Exploring Religiosity's Impact on Two Science-based Issues: Climate Change & Vaccines

A THESIS
Submitted to the University of Michigan in partial
fulfillment of the requirements for the degree of
HONORS BACHELOR OF SCIENCE
Department of Political Science

Noah R. Marcotte
48012849
March 2021

Table of Contents

List of Tables & Figures

"To speak with precision of public opinion is a task not unlike coming to grips with the Holy Ghost." – V.O. Key in *Public Opinion and American Democracy* (1961)

Acknowledgements

The thesis writing process has been incredibly rewarding for me. I would be remiss if I did not extend my gratitude to the following people who have helped me along the way:

First, I want to thank my advisor, Professor Nancy Burns. Her consistent help throughout these two semesters has been invaluable during my writing process. I am very grateful for our weekly meetings and all her feedback in helping me to create the best thesis possible.

In addition, there were also other faculty who helped me on my journey to complete this thesis. My term paper for Professor Vincent Hutchings' class was my first experience exploring religiosity and public opinion in the United States. Although both he and Professor Ted Brader were unable to serve as advisors for my project, nonetheless, their advice and direction were tremendously helpful in the genesis of my thesis and I thank them for it. Another faculty member I wish to thank is Professor Angela Ocampo, who also aided me with an earlier version of my project. Finally, in this group, I want to thank Professor Mariah Zeisberg. She was the first faculty member who suggested that I write a thesis when I was a sophomore. Although she did not advise my project, her classes were some of the highlights of my college career.

I also wish to extend many thanks to the Gerstein Family for providing crucial funding for the survey I fielded. Funding freezes due to the COVID-19 pandemic were not uncommon during the 2020 academic term, so I am very grateful that the Gerstein Fund was still available to Honors Political Science students.

Finally, I want to thank my family for all their love and support. (Indeed, my mother's advice on interpreting interaction models proved to be invaluable for my project.)

I. INTRODUCTION

Many people understand religion and science to be incompatible fields of study. They often assume that religious people reject science out of hand or that scientific minded people do not rely on religious ideas in their personal lives. Indeed, there are some issues where the contradiction seems to be more apparent than others (e.g., queer rights). Nevertheless, this view ignores the way religion can be utilized in service of supporting these science-based issues. For example, many religious doctrines teach about humanity's stewardship of the planet and our duty to mitigate the effects of climate change. In addition, there are also teachings about the value of preserving human lives, which might lead someone to support vaccination policies. In this thesis, I will examine public opinion on these two issues, climate change and vaccines, as well as their relationships to religiosity.

The other major question running through this paper involves the relationship between support for these liberal policies and the use of religious language. Very often religiosity is monopolized by evangelical voters, who reliably vote Republican.[1] However, I want to explore to what extent religious language can be used in motivating a conservative to support policies associated with the left (such as the mitigation of climate change). Furthermore, I am curious about the effects of religious language on left-wing folks and how it might also increase their support for these same issues.

II. LITERATURE REVIEW

I begin my review by exploring the role religion plays in public opinion formation. While often conservatism and religiosity are conflated, scholars like Ariel Malka argue that the two are

[1] Michael Lipka, "U.S. religious groups and their political leanings," pewresearch.org, Pew Research Center, February 23, 2016, https://www.pewresearch.org/fact-tank/2016/02/23/u-s-religious-groups-and-their-political-leanings/.

not always linked. Here, Malka et al. evaluate the parameters of this relationship, finding that it is only present "among those who are relatively interested in and knowledgeable about politics."[2] Thus, even when not accounting for differences in ethno-religious communities in the United States, Malka et al. show that religiosity merely strengthens beliefs rather than being the catalyst for their inception. Indeed, scholars like Zaller would likely conceptualize religiosity as an example of a political predisposition, which he argues mediates the relationship between elite information and public opinions.[3] Other elements that factor into opinion formation, such as age, gender, education, and race will serve as controls in the regression models in my analyses. Moreover, Zaller asserts that many things over a person's lifetime affect their predispositions, especially when they interact directly with the policies about which they form opinions.[4] In fact, some scholarship suggests that religiosity's effect may change over a person's lifetime, a model that Margolis identifies as "the life-cycle theory of religious political attachments."[5] There, she argues that Americans abandon and then rediscover religion as their political ideologies stabilize.[6] This idea – that religiosity intensifies *existing* beliefs – is incredibly relevant to my project, forming the basis of my hypotheses about the interaction between religiosity and partisan identity on these issues.

The other major political predisposition discussed in this paper is partisan identity. Scholarship about climate change and vaccines suggests different partisan positions on each issue, which form the foundation of the base-hypothesis about these two subjects. I have elected

---

[2] Ariel Malka, Yphtach Lelkes, Sanjay Srivastava, Adam B. Cohen, and Dale T. Miller, "The Association of Religiosity and Political Conservatism: The Role of Political Engagement," *Political Psychology* 33 no. 2 (2012): 276.
[3] John R Zaller, *The Nature and Origins of Mass Opinion*, (Cambridge: Cambridge University Press, 1992), 23.
[4] Ibid.
[5] Michele F. Margolis, "How Politics Affects Religion: Partisanship, Socialization, and Religiosity in America," *The Journal of Politics* 80 no. 1 (2017): 32.
[6] Ibid.

to begin with climate change, since that partisan divide appears to be more obvious. Indeed, scholars like Stefan Linde's comparative analysis finds that support for different policies designed to mitigate the effects of climate change varies by political party.[7] Consequently, in this paper, I found different outcomes for different policy-based questions among Republicans. Moreover, scholars like Deborah Lynn Guber apply Zaller's model to climate change. She asserts that this divide among elite opinions disseminates into the masses, resulting in extreme polarization on the issue, even when applying the controls mentioned earlier.[8] Together, these two sentiments about partisanship and climate change lead to *The Partisan Climate Change Hypothesis*, which I propose as: "Climate Change follows Partisan Identity." While there may be variation in the support of different policies, ultimately, I expect the Republican position to be consistently less supportive than the Democratic one.

This project also investigates vaccines as a comparison to climate change. When it comes to vaccines, it can be difficult to locate a partisan direction to the issue. Indeed, Anna Kirkland explains in her book that "...vaccines are ideologically cross-cutting…" arguing that those who oppose vaccines make up a broad coalition, rather than belonging to a single political party.[9] She argues that this issue stands in stark contrast to climate change, thereby allowing for an apt comparison. I therefore submit *The Non-Partisan Vaccine Hypothesis*: "Opinions about vaccines will not correlate with political parties." Here, I expect this hypothesis to hold both for beliefs about vaccines and autism as well as general concerns about vaccine safety and risks.

---

[7] Stefan Linde, Climate policy support under political consensus: exploring the varying effect of partisanship and party cues," *Environmental Politics* 27, no. 2 (2018): 233.
[8] Deborah Lynn Guber, "A Cooling Climate for Change? Party Polarization and the Politics of Global Warming," American Behavioral Scientist 57, no. 1 (January 2013): 108.
[9] Anna Kirkland, *Vaccine Court: The Law and Politics of Injury*, (NYU Press, 2016), 37.

Now that I have proposed foundational hypotheses about the relationship between partisanship and each topic, a more in depth discussion of this complex relationship involving religiosity can be explored. Regarding climate change, some recent scholarship suggests that "religiosity was also positively and significantly related to concern for global warming…"[10] However, it should be noted that there is not consensus about the salience of religiosity in this literature (e.g., Rutjens et al., found that "religiosity played no meaningful role" in evaluating climate change skepticism.[11]) More specifically, Mostafa's article also finds that "…religious participation fosters altruistic and pro-environmental behaviors."[12] Here, the religious *beliefs* in contrast with *behaviors* may produce different effects. Other scholars have emphasized the beliefs end of this spectrum as well as the role religious institutions might play in crafting future environmental policies since "people are typically more moved by faith than by other means."[13] Thus, I still submit *The Climate Change & Religiosity Hypothesis*. Here, I assert that those with high levels of religiosity in either party will represent the extreme positions on the climate change issue. In other words, religious Republicans will be the strongest opponents of climate change policies, while religious Democrats will be the strongest supporters of these same policies. Here too, I also suggest the *Vaccines & Religiosity Hypothesis.* In the context of vaccines, I expect religiosity to have a similar radicalizing effect: those with the highest levels of religiosity will be at the extreme ends of the issue.

---

[10] Mohammed M. Mostafa, "Post-maternalism, Religiosity, Political Orientation, Locus of Control and Concern for Global Warming: A Multilevel Analysis Across 40 Nations," *Social Indicators Research* 128 no. 3 (2016): 1286.
[11] Bastiaan T. Rutjens, Robbie M. Sutton, and Romy van der Lee, "Not All Skepticism is Equal: Exploring the Ideological Antecedents of Science Acceptance and Rejection," *Personality and Social Psychology Bulletin* 44, no. 3 (2017): pp. 392.
[12] Mostafa, "Post-maternalism, Religiosity, Political Orientation," 1291.
[13] Jay Squalli, "Is religiosity green in the United States?" *Economic Analysis and Policy* 63 (2019): 22.

In addition, the role age plays in levels of religiosity and political socialization presents a compelling alternative hypothesis. It could be said that people are more liberal and less religious when they are young, but conservative and more religious when they grow older. Thus, when exploring the public opinions of religious folks, it is necessary to account for differences in ages in respondents, and the controls in my models do so. Some scholarship also indicates that younger people are more concerned about economic policies rather than environmentalism.[14] However, these two issues are closely linked, as many of the policies designed to mitigate climate change would have direct effects on the economy. Moreover, given the activity of younger activists (especially in the past four years), I think there is good reason to re-evaluate this claim.

Finally, I aim to test religiosity's prevalence across party lines through a framing experiment. To answer this question, I apply literature on priming and the framing of survey questions. Here, a framing experiment using different language would allow me to reduce the impact of conflating variables to see the direct effect of the difference in language. In their 1990 article, Kinder and Sanders explore the effects of different frames in survey questions. They explain how frames are sometimes used by elites to "alter how an issue is understood and, ultimately, what opinion turns out to be."[15] To put this concept in Zaller's terms, by deliberately framing information about political issues, elites can affect which political predispositions an individual may call upon when deciding what to do with the new information presented. Here, my goal was to remind respondents about their religious identity and hopefully cause them to

[14] Tsimpo, Clarence Tsimpo, and Quentin Wodon, "Faith Affiliation, Religiosity, and Attitudes Towards the Environment and Climate Change," *The Review of Faith & International Affairs* 14, no. 4 (2016): 55.
[15] Donald R. Kinder, and Lynn M. Sanders, "Mimicking political debate with survey questions: The case of white opinion on affirmative action for blacks," *Social cognition* 8, no. 1 (1990): 74.

rely on that predisposition when answering the questions, thereby increasing support. In sum, I used their models of differently framed survey questions as a template and basis for constructing my own questions about climate change and vaccines.[16] A closer examination of the specific language used appears in the following methods section.

III. METHODS

My thesis incorporates data from three different datasets. The first two are American National Election Study (ANES) pilot data from 2018 and 2019 and the third is my own survey which I fielded through Amazon's Mechanical Turk program.[17] Included within this survey was a framing experiment around climate and vaccine issues. Each of these datasets have their own advantages and setbacks. For example, the 2018 ANES pilot has no questions about vaccines, but its section on climate change provides for a more robust measure of the concept. There are questions about the perceptions of different areas affected by climate change as well as the overall importance of the issue. In contrast, the 2019 ANES pilot dataset does have questions about both vaccines and climate change; however, the scales constructed from this dataset are rather limited. Here, there is only one question about vaccines, and it involves their relation to autism. While this is an important component of a vaccine scale, it should by no means be the only question generating the scale. Additionally, the questions about climate change produce a different scale than the 2018 data. Here, the questions involve specific hypothetical policy questions about fuel efficiency standards and government regulations. Neither ANES pilots have particularly robust measures of religiosity. In addition to denominations, their measures borrow Pew questions about the frequency of religious service attendance, the frequency of prayer, if the

[16] Kinder and Sanders, "Mimicking political debate with survey questions," 78.
[17] IRB exemption status received on December 02, 2020.

respondent has had a born again experience, and their perceived importance of their religious identity. There are no questions about scripture, God, or other communal religious experiences, which I would argue could be just as important in constructing a religiosity scale. Therefore, in my own survey I did several things to address the problems I had with the ANES data.

First, I combined several questions about climate change from the 2018 and 2019 ANES pilots, including the policy suggestions from the 2019 dataset, as well as more general questions about the effects of the climate crisis. Second, I added more questions about vaccines, including the overall importance of the issue and the perceived threat not being vaccinated causes the community. Third, I asked a series of questions to serve as "measures of religious belongings, belief, and behaviors (the Three Bs)," which are all necessary components in measuring religiosity.[18] Here, I blended measures from multiple scholars. For example, McKenzie and Rouse combine measures about general feelings on a 6-point scale with belief in Biblical inerrancy and frequency of church attendance on a 5-point scale.[19] In contrast, Kelly & Morgan measure religiosity through such variables as church attendance, prayer, Bible reading, authority of the Bible, importance of religion, and born-again experiences.[20] Moreover, by expanding the definition of religiosity to include things beyond just denomination and church attendance, I hope to be more inclusive to non-Christian religions that might otherwise get overlooked. Furthermore, while religious denomination may appear to present an important difference in attitudes toward the environment, recent scholarship suggests that there is considerable overlap

[18] David L. Leal, Jerod Patterson, and Joe R. Tafoya, "Religion and the Political Engagement of Latino Immigrants: Bridging Capital or Segmented Religious Assimilation?" *RSF: The Russell Sage Foundation Journal of the Social Sciences* 2 no. 3 (2016): 125.
[19] Brian D. McKenzie, and Stella M. Rouse, "Shades of Faith: Religious Foundations of Political Attitudes among African Americans, Latinos, and Whites," *American Journal of Political Science* 57, no. 1 (2013): 224-225.
[20] Nathan J. Kelly, and Jana Morgan. "Religious Traditionalism and Latino Politics in the United States," *American Politics Research* 36, no. 2 (2008): 244.

across faiths, necessitating a more robust measure than merely religious denominations.[21] Ultimately, I included four measures of beliefs and four measures of behaviors. Religious beliefs include beliefs about God, about scripture, about their perceived connectedness to their religious community, as well as the overall importance they place on their religion. Religious behaviors include, religious service attendance, time spent praying, time spent reading scripture, and time spent with one's non-familial coreligionists. Together these eight questions were used to generate a very robust measure of religiosity. Here, I hope this robust measure of religiosity will more fully capture this concept. Further, the increased number of questions in the religiosity scale enables me to separate religious beliefs from behaviors to interrogate a potential different effect for each scale. The univariate results of both the M-Turk survey and the 2018 and 2019 pilots can be viewed at the beginning of Section IV. Additionally, the full list of survey questions and responses is detailed below in Appendix I.

However, there were also some drawbacks with the M-Turk dataset. Most importantly, the lack of a representative sample results in low levels of external validity for its multivariate analyses. Therefore, the primary function of the observational section of the M-Turk dataset will be to reinforce the findings of the ANES data. Nevertheless, since a major component of the survey involved testing a framing experiment, the sample size was maximized according to power calculations from both the 2018 and 2019 ANES pilot datasets. Based on the 2018 ANES data, a sample size of at least 344 would be needed to find a difference of 0.10 between two means of the Global Warming Scale (2018) at power level 0.80 and $\alpha = 0.05$. In contrast, a difference of in means of the Global Warming Scale (2019) of 0.53 (and the same power and alpha) on the 2019 ANES dataset, would require a sample size of 366. Furthermore, when

[21] Squalli, 22.

assessing the Vaccines & Autism Scale (2019), I found a delta of -0.66 (and the same power and alpha as the other two calculations), required a dataset with a samples size of 358. Using these power calculations along with the price estimate of Amazon's M-Turk workers, a sample size of 360 was determined for my survey.

The aim of this experiment was to see if respondents' religiosity could be primed in a way to show support for climate change policies or vaccines. In the first round of the experiment, respondents were randomly split into two groups. One group received a question about the importance of being vaccinated with a religious frame, while the other group received the same question in isolation. Below is an example of the religious language used in the vaccines experiment:

> *Some people say they have a moral obligation to value life, health, and the prevention of suffering (particularly of children and other innocents) through vaccinations. Other people believe that getting vaccinated is ineffective at accomplishing this goal.*
>
> To what extent would you say it is important to get vaccinated?

Similarly, in the Climate Change round of the experiment, respondents were again divided into two groups. The first received a question about climate change framed by religious language, and the second group received the same question with no frame at all. Below is the religious language used in the Climate Change experiment:

> *Some people think humanity are stewards of the environment and we have a moral responsibility to address global warming, by protecting our Earth and all of Creation. Others think the Earth was given to humanity to do with as we please.*
>
> To what extent should we be supporting government action to slow the Earth's warming?

In both cases, I was careful to ensure that the religious appeals appear as non-denominational as possible. While the ideas presented in the religious frames do involve values that are implicitly Christian, my goal with this language was to erase explicit appeals to a particular branch of Christianity from the text. For example, The Center for Progressive Christianity's 8 points of Progressive Christianity lists number 7 as "[W]e are Christians who… strive to protect and restore the integrity of our Earth."[22] In my survey, I opted to use this same language without the explicit mention of Christianity, to achieve the widest appeal possible. In contrast, Campbell et al.'s religiosity framing experiment uses the same language in the "Moderate Religion" category as the "No Religion" category when addressing political issues, (e.g., policies involving the LGBTQ+ community).[23] Moreover, their experiment had a third group of "High Religion," which contained explicitly Christian appeals in these policy descriptions.[24] However, since my aim was to reach the most people with the appeal (and I could not afford to have three groups), I opted to keep the language as non-denominational as possible. In hindsight, it may have been beneficial to preserve the explicitly Christian language but combine it with a more complex sampling procedure that prioritizes those with salient Christian identities.

There were four groups of respondents in my experiments. The first group consists of those who received *both* religious language treatments. The second one was made up of those who received the religious language around vaccines, but not for climate change. The third group had no religious language around vaccines, but they did have it for climate change. Finally, the

---

[22] "The 8 Points of Progressive Christianity," ProgressiveChristianity.org, accessed October 20, 2020 https://progressivechristianity.org/the-8-points/.
[23] David E. Campbell, Geoffrey C. Layman, John C. Green, and Nathanael G. Sumaktoyo, "Putting politics first: The impact of politics on American religious and secular orientations," *American Journal of Political Science* 62, no. 3 (2018): 557-558.
[24] Ibid.

fourth group received no religious language on either question. Theoretically, there are questions about the effect of the religious language on members of group two. Since their religiosity has already been primed with the vaccines question, it stands to reason that it will remain salient for them, leading them to use it in assessing the climate change question. However, since the general questions about vaccines will function as a buffer, there is less of a concern.[25]

Here, due to the random assignment of respondents to each group, the experiment can be used as a means of testing the causality of the religious frame. Since respondents did not choose their groups, the experimental data should allow me to study the isolated influence of religiosity. In contrast, the observational data cannot as easily show a causative effect of religiosity on the respondents' answers. There, the results illustrate correlation, but not causation.

For both vaccines and climate change, I hypothesize the following about the frame:

1. The religious language will be effective at raising respondents' scores on both issues.
2. Democrats and Republicans will be affected differently by religious frames. Democrats will display higher scores with the religious frame, but Republicans will score lower with those same frames.
3. There will be a difference in the effectiveness of the frame across three different levels of religiosity, with those in the middle being the most affected.
4. There will also be a difference in the effectiveness of the frame across the different levels of importance respondents ascribe to the issues. Here again, those who assign a middling level of importance to the issue will be most affected by the frame.

[25] Here, the effects of having these two experiments back to back are explored further in Table 20a and Table 20b (see pages 67-68).

IV. ANALYSIS

Descriptive Data

Here, this section of the data analysis opens with some numerical and graphical displays of the key variables used in the analysis as they appear in each of the data sets used in this thesis. First, I explore partisan identity, then measures of religiosity, and finally, the different scales used to measure support for climate change policies as well as vaccines.[26]

Partisan Identity:

Dataset	Democrats	Republicans	Independents	Others (No Party)
2018 ANES	870 (37.02%)	627 (26.68%)	781 (33.23%)	72 (3.06%)
2019 ANES	999 (33.28%)	862 (28.71%)	987 (32.88%)	154 (5.13%)
2020 M-Turk	172 (49.00%)	106 (30.20%)	73 (20.80%)	

Although there is considerable variation across datasets, there is still some strong overlap. Most prominently between the 2018 and 2019 ANES pilots, which consist of nationally representative samples. In contrast, the 2020 M-Turk data has less external validity. Here, the biggest issue is the over representation of Democrats at almost 50%. Nevertheless, the percentage of Republicans remains relatively close to the proportion present in other datasets. Also, the relatively smaller number of independents will make any conclusions about that group from the 2020 data difficult.

In the 2018 ANES pilot dataset, there were originally 857 Democrats. However, there were also 13 individuals who listed other left-wing parties including but not limited to "democratic socialist" or "liberal". These folks were then up-coded into the category of

[26] In multiple instances, the way I combined variables resulted in lopsided scales, especially for the 2020 M-Turk dataset (e.g., the 2020 Global Warming Scale runs from -3 to 5). In the context of future research projects, I intend to combine these scales in a different way, so as to decrease this lopsidedness.

Democrats, resulting in the final number of 870. Similarly, the initial Republican count was 609. However, there were also several individuals who listed other right-wing parties, including but not limited to "conservative" or "libertarian" that were up-coded into Republican. The final tally of Republicans thus became 627. Finally, Independents started out with 767 cases. However, like with the Democrats and Republicans before them, some folks expressed centrist ideologies, such as "between republican and democrat" or "neutral." These centrist cases were up-coded, to give us a total of 781 Independents. The final 72 cases (reduced from 117) were individuals who express affiliation for no political party at all or were in other ways in direct opposition to American politics (e.g., "Don't vote" or "nothing").

In the 2019 ANES pilot data, there was a similar process to the 2018 data of up-coding. Here, when respondents reported to be "democratic socialists", it was added to the Democrat category. Similarly, respondents who answered things like "conservative" or "libertarian" were added to the Republican category. In addition, I constructed a continuous 7 point partisan identity scale using the 2019 ANES pilot data.

Dataset	**Observations**	**Mean**	**Standard Deviation**	**Min**	**Max**
2019 ANES	3,049	0.120	2.18	-3 (Republican)	3 (Democrat)

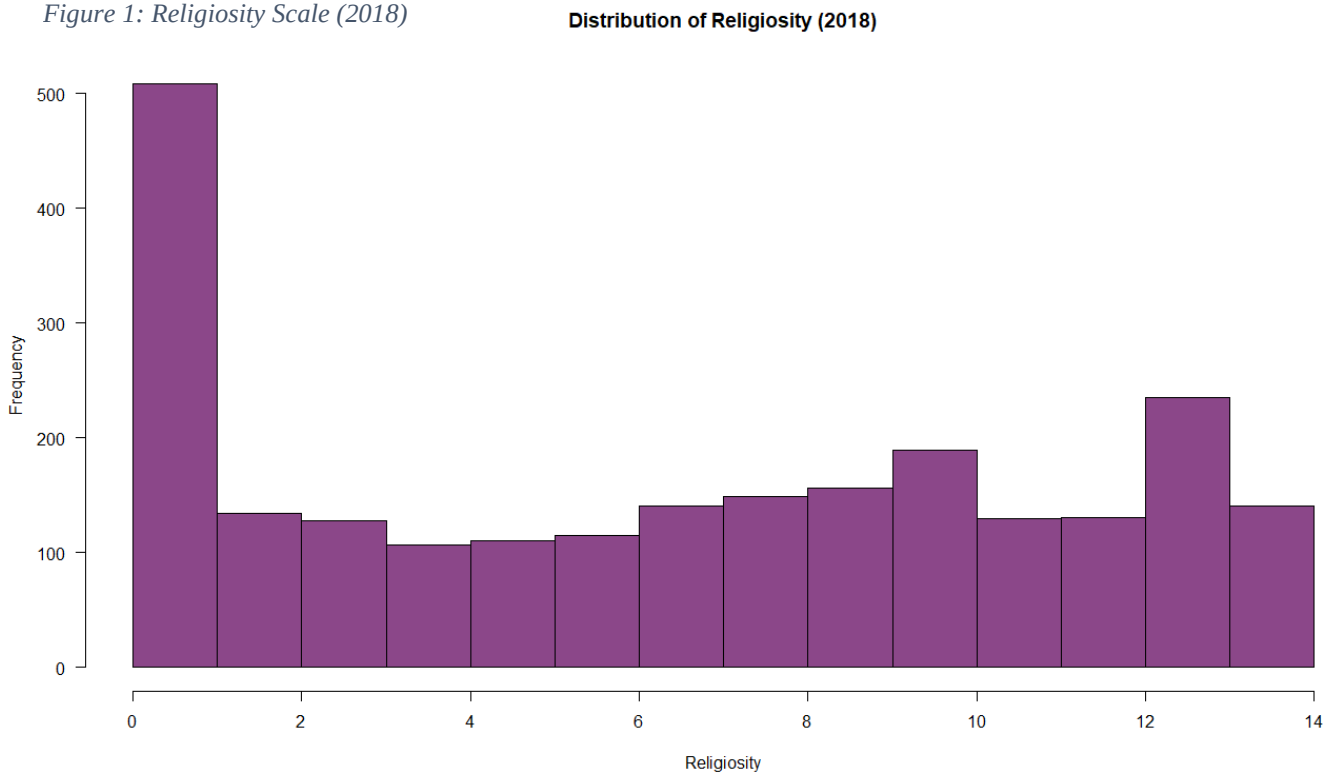
Finally, within the 2020 M-Turk dataset, there was no free-response option on the partisan identity question. Thus, there was no possibility for up-coding respondents into each category.

Religiosity:

2018 ANES Pilot Data:

Variable	Observations	Mean	Standard Deviation	Min	Max	Cronbach's Alpha
Attendance	2,426	1.37	1.17	0	3	
Prayer	2,408	3.23	2.40	0	6	
Importance	2,497	1.71	1.18	0	3	
Overall Religiosity	2,374	6.74	4.71	0	14	0.8671

Figure 1: Religiosity Scale (2018)



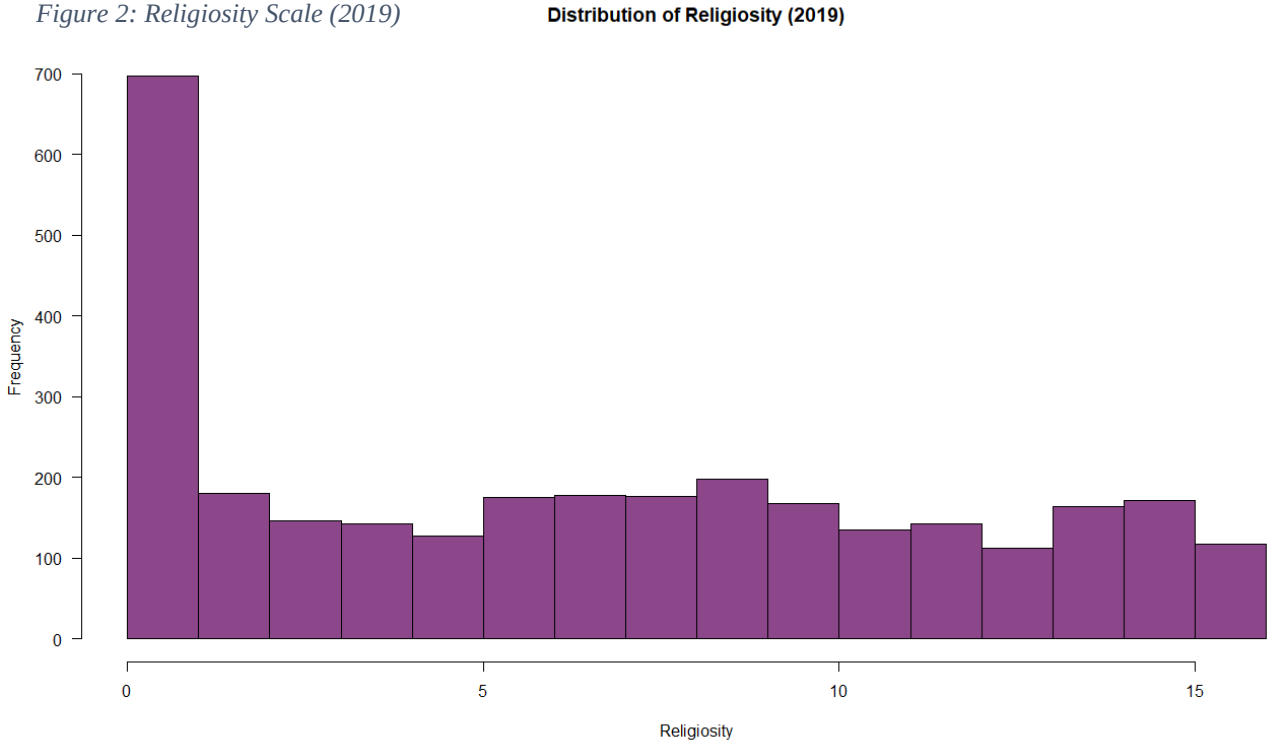
Here, the attendance variable initially had values ranging from 0 to 5, with different levels including: "Never Attends" (0), "Seldom Attends" (1), "A Few Times a Year" (2), "Once or Twice a Month" (3), "Once a Week" (4), "More Than Once a Week" (5). Nevertheless, after comparing each level's mean score on the Global Warming Scale (2018), I elected to collapse the variable, by combining levels 2 & 3 as well as 4 & 5. However, when I combined it with the

other variables to create "Overall Religiosity" I was careful to use the original 6-point scale. Moreover, the addition of the born-again question resulted in a lower alpha score (α = 0.8450, compared with 0.8671), so it was not added to the rest of the measures in creating the religiosity scale. Of the 2,500 sampled 685 expressed having a born again experience (about 27%).

2019 ANES Pilot Data:

Variable	Observations	Mean	Standard Deviation	Min	Max	Cronbach's Alpha
Attendance	3,162	1.53	2.07	0	6	
Prayer	3,037	3.24	2.41	0	6	
Importance	3,165	1.75	1.19	0	3	
Overall Religiosity	3,034	6.85	5.17	0	16	0.8269

Figure 2: Religiosity Scale (2019)



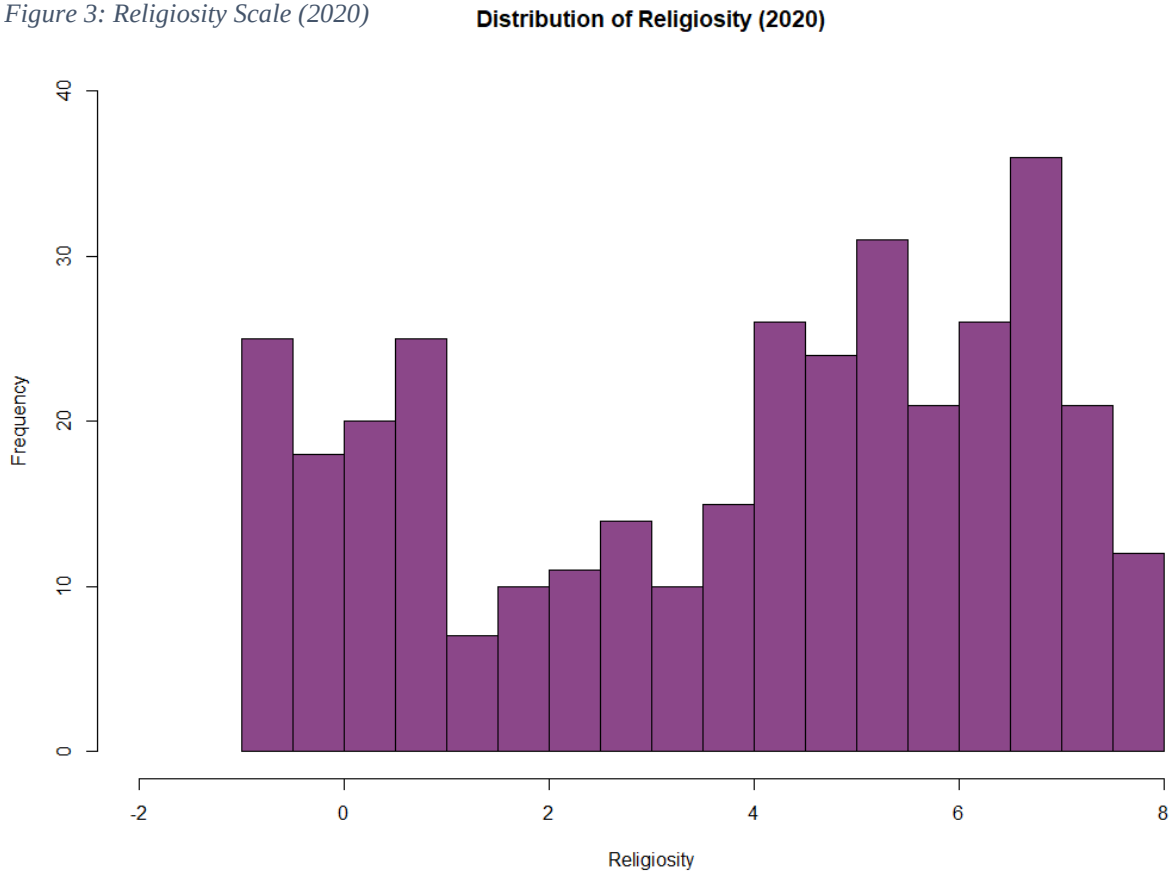
In addition to these measures of religiosity, 922 respondents out of 3,164 (about 29%) reported having a born-again experience. Unlike with the 2018 ANES dataset, here, the addition of the born-again variable to the religiosity scale did not yield a lower alpha. Thus, it was

retained. Additionally, the histogram above (*Figure 2*), helps to illustrate how this dataset's religiosity distribution has a very similar shape to the 2018 dataset (*Figure 1*).

2020 M-Turk Dataset:

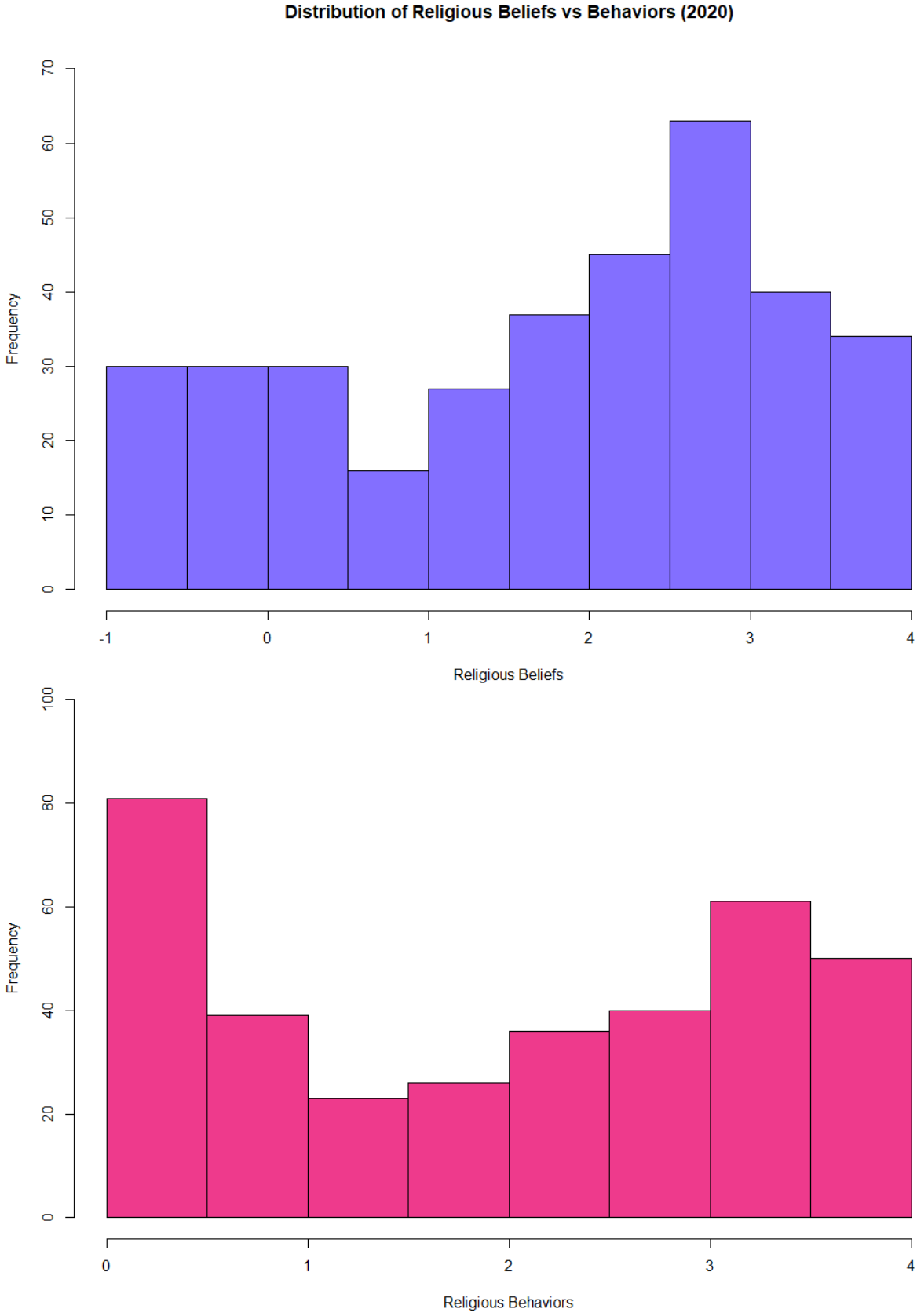
Dataset	Observations	Mean	Standard Deviation	Min	Max	Cronbach's Alpha
Overall Religiosity	352	3.86	2.69	-1	8	0.9071
Religious Beliefs	352	1.90	1.43	-1	4	0.8968
Religious Behaviors	356	1.97	1.38	0	4	0.7581

Figure 3: Religiosity Scale (2020)



Here is a histogram of the Religiosity Scale in the 2020 M-Turk dataset *(Figure 3*). The scale is constructed from 8 questions (four *belief* questions and four *behavior* questions), yielding a Cronbach's alpha score of 0.9071.

Figure 4: Religious Beliefs & Behaviors Scale (2020)

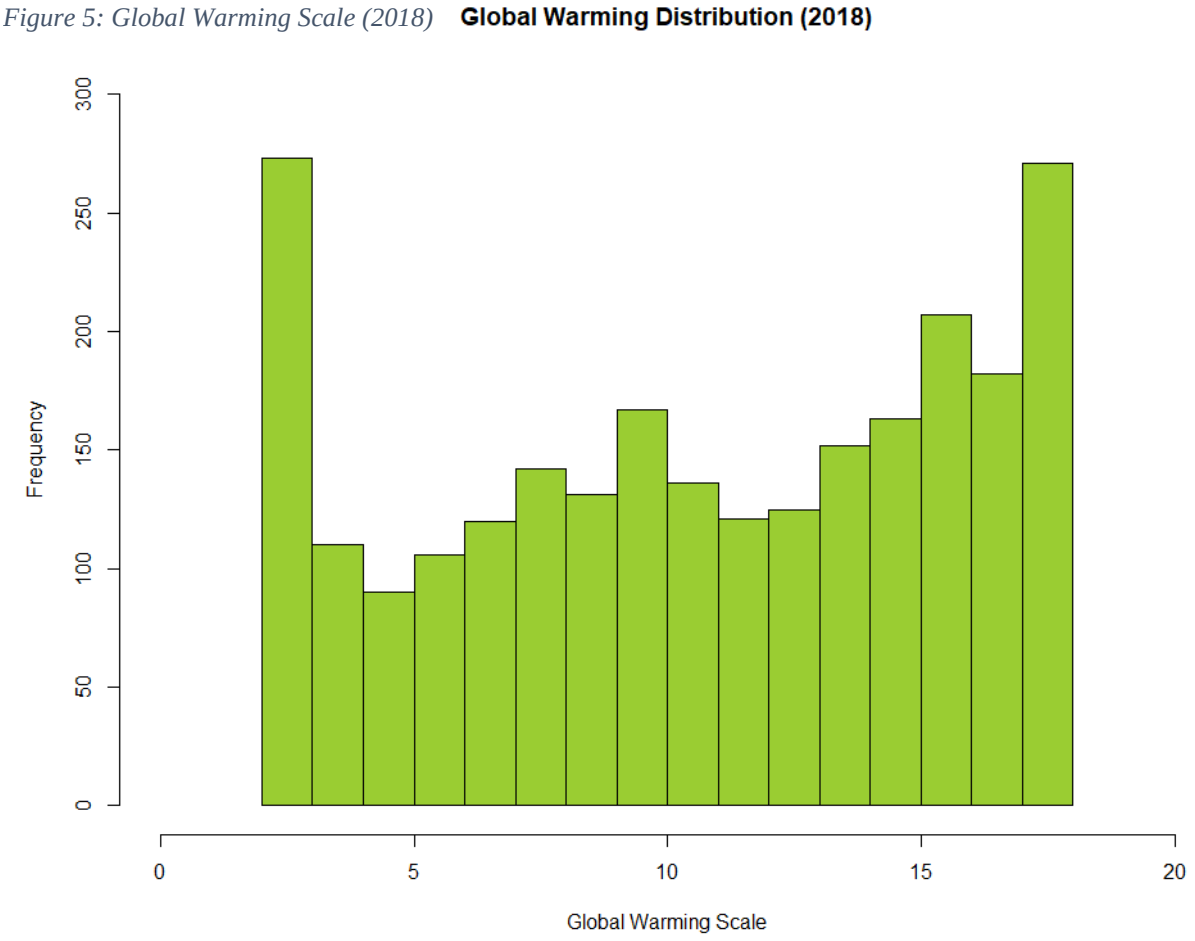


These two histograms show the distribution of the Religious Beliefs scale as well as the Religious Behavior scale constructed from the 2020 M-Turk dataset (*Figure 4*). Here, the Religious Beliefs scale is constructed from 4 questions: respondents' beliefs about God, their beliefs about the holy text of their religion, the level of importance they ascribe to their religious identity, and the amount they feel like their true self around their coreligionists. The combined measures yield a Cronbach's alpha score of 0.8968. The Religious Behavior scale is likewise constructed from 4 questions: the frequency of respondent's religious service attendance, the frequency they engage in personal prayer, the amount of time they spend reading scripture, and the amount of time they spend with members of the same religion (outside of family). The combined measures yield a Cronbach's alpha score of 0.7581.

Global Warming Scales:

Dataset	Observations	Mean	Standard Deviation	Min	Max	Cronbach's Alpha
2018 ANES	*2,496*	*10.99*	*5.11*	*2*	*18*	*0.9143*
2019 ANES	3,151	0.98	1.81	-3	3	0.8319
2020 M-Turk	328	3.15	1.70	-3	5	0.8044

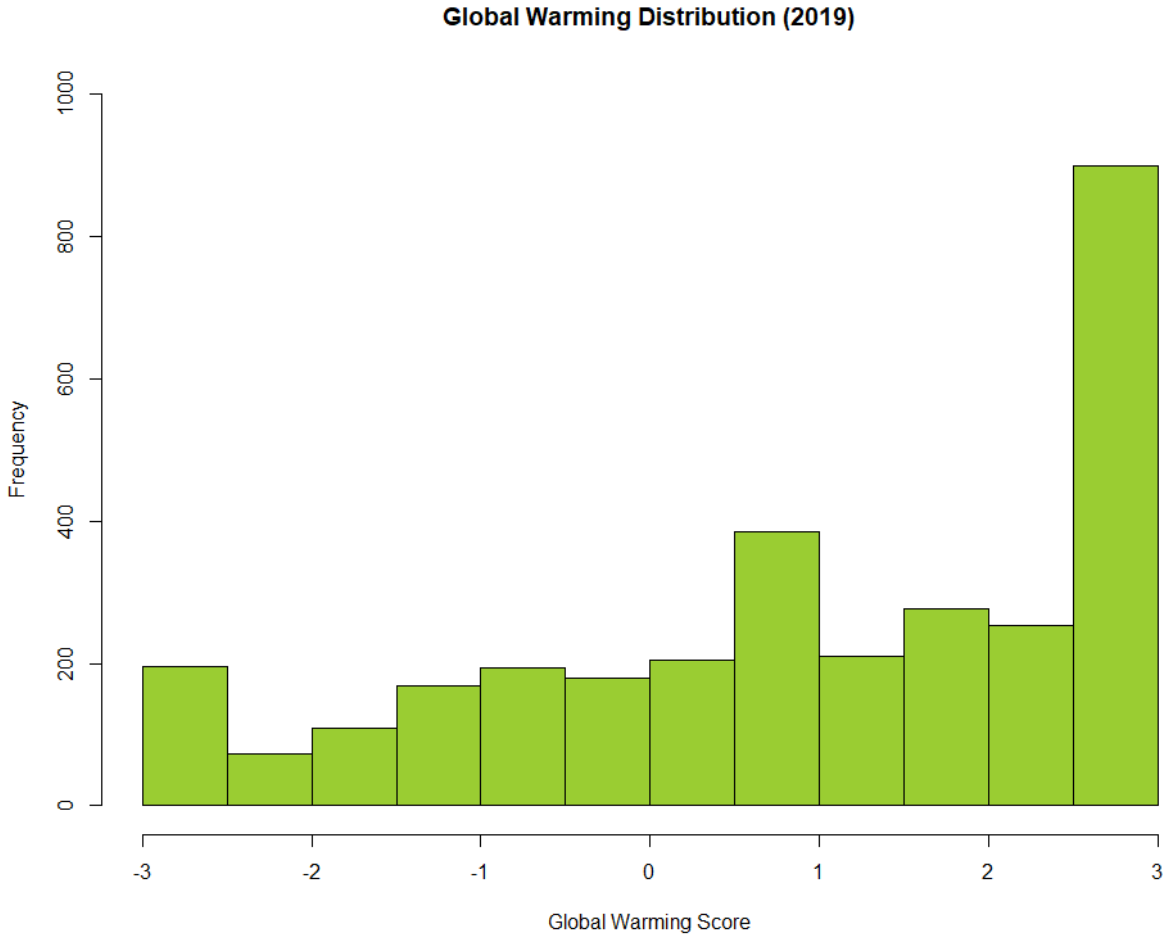
Figure 5: Global Warming Scale (2018)



Here in the 2018 ANES pilot data, the Global Warming Scale (2018) is constructed from questions about the causes of global warming, the amount the government should do about it, the amount global warming affects weather patterns in the United States, the amount global warming affects weather patterns in one's local community, and the level of importance of the issue. The combined measure yields a Cronbach's alpha score of 0.9143.

Dataset	Observations	Mean	Standard Deviation	Min	Max	Cronbach's Alpha
2018 ANES	2,496	10.99	5.11	2	18	0.9143
2019 ANES	*3,151*	*0.98*	*1.81*	*-3*	*3*	*0.8319*
2020 M-Turk	328	3.15	1.70	-3	5	0.8044

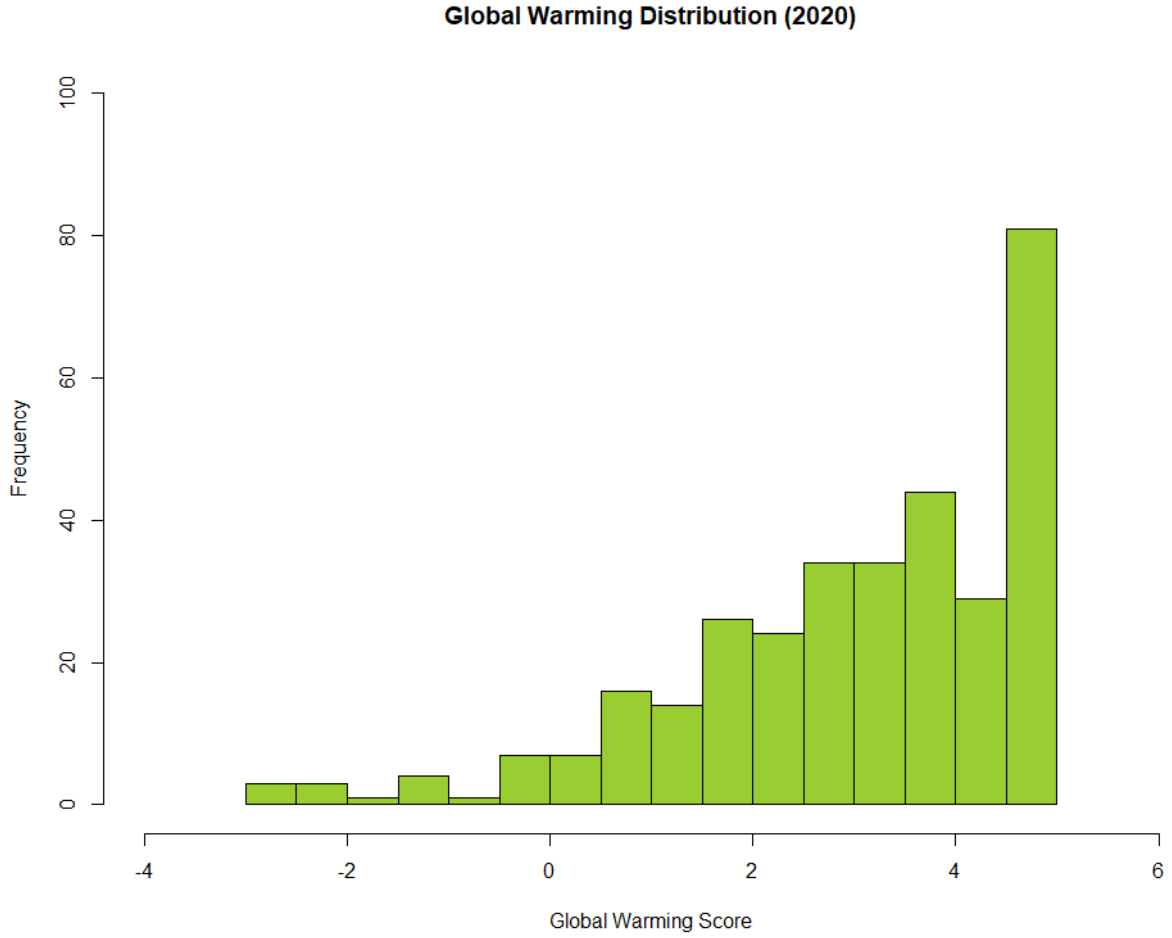
Figure 6: Global Warming Scale (2019)



Here in the 2019 ANES pilot data, the Global Warming Scale (2019) is constructed from respondent's support or opposition to two hypothetical policies to combat climate change as well as respondent's confidence in their belief (or disbelief) in the warming tempature of the planet. The two policies are: 1) increased government regulation on businesses that produce a great deal of greenhouse emissions linked to climate change, and 2) higher fuel efficiency standards for cars and trucks. The combined measure yields a Cronbach's alpha score of 0.8319.

Dataset	Observations	Mean	Standard Deviation	Min	Max	Cronbach's Alpha
2018 ANES	2,496	10.99	5.11	2	18	0.9143
2019 ANES	3,151	0.98	1.81	-3	3	0.8319
2020 M-Turk	*328*	*3.15*	*1.70*	*-3*	*5*	*0.8044*

Figure 7: Global Warming Scale (2020)



Here in the 2020 M-Turk data, the Global Warming Scale (2020) is constructed from questions about the causes of global warming, and the level of importance of the issue, as well as respondent's support or opposition to two hypothetical policies to combat climate change. These two policies are the same as those proposed in the 2019 ANES pilot. Here, the Cronbach's alpha score was 0.8044. Here, the 2020 Global Warming scale distribution mirrors the 2019 scale due to the number of overlapping questions.

Vaccines Scales:

Dataset	Observations	Mean	Standard Deviation	Min	Max	Cronbach's Alpha
2019 ANES	3,137	-2.17	2.22	-4	4	
2020 M-Turk	357	2.35	1.11	-1	4	0.6555

In the 2019 ANES pilot data, the Vaccines Scale represents the respondents' belief (or disbelief) in the link between vaccines and autism. Here is how I constructed the scale: An initial question asked respondents if they thought there was a link between vaccines and autism. Next, respondents were asked to rank the level of confidence they associated with their previous answer. I then multiplied the two results. Thus, a high negative score reflects confidence in the lack of association of vaccines and autism, whereas a high positive score corresponds to someone who is very confident in a link between vaccines and autism. Since very few respondents ended up with positive scores on this Vaccines Scale, *Figure 8* on the next page illustrates a heavy skew of the distribution in the negative direction. As a result of this skew, the differences I explore will be in how confident a person is that vaccines do not cause autism.

In contrast, the 2020 M-Turk dataset, contains multiple measures of vaccines to construct that scale. Here, the vaccine scale contains questions about the importance of being vaccinated, the potential risks to the community when someone is not vaccinated, the possibility of a link between vaccines and autism, and the personal level of importance of the issue to the respondent. Additionally, the belief in vaccines causing autism is coded in the opposite direction from the 2019 dataset. This way, all the pro-vaccine policy preferences end up on the same side of the scale. Thus, the negative section in *Figure 9* corresponds to the positive section of *Figure 8*.

Figure 8: Vaccines & Autism Scale (2019)

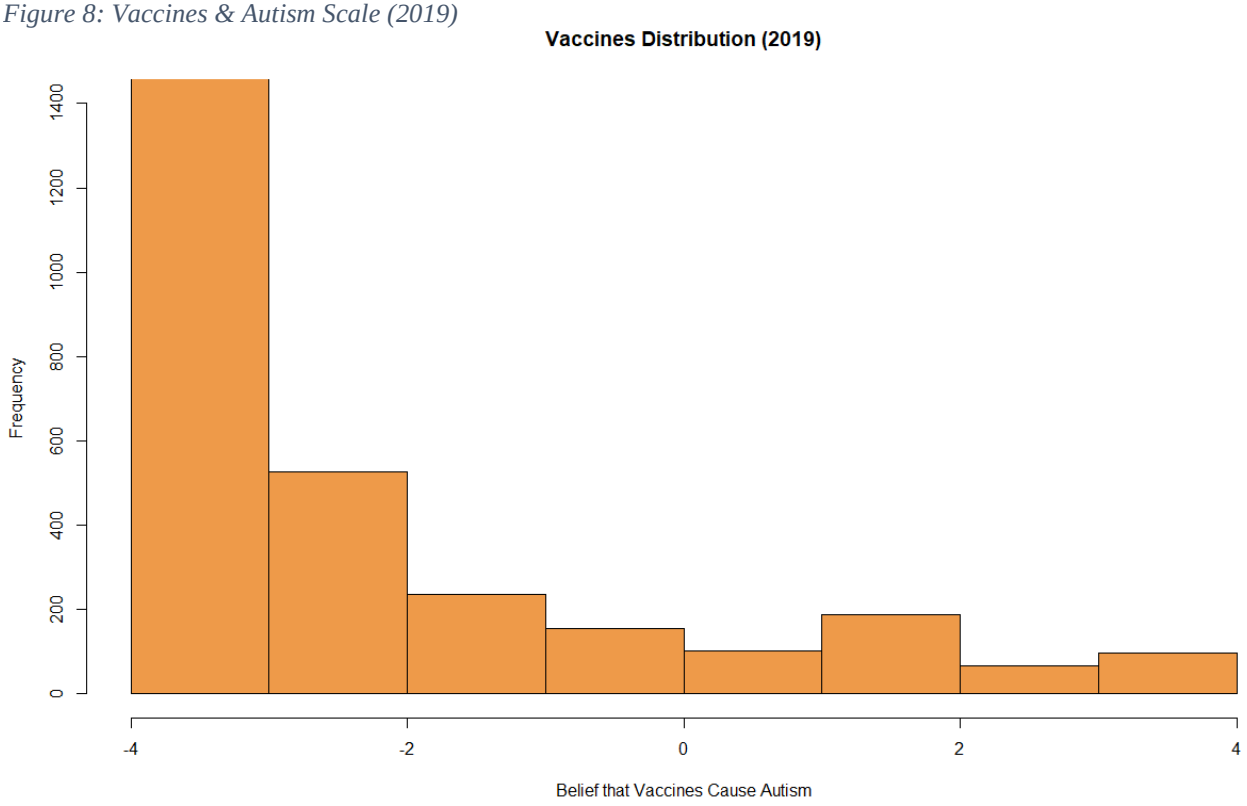
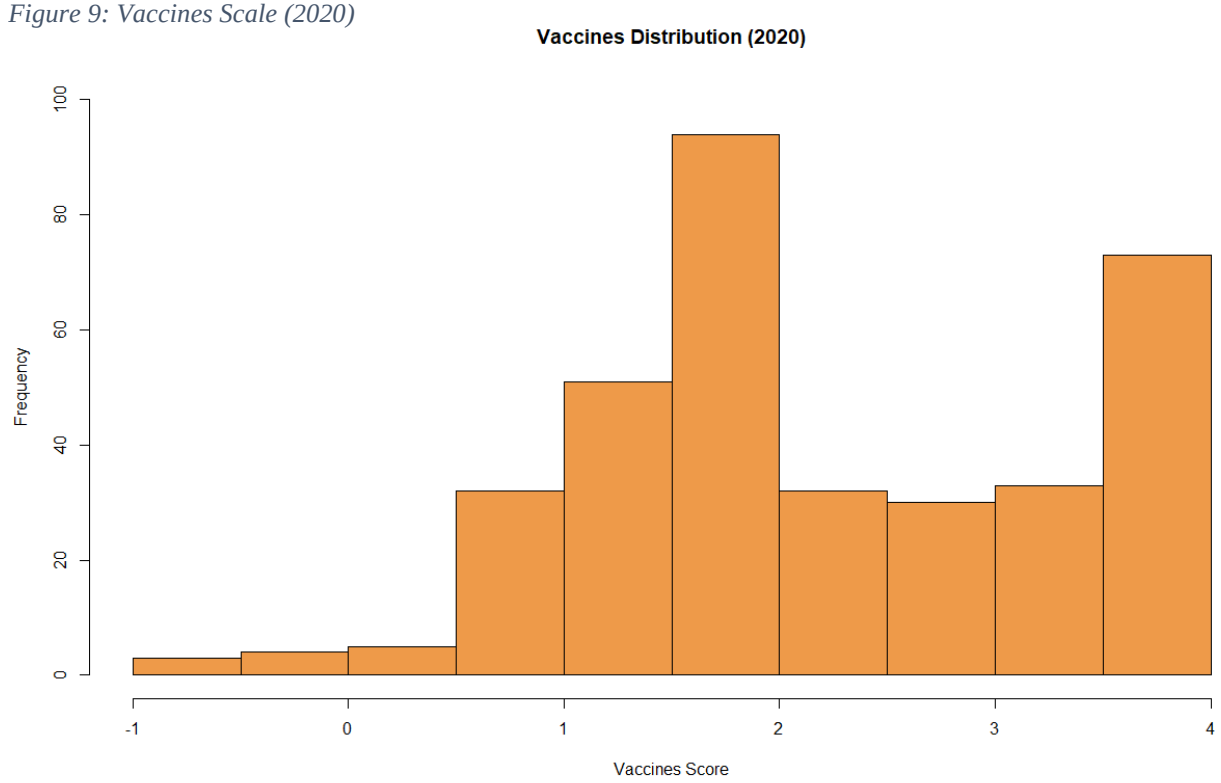


Figure 9: Vaccines Scale (2020)



Multivariate Analysis

Before assessing religiosity's connection with partisan perspectives on science-based issues, it is first necessary to explore that partisan relationship in its own terms. I begin the analyses with climate change opinions, which are described in the *Partisan Climate Change Hypothesis*:

> *Climate Change follows Partisan Identity; Republicans will score lower than Democrats on Global Warming Scales.*

Below is a table of each group's mean score on the Global Warming Scale (2018) as well as the results of an ordinary least squares regression analysis between party affiliation and perception of the effects of global warming:

Table 1: Mean Scores on the Global Warming Scale by Party (ANES 2018)

Support for Global Warming Polices	Observations	Mean (Standard Error)	95% Confidence Interval
Democrats	870	14.22 (0.12)	(13.99, 14.45)
Republicans	627	6.68 (0.17)	(6.36, 7.01)
Independents	781	10.90 (0.18)	(10.55, 11.25)
Other (No Party)	72	10.38 (0.64)	(9.12, 11.63)

Table 1a: Support for Global Warming Policies by Party Affiliation (ANES 2018)

Support for Global Warming Policies	Coefficients (Standard Error)	t	P > |t|	95% Confidence Interval
Republican	-7.54 (0.22)	-33.64	0.000***	(-7.98, -0.71)
Independent	-3.32 (0.21)	-15.75	0.000***	(-3.73, -2.90)
Other (No Party)	-3.85 (0.52)	-7.34	0.000***	(-4.87, 2.82)
Intercept (Democrats)	14.22 (0.15)	98.16	0.000***	(13.94, 14.50)

**** $p < 0.001$ ** $p < 0.05$ * $p < 0.10$*

N(df) = 2,346 (2,342); Adjusted $R^2 = 0.3253$; $P > F = 0.0000$

The Global Warming Scale used in this model runs from 2 to 18 and reflects the global warming impact they perceive and their opinions about the amount the government should do to combat these forces. Here, Democrats are shown to have the highest scores on the Global Warming Scale (2018). In contrast, Republicans score about -7.5 points lower than Democrats; Independents score about -3.3 points lower than Democrats; and those without a party score -3.8 less than Democrats. Each of these differences carry statistical significance ($p = 0.000$), indicating strong evidence in support of a real difference in climate change opinions between parties. Moreover, the distribution illustrated in these histograms show how Republican opinion of climate change runs counter to Democrat opinions on the same issue. However, later, when questions orient respondents toward specific policies, the Republican distribution shifts to be more centered.

Figure 8: Republican GWS Score (2018)

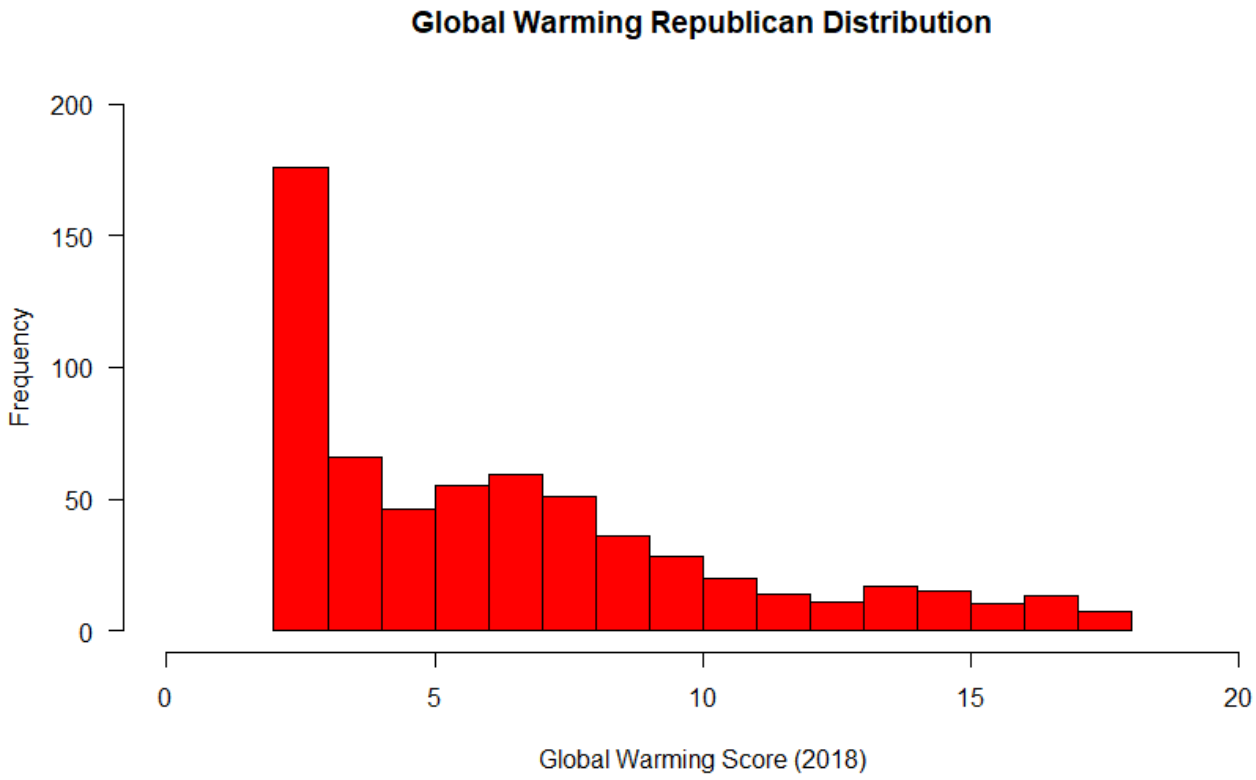
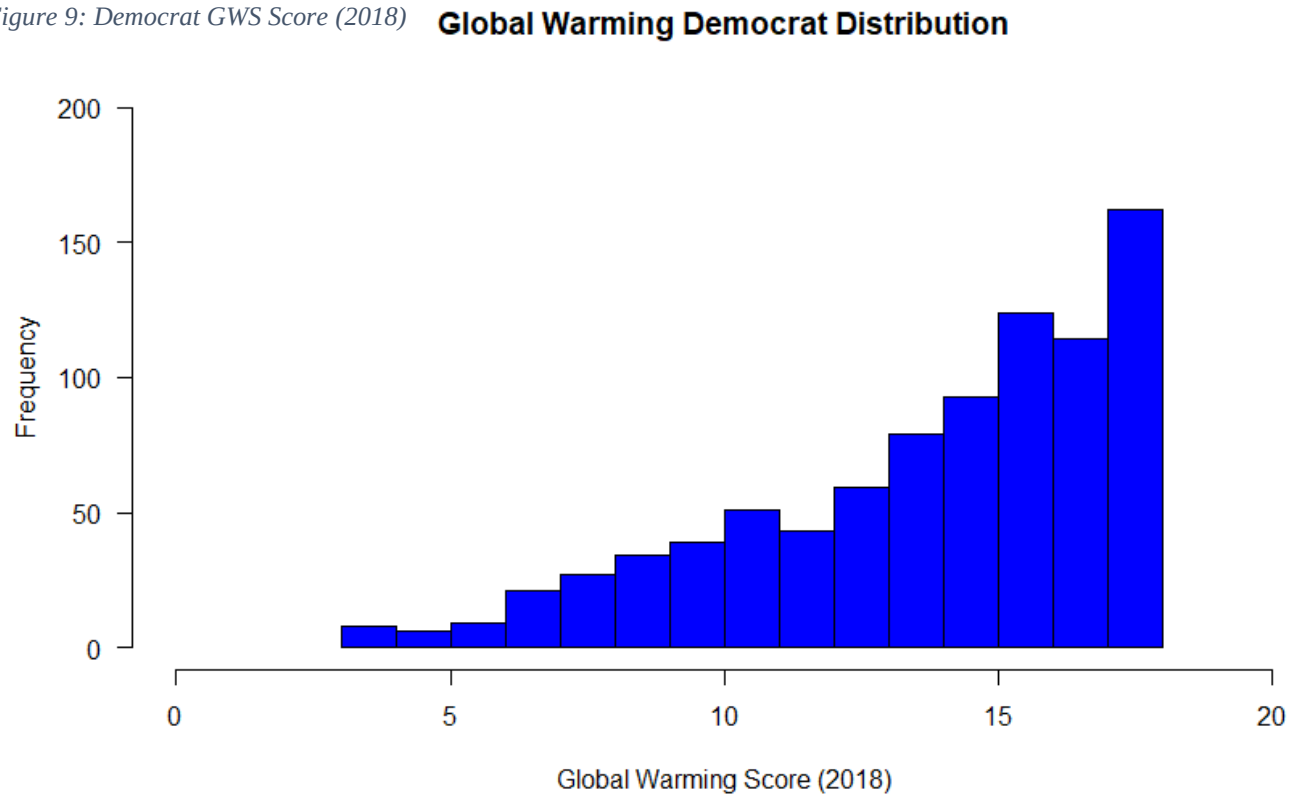


Figure 9: Democrat GWS Score (2018)



This effect is also apparent when coding party affiliation as a continuous scale, which runs from strong Republican (-3) to strong Democrat (+3).

Table 2: Support for Global Warming Policies by Strength of Party Affiliation (ANES 2019)

Support for Global Warming Policies	Coefficients (Standard Error)	t	P > |t|	95% Confidence Interval
Party Affiliation Scale	0.46 (0.01)	36.70	0.000***	(0.44, 0.49)
Intercept	0.31 (0.01)	33.99	0.000***	(0.29, 0.33)

**** $p < 0.001$ ** $p < 0.050$ * $p < 0.100$*

$N(df) = 3{,}036\ (3{,}034)$; Adjusted $R^2 = 0.3072$; $P > F = 0.0000$

The relationship here is also statistically significant (p = 0.000), and positive, meaning as a person's party affiliation moves in the direction of strong Democrat, the more likely they are to support specific policies designed to combat global warming. The key distinction here being that the 2019 ANES Global Warming Scale (2019) references two policies designed to accomplish

this goal. The two policy proposals are increased government regulations and higher efficiency standards for motor vehicles. Another distinguishing factor of this measure is the scale running from -3 to +3. Here, there is an opportunity for respondents to voice their opposition to each policy, rather than merely a lack of support for it.

Below is a table of mean Global Warming Scores (2019) by Party Affiliation in the 2019 ANES data.

Table 2a: Mean Scores on the Global Warming Scale by Party (ANES 2019)

Support for Global Warming Polices	Observations	Mean (Standard Error)	95% Confidence Interval
Democrats	999	2.11 (0.04)	(2.04, 2.19)
Republicans	862	-0.10 (0.06)	(-0.21, 0.02)
Independents	987	0.95 (0.06)	(0.84, 1.07)
Other (No Party)	154	0.30 (0.18)	(-0.05, 0.65)

Much like the 2018 data, when conducting regression analysis, Democrats were found to score the highest. In contrast to the previous dataset where Republicans could only express a lack of *belief* in the impacts of climate change on their country and community, here they can voice direct opposition to specific policies (e.g., regulations and efficiency standards). Here, the table illustrates only weaker *support* for those policies, rather than direct opposition to them. In fact, the 95 percent confidence interval implies that the mean could be as high as 0.02. Indeed, while the distribution of the scores for Democrats and Republicans skew in opposite directions (see histograms on the next page), the skew is much weaker for the Republicans. There, the data appear to be nearly normally distributed about the 0, with most of the cases scoring 1 or less. Thus, while there is still a clear difference in the opinions of members of different political

parties, it is not entirely apparent that Republicans strongly oppose these policies in a way that parallels Democratic support for them.

Figure 10: Republican GWS Score (2019)

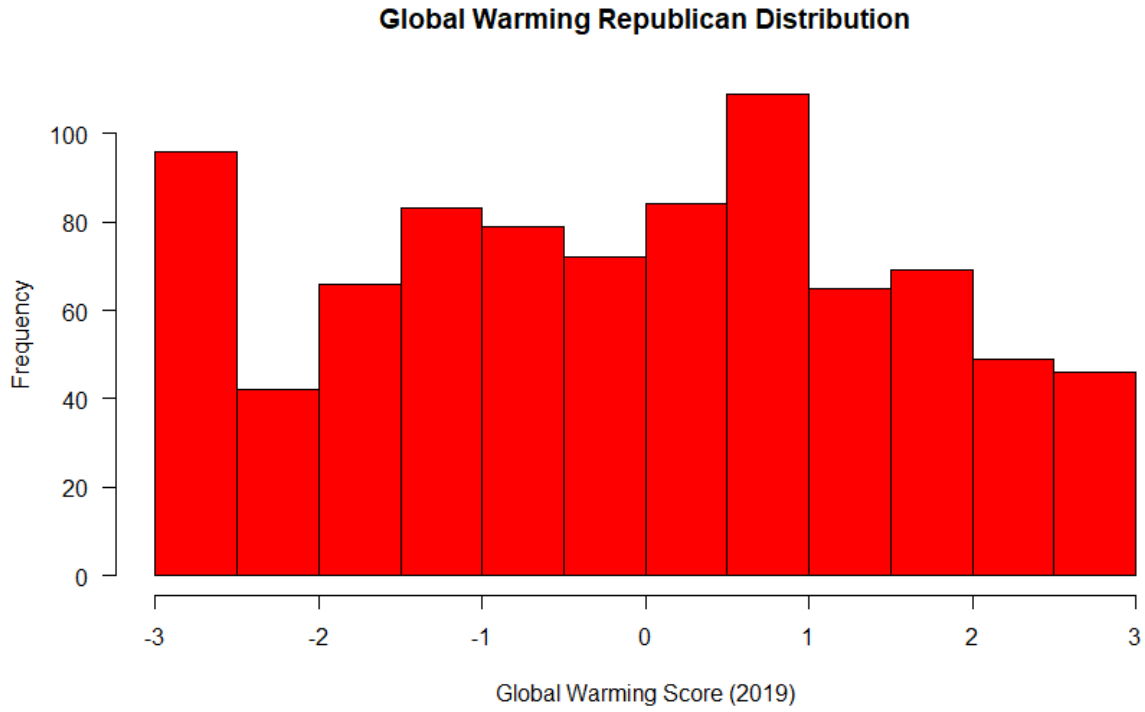


Figure 11: Democrat GWS Score (2019)

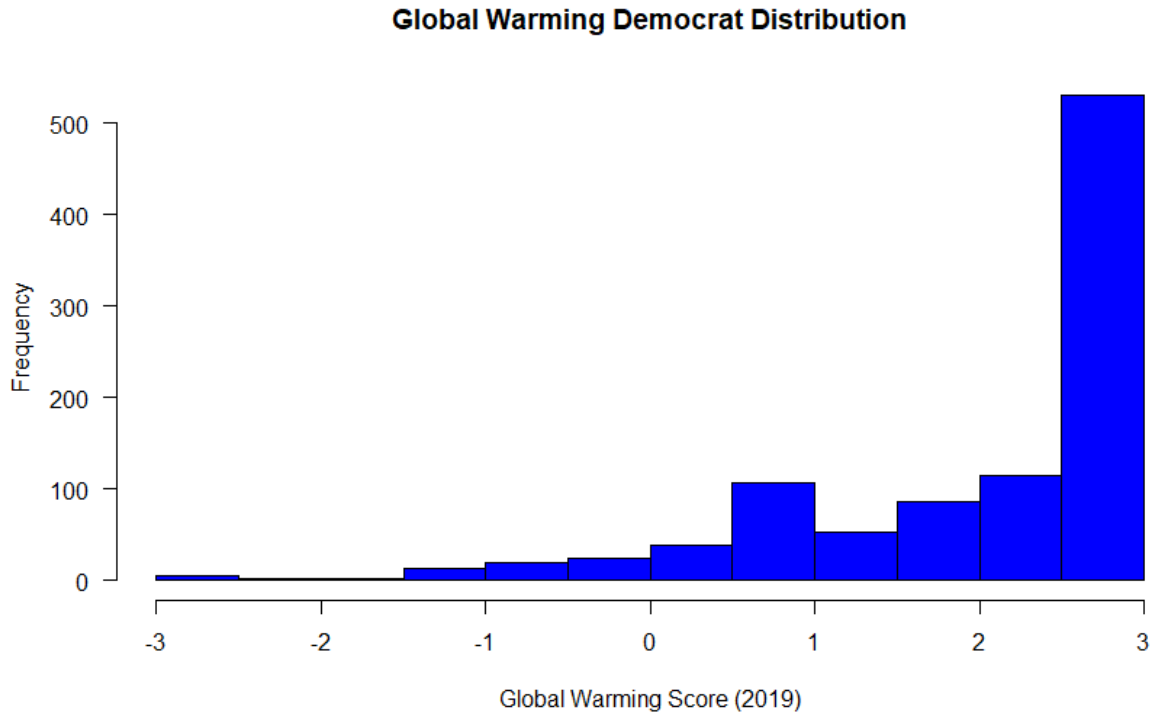


Table 2b: Support for Global Warming Policies by Party Affiliation (ANES 2019)

Support for Global Warming Policies	Coefficients (Standard Error)	t	P > |t|	95% Confidence Interval
Republicans	-2.21 (0.07)	-29.72	0.000***	(-2.36, -2.07)
Independents	-1.16 (0.07)	-16.12	0.000***	(-1.30, -1.02)
Other (No Party)	-1.81 (0.14)	-13.07	0.000***	(-2.09, -1.54)
Intercept (Democrats	2.11 (0.05)	41.69	0.000***	(2.01, 2.21)

**** p < 0.001* *** p < 0.050* ** p < 0.100*

N(df) = 2,989 (2,985); Adjusted R^2 = 0.2347; P > F = 0.000

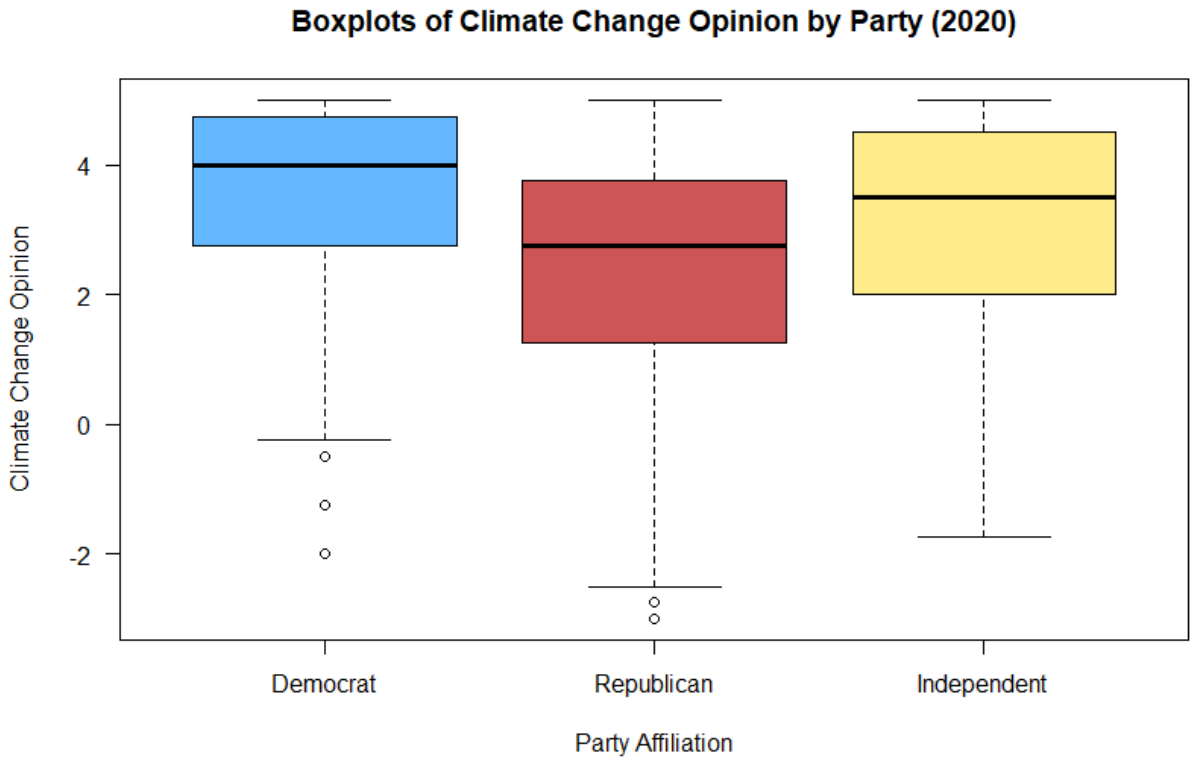
Here, in the 2019 ANES dataset, I was able to effectively replicate the 2018 ANES results. Each other group (Republicans, Independents, and those without a party) scored lower than Democrats, each supported by strong statistical evidence (p = 0.000).

Finally, I will attempt to replicate these results a third time using the M-Turk survey data. Here, the Global Warming Scale (2020) score was constructed through a combination of questions from the 2018 and 2019 ANES pilot datasets. Thus, there are questions both about the general impact of global warming felt by individuals as well as questions about specific policy preferences, yielding a scale that runs from -3 to 5. The table below describes the mean score by party affiliation as well as a boxplot describing the distribution of the data in each party:

Table 3: Mean Scores on the Global Warming Scale by Party (M-Turk 2020)

Support for Global Warming Polices	Observations	Mean (Standard Error)	95% Confidence Interval
Democrats	172	3.60 (0.12)	(3.37, 3.83)
Republicans	106	2.38 (0.19)	(2.01, 2.76)
Independents	73	3.13 (0.19)	(2.77, 3.49)

Figure 12: GWS by Party (2020)



Here again, like in the 2018 and 2019 ANES pilot datasets, the Democrat's average score was the highest, followed by Independents, and finally Republicans. Additionally, like in the 2019 ANES dataset, the lower Republican score translates to a lack of support – rather than direct opposition to – the proposed policies.

Furthermore, the regression table below also confirms the results of the 2018 ANES and 2019 ANES data, with Republicans yielding a negative, statistically significant ($p = 0.000$) coefficient. In contrast to the other datasets, there is slightly less evidence suggesting Independents are any different than Democrats ($p = 0.043$). These results would place Independents in between Republicans and Democrats on the Global Warming Scale (2020) (albeit with a little less certainty than in other datasets). Additionally, the similarities here between these results and the previously explored ones helps affirm my confidence about the quality of the sample and the responses in this dataset.

Table 3a: Support for Global Warming Policies by Party Affiliation (M-Turk 2020)

Support for Global Warming Policies	Coefficients (Standard Error)	t	P > |t|	95% Confidence Interval
Republicans	-1.22 (0.21)	-5.84	0.000***	(-1.63, -0.81)
Independents	-0.48 (0.23)	-2.04	0.043**	(-0.93, -0.02)
Intercept (Democrats)	3.60 (0.13)	27.94	0.000***	(3.35, 3.86)

**** $p < 0.001$ ** $p < 0.05$ * $p < 0.10$*

N(df) = 323 (320); Adjusted $R^2 = 0.0906$; $P > F = 0.000$

In sum, there is strong evidence in suggesting that public opinion on climate change follows partisan identity, thus supporting the *Partisan Climate Change Hypothesis*. Moreover, Democrats tend to support policies designed to combat Climate Change, whereas there is more variation in Republican opinion of these policies, despite a lack of support for the issue itself. While this hypothesis and finding may seem obvious, it provides a necessary foundation and starting point before examining more complex hypotheses.

Next, I move to examine public opinion on vaccines and its relationship with partisan identity. In contrast to climate change opinions, I hypothesized the *Non-Partisan Vaccines Hypothesis* which states:

Opinions about vaccines will not correlate with political parties.

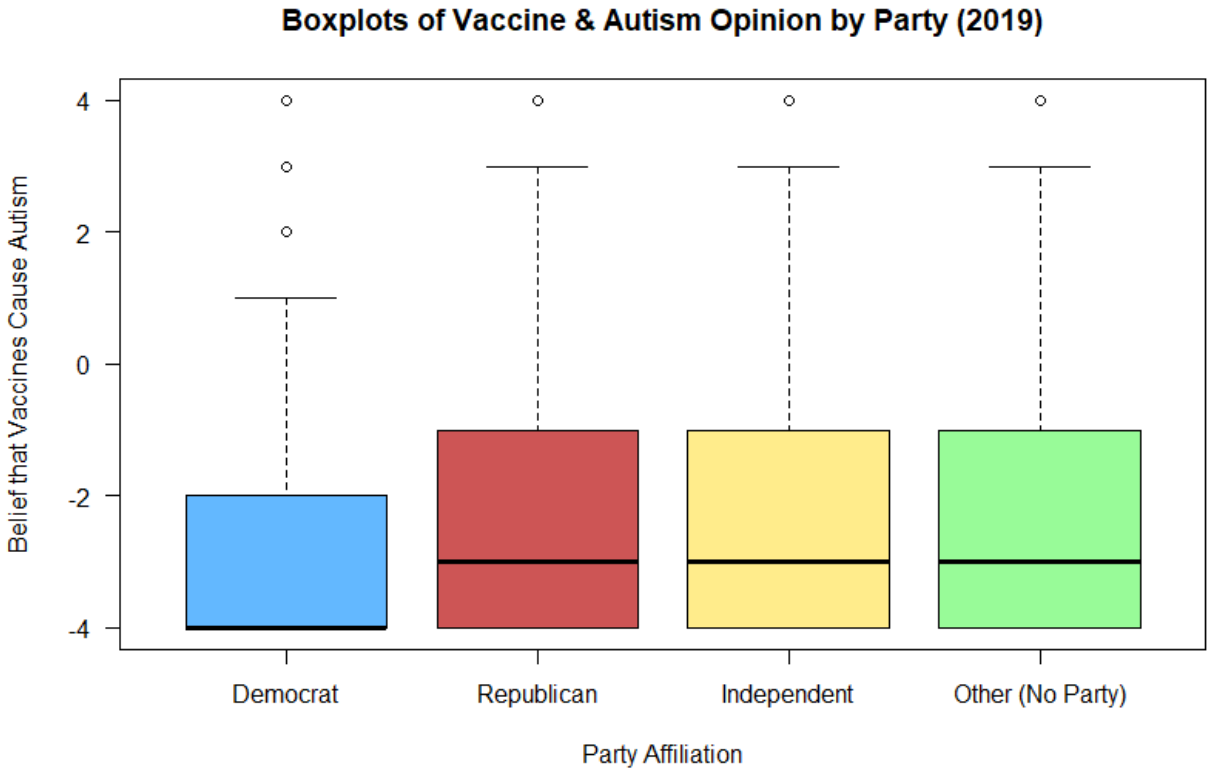
Before describing the findings related to this hypothesis, it is important to first note that the two data sets (2019 ANES and 2020 M-Turk) focus on different aspects of vaccines as a political issue. The 2019 ANES data focuses exclusively on the belief that vaccines are somehow linked with autism, whereas the 2020 M-Turk vaccines scale contains other questions about vaccines.

Below is a table showing the mean vaccine & autism score from the 2019 ANES pilot study as well as a boxplot showing the distribution of the data by party.

Table 4: Mean Vaccines & Autism Score by Party Affiliation (ANES 2019)

Belief that Vaccines Cause Autism	Number of Observations	Mean (Standard Error)	95% Confidence Interval
Democrats	999	-2.56 (0.07)	(-2.69, -2.43)
Republicans	862	-1.90 (0.08)	(-2.05, -1.74)
Independents	987	-2.18 (0.07)	(-2.32, -2.04)
Other (No Party)	154	-2.13 (0.18)	(-2.49, -1.77)

Figure 13: Vaccines & Autism by Party (2019)



Here, the data show that most folks, across each party, do not believe there is a link between vaccines and autism. The difference in opinion has more to do with the respondent's confidence in their answer. Democrats appear to be more confident that there is no association between vaccines and autism, but Republicans and other groups are a little less confident that there is no relationship there.

Below are regression tables showing the difference in vaccine and autism beliefs by party identity. The first model has party affiliation coded as a categorical variable, and the second one uses a continuous scale.

Table 4a: Vaccines & Autism by Party Affiliation (ANES 2019)

Belief that Vaccines Cause Autism	Coefficients (Standard Error)	t	P > |t|	95% Confidence Interval
Republican	0.66 (0.10)	6.47	0.000***	(0.46, 0.86)
Independent	0.38 (0.10)	3.84	0.000***	(0.19, 0.57)
Other (No Party)	0.43 (0.19)	2.24	0.025**	(0.06, 0.81)
Intercept (Democrats)	-2.56 (0.07)	-36.75	0.000***	(-2.70, -2.42)

**** $p < 0.001$ ** $p < 0.050$ * $p < 0.100$*

N(df) = 2,974 (2,970); Adjusted $R^2 = 0.0134$; $P > F = 0.000$

Table 4b: Vaccines & Autism by Strength of Party Affiliation (ANES 2019)

Belief that Vaccines Cause Autism	Coefficients (Standard Error)	t	P > |t|	95% Confidence Interval
Party Affiliation Scale	-0.15 (0.02)	-8.47	0.000***	(-0.19, -0.12)
Intercept	-2.19 (0.04)	-54.85	0.000***	(-2.26, -2.11)

**** $p < 0.001$ ** $p < 0.050$ * $p < 0.100$*

N(df) = 3,021 (3,019); Adjusted $R^2 = 0.0229$; $P > F = 0.000$

Here, Republicans are significantly less likely to be confident that there is no link between vaccines and autism (p = 0.000). This effect is about half for Independents with the same level of significance (p= 0.000), and a little less significant for those with no Political Party (p = 0.025). These partisan distinctions also maintain their significance and direction when introducing controls for race, education, age, and gender into the model. Since these results show partisan differences in public opinion of vaccines, they would appear to contradict my *Non-Partisan Vaccines Hypothesis*. However, these results may be symptomatic of something else going on with Republicans, given that these questions come from a section on misinformation in the 2019

ANES pilot. It is possible that these findings indicate Republicans are more exposed to pseudoscience than their Democrat peers, rather than just their beliefs about vaccines and autism. However, this assertion requires evidence beyond the scope of this paper.

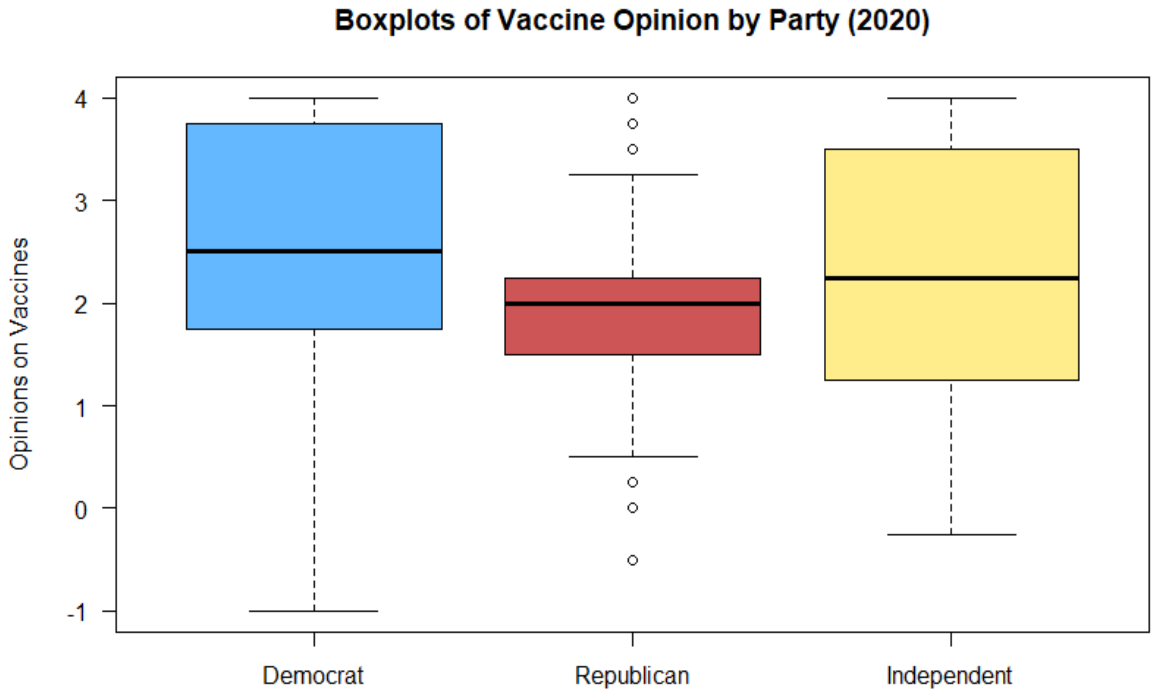
For a more robust vaccines scale, I now turn to the 2020 M-Turk data. There, the vaccines scale runs from -1 to 4. These questions ask about vaccines in a more general sense (as well as their potential connection with autism). In this scale, those who scored the highest did not believe in a link between vaccines & autism, expressed concern for the threat to the community posed by not being vaccinated, and reported the issue as one of personal importance to them. Below, the table describes the mean vaccine scores in each political party.

Table 5: Mean Vaccine Score by Political Affiliation (M-Turk 2020)

Vaccines	Observations	Mean (Standard Error)	95% Confidence Interval
Democrats	172	2.54 (0.09)	(2.37, 2.71)
Republicans	106	2.01 (0.09)	(1.83, 2.19)
Independents	73	2.32 (0.14)	(2.05, 2.58)

Here, much like the 2019 ANES dataset, both Republicans and Democrats have mean scores that place them on the pro-science side of the scale. Each party's mean scores about vaccines in that dataset showed them to not think vaccines are linked with autism. The variation was linked to their relative confidence in their thoughts on that relationship, rather than whether they thought it exists or it does not. Here too, Republicans – while still scoring lower than the Democrats or Independents – are not receiving extremely low scores (or even *negative* ones). The distributions of these opinions are further illustrated on the boxplot on the next page (*Figure 16*).

Figure 14: Vaccines Scale by Party (2020)



Here again, Democrats scored highest, followed by independents, and then finally by Republicans, who appear to have the smallest distribution of all three groups. Indeed, the ordinary least squares regression table below shows strong evidence that Republicans score lower than Democrats on the vaccines scale (p = 0.000).

Table 5a: Vaccines Score by Party Affiliation (M-Turk 2020)

Vaccines	Coefficients (Standard Error)	t	P > |t|	95% Confidence Interval
Republicans	-0.53 (0.13)	-3.94	0.000***	(-0.79, -0.27)
Independents	-0.22 (0.15)	-1.47	0.142	(-0.52, 0.08)
Intercept (Democrats)	2.54 (0.08)	30.59	0.000***	(2.38, 2.70)

**** p < 0.001 ** p < 0.050 * p < 0.100*

N(df) = 350 (347); Adjusted R^2 = 0.0208; P > F = 0.0152

In sum, there appears to be pretty strong evidence against the claim that there is no association between opinions about vaccines and partisan identity. Thus, there appears to be little support for my *Non-Partisan Vaccines Hypothesis*.

Before going on to the next section which deals with religiosity, I think it is prudent to recap what I have found so far. First, I found strong support for the *Partisan Climate Change Hypothesis*, albeit with different distributions in the Republican party depending on the questions. Generally, I found that specific policies tend to be not supported, rather than directly opposed by Republicans. Second, models from both the 2019 ANES and 2020 M-Turk dataset showed evidence that contradicts the *Non-Partisan Vaccines Hypothesis.* The 2019 ANES dataset suggests that Republicans were less confident in there being no link between vaccines and autism than their Democratic counterparts. Moreover, in the 2020 M-Turk dataset, Republicans had the lowest mean vaccines scores when compared with Democrats and Independents. Below is a summary of the hypothesis in a table form:

Hypothesis:	Text:	Result:
1. Partisan Climate Change Hypothesis	"Climate Change follows Partisan Identity; Republicans will score lower than Democrats on Global Warming Scales."	I found *strong* evidence *supporting* this hypothesis. Republicans scored lower than Democrats on Global Warming Scales across three datasets ($p = 0.000$). *See Tables 1-3a*
2. Non-Partisan Vaccine Hypothesis	"Opinions about vaccines will not correlate with political parties."	I found *strong* evidence *against* this hypothesis. Republicans tended to score lower on Vaccine Scales across both datasets ($p = 0.000$). *See Tables 4-5a*

In the next few pages, I explore the association between religiosity and each of these issues. The distributions and scale construction of the religiosity variables are described in the

Descriptive Analyses section (see pages 14-18). In the next few sections, I will explore the 2018 & 2019 ANES Religiosity Scales effects both as continuous and broken up into categorical variables in the models. The 2020 M-Turk Religiosity Scale is comprised of both a *belief* and a *behavior* component; thus, it will be evaluated first holistically, and then as separate scales.

I begin this section of analysis by examining the association between climate change and religiosity. The first model uses the data from the 2018 ANES pilot:

Table 6: Global Warming Scores by Religiosity (Continuous) (ANES 2018)

Opinions about Global Warming Effects	Coefficients (Standard Error)	t	P > |t|	95% Confidence Interval
Religiosity	-0.30 (0.02)	-14.07	0.000***	(-0.35, -0.26)
Intercept	13.07 (0.18)	73.55	0.000***	(12.72, 13.41)

**** $p < 0.001$ ** $p < 0.050$ * $p < 0.100$*

N(df) = 2,371 (2,369); Adjusted $R^2 = 0.0767$; $P > F = 0.000$

Here, there is a significant negative effect of religiosity on opinions about the effects of climate change. However, I am curious if the effect of religiosity could be modeled non-linearly. I suspect that the difference between cases is not uniformly distributed throughout the variable. Indeed, a categorical regression model with religiosity revealed less significance for the relationship in the lower levels of the variable, with some levels displaying no significance at all ($p = 0.158$). Thus, I decided to collapse the variable into four levels. The means of each group are displayed in the table below and the regression model using this categorical variable shown below as well:

Table 6a: Mean Global Warming Scores by Religiosity (Categorical) (ANES 2018)

Religiosity Levels: (0-14)	Observations	Mean (Standard Error)	95% Confidence Interval
Low Religiosity (0-2)	642	12.94 (0.18)	(12.57, 13.30)
Some Religiosity (3-6)	460	11.49 (0.23)	(11.04, 11.93)
More Religiosity (7-10)	635	10.47 (0.20)	(10.70, 11.58)
Most Religiosity (11-14)	637	9.30 (0.21)	(8.73, 9.56)

Table 6b: Global Warming Scores by Religiosity (Categorical) (ANES 2018)

Opinions about Global Warming Effects	Coefficients (Standard Error)	t	P > |t|	95% Confidence Interval
Some Religiosity (3-6)	-1.47 (0.30)	-4.77	0.000***	(-2.05, -0.85)
More Religiosity (7-10)	-2.47 (0.28)	-8.87	0.000***	(-3.02, -1.92)
Most Religiosity (11-14)	-3.64 (0.27)	-13.08	0.000***	(-4.19, -3.09)
Intercept (Low Religiosity)	12.94 (0.19)	65.90	0.000***	(12.55, 13.32)

**** $p < 0.001$ ** $p < 0.050$ * $p < 0.100$*

N(df) = 2,371 (2,367); Adjusted $R^2 = 0.0708$; $P > F = 0.000$

Here, there is still a nearly linear distribution in the model, albeit with larger differences between the groups than what was previously shown in the last model. These larger groups allow for clearer distinctions between the levels of religiosity and their respective effects on climate change opinions. In both cases, an increase in religiosity is associated with a decrease in opinions about the impacts of global warming (p = 0.000). These folks who attend religious services often are less likely to think that the effects of climate change are present in their community (or the country at large) and that the government does not need to do more to combat its effects. Moreover, the effects of religiosity on global warming opinions remains significant even when

controlling for the age of the respondent. Furthermore, I find no evidence of an interaction between age and religiosity on climate change opinions ($p > 0.100$).

I find similar results in the 2019 ANES pilot data. Again, there is a negative correlation between religiosity and attitudes about climate change policies.

Table 7: Global Warming Scores by Religiosity (Continuous) (ANES 2019)

Support for Global Warming Policies	Coefficients (Standard Error)	t	P > |t|	95% Confidence Interval
Religiosity (Continuous)	-0.11 (0.01)	-18.40	0.000***	(-1.22, -0.10)
Intercept	1.76 (0.05)	33.92	0.000***	(1.67, 1.86)

**** $p < 0.001$ ** $p < 0.050$ * $p < 0.100$*

N(df) = 3,022 (3,020); Adjusted $R^2 = 0.1005$; $P > F = 0.0000$

However, much like in the 2018 ANES dataset, I am curious about the linearity of this model. An examination of the mean Global Warming Score (2019) at each of the 17 levels of religiosity in the 2019 ANES dataset revealed a larger difference between those with the highest levels of religiosity and the group proceeding them. Moreover, there were also smaller differences in the middle groups, as well as larger ones in the lowest categories. The religiosity variable was then collapsed into 4 categories (based on Global Warming Scores) to aid in the creation of these models. Here is a table of the means and below is a regression table with the collapsed categorical variable.

Table 7a: Mean Global Warming Scores by Religiosity (Categorical) (ANES 2019)

Levels of Religiosity (0-16)	Observations	Mean (Standard Error)	95% Confidence Interval
Low Religiosity (0-1)	697	1.89 (0.06)	(1.77, 1.99)
Some Religiosity (2-7)	952	1.09 (0.06)	(0.98, 1.20)
More Religiosity (8-13)	933	0.74 (0.06)	(0.63, 0.86)
Most Religiosity (14-16)	452	-0.04 (0.09)	(-0.21, 0.14)

Note how the confidence interval of the "Most Religiosity" group crosses the 0. Here, (like with the Republicans in this dataset) it looks like this group is merely displaying a lack of support for these policies rather than direct *opposition* to them.

Table 7b: Global Warming Scores by Religious Service Attendance (Categorical) (ANES 2019)

Support for Global Warming Policies	Coefficients (Standard Error)	t	P > |t|	95% Confidence Interval
Some Religiosity (2-7)	-0.79 (0.09)	-9.26	0.000***	(-0.96, -0.62)
More Religiosity (8-13)	-1.13 (0.09)	-13.24	0.000***	(-1.30, -0.97)
Most Religiosity (14-16)	-1.91 (0.10)	-18.55	0.000***	(-2.12, -1.71)
Intercept (Low Religiosity)	1.89 (0.06)	29.00	0.000***	(1.75, 2.01)

**** $p < 0.001$ ** $p < 0.050$ * $p < 0.100$*

$N(df) = 3{,}022\ (3{,}018)$; Adjusted $R^2 = 0.1093$; $P > F = 0.000$

Additionally, this regression model illustrates the non-linearity of the model. The difference between the coefficients of the "More" and "Most" group (0.78) appears to be nearly twice the difference between the "Some" and "More" groups (0.34). Moreover, the difference between the "Low" group and the "Some" group is even greater (1.10), further emphasizing this lack of linearity. In sum, religiosity's effect appears to decrease support for specific policies. This effect is not constant throughout the model. It appears largest for folks with lower levels of religiosity, next largest for the folks with the most religiosity, but those with medium levels appear to

experience the smallest effect. When controlling for age in this model, the overall effect of religiosity was maintained, despite age being significant and negative.

Next, I examine the M-Turk 2020 data. Here, a regression model with religiosity and support for global warming policies yielded a significant negative association (p = 0.000). Here, the scale mainly consists of policy questions and the overall importance of fighting the effects of the changing climate. In other words, a high score on the religiosity scale is associated with lower levels of support for global warming policies, like increased regulations and higher fuel efficiency standards.

Table 8: Global Warming Scores by Religiosity (M-Turk 2020)

Support for Global Warming Policies	Coefficients (Standard Error)	t	P > |t|	95% Confidence Interval
Religiosity	-0.14 (0.03)	-4.13	0.000***	(-0.20, -0.07)
Intercept	3.70 (0.16)	23.68	0.000***	(3.39, 4.01)

**** p < 0.001* *** p < 0.050* ** p < 0.100*

N(df) = 325 (323); Adjusted R^2 = 0.0472; P > F = 0.0000

However, since that dataset has a more robust definition of religiosity than the ANES data, it is prudent to explore any potential differences religious beliefs and behaviors may have on attitudes about increasing fuel efficiency standards and government regulations as well as the overall significance of the climate crisis to the respondent. Here, religious beliefs include belief in God, beliefs about scripture, feelings about coreligionists, and the overall importance of religion to the respondent. In contrast, religious behaviors refer to service attendance, frequency of prayer, time spent reading scripture, and amount of time spent with non-familial coreligionists.

Table 8a: Global Warming Scores by Religious Beliefs vs Behaviors (M-Turk 2020)

Support for Global Warming Policies	Coefficients (Standard Error)	t	P > |t|	95% Confidence Interval
Religious Beliefs	-0.25 (0.11)	-2.17	0.031**	(-0.47, -0.02)
Religious Behaviors	-0.02 (0.12)	-0.19	0.850	(-0.25, 0.21)
Intercept	3.68 (0.16)	23.42	0.000***	(3.37, 3.99)

**** p < 0.001* *** p < 0.050* ** p < 0.100*

N(df) = 325 (322); Adjusted R^2 = 0.0472; P > F = 0.0002

Here, there is evidence that the religious beliefs scale and religious behaviors scale are measuring the same underlying concept. In fact, when separated (but still in the same model), only *beliefs* are significant (p = 0.031), whereas *behaviors* are not (p = 0.850). In contrast, when run in their own models, each variable retains its significance (p = 0.000 and 0.001, respectively). Since beliefs and behaviors measure the same concept, little significance is given to behaviors when put in a model together with beliefs, since its effect is taken up by that variable. Additionally, religiosity remained significant when controlling for age, which was not found to be significantly correlated with climate change opinions.

Up until now, I have been laying the foundation for my real hypothesis about the relationship between religiosity, party, and opinions of global warming policies. Here, I theorize that there will be a difference in the effect of religiosity among Democrats than among Republicans. The expected outcomes are outlined in the *Climate Change & Religiosity Hypothesis*, which states:

> *Highly Religious Democrats will be more likely to favor policies designed to mitigate the effects of Climate Change; but in contrast, Highly Religious Republicans will be less likely to favor these same policies (and may even oppose them).*

In other words, high levels of religiosity push a person to the more extreme end of their party's position on the issue.

To test this hypothesis, I rely on regression models containing interaction terms between party affiliation and religiosity. Below is a table of this interaction in the 2018 ANES dataset. The model suggests evidence that the effect of religiosity is different for Republicans than for Democrats at all levels ($p = 0.033$, 0.031, & 0.009). The overall religiosity effect appears to be smaller for Republicans (and even positive in the "Some" case, where the coefficient becomes +0.27). There is no significant difference in the effect of religiosity for Independents ($p > 0.100$), and the effect for Other (No Party) is largest for the "Most" religiosity group ($p = 0.042$).

Table 9: Global Warming Scale Interactions (Party ID & Religiosity) (ANES 2018)[27]

Opinions about Global Warming Effects	Coefficients (Standard Error)	t	P > |t|	95% Confidence Interval
Republicans (Low Religiosity)	-8.67 (0.54)	-16.16	0.000***	(-9.72, -7.62)
Independents (Low Religiosity)	-3.10 (0.37)	-8.30	0.000***	(-3.83, -2.37)
Other (Low Religiosity)	-2.59 (0.93)	-2.79	0.005**	(-4.40, -0.77)
Some Religiosity	-1.36 (0.39)	-3.41	0.001**	(-2.14, -0.58)
More Religiosity	-1.56 (0.38)	-4.05	0.000***	(-2.31, -0.80)
Most Religiosity	-2.17 (0.41)	-5.35	0.000***	(-2.97, -1.38)
Republicans (Some Religiosity)	1.63 (0.76)	2.14	0.033**	(0.14, 3.13)
Republicans (More Religiosity)	1.48 (0.68)	2.16	0.031**	(0.14, 2.82)
Republicans (Most Religiosity)	1.77 (0.68)	2.61	0.009**	(0.44, 3.10)
Independent (Some Religiosity)	-0.06 (0.59)	-0.10	0.918	(-1.22, 1.10)
Independent (More Religiosity)	-0.44 (0.56)	-0.79	0.430	(-1.54, 0.66)
Independent (Most Religiosity)	-0.59 (0.59)	-1.00	0.318	(-1.75, 0.57)
Other (Some Religiosity)	-0.74 (1.52)	-0.49	0.627	(-3.71, 2.24)
Other (More Religiosity)	-1.24 (1.45)	-0.85	0.393	(-4.09, 1.61)
Other (Most Religiosity)	-2.79 (1.37)	-2.04	0.042**	(-5.49, -0.10)
Intercept	15.45 (0.25)	61.55	0.000***	(14.96, 15.94)

**** $p < 0.001$ ** $p < 0.050$ * $p < 0.100$*

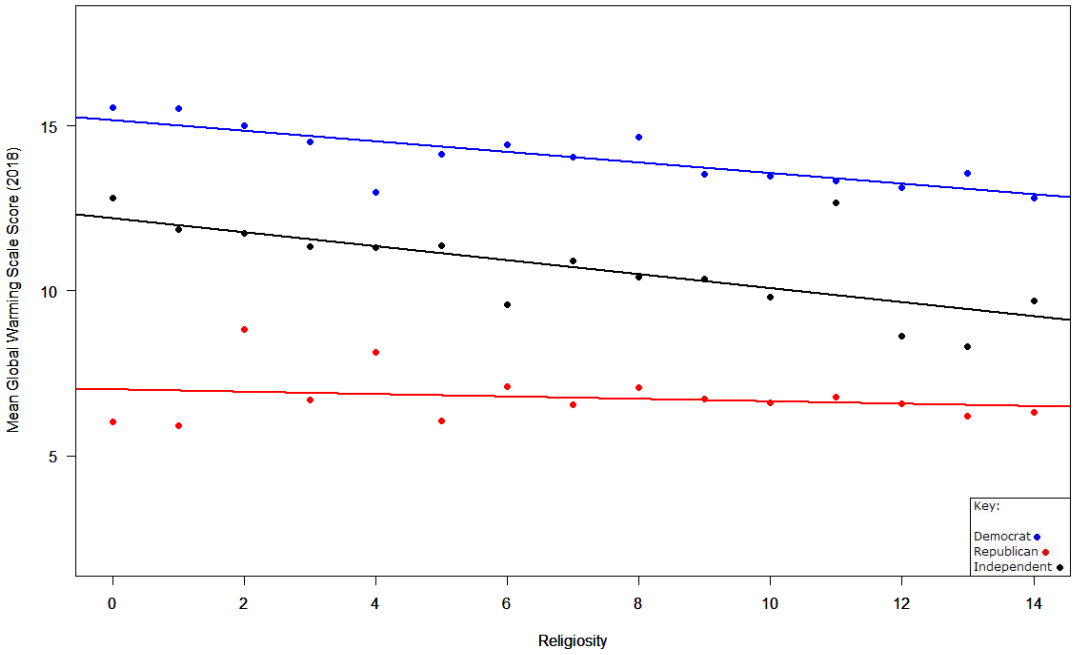
$N(df) = 2,257\ (2,241)$; Adjusted $R^2 = 0.3609$; $P > F = 0.0000$

These findings appear to contradict my *Climate Change & Religiosity Hypothesis*, since it does not appear that religiosity has a positive effect on Democrat opinion and a negative effect on Republican opinion. Moreover, the effects of this interaction are slightly mitigated by the introduction of controls for race, education, and gender, into the model. Nevertheless, the general conclusions of the above table still hold. For example, the general effect of religiosity holds for

[27] Here, I rely on the interaction models described Franzese and Kam's book *Modeling and interpreting interactive hypotheses in regression analysis*.

each level when running the model with controls (p = 0.003, 0.000, & 0.000). Additionally, the direction and size the coefficient for Republicans at the "Some" level holds, albeit with a smaller resultant coefficient and less significance (+0.14 and p = 0.082). Plus, the Republicans in the "Most" group also retained their significance and direction (p = 0.064). Moreover, the lack of significance for Independents remains (p > 0.100) as well as the significance of the Other "Most" group (p = 0.027).

Figure 15: Religiosity & Party Interaction on GWS (2018)



Furthermore, as this graph illustrates, the effect of religiosity is slightly different across parties. Since none of the religiosity-Independents interaction terms were found to be significant, that line's slope should be nearly parallel with the blue Democrat line. Thus, the graph illustrates how the effect of religiosity is the same for Democrats and Independents. The group that appears to function differently here are the Republicans. While the overall slope appears to be slightly negative, it is noticeably flatter than the other two lines. In this way, religiosity appears to have a distinct effect on Republicans from its effect on the general population. Furthermore, the

distinction between the overall Republican position and the overall Democratic position, remains despite the effect of religiosity. Republicans still score consistently lower than Democrats on the Global Warming Scale (2018).

Next, I will use the 2019 ANES data to attempt to confirm my findings in the 2018 ANES dataset. Here, the Global Warming Scale (2019) involves potential higher efficiency standards and government regulations. First, I explore the interaction between a continuous partisan identity scale and a categorical religiosity variable. The second model treats partisan identity as a categorical variable and interacts it with the same categorical religiosity variable. Below is the first table with the continuous scale:

Table 10: GWS Interactions (Party ID Scale & Religiosity) (ANES 2019)

Support for Global Warming Policies	Coefficients (Standard Error)	t	P > |t|	95% Confidence Interval
Partisan Identity Scale	0.46 (0.03)	14.49	0.000***	(0.43, 0.52)
Some Religiosity	-0.51 (0.08)	-6.25	0.000***	(-0.67, -0.35)
More Religiosity	-0.62 (0.08)	-7.57	0.000***	(-0.78, -0.46)
Most Religiosity	-1.08 (0.10)	-10.56	0.000***	(-1.28, -0.88)
Partisan Scale (Some Religiosity)	-0.03 (0.04)	-0.97	0.331	(-0.11, 0.04)
Partisan Scale (More Religiosity)	-0.05 (0.04)	-1.36	0.173	(-0.13, 0.02)
Partisan Scale (Most Religiosity)	-0.06 (0.05)	-1.20	0.230	(-0.15, 0.03)
Intercept	1.45 (0.07)	22.25	0.000***	(1.32, 1.58)

**** $p < 0.001$ ** $p < 0.050$ * $p < 0.100$*

N(df) = 2,938 (2,930); Adjusted $R^2 = 0.3418$; $P > F = 0.000$

This model reveals very different results from the interaction models in the 2018 ANES data. Most notably, no statistical significance is assigned to *any* of the religiosity-partisan interaction terms ($p > 0.100$). In other words, there does not appear to be a different effect of religiosity as a respondent moves closer to a strong Democrat identity (+3), when compared with someone with

the same level of religiosity on another point on the partisan identity scale. However, there could still be an effect for individual parties, as shown in the table below.

Table 10a: GWS Interactions (Party ID & Religiosity) (ANES 2019)

Support for Global Warming Policies	Coefficients (Standard Error)	t	P > |t|	95% Confidence Interval
Republican	-2.07 (0.20)	-10.42	0.000***	(-2.46, -1.68)
Independent	-0.78 (0.13)	-5.90	0.000***	(-1.04, -0.52)
Other	-0.72 (0.29)	-2.50	0.012**	(-1.28, -1.55)
Some Religiosity	-0.56 (0.12)	-4.59	0.000***	(-0.81, -0.32)
More Religiosity	-0.61 (0.13)	-4.70	0.000***	(-0.87, -0.37)
Most Religiosity	-0.75 (0.20)	-3.79	0.000***	(-1.14, -0.36)
Republican (Some Religiosity)	-0.07 (0.24)	0.31	0.757	(-0.40, 0.54)
Republican (More Religiosity)	0.09 (0.24)	0.40	0.688	(-0.37, 0.56)
Republican (Most Religiosity)	-0.18 (0.29)	-0.61	0.540	(-0.73, 0.38)
Independent (Some Religiosity)	-0.15 (0.18)	-0.81	0.418	(-0.50, 0.21)
Independent (More Religiosity)	-0.50 (0.19)	-2.70	0.007**	(-0.87, -0.14)
Independent (Most Religiosity)	-1.34 (0.27)	-5.03	0.000***	(-1.86, -0.81)
Other (Some Religiosity)	-0.98 (0.37)	-2.65	0.008**	(-1.71, -0.26)
Other (More Religiosity)	-1.36 (0.39)	-3.49	0.000***	(-2.13, -0.60)
Other (Most Religiosity)	-1.71 (0.43)	-3.94	0.000***	(-2.57, -0.86)
Intercept	2.54 (0.09)	28.24	0.000***	(2.37, 2.72)

**** $p < 0.001$ ** $p < 0.050$ * $p < 0.100$*

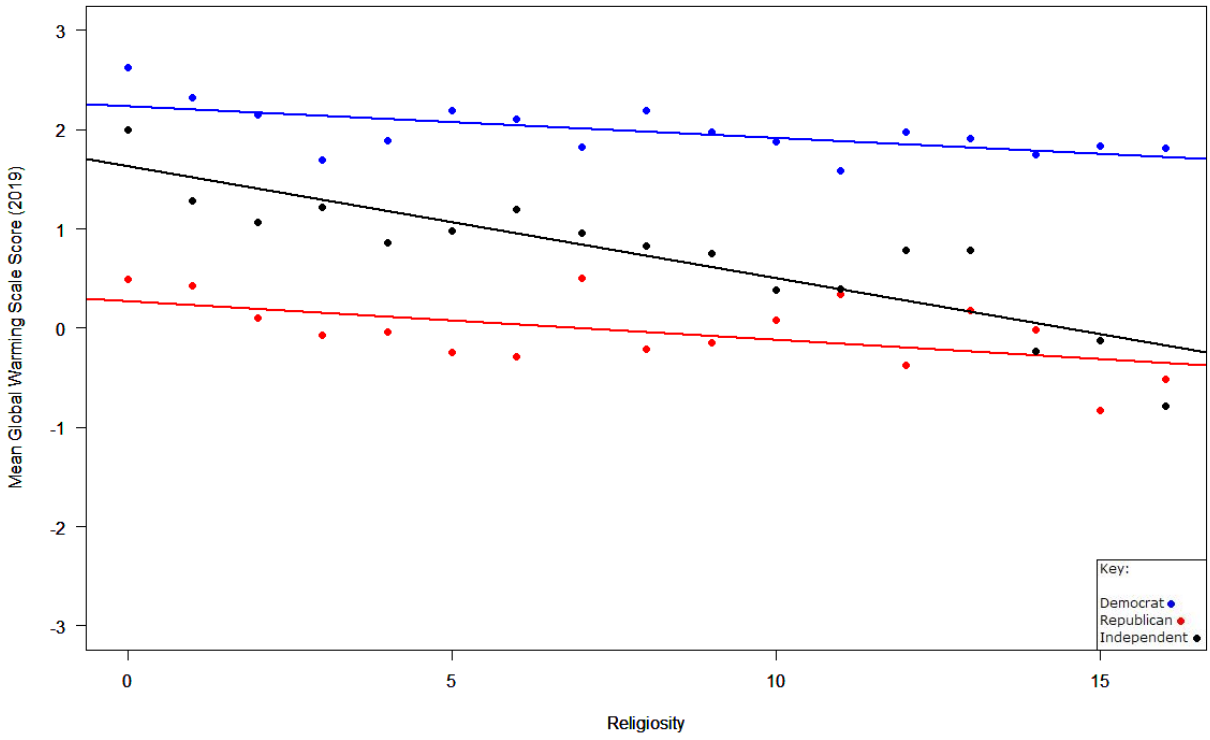
N(df) = 2,892 (2,876); Adjusted $R^2 = 0.2970$; $P > F = 0.000$

Here, like with the 2018 ANES data, there is still a significant negative effect of religiosity across each category (p = 0.000). In contrast, there is no difference in this attendance effect for Republicans when compared with Democrats at all levels of religiosity (p > 0.100). However, a larger negative effect is present for Independents with religiosity, but only for the “More” and “Most” religious categories (p = 0.007 & 0.000). Additionally, the interaction between the

religiosity and those who aligned with no party (Other), showed significance at every level (p = 0.008, 0.000, & 0.000). Further, when controlling for race, education, and gender, there is still no significantly different effect for any of the Religious Republican categories (p > 0.100). Also, the overall religiosity effect remains comparable (p = 0.000). Plus, the effect for Independents in the "More" and Others in the "Some" group remained significant, (p = 0.002 & p = 0.008, respectively). Finally, the Independent "Most" group as well as the Other religiosity groups were also found to be significant and negative, when applying these controls (p = 0.000).

The graph below also illustrates the effect of religiosity on each party.

Figure 16: Religiosity & Party Interaction on GWS (2019)



Like the 2018 ANES data, there is a clear separation between the Democratic scores and the Republicans scores on the Global Warming Scale (2019) and the different levels of religious service attendance do not cause them to switch places. Here, there is a clear negative effect of religiosity on opinions of policies designed to mitigate climate change. Moreover, there is no

distinct effect of religiosity on Republicans from the general religiosity effect, as the red and blue lines appear to be parallel. Further, the Independents have a steeper negative slope, since there is a significant negative effect for that group (p = 0.000). Thus, the effect is stronger for that group than for Republicans or Democrats.

Next, I will explore how these interactions function in the 2020 M-Turk survey. The regression model below, reveals very similar results to the 2018 ANES dataset:

Table 11: GWS Interactions (Party ID & Religiosity) (M-Turk 2020)

Support for Global Warming Policies	Coefficients (Standard Error)	t	P > |t|	95% Confidence Interval
Republicans	-3.77 (0.46)	-8.13	0.000***	(-4.68, -2.86)
Independents	-0.46 (0.33)	-1.38	0.168	(-1.11, 0.19)
Religiosity	-0.17 (0.04)	-4.08	0.000***	(-0.26, -0.09)
Religious Republicans	0.53 (0.09)	6.20	0.000***	(0.36, 0.70)
Religious Independents	-0.07 (0.09)	-0.85	0.395	(-0.24, 0.10)
Intercept (Democrats)	4.25 (0.19)	22.61	0.000***	(3.88, 4.62)

**** p < 0.001* *** p < 0.050* ** p < 0.100*

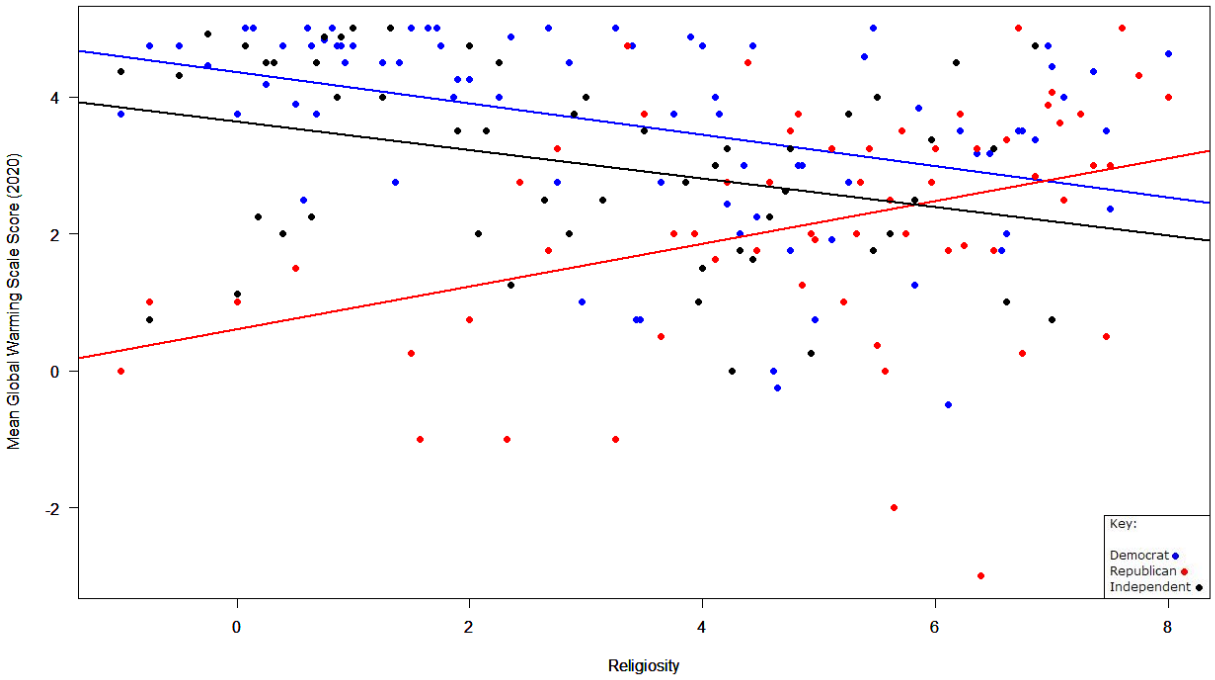
N(df) = 320 (314); Adjusted R^2 = 0.2185; P > F = 0.0000

The effect of religiosity on Republicans is distinct from its effect on other groups (p = 0.000). Here, religious Republicans show a slight increase in support for global warming policies. The model shows that the effect of religiosity for religious Republicans is +0.36, whereas the impact of religiosity for Democrats runs in the opposite direction and is smaller (-0.17). This finding is the exact opposite of my prediction in the *Climate Change & Religiosity Hypothesis*.

Below is a graph illustrating the trends of the data for each political party. Since religiosity had no distinct effect for Independents, their slope ought to be nearly parallel to the

Democrat's blue line. In contrast, since the effect of religiosity for Republicans was positive and significant, their slope runs in the opposite direction of the Democrats.

Figure 17: Religiosity & Party Interaction on GWS (2020)



Next, I will explore potentially different effects of religious beliefs and behaviors within these interactions. The table below contains interactions of beliefs on party, behaviors on party, as well as beliefs on behaviors. For religious beliefs, there was no statistically significant differences in its effect across each party. Nevertheless, religious behaviors interactions did produce significant results in the same directions previously found in the 2020 and 2018 data. Republicans with more religious behaviors scored higher on the global warming scale than those of the same party who engaged with less religious behavior ($p = 0.000$). Democrats with more religious behaviors scored lower than those of the same party who engaged with less religious behavior ($p = 0.000$).

Table 12: GWS Interactions (Beliefs & Behaviors) (M-Turk 2020)

Support for Global Warming Policies	Coefficients (Standard Error)	t	P > |t|	95% Confidence Interval
Republicans	-3.79 (0.57)	-6.60	0.000***	(-4.92, -2.66)
Independents	-0.62 (0.36)	-1.71	0.088*	(-1.32, 0.09)
Religious Beliefs	-0.24 (0.18)	-1.31	0.192	(-0.60, 0.12)
Religious Beliefs (Republicans)	0.05 (0.33)	0.15	0.884	(-0.59, 0.69)
Religious Beliefs (Independents)	-0.03 (0.33)	-0.10	0.919	(-0.68, 0.62)
Religious Behaviors	-0.82 (0.23)	-3.63	0.000***	(-1.27, -0.38)
Religious Behaviors (Republicans)	1.44 (0.23)	3.84	0.000***	(0.70, 2.18)
Religious Behaviors (Independents)	0.24 (0.43)	0.56	0.573	(-0.60, 1.09)
Religious Beliefs * Religious Behaviors	0.21 (0.08)	2.72	0.007**	(0.06, 0.36)
Religious Beliefs * Religious Behaviors (Republicans)	-0.14 (0.13)	-1.10	0.274	(-0.39, 0.11)
Religious Beliefs * Religious Behaviors (Independents)	-0.09 (0.17)	-0.51	0.609	(-0.42, 0.24)
Intercept (Democrats)	4.52 (0.21)	21.95	0.000***	(4.12, 4.93)

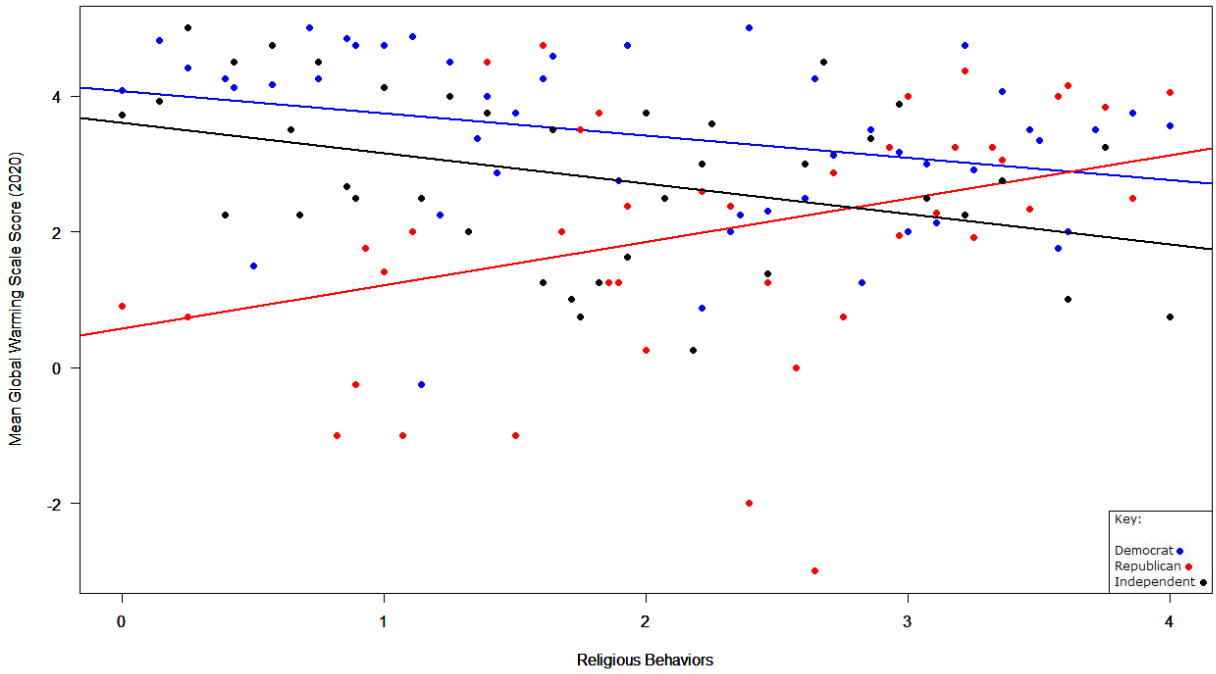
**** p < 0.001* *** p < 0.050* ** p < 0.100*

N(df) = 320 (308); Adjusted R^2 = 0.2445; P > F = 0.0000

There was also a statistically significant interaction between religious beliefs and religious behaviors (p = 0.007). In this model, those with high levels of religious beliefs and high levels of religious behaviors scored slightly higher on the Global Warming Scale (2020). However, this finding was not found to be significantly different across parties. Furthermore, these holdings stay significant when controlling for education, gender, and race.

Below is a graphical representation of the different effects of religious behaviors across groups. Again, the effects of religious behavior for Democrats and Independents are very similar, due to its large p-value (p = 0.573). In contrast, religious behaviors appear to have a positive effect on Republicans scores on the Global Warming Scale (2020).

Figure 18: Religious Behaviors Interaction on GWS (2020)



In sum, there appears to be strong evidence against my *Religiosity & Climate Change Hypothesis*. The interaction between religiosity and party identity appears to run in the opposite direction suggested by the hypothesis. Indeed, my analyses indicated that highly religious Democrats are slightly less supportive of global warming policies, and highly religious Republicans are slightly more supportive of these policies. Furthermore, it appears that this relationship is being driven more by religious behaviors over religious beliefs.

Hypothesis:	Text:	Result:
1. Partisan Climate Change Hypothesis	"Climate Change follows Partisan Identity; Republicans will score lower than Democrats on Global Warming Scales."	I found *strong* evidence *supporting* this hypothesis. Republicans scored lower than Democrats on Global Warming Scales across three datasets (p = 0.000). *See Tables 1-3a*
2. Non-Partisan Vaccine Hypothesis	"Opinions about vaccines will not correlate with political parties."	I found *strong* evidence *against* this hypothesis. Republicans tended to score lower on Vaccine Scales across both datasets (p = 0.000). *See Tables 4-5a*
3. Religiosity & Climate Change Hypothesis	"Highly Religious Democrats will be more likely to favor policies designed to mitigate the effects of Climate Change; but in contrast, Highly Religious Republicans will be less likely to favor these same policies (and may even oppose them)."	I found *moderate* evidence *against* this hypothesis. In each dataset, religiosity was negatively correlated with the GWS (p = 0.000). However, in the interaction model, results were mixed. Democrats with high levels of religiosity scored lower on the GWS in all datasets (p = 0.000). Republicans with high religiosity in 2018 & 2020 scored higher (p = 0.000) but were not significantly different in the 2019 dataset (p > 0.100). *See Tables 6-12*

Next, I will explore the effect these interactions may have on vaccine opinions. Of course, before I describe these relationships, I must first explore the relationship between religiosity and vaccines in a more general sense. Below is a regression model of the vaccines & autism score based on a continuous religiosity variable from the 2019 ANES dataset.

Table 13: Vaccines & Autism Score by Religiosity (Continuous) (ANES 2019)

Belief that Vaccines Cause Autism	Coefficients (Standard Error)	t	P > |t|	95% Confidence Interval
Religiosity	0.07 (0.01)	8.85	0.000***	(0.05, 0.08)
Intercept	-2.66 (0.07)	-40.06	0.000***	(-2.79, -2.53)

**** p < 0.001 ** p < 0.050 * p < 0.100*

N(df) = 3,008 (3,006); Adjusted R^2 = 0.0251; P > F = 0.000

Here, there is a significant positive relationship between religiosity and the belief that vaccines are linked to autism. However, (much like with climate change), I am curious how this relationship is spread out across the variable. Below is a table with means of vaccine beliefs over a collapsed religiosity variable as well as a regression model. Here there are four different levels of religiosity based on the vaccine scores at each of the 17 levels of religiosity.

Table 13a: Mean Vaccines & Autism Score by Religiosity (ANES 2019)

Levels of Religiosity (0-16)	Observations	Mean (Standard Error)	95% Confidence Interval
Low Religiosity (0-1)	697	-2.86 (0.07)	(-3.01, -2.72)
Some Religiosity (2-6)	774	-2.21 (0.08)	(-2.36, -2.05)
More Religiosity (7-11)	856	-1.84 (0.08)	(-1.99, -1.68)
Most Religiosity (12-16)	707	-1.93 (0.09)	(-2.10, -1.76)

Table 13b: Vaccines & Autism Score by Religiosity (Categorical) (ANES 2019)

Belief that Vaccines Cause Autism	Coefficients (Standard Error)	t	P > |t|	95% Confidence Interval
Some Religiosity (2-6)	0.66 (0.11)	5.73	0.000***	(0.45, 1.92)
More Religiosity (7-11)	1.03 (0.11)	9.15	0.000***	(0.20, 0.73)
Most Religiosity (12-16)	0.93 (0.12)	7.95	0.000***	(0.16, 0.80)
Intercept (Low Religiosity)	-2.86 (0.08)	-34.47	0.000***	(-3.02, -2.70)

**** p < 0.001 ** p < 0.050 * p < 0.100*

N(df) = 3,008 (3,004); Adjusted R^2 = 0.0304; P > F = 0.000

The regression table shows a significant relationship for all levels of religiosity (p = 0.000). However, this effect is not constant across groups. Indeed, if it were, I would expect the "Most" group to have the largest coefficient instead of the second largest. Here, the difference between the "More" and "Most" groups is only about 0.1, whereas the difference between the "Some" and "More" groups is 0.38. Thus, the effect is strongest for the "More" group, with only a slightly smaller effect for the "Most" group. Plus, the "Some" group experience the smallest effect from religiosity. In this way, the effect of religiosity on vaccine opinions is not-linear; it decreases confidence in the belief that there is no link between vaccines and autism and this effect peaks in the middle of the religiosity scale. Furthermore, when controlling for age in the model, the effects of religiosity remain significant.

Next, I will explore the 2020 M-Turk data on vaccines and religiosity. Below, the regression model illustrates that an increased level of religiosity is associated with a decrease in score on the vaccines scale (p = 0.000).

Table 14: Vaccines by Religiosity (M-Turk 2020)

Vaccines	Coefficients (Standard Error)	t	P > |t|	95% Confidence Interval
Religiosity	-0.20 (0.02)	-10.21	0.000***	(-0.24, -0.16)
Intercept	3.12 (0.09)	34.26	0.000***	(2.94, 3.30)

**** p < 0.001* *** p < 0.050* ** p < 0.100*

N(df) = 352 (350); Adjusted R^2 = 0.2274; P > F = 0.0000

However, since this religiosity scale is robust, containing measures of beliefs and behaviors, I might expect to see a different effect for each of these components. Below are two tables illustrating the effects religious beliefs have on vaccine opinion and the effect religious behaviors have on vaccine opinions, respectively. Similarly, here, the effects of religiosity persist even when controlling for age.

Table 14a: Vaccines by Religious Beliefs vs Behaviors (M-Turk 2020)

Vaccines	Coefficients (Standard Error)	t	P > |t|	95% Confidence Interval
Religious Beliefs	-0.07 (0.06)	-1.08	0.279	(-0.19, 0.06)
Religious Behaviors	-0.33 (0.06)	-5.00	0.000***	(-0.46, -0.20)
Intercept	3.14 (0.09)	34.46	0.000***	(2.95, 3.32)

**** p < 0.001 ** p < 0.050 * p < 0.100*

N(df) = 352 (349); Adjusted R^2 = 0.2349; P > F = 0.0000

Here too, religious beliefs and behaviors are getting at the same underlying concept. Thus, only one is significant in the above model. In contrast to climate change, with vaccines, it appears that *behaviors* more fully capture the concept than *beliefs.* When evaluated in separate models, there was a statistically significant negative relationship between religious beliefs or behaviors and vaccine opinions (p = 0.000).

Next, I move to explore the effect of the interaction between party affiliation and religiosity on vaccine opinions. Here, like in the case of global warming, the *Vaccines & Religiosity Hypothesis* is

> *Highly Religious Democrats will score higher on the Vaccine Scale; Highly Religious Republicans will score lower on the Vaccine Scale.*

In other words, highly religious individuals will be on the extreme ends of each party. Below, is a regression table exploring this interaction within the 2019 ANES dataset.

Table 15: Vaccines & Autism Interactions (Party ID Scale & Religiosity) (ANES 2019)

Belief that Vaccines Cause Autism	Coefficients (Standard Error)	t	P > |t|	95% Confidence Interval
Partisan Identity Scale	-0.27 (0.04)	-5.87	0.000***	(0.43, 0.52)
Some Religiosity	0.46 (0.12)	3.73	0.000***	(0.22, 0.71)
More Religiosity	0.79 (0.12)	6.51	0.000***	(0.55, 1.03)
Most Religiosity	0.64 (0.13)	4.89	0.000***	(0.38, 0.89)
Partisan Scale (Some Religiosity)	0.11 (0.06)	1.88	0.061*	(0.00, 0.23)
Partisan Scale (More Religiosity)	0.23 (0.06)	3.95	0.000***	(0.11, 0.34)
Partisan Scale (Most Religiosity)	0.17 (0.06)	-2.96	0.003**	(0.06, 0.29)
Intercept	-2.65 (0.09)	-27.89	0.000***	(-2.83, -2.46)

**** $p < 0.001$ ** $p < 0.050$ * $p < 0.100$*

N(df) = 2,923 (2,915); Adjusted $R^2 = 0.0518$; $P > F = 0.000$

The regression model illustrates the effect of religiosity and the partisan identity scale on the belief that vaccines are linked to autism. Like in both previous models, as a person's partisan identity increases (towards Democrats at +3), their confidence in the lack of a link between vaccines and autism goes down significantly (p = 0.000). Moreover, the general effect of religiosity still holds; as it increases, the belief that vaccines are linked to autism also increases (p =0.000). Here, there are significant interactions for all levels of religiosity (p = 0.061, 0.000, & 0.003). Although, the largest coefficient is the one associated with the "More" group, rather than the "Most" category. However, to better illustrate the different effect of religiosity across parties, I will use a model evaluating political parties as a categorical variable, rather than a continuous one.

Table 15a: Vaccines & Autism Interactions (Party ID & Religiosity) (ANES 2019)

Belief that Vaccines Cause Autism	Coefficients (Standard Error)	t	P > |t|	95% Confidence Interval
Republican	1.11 (0.28)	3.98	0.000***	(0.56, 1.66)
Independent	0.38 (0.19)	2.02	0.043**	(0.01, 0.74)
Other	0.37 (0.40)	0.91	0.362	(-0.42, 1.15)
Some Religiosity	0.62 (0.18)	3.38	0.001**	(0.26, 0.99)
More Religiosity	1.34 (0.18)	7.39	0.000***	(0.99, 1.70)
Most Religiosity	0.99 (0.22)	4.47	0.000***	(0.56, 1.43)
Republican (Some Religiosity)	-0.39 (0.35)	-1.12	0.263	(-1.08, 0.29)
Republican (More Religiosity)	-1.05 (0.34)	-3.12	0.002**	(-1.71, -0.39)
Republican (Most Religiosity)	-0.66 (0.35)	-1.86	0.063*	(-1.36, 0.04)
Independent (Some Religiosity)	0.14 (0.27)	0.52	0.602	(-0.38, 0.66)
Independent (More Religiosity)	-0.26 (0.26)	-0.97	0.334	(-0.77, 0.26)
Independent (Most Religiosity)	0.01 (0.31)	0.03	0.980	(-0.60, 0.61)
Other (Some Religiosity)	0.18 (0.54)	0.34	0.737	(-0.88, -1.25)
Other (More Religiosity)	0.01 (0.56)	0.01	0.992	(-1.09, 1.11)
Other (Most Religiosity)	-0.09 (0.56)	-0.16	0.871	(-1.19, -1.01)
Intercept	-3.27 (0.13)	-25.85	0.000***	(-3.52, -3.02)

**** p < 0.001* *** p < 0.050* ** p < 0.100*

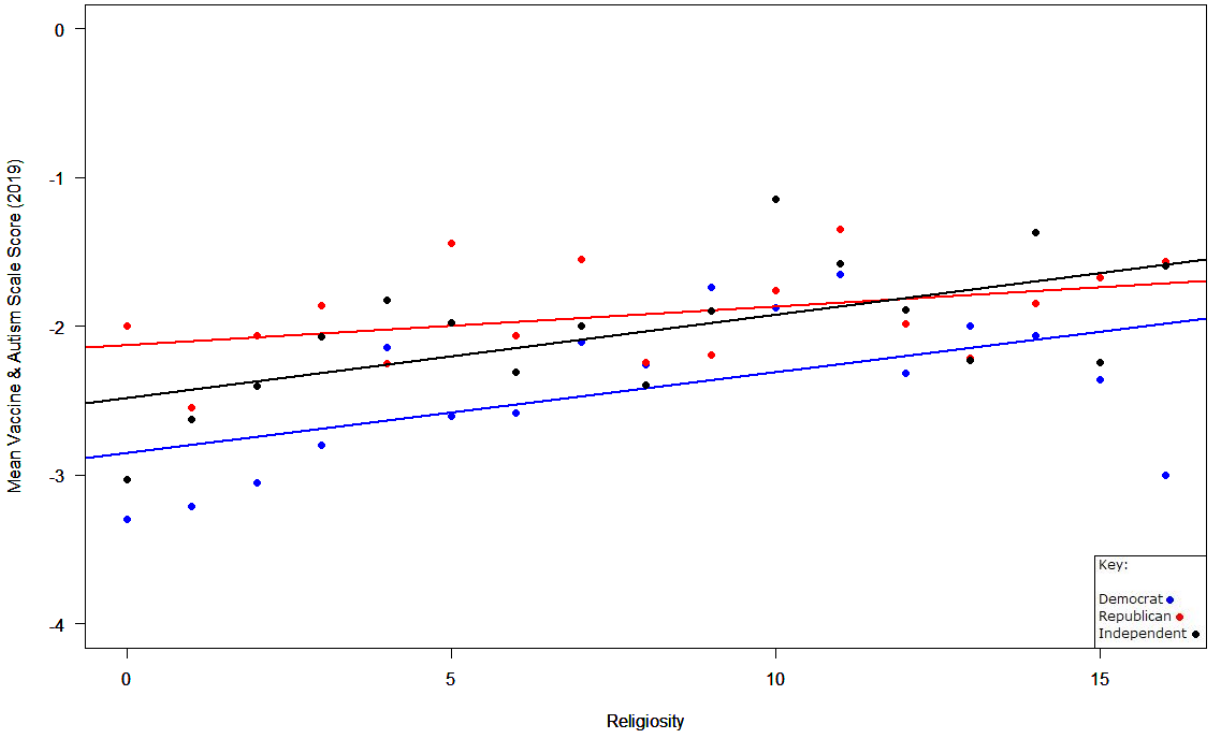
N(df) = 2,877 (2,861); Adjusted R^2 = 0.0450; P > F = 0.000

The table shows some evidence for this interaction. It appears that religiosity functions differently for Republicans than it does for Democrats or Independents. However, this effect only appears to diverge in the "More" and "Most" groups (p = 0.002 & 0.063, respectively). In the "More" category, the resultant effect for Republican is slightly stronger: the general effect is 1.34, but for Republicans it becomes 1.40. Furthermore, for Republicans in the "Most" group, the coefficient goes from 0.99 (in general) to 1.44 for Republicans, albeit with less significance. Either way, there appears to be a stronger effect of religiosity on Republicans than Democrats

when it comes to believing in a link between vaccines and autism. Religious Republicans appear to be less confident that there is no link between vaccines and autism than their less religious political counterparts. Additionally, these findings for religiosity hold when controlling for race, education, and gender (p = 0.045, 0.000, & 0.042). However, the only level of religiosity that remains somewhat significant for Republicans is the "More" group (p = 0.062).

The graph below illustrates the average position of each party across levels of religiosity:

Figure 19: Religiosity & Party Interaction on Vaccines & Autism (2019)



Here, the general effect of religiosity is the same for Democrats and Independents, so their lines are parallel and positive. In contrast, the Republican line appears to be flatter, perhaps indicating that the difference in the effect is inconsistent across levels of religiosity.

Moreover, the effect of religiosity remains at all levels, even when adding controls for race, education, and gender (p = 0.045, 0.000, & 0.042). Here, the most significant effect is still associated with the "More" group. However, the only significant Republican interaction in that

model was the “More” group (p = 0.065). All other levels of Republican religiosity were found not to be significant. Thus, only some of the findings involving religiosity still hold, mainly the ones pertaining to the middling level of religiosity.

Next, I will explore this party and religiosity interaction within the 2020 M-Turk data.

Table 16: Vaccines Interactions (Party ID & Religiosity) (M-Turk 2020)

Vaccines	Coefficients (Standard Error)	t	P > |t|	95% Confidence Interval
Republicans	-1.19 (0.29)	-4.11	0.000***	(-0.10, -0.02)
Independents	-0.15 (0.21)	-0.73	0.464	(-0.56, 0.26)
Religiosity	-0.22 (0.03)	-8.39	0.000***	(-0.27, -0.17)
Religious Republicans	0.20 (0.05)	3.72	0.000***	(0.09, 0.30)
Religious Independents	-0.08 (0.05)	-1.49	0.138	(-0.19, 0.03)
Intercept (Democrats)	3.31 (0.12)	28.45	0.000***	(3.08, 3.54)

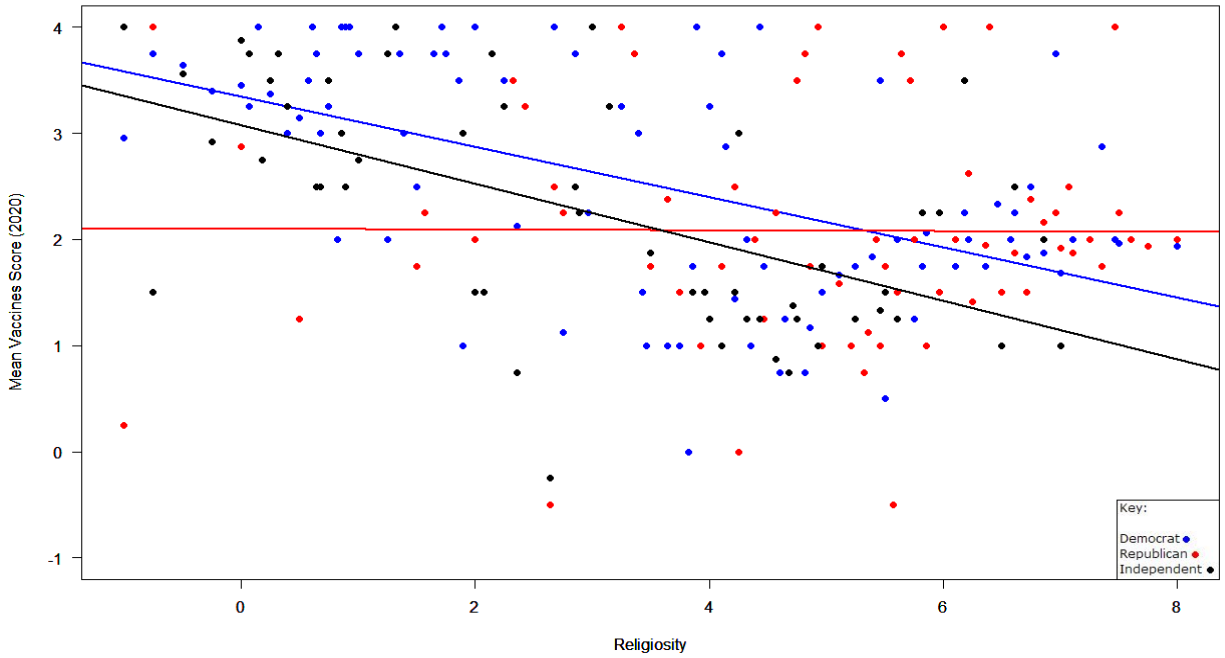
**** p < 0.001* *** p < 0.050* ** p < 0.100*

N(df) = 345 (339); Adjusted R^2 = 0.2691; P > F = 0.000

Here, the regression table interactions show a significant negative effect for Democrats and a significant positive effect for Republicans (p = 0.000). These findings hold when controlling for gender, race, education, and age.

The graph below (*Figure 22)* illustrates the different effects of religiosity for each group by party on vaccines in the 2020 M-Turk dataset.

Figure 20: Religiosity & Party Interaction on Vaccines (2020)



Here, there is a general negative trend in the Democrat data. An increase in religiosity is associated with a lower mean vaccine score for Democrats. In contrast, the Republican graph indicates a lack of a linear relationship between mean vaccine scores and religiosity. Here, if there is a slight increase in vaccine scores for religious Republicans, it remains a relatively small push, and it has very little overall effect. Finally, the graph of Independents mirrors the Democrats, albeit with a slightly lower intercept and steeper negative slope.

Finally, I will take some time to explore the interaction between party and religious beliefs and behaviors on vaccine opinions.

Table 17: Vaccine Interactions (Beliefs & Behaviors) (M-Turk 2020)

Vaccines	Coefficients (Standard Error)	t	P > |t|	95% Confidence Interval
Republicans	-1.14 (0.36)	-3.17	0.002**	(-1.84, -0.43)
Independents	-0.19 (0.22)	-0.87	0.385	(-0.64, 0.25)
Religious Beliefs	-0.24 (0.11)	-2.19	0.029**	(-0.46, 0.02)
Religious Beliefs (Republicans)	0.24 (0.20)	1.24	0.216	(-0.14, 0.62)
Religious Beliefs (Independents)	-0.16 (0.21)	-0.76	0.449	(-0.56, 0.25)
Religious Behaviors	-0.72 (0.13)	-5.39	0.000***	(-0.99, -0.46)
Religious Behaviors (Republicans)	0.31 (0.23)	1.36	0.176	(-0.14, 0.76)
Religious Behaviors (Independents)	-0.03 (0.26)	-0.11	0.910	(-0.54, 0.48)
Religious Beliefs * Religious Behaviors	0.15 (0.05)	3.32	0.001**	(0.06, 0.24)
Religious Beliefs * Religious Behaviors (Republicans)	-0.06 (0.08)	-0.78	0.438	(-0.22, 0.09)
Religious Beliefs * Religious Behaviors (Independents)	0.04 (0.10)	0.36	0.716	(-0.17, 0.24)
Intercept	3.52 (0.13)	27.97	0.000***	(3.27, 3.77)

**** p < 0.001* *** p < 0.050* ** p < 0.100*

N(df) = 345 (333); Adjusted R^2 = 0.3091; P > F = 0.0000

Here, there is some significance for religious beliefs having a negative effect on vaccine opinions (p = 0.029). However, there is strong evidence against the idea that strong religious beliefs have different effects for Republicans than for Democrats in the case of vaccines (p = 0.216). Similarly, religious behaviors were also negatively associated with vaccine opinions (p = 0.000). Here too, there was no difference in this effect for Republicans than for Democrats (p = 0.176). Finally, the interaction between beliefs and behaviors yielded a positive, significant coefficient (p = 0.001). However, this coefficient was smaller than the negative ones. Thus, the net effect of

religiosity is still in the negative direction. These findings also hold when controlling for race, education, age, and gender.

In sum, I find some evidence against the *Religiosity & Vaccines Hypothesis*. Those Democrats with higher levels of religiosity tended to score lower on vaccine scales than those of the same party who are less religious. In contrast, the relationship for highly religious Republicans appears to be either slightly positive or no different than their Democratic counterparts.

Before moving on to the next section of this thesis, which will deal with the experiments from the 2020 M-Turk dataset, it is important to recap what I have described up to this point and update my hypothesis table. So far, I found evidence suggesting a partisan difference in climate change as well as vaccine opinions between Democrats and Republicans. High levels of religiosity are associated with lower scores on each Global Warming Scale, as well as lower scores on Vaccines Scales. Finally, I found some evidence that religiosity functions differently for Republicans than for Democrats. In the case of Climate Change, religiosity appears to have opposite effects for Democrats and Republicans. Although, there does appear to be a difference in the party-religiosity interaction effect when the outcome variable involves the respondent's perceived impacts of climate change, compared to when the outcome involves specific policy preferences. Furthermore, in the case of vaccines, when adding controls, religiosity's interaction with party mostly went away in 2019, but held in 2020.

Hypothesis:	Text:	Result:
1. Partisan Climate Change Hypothesis	"Climate Change follows Partisan Identity; Republicans will score lower than Democrats on Global Warming Scales."	I found *strong* evidence *supporting* this hypothesis. Republicans scored lower than Democrats on Global Warming Scales across three datasets ($p = 0.000$). *See Tables 1-3a*
2. Non-Partisan Vaccine Hypothesis	"Opinions about vaccines will not correlate with political parties."	I found *strong* evidence *against* this hypothesis. Republicans tended to score lower on Vaccine Scales across both datasets ($p = 0.000$). *See Tables 4-5a*
3. Religiosity & Climate Change Hypothesis	"Highly Religious Democrats will be more likely to favor policies designed to mitigate the effects of Climate Change; but in contrast, Highly Religious Republicans will be less likely to favor these same policies (and may even oppose them)."	I found *moderate* evidence *against* this hypothesis. In each dataset, religiosity was negatively correlated with the GWS ($p = 0.000$). However, in the interaction model, results were mixed. Democrats with high levels of religiosity scored lower on the GWS in all datasets ($p = 0.000$). Republicans with high religiosity in 2018 & 2020 scored higher ($p = 0.000$) but were not significantly different in the 2019 dataset ($p > 0.100$). *See Tables 6-12*
4. Religiosity & Vaccines Hypothesis	"Highly Religious Democrats will score higher on the Vaccine Scale; Highly Religious Republicans will score lower on the Vaccine Scale."	I found *moderate* evidence *against* this hypothesis. In both the 2019 and 2020 datasets, religiosity was negatively correlated with each dataset's Vaccine Scale ($p < 0.050$). I found a significant interaction for Republicans & religiosity in the 2019 dataset, but only for moderate levels of religiosity. The interaction in the 2020 dataset did indicate a difference in the direction of the size of religiosity for Democrats when compared with Republicans ($p = 0.000$). *See Tables 13-17*

In the next section, I will explore the results of the experiment at the start of the M-Turk survey. The purpose of the experiment was to see if religiosity can be primed through a framing

experiment, resulting in an increase of opinions of climate change and vaccines. One benefit of the experimental format was its ability to minimize the effect of confounding variables.

Experiment Test Results

The first hypothesis about the results of the experiment is as follows: *The religious language will be effective at raising respondents' scores on both issues.*

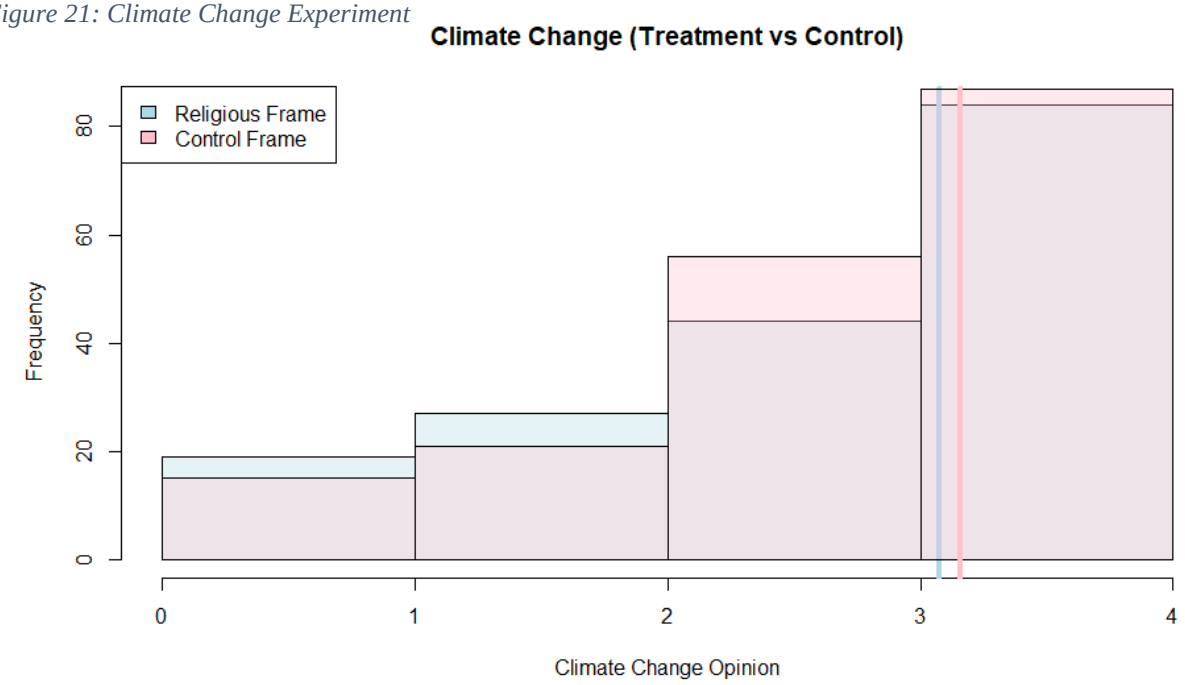
Table 18: Climate Change Experiment (2020):

Climate Change	Observations	Mean (Standard Error)	Standard Deviation	95% Confidence Interval
Control Frame (T)	179	0.79 (0.02)	0.27	(0.75, 0.83)
Religiosity Frame (t)	174	0.77 (0.02)	0.28	(0.73, 0.81)
Combined	353	0.78 (0.01)	0.27	(0.75, 0.81)
Difference (T-t)		0.02 (0.03)		(-0.04, 0.08)

t = 0.7020; df = 351

P (T < t) = 0.7584 P (|T| > |t|) = 0.4832 P (T > t) = 0.2416

Figure 21: Climate Change Experiment



An unpaired t-test between the two climate change groups revealed no statistically significant difference in means between those respondents who received the religious frame and those in the control group. Similar results were found in the vaccines experiment, where there was also no statistically significant difference between control and experiment groups.

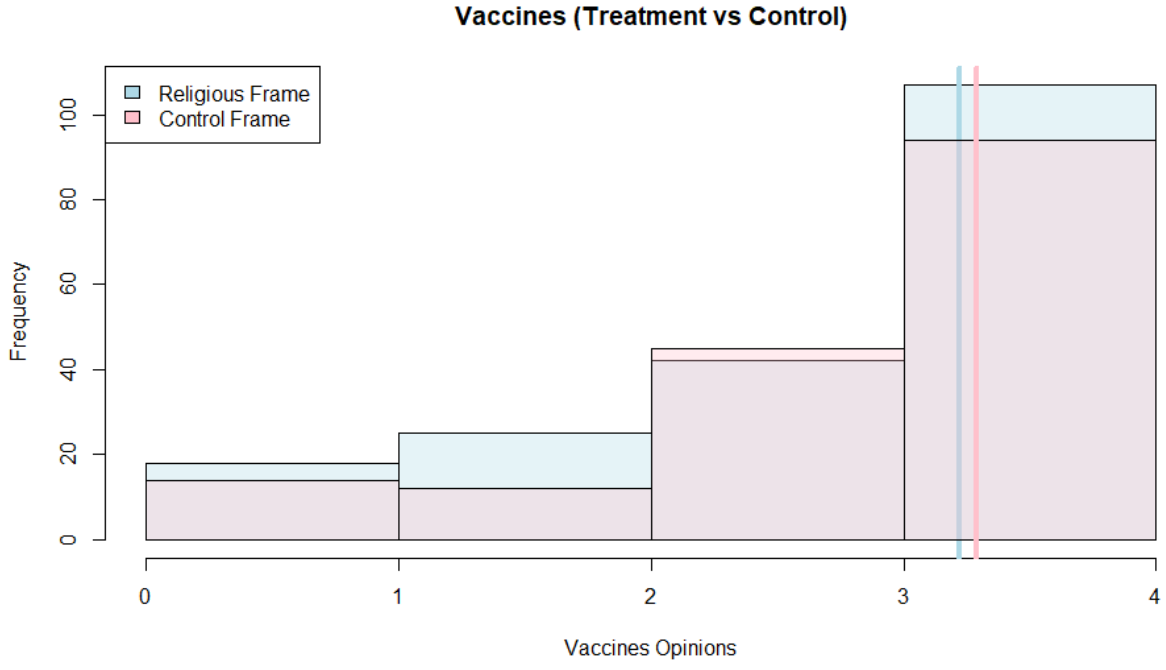
Table 19: Vaccines Experiment (M-Turk 2020):

Vaccines	Observations	Mean (Standard Error)	Standard Deviation	95% Confidence Interval
Control Frame (T)	165	0.82 (0.02)	0.26	(0.78, 0.86)
Religiosity Frame (t)	192	0.81 (0.02)	0.27	(0.77, 0.84)
Combined	357	0.81 (0.01)	0.26	(0.79, 0.84)
Difference (T-t)		0.02 (0.03)		(-0.04, 0.07)

t = 0.6462: df = 355

P (T < t) = 0.7407 P (|T| > |t|) = 0.5186 P (T > t) = 0.2593

Figure 22: Vaccines Experiment



Since these experiments were run in succession, there may also be questions about the lingering effects of the vaccines religious frame on the Climate Change Experiment. However, as mentioned earlier in the methods section, I think these effects are mitigated slightly by the presence of additional general buffer questions between that section and the climate change one. Hopefully, these general vaccine questions would reduce the effect of that religious frame.

Table 20a: Climate Change Control Group by the Vaccine Experiment (2020):

Climate Change (Control)	Observations	Mean (Standard Error)	Standard Deviation	95% Confidence Interval
Vaccine Control Frame (T)	96	0.79 (0.03)	0.26	(0.74, 0.84)
Vaccines Religiosity Frame (t)	83	0.79 (0.03)	0.27	(0.73, 0.85)
Combined	179	0.79 (0.02)	0.27	(0.75, 0.83)
Difference (T-t)		0.00 (0.04)		(-0.08, 0.08)

t = -0.0023; df = 177

P (T < t) = 0.4991 P (|T| > |t|) = 0.9981 P (T > t) = 0.5009

Here, the effects of receiving the vaccine religious language on the climate change control group is practically non-existent. Indeed, the results of these two groups appear nearly identical. However, there may still be a lingering effect for those who received a double dosage of the religious language. There is a possibility that the effect of the religious frame on climate change could be magnified since the respondent received multiple appeals to their religiosity. Perhaps a reinforcement, through multiple priming's is required to make religiosity salient for the respondent. Below is a table illustrating the results from that t-test:

Table 20b: Climate Change Religiosity Group by the Vaccine Experiment (2020):

Climate Change (Religiosity)	Observations	Mean (Standard Error)	Standard Deviation	95% Confidence Interval
Vaccine Control Frame (T)	95	0.74 (0.03)	0.29	(0.68, 0.80)
Vaccines Religiosity Frame (t)	79	0.80 (0.03)	0.26	(0.75, 0.86)
Combined	174	0.77 (0.02)	0.28	(0.73, 0.81)
Difference (T-t)		-0.06 (0.04)		(-0.15, 0.02)

t = -1.5179; df = 172

P (T < t) = 0.0654 P (|T| > |t|) = 0.1309 P (T > t) = 0.9346

Here, there is some evidence that there was an additional effect of the vaccine religious frame on the religious climate change group (p = 0.0654). Not only that, but those who received both the vaccine religious frame and the climate change religious frame had a higher mean climate score than those who only received the religious language once. Nevertheless, since this impact only carries moderate significance, it is unsurprising that its effects did not translate into results described by Table 18 and *Figure 23*.

My attention now shifts to examining different groups' responses to each frame in the experiment. I begin with party identification, then move to examine those with different levels of religiosity, and then conclude with those who view the issues with varying levels of importance. Of course, there is reduced power in some of these tests, due to the smaller group sizes.

Below are the results from the Climate Change experiment between the parties. Here, since no statistically significant difference was found between the control and experiment groups, I chose to combine these two groups when comparing Democrats to Republicans, thereby enabling the test to have more statistical power.

Table 21: Climate Change & Party (Democrats & Republicans) (M-Turk 2020)

Party	Observations	Mean (Standard Error)	Standard Deviation	95% Confidence Interval
Democrats (T)	168	0.83 (0.02)	0.25	(0.80, 0.87)
Republicans (t)	106	0.67 (0.03)	0.29	(0.62, 0.73)
Combined	274	0.77 (0.02)	0.27	(0.72, 0.81)
Difference (T-t)		0.16 (0.03)		(0.10, 0.22)

t = 4.8626; df = 272

P (T < t) = 1.0000 P (|T| > |t|) = 0.0000 P (T > t) = 0.0000

These findings in this table are unsurprising and confirm what I already showed in earlier regression analyses: support for climate change follows partisan cues (see *The Partisan Climate Change Hypothesis*). Of course, the question now becomes is there a difference between the religious and control groups *within* each party. Here, I hypothesized that in both cases, the religious frame would result in a higher score in both Democrats and Republicans. The two tables below illustrate how this was not found to be the case.

Table 21a: Democrats with Different Frames on Climate Change Comparison

Frame	Observations	Mean (Standard Error)	Standard Deviation	95% Confidence Interval
Control Frame (T)	82	0.84 (0.03)	0.23	(0.79, 0.89)
Religious Frame (t)	86	0.82 (0.03)	0.26	(0.77, 0.88)
Combined	168	0.83 (0.02)	0.25	(0.80, 0.87)
Difference (T-t)		0.02 (0.04)		(-0.06, 0.09)

t = 0.4152; df = 166

P (T < t) = 0.6607 P (|T| > |t|) = 0.6786 P (T > t) = 0.3393

Table 21b: Republicans with Different Frames on Climate Change Comparison

Frame	Observations	Mean (Standard Error)	Standard Deviation	95% Confidence Interval
Control Frame (T)	56	0.66 (0.04)	0.28	(0.59, 0.74)
Religious Frame (t)	50	0.69 (0.04)	0.30	(0.61, 0.77)
Combined	136	0.78 (0.02)	0.283	(0.73, 0.82)
Difference (T-t)		0.14 (0.05)		(0.04, 0.23)

t = -0.5227; df = 104

P (T < t) = 0.3011 P (|T| > |t|) = 0.6023 P (T > t) = 0.6989

Ultimately, there appears to be no significant difference between the means of those Democrats who received the religious frame and those in the control group for the climate change experiment. This finding also held true for Republicans. In other words, Republicans are not more likely to support government action on climate change when the issue is framed in religious terms than if it is not. Democrats appear to be similarly unaffected.

Next, I will examine these party and frame differences for the vaccine experiment. Here, since I hypothesized that there is no significant difference between an individual's party and their beliefs about the importance of getting vaccinated, I expect there to be no difference in means between Democrats and Republicans in their responses to the question. Additionally, like with climate change, I combine the control and experiment groups to increase statistical power.

Table 22: Vaccines & Party (Democrats & Republicans) (M-Turk 2020)

Party	Observations	Mean (Standard Error)	Standard Deviation	95% Confidence Interval
Democrats (T)	171	0.83 (0.02)	0.27	(0.79, 0.87)
Republicans (t)	106	0.81 (0.03)	0.27	(0.76, 0.86)
Combined	277	0.82 (0.02)	0.27	(0.79, 0.86)
Difference (T-t)		-0.03 (0.03)		(-0.04, 0.09)

t = 0.8061; df = 275

P (T < t) = 0.7896 P (|T| > |t|) = 0.4209 P (T > t) = 0.2104

Here, there was no statistically significant difference between Democrats and Republicans for vaccines. Nevertheless, it is also important to examine if the religious framing was effective at increasing support for vaccines in each party on its own. Since I hypothesized that the religious framing would be effective at increasing support for vaccines, I would expect the religious frames to increase support for vaccines in both Democrats and Republicans.

Table 22a: Democrats with Different Frames on Vaccines Comparison

Frame	Observations	Mean (Standard Error)	Standard Deviation	95% Confidence Interval
Control Frame (T)	79	0.84 (0.03)	0.27	(0.78, 0.90)
Religious Frame (t)	92	0.83 (0.28)	0.27	(0.77, 0.89)
Combined	171	0.83 (0.02)	0.27	(0.79, 0.87)
Difference (T-t)		0.01 (0.41)		(-0.07, 0.09)

t = 0.2374; df = 169

P (T < t) = 0.5937 P (|T| > |t|) = 0.8126 P (T > t) = 0.4063

In the case of Democrats, the religious frame appears to have no effect, and the difference between the groups is negligible. The same holds true for Republicans, with one key distinction.

The table below suggests there might even be some evidence that my religious frame had the opposite of the desired effect – that it *decreased* Republican support for vaccines. Yet, this claim is not based in super strong evidence. Here, the p-value of 0.0765, only carries a little bit of significance, meaning it is still possible to conclude that there is no actual difference between the control and experimental Republican groups' answers to the vaccine question.

Table 22b Republicans with Different Frames on Vaccines Comparison

Frame	Observations	Mean (Standard Error)	Standard Deviation	95% Confidence Interval
Control Frame (T)	45	0.85 (0.05)	0.25	(0.78, 0.92)
Religious Frame (t)	61	0.78 (0.04)	0.29	(0.70, 0.85)
Combined	106	0.81 (0.03)	0.27	(0.76, 0.86)
Difference (T-t)		0.08 (0.05)		(-0.03, 0.18)

t = -0.5227; df = 104

P (T < t) = 0.9235 P (|T| > |t|) = 0.1529 P (T > t) = 0.0765

Next, I will turn to the effect of the religious frame on folks with higher religiosity scores on issues of climate change and then vaccines. Here, I expect those with high religiosity to score significantly higher in the religious frame relative to those in the same frame who had lower levels of religiosity.

Table 23a: Climate Change Religious Frame & Levels of Religiosity (M-Turk 2020)

Levels of Religiosity	Observations	Mean (Standard Error)	Standard Deviation	95% Confidence Interval
High (T)	100	0.74 (0.03)	0.27	(0.69, 0.80)
Low (t)	76	0.80 (0.03)	0.29	(0.74, 0.87)
Combined	176	0.77 (0.02)	0.28	(0.73, 0.81)
Difference (T-t)		-0.06 (0.04)		(-0.14, 0.02)

t = -1.4201; df = 174

P (T < t) = 0.0787 P (|T| > |t|) = 0.1574 P (T > t) = 0.9213

In contrast, there is some slight statistical evidence suggesting that those with higher levels of religiosity scored lower on the climate change experiment when given the religious frame than their counterparts with lower levels of religiosity. However, this finding is based on relatively weak statistical evidence. Furthermore, the results of the control group comparison suggests that those with high levels of religiosity scored lower in the climate change experiment regardless of the frame they were given. There, I might have expected to see no statistically significant differences in the two control groups because an explicit appeal to religion was not made. Moreover, this finding supports what I already showed regarding religiosity and climate change. Here, it is unsurprising that those with low levels of religiosity scored *higher* on the climate change experiment within the control group because the regression model revealed a negative association between religiosity and support for climate change policies (see Table 8).

Table 23b: Climate Change Control Frame & Levels of Religiosity

Levels of Religiosity	Observations	Mean (Standard Error)	Standard Deviation	95% Confidence Interval
High (T)	101	0.77 (0.03)	0.26	(0.71, 0.82)
Low (t)	78	0.82 (0.03)	0.28	(0.76, 0.88)
Combined	179	0.79 (0.02)	0.27	(0.75, 0.83)
Difference (T-t)		-0.06 (0.04)		(-0.14, 0.02)

t = -1.3846; df = 177

P (T < t) = 0.0840 P (|T| > |t|) = 0.1679 P (T > t) = 0.9160

Nevertheless, I also want to compare those with high religiosity who received the religious frame on climate change and those with high religiosity who did not, as well as those with low religiosity who received the religious climate change treatment with those who did not. I do not expect that those with high levels of religiosity who received the religious language will score higher than those with similar levels of religiosity in the control group.

Table 23c: High Religiosity & Different Frames on Climate Change Comparison

Frame	Observations	Mean (Standard Error)	Standard Deviation	95% Confidence Interval
Control Frame (T)	101	0.77 (0.03)	0.26	(0.71, 0.82)
Religious Frame (t)	100	0.74 (0.03)	0.27	(0.70, 0.80)
Combined	201	0.75 (0.02)	0.27	(0.72, 0.79)
Difference (T-t)		0.02 (0.04)		(-0.05, 0.10)

t = 0.5966; df = 199

P (T < t) = 0.7243 P (|T| > |t|) = 0.5514 P (T > t) = 0.2757

However, these findings contradict my hypothesis about those with high levels of religiosity. There was no statistical difference in the climate change experiment between control and experiment groups for those with high levels of religiosity. As for those with low levels of religiosity, I also expect the treatment to have no effect on the respondents' answers.

Table 23d: Low Religiosity & Different Frames on Climate Change Comparison

Frame	Observations	Mean (Standard Error)	Standard Deviation	95% Confidence Interval
Control Frame (T)	78	0.82 (0.03)	0.28	(0.76, 0.88)
Religious Frame (t)	76	0.80 (0.03)	0.29	(0.74, 0.87)
Combined	154	0.81 (0.02)	0.28	(0.77, 0.86)
Difference (T-t)		0.02 (0.05)		(-0.07, 0.11)

t = 0.3944; df = 152

P (T < t) = 0.6531 P (|T| > |t|) = 0.6938 P (T > t) = 0.3469

The results of this t-test would indicate that those with low levels of religiosity were unaffected by the difference of language in the climate change experiment.

While I did see that the frame was ineffective with both groups of folks at the extreme ends of the religiosity scales, there may be a chance that the frame was effective with those in the middle. These people have enough religiosity that the frame could effectively make it salient, but not too much where they are already factoring it into their consideration of the issue. Below are the results of the climate change experiment with the middling religiosity scores. Here, these folks are defined as anyone who scored between 1.5 and 5.75 on the religiosity scale, which runs from -1 to 8.

Table 23e: Medium Religiosity & Different Frames on Climate Change Comparison

Frame	Observations	Mean (Standard Error)	Standard Deviation	95% Confidence Interval
Control Frame (T)	69	0.72 (0.03)	0.28	(0.65, 0.79)
Religious Frame (t)	78	0.71 (0.03)	0.29	(0.65, 0.78)
Combined	147	0.71 (0.02)	0.28	(0.67, 0.76)
Difference (T-t)		0.01 (0.05)		(-0.09, 0.10)

t = 0.1244; df = 145

P (T < t) = 0.5494 P (|T| > |t|) = 0.9012 P (T > t) = 0.4506

Ultimately, the religious frame was ineffective at getting respondents to answer more favorably on the climate change experiment, even among those with medium levels of religiosity.

Next, I will explore potential differences in the vaccine experiment scores across different levels of religiosity. Like in the case of climate change, I expect those with higher levels of religiosity who received the vaccine question framed with religious language to score higher than those who received the same religious language but had lower levels of religiosity. In the vaccine control group, I expect those with higher levels of religiosity to score lower than those with lower levels of religiosity (see Table 14).

Table 24a: Vaccines Religious Frame & Levels of Religiosity (M-Turk 2020)

Levels of Religiosity	Observations	Mean (Standard Error)	Standard Deviation	95% Confidence Interval
High (T)	107	0.79 (0.03)	0.26	(0.74, 0.85)
Low (t)	86	0.81 (0.03)	0.27	(0.76, 0.87)
Combined	193	0.80 (0.02)	0.27	(0.77, 0.84)
Difference (T-t)		-0.02 (0.04)		(-0.10, 0.06)

t = -0.5080; df = 191

P (T < t) = 0.3060 P (|T| > |t|) = 0.6120 P (T > t) = 0.6940

Here, the results showed no difference between those with high levels of religiosity and those with low levels of religiosity on the religious vaccine frame.

Table 24b: Vaccines Control Frame & Levels of Religiosity

Levels of Religiosity	Observations	Mean (Standard Error)	Standard Deviation	95% Confidence Interval
High (T)	97	0.81 (0.03)	0.27	(0.76, 0.87)
Low (t)	69	0.84 (0.03)	0.25	(0.78, 0.90)
Combined	166	0.82 (0.02)	0.26	(0.78, 0.86)
Difference (T-t)		-0.03 (0.04)		(-0.11, 0.05)

t = -1.8971; df = 168

P (T < t) = 0.2424 P (|T| > |t|) = 0.4847 P (T > t) = 0.7576

Here, I again find no difference between the two groups who received the vaccines control language. This finding is somewhat inconsistent with my earlier regression analyses between religiosity and opinions about vaccines.

Next, I move to compare the effect of the religious vaccine frame within the high religiosity group and the low religiosity group. Here, I expect those with higher levels of religiosity to be more susceptible to the religious language given to the treatment group. I also expect no difference between the control and experimental vaccine groups for the low group.

Table 24c: High Religiosity & Different Frames on Vaccines Comparison

Frame	Observations	Mean (Standard Error)	Standard Deviation	95% Confidence Interval
Control Frame (T)	97	0.81 (0.03)	0.27	(0.76, 0.87)
Religious Frame (t)	107	0.79 (0.03)	0.26	(0.74, 0.85)
Combined	204	0.80 (0.02)	0.27	(0.77, 0.84)
Difference (T-t)		0.02 (0.04)		(-0.06, 0.09)

t = 0.4693; df = 202

P (T < t) = 0.6803 P (|T| > |t|) = 0.6394 P (T > t) = 0.3197

Here, I found there to be no difference between the scores of folks with high levels of religiosity who received the religious vaccine frame and those with comparable religiosity levels who received the control vaccine frame.

Table 24d: Low Religiosity & Different Frames on Vaccines Comparison

Frame	Observations	Mean (Standard Error)	Standard Deviation	95% Confidence Interval
Control Frame (T)	69	0.84 (0.03)	0.25	(0.78, 0.90)
Religious Frame (t)	86	0.81 (0.03)	0.27	(0.76, 0.87)
Combined	155	0.83 (0.02)	0.27	(0.77, 0.84)
Difference (T-t)		0.03 (0.04)		(-0.06, 0.11)

t = 0.6321; df = 153

P (T < t) = 0.7359 P (|T| > |t|) = 0.5283 P (T > t) = 0.2641

Similarly, there was no difference in the scores of the control and experiment groups when comparing those with lower levels of religiosity. In addition, I also examined the effectiveness of the religious frame on vaccines with folks who have medium levels of religiosity. Here too, the same reasoning as with the climate change experiment applies.

Table 24e: Medium Religiosity & Different Frames on Vaccines Comparison

Frame	Observations	Mean (Standard Error)	Standard Deviation	95% Confidence Interval
Control Frame (T)	65	0.70 (0.04)	0.32	(0.62, 0.78)
Religious Frame (t)	84	0.70 (0.03)	0.31	(0.62, 0.76)
Combined	149	0.70 (0.03)	0.31	(0.65, 0.75)
Difference (T-t)		0.01 (0.05)		(-0.09, 0.12)

t = 0.2571; df = 147

P (T < t) = 0.6013 P (|T| > |t|) = 0.7974 P (T > t) = 0.3987

Here again, the religious frame had no effect for those with medium levels of religiosity in both the vaccines and climate change experiments.

One final paradigm to examine is the potential effectiveness of the frame on an individual who is already invested in the issue. It is possible that the religious appeal was more effective to someone for whom the issue is already of great importance. I will test this hypothesis in much the same way I tested the frame's effectiveness across differing levels of religiosity.

In the case of climate change, I hypothesized that those for whom climate change is already an important issue will score higher on the experiment (regardless of the given frame). Further, the people who list climate change as an important issue will be unaffected by the religious frame, but the people who ascribe it a lower level of importance will be positively affected by the religious frame.

Table 25: Climate Change & Levels of Importance of the Issue (M-Turk 2020)

Climate Change Importance	Observations	Mean (Standard Error)	Standard Deviation	95% Confidence Interval
High (T)	242	0.87 (0.01)	0.19	(0.84, 0.89)
Low (t)	111	0.58 (0.03)	0.32	(0.52, 0.64)
Combined	353	0.78 (0.01)	0.27	(0.75, 0.81)
Difference (T-t)		0.29 (0.03)		(0.23, 0.34)

t = 10.4157; df = 351

P (T < t) = 1.0000 P (|T| > |t|) = 0.0000 P (T > t) = 0.0000

Here, those who answered that they did not think the climate of the planet is currently warming were added to the low importance group. (A skip algorithm was introduced into the survey, so those who espoused the belief that the Earth's climate is not changing would not be subjected to further global warming questions. Thus, it is uncertain exactly how these 24 people might have responded to the "importance" question. Nevertheless, I think they would likely behave similarly to the low importance group.) As expected, those who ascribed high importance to the issue also scored higher on the climate change experiment (regardless of the frame).

Table 25a: High Importance & Different Frames on Climate Change Comparison

Frame	Observations	Mean (Standard Error)	Standard Deviation	95% Confidence Interval
Control Frame (T)	129	0.87 (0.02)	0.18	(0.85, 0.91)
Religious Frame (t)	113	0.85 (0.02)	0.21	(0.82, 0.90)
Combined	242	0.87 (0.01)	0.19	(0.84, 0.89)
Difference (T-t)		0.02 (0.02)		(-0.03, 0.07)

t = 0.7816; df = 240

P (T < t) = 0.7824 P (|T| > |t|) = 0.4352 P (T > t) = 0.2176

Here, there was no difference in the control and religious frames around climate change for folks who already describe it as an important issue to them.

Table 25b: Low Importance & Different Frames on Climate Change Comparison

Frame	Observations	Mean (Standard Error)	Standard Deviation	95% Confidence Interval
Control Frame (T)	50	0.56 (0.05)	0.32	(0.47, 0.65)
Religious Frame (t)	61	0.60 (0.04)	0.31	(0.52, 0.68)
Combined	111	0.58 (0.03)	0.32	(0.52, 0.64)
Difference (T-t)		-0.04 (0.06)		(-0.16, 0.08)

t = -0.7009; df = 109

P (T < t) = 0.2424 P (|T| > |t|) = 0.4849 P (T > t) = 0.7576

Contrary to my hypothesis, the religious frame was similarly ineffective for folks who ascribed a lower level of importance to climate change as an issue.

Additionally, like with the case of religiosity, it is also possible that those who ascribe middling importance to the issue (and express other "middle" positions on the 2020 Global Warming Scale) may be affected by the religious framing of the question more so than those who view the issue as unimportant and those who view it as paramount.

Table 25c: Medium Importance & Different Frames on Climate Change Comparison

Frame	Observations	Mean (Standard Error)	Standard Deviation	95% Confidence Interval
Control Frame (T)	88	0.77 (0.02)	0.21	(0.73, 0.82)
Religious Frame (t)	96	0.73 (0.03)	0.26	(0.68, 0.78)
Combined	184	0.75 (0.04)	0.32	(0.72, 0.78)
Difference (T-t)		0.04 (0.04)		(-0.03, 0.11)

t = 1.2415; df = 182

P (T < t) = 0.8920 P (|T| > |t|) = 0.2160 P (T > t) = 0.1080

Here, there was no difference between the religious and control frames for those who assign a medium level of importance to the climate crisis.

Similarly, in the case of vaccines, I hypothesize that people who assigned high importance to the issue of vaccines would also score high in the experiment (regardless of frame). Additionally, those for whom vaccines are already a salient issue, the religious frame will be ineffective at raising their support for the issue. However, for those who ascribe little importance to vaccines, the religious frame will be effective at increasing support.

Table 26: Vaccines & Levels of Importance of the Issue (M-Turk 2020)

Vaccine Importance	Observations	Mean (Standard Error)	Standard Deviation	95% Confidence Interval
High (T)	269	0.87 (0.01)	0.23	(0.84, 0.90)
Low (t)	88	0.64 (0.03)	0.29	(0.57, 0.70)
Combined	357	0.81 (0.01)	0.26	(0.79, 0.84)
Difference (T-t)		0.23 (0.03)		(0.18, 0.29)

t = 7.8614; df = 355

P (T < t) = 1.0000 P (|T| > |t|) = 0.0000 P (T > t) = 0.0000

Here, those who already viewed vaccines as important tend to score higher in the experiment, regardless of the presence of a religious frame.

Table 26a: High Importance & Different Frames on Vaccines Comparison

Frame	Observations	Mean (Standard Error)	Standard Deviation	95% Confidence Interval
Control Frame (T)	124	0.87 (0.02)	0.23	(0.83, 0.91)
Religious Frame (t)	145	0.87 (0.02)	0.22	(0.84, 0.91)
Combined	269	0.87 (0.01)	0.23	(0.84, 0.90)
Difference (T-t)		0.00 (0.03)		(-0.06, 0.05)

t = -0.1255; df = 267

P (T < t) = 0.4501 P (|T| > |t|) = 0.9002 P (T > t) = 0.5499

Among those who had listed the vaccines as most important to them, there was no difference between the religious and control groups on the experiment. Here, these findings confirm my

hypothesis that for folks who already think vaccines are important, there is no discernable effect of the religious frame.

Table 26b: Low Importance & Different Frames on Vaccines Comparison

Frame	Observations	Mean (Standard Error)	Standard Deviation	95% Confidence Interval
Control Frame (T)	41	0.68 (0.05)	0.29	(0.59, 0.77)
Religious Frame (t)	47	0.60 (0.04)	0.29	(0.51, 0.68)
Combined	88	0.64 (0.03)	0.29	(0.57, 0.70)
Difference (T-t)		0.09 (0.06)		(-0.04, 0.21)

t = 1.4102; df = 86

P (T < t) = 0.9190 P (|T| > |t|) = 0.1621 P (T > t) = 0.0810

Furthermore, in the cases of those for whom vaccines was not an important issue, the religious frame was also ineffective. Indeed, there may even be some evidence that those who received the treatment language may have scored *lower* rather than higher as predicted (p = 0.0810). Since this is only slight evidence (and it goes in the opposite direction of the hypothesis), I would describe this as strong evidence against my hypothesis. Thus, the frame was not effective among the low importance group.

Finally, I compare the effects of the religious language frame for those who ascribe only a medium level of importance to the issues of vaccines. Again, I expect that those in this middle category have the most malleable opinions, leading to a potential positive impact of the religious language framing the question.

Table 26c: Medium Importance & Different Frames on Vaccines Comparison

Frame	Observations	Mean (Standard Error)	Standard Deviation	95% Confidence Interval
Control Frame (T)	81	0.84 (0.02)	0.22	(0.79, 0.88)
Religious Frame (t)	98	0.79 (0.03)	0.25	(0.74, 0.84)
Combined	179	0.81 (0.04)	0.23	(0.78, 0.85)
Difference	(T-t)	0.05 (0.04)		(-0.02, 0.12)

t = 1.2951; df = 177

P (T < t) = 0.9015 P (|T| > |t|) = 0.1970 P (T > t) = 0.0985

Here too, like with the low importance group, those who ascribe a medium level of importance to vaccine issues scored slightly *lower* when given the religious frame when compared to those same folks who received the control question (p = 0.0985). Again, like with the previous group, the higher p-value reflects some slight significance, but nothing overwhelming. Thus, it appears that the religious frame was ineffective at promoting support for the vaccine issue among those who had medium-level vaccines scores.

V. DISCUSSION

The outcomes of this project were not all uniform or expected. Pretty much the only hypothesis I was able to confirm was my *Partisan Climate Change Hypothesis.* Nearly every other hypothesis I proposed turned out to be not supported by the evidence. However, this does not mean I did not learn anything valuable, or that I am unable to show anything for it. Indeed, I was able to enumerate a few key findings. First, I found a significant difference in partisan opinions both about climate change and vaccines. Further, there was a noticeable difference between results depending on the types of questions around global warming. Republicans seem more oppositional to climate change in the abstract, but merely express a lack of support for

(rather than direct opposition to) specific policies such as higher efficiency standards or government regulations. In addition, I found a significant effect of religiosity in relation to both issues. In both cases, an increase in religiosity was associated with opposition to the science-based side of each issue. For climate change, it meant a lack of support for policies designed to combat it, and for vaccines it correlated with an increased belief in a link between vaccines and autism.

Moreover, I did find some evidence for an interaction between party identity and religiosity on these issues. The effect of religiosity for Republicans in relation to abstract effects of climate change was smaller than its general effect (although it still maintained the same direction). In contrast when it comes to specific policies there was no significant Republican interaction with religiosity. For vaccines, the interaction with Republicans is not uniform for all levels of religiosity. Indeed, the most significant effects are for those with medium levels of religiosity, rather than the extremes.

Finally, the results of the experiment were contrary to my hypotheses. I initially predicted that my religious language would be effective at increasing support for vaccines and climate change policies. This proved not to be the case. There were no significant differences in means of each group on the different questions. The frames were also no more effective for those with high levels of religiosity or for people who already considered the issue to be important. The frames were also ineffective at motivating religious Republicans more than religious Democrats. Additionally, the folks in the middle of these scales also experienced no effect from the religious language.

Ultimately, the final outcomes of my project are mixed. Most notably, my multivariate analyses illustrate some key distinctions between opinions of Republicans when compared to

Democrats on science-based issues. Further, I hope my examinations of religiosity's role in opinion formation helps illuminate its importance as a political predisposition. While I was unable to effectively prime religiosity like I had planned, I still think there are important takeaways from the experiment section of my thesis. A more detailed discussion of these lessons appears in the following section on the limitations of my project.

Limitations

There were multiple limitations associated with this project. It appears that religiosity is much more difficult to manipulate than I had previously thought. Future researchers should employ a more targeted sampling strategy and tailor religious language to specific denominations to yield the most effective results. Here, future researchers would also likely be able to improve upon the scales I constructed from the survey. By having a more targeted sample, they could ask similarly targeted religiosity questions, rather than the more general ones I employed. Further, there are likely other ways to combine questions such that they form neater scales.[28]

However, I suspect that this religious appeal will only be effective for those with middling levels of religiosity. These are the folks who have enough religiosity for it to be made salient by the question, but it is not already an opinion ingredient used by the respondent ordinarily. In contrast, for the folks with the highest levels of it, religiosity is already salient (and a prime factor) in their opinion formation. For those with little-to-no religiosity, they do not factor it in at all. Moreover, for these people, a religious reminder may even cause them to move in the opposite direction on the issue than was intended by the researcher. In addition, there may be some merit to explore the effects of consistent, repeated, religious appeals across multiple

[28] This comment extends to all my scales (not just my religiosity one).

issues. Further, it would be interesting to see if a more targeted religious appeal is effective for some denominations over others.

Conclusion

In the end, many aspects of the gap between religiosity and science still exist. Furthermore, the results of this thesis indicate that using religion to motivate support for science-based issues is unlikely to be effective. However, there are still religious folks in the Democratic party (or on the left) for whom their religion serves as an important motivator in their opinion formation. Although this group may be a minority on the left, I still think they are a valuable group to study, since they utilize a seemingly right-wing framework to arrive at left-wing conclusions. In the future, I hope to further investigate this relationship and expand it beyond science-based issues to other left-wing policy opinions.

Moreover, these questions about religiosity and left-wing politics are of a personal nature for me. Personally, I would describe myself as a religious individual (although, I am not sure how high I would score on my own religiosity scale). Like those with high levels of religiosity, my own religious identity is already an important opinion ingredient I reach for when I form political opinions. With this project, I hoped to explore my own process in opinion formation as well as see what I can do to understand how others come to their conclusions. Hopefully, I will be able to apply what I learned here to other religious folks, to better understand why they may arrive at different conclusions than me. Perhaps future research will do more to help bridge this gap between left-wing policies and religiosity.

Appendix I

List of Survey Questions (2020):

I. Vaccines

1. Experiment:

Religious Frame	Control
Some people say they have a moral obligation to value life, health, and the prevention of suffering (particularly of children and other innocents) through vaccinations. Other people believe that getting vaccinated is ineffective at accomplishing this goal. To what extent would you say it is important to get vaccinated?	To what extent would you say it is important to get vaccinated?

   Answers: A great deal (4), A lot (3), A moderate amount (2), A little (1), None at all (0)

2. Some people think there is a link between vaccines and autism. How likely do you think it is for this to be true?

   Answers: Extremely likely (-2), Somewhat likely (-1), Neither likely nor unlikely (0), Somewhat unlikely (1), Extremely unlikely (2)

3. Some people do not take a vaccine because of religious or cultural reasons. To what extent do you think they are risking their health or the health of the community?

   Answers: A great deal (4), A lot (3), A moderate amount (2), A little (1), None at all (0)

4. How important is the issue of vaccinations you your personally?

   Answers: Extremely important (4), Very important (3), Moderately important (2), Slightly important (1), Not at all important (0)

II. Climate Change

1. Experiment:

Religious Frame	Control
Some people think humanity are stewards of the environment and we have a moral responsibility to address global warming, by protecting our Earth and all of Creation. Others think the Earth was given to humanity to do with as we please. To what extent should we be supporting government action to slow the Earth's warming?	To what extent should we be supporting government action to slow the Earth's warming?

Answers: A great deal (4), A lot (3), A moderate amount (2), A little (1), None at all (0)

2. Which of the following appears to be closest to your views about what is causing the Earth's climate to get warmer?

   Answers: It is caused mostly by human activity (1), It is caused mostly by natural causes (-1), It is caused about equally by human activity and natural causes (0), I do not think the climate is getting warmer (n/a)

3. Policymakers have considered many proposals to reduce the effects of global temperature increases. What is your opinion on the following proposals:
   a. Increased government regulation on businesses that produce a great deal of greenhouse emissions linked to climate change.

   Answers: Favor strongly (2), Favor somewhat (1), Neither favor nor oppose (0), Oppose somewhat (-1), Oppose strongly (-2)

   b. Higher fuel efficiency standards for cars and trucks.

   Answers: Favor strongly (2), Favor somewhat (1), Neither favor nor oppose (0), Oppose somewhat (-1), Oppose strongly (-2)

4. How important is the issue of increasing global temperatures to you personally?

   Answers: Extremely important (4), Very important (3), Moderately important (2), Slightly important (1), Not at all important (0)

III. Religiosity

1. What is your present religion, if any? Are you…

   Answers: Protestant, Roman Catholic, Orthodox Christian (such as Greek or Russian Orthodox), Mormon, Jewish, Muslim, Buddhist, Hindu, atheist, agnostic, something else [text box], nothing in particular

a. (if "nothing in particular") Would you say that is atheist, agnostic, Christian, or nothing in particular?

   Answers: atheist, agnostic, Christian, nothing in particular

2. Lots of things come up that keep people from attending religious services even if they want to. Thinking about your life these days, how often would you say you attend religious services?

   Answers: Every week (4), Almost every week (3), Once or twice a month (2), A few times a year (1), Never (0)

3. How often do you engage in personal prayer (regardless of whether or not you attend religious services)?

   Answers: Several times a day (4), Once a day (3), A few times a week (2), Less than once week (1), Never (0)

4. How often would you say you spend time with non-family members of your same religion outside of religious services?

   Answers: Several times a day (6), More than once a week (5), Once a week (4), Almost every week (3), Once or twice a month (2), A few times a year (1), Rarely (0)

5. How often would you say that you feel like your true self around those who share your religious beliefs?

   Answers: All the time (4), Most of the time (3), Some of the time (2), A little of the time (1), None of the time (0)

6. How important is belonging to your religious group to your personal identity?

   Answers: Extremely important (4), Very important (3), Moderately important (2), Slightly important (1), Not at all important (0)

7. Do you believe in God?

   Answers: Definitely yes (2), Probably yes (1), Might or might not (0), Probably not (-1), Definitely not (-2)

8. How often would you say that you read the Holy Book of your religion?

   Answers: At least once a week (4), Once or twice a month (3), Several times a year (2), Seldom (1), Never (0)

9. Which comes closest to your view about the origins of the Holy Book of your religion?

   Answers: Scripture is the word of God (2/3), Scripture is a book written by human beings and is not the word of God (0), Scripture is a Divinely inspired book, but written by human beings (1/2)

a. (if Scripture is the word of God, or Scripture is a Divinely inspired book, but written by human beings) Which comes closest to your view about interpreting the Holy Book of your religion?

   Answers: Scripture is to be taken literally, word for word (3), Not everything in scripture should be taken literally, word for word (2)

IV. Demographics

1. Which of the following best describes where you live?

   Answers: City / urban area, Suburban area, Small town, Country / rural area

2. Which category best describes you?

   Answers: White, Hispanic or Latino, Black or African American, Asian, American Indian or Alaska Native, Middle Eastern or North African, Native Hawaiian or Other Pacific Islander, Some other race, ethnicity or origin

3. What year were you born?

   Answers: [text box]

4. What is your highest level of education?

   Answers: Less than high school, High school graduate, Some college, 2 year degree, 4 year degree, Professional degree, Doctorate

5. What is your total household income?

   Answers: No income, $1 to $24,999, $25,000 to $49,999, $50,000 to $74,999, $75,000 to $99,999, $100,000 to $199,999, $200,000 and over

6. Generally speaking, do you usually think of yourself as a Republican, a Democrat, an independent, or what?

   Answers: Republican, Democrat, Independent, Something else

7. Which of the following comes closer to your beliefs about the size of government?

   Answers (1-7 scale): The government has gotten bigger because it has gotten involved in things that people should do for themselves; The government has gotten bigger because the problems we face have gotten bigger.

8. Which of the following comes closest to your beliefs about equality and individual freedom?

   Answers (1-7 scale): Individual freedom is more important that equality; Equality is more important that individual freedom

9. Which of the following best describes your sexual orientation?

   Answers: Heterosexual (straight), Homosexual (gay), Bisexual, Other, Prefer not to say

10. Please indicate your gender identity.

    Answers: Woman, Man, Transgender woman, Transgender man, Non-conforming / non-binary individual, Not listed (please specify)

Bibliography

Campbell, David E., Geoffrey C. Layman, John C. Green, and Nathanael G. Sumaktoyo. "Putting politics first: The impact of politics on American religious and secular orientations." *American Journal of Political Science* 62, no. 3 (2018): 551-565.

Franzese, Robert J., and Cindy Kam. *Modeling and interpreting interactive hypotheses in regression analysis*. University of Michigan Press, 2009.

Guber, Deborah Lynn. "A Cooling Climate for Change? Party Polarization and the Politics of Global Warming." American Behavioral Scientist 57, no. 1 (January 2013): 93–115. https://doi.org/10.1177/0002764212463361.

Kelly, Nathan J., and Jana Morgan. "Religious Traditionalism and Latino Politics in the United States." *American Politics Research* 36, no. 2 (2008): 236-263.

Key Jr., Valdimer O. *Public Opinion and American Democracy*. New York: Alfred A. Knopf, Inc., 1961.

Kinder, Donald R., and Lynn M. Sanders. "Mimicking political debate with survey questions: The case of white opinion on affirmative action for blacks." *Social cognition* 8, no. 1 (1990): 73-103.

Kirkland, Anna. *Vaccine Court: The law and Politics of Injury*. NYU Press, 2016.

Leal, David L., Jerod Patterson, and Joe R. Tafoya. "Religion and the Political Engagement of Latino Immigrants: Bridging Capital or Segmented Religious Assimilation?" *RSF: The Russell Sage Foundation Journal of the Social Sciences* 2 no. 3 (2016): 125-146.

Linde, Stefan. "Climate policy support under political consensus: exploring the varying effect of partisanship and party cues." *Environmental Politics* 27, no. 2 (2018): 228-246.

Lipka, Michael. "U.S. religious groups and their political leanings." pewresearch.org. Pew Research Center, February 23, 2016, https://www.pewresearch.org/fact-tank/2016/02/23/u-s-religious-groups-and-their-political-leanings/.

Malka, Ariel, Yphtach Lelkes, Sanjay Srivastava, Adam B. Cohen, and Dale T. Miller. "The Association of Religiosity and Political Conservatism: The Role of Political Engagement." *Political Psychology* 33 no. 2 (2012): 275-299.

Margolis, Michele F. "How Politics Affects Religion: Partisanship, Socialization, and Religiosity in America." *The Journal of Politics* 80 no. 1 (2017): 30-43.

McKenzie, Brian D., and Stella M. Rouse. "Shades of Faith: Religious Foundations of Political Attitudes among African Americans, Latinos, and Whites." *American Journal of Political Science* 57, no. 1 (2013): 218-235.

Mostafa, Mohamed, M. "Post-maternalism, Religiosity, Political Orientation, Locus of Control and Concern for Global Warming: A Multilevel Analysis Across 40 Nations." *Social Indicators Research* 128 no. 3 (2016): 1273-1298.

Rutjens, Bastiaan T. Robbie M. Sutton, and Romy van der Lee. "Not All Skepticism is Equal: Exploring the Ideological Antecedents of Science Acceptance and Rejection." *Personality and Social Psychology Bulletin* 44, no. 3 (2017): pp. 384-405.

Squalli, Jay. "Is religiosity green in the United States?" *Economic Analysis and Policy* 63 (2019): 11-23. https://doi.org/10.1016/j.eap.2019.04.008.

The American National Election Studies 2018. *The ANES 2018 Pilot Study*. Ann Arbor MI: University of Michigan, Center for Political Studies.

The American National Election Studies 2019. *The ANES 2019 Pilot Study*. Ann Arbor MI: University of Michigan, Center for Political Studies.

"The 8 Points of Progressive Christianity." ProgressiveChristianity.org. Accessed October 20, 2020 https://progressivechristianity.org/the-8-points/.

Tsimpo, Clarence & Quentin Wodon. "Faith Affiliation, Religiosity, and Attitudes Towards the Environment and Climate Change." *The Review of Faith & International Affairs* 14, no. 4 (2016): 51-64.

Zaller, John R. *The Nature and Origins of Mass Opinion*. Cambridge Studies in Public Opinion and Political Psychology. Cambridge: Cambridge University Press, 1992. doi:10.1017/CBO9780511818691.