Importance of Religion after Adversity

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After major adversity, some people rely on their religious faith and networks for comfort, support, and material goods and services. Consistent with this behavior are findings that adversity has a positive causal effect on the importance of religion in people's lives. Using a large high-frequency US dataset, we estimate the causal effects of natural disasters on stated religious importance and attendance at religious services. Effects are identified by comparing changes in outcomes over time within counties affected by a natural disaster with changes over time in other counties from the same state. We find that most estimates are near-zero in magnitude; for the full sample, for subgroups defined by religious affiliation, demographics, and income, and for different disaster types. However, significant negative effects are found immediately postdisaster, suggesting a short-term crowding-out effect in which recovery activities limit time for worship. This explanation is supported by a finding that people are less "well rested" in the first weeks postdisaster.

Keywords: religious importance, religious attendance, natural disasters, adversity, resilience.

INTRODUCTION

There is a near-consensus across the social sciences that major disasters and adverse events increase the importance of religion and spirituality in people's lives. Historians have highlighted how people regularly turned to the supernatural, the sacred, or the spiritual after experiencing major events that are beyond their personal and communal control (Aten et al. 2019). Similarly, other social scientists have empirically demonstrated that religious salience and involvement significantly increases following adversities, such as financial crises (Chen 2010), earthquakes (Bentzen 2019), war-related violence (Henrich et al. 2019), the COVID-19 pandemic (Bentzen 2020), mass shootings (San Roman et al. 2019), and Hurricane Katrina (Ai et al. 2013; Park, Sacco, and Mills 2019).

Furthering this literature, religion studies have empirically explored the mechanisms through which religiosity and spirituality strengthen resilience after traumatic experiences such as disasters (Ai et al. 2013), adverse conditions (Reutter and Bigatti 2014), challenging life events (Eliassen, Taylor, and Lloyd 2005), and health shocks (Upenieks 2022). The study of religious importance during adverse times has also focused on the challenges in the therapeutic use of religion

(Kwilecki 2004). Psychologists who stress the importance of religion note that disasters increase the salience of meaning and a sense of control (Boyer 2001; Savage and Torgler 2013). As Boyer (2001:170) notes: "when people want to know why, if they have gods and spirits they can say why". Thus, religious beliefs are seen as providing an orienting framework, a cognitive schema through which events are interpreted, and a way of individually coping and adjusting (McIntosh, Silver, and Wortman 1993; Newton and McIntosh 2010). Park, Cohen, and Herb (1990:562) have argued that religious beliefs play a role in adjustments to life stress by influencing primary appraisal (e.g., belief that God designed challenges to strengthen faith or communicate through events),[1] secondary appraisal (e.g., influencing the perceived ability to persevere), or as a stress buffer (e.g., turning to God and prayer for relief or strength).[2]

Sociologists stress that religious involvement offers social integration and support (Ellison 1991)). Scholars who see religion partly in terms of networks of mutual support bound by a common belief have noted that disasters increase the importance of those networks for comfort, support, and renewed purpose (Ano and Vasconcelles 2005; Bentzen 2020; Pargament et al. 1998; Pargament 1997; Park, Sacco, and Mills 2019; Savage and Torgler 2013). Religious communities can provide informal insurance, supplying material goods and services postadversity (Auriol et al. 2020; Dehejia, DeLeire, and Luttmer 2007;). As a consequence, widespread adversity requiring a collective response may cause people to more closely observe local religious beliefs that help ingroup cooperation and coordination (Henrich et al. 2019). Thus, natural disasters are times in which religious networks need to "prove themselves". Especially severe disasters are thereby also potential times of religious crises, when competing religions can "muscle out" those that are seen to fail the community (Everton and Schroeder 2019). Stark (1997), for example, emphasized that two disastrous epidemics increased the shift away from paganism towards Christianity during the Roman Empire due to paganism's inability to confront those crises socially and spiritually.

For dispassionate social scientists, disasters are a natural avenue to explore religious importance and spirituality. In his influential book *The Psychology of Religion and Coping*, Kenneth Pargament (1997) stresses that "[t]here may be no better laboratory for studying and learning about religion in its most palpable forms than times of crisis and coping" (5). Natural disasters can be viewed as natural experiments: exogenously bounded events with the change in a known direction (Savage 2019). This is in contrast to the effects of other negative individual shocks such as divorce, unemployment, or income shocks, which invariably raise the question whether own behavior was involved in causing those shocks, reducing many studies of how shocks relate to religion as correlational (Hackney and Sanders 2003; Lang 2020).

Interestingly, a noted "strong selling point" of religion during times of crises is that religions provide exogenous explanations that do not require an immediate reevaluation of community life, contrary to invoking the violation of social stigmas or norms (Clark and Lelkes 2005). Another benefit is that religion "keeps it simple" in that religious symbols and beliefs provide a comparatively restricted set of symbolic codes with which to understand disasters (Ellison 1991).

Yet, despite the substantial literature on how major disasters increase religiosity, there remains the question of what level of disaster is needed to elicit a religiosity-increasing response. After all, one does not expect a crisis of faith after every hailstorm. Moreover, there is a time constraint and during an unexpected crisis, time is at a premium. So, while economists propose that the marginal utility from religion rises during crises (Clark and Lelkes 2005), the same is true for the marginal utility of time. Hence, if the natural disaster is in some "minor range" of severity, it may not be noticed at all. In contrast, if it is in a "middle range" of severity, disasters may be found to reduce religious observances because individuals and communities are too busy reacting and repairing.

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[1]The religious assessment of misfortunate as a divine punishment is prominent in religious scriptures (Kwilecki 2004).

[2]For a detailed discussion on religious involvement and stress-buffering, see Schnittker (2001).

We contribute to this large multidisciplinary literature by using data on religious importance from over 2 million Americans between 2008 and 2015 to determine whether the relationship between natural disasters and religious importance holds in the context of the United States, which has a substantial emergency management response system in comparison to many other countries (particularly low- and middle-income countries).[3] Garnering empirical insights from diverse international contexts can further elucidate how institutional circumstances modulate the relation between religiosity and disaster response. From an empirical perspective, the large high frequency dataset represents a significant improvement over more commonly used religiosity datasets. For instance, evidence suggesting that religion can mediate traumatic life events has been criticized for using small and nonrepresentative samples (Clark and Lelkes 2005).

We use two measures to study religious importance: an intrinsic measure which asks people whether religion is an important part of their lives, and an extrinsic measure representing regular attendance at religious services. We estimate the causal effects of natural disasters on these outcomes, while providing a rigorous set of robustness and sensitivity tests. Effects are identified by comparing changes in religious importance over time within counties affected by a natural disaster with changes over time in other counties from the same state. We estimate changes in outcomes in the weeks, months, and quarters following the disaster, extending research that observes religiosity only years afterwards. We find that Americans do not report increased religious importance postdisaster. This null finding holds for different religious affiliations, unexpected disasters, and demographic subsamples. However, there is a clear negative effect in the week after the disaster, suggesting that there might be "no time for prayer" during the emergency. In other words, the urgency of immediate recovery might supplant the activation of religious coping mechanisms. In general, the results highlight the need for further research into the contextual processes that shape an individual's religious response to adversity.

DATA

We use data from the Gallup US Daily Poll, a phone survey of around 1000 American adults each day of the year, excluding major holidays. Our maximum estimation sample of 2,726,260 observations includes people aged 18+, with nonmissing information on key variables, who reside in a contiguous mainland state, and who were surveyed between January 2008 and December 2015. Table 1 describes our sample of surveyed individuals with sample means for demographic and economic characteristics, separately by county-level disaster exposure. On average, the sample is 54 years old, with 50 percent females, 58 percent married, 78 percent Whites (8 percent Blacks, 7 percent non-White Hispanics, 2 percent Asians), and 42 percent college-educated, and with a monthly household income of almost $5000.

Notably, there are few large differences between the samples of people who experienced a costly natural disaster within their county of residence (sometime between 2008 and 2015) and those who did not. The largest differences occur for college education (1.7 percentage-point difference) and for race (e.g., 1.4 percentage-point difference in non-White Hispanics). As discussed below in the Methods Section, these average differences are controlled for along with county fixed-effects (or zip code fixed-effects in robustness specifications).

We use two binary variables to measure religious importance. First, an intrinsic measure that asks respondents whether religion is an "important" part of their daily lives. Previous research found this measure to be affected by disasters (Bentzen 2020). Second, an extrinsic measure indicating that respondents attend a religious service at least monthly. This extrinsic measure considers that religious production is associated with service attendance (Iannaccone 2002). Sample

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[3]Frijters et al. (2023) previously used these data to explore the relationship between disaster exposure and mental well-being, but did not discuss or empirically investigate the importance of religion.

Table 1: Descriptive statistics by disaster experience

	No Disaster	Experienced Disaster
Age	54.31	54.20
Female	0.503	0.508
Married	0.576	0.576
White	0.778	0.784
Black	0.075	0.084
Asian	0.019	0.015
Non-White Hispanic	0.074	0.060
Did not finish high school	0.055	0.062
College degree	0.420	0.403
Household monthly income ($10,000)	0.493	0.481
Number of observations	1,976,088	840,809

Note: Table reports sample means for respondents living in counties that experienced a large disaster over sample period versus those living in counties that did not. Average monthly household income constructed using the mid-points of income category ranges.

Table 2: Sample frequencies of main outcome variables

Sample	Religion Important	Regular Attendance
All respondents	0.665	0.554
Religious preference		
Christian	0.772	0.650
Jewish	0.385	0.326
Other religion	0.561	0.399
Agnostic / atheist	0.095	0.056
Demographics		
Female	0.730	0.595
Male	0.598	0.511
Age < 55-years old	0.617	0.520
Age > 55-years old	0.709	0.585
Household income		
Below median	0.693	0.549
Above median	0.613	0.537

Note: Figures are the sample means of the importance and attendance variables for each subsample.

means of these two outcome variables by individual-level characteristics are given in Table 2. Overall, 67 percent of respondents report that religion is important to them and 55 percent attend a religious service at least once a month. These figures vary considerably by religious preference with Christian respondents having means of 77 percent and 65 percent and Jewish respondents having means of 39 percent and 33 percent. Somewhat surprisingly, 10 percent of people who are agnostic or atheists report that religion is important to them, and 6 percent regularly attend a religious service. More generally, our religious importance measures are higher for women, older people, and those with lower incomes.

The Gallup data are matched to Federal Emergency Management Agency's (FEMA) county-level information on all federally declared climate and environmental disasters that received a

Figure 1
Treatment and control counties
[Color figure can be viewed at wileyonlinelibrary.com]
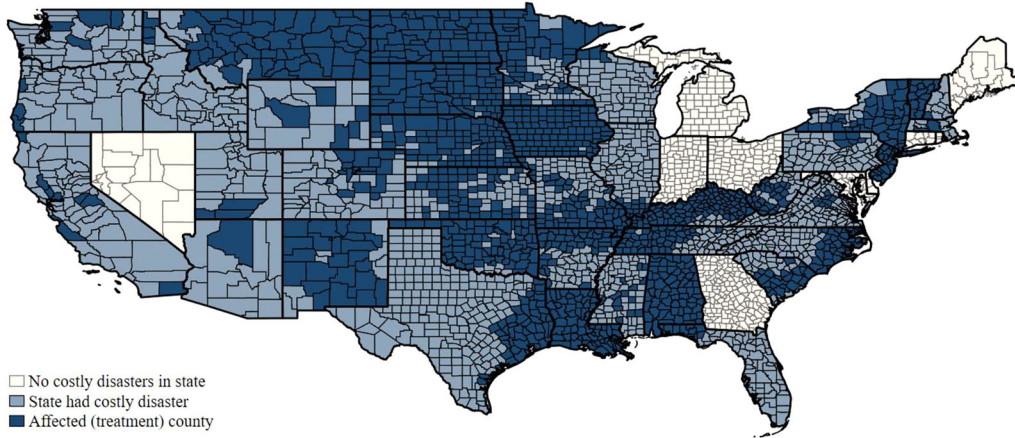
Note: Counties and states that experienced a major costly natural disaster. The dark blue counties experienced (at least one) major costly natural disaster during the 2008–2015 study period. Counties in states that experienced a large disaster but did not receive a major disaster declaration for a costly natural disaster during the 2008–2015 period are colored in the lighter blue. Gray outline marks county borders, while black outline marks state borders.

Presidential Major Disaster Declaration.[4] The analysis focuses on severe disasters which are defined as the top quartile of disasters in terms of total public assistance funds per affected person,[5] calculated at the state level. This set includes disasters such as Hurricane Sandy, the 2011 Super Tornado Outbreak, the 2010 Tennessee Floods, and Hurricane Ike.

Figure 1 is a map showing the counties that experienced (at least one) major natural disaster during the 2008–2015 study period (treatment group), and counties in states that did not experience a major natural disaster, but which are located within a state that did (control group). This map demonstrates that the treatment counties are located all across the United States and not concentrated in a particular region (e.g., the hurricane affected areas in southern United States). It also demonstrates that some states did not experience any major disasters during the sample period (white-colored areas). These areas do not aid in the identification of the estimated disaster effects and their omission from the estimation sample does not alter results.

METHODS

To identify the impact of natural disasters on religious importance, we follow the methodology in Frijters et al. (2023) and use an event-study approach that compares changes over time in counties affected by disaster with changes over time in unaffected counties from the same state:

$$\text{relig}_{ijt} = \sum_{m} \beta_m D_{jt-m} + \alpha_j + \tau_t + \gamma_{st} + \delta X_{it} + \varepsilon_{ijt}, \qquad (1)$$

[4]We omit FEMA-reported disasters occurring in Indian Reservations, as we are unable to identify individuals residing in these locations in the Gallup Poll data (however, affected neighboring counties will be captured).

[5]Affected people are people living in counties exposed to a disaster.

where relig_{ijt} is the religious importance of individual i in county j at time t; α_j are county-level fixed-effects that control for time-invariant characteristics of county j; τ_t are month-year fixed-effects that control for seasonality and trends over time; γ_{st} are state-season-year fixed-effects that control for time-varying state-specific factors; X_{it} includes individual-level covariates: age, gender, marital status, education, and race; and ε_{ijt} is an idiosyncratic error.

D_{jt-m} is a vector of M treatment dummies equal to 1 if county j experienced a disaster in week or month $t - m$; and β_m quantify the extent to which religious importance is impacted by a disaster occurring m periods ago. Under the assumption that natural disasters are unanticipated, $\hat{\beta}_m$ can be interpreted as the causal effects of disaster on religious importance.

We test the robustness of our Equation (1) estimates to several potential issues. First, it is possible that residents from the control counties—nondirectly affected counties in the same state as treated counties—may also be impacted by the disaster (e.g., due to the state-wide economic shock), and so we additionally estimate regressions using control counties from neighboring states. Second, response patterns may differ across treatment and control counties after a disaster, causing sample selection bias. We examine this issue by additionally including covariates associated with selection: (i) number of completed surveys per county, and (ii) number of required call attempts per surveyed individual. Third, we extend Equation (1) by replacing county fixed-effects with zip code fixed-effects to ensure that demographic and socioeconomic differences across areas are adequately controlled for.

Results

Short-Term Effects

Figure 2 presents the estimated short-term effects of residing near a natural disaster. The regression specification allows for predisaster effects because religious importance may change due to people responding to disaster forecasts (e.g., hurricane tracking) and because of severe weather that may precede disaster (e.g., heavy rain in the days or weeks before a flood). The specification also allows for a very short-term 1-week postdisaster effect because religious attendance may be differently affected in the immediate aftermath due to unrectified damage. The remaining terms are monthly.

Overall, there is no evidence that major natural disasters increase religious importance in the United States. Effects sizes are small relative to the sample mean and almost all are statistically insignificant, for both intrinsic and extrinsic measures. The largest effects in magnitude occur in the first-week postdisaster. Immediately following a disaster, people are 3.2 percentage points less likely to report that religion is important in their lives (4.8 percent decrease relative to the sample mean) and 2.8 percentage points less likely to report that they regularly attend a religious service (5.1 percent decrease).

One potential issue with the estimates presented in Figure 2 is that they are based on comparisons between disaster-affected counties and nondisaster-affected counties in the same state. The advantage of this approach is that control counties are similarly affected by time-varying state-level factors. The disadvantage is that people living in control counties may also have been negatively impacted by the disaster, for example, due to shared macroeconomic impacts or because family and friends in the disaster zones are negatively affected. To explore the sensitivity of our estimates to the definition of control counties, we reestimate regressions using counties in other states from the same Standard Federal Region and counties in other states from the same Bureau of Economic Analysis region. The results of this exercise are presented in Appendix Table A1 and show that the coefficient estimates are very similar to those presented in Figure 2. In other words, our main estimates are insensitive to different reasonable definitions of control counties.

Figure 2
Religious importance following a natural disaster—short-term effects
[Color figure can be viewed at wileyonlinelibrary.com]
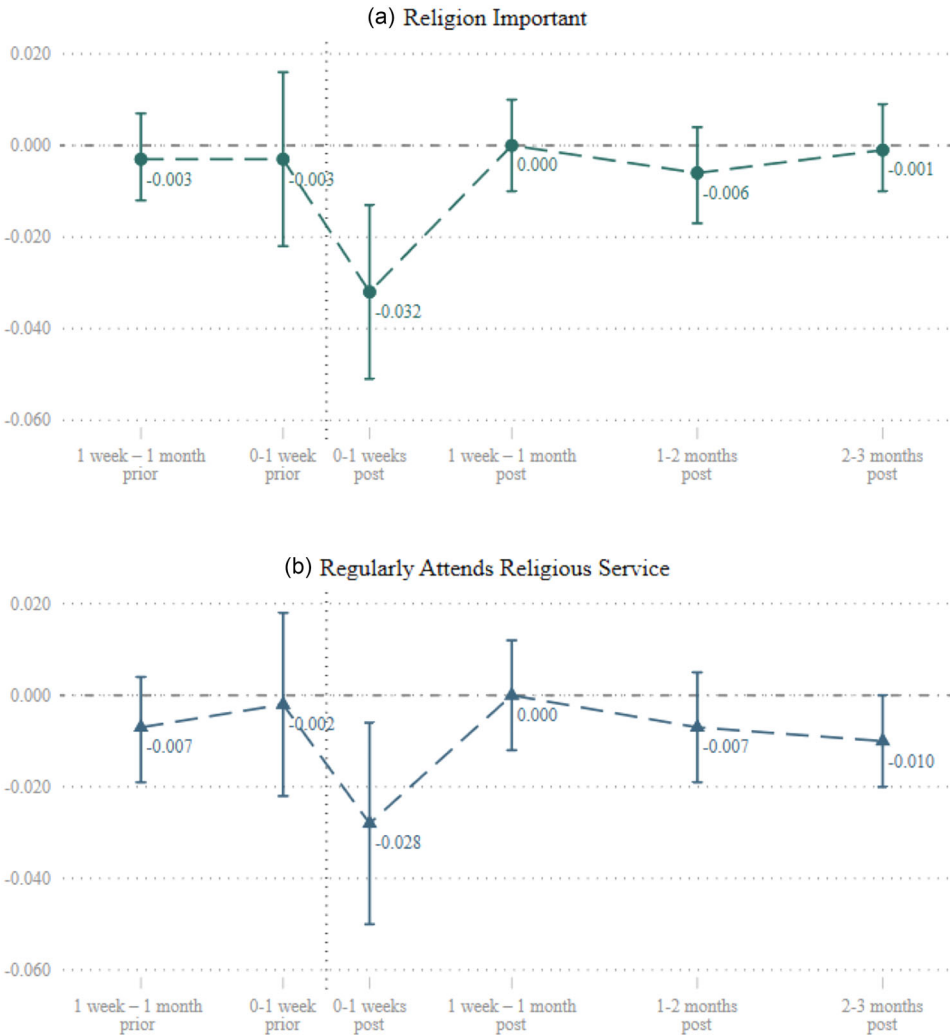
Note: Figure plots estimated coefficients and 95 percent confidence intervals on the effects of disasters over time. See Equation (1) for regression specification.

Another potential empirical issue is that an individual's propensity to participate in a survey could be directly affected by a local natural disaster, causing differences in survey selection between treatment and control counties. To control for selection effects, we include two additional covariates: (i) the number of phone calls needed to reach each respondent, and (ii) the number of completed surveys over the event study period in each county. The estimates in Appendix Table A2 indicate that any sampling variations in the weeks and months following a disaster do not affect our main estimated effects. Though the coefficient on "number of calls needed" is significantly positive (more calls are positively associated with higher religious importance), the main disaster effects are unaffected.

Finally, we have explored the sensitivity of the Figure 2 estimates to the addition of more detailed geographic fixed-effects. Specifically, we replaced the county-level fixed-effects with

Table 3: Religious importance following a natural disaster—medium-term effects

	Religion Important	Regularly Attends Religious Service
Predisaster 3–6 months	0.002	0.006
	(0.003)	(0.004)
Predisaster 0–3 months	−0.003	−0.007
	(0.004)	(0.004)
Postdisaster 0–3 months	−0.003	−0.008*
	(0.003)	(0.004)
Postdisaster 3–6 months	0.008*	0.002
	(0.003)	(0.004)
Postdisaster 6–9 months	0.003	0.005
	(0.003)	(0.004)
Outcome mean	0.664	0.553
Sample size	2,288,030	2,230,891

Note: Figures are estimated coefficients on disaster indicators. Standard errors clustered at the county level in parentheses. See Equation (1) for regression specification.
* and ** denote statistical significance at the 0.05 and 0.01 levels.

zip code fixed-effects, which control more precisely for differences in population characteristics across areas, while retaining the month-year and state-season-year fixed-effects. The estimated 0–1 week postdisaster effects from this specification are slightly smaller than in Figure 2: −0.028 and −0.024 for religion importance and regular attendance, respectively (see Appendix Table A3). However, the results still suggest that the only meaningful effect of severe disaster on religious importance is a small, short-lived, immediate decline.

Medium-Term Effects

Religious importance may be affected gradually, with changes becoming apparent only after the clean-up and recovery period, which often lasts several months. In Table 3, we present regression estimates for two quarters predisaster and three quarters postdisaster to allow for this possibility. All estimates are much smaller in magnitude than the 1-week postdisaster estimates in Figure 2. The largest point estimate for the "religion important" outcome occurs 3–6 months postdisaster and equals positive 0.8 percentage points (1.2 percent relative to the sample mean), suggesting a minor increase in religious importance. The largest point estimate for the "service attendance" outcome occurs 0–3 months postdisaster and equals negative 0.8 percentage points (1.4 percent). This effect is more in line with the negative short-term effect in Figure 2. There is also a −0.007 estimated effect 0–3 months predisaster that is statistically significant at the 10 percent level. A nonzero predisaster effect may seem surprising, but as explained earlier, it may be driven by behavioral change brought on by associated severe weather, forecasted disasters, and/or associated disasters in neighboring states.[6] Overall, there is little evidence in Table 3 in favor of the hypothesis that religion becomes more important for people during adverse times.

[6]Disasters are federally declared at the state level and so a flood in one state, for example, may be declared earlier than the same on-going flood in a neighbouring state.

Table 4: Heterogeneity by individual level characteristics

	Sample Size	Religion Important		Regularly Attends Religious Service	
Religious preference					
Christian	1,780,758	−0.021*	(0.010)	−0.019	(0.012)
Jewish	52,670	−0.031	(0.074)	0.026	(0.081)
Other religion	61,556	−0.166*	(0.081)	−0.056	(0.078)
Agnostic / atheist	298,793	−0.021	(0.017)	−0.036**	(0.011)
Demographics					
Female	1,151,905	−0.029*	(0.013)	−0.040**	(0.015)
Male	1,136,118	−0.036*	(0.016)	−0.012	(0.017)
Age < 55-years old	1,132,052	−0.034*	(0.015)	−0.026	(0.016)
Age > 55-years old	1,155,973	−0.025	(0.014)	−0.023	(0.016)
Household income					
Below median	875,235	−0.041**	(0.015)	−0.027	(0.017)
Above median	960,586	−	(0.017)	−0.027	(0.018)

Note: Figures are estimated coefficients on disaster indicators. Standard errors clustered at the county level in parentheses. See Equation (1) for regression specification.
* and ** denote statistical significance at the 0.05 and 0.01 levels.

Heterogeneity by Individual and Disaster Characteristics

It is likely that the effect of disasters on religious importance will differ by individual characteristics. As shown in Table 2, there is significant variation in baseline levels of religious importance across people. Moreover, there will be differences across people in their direct disaster experience and in their subsequent involvement in the recovery efforts. We test for heterogeneity in the negative short-term religious importance effects shown in Figure 2 by reestimating the regressions for various subsamples. The results are presented in Table 4.

Focusing first on the intrinsic measure, the drop in religious importance appears largest for people who nominate a non-Christian or non-Jewish religion, such as Islam or Hinduism, and for people with below median income.[7] The negative effect for lower income respondents—which is 2.7 times larger than for higher income respondents—is somewhat surprising, given that low income households are often more financially affected by disasters (Deryugina, Kawano, and Levitt 2018) and that income is negatively associated with religious importance (Silveus and Stoddard 2020). It is possible that low-income households are particularly preoccupied with recovery activities. But it is also the case that the difference in effects between income groups is not statistically significant (p-value equals 0.21).

For the extrinsic measure, the differences in effect size across religious preference and income categories are less pronounced. For this outcome, the most striking difference in estimates is between females (−0.040) and males (−0.012), with results suggesting that women experience a relatively large 4.0 percentage point drop in attendance in the first week following disaster. Again, this difference is not statistically significant (p-value equals 0.12).

In the main estimates shown in Figure 2, we estimated the effects of more severe disasters, defined as the top quartile of disasters in terms of total public assistance funds per person in affected counties. In Table 5, we present estimates for all other less costly disasters. These less severe

[7]Estimates for Roman Catholics, Protestants, and other Christian denominations are similar and not significantly different from one another.

Table 5: Heterogeneity by disaster type

	Sample Size	Religion Important		Regularly Attends Religious Service	
Disaster categories					
Less costly	2,286,188	0.001	(0.004)	0.006	(0.005)
More costly	2,288,030	−0.031**	(0.010)	−0.026**	(0.011)
Surprising	2,288,061	−0.027*	(0.012)	−0.027*	(0.013)
Unsurprising	2,288,061	−0.040*	(0.018)	−0.022	(0.020)
Disaster types					
Storms	2,288,036	−0.047**	(0.015)	0.056**	(0.017)
Floods	2,288,036	0.000	(0.031)	0.002	(0.029)
Hurricanes	2,288,036	−0.017	(0.017)	0.006	(0.020)
Snow/ice	2,288,036	−0.047	(0.033)	−0.060	(0.037)

Note: Figures are estimated coefficients on disaster indicators. Standard errors clustered at the county level in parentheses. See Equation (1) for regression specification.
* and ** denote statistical significance at the 0.05 and 0.01 levels.

disasters have a near-zero impact on religious importance which is as expected given that people are less likely to increase reliance on their religious faith following relatively minor disasters, and given that minor disasters require less time and effort in clean-up and recovery.

Table 5 also splits the sample by whether the disaster was unsurprising or surprising, defined by whether a disaster of the same type has or has not occurred within the state in the period 1997–2007, in other words, historically unusual disasters (at least in recent history). Bentzen (2019) finds that surprising disasters increase religiosity but unsurprising disasters do not. We find that both types of disasters cause a negative religious importance effect in the first week postdisaster. For instance, stated religious importance drops by 4.0 percentage points following unsurprising disasters and 2.7 percentage points following surprising disasters (coefficient difference not statistically significant). Notably, we find no evidence of positive religious importance effects following surprising disasters if we use our medium-term specification with 3-monthly time periods (i.e., the specification shown in Table 4).

In the bottom panel of Table 5 we present estimates separately for four different disaster types: storms, floods, hurricanes, and snow/ice-related disasters. These represent the four most common disaster types in our data, with relative frequencies of 61 percent, 15 percent, 7 percent, and 7 percent, respectively, among severe disasters at the disaster-county level. Disaggregating the disaster indicator reduces the precision of our estimates, given that each regression only uses a minor proportion of all disasters for identification (especially those other than storms). Nevertheless, we find that the religious importance estimates are more negative for storm and snow/ice disaster types; though, in the latter case the estimates have wide confidence intervals that include zero. Bentzen (2019) finds that storms do not induce a positive religiosity effect in her study and explains this result by the fact that storms are more predictable (less surprising) than earthquakes, tsunamis, and volcanic eruptions (for which she does find positive effects). It is unclear whether in our setting, floods and hurricanes are more or less predictable than storms; however, it is clear that more people have had experience with storms than with other disaster types. It is this experience that may partly negate any positive religious importance effects: following storms people are still busy with clean-up and recovery activities but are less reliant on their religious faith for comfort and support.

Table 6: Likelihood of feeling well rested following a natural disaster

	All	Female	Male	Age < 55	Age ≥ 55
Predisaster 1 week–1 month	0.005	0.010	−0.002	0.005	0.005
	(0.006)	(0.008)	(0.008)	(0.008)	(0.008)
Predisaster 0–1 week	0.011	0.021	−0.003	0.002	0.014
	(0.010)	(0.013)	(0.017)	(0.016)	(0.013)
Postdisaster 0–1 week	−0.012	−0.024	0.001	−0.019	−0.008
	(0.011)	(0.015)	(0.017)	(0.017)	(0.014)
Postdisaster 1 week–1 month	−0.012*	0.002	−0.027**	−0.022*	−0.001
	(0.006)	(0.008)	(0.008)	(0.009)	(0.008)
Postdisaster 1–2 months	−0.002	0.001	−0.004	0.001	−0.004
	(0.005)	(0.008)	(0.008)	(0.008)	(0.007)
Postdisaster 2–3 months	−.002	−0.006	0.002	0.006	−0.009
	(0.005)	(0.008)	(0.007)	(0.008)	(0.007)
Outcome mean	0.729	0.702	0.757	0.673	0.785
Sample size	1,898,275	959,619	938,644	942,586	955,679

Note: Figures are estimated coefficients on disaster indicators. Standard errors clustered at the county level in parentheses. See Equation (1) for regression specification.

* and ** denote statistical significance at the 0.05 and 0.01 levels.

Mechanism for Decline in Religious Importance

A likely explanation for our results is that clean-up and recovery activities following a natural disaster require considerable time and effort and this crowds-out religious observance in the short-term. We have no data with which to directly test this explanation. However, the Gallup US Daily Poll does include a question about whether the respondent feels "well rested". People who are busy with clean-up and recovery efforts are less likely to feel well rested, and so for our proposed mechanism to be true, we would expect disasters to have a negative effect on this variable, especially in the first weeks postdisaster. The results in Table 6 indicate exactly this result. Respondents are 1.2 percentage-points less likely to feel well rested in the first month postdisaster. This effect is larger for men (2.7 percentage-points) and for younger people (2.2 percentage-points).

CONCLUSION

In this article, we explore natural disasters as natural experiments to understand how religious importance changes after adverse life events. We find that religious importance does not significantly increase in the weeks and months following natural disasters in the United States. Thus, contrary to Bentzen (2019), we were not able to observe that individuals become more religious when hit by a natural disaster. This finding holds for people of different religious denominations, demographics, and income groups, and holds for both more and less surprising disasters (which are defined as having the same disaster type in recent presample years). It also holds across different disaster types (storms, floods, hurricanes, and snow/ice). Thus, our results are inconsistent with the proposition that people place greater importance in religion or increase their attendance at religious services following adverse events, as has been emphasized in the literature. Consequently, our findings underscore the necessity to carefully consider institutional and contextual factors surrounding disasters or adverse events. The robust U.S. emergency management response system for natural disasters could be instrumental in enhancing preparedness

and resilience. This, in turn, might be a major factor influencing our results as increased preparedness at the institutional level can alter individuals' responses to adversity, including their reliance on religious coping mechanisms. A potential explanation is that people living in the United States are focused on recovery in the immediate aftermath of a disaster, and in the medium-term do not experience sufficient personal adversity to activate a religiosity response. The explanation that the recovery activities following a natural disaster require considerable time and effort is supported by our evidence that people are less likely to feel well rested in the short-term, (i.e., during the clean-up period in the first postdisaster month). In addition, Frijters et al. (2023) find that well-being reductions following U.S. disasters are only small-to-moderate in size, which might explain the lack of a large medium-term response in our results. Another explanation is that the destruction of places of worship may disrupt religious attendance.

Our results can be interpreted in terms of Maslow's (1943) hierarchy of needs, which suggests that people tend to prioritize their fundamental necessities immediately following a disaster, thus relegating higher-order needs such as spiritual requirements, to a potentially later stage. In essence, the meaning-making process—the individual's interpretative efforts to relate the disaster experience to their religious beliefs—is likely to be deferred. This is consistent with the hypothesis that the physical and mental toll of disaster recovery may supersede any potential increase in religious seeking behavior. Essentially, the immediate demand for basic needs and recovery might delay or crowd-out any religious coping response. We find that the importance of religion increases during the mid-term phase (3–6 months postdisaster), but the effect is small. Further detailed data are needed to capture a more nuanced understanding of the contextual religious meaning-making process individuals may undergo postdisaster.

As a final point, our findings call for more comparative analysis across different institutional and cultural contexts. For example, do societies with different emergency response systems or cultural norms around religion and adversity react differently to disasters? Would we find different results in societies where religious institutions play a more prominent role in disaster relief and recovery? Such questions hold promise for future research and offer potential pathways for bridging our understanding of religiosity, adversity, and institutional context.

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Supporting Information

Additional supporting information may be found online in the Supporting Information section at the end of the article.