10,139 respondents, which for this study was reduced to 9482 respondents (94% of the original sample) due to missing data. The February 2021 survey had 10,121 respondents sampled February 16 to 21, and this number was reduced to 9429 (93%) in the analysis of face-mask wearing and 9419 (also 93%) in the part of the analysis dealing with vaccination.

**Variables.** Dependent variables tapped into currents of misinformation indirectly by identifying major information sources and actions or intended actions related to preventive measures. The dependent variables on the use of sources of information came from the April 2020 survey. Categories for expert and official government sources of news and information were divided into four groups—public health experts, state and local government officials, then President Donald Trump, and the news media. In addition, we examined responses for four informal sources of information: (1) family, friends, and neighbors, (2) community or neighborhood newsletters or listservs, (3) online forums or discussion groups, and (4) social media. For all but one of these information sources, a binary variable for each source was created contrasting the response “major source” with the combination of “minor source” and “not at all.” The exception was social media, whose dichotomous variable was built around self-declared use of social media with the category “often” combined with “sometimes” and the response “hardly ever” with “never.”

Two preventive actions were assessed in February 2021. One dependent variable was the unwillingness to wear a face mask. The variable was coded zero if the respondent said that they did not wear a face mask at all or most of the time, and 1 if they indicated that they did. The other dependent variable highlighted anti-vaccination stance as a dichotomous variable. Individuals were scored 1 if they had not yet received the

vaccine and probably would not do so. They were scored zero if they had been vaccinated or said that they intended to do so.

The independent variables in both surveys were faith community, which were built on combinations of the self-identified religious identification with race and ethnicity. No combination had less than 150 respondents. After preliminary analysis and testing differences across faith communities using one-way ANOVAs with Bonferroni tests, three categories—Jews, White Other Religion, and Nonwhite Other Religion—were combined into a single group labeled Other Religion, and self-identified Atheists and Agnostics were merged with Religious Nones (no self-identified faith tradition). The result was a typology of faith communities with 10 categories, which for the purposes of analysis was broken into a block of dummy variables. The list of statistical controls used as mediators was a standard set of socio-demographic and political-identity variables, which are listed in Table 1.

**Analytic Strategy.** All analyses were weighted using the appropriate survey’s sample weight. Binary logistic regressions used to measure the effects of multiple independent and control variables, and the category Religious None was used as the reference category. Unadjusted models reported results for the block of faith-community dichotomous variables only. The adjusted models revealed unique religious effects because they removed the potential mediating effects of sociodemographic and political-identity control variables (Table 1).

Stata 17.0 SE was the software used in this analysis. In spite of potential correlations among the independent and control variables, the Variance Inflation Factor for models never exceeded 4.58. Given the sample size, the discussion of results focused only on odds ratios where  $P < .01$ , which correspond roughly to a small effect size when the odds ratio was converted to the  $r$  statistic.<sup>69</sup> Nearly all religious effects reaching this level were small. We make little mention of effects associated with Other Protestant and Other Religion—results in these categories were hard to interpret because they were so diverse.

## Results

### Trends in Discourse

Figure 1 shows that COVID activity peaked at 9626 posts per day in August 2021. Based on our monitoring of trends, there was probably a real increase in activity during the middle of the summer, but the numbers may be exaggerate its size because it includes posts tied to the initial novelty of several new chat rooms. Debates over vaccinations clearly drove much of this increase: There is a little increase in vaccine discussion late in 2020 when news broke that vaccinations were approved; the conversation level sharply rose starting in the late winter as mass vaccination started to happen. The vaccination debate not only increased in volume but in terms of the overall percentage of activity, rising from 55% of

**Table 1.** % Distributions for Faith Community and Control Variables.

	April 2020 Urvey	February 2020 Survey
<i>Religious Identification</i>		
White evangelical Protestant	15	17
White nonevangelical Protestant	13	12
Black Protestant	6	8
Hispanic Protestant	4	4
Other Minority Protestant	2	1
Non-Hispanic Roman Catholic	13	13
Hispanic Roman Catholic	8	7
Latter-day saint	2	2
Other religion	7	7
Religious none	31	29
<i>Age category</i>		
18–29 years	20	18
30–49	34	35
50–64	26	26
65+	20	21
<i>Sex</i>		
Male	49	48
Female	51	52
<i>Race/Ethnicity</i>		
White, non-Hispanic	65	64
Black, non-Hispanic	11	12
Hispanic	15	16
Other	9	8
<i>Marital status</i>		
Married	47	51
Living with a partner	10	10
Divorced	11	10
Separated	2	2
Widowed	5	5
Never been married	25	22
<i>Family income</i>		
Less than \$30K	30	46
\$10K to 49K	20	16
\$50K to 99K	29	11
\$100K or more	22	27
<i>Education</i>		
College graduate	32	33
Some college	32	31
H.S. grad or less	36	36
<i>Metropolitan status</i>		
Metropolitan	87	89
Nonmetropolitan	13	11
<i>Political party</i>		
Republican	28	27
Democratic	30	39
Independent	30	26
Other	13	8
(N)	(9482)	(9429)

Note: Totals may not equal 100% due to rounding error.

COVID-19 posts in February 2021 to 72% in April and remaining above 70% afterward in all but one month.

Figure 2 shows variations over time in the religious framing of the COVID-19 discussion. The percent of religion posts co-occurring with the COVID-19 discussion hovered around 15%, peaking at 19% of activity in June 2020, and falling below 15% in the spring after vaccines became available. It is noteworthy that all three subsets of COVID discourse tracked here were substantially higher than the main trend through Fall 2020. Discussion of “hypothetical” issues tied to hoaxes and expert authority remained high after this time, but religious discourse regarding vaccines dropped quickly once the availability of vaccines shifted from hypothetical to the actual, and it has closely tracked the main trend line since the Spring 2021.

Figure 3 indicates that Christian-right themes were prevalent in the religious discourse associated with COVID-19, and most of the trend lines for the subsets of the discussion tracked the main trend line. Christian-right discourse was present in more than 50% of COVID posts across most the study period, peaking at 58% in June 2020 and not falling below 50% until September 2021. Christian-right commentary on vaccinations spiked to more than 70% of vaccination commentary in March 2020, but otherwise tended to track the main trend line.

### Sources of Information

Table 2 presents results regarding perception of information from professional information sources. Public health experts were the most used and trusted major source of pandemic information. In April 2020, half (51%) of respondents regarded public health experts as a major information source. The next highest group, state and local officials, trailed the use of public health experts by 15 percentage points overall, and the news media was the least used major source (25%).

Among the many findings on this table, we highlighted four points of interest. First, the findings were consistent with claims that White evangelicals embraced highly politicized responses to the pandemic. White evangelicals departed from the overall pattern noted above by making President Trump their most cited major information source (52%) at a rate 10 points higher than their use of public health experts. This effect was medium sized in the unadjusted model relative to Religious Nones (OR = 4.76,  $P < .001$ ,  $r = .40$ ), and a small, uniquely religious effect remained after mediation (OR=1.94,  $P < .001$ ,  $r = .18$ ). Consistent with this politicization, White evangelicals also were slightly less likely to regard the news media, referred to the “fake news” by Trump, as a major source of information after mediation (15%, OR = .67,  $P < .001$ ,  $r = -.11$ ). White evangelicals were also less likely to regard public health experts as major sources of information in the unadjusted model (OR = .62,  $P < .001$ ,  $r = -.13$ ), an effect that disappeared after statistical controls.

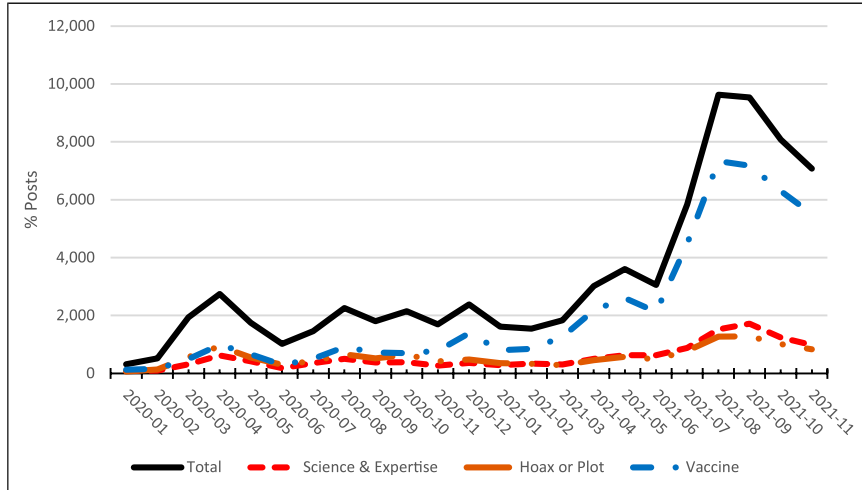


Figure 1. Average daily posts for COVID-19 topics and selected subtopics.

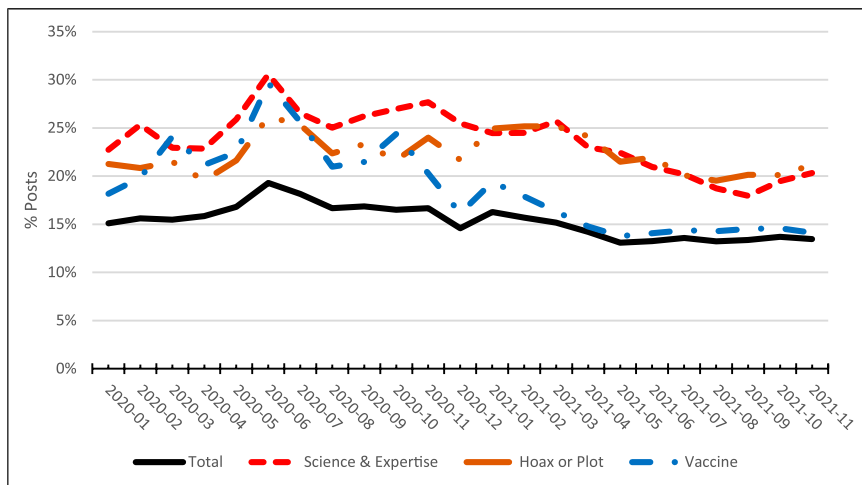


Figure 2. Co-occurring religion posts as % of COVID-19 topics.

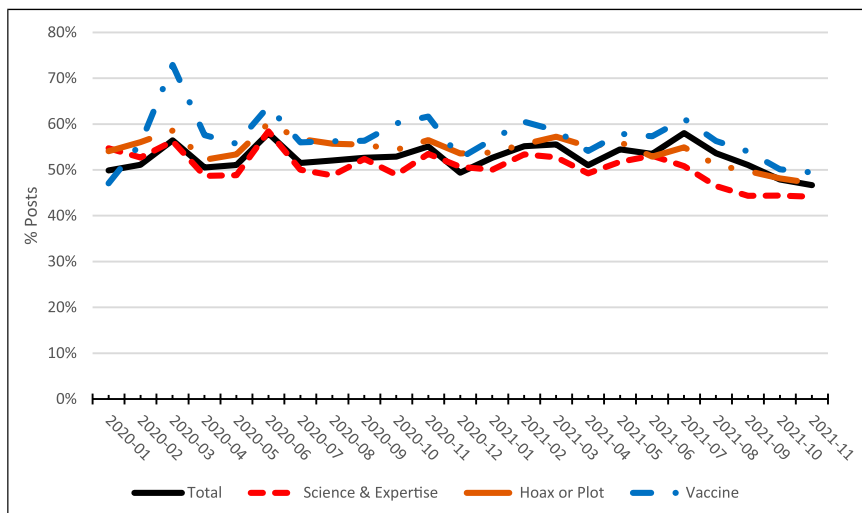


Figure 3. Co-occurring Christian right as % of religion posts.

**Table 2. Use and Perception of COVID-19 Professional Information Sources by Faith Community.**

	Public Health (N=9,482)			State and Local Officials (N=9,482)			President Trump (N=9,482)			News Media (N=9,482)		
	%	Unadjusted	Adjusted	%	Unadjusted	Adjusted	%	Unadjusted	Adjusted	%	Unadjusted	Adjusted
<b>Odds Ratios</b>												
White evangelical prot	42	.62***	.94	32	.98	1.09	52	4.76***	1.94***	15	.45***	.67**
White non-evangelical prot	47	.77*	1.00	34	1.06	1.09	41	3.03***	1.52**	16	.48***	.65**
Black Protestant	61	1.35*	1.17	47	1.80***	1.35	21	1.17	1.24	30	1.04	.73
Hispanic Protestant	57	1.15	.97	40	1.38	1.34	36	2.54***	1.50	33	1.21	.89
Other Minority Protestant	49	.83	.76	36	1.17	1.06	38	2.68***	1.96*	26	.85	.75
Non-Hispanic Catholic	49	.84 t	1.04	40	1.38**	1.37**	37	2.62***	1.45**	19	.59***	.75*
Hispanic Catholic	59	1.25	.91	36	1.18	1.06	28	1.74**	1.25	38	1.50*	1.00
Latter-day saint	49	.82	1.06	33	1.03	1.11	27	1.66 t	.82	12	.32***	.41**
Other Religion	55	1.07	.97	38	1.24	1.13	25	1.44*	1.52*	36	1.36*	1.27
Religious none	53	1.00	1.00	33	1.00	1.00	18	1.00	1.00	29	1.00	1.00
Total	51			36			31			25		
<b>Wald X<sup>2</sup></b>												
Total model		48.78(9)***	260.11(30)***		28.85(9)***	139.34(30)***		237.50(9)***	705.86(30)***		121.73(9)***	208.81(30)***
Unique effects												
Sociodemographics			61.75(18)***			52.39(18)***			121.26(18)***			50.81(18)***
Political party			125.93(3)***			41.42(3)***			379.16(3)***			38.86(3)***
Religion		48.78(9)***	2.58(9)		28.85(9)***	11.46(9)		237.50(9)***	34.59(9)***		121.73(9)***	30.38(9)***
<b>Friends, family, and neighbors (N=9,482)</b>				<b>Newsletters and listservs (N=9,482)</b>				<b>Online forums and discussion groups v(N=9,482)</b>				
	%	Unadjusted	Adjusted	%	Unadjusted	Adjusted	%	Unadjusted	Adjusted	%	Unadjusted	Adjusted
<b>Odds Ratios</b>												
White evangelical Prot	14	.93	1.34 t	5	.72	1.06	9	.69*	.97	41	.69***	.99
White non-evangelical Prot	10	.62**	.94	5	.74	1.19	6	.45***	.68 t	41	.69***	1.08
Black Protestant	25	1.84**	1.22	18	3.09***	1.52	17	1.47 t	1.19	51	1.05	1.07
Hispanic Protestant	19	1.30	1.34	9	1.42	.58	13	1.13	.81	57	1.36	.94
Other Protestant	17	1.14	1.05	9	1.45	1.44	11	.87	.56	47	.88	.56*
Non-Hispanic Catholic	13	.83	1.27	7	1.04	1.70*	7	.54**	.73 t	41	.70**	1.05
Hispanic Roman Catholic	17	1.13	1.22	13	2.08**	.89	13	1.12	.86	67	2.01***	1.46 t
Latter-day saint	17	1.11	1.32	6	.85	.98	7	.52 t	.57	43	.77	.78
Other religion	19	1.32	1.65*	9	1.38	1.78*	14	1.21	1.21	49	.98	1.08
Religious none	15	1.00	1.00	7	1.00	1.00	12	1.00	1.00	50	1.00	1.00
Total	16			8			11			47		
<b>Wald X<sup>2</sup></b>												
Total model		31.55(9)***	210.99(30)***		47.87(9)***	183.08(30)***		46.94(9)***	121.84(30)***		70.86(9)***	500.27(30)***
Unique effects												
Sociodemographics			152.61(18)***			117.71(18)***			73.67(18)***			433.08(18)***
Political party			.91(3)			2.48(3)			7.98(3) t			4.29(3)
Religion		31.55(9)***	11.18(9)		47.87(9)***	10.16(9)		46.94(9)***	11.45(9)		70.86(9)***	1.33(9)

Notes: t P<.10 \* P<.05 \*\* P<.01 \*\*\* P<.001. Number of observations are based on adjusted model.

Second, other groups showed signs of this politicization, though not always to the degree seen among White evangelicals. White nonevangelical Protestants largely paralleled White evangelicals regarding major information sources. With regard to use of Trump as a major source of information, small, unadjusted effects were found among Hispanic Protestants (OR = 2.54,  $P < .001$ ,  $r = .25$ ), Non-Hispanic Catholics (OR = 2.62,  $P < .01$ ,  $r = .26$ ), and Hispanic Catholics (OR = 1.52,  $P < .01$ ,  $r = .11$ ), but in the adjusted models, effects were retained only among Non-Hispanic Catholics (OR = 1.45,  $P < .01$ ,  $r = .10$ ).

Third, Black Protestants did not show the expected resistance to professional authority figures. With regard to major news sources, there was a slight increase in the recognition of state and local officials relative to Religious Nones in the unadjusted model (OR = 1.80,  $P < .001$ ,  $r = .16$ ), and there was also a slight increase in the unadjusted model regarding the perception of these officials (OR = 1.57,  $P < .01$ ,  $r = .12$ ). However, neither relationship survives the addition of mediating variables to the model.

Finally, regarding informal sources of information, minority faith communities appear most likely to use these sources. In unadjusted models, Black Protestants had heightened levels of use of family, friends, and neighbors (OR = 1.84,  $P < .01$ ,  $r = .16$ ) including newsletters and listservs (OR = 3.09,  $P < .001$ ,  $r = .30$ ). Hispanic Catholics relied on newsletters and listservs (OR = 2.08,  $P < .01$ ,  $r = .20$ ) plus social media (OR = 2.01,  $P < .001$ ,  $r = .19$ ). However, the adjusted coefficients indicate that in no instance were any of these relationships uniquely religious.

## Preventive Measures

White evangelicals clearly stood out in the February 2021 survey for their reluctance to accept measures that mitigated the spread of the virus (Table 3). While only 28% of the population were reluctant to wear face masks, white evangelicals were more than twice the population rate at 66%. This effect, however, was mediated by control variables, mostly sociodemographic characteristics (OR = 1.60,  $P < .05$ ,  $r = .13$ ). Forty-six percent of White evangelicals said that they were not vaccinated or did not plan to get vaccinated, and a small, statistically significant effect remained even after controls for sociodemographic characteristics and political leanings (OR = 2.10,  $P < .001$ ,  $r = .20$ ).

## Discussion

Across our three small studies, a consistent story emerged about White evangelicals and their receptivity to politicized misinformation. The discourse of the Christian right, largely a product of White evangelicalism, drove a large subset of the co-occurrence of religious and COVID-19 discourse on social-media platforms. Furthermore, we found patterns regarding the use of information and preventive measures in a manner consistent with the politicization of COVID-19 misinformation in the society at large. Outside of White evangelicals, the politicization of misinformation appeared highest among White nonevangelical Protestants, which would include the supposedly more liberal mainline denominations that are often thought of as more progressive than White evangelicals.

**Table 3.** Preventive Measures by Faith Community.

	Not Wearing Mask All or Most of the Time (N=9429)			Anti-vaccination Stance (N=9419)		
	%	Unadjusted	Adjusted	%	Unadjusted	Adjusted
<i>Odds Ratios</i>						
White evangelical Protestant	66	1.94***	1.60*	46	2.15***	2.11***
White non-evangelical Prot	27	1.05	1.10	27	.94	1.20
Black Protestant	22	.55	1.48	35	1.38*	.88
Hispanic Protestant	10	1.01	.56	35	1.39	.94
Other Protestant	19	2.06 t	2.70 t	43	1.90*	3.62***
Non-Hispanic Catholic	26	.91	1.21	24	.80 t	1.13
Hispanic Catholic	16	1.28	.73	22	.73	.56 t
Latter-day saint	12	1.17	1.12	30	1.10	1.09
Other religion	20	1.59 t	2.19**	20	.64*	.92
Religious none	18	1.00	1.00	28	1.00	1.00
Total	28			30		
<i>Wald X<sup>2</sup>(df)</i>						
Total model		33.60(9)***	227.05(30)***		101.79(9)***	566.00(30)***
<i>Unique effects</i>						
Sociodemographics			120.45(18)***			325.04(18)***
Political party			49.37(3)***			158.24(3)***
Religion		33.60(9)***	16.58(9)t		101.79(9)***	55.67(9)***



The results for minority faith communities were not as clear. Black Protestants did not show the rejection of medical authority in the manner expected given the enduring influence of Tuskegee, though they showed some more reliance on nonprofessional social networks. Hispanic groups showed signs of politicization, but these groups did not stick out in any noteworthy way. The ambiguity of these findings suggests a need to dig into the data deeper to reconcile these apparent discrepancies, especially among Hispanics, where evidence for the receptivity to misinformation to date is largely anecdotal.

Despite these findings, we caution readers against overgeneralization about the responses of faith communities to the pandemic. Even among White evangelicals, where politicization was the strongest, almost half did not regard Trump as a major source of information, and slightly more than half were accepting of vaccinations. Much more diversity among White evangelicals may be present than is often portrayed in anecdotal media accounts.

The associations that we found are interesting in themselves to describe this historical moment. However, the patterns that emerged have more general importance in that they indicate that communicating public health messages to faith communities is more than just dropping off pamphlets or wrapping the message in a theological wrapper. Faith communities can have vastly different takes on situations and may even adopt positions contrary to the public good. These variations cannot always be reduced to the sociodemographic characteristics of the group or political orientation. Consequently, public health officials need to accept the possibility that they may on some occasions encounter uniquely religious effects.

From this study, we learn two important lessons about the religion effect in the spread of medical misinformation. First, it may be possible to identify the religion effect early. We found misinformation simmering in discussion forums early in the pandemic, and the Christian right and White evangelicals were hardly secretive about their opinions. Public health officials had several months to counteract religiously based anti-vax messages if they had desired to do so. Since preparedness for pandemics and other public health emergencies is a prerequisite of successful emergency management, we recommend the creation of ways to monitor discourse related to public health in real time rather than relying on after-the-fact research. As this study demonstrates, the ongoing monitoring of social media and other public communications could be one useful tool in identifying negative responses to preventive measures before a public health emergency deepens or even occurs.

Second, the religion effect appears strongest when the situation is ambiguous. As our analysis of discussion forums indicates, criticism of vaccinations declined once a vaccination was available, that is, misinformation declined once vaccination shifted from a hypothetical to a reality. Consistent

with the previous point, this finding underscores the importance for health officials to get control of the narrative early.

In summary, early identification of and response to potential problems may be key to the management of pandemics and other health-related crises. By drawing on these findings, this study provides a rich insight of factors that public health professionals and health education specialists must consider when partnering with faith communities. The role faith communities play in sharing public health information with some segments of the population may be critical.

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### ORCID iD

Nicolette Powe  <https://orcid.org/0000-0002-3796-6322>

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