

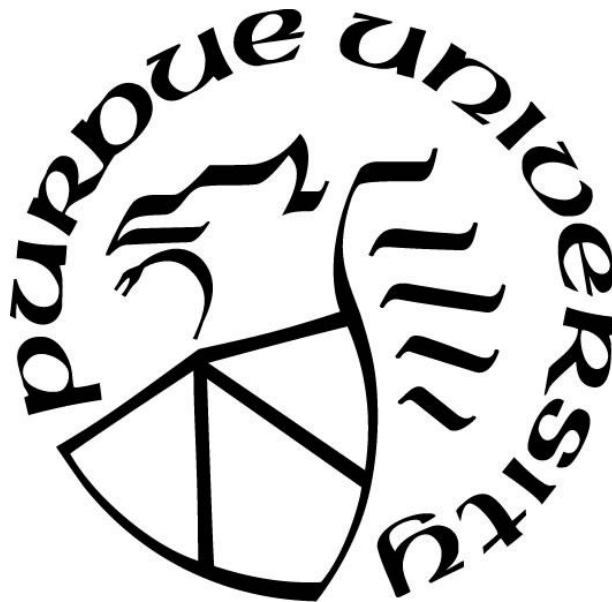
**RELIGIOUS COMMITMENT AND EXISTENTIAL  
INSECURITY IN THE UNITED STATES**

by  
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**A Dissertation**

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*To my dad, Joe Allan Marshall, who taught me to just keep trucking.*

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## CHAPTER 1: INTRODUCTION

This dissertation presents a quantitative analysis of religious commitment among U.S. adults who were polled in nationally representative surveys between 1984 and 2010. The three studies presented in this dissertation investigate two key research questions. First, are people in the United States more religiously committed, on average, when they live in geographic areas (e.g., counties and cities) where local indicators of human development such as life expectancy, education and income are relatively low? Prior research has found a robust cross-national relationship between human development and religiosity, but little evidence has been presented that suggests the same relationship exists at the level of subnational geographies. Second, if such a relationship exists, are the reasons for the statistical link between human development and religiosity attributable to the theoretical explanations in the extant literature? Are people living in poverty and poor health more likely to be religious because they fear for their security?

The results presented in this dissertation suggest, first, that a strong and robust association exists between the levels of human development in U.S. counties and cities and the levels of religious commitment reported by survey respondents who lived in those areas. On average, U.S. adults tended to self-identify with a religious group, report strong affiliation with their religious group, pray more frequently, attend religious services more regularly and hold more supernaturalistic religious views when they lived in geographic areas with relatively low levels of human development. Inversely, survey respondents who lived in areas of the country with higher levels of human development—where living conditions were more comfortable and desirable—tended to report significantly lower levels of religious commitment on average. These results held after adjusting for covariates at the individual and geographic levels of analysis, including denomination, political party affiliation, population dynamics and basic demographics.

Second, although the overall relationship between human development and religious commitment is present in the results, there is little evidence for the explanatory chain predicted by the literature. Individual-level measures of psychological distress do not mediate the relationship between human development and religious commitment as the existential insecurity literature would expect. Existential insecurity may be important, but not at the individual level as often assumed. Instead, what this dissertation finds is that the effect of human development on individual level religiosity seems to be mediated mostly by aggregate-level insecurity rather than

individual-level insecurity. Indicators of mental distress at the level of geographic areas are much better mediators of the overall relationship than indicators of mental distress at the individual level. Incidentally, these findings may be important for understanding why levels of religiosity differ so substantially by area of the country and by countries in the world. It may be that determinants of religiosity work more through local and regional cultural values and they do through individual psychological means. Of course, this last conclusion is speculative and is not the main goal of the dissertation, but it may be an important implication to be explored in future research.

Collectively, these results contribute to theory and ongoing research around the *existential insecurity model of religious commitment*, a theoretical model that sees economic precarity as part of a broader collection of everyday threats to basic survival. In geographic areas where human development is low, inevitable risks to survival such as old age, death, sickness, conflict and poverty are more immediately threatening. Human beings, who inherently need and seek security from threatening conditions, tend to pursue religion as a source of security and control, especially in the absence of other guarantors of security such as a robust social safety net. Norris and Inglehart (2004; 2011) invoke this theoretical model to explain why religion persists and thrives in some parts of the world but is declining elsewhere, especially in richer countries with a strong public commitment to economic equality and social welfare. The existential insecurity model is therefore linked to some of the most basic and foundational questions in the social scientific study of religion, such as whether religion per se will survive modernity.

Although the existential insecurity model has become highly influential in the social scientific study of religion, two key assumptions remain untested. First, it is unclear whether the model is valid at the subnational level. Nearly all previously published analyses on this topic are based on variation between whole countries; however, countries differ enormously from one another in ways that are sometimes difficult to measure. If the theoretically expected associations are not present in sub-national analyses, this leaves open the possibility that the cross-national results are partly or wholly spurious. Second, the key mechanism of the existential insecurity model—existential insecurity itself—is an untested and assumed mediator. Few published analyses attempt to directly measure existential insecurity and examine its assumed role as the explanatory mechanism linking economic conditions to religious beliefs or behavior. This

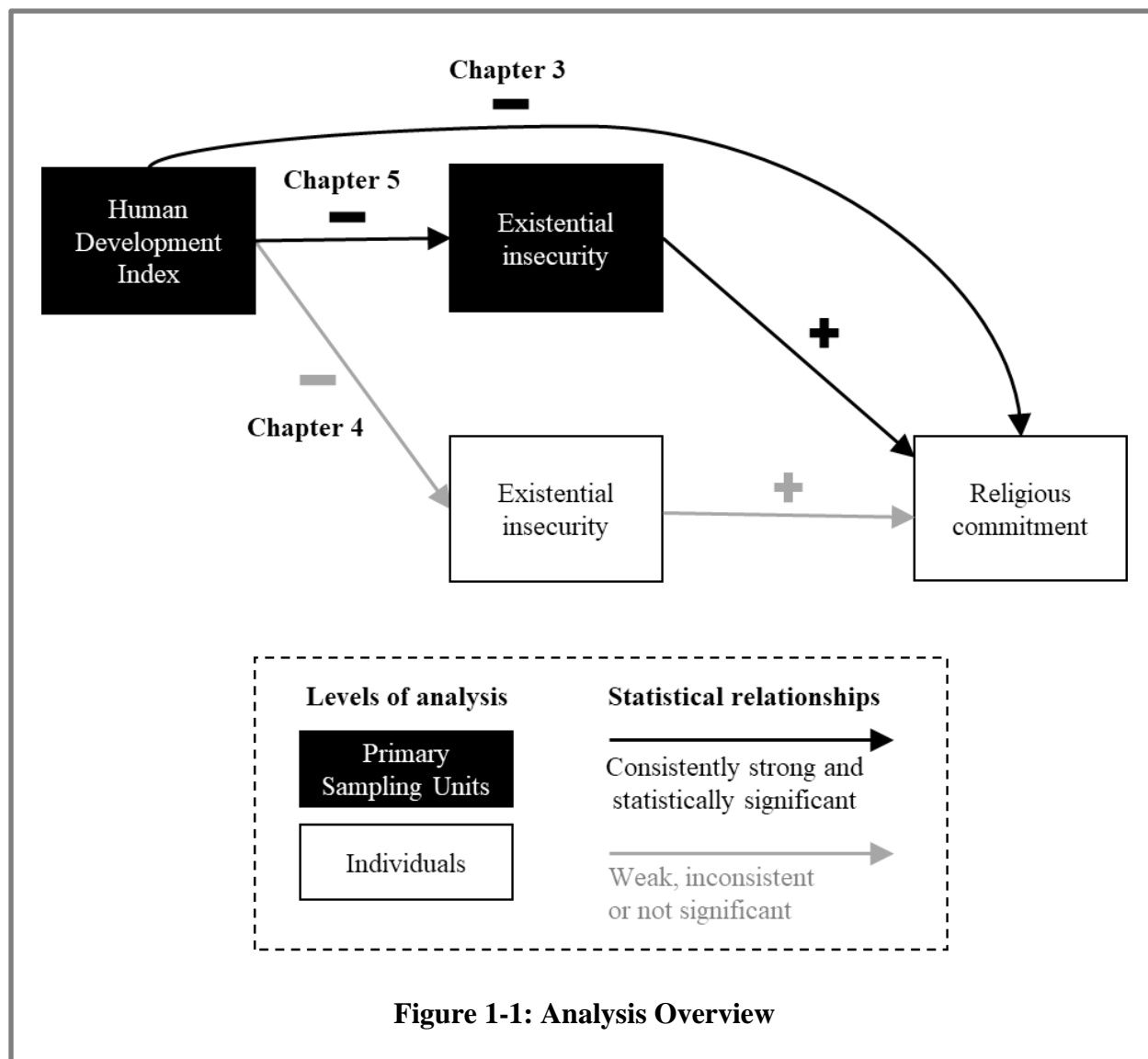
dissertation investigates the aforementioned gaps in the existential insecurity model with a multilevel analysis of people clustered in subnational geographic areas in which direct measures of both existential insecurity and religious commitment can be linked to information about the areas in which survey respondents lived at the time of data collection.

I begin by presenting a more thorough exploration of the theoretical background for this study. Next, I present a measure of human development that is frequently calculated at the level of whole countries but rarely applied to subnational geographies, the American Human Development Index. I then show that the wide variation in human development around the United States is significantly and strongly linked to the religious commitment of individuals who share the same geographic space. These results are mostly congruent with Norris and Inglehart's foundational work on the existential insecurity model, with a few exceptions. Finally, I explore whether more direct measures of existential insecurity mediate the relationship between human development and religious commitment. Following is a more detailed guide to the remaining chapters in this dissertation.

### **Guide to Chapters**

Chapter 2 introduces the theoretical background and literature underpinning the analyses in this dissertation. Beginning with foundational work in the sociology of religion, Chapter 2 explains how the existential insecurity model of religious commitment finds its historical roots in early sociological literature, how secularization theories as a whole were largely displaced in the late twentieth century as the dominant explanation for religious change, and how the existential insecurity model emerged in the twenty-first century as part of a revival of secularization theory. Chapter 2 also unpacks the existential insecurity model and reviews prior research that tests some of its key predictions.

Chapters 3 through 5, the core analytic chapters, are best understood as an attempt to dissect the existential insecurity model of religious commitment into its constituent parts and investigate each part separately. Figure 1-1 demonstrates this visually.



Chapter 3 focuses on the direct relationship between human development at the geographic level and religious commitment at the individual level. Note that the darkly shaded boxes in Figure 1-1 represent variables that are measured at the level of Primary Sampling Units (PSUs). PSUs are the geographies used throughout this dissertation that represent U.S. counties and, particularly in urban areas, groups of counties or Metropolitan Statistical Areas. The delineation of geographic areas is explained more fully in the data and methods sections of Chapter 3. In essence, Chapter 3 is a direct test of the existential insecurity model of religious commitment, analogous to the results presented in Norris and Inglehart (2004; 2011), but

conducted within one country; using subnational geographies rather than whole countries as geographic units; and modeled in a multilevel framework with a robust set of controls at both levels of analysis. The theoretical expectation (that is borne out empirically in Chapter 3) is that HDI will negatively predict religious commitment. This is indicated by the minus sign over the path labeled “Chapter 3” in Figure 1-1. Results suggest that this relationship is evident in the analysis: PSU-level HDI is positively associated with individual-level religious commitment. Statistically significant relationships are shown in Figure 1.1 as bold black lines while relationships that are not statistically significant are shown as grey lines.

Chapter 4 explores the role of individual-level psychological distress as a mediator in the existential insecurity model. This is shown in the lower part of Figure 1-1 where the “Chapter 4” label falls under the minus sign along the path between HDI and existential insecurity. The theoretical expectation is that HDI will lower feelings of insecurity. For its part, insecurity is expected to boost religious commitment by driving some people in the population toward religion as a source of security (note the plus sign between insecurity and religious commitment); however, in the path shown in Figure 1-1, better living conditions have lowered existential insecurity, driving down the demand for religion in the population and lowering the likelihood that people will report high religious commitment on surveys. Results from a series of mediation tests find little support for the paths predicted by Chapter 4. Individual-level insecurity does not mediate the relationship between HDI and religious commitment.

Chapter 5 is shown in the middle section of Figure 1-1. The path begins with HDI and routes through PSU-level aggregate insecurity rather than individual-level insecurity. This is one of the more speculative but potentially enlightening contributions of the dissertation. Chapter 5 explores the possibility that the subcultural values that predominate in a geographic area—particularly those related to levels of mental distress at the aggregate level—are better able to account for the negative relationship between human development at the PSU-level and individual-level religiosity. Chapter 6, the conclusion, explores this idea as it relates to broader theoretical contributions of the dissertation and possible directions for future research on religious change.

### **Redundancies Across Chapters**

Chapters 3, 4 and 5 of this dissertation are written as standalone journal articles so that pared-down or modified versions of those chapters can later be submitted for publication. As a result, some information is redundant across chapters. All three chapters use the same data, and the sections related to data sources and control variables are redundant through Chapters 3-5. Readers may wish to skip these sections after encountering them for the first time in Chapter 3. Furthermore, Chapters 3 and 5 both introduce the existential insecurity model of religious commitment, which creates some redundancy in literature review sections.

### **References**

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## **CHAPTER 2: THEORETICAL BACKGROUND**

### **The effects of modern life on religion**

Questions about the effects of modern life on religion have animated social scientific debate at least as far back as the foundational work of nineteenth-century social theorists such as Weber, Durkheim, Marx, Spencer and Comte, all of whom broadly believed that modernization would unseat religion as a dominant force in society. For instance, Durkheim ([1893] 1964) expected religion to disappear either because of social diversity or the shrinking of the collective conscience (Durkheim [1893] 1997). Weber's ([1920] 1993) work on the rationalization of supernatural ideas and authority point to the many ways in which routinization may dampen the spark of religious charisma. Marx's treatment of religion implies that ideal economic arrangements will obviate the need for a religious "opiate" (Marx and O'Malley 1977:131). Many of these ideas were updated by later influential writers such as Berger (1967), who in the 1960s maintained that the "sacred canopy" into which believers were socialized could be pierced and unraveled through exposure to alternative ideas that one encounters in a modern, diverse society. These examples reveal a consistent thread running through much of the history of the sociology of religion: what unites these theorists is their expectation that religion will, one way or another, lose its public significance, shrink into a niche of private life, or disappear altogether as a result of modernity. This broad expectation, known today under the umbrella term "secularization theory," was "the master model of sociological inquiry, where secularization was ranked with bureaucratization, rationalization, and urbanization as the key historical revolutions transforming medieval agrarian societies into modern industrial nations" (Norris and Inglehart 2011:3).

Secularization theory maintained its dominance until a new generation of mostly North American social theorists in the late twentieth century rejected its central premise. At the time, multiple lines of evidence such as the prominence of religion in geo-political affairs, the growth of evangelical Protestantism in the United States and a religious revival in Latin America suggested that religion was surviving and thriving in the modern world. Citing the apparent obsolescence of the secularization model, Peter Berger—formerly a champion of the secularization model—famously recanted his views, claiming, "The world today, with some

exceptions...is as furiously religious as it ever was, and in some places more so than ever. This means that a whole body of literature by historians and social scientists loosely labeled ‘secularization theory’ is essentially mistaken” (Berger 1999:2).

At least in North America, the religious economies model was largely the successor to secularization theory. Drawing on market analogies and using econometric indicators such as the Herfindahl-Hirschman index to measure religious pluralism, religious economies theorists conceptualized a religious marketplace with suppliers (formal clergy and religious “entrepreneurs”) who competed for followers like companies competing for business (see, for example, Stark and Finke 2000; Finke and Stark 1988, 2005; Iannaccone 1991,1994). Religion was expected to flourish in the modern world—even in advanced economies like the United States—when religious suppliers were allowed to compete freely in an open marketplace with no constraints on innovation or free competition. Alternatively, if religious production or competition were regulated by the state, or if one or more religions were given a legally enforced monopoly, the demand for religion (assumed to be constant and normally distributed across the population) would go unmet and religion would decline. Declared the “new paradigm,” in the social scientific study of religion (Warner 1993), the religious economies model attained such prominence in the academic community that Stark and Finke pronounced the death of the secularization model, claiming “After nearly three centuries of utterly failed prophecies and misrepresentations of both present and past, it seems time to carry the secularization doctrine to the graveyard of failed theories, and there to whisper ‘requiescat in pace.’” (Stark and Finke 2000:79; see also Stark 1999).

However, the religious economies model did not achieve total saturation in the social scientific study of religion, and recent empirical observations suggest that the death of the secularization model may have been declared prematurely. The patterns of religious decline observed in Europe, in which successive generations are less religious than their parents (Crockett and Voas 2006), can also be observed in the United States, where religious commitment has in fact been declining for decades (Voas and Chaves 2016). Bruce (2013) claims that Christians in the United States tend to over report rates of church attendance (pp. 158-9), and that Christian churches are becoming increasingly secular from within (p. 160). Furthermore, statistical modeling involving the religious pluralism index—upon which most quantitative analyses of the religious economies model depended—were shown to be plagued

with mathematical problems that led to spurious results and conclusions (for a detailed explanation, see Voas, Olson, and Crockett, 2002). Using longitudinal data and methods that account for the problems with prior analyses, Olson et al. (2020) found a negative relationship between religious diversity and change in religious adherence over time. Finally, some of the most compelling evidence for internationally consistent patterns of secularization came from the World Values Surveys, which yielded compelling evidence, for the first time, that more economically developed countries tend to have lower levels of religious belief and practice (Norris and Inglehart 2011:77). Norris and Inglehart's findings were part of a revitalization of secularization theory that joined longstanding theoretical expectations with new data and methods to demonstrate a link between macro-level societal conditions and micro-level religious commitment.

### **The existential insecurity hypothesis**

In 2004, Pippa Norris and Ronald Inglehart published *Sacred and Secular: Religion and Politics Worldwide*, in which they revisit and update secularization theory (see the second edition, Norris and Inglehart 2011). Their model begins with the basic assumptions that threats to human life are inherently anxiety-inducing; that the degree to which humans feel threatened varies widely among societies and between individuals; and that humans need and seek out security from existentially threatening circumstances. Most of the world's religious traditions are finely tuned to meet this precise set of existential needs, which partly explains why religion has captivated the attention and devotion of humans throughout most of recorded history. However, when those needs are met by some other guarantor of security—specifically a wealthy, post-industrial advanced economy with secure housing, healthcare, social security, and pensions—the demand for religion becomes in the population may decline.

Of course, the human need for security is complex. Threats to survival come in the form of disease, fear of violence, fear of losing the material necessities of everyday life, and the fear that one's ability to live comfortably is vulnerable to job loss, poverty, injury and old age. Many of the world's nation-states effectively meet those needs, but those nation-states tend to be rich and relatively egalitarian. In poorer or less egalitarian countries, much of the population faces daily threats to survival.

The human connection to the divine is equally complex. Religion comes in many forms around the world—some of which are inseparable from culture or the normal course of living one's life—and people turn to faith for all kinds of reasons including habit, socialization into a set of religious norms, or spiritual curiosity, among other motivations. However, across all of this variation, what most of the world's religions share is a powerful capacity to provide a divine sense of security. As Norris and Inglehart point out, “virtually all of the world's major transcendent religions provide reassurance that, even though the individual alone can't understand or predict what lies ahead, a higher power will ensure that things work out” (Norris and Inglehart 2011:246). This unique property of religion explains why people in threatening or precarious situations might choose to turn to religion as an antidote to existential insecurity. This notion is further supported by a longstanding psychological tradition demonstrating that religion helps people cope with anxiety from uncontrollable life events (Pargament 1997, 2002; Ano and Vasconcelles 2005). Anthropological evidence further confirms the anxiety-reducing effect of religion; for instance, Malinowski (1948) famously observed that Trobriand Island fisherman would engage in more extensive religious rituals when fishing on the open sea (where risks and uncertainties were greater) than when fishing in the safety of the inner lagoon. To sum up, of the many reasons people might be religious, existential security is an important one that may help explain the geographic distribution of religious commitment around the world.

Drawing on data from the World Values Surveys, Norris and Inglehart demonstrate a strong link between economic indicators and religious commitment. For instance, analyses of dozens of countries suggest that religious participation is twice as strong in richer nations than poorer nations (Norris and Inglehart 2011:58,108). Two-thirds of citizens in agrarian societies claimed religion was very important in their life versus only about one-in-five of survey-takers in wealthier post-industrial societies (p. 58).

Even in wealthier countries, variation in religious commitment can largely be explained by differences in income inequality. The United States and similarly wealthy align neatly on a continuum of low inequality-low religion on one end (e.g. Denmark, Japan, Luxembourg) and high inequality-high religion on the other (e.g. USA, Ireland). Despite Americans' relative affluence, Norris and Inglehart argue, American values such as individualism and distrust of “big government” have minimized the social safety net, leading to a precarious middle class that is one job loss, injury, or illness away from poverty. A country's overall wealth, in other words, is

necessary but not sufficient to ensure personal security sufficient to diminish the role of religion in people's lives. If national wealth is locked in an impermeable upper class and cannot be enjoyed by most in society, the citizenry remains vulnerable to the existential threats to survival and may seek security in religion.

Norris and Inglehart's work is not without controversy. Criticisms include challenges to the claim that all the world's major religions provide security; the idea that some religions disrupt security by initiating violence and geo-political crises through fanaticism; and critiques from religious economies theorists that western Europe is more religious than previously thought due to the emergence of new age spirituality and other forms of religious expression that are difficult to capture in quantitative surveys. Rebuttals to these critiques are beyond the scope of the current analysis. Norris and Inglehart address most of them in the epilogue to the 2011 edition of *Sacred and Secular* as well as in separately published responses to critics (Norris and Inglehart 2015).

### **The current analysis**

This dissertation is situated within a small but growing body of literature that furthers Norris and Inglehart's existential insecurity model by investigating its gaps and pressure testing its key assumptions. The following chapters focus on two basic assumptions in the existential insecurity model that remain untested. First, although cross-national research shows a strong link between economic conditions and religious commitment at the level of whole countries, it is unclear whether the existential insecurity model is valid at the subnational level. The potential for unmeasured variation between countries with different languages, political systems and histories increases the risk that the association between economic conditions and religion could be partly or wholly spurious. A more robust test would hold constant many aspects of national culture that are shared, at least to some extent, by everyone in the population.

Second, and perhaps most importantly, the central mechanism of the existential insecurity model—existential insecurity itself—remains an untested mediator that is assumed to link economic conditions to religious commitment. Most previously published quantitative models of existential insecurity demonstrate a link between some measure of country-level wellness (such as human development or economic inequality) and religious commitment (such as prayer

frequency) without confirming that some direct measure of insecurity mediates the statistical association.

This dissertation addresses both of the aforementioned concerns using a composite dataset that matches U.S. survey respondents to the geographic areas where they lived at the time of data collection, which enables a multilevel analysis of all three components of the existential insecurity model—economic conditions, insecurity, and religious commitment—all within one national context.

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## **CHAPTER 3: INEQUALITY, HUMAN DEVELOPMENT, AND RELIGIOSITY IN THE UNITED STATES**

### **Abstract**

The existential insecurity model of religious change predicts that religious commitment will be lower in geographic areas where economic circumstances are secure, such as when income inequality is low and human development is high. Although prior research on the topic is almost exclusively at the country level, this analysis presents the results of a within-country test demonstrating that 1) income inequality and human development vary widely within the United States, and 2) human development strongly covaries with five measures of religious commitment: daily prayer, weekly attendance, affiliation, salience, and Biblical literalism. Consistent with the existential insecurity model, multilevel analyses of U.S. General Social Survey (GSS) respondents (n=17,783) nested in counties and cities (n=255), demonstrate that religious commitment by any measure is lower in areas with high levels of human development. Inequality, measured with the Gini index, is associated with a decline in the predicted probability of religious affiliation but not the other four measures of religious commitment, except in the U.S. South where Gini predicts lower probability of prayer frequency. These results speak to longstanding theoretical debates about secularization in advanced economies as well as to broader concerns regarding regional divides within the United States.

### **Introduction**

A focal and perennial question in the social scientific study of religion is whether the strength of religious belief will increase or decline in modern, economically developed societies. Early sociologists such as Durkheim ([1893] 1964) assumed that social ties based on shared religious commitments would weaken over time, requiring other institutions to replace religion as a source of social solidarity. More recently, religion has been conceptualized as a “sacred canopy” (Berger, 1967) that is vulnerable to deterioration as people encounter new ideas and opinions in modern, pluralistic societies. However, religion has not died out in America. About half of all Americans claim that religion is very important in their lives, and two-thirds attend religious services at least monthly (Pew Research Center 2016). Despite a recent rise in Americans who

claim no religious affiliation, the majority of Americans still claim that they believe in God with no doubts (Hout, et al., 2013). The persistence of religion in America calls into question whether religion is incompatible with modernity.

New voices in the secularization debate have offered alternative explanations that foreground the high levels of religiosity in American as well as the comparatively low levels of religiosity in similarly developed economies in Northern and Western Europe. Among these new voices, one of the leading theoretical models was proposed by Norris and Inglehart (2011), who predict that the geographic distribution of religious commitment will covary with economic conditions. Their existential insecurity hypothesis begins with the basic human need for security and the state's opportunity to provide it. If the state reliably guarantees physical safety, healthcare, a high standard of living and a welfare safety net, religion may lose its public importance as the existential security deficit in the population is reduced. If, on the other hand, the state fails to provide security, or if citizens perceive that they are vulnerable to the threat of poverty or loss of basic needs such as healthcare, they will seek out surrogate sources of security, including and especially religion. If Norris and Inglehart are correct, faith keeps a stronger foothold in the U.S. than in Western Europe or Scandinavia because Americans have a weaker social safety net than Europeans. Norris and Inglehart test their model by demonstrating a cross-national relationship between economic indicators (inequality and human development) and religious commitment.

The patterns of results shown by Norris and Inglehart are strong and compelling; however, the cross-national scope of their research leaves open the possibility that a religious commitment and economic development are linked by some unknown or unmeasured confounding variable. The cultural, linguistic, and historical differences between countries are inseparably linked to economic development and religious behavior. What is needed is a within-country test of the existential insecurity model to determine whether—in a single society—religious commitment covaries with economic indicators.

The present study replicates Norris and Inglehart's landmark study using a composite data source comprising two levels of analysis: individuals and the geographic areas where they live. Drawing on individual responses to nationally representative surveys combined with aggregate data on geographic areas, this study seeks to determine whether, as Norris and

Inglehart predict, levels of religiosity are lower in areas of the U.S. where inequality is greater and human development is lower.

### **Literature review**

**Secularization theories.** The theoretical background for this study goes at least back to nineteenth-century social theorists such as Weber, Durkheim, Marx, Spencer and Comte who broadly believed that modernization would unseat religion as a dominant force in society. Each proposed their own mechanism of religious decline – for instance, Durkheim ([1893] 1964) lamented the “problem of order” caused by the deterioration of faith as a source of social solidarity while Marx believed the ideal society would obviate the need for a religious “opiate” (Marx and O’Malley 1977:131). In the foundational sociological canon, the anticipated future decline of religion was “*the* master model of sociological inquiry, where secularization was ranked with bureaucratization, rationalization, and urbanization as the key historical revolutions transforming medieval agrarian societies into modern industrial nations” (Norris and Inglehart 2011:3).

In the late twentieth century, secularization theory lost much of its dominance over American and European social scientific discourse with the emergence of the religious economies model. Religious economies theorists argued that religious diversity could *increase* rather than decrease religious commitment by providing market competition for religious “suppliers,” which would ostensibly drive religious competition and innovation, leading to growth in the religious marketplace as a whole (see, for instance, (Stark and Finke 2000; Iannaccone 1991; Finke and Stark 1988; 2005). The religious economies model was dubbed the “new paradigm” in the sociology of religion (Warner 1993), Peter Berger recanted his former allegiance to secularization theory (Berger 1999:2), and Stark and Finke relegated secularization theory to the “graveyard of failed theories” (Stark and Finke 2000:79).

Despite the popularity of the religious economies model, however, recent empirical observations have prompted a revival of secularization theory. The percent of religious “nones” in the United States continues to increase (see, for instance, Pew Research Center 2016). Data from the U.S. and Europe have shown that successive generations are less religious than their parents (Crockett and Voas 2006; Voas and Chaves 2016). Bruce (2013) claims that Christians in

the United States tend to over report rates of church attendance (pp. 158-9) and that many religious organizations have secularized from within, becoming increasingly difficult to distinguish from nonreligious organizations (Bruce 2013, 160). Furthermore, analyses involving the religious pluralism index—upon which the religious economies model is largely dependent—were shown to be plagued with mathematical problems that led to spurious results and conclusions (for a detailed explanation, see Voas, Olson, and Crockett, 2002). Finally, some of the most compelling evidence for internationally consistent patterns of secularization came from the World Values Surveys, which yielded compelling evidence that more economically developed countries tended to have lower levels of religious belief and practice (see, for instance, Norris and Inglehart 2011:77).

**The existential insecurity hypothesis.** In 2004, Norris and Inglehart published the first edition of *Sacred and Secular: Religion and Politics Worldwide*, which revisited secularization theory by applying newer methods and data to a longstanding theoretical expectation that an abundance and equitable distribution of economic goods can reduce the demand for religion in society. The existential insecurity model of religious commitment begins with the basic assumptions that humans need and actively seek security from inevitable threats to survival such as poverty, illness, death, conflict and the loss of loved ones. Religion, as an institution and an individual practice, is finely tuned to meet the inherent need for existential security. Most of the world's religious traditions promise some level of access to the divine, some degree of control over conditions that are otherwise hard to manage, and some degree of meaning that venerates suffering. The demand for religion could be relatively high in societies where citizens lack basic protection from existential threats; inversely, a well-resourced state with a strong commitment to equality and public welfare may reduce the demand for religion by disrupting one of its key functions: offering security in the face of existential threats to wellbeing. In this way, the existential insecurity model of religious commitment invokes a neo-Marxian understanding of religion as “opiate” to numb the pain of economic deprivation (Marx and O'Malley 1977, 131). Of course, existential security is not the only reason people are religious, but it is potentially an important reason that helps explain the geographic distribution of religious commitment around the world.

Contemporary cross-national observations are largely congruent with the existential insecurity model. For instance, religious participation is twice as strong in poorer nations than in richer nations (Norris and Inglehart 2011, 58, 108). Survey respondents also pray less frequently in countries with higher GDP and tend to report that religion is less important in their lives when they live in countries with greater wealth equality (Pew Research Center 2018). Furthermore, numerous studies have replicated Norris and Inglehart's analysis using different data, methods, or both. Gill and Lundsgaarde (2004) presented evidence of a strong negative relationship between higher welfare spending and lower church attendance, even after controlling for per capita GDP. Rees (2010) demonstrated that economic inequality was an important predictor of religiosity relative to other drivers of religious behavior. Storm (2017) presented multilevel analyses that linked increases in government welfare expenditures in Europe to decreases in religiosity over time. Some analyses have focused narrowly on individual countries such as Czechia and Slovakia (Willard and Cingl 2017) while others have pitted various theoretical models of religious growth and decline side-by-side, demonstrating the predictive validity of the existential insecurity model relative to others (Ruiter and van Tubergen 2000).

Other analyses have drawn on different measures of insecurity. Immerzeel and van Tubergen (2011) used data from the European Social Survey to analyze various sources of insecurity such as parental unemployment, insecure employment, war, loss of romantic partners, and unemployment, all of which predicted higher religiosity. Barber (2011) separately analyzed financial security (inequality, taxes related to welfare) and health security (e.g. pathogen load), demonstrating their varying links to religiosity.

The current analysis is situated within this body of literature. What remains to be seen is whether different geographic areas within the same country exhibit the same connections between economic security and religious commitment. The United States represents an ideal test case for two distinct reasons. First, levels of human development, economic inequality, and religious commitment all vary nearly as widely within the United States as they do around the world. Some U.S. counties and cities are healthy, safe, and egalitarian while others are impoverished or have gaps between the rich and poor that rival those in the world's most unequal countries. Similarly, some parts of the country are palpably religious while others resemble Northern or Western Europe in their levels of secularity. Secondly, the United States is flush with data from nationally representative surveys along with Census and other data on cities and

counties across the country. The present study seeks to combine these sources of data in a robust test of the existential insecurity hypothesis—one that is less vulnerable to the risks omitted variable biases inherent in cross-national analyses.

### **Data and methods.**

**Data sources.** This analysis used nationally representative survey data from the U.S. General Social Survey (GSS) matched to geographic-level data from the U.S. Census Bureau. The GSS data are from survey years 1984–2010. Although GSS data have been collected since 1972, the survey years prior to 1984 used a less-refined method of coding religious denominations and are less useful for an analysis of the religious environment.

The GSS employs a multistage sampling design in which predefined Primary Sampling Units (PSUs) are randomly selected. Survey respondents are then randomly selected from within the PSUs that were selected in step one. GSS PSUs are usually Metropolitan Statistical Areas (MSAs) except in less-populous area when a PSU may comprise a whole county. The final models for this analysis included 17,783 individuals clustered in 255 PSUs. The number of individuals in each PSU ranged from 19 to 360, with a mean of 69.9.

This analysis matched GSS survey responses to PSU-level data from the Census Bureau, and from individual-level GSS variables aggregated for each PSU. In cases where PSUs comprised multiple counties, the values are population-weighted means from the multiple counties included in each PSU.

**Focal independent variables:** The two focal predictors in this analysis are the American Human Development Index (HDI) and the Gini index of income inequality, both calculated at the level of U.S. counties. The former, HDI, is a composite measure that tries to express, in a single index score, the aggregate well-being of a population. HDI is a composite of life expectancy at birth, education (measured as school enrollment and educational degree attainment) and median personal earnings. HDI is the mean of all three normalized components. The resulting score can range from 0 to 10 where 0 represents the lowest possible level of human development and 10

represents the highest. Data for the HDI calculation are all available from Measure of America, a non-profit research initiative of the Social Science Research Council.<sup>1</sup>

The Gini index of income inequality is a summary measure of the dispersion of income across a population. The Gini index ranges from 0 to 1 where 0 represents a population in which everyone receives the exact same income and 1 represents a perfectly unequal dispersion (where one person receives all the income). In this analysis, the Gini index is rescaled from 0 to 100. For 1990, 2000, and 2010, I obtained Gini data at the level of U.S. counties from the Census Bureau.<sup>2</sup> For 1980, because I was unable to source official data releases, I calculated an approximation of the county-level Gini index by obtaining binned income data from the Census Bureau and calculating the Robust Midpoint Pareto Estimator (von Hippel, Scarpino, and Holas 2016).

**Dependent variables: religious commitment.** Individual-level religious commitment is measured using five variables from the GSS: prayer frequency, attendance at religious services, religious affiliation (claiming a religious affiliation versus claiming no religious affiliation), strength of affiliation, and belief that the Bible is the literal word of God. The dependent variables are dichotomized to more easily display the sizes of the effects by calculating the probability that a survey respondent is highly religiously committed. Ancillary analyses (not shown) suggest that the results are substantively similar when fitting models predicting the original variables with their native ordinal scales.

The native survey item measuring religious services attendance is worded, “How often do you attend religious services?” Respondents can respond on an ordinal scale between never and more than once per week. In the dichotomy for the current analysis, a score of 1 indicates attending religious services at least weekly. Similarly, the item for prayer frequency is

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<sup>1</sup> Data are publicly available for download from [measureofamerica.org](http://measureofamerica.org). Note that, when these data were downloaded, the data from Measure of America did not include the final HDI calculation. The data included two of the three indices used to calculate HDI—the income index and the education index—along with the data necessary to calculate the health index (life expectancy at birth). I had to take additional steps to manually calculate the health index and then generate the final HDI by taking the simple mean of all three normalized indices. I do not know why the publicly available data did not include the final HDI calculation. Also note that other calculations of HDI, such as the one available from the United Nations’ Human Development Report, combines the three sub-indices using the geometric mean rather than the arithmetic average. When calculating HDI for U.S. counties, I used the simple average because it was recommended by the documentation available from Measure of America.

<sup>2</sup> 2010 estimates are available from the American Community Survey data, table B19083. Estimates for 1990 and 2000 are available from <https://www.census.gov/data/tables/time-series/dec/historical-income-counties.html>.

dichotomized so that a score of 1 represents “Once a day” or “Several times a day” in response to the question, “About how often do you pray?”

Religious affiliation indicates self-identification with a particular religious group. Respondents are asked, “What is your religious preference? Is it Protestant, Catholic, Jewish, some other religion, or no religion?” Any response other than “no religion” is coded as religious affiliation for the purposes of this analysis. When respondents answer this question, they are subsequently asked, “Would you call yourself a strong \_\_\_\_\_ or a not very strong \_\_\_\_\_?” (with the blanks filled in as the previously indicated religious preference). Respondents who respond “Strong” are coded as having a high strength of affiliation in this analysis. Those who reported no religious affiliation were also coded as not having a strong affiliation.

Finally, respondents are asked, “Which of these statements comes closest to describing your feelings about the Bible? A) The Bible is the actual word of God and is to be taken literally, word for word; B) The Bible is the inspired word of God but not everything in it should be taken literally, word for word; C) The Bible is an ancient book of fables, legends, history, and moral precepts recorded by men.” Respondents who answer A are coded as having a literal interpretation of the Bible (hereafter “Biblical literalism”). Note that prior researchers have expressed doubt that a question about Biblical literalism is a good proxy for religious commitment. Ammerman (1982, 171) argued that such a question would only parse Christian fundamentalists from the larger body of Christians (see also Dixon, Jones, and Lowery 1992). However, I chose to include this item because the Bible is a relevant document for many in the United States. Second, the Biblical literalism item correlates well with other measures of religious commitment. Ideally, I would have a general measure about supernatural belief; however, the question about Biblical literalism is perhaps the closest variable available in the GSS that is asked over many years to a large number of respondents.

**Control variables.** At the PSU level, models include controls for basic demographic characteristics of the population which have long been shown to be associated with religious behavior (e.g., Finke 1989) such as percent male, population mobility, percent black, percent urban, and population growth. These variables are harvested from publicly available U.S. Census Bureau data, either from base tables or from Public Use Microdata (PUMs) data from sources such as the American Community Survey 5-year estimates (which are available for smaller

geographies such as those used in this analysis). The Census data are then matched to the decades and the counties in which the GSS data were collected, and then aggregated from the county level to the PSU level by taking population-weighted means across counties within PSUs. Models also include controls for the region in which the GSS respondents lived.

At the individual level, models include controls from the GSS including sex, age, race, education, income, political party and religious tradition. Income is assessed as family income in thousands of 1986 constant dollars. These controls are important because religious attitudes and behaviors are not evenly distributed across basic population demographics (see, for instance, Pew Research Center 2014). Furthermore, although family income is conflated with the focal predictor of human development, income is included among the controls in order to isolate the contextual-level effect of HDI from the compositional effect of individual-level income. In other words, the models are adjusted for individual-level income to determine whether the net effect of HDI on religious commitment is more than an artifact of high-income survey respondents being more or less religious than lower-income respondents.

The models also include controls for the religious tradition with which respondents self-identify. Religious traditions are categorized by matching the respondents' stated religious affiliation (religious group or denomination) against a coding scheme very similar to the widely-used RELTRAD method (Steensland et al. 2000; Woodberry et al. 2012). This set of controls is important because the outcome, religious commitment, is known to vary substantially by religious tradition. Controlling for whether a person is, for instance, white evangelical Protestant can help rule out the correlation between the economics of an area and religiosity that will naturally emerge based on the kind of religions that predominate in an area.

Finally, the models include controls that adjust for the decade in which the data were collected to account for changes in the focal variables over time. However, although we use data from 1980 to 2010, we are compelled to simply pool the data and estimate what are essentially cross-sectional models. We are unable to estimate longitudinal models because the individual-level data are repeated cross-sections (not panels). Furthermore, we cannot treat aggregate observations on PSUs as longitudinal because different PSUs are included in different GSS years. Finally, because we are making inferences at the PSU level, we cannot simply treat all the observations as representing repeated measures on the United States as a whole (as we might do in age-period-cohort modeling, for example). The nature of the data thus limits our ability to

examine change either in individuals or in geographic areas over time. But by controlling for the decade the individual was surveyed, we at least take into account the changes in levels of religious commitment that occurred over the 30 years covered in this study.

**Analytic strategy.** The analysis begins by demonstrating, at a descriptive level, that HDI and Gini predict individual-level religious commitment. The next stage of the analysis involves adding control variables and estimating mixed effects logistic regression models to demonstrate that the relationship between HDI (and, to a lesser extent, Gini) and religious commitment is robust to controls. The most complex model in this analysis takes the following form:

$$\text{Religious commitment} = \gamma_{00} + \gamma(W_{1j} \dots W_{nj}) + \gamma(X_{1ij} \dots X_{nij}) + \mu_{0j} + r_{ij}$$

Where  $\gamma$  represents a fixed effect slope estimate;  $\gamma_{00}$  represents the y-intercept;  $W_{nj}$  represents the n-th predictor at the primary sampling unit level (level 2);  $X_{ij}$  represents the n-th predictor at the individual level (level 1);  $\mu_{0j}$  represents the random intercept (the variation in prayer frequency between primary sampling units); and  $r_{ij}$  represents the residual (level 1) variance not explained by the predictors in the model.

## Results

Table 3-1 displays descriptive statistics for all the covariates in the analysis. Results suggest that, among the measures of religious commitment, daily prayer is the most prevalent. Slightly more than half (56%) of the sample reported praying daily; by comparison, slightly more than one-quarter (27%) attended religious services weekly, 32% regarded the Bible as the literal word of God, 87% identified with a religious tradition, and 36% reported that they were strongly affiliated.

Descriptive statistics from the 255 Primary Sampling Units suggest that the mean Human Development Index (HDI) score was 4.95 on a scale of 0 to 10. HDI varied widely among PSUs from a low of 2.88 to a high of 6.96. Regional analyses (not shown) suggest that human development tended to be higher in the Northeast (mean = 5.57) and lower in the South (mean = 4.51). The Gini coefficient of income inequality, however, showed less regional variation, ranging from about 41.47 in the Midwest to 42.77 in the Northeast.

Descriptives from the individual-level controls show that the sample was about 55% female and the mean age was about 46 years old. The average respondent had acquired about 13 years of education and reported a family income of about \$32,700 per year in 1986 constant dollars (equivalent to roughly \$76,300 in 2019 dollars<sup>3</sup>). About one-quarter of the sample reported affiliation with an evangelical denomination; 17% were mainline Protestant; 27% were Catholic; about 5% were Jewish, Latter-day Saints, or some other religious group; and about 13% reported no religious affiliation. The respondents were fairly evenly distributed across the survey decades, with about 30% surveyed in the 1980s, 33% in the 1990s, and 37% in the 2000s.

**Table 3-1: Descriptive Statistics**

	Mean	SD	Min	Max
<b>Dependent variables (n=17,783)</b>				
Prays daily	0.56	0.50	0.00	1.00
Attends weekly	0.27	0.44	0.00	1.00
Biblical literalist	0.32	0.47	0.00	1.00
Strongly affiliated	0.36	0.48	0.00	1.00
Religiously affiliated	0.87	0.34	0.00	1.00
<b>PSU-level focal predictors (n=255)</b>				
HDI (0-10)	4.94	0.85	2.88	6.96
<b>PSU-level controls</b>				
Gini (0-100)	42.86	3.10	34.78	51.90
% male	48.99	1.09	46.61	55.19
% living in same residence 5+ yrs	53.50	7.17	30.90	70.37
% black	11.97	10.41	0.06	57.55
% urban	76.94	23.08	0.00	99.86
Pop. growth	1.12	0.12	0.76	1.71
% voted GOP in last pres. election	0.29	0.09	0.10	0.64
Census region				
- Northeast	0.18	0.39	0.00	1.00

<sup>3</sup> See the inflation calculation available from the U.S. Bureau of Labor Statistics at [https://www.bls.gov/data/inflation\\_calculator.htm](https://www.bls.gov/data/inflation_calculator.htm).

**Table 3-1 continued**

- Midwest	0.26	0.44	0.00	1.00
- South	0.35	0.48	0.00	1.00
- West	0.21	0.41	0.00	1.00
<b>Individual-level controls (n=17,783)</b>				
Female	0.55	0.50	0.00	1.00
Age (years)	45.57	16.94	18.00	89.00
Nonwhite	0.13	0.34	0.00	1.00
Education (years)	13.26	3.04	0.00	20.00
Income (thousands)	32.73	30.60	0.26	146.15
Religious tradition				
- Evangelical	0.26	0.44	0.00	1.00
- Mainline	0.17	0.37	0.00	1.00
- Black Protestant	0.12	0.32	0.00	1.00
- Catholic	0.27	0.44	0.00	1.00
- Jewish	0.02	0.13	0.00	1.00
- Other religion	0.03	0.16	0.00	1.00
- LDS	0.01	0.08	0.00	1.00
- No religion	0.13	0.34	0.00	1.00
Political party				
- Democrat	0.36	0.48	0.00	1.00
- Independent	0.36	0.48	0.00	1.00
- Republican	0.27	0.45	0.00	1.00
- Other political party	0.01	0.12	0.00	1.00
Decade				
- 1980s	0.30	0.46	0.00	1.00
- 1990s	0.33	0.47	0.00	1.00
- 2000s	0.37	0.48	0.00	1.00

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*Sources: General Social Surveys, 1984-2010; U.S. Census Bureau; Measure of America.*

**Table 3-2: Multilevel Logistic Regressions (Odds Ratios) Predicting Five Religiosity Measures**

	M1: Daily prayer	M2: Weekly attendance	M3: Biblical literalism	M4: Strong affiliation	M5: Affiliation
<b>Focal predictors</b>					
HDI (z score)	0.90**	0.88***	0.83***	0.93*	0.75***
Gini (z score)	1.01	0.98	1.03	0.96	0.91*
<b>PSU-level predictors (N=255)</b>					
% male	0.99	0.96	1.00	1.00	1.03
% living in same residence 5+ yrs	1.00	1.01	1.01**	1.01	1.03***
% black	1.00	1.00	1.00	1.00	1.00
% urban	1.00	1.00	1.00	1.00	1.01***
Pop. growth	1.08	1.10	1.06	0.98	1.23
% voted GOP in last pres. election	1.43	1.48	1.08	1.78*	1.65
Census region (ref = Northeast)					
- Midwest	1.00	1.12	1.08	1.03	1.08
- South	1.29**	1.26*	1.49***	1.13	1.58**
- West	1.09	0.93	1.12	0.86	0.75*
Survey decade (Ref = 1980s)					
- 1990s	1.08	0.82**	0.92	0.96	0.60***
- 2000s	1.24**	0.81**	1.04	0.96	0.39***
<b>Individual-level controls (N=17,783)</b>					
Female	2.55***	1.55***	1.36***	1.52***	1.80***
Age (years)	1.03***	1.03***	1.00	1.02***	1.03***
Nonwhite	2.85***	1.84***	2.13***	2.15***	1.64***
Education (years)	1.00	1.08***	0.84***	1.05***	0.95***
Income (thousands)	1.00***	1.00	0.99***	1.00	1.00*
Political party (ref = Democrat)					

**Table 3-2 continued**

- Independent	1.04	1.01	0.86***	0.85***	0.71***
- Republican	1.36***	1.65***	1.27***	1.34***	2.33***
- Other pol. party	1.36*	0.97	0.96	0.95	0.46***
Religious tradition					
- Mainline	0.55***	0.42***	0.36***	0.49***	
- Black Protestant	0.62***	0.48***	0.71***	0.51***	
- Catholic	0.79***	0.93	0.33***	0.62***	
- Jewish	0.22***	0.16***	0.19***	0.68**	
- Other	0.93	1.22	0.37***	1.15	
- Latter-day Saints	2.07**	3.82***	0.97	1.74**	
- None	0.15***	0.04***	0.14***	1.00	

Notes: Table entries are exponentiated coefficients. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Sources: General Social Surveys, 1984-2010; U.S. Census Bureau; Measure of America.

Table 3-2 displays the results from mixed effects logistic regression models predicting each of the five measures of religious commitment. The coefficients are reported as odds ratios, and all models include the full suite of PSU-level and individual-level controls; the only exception is the model predicting affiliation, which does not include controls for religious affiliation (because the indicator for “no religion” would be perfectly correlated with the outcome). Results suggest that HDI negatively, significantly predicts all five measures of religious commitment net of controls. Put simply, respondents tend to report *lower* levels of religious commitment when human development is *higher*.

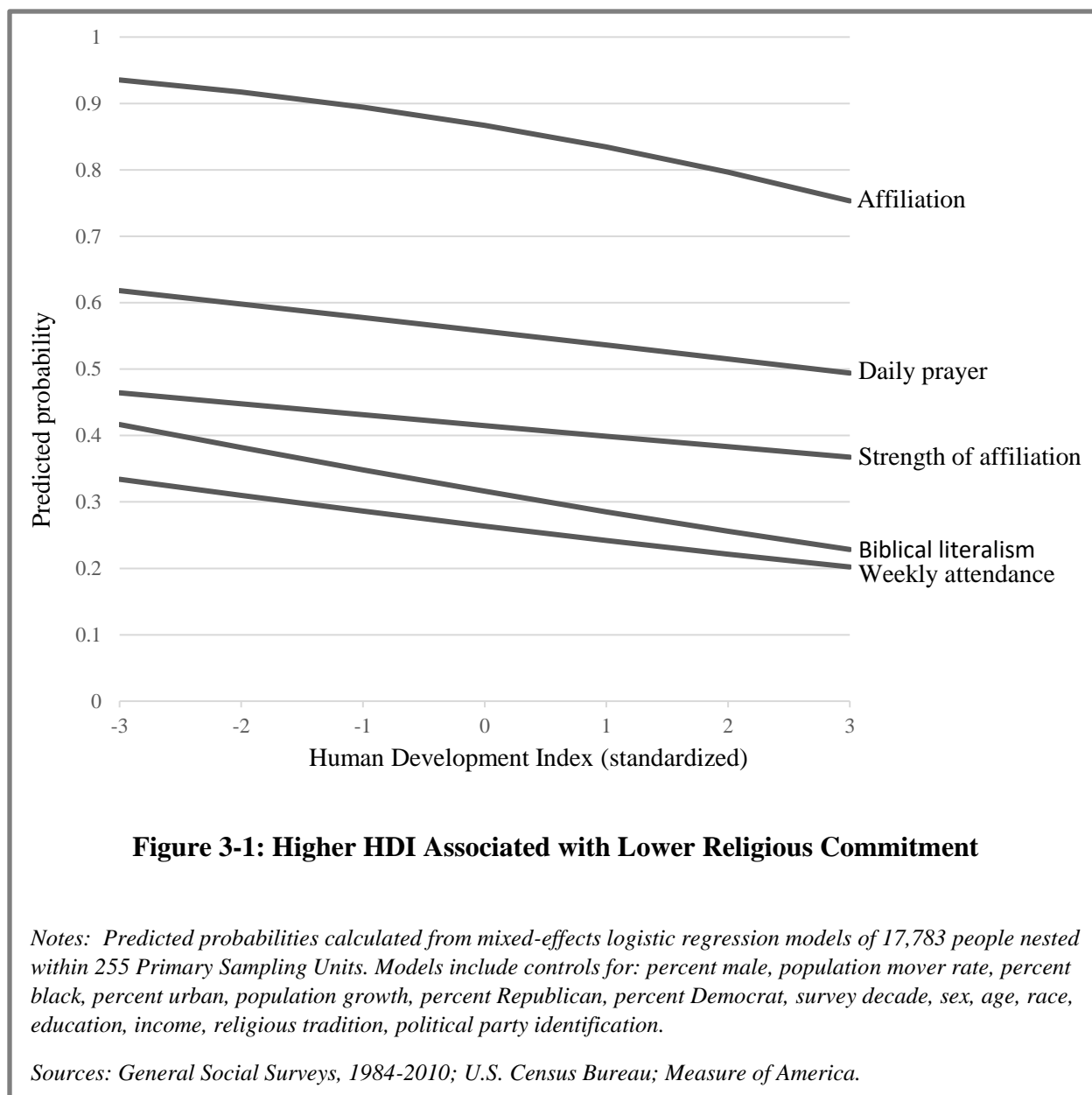
The predictor for HDI is standardized to enable easy interpretation of effect sizes. Results suggest that a one standard deviation increase in HDI is associated with an 10% decline in the predicted probability of praying daily; a 12% decline in the probability of weekly attendance; a 17% drop in the probability of believing the Bible is the literal word of God; a 7% decline in the probability of affiliating strongly with a religious group; and a 25% drop in the predicted probability of affiliating with any religious group.

The Gini index of income inequality is associated with affiliation but not the other measures of religious commitment. A one standard deviation increase in income Gini is associated with a 9% drop in the predicted probability of identifying with a religious group. However, Gini tends not to predict prayer, attendance, literalism or strength of affiliation. This

finding is notable because Gini is an important indicator in Norris and Inglehart's analysis. Further investigation reveals that the pattern of results related to Gini has a regional component, a finding is addressed more fully later in the chapter.

Some control variables are important to mention. First, living in the South tends to predict religious commitment above and beyond the other covariates. People who live in the South are 29% more likely to pray daily, 26% more likely to attend weekly, 49% more likely to believe the Bible is the literal word of God, and 58% more likely to affiliate with any religion than people in the Northeast (the reference category). But region is not the strongest predictor of religious commitment. Race and gender stand out as the covariates with the strongest effects. For instance, women are more than 2.5 times more likely to pray daily than men, net of controls, and those who identify as nonwhite are about 2.9 times more likely to pray daily than whites. In terms of membership in religious groups, members of most denominations report lower levels of religious commitment than evangelicals (the reference category), except for Latter-day Saints who are, for instance, twice as likely evangelicals to pray daily and nearly four times as likely as evangelicals to attend religious services weekly. And although political party identification is colinear with many other controls such as denomination, party still seems to have an independent effect. Self-identified Republicans are about 36% more likely to pray daily and 65% more likely to attend weekly than Democrats. Self-identified political independents are 29% less likely than Democrats to be religiously affiliated. In PSUs that voted GOP in the most recent presidential election, respondents are on average about 78% more likely to report strong affiliation than in PSUs that did not vote for the Republican presidential candidate. Note that, because the coefficient for HDI remains statistically significant despite the inclusion of political controls, the effects of HDI are not wholly reducible to a red state-blue state political effect.

Figure 3-1 demonstrates graphically how the probability of reporting high religious commitment tends to decline at high levels of human development.



The comparatively weak effect of Gini on religious commitment warrants further investigation, given that one of the key arguments from Norris and Inglehart is that economic precarity (of which Gini is a proxy) leads to existential insecurity. Theoretically, one would expect to find the high levels of inequality would be associated with high levels of religious commitment. And in fact, at a bivariate level, the Gini index *does* predict higher levels of religious commitment. For instance, Table 3-1, M1 demonstrates that a 1-SD increase in Gini is

associated with about a 9% increase in the probability of praying daily. However, this effect is partially mediated by region, a finding explored in greater detail in Table 3-3 and Figure 3-2.

**Table 3-3: Multilevel Logistic Regressions (Odds Ratios) Predicting Daily Prayer**

	M1: Bivariate	M2: Controls for region	M3: Full controls	M4: Region interactions	M5: South only
Gini (z score)	1.09***	1.05	1.01	0.95	1.17**
HDI (z score)			0.90**	0.92**	0.99
<b>Interaction of Gini and region</b>					
Gini X Midwest				1.02	
Gini X South				1.18**	
Gini X West				0.99	
<b>Census region (ref = Northeast)</b>					
- Midwest		1.09	1.00	1.01	
- South		1.54***	1.29**	1.29**	1.00
- West		0.91	1.09	1.11	
<b>PSU-level predictors (n=255)</b>					
% male			0.99	0.99	0.98
% living in same residence 5+ yrs			1.00	1.00	1.00
% black			1.00	1.00	1.00
% urban			1.00	1.00	1.00*
Pop. growth			1.08	1.07	0.65
% voted GOP in last pres. election			1.43	1.29	1.87
<b>Survey decade (Ref = 1980s)</b>					
- 1990s			1.08	1.08	1.13
- 2000s			1.24**	1.24***	1.31*
<b>Individual-level controls (n=17,783)</b>					
Female			2.55***	2.55***	2.58***
Age (years)			1.03***	1.03***	1.03***
Nonwhite			2.85***	2.84***	2.66***

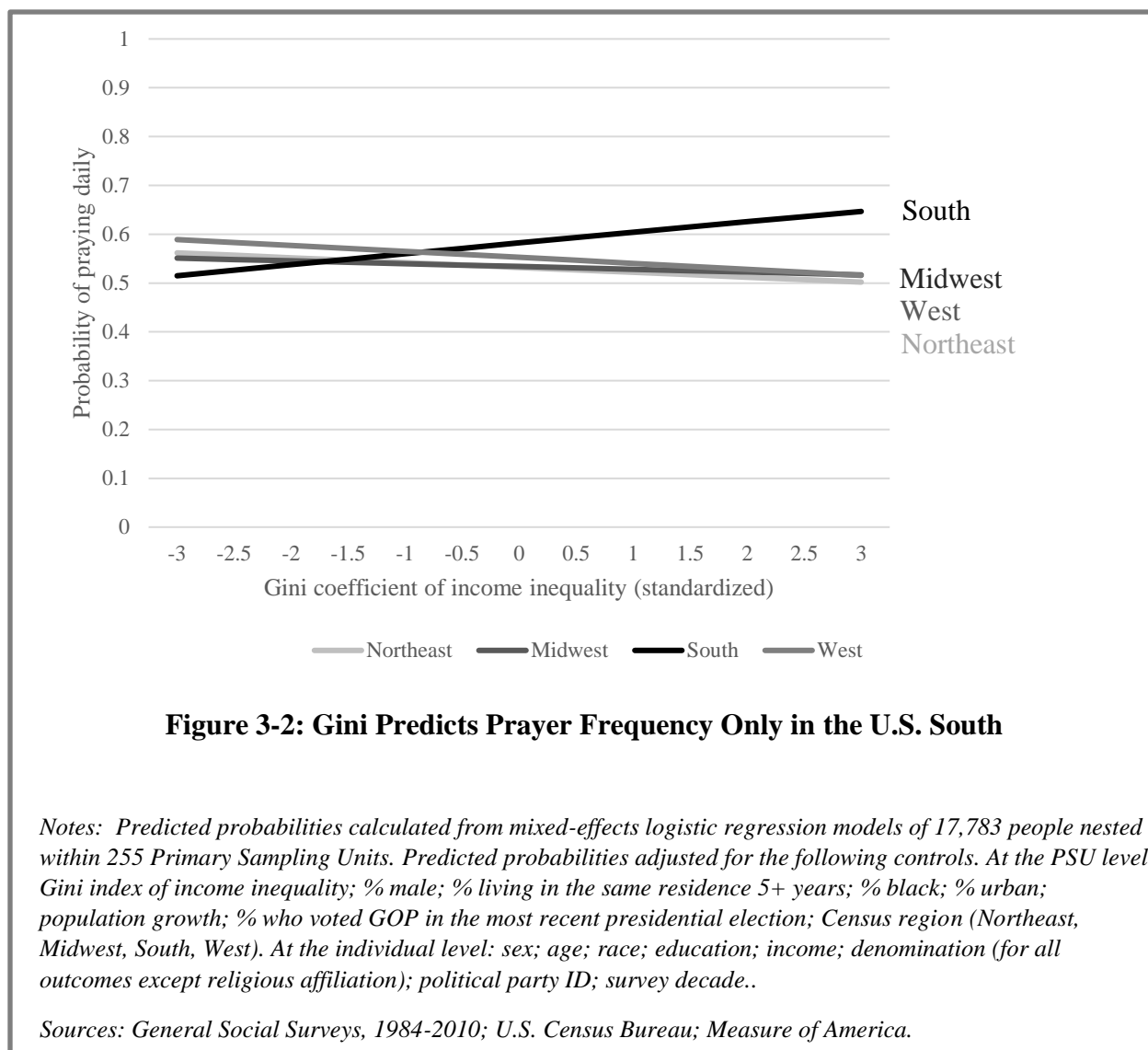
**Table 3-3 continued**

Education (years)	1.00	1.00	0.99
Income (thousands)	1.00***	1.00***	1.00
Political party			
- Independent	1.04	1.04	0.96
- Republican	1.36***	1.36***	1.27**
- Other pol. party	1.36*	1.36*	1.27
Religious tradition			
- Mainline	0.55***	0.55***	0.58***
- Black Protestant	0.62***	0.62***	0.66***
- Catholic	0.79***	0.78***	0.76**
- Jewish	0.22***	0.22***	0.27***
- Other	0.93	0.92	0.80
- Latter-day Saints	2.07**	2.05**	1.19
- None	0.15***	0.15***	0.15***

Notes: Table entries are exponentiated coefficients. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Sources: General Social Surveys, 1984-2010; U.S. Census Bureau; Measure of America.

In a series of iterative analyses (not shown here) testing for intervening variables, region stood out as a key predictor that reduced the effect of Gini beyond any reasonable threshold of statistical significance. And specifically, the indicator for *living in the South* seems to be the most prominent intervening variable. Table 3-3, M4 shows a series of interactions between Gini and the indicators for region (note the significant interaction between Gini and South). And Table 3-3, M5 shows the results of a full model with all the relevant controls but with the sample limited only to respondents in the South. The results suggest that Gini *does* predict prayer frequency, but *only for respondents who live in the south*. Figure 3-2—a visualization of the interaction in Table 3-3, M3—displays this effect graphically. The discussion and conclusion section goes into more detail about the possible mechanisms underlying this effect



### Discussion and conclusion

Analyses from nationally representative survey data matched to data on subnational geographies within the U.S. suggest that survey respondents are less religiously committed in parts of the country where human development is higher. Respondents tend to pray less frequently, attend religious services less often, interpret the Bible less literally, affiliate with a religious group less often, and report weaker religious affiliation in geographic areas where the population tends to live longer, acquire more education and enjoy a higher standard of living. The magnitude of this effects is pragmatically meaningful; for instance, an increase of one

standard deviation in human development is associated with a 10% drop in the predicted probability of praying daily and a 25% drop in the predicted probability of identifying with a religious group. And these effects hold net of a host of controls including denominational preference, political party identification and basic demographics at both the individual and geographic level.

The pattern of results observed in this analysis is consistent with Norris and Inglehart's (2004; 2011) existential insecurity model, in which economic indicators are thought to represent the presence or absence of existential threats to survival and security. Low standards of living and high levels of income inequality are conditions under which people in the population feel vulnerable to inevitable risks such as poverty, illness and the inability to care for one's self in old age. Religion in the broadest sense is finely tuned to provide security in the face of threatening circumstances. And when no other sources of security are present (e.g., a social safety net guaranteed by the state), religion tends to fill the vacuum.

The results demonstrated here are also consistent with Norris and Inglehart's empirical findings, which suggest that variation in religious commitment between whole countries is statistically linked to levels of human development and income inequality in those countries. What is largely missing from the research is a sub-national analysis using smaller areas within countries to demonstrate whether—when the national context is held constant—the key relationships still emerge. This research seeks to fill that gap by presenting a multilevel analysis in which people are nested not in whole nation-states but in the counties and cities where they lived at the time of data collection.

However, this analysis is not perfectly consistent with Norris and Inglehart's cross-national work. Most notably, the Gini index of income inequality is only associated with religious affiliation in the U.S. sample. Only under special circumstances—such as when the sample is limited to the U.S. South—is Gini associated with other measures of religious commitment such as prayer frequency. What could explain this effect? One potentially mundane explanation is that the relevant variables vary more in the South than in other regions. However, ancillary analyses reveal that neither Gini nor prayer frequency varies more in the South than elsewhere—in fact, the standard deviation for Gini is much higher in the Northeast (3.41) than in the South (2.95). Rather, it is possible that, due to the generally higher levels of religiosity in the South, religion may be a more immediately available solution to anxiety than elsewhere in the

country. In places where religious belief and practice are so ubiquitous that they are difficult to avoid, people who experience economically-driven anxiety may turn to religion more easily than people in parts of the country where religion is less pervasive. However, this study cannot draw firm conclusions on this subject and more research is needed to fully investigate the regional pattern of results.

This study also cannot conclusively prove that human development *causes* people in the population to become less religious. The data are pooled cross-sectional samples; a longitudinal analysis of the same people over time would more conclusively establish the temporal ordering of effects. In fact, because religious norms and economic conditions probably become institutionalized together over long periods of time, the causal ordering may be difficult to unpick even with longitudinal data. A reverse-causal model is also plausible: if some types of religious organizations are more pro-social, then the numerical dominance of those religious groups could influence the economic conditions in a geographic area through mechanisms such as higher charitable giving, volunteerism and changes in local government. In other words, the numerical dominance of religious groups can change the subcultural norms in entire geographic areas, a pattern that prior demonstrates empirically (see, for instance, Marshall and Olson 2018). However, the current analysis does negate the possibility that the interrelationships between whole institutions such as religion and the economy are complicated and reciprocal; these results also do not dictate that an individual will definitely and inevitably become more religious if they are exposed to undesirable economic circumstances. Religion, like so many aspects of the social world, is complex, and no model can perfectly predict behavior no matter how sophisticated. Instead, what seems apparent—and what is observed in both cross-national and now sub-national analyses—is that at least *part* of the reason why some people are more religious than others is statistically linked to the places where they live, including and especially the economic conditions under which people live their daily lives.

The remaining and perhaps more pressing open question is whether the assumed link between economic wellbeing and existential insecurity is empirically valid. Do people really feel more threatened when they live in poor economic conditions, and if so, do they seek greater religious commitment as a source of security? These questions, largely unexplored in the still-nascent body of literature on the existential insecurity model, are explored in depth in Chapters 4 and 5.

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## CHAPTER 4: TESTING THE ROLE OF PSYCHOLOGICAL WELLBEING IN THE EXISTENTIAL INSECURITY MODEL OF RELIGIOUS CHANGE

### Introduction

The existential insecurity model of religiosity (Norris and Inglehart 2004; 2011) predicts that religious commitment is at least partly determined by the extent to which people feel vulnerable to threats to their survival and wellbeing. More than just individual phenomena, these existential threats are experienced to varying degrees by most or all people who live in the same geographic area, and nation-states play a role in mitigating or exacerbating existential insecurity. The constant human need for security and our tendency to rely on religion as a source of existential security—especially when the state fails to mitigate threats to survival and wellbeing—are offered as key explanations for why religion thrives in some areas today and, inversely, why religion is declining in nations with advanced economies and robust social safety nets such as in Northern and Western Europe.

In quantitative research on the topic, the current state of the art is to model religious commitment as a direct function of economic indicators such as income inequality and human development, both of which emerge as strong and reliable predictors of religious variation around the world (see, for instance, Norris and Inglehart 2011; 2015; Immerzeel and van Tubergen 2011; Barber 2011). And, as Chapter 3 demonstrates, human development is also a robust predictor of religious commitment at the sub-national level, at least within the United States. Across countries and within the U.S., people who live in geographic areas with high levels of human development tend to engage in religious activities and hold religious beliefs at lower rates than people who live in geographic areas with lower levels of human development.

In these models, economic wellness is thought to decrease the demand for religion in the population by driving down existential insecurity (see Figure 1-1). Universal threats to wellbeing such as war, crime, natural disasters, illness, old age and poverty may be offset by a high standard of living, reliable access to the basic means of survival, the equitable distribution of wealth and a social safety net guaranteed by the state. Under these conditions, the state may supplant religion as the foundation of security, reducing the demand for religion across the population. The existential insecurity model is, therefore, a *demand-side* model of religious change, as opposed to *supply-side* explanations that model religiosity as a function of variation in

the supply of religious products (see, for instance, Iannaccone 1991; Finke and Stark 2005; 1988; Stark and Finke 2000).

However, what has remained largely untested are the links in the causal chain between economic indicators at the geographic level and religious commitment at the individual level. Are economic indicators such as the Human Development Index associated with direct measures of existential insecurity? For example, does higher HDI levels in a geographic area lead to lower levels of variables measuring individual-level experiences of insecurity? And if so, do the direct measures of individual-level insecurity mediate the relationship between geographic-level human development and individual-level religious commitment? Existential insecurity models of religiosity *assume* that people living in areas with low HDI individually feel less secure and that individual-level psychological processes cause them to turn to religion to reduce their insecurity. But research has yet to explore whether individual-level insecurity is actually affected by geographic-level economic indicators and HDI and whether individual-level insecurity leads individuals to become more religious. These questions represent serious gaps in the existential insecurity model. As Stolz (2020, 284–85) points out,

... the high correlation between insecurity and religiosity at the country level is strongly confounded with other variables that also correlate with religiosity, such as gross domestic product (GDP) per capita, urbanity, literacy rate, educational attainment, and access to mass media (Pew, 2018: 33ff.). This point, already noted by Norris and Inglehart (2012[2004]: 62), means that the data permit various other interpretations besides the insecurity explanation – for example, secularization could be caused by increased education and critical thinking, and not by reduced insecurity...

Another possibility that has not yet been given the attention that it deserves is that it is not so much individual existential security that influences the religiosity of individuals; rather, it is perceived existential insecurity in society as a whole, mediated by parental efforts at religious socialization. Thus, it might be that better living conditions do not have a *direct* effect on the religiosity of better-off adults; instead, these better living conditions simply make religious socialization a little more difficult for all parents of a society over a long period of time.

Stolz's comments highlight the very real possibility that the relationship between economic indicators and religious commitment may be spurious or, at best, only indirectly causal. In response to this call for greater scrutiny of the existential insecurity model, the current

analysis draws on nationally representative survey from the United States matched to aggregate data on U.S. counties and cities to directly test the links in the causal chain. First, this chapter examines the relevant literature on religion, the economy and insecurity. Next, I mine the U.S. General Social Surveys for variables that measure existential insecurity more directly than most previous analyses. Finally, I test whether existential insecurity is associated with both economic indicators and religiosity, and whether insecurity mediates the relationship between human development and religious commitment in the United States.

### **Literature review**

Because this study is a mediation analysis, three relationships are under investigation: the overall link between economic conditions and religious commitment (the predictor and the outcome, Path C in Figure 1-1); the relationship between economic conditions and mental distress (the predictor and the mediator, Path B in Figure 1-1), and the relationship between mental wellbeing or distress and religious commitment (the mediator and the outcome, Path A in Figure 1-1). The direct relationship between economic conditions and religious commitment (Path C) is the subject of Chapter 3. The other links in the causal chain are the subject of this chapter. The following sections review prior research and theoretical expectations for those two topics.

**Economic conditions and mental wellbeing.** Do people actually feel threats to survival when they live in undesirable economic conditions? Prior research suggests that they might. First, incidence of major depressive episode is comparatively low among people who are socially advantaged (Gilman 2002). And there is also population effect of economic conditions across countries on an individual's risk of depression. Cifuentes et al. (2008) found in a study of over 250,000 respondents in 65 countries surveyed by the World Health Organization that major depressive episodes (MDEs) were linked to income inequality and human development. MDEs were the most common among low developed countries. Among high HDI countries, higher income inequality was also associated with MDE prevalence. Some of the effects were complicated and interdependent; however, the general observation is that economic conditions are statistically linked to mental health. And although MDEs may not perfectly proxy for the existential insecurity described by Norris and Inglehart, analyses like those conducted by

Cifuentes et al. show that economic conditions have a strong and robust link to the mental wellness experienced by people who live in the same geographic area.

**Religion's relationship to mental wellbeing.** The literature on religion's relationship to mental and physical wellbeing is extensive and beyond the scope of this chapter (for a review, see Koenig, King, and Carson 2012). However, a relevant and consistent theme in this literature is that the causal links between religiosity and wellbeing are complex and often reciprocal. On one hand, because people sometimes turn to religion in times of distress, the coefficient between quantitative measures of religion and health or wellbeing can be *negative*: as circumstances grow worse, people upregulate their religious involvement or belief. On the other hand, religion offers potential wellbeing benefits through multiple avenues including security in times of distress (as Norris and Inglehart would predict). Because religion may boost wellbeing, one might expect to find a *positive* coefficient between religion and mental or physical health. Put simply, there are plausible explanations for why religious commitment can be associated either positively or negatively with wellbeing.

Key to untangling the complex interrelationships between religion and wellbeing is the understanding that the social benefits of involvement in a religious community can yield wellbeing benefits that are at least to somewhat independent of the ideological content of any specific religious tradition. In a quantitative analysis of survey respondents in the United States and more than two dozen other countries, Pew Research Center (2018) found that people who regularly participate in a religious community—rather than just identifying with a religious group—tend to report greater levels of happiness than religious disaffiliates or those who are inactively religious. Other research in the United States finds that religious service attendance is associated with longevity (Idler et al. 2017). In a study of respondents who were sampled in 2006 and recontacted in 2007, Lim and Putnam found that participation in religious services was strongly associated with happiness among those who attended religious services, but only if they reported having many friends in their congregations and if they reported that religion was very important to them (Lim and Putnam 2010). Importantly, the Lim and Putnam study highlights that religious social interaction is not, in isolation, the sole predictor of happiness; rather, the interplay of a strong ideological commitment to a faith system along with mutual support from co-believers seems to drive the wellbeing benefits of religion.

Prior research sets the stage for mediation analysis by mental distress to both religious commitment and economic wellbeing. The following sections investigate whether the relationships are borne out in nationally representative survey data.

## Analysis

**Data sources.** This analysis uses nationally representative survey data from the U.S. General Social Survey (GSS) matched to geographic-level public use data from sources such as the U.S. Census Bureau and the U.S. Centers for Disease Control and Prevention (CDC). The GSS data are from survey years 1984–2010. Although GSS data have been collected since 1972, the survey years prior to 1984 used a less-refined method of coding religious denominations and are less useful for the purposes of this analysis.

The GSS employs a multistage sampling design in which predefined Primary Sampling Units (PSUs) are randomly selected. Survey respondents are then randomly selected from within the PSUs that were selected in step one. GSS PSUs are usually multicounty Metropolitan Statistical Areas (MSAs) except in less-populous area when PSU may comprise an entire county. This analysis matched GSS survey responses to PSU-level data from the Census Bureau, and from individual-level GSS variables aggregated for each PSU. In cases where PSUs comprised multiple counties, the values are population-weighted means from multiple counties.

**Dependent variables: religious commitment.** Individual-level religious commitment is measured using five variables from the GSS: prayer frequency, attendance at religious services, religious affiliation (claiming a religious affiliation versus claiming no religious affiliation), strength of affiliation, and belief that the Bible is the literal word of God. The dependent variables are dichotomized to more easily display the sizes of the effects by calculating the probability that a survey respondent is highly religiously committed. Ancillary analyses (not shown) suggest that the results are substantively similar when fitting models predicting the original variables with their native ordinal scales.

The native survey item measuring religious services attendance is worded, “How often do you attend religious services?” Respondents can respond on an ordinal scale between never and more than once per week. In the dichotomy for the current analysis, a score of 1 indicates attending religious services at least weekly. Similarly, the item for prayer frequency is

dichotomized so that a score of 1 represents “Once a day” or “Several times a day” in response to the question, “About how often do you pray?”

Religious affiliation indicates self-identification with a particular religious group. Respondents are asked, “What is your religious preference? Is it Protestant, Catholic, Jewish, some other religion, or no religion?” Any response other than “no religion” is coded as religious affiliation for the purposes of this analysis. When respondents answer this question, they are subsequently asked, “Would you call yourself a strong \_\_\_\_\_ or a not very strong \_\_\_\_\_?” (with the blanks filled in as the previously indicated religious preference). Respondents who respond “Strong” are coded as having a high strength of affiliation in this analysis. Those who reported no religious affiliation were also coded as not having a strong affiliation.

Finally, respondents are asked, “Which of these statements comes closest to describing your feelings about the Bible? A) The Bible is the actual word of God and is to be taken literally, word for word; B) The Bible is the inspired word of God but not everything in it should be taken literally, word for word; C) The Bible is an ancient book of fables, legends, history, and moral precepts recorded by men.” Respondents who answer A are coded as having a literal interpretation of the Bible (hereafter “Biblical literalism”). Note that prior researchers have expressed doubt that a question about Biblical literalism is a good proxy for religious commitment. Ammerman (1982, 171) argued that such a question would only parse Christian fundamentalists from the larger body of Christians (see also Dixon, Jones, and Lowery 1992). However, I chose to include this item because the Bible is a relevant document for many in the United States. Second, the Biblical literalism item correlates well with other measures of religious commitment. Ideally, I would have a general measure about supernatural belief; however, the question about Biblical literalism is perhaps the closest variable available in the GSS that is asked over many years to a large number of respondents.

**Focal predictor: American Human Development Index.** The American Human Development Index (hereafter human development or HDI) is a composite measure that tries to express, in a single index score, the aggregate well-being of a population. HDI comprises life expectancy at birth, education (measured as school enrollment and educational degree attainment) and median personal earnings. HDI is the mean of all four normalized components. The resulting score can range from 0 to 10 where 0 represents the lowest possible level of human development and 10

represents the highest. Data for the HDI calculation are all available from Measure of America, a non-profit research initiative of the Social Science Research Council.<sup>4</sup>

**Mediating variables: individual-level measures of psychological distress.** The General Social Survey includes many items that measure, directly or indirectly, some aspect of psychological wellness or distress. The major drawback to these items is that most are measured in only a few survey years, which limits the full sample of 17,783 respondents from Chapter 3 to only a few thousand or, in some cases, fewer than 1,000 observations. Results therefore should be treated with caution and with this limitation in mind. The sample size for each of the mental distress variables is included in Table 4-1. The following items are the measures of mental distress used in this analysis.

First, the General Social Survey includes a measure in which the respondent indicates how many days, out of the past 30, in which they have experienced mental distress. The question is worded, “Now thinking about your mental health, which includes stress, depression, and problems with emotions, for how many days during the past 30 days was your mental health not good?” Respondents can answer between 0 and 30.

Similarly, in one survey year (1996) respondents were asked how many days they felt sad out of the past seven days. The question was part of a list of emotions that respondents may feel. The question was worded, “Now I’m going to read a list of different feelings that people sometimes have. After each one, I would like you to tell me on how many days you have felt this way during the past 7 days. On how many days in the past 7 days have you...felt sad?” Respondents could answer between 0 and 7.

In another survey year (2004), respondents were asked, “For each of the following, please indicate how well the description applies to you by circling one number: A person who often feels sad and blue. Is this...” to which respondents could answer, “A very good description,” “A

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<sup>4</sup> Data are publicly available for download from [measureofamerica.org](http://measureofamerica.org). Note that, when these data were downloaded, the data from Measure of America did not include the final HDI calculation. The data included two of the three indices used to calculate HDI – the income index and the education index – along with the data necessary to calculate the health index (life expectancy at birth). I had to take additional steps to manually calculate the health index and then generate the final HDI by taking the simple mean of all three normalized indices. I do not know why the publicly available data did not include the final HDI calculation. Also note that other calculations of HDI, such as the one available from the United Nations’ Human Development Report, combines the three sub-indices using the geometric mean rather than the arithmetic average. When calculating HDI for U.S. counties, I used the simple average because it was recommended by the documentation available from Measure of America.

good description,” “A fair description,” “Not a very good description,” or “Not a good description at all,” in addition to the usual don’t know / refused / not applicable options.

In six different survey years, respondents were asked how often they found work to be stressful, to which they could respond on a five-point scale between “Never” and “Always.”

In two survey years, respondents were asked how often they had talked to someone how was down or depressed. This question is an ideal inclusion because it gets to the feelings of others rather than just the respondents’ self-report of their own emotions. The question was worded, “During the past 12 months, how often have you done any of the following things for people you know personally, such as relatives, friends, neighbors or other acquaintances?” One of the items in the list was, “Spent time talking with someone who was a bit down or depressed” to which respondents could respond on a six-point scale between “Not at all in the past year” and “More than once a week.”

The standard happiness item from the GSS is also included in this analysis. This question, which appeared in every GSS survey year, was worded, “Taken all together, how would you say things are these days--would you say that you are very happy, pretty happy, or not too happy?”

Finally, this analysis includes three items from the “anomia” battery in the GSS, which appeared on the ballot in 15 GSS survey years (for a detailed analysis of the anomia scale, see Doddler and Astle 1980). These items were binary agree/disagree statements. The three “anomia” items included in this analysis were based on responses to the following three statements: “The lot of the average man is getting worse,” “It is not fair to bring a child into the world” and “Officials are not interested in the average man.”

**Control variables.** At the PSU level, models include controls for basic demographic characteristics of the population which have long been shown to be associated with religious behavior (e.g., Finke 1989) such as percent male, population mobility, percent black, percent urban, and population growth. These variables are harvested from publicly available U.S. Census Bureau data, either from base tables or from Public Use Microdata (PUMs) data from sources such as the American Community Survey 5-year estimates (which are available for smaller geographies such as those used in this analysis). The Census data are then matched to the decades and the counties in which the GSS data were collected, and then aggregated from the

county level to the PSU level by taking population-weighted means across counties within PSUs. Models also include controls for the region in which the GSS respondents lived.

At the individual level, models include controls from the GSS including sex, age, race, education, income, political party and religious tradition. Income is assessed as family income in thousands of 1986 constant dollars. These controls are important because religious attitudes and behaviors are not evenly distributed across basic population demographics (see, for instance, Pew Research Center 2014). Furthermore, although family income is conflated with the focal predictor of human development, income is included among the controls in order to isolate the contextual-level effect of HDI from the compositional effect of individual-level income. In other words, the models are adjusted for individual-level income to determine whether the net effect of HDI on religious commitment is more than an artifact of high-income survey respondents being more or less religious than lower-income respondents.

The models also include controls for the religious tradition with which respondents self-identify. Religious traditions are categorized by matching the respondents' stated religious affiliation (religious group or denomination) against a coding scheme very similar to the widely-used RELTRAD method (Steensland et al. 2000; Woodberry et al. 2012). This set of controls is important because the outcome, religious commitment, is known to vary substantially by religious tradition. Controlling for whether a person is, for instance, white evangelical Protestant can help rule out the correlation between the economics of an area and religiosity that will naturally emerge based on the kind of religions that predominate in an area.

Finally, the models include controls that adjust for the decade in which the data were collected to account for changes in the focal variables over time. However, although we use data from 1980 to 2010, we are compelled to simply pool the data and estimate what are essentially cross-sectional models. We are unable to estimate longitudinal models because the individual-level data are repeated cross-sections (not panels). Furthermore, we cannot treat aggregate observations on PSUs as longitudinal because different PSUs are included in different GSS years. Finally, because we are making inferences at the PSU level, we cannot simply treat all the observations as representing repeated measures on the United States as a whole (as we might do in age-period-cohort modeling, for example). The nature of the data thus limits our ability to examine change either in individuals or in geographic areas over time. But by controlling for the

decade the individual was surveyed, we at least take into account the changes in levels of religious commitment that occurred over the 30 years covered in this study.

**Analytic strategy.** Chapter 3 demonstrated a statistical link between HDI and five measures of religious commitment. The analysis in the current chapter will build on Chapter 3 by introducing measures of psychological distress as mediating variables in multilevel models like those in Chapter 3. I begin by analyzing individual-level measures of psychological distress from the GSS, investigating which measures are related to both religious commitment and human development. Finally, I look for signs of mediation by comparing the effects of HDI on religious commitment before and after introducing the intervening variables into the model.

## Results

**Descriptive statistics.** Table 4 displays descriptive statistics for all the covariates in the analysis. This set of variables is identical to those used in Chapter 3 but with the addition of items measuring mental distress. Among those items, results suggest that survey respondents reported, on average, experiencing about 3.65 days of mental distress in the last 30. This figure varied widely, with a standard deviation of nearly seven days. Among the respondents who were asked whether they had felt sad in the past seven days, respondents reported about 1.64 days of feeling sad on average. More than half of respondents agreed that the “lot of average man” was getting worse, but only about 38% reported that it was unfair to bring a child into the world. About two-thirds reported that officials were not interested in the average man (note that many of these survey items are strongly gendered, using “man” for instance of “person,” probably in part because these survey items were fielded in the 1980s when linguistic norms still referred to men as the default gender). All descriptive statistics are shown in Table 4-1.

**Table 4-1: Descriptive Statistics**

	Mean	SD	Min	Max	n
<b>Dependent variables</b>					
Prays daily	0.56	0.50	0.00	1.00	17,783
Attends weekly	0.27	0.44	0.00	1.00	17,783
Biblical literalist	0.32	0.47	0.00	1.00	17,783
Strongly affiliated	0.36	0.48	0.00	1.00	17,783
Religiously affiliated	0.87	0.34	0.00	1.00	17,783
<b>Measures of psychological distress</b>					
Days of mental distress in last 30	3.65	6.95	0.00	30.00	3,811
Days felt sad in last 7	1.64	1.91	0.00	7.00	744
Are you a person who feels sad and blue	1.93	0.87	1.00	5.00	927
How often do you find work stressful	3.15	1.01	1.00	5.00	3,545
General unhappiness	1.82	0.63	1.00	3.00	17,713
Agree: Lot of the avg. man getting worse	0.58	0.49	0.00	1.00	4,305
Agree: Not fair to bring a child into world	0.38	0.49	0.00	1.00	4,347
Agree: Officials not interested in average man	0.68	0.47	0.00	1.00	4,323
Talked to depressed person in past year	3.90	1.37	1.00	6.00	1,999
<b>PSU-level focal predictors</b>					
HDI (0-10)	4.94	0.85	2.88	6.96	17,783
<b>PSU-level controls</b>					
Gini (0-100)	42.86	3.10	34.78	51.90	255
% male	48.99	1.09	46.61	55.19	255
% living in same residence 5+ yrs	53.50	7.17	30.90	70.37	255
% black	11.97	10.41	0.06	57.55	255
% urban	76.94	23.08	0.00	99.86	255
Pop. growth	1.12	0.12	0.76	1.71	255
% voted GOP in last pres. election	0.29	0.09	0.10	0.64	255
Census region					
- Northeast	0.18	0.39	0.00	1.00	255
- Midwest	0.26	0.44	0.00	1.00	255
- South	0.35	0.48	0.00	1.00	255
- West	0.21	0.41	0.00	1.00	255

**Table 4-1 continued****Individual-level controls**

Female	0.55	0.50	0.00	1.00	17,783
Age (years)	45.57	16.94	18.00	89.00	17,783
Nonwhite	0.13	0.34	0.00	1.00	17,783
Education (years)	13.26	3.04	0.00	20.00	17,783
Income (thousands)	32.73	30.60	0.26	146.15	17,783
Religious tradition					
- Evangelical	0.26	0.44	0.00	1.00	17,783
- Mainline	0.17	0.37	0.00	1.00	17,783
- Black Protestant	0.12	0.32	0.00	1.00	17,783
- Catholic	0.27	0.44	0.00	1.00	17,783
- Jewish	0.02	0.13	0.00	1.00	17,783
- Other religion	0.03	0.16	0.00	1.00	17,783
- LDS	0.01	0.08	0.00	1.00	17,783
- No religion	0.13	0.34	0.00	1.00	17,783
Political party					
- Democrat	0.36	0.48	0.00	1.00	17,783
- Independent	0.36	0.48	0.00	1.00	17,783
- Republican	0.27	0.45	0.00	1.00	17,783
- Other political party	0.01	0.12	0.00	1.00	17,783
Decade					
- 1980s	0.30	0.46	0.00	1.00	17,783
- 1990s	0.33	0.47	0.00	1.00	17,783
- 2000s	0.37	0.48	0.00	1.00	17,783

Table 4-2 displays the nine measures of existential insecurity from the GSS and how those measures are related both to HDI and to religious commitment. The most notable and consistent finding across Table 4-2 is that the zero-order correlations are very weak and not always in a consistent direction. Many of the cells are not populated because the correlations are not statistically significant at  $p < 0.05$ . The weak and largely null results in the table call into question whether the mediation analysis should proceed. There are, however, two measures of psychological distress that seem at least moderately related to religious commitment and HDI. Biblical literalism is associated with two of the “anomia” items: one measuring whether

respondents believe lot of the average man is getting worse and another related to whether it is fair to bring a child into the world. Additionally, general happiness (reversed in Table 4-2 so that the measure represents “unhappiness”) is associated with regular attendance at religious services ( $r = -0.13$ ). This analysis will proceed only with these three sets of relationships, excluding all the other potential mediating relationships in Table 4-2.

**Table 4-2: Zero-Order Correlations Between Study Variables**

	Prayer	Attendance	Biblical literalism	Strength of affiliation	Affiliation	HDI
Days of poor mental health in last 30 days	n.s.	-0.08	n.s.	-0.06	-0.06	-0.05
Days felt sad in last 7 days	n.s.	-0.08	n.s.	n.s.	n.s.	n.s.
Person who feels sad and blue	n.s.	-0.12	n.s.	-0.06	n.s.	n.s.
Find work stressful	n.s.	n.s.	-0.05	n.s.	n.s.	n.s.
General unhappiness	n.s.	-0.13	-0.03	-0.10	-0.06	0.02
Lot of the average man getting worse	0.05	n.s.	0.11	n.s.	n.s.	-0.08
Not fair to bring child into the world	0.06	-0.05	0.17	n.s.	n.s.	-0.14
Officials not interested in average man	0.05	-0.06	0.09	n.s.	n.s.	-0.07
Talked to depressed person in past year	0.16	0.07	n.s.	0.06	n.s.	n.s.

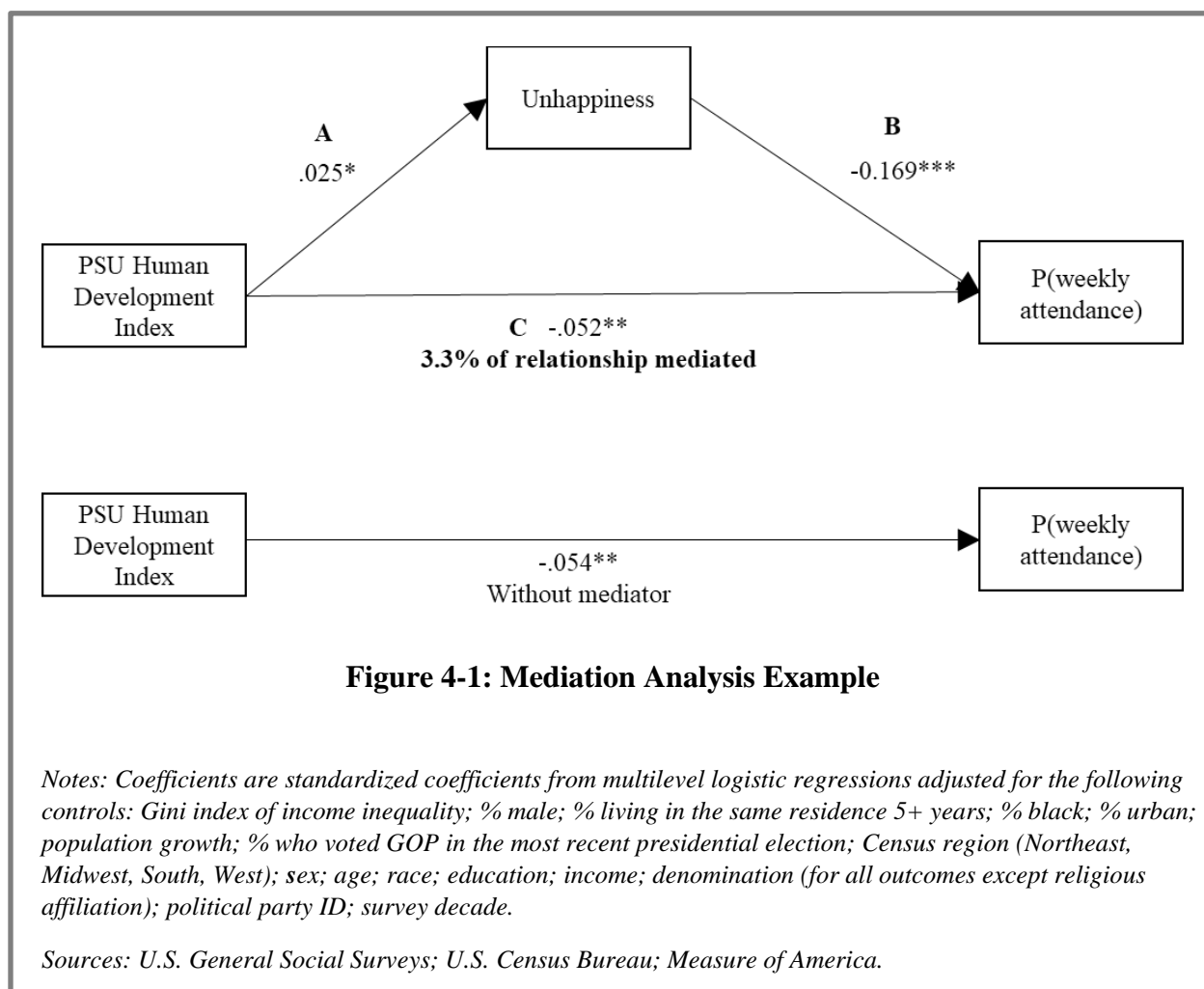
*Note: correlation coefficients that are not statistically significant at  $p < 0.05$  are omitted.*

*Source: U.S. General Social Surveys*

Figure 4-1 sets up a mediation analysis for one of the sets of relationships identified earlier: general unhappiness will serve as the mediating variable for the relationship between HDI and weekly attendance. The visualization first shows the three paths under investigation in the mediation analysis: the link between the predictor and the mediator (Path A), the mediator and the outcome (Path B), and the direct path between the predictor and the outcome (Path C).

The path at the bottom of the image shows the direct path without the mediating variable. The coefficient for the path between HDI and attendance is -0.054 before the mediator is included in the model, and -0.052 after the mediator is introduced. The strength of the direct relationship between HDI and attendance was reduced by 3.3% ( $100 * ((.0538 - .0520) / .0538)$ ) when adding the mediator to the model, yielding very weak evidence for mediation.

All coefficients shown in Figure 4-1 are standardized regression coefficients. Because the results are from multilevel logistic regressions, the standardized coefficients are calculated as  $by * (sd_x / \text{latent\_sd}_y)$  where  $\text{latent\_sd}_y$  is the square root of the sum of the variances of the linear prediction plus the error parameter ( $\pi^2$ )/3.<sup>5</sup>



<sup>5</sup> For more information on calculating standardized coefficients from logits, see the methods outlined in the Sage Foundations series, <http://dx.doi.org/10.4135/9781526421036>.

Finally, Table 4-3 summarizes the three mediation models under investigation in this analysis. Results suggest that the two relationships not shown in Figure 4-1 yield results very similar to the illustration. The variables measuring agreement with statements related to “the lot of average man is getting worse” and “it is not fair to bring a child into the world” mediate only 2.5% and 4.7%, respectively, of the relationship between HDI and Biblical literalism.

In summary, out of the 45 potential opportunities for mediation identified in Table 4-2, only three are appropriate for mediation because they associated, albeit weakly or moderately, to the focal predictor and outcomes identified in Chapter 3. Of the three potential mediation analyses, none yield strong evidence for mediation.

**Table 4-3: Mediation Analysis Summary**

<b>Outcome</b>	<b>Mediator</b>	<b>Percent of relationship mediated</b>
Attendance	General unhappiness	3.3%
Biblical literalism	Lot of the average man getting worse	2.5%
Biblical literalism	Not fair to bring child into the world	4.7%

## **Discussion and Conclusion**

The existential insecurity model of religious commitment predicts that economic wellness (e.g., a high standard of living and an equitable distribution of resources) will suppress demand for religion by providing a sense of security to large numbers of people in the population who will no longer seek religion as a source of control over threatening circumstances. This model implies a casual path by which economic conditions influence feelings of psychological security that in turn influence religious commitment. The current analysis was an initial attempt to investigate the intervening links in the causal chain that, until now, remained largely untested. However, results from the General Social Survey, which contains several direct and indirect measures of psychological distress, yield very little evidence that the individual-level measures of psychological distress mediate the relationships between economic indicators such as HDI and measures of religious commitment. This analysis identified 45 potential mediating linkages of

which only three qualify as even giving weak evidence for mediation. The vast majority of the potential mediating linkages do not match the assumptions of the existential insecurity hypothesis. And where the results are consistent, they are weak.

If individual-level measures of existential security do not seem like very promising explanations of the mechanisms behind the overall negative relationship between HDI and religiosity, what then explains the overall relationship? Chapter 5 suggests that the effects of HDI work more through local subcultural values and subcultural interpretations of economic conditions than through the processes of individual psychological processes. People appear to base their own assessment of the insecurity they face by drawing more on the attitudes of other people living in the same area than on their assessment of their own immediate circumstances. Moreover, these collective attitudes about insecurity determine individual religiosity more than the individual's own particular circumstances.

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## **CHAPTER 5: GEOGRAPHIES OF INSECURITY: HOW AGGREGATE EMOTIONAL WELLBEING DRIVES THE RELATIONSHIP BETWEEN HUMAN DEVELOPMENT AND RELIGIOSITY**

### **Introduction**

Since the 2004 publication of Norris and Inglehart's *Sacred and Secular: Religion and Politics Worldwide* and its second edition in 2011, a growing body of literature in the social scientific study of religion has explored the interrelationships between economic wellness, existential insecurity, and religiosity. Religious commitment, in Norris and Inglehart's theoretical model, varies as a function of economic and living conditions. Precarious economic circumstances such as low human development and high inequality are presumed to drive feelings of existential threat, which in turn promotes religiosity as many in the population are driven to faith as a source of security.

Though its intellectual roots stretch back to Marx and beyond, the existential insecurity model features prominently in contemporary debates around secularization theory. If economic wellness is conceptually prior to religiosity, then reductions in inequality and improvements in the standard of living could secularize whole populations by removing the existential anxiety that otherwise fuels religious commitment. And the model has empirical merit. Cross-national variation in religious commitment aligns more or less neatly along a few axes of economic variation; for instance, people pray more frequently on average in poorer countries and in countries with high levels of income inequality (see, for instance, Pew Research Center 2016). Norris and Inglehart's own analysis of World Values Surveys data demonstrates that religious participation is twice as strong in poor nations than in richer nations (Norris and Inglehart 2011:58,108).

However, the component of the existential insecurity model with the least empirical attention is existential insecurity itself. Nearly all published analyses model religiosity as a direct function of economic conditions, leaving existential insecurity as an untested and assumed explanatory mechanism. The current analysis attempts to directly measure existential insecurity and evaluate its role as an intermediary between the level of human development in a geographic area and the level of religious commitment reported by survey respondents who live in that area.

One of the major challenges in this analysis is how to measure existential insecurity. This analysis compares two sources of data—the emotional sentiment reported at the individual level by respondents themselves and the aggregate level of emotional distress in whole geographic areas. Surprisingly, the collective distress voiced by others living in the same community seems to influence an individual’s religiosity more than the distress directly experienced by an individual. Drawing on psychological research that explores how emotional sentiments can be treated as spatially bounded properties of entire groups of people in the same geographic space, this analysis demonstrates how aggregate emotional sentiment is linked to both economic conditions and religious commitment.

Finally, although most evaluations of the existential insecurity model compare whole nations, this analysis uses subnational data from within the United States, comparing populations in counties and cities to one another. The results suggest that the link between economic wellness and religious commitment is strong and robust to controls within the United States. That is, these processes are not simply due to unmeasured cultural differences between countries in cross-national studies. These are general processes that also operate at the scale of counties and cities, not just whole countries.

### **Literature review**

**Predictors of religious commitment.** Research on the antecedents of religious behavior is strongly linked to debates over whether religion will decline or persist in modern, economically developed societies. On one side of the debate are religious economies theorists who argue that religious diversity often thought to be associated with modern life drives religious commitment. Just as capitalist economies seek to drive growth through competition, religious pluralism is thought to boost religious participation by driving competition and innovation among clergy who compete for religious consumers (see, for instance, (Stark and Finke 2000; Iannaccone 1991; Finke and Stark 1988; 2005; Warner 1993). As a result, religion can be expected to thrive in modern liberal democracies where diversity and religious freedom create ideal conditions for religious competition.

On the other side of the debate are secularization theorists who broadly expect that religion will, to varying degrees and for various reasons, decline either at the level of individuals or in the extent to which religion wields its influence over other institutions. And this process of

secularization may take many forms that co-occur. For instance, the intergenerational transmission of religious commitment may wane over time such that successive generations are less devout than their parents (Crockett and Voas 2006); the institution of religion may lose its authority over other institutions such as law, medicine, and government (Chaves 1994; Casanova 2006); corporate and participatory forms of religiosity may give way to private religious pursuits such as individual spirituality (Heelas and Woodhead 2004); and religious organizations may secularize from within, becoming increasingly difficult to distinguish from nonreligious organizations (Bruce 2013, 160).

Another form of secularization at the macro level involves economic development and its role in supplanting religion as the guarantor of personal security. Although the theoretical connections between religion and economic wellness date back at least to Marx (Marx and O'Malley 1977), recent empirical findings have reinvigorated the debate. Most notably, Norris and Inglehart (2004; 2011) spearheaded a contemporary investigation of whether—and why—the religiosity of whole populations is statistically linked to economic conditions. Their work, presented here as the existential insecurity model of religious commitment, provides the backdrop to the subsequent analysis.

**The existential insecurity model.** Norris and Inglehart's (2004; 2011) *Sacred and Secular* revisited a longstanding theoretical prediction that an abundance and equitable distribution of economic goods may undermine one of religion's core functions: providing security through the inevitable uncertainties and anxieties that accompany human life. Economic wellness provides a measure of control that can compete with religion as a source of emotional security.

Norris and Inglehart's theoretical model of religious commitment begins with the basic assumptions that many aspects of human life are inherently anxiety-inducing and that humans need and actively seek security. Universal human fears such as economic ruin, disease, death and the loss of loved ones are threatening circumstances that are difficult to predict and control. And most of the world's religious traditions are finely tuned to meet the existential need for security, which partly explains why religion has captivated the attention and devotion of humans throughout most of recorded history. However, when this need is met by some other guarantor of security—specifically a wealthy, post-industrial advanced economy with secure housing, healthcare, social security and retirement plans—the demand for religion may decline among

some members of the population. Norris and Inglehart's model therefore echoes Marx's treatment of religion as an "opiate" (Marx and O'Malley 1977, 131), an analgesic to numb the pain of class oppression. When the root cause of the disease is eliminated, the symptoms no longer require treatment.

Of course, religious behavior at an individual level is complex, and economically driven emotional needs are only one of many inputs that are presumed to drive religiosity. But on average and in aggregate, the existential insecurity model would predict that at least some measures of religiosity will be less prevalent among populations of people who are more economically (and, by extension, existentially) secure. This theoretical model is not unlike Malinowski's (1948) anthropological observations of Trobriand Islanders, who would engage in more extensive religious rituals when fishing on the open sea (where risks and uncertainties were greater) than when fishing in the safety of the inner lagoon.

Contemporary cross-national observations are largely congruent with the existential insecurity model. For instance, religious participation is twice as strong in poorer nations than in richer nations (Norris and Inglehart 2011, 58, 108). Survey respondents also pray less frequently in countries with higher GDP and tend to report that religion is less important in their lives when they live in countries with greater wealth equality (Pew Research Center 2018). Furthermore, numerous studies have replicated Norris and Inglehart's analysis using different data, methods, or both. Gill and Lundsgaarde (2004), although arguing from the perspective of the religious economies model, presented evidence of a strong negative relationship between higher welfare spending and lower church attendance, even after controlling for per capita GDP.<sup>6</sup> Rees (2010) demonstrated that economic inequality was an important predictor of religiosity relative to other drivers of religious behavior. Storm (2017) presented multilevel analyses that linked increases in government welfare expenditures in Europe to decreases in religiosity over time. Ruiter and van Tubergen (2009) demonstrated in a multilevel analysis of survey respondents in 60 countries that personal and societal markers of economic precarity are strong predictors of religious attendance. Immerzeel and van Tubergen (2011) show that many different kinds of economic threats—including job insecurity, war, and low levels of public welfare spending—predict religiosity.

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<sup>6</sup> Gill and Lundsgaarde view social welfare, at least in a historical sense, as largely the purview of the church. Their argument broadly sees state welfare spending as interfering with a key function of the church, driving down religious participation.

What is missing from this growing body of research, however, is a direct test of existential insecurity as the explanatory link between economic precarity and religious commitment. Prior research posits religious commitment as a direct function of economic circumstances, leaving existential insecurity as an untested mediator. That is, these past studies assume that economic precarity arouses emotional feelings of existential insecurity within individuals which, in turn, causes people to seek out religion as a means of abating these feelings. However, none of these studies actually measure whether people are feeling insecure and whether feelings of insecurity lead to religious participation and belief. This gap may be due to the theoretically and methodologically fraught task of directly measuring the emotional characteristics of whole populations of people.

Also missing is an investigation of whether this linkage occurs primarily at the level of individual psychological insecurity or through cultural norms, beliefs and commonly held definitions of conditions that are shared by whole communities of people facing similar situations. Do individuals decide to become religious when they face a certain level of insecurity, or do community norms shift in ways that increase or devalue the importance of religious involvement in light of shared perceptions concerning the uncertainty of life? If the mechanism occurs primarily at the individual level, poor individuals living in secure economic conditions should be more religious. If the mechanism occurs primarily at the level of local subcultures, then even wealthy people living in an economically insecure community should be more religious.

**Existential insecurity: individual or subcultural?** Nationally representative surveys (including the survey data used in this analysis) routinely include questions about respondents' emotional well-being, and a robust psychological research tradition links such survey questions to many outcomes of interest, including religiosity (see, for instance, Pargament 1997; 2002; Ano and Vasconcelles 2005). Furthermore, individual-level measures of emotional distress can serve as mediators in models of economic precarity and religious commitment. The present analysis includes this kind of model, in which individual-level measures of emotional distress serve as mediators between the economic conditions in a geographic area on the right-hand side of the equation and religiosity, the dependent variable, on the left. On its face, such an analysis seems like a straightforward test of the existential insecurity model of religious commitment.

However, the results from Chapter 4 suggest that individual-level measures of emotional distress do not mediate the relationship between levels of human development in U.S. counties and cities and the religious commitment of survey respondents who live in those areas. Is the existential insecurity model insufficient to explain religious commitment in the United States, or is there another test that could demonstrate a different mechanism through which insecurity might operate? This chapter investigates an alternative idea: that existential insecurity can be a property of entire groups of people who face similar economic conditions, and that the aggregate emotional sentiments of whole geographic areas can work through group norms and local subcultural values to influence the behavior and attitudes of individuals, including and especially their religious beliefs and behaviors.

Notably, the idea of aggregate emotional characteristics is not new; in fact, a well-established psychological literature explores how emotional characteristics can be properties of geographically bounded subcultures. For instance, many of the “Big five” personality traits such as neuroticism and openness have been shown to cluster spatially across countries and across sub-national geographies within countries (e.g., McCrae and Terracciano 2005).

Rentfrow and Jokela (2016) argue that there are three primary mechanisms through which psychological characteristics transcend individuals and become properties of whole subcultures: selective migration, social influence and ecological influence. The first, *selective migration*, describes the process through which people move to areas where the local population reinforces their psychological needs. For instance, people who score highly on extroversion, intelligence and openness tend to move into diverse urban settings, and people who score highly on agreeableness tend to stay longer in one area without moving than people who score lower on agreeableness (Jokela 2009).

Whereas selective migration describes how people with similar characteristics cluster together, the other two processes—social and ecological influence—describe how mutually constructed norms and aspects of the physical environment can give rise to subcultures that, in turn, exert a causal influence on individual behavior. In other words, aggregate psychological characteristics represent more than the mathematical average of the individuals in an area who possess similar traits. If subcultural values were simply the average of individual values, then the socially “real” causal action would still take place at the individual level where internal psychological states give rise to individual behaviors. However, social and ecological influence

describe processes by which subcultural norms take on a life of their own, influencing the attitudes and behaviors of individuals who would otherwise think or act differently.

The second process described by Rentfrow and Jokela, *ecological influence* describes how aspects of the natural or built environment give rise to attitudes and behaviors. For instance, living in close proximity to a green space has been shown to reduce stress and boost psychological well-being (White et al. 2013). Geographic areas with a high pathogen load give rise to psychological characteristics such as caution and risk aversion (Schaller and Murray 2008). People who live in countries with a pleasant climate and abundant natural resources tend to exhibit individualistic behaviors and attitudes whereas people who live in countries with harsh climates and limited natural resources tend to exhibit communal and collectivist behaviors and attitudes (Van de Vliert 2013). In each example, the physical environment gives rise to subcultural values that shape the way people in a geographic area think, feel and behave.

The third and final mechanism, *social influence*, refers to the process by which people adjust their own behavior to match group expectations; and by behaving in accordance with subcultural norms, people internalize those norms so that their own thoughts and values reflect the dominant subcultural values (Hofstede 2001). Even religious subcultural values have been shown to operate in this way. The religious groups that are numerically dominant in a geographic area can influence the behaviors of everyone in the area—even those outside the religious group—on a variety of dimensions including trust, tolerance, divorce, and even community-level outcomes such as mortality and crime rates (Olson 2019). By example, one could imagine a person whose individual personality traits and actual life experience might make them feel quite secure, but they live in a community suffering from high economic pain and uncertainty. If the cultural norms of the community support religious participation and belief as a normatively valued way of dealing with economic upheaval, such norms (and their associated sanctions and rewards) might stimulate increased religious participation and belief even in people whose personal characteristics and circumstances do not cause them to feel anxiety about their situation.

To sum up, prior research suggests that aggregate emotional sentiments should be regarded as more than the accumulation of micro-level psychological states; rather, the spatial and geographic distribution of emotional sentiments reflects subcultural values that are exogenous to—and may act causally upon—the thoughts, feelings and behaviors of individuals. For this reason, the present analysis measures existential insecurity at both the individual and

aggregate levels to directly compare their explanatory power in models of economic wellness and religious commitment.

**The current analysis.** The following analysis pursues two key goals: to directly measure existential insecurity at multiple levels of analysis and to test whether any measure of insecurity mediates the relationship between economic wellness and religiosity, as predicted by the existential insecurity model of religious commitment. Note that prior research has largely avoided such explorations. However, the relative importance of contextual versus individual level mechanisms is key to understanding the real nature of secularization and religious change.

### **Data and Methods**

**Data sources.** This analysis uses nationally representative survey data from the U.S. General Social Survey (GSS) matched to geographic-level public use data from sources such as the U.S. Census Bureau and the U.S. Centers for Disease Control and Prevention (CDC). The GSS data are from survey years 1984–2010. Although GSS data have been collected since 1972, the survey years prior to 1984 used a less-refined method of coding religious denominations and are less useful for the purposes of this analysis.

The GSS employs a multistage sampling design in which predefined Primary Sampling Units (PSUs) are randomly selected. Survey respondents are then randomly selected from within the PSUs that were selected in step one. GSS PSUs are usually multicounty Metropolitan Statistical Areas (MSAs) except in less-populous area when PSU may comprise an entire county. The final models for this analysis included 17,783 individuals clustered in 255 PSUs. The number of individuals in each PSU ranged from 19 to 360, with a mean of 69.9.

This analysis matched GSS survey responses to PSU-level data from the Census Bureau, and from individual-level GSS variables aggregated for each PSU. In cases where PSUs comprised multiple counties, the values are population-weighted means from multiple counties.

**Focal independent variables:** The two focal predictors in this analysis are the American Human Development Index (hereafter human development or HDI) and an index of emotional distress, both calculated at the level of U.S. counties. The former, HDI, is a composite measure that tries

to express, in a single index score, the aggregate well-being of a population. HDI is a composite life expectancy at birth, education (measured as school enrollment and educational degree attainment) and median personal earnings. HDI is the mean of all four normalized components. The resulting score can range from 0 to 10 where 0 represents the lowest possible level of human development and 10 represents the highest. Data for the HDI calculation are all available from Measure of America, a non-profit research initiative of the Social Science Research Council.

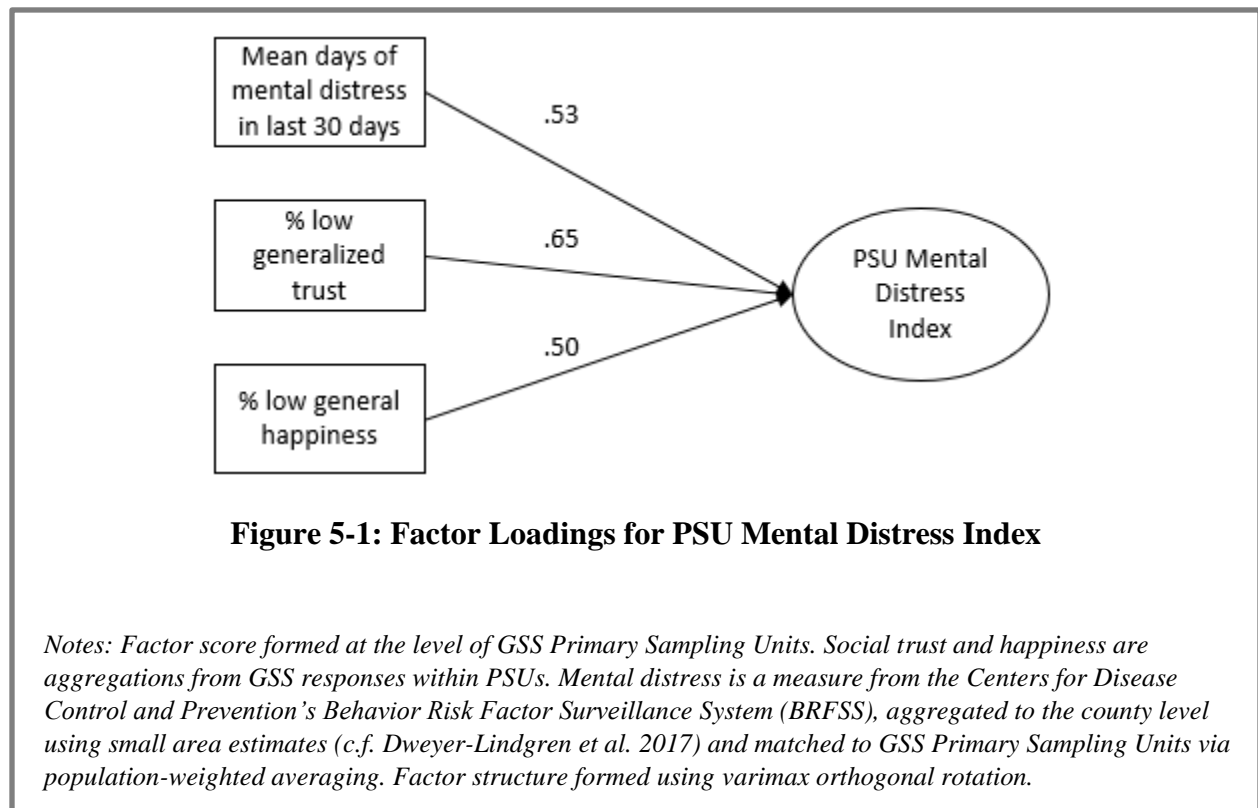
The mental health index is a factor score calculated at the level of GSS PSUs. The factor comprises three variables: (un)happiness, (lack of) social trust, and mental distress. I chose these three variables after conducting exploratory factor analysis on a much broader set of input variables that included other potential measures of distress such as population mortality data on deaths from self-harm, violence, alcohol and drug disorders. Ultimately unhappiness, lack of trust and mental distress formed the most coherent factor structure. The factor structure including factor loadings are displayed in Figure 5-1.

Happiness (coded as unhappiness) is a survey item from the GSS aggregated up to the level of PSUs via population-weighted averages. The item wording is, “Taken all together, how would you say things are these days--would you say that you are very happy, pretty happy, or not too happy?” For the mental health index, I calculated the PSU-level percent of respondents who selected “not too happy.”

Lack of trust is also a survey item from the GSS aggregated up the level of PSUs. The item wording is, “Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people?” For the mental health index, I calculated the PSU-level percent of respondents who selected “Can't be too careful.”

Mental distress is a measure taken from the Behavioral Risk Factor Surveillance System (BRFSS), a nationally representative survey conducted by the U.S. Centers for Disease Control and Prevention in partnership with health departments from all 50 U.S. states. Conducted since 1984, the BRFSS is an omnibus health survey that examines risk behaviors and healthcare access along with questions about psychological wellbeing, such as anxiety and depressive disorders and other aspects of mental illness. One of the key indicators in the BRFSS is an item that measures the number of recent mentally unhealthy days. The item is worded as, “Now thinking about your mental health, which includes stress, depression, and problems with emotions, how many days during the past 30 days was your mental health not good?” To match the BRFSS

mental distress indicators to the GSS survey data, I began with a version of the BRFSS estimates available from Dwyer-Lindgren et al. (2017) who used small-area estimation methods to produce county-by-county estimates of key BRFSS indicators. I then aggregated the county-level estimates up to the level of GSS PSUs by taking population-weighted averages across counties in PSUs that comprise multiple counties.



Although several measures of population distress did not pass successive iterations of factor analysis, the end result appears face valid. First, the mental distress measure is perhaps the closest thing currently available in nationally representative surveys to a direct measure of existential insecurity for entire groups of people. And the happiness measure can indicate general malaise. Generalized social trust may not seem like an obvious inclusion, but it's role in the factor structure is important. Prior research suggests a strong link between trust and social anxiety (e.g. Wilkinson 2000). Abbot and Freeth (2008) suggest that the ability and willingness to trust others protects against the harmful effects of chronic stress by reducing one's fear about the behaviors of others. Together, mental distress, general unhappiness, and low social trust

represent a broad spectrum of insecurities that should serve as an ideal mediator in the existential insecurity model of religious commitment.

**Dependent variables: religious commitment.** Individual-level religious commitment is measured using five variables from the GSS: prayer frequency, attendance at religious services, religious affiliation (claiming a religious affiliation versus claiming no religious affiliation), strength of affiliation, and belief that the Bible is the literal word of God. The dependent variables are dichotomized to more easily display the sizes of the effects by calculating the probability that a survey respondent is highly religiously committed. Ancillary analyses (not shown) suggest that the results are substantively similar when fitting models predicting the original variables with their native ordinal scales.

The native survey item measuring religious services attendance is worded, “How often do you attend religious services?” Respondents can respond on an ordinal scale between never and more than once per week. In the dichotomy for the current analysis, a score of 1 indicates attending religious services at least weekly. Similarly, the item for prayer frequency is dichotomized so that a score of 1 represents “Once a day” or “Several times a day” in response to the question, “About how often do you pray?”

Religious affiliation indicates self-identification with a particular religious group. Respondents are asked, “What is your religious preference? Is it Protestant, Catholic, Jewish, some other religion, or no religion?” Any response other than “no religion” is coded as religious affiliation for the purposes of this analysis. When respondents answer this question, they are subsequently asked, “Would you call yourself a strong \_\_\_\_\_ or a not very strong \_\_\_\_\_?” (with the blanks filled in as the previously indicated religious preference). Respondents who respond “Strong” are coded as having a high strength of affiliation in this analysis. Those who reported no religious affiliation were also coded as not having a strong affiliation.

Finally, respondents are asked, “Which of these statements comes closest to describing your feelings about the Bible? A) The Bible is the actual word of God and is to be taken literally, word for word; B) The Bible is the inspired word of God but not everything in it should be taken literally, word for word; C) The Bible is an ancient book of fables, legends, history, and moral precepts recorded by men.” Respondents who answer A are coded as having a literal interpretation of the Bible (hereafter “Biblical literalism”). Note that prior researchers have

expressed doubt that a question about Biblical literalism is a good proxy for religious commitment. Ammerman (1982, 171) argued that such a question would only parse Christian fundamentalists from the larger body of Christians (see also Dixon, Jones, and Lowery 1992). However, I chose to include this item because the Bible is a relevant document for many in the United States. Second, the Biblical literalism item correlates well with other measures of religious commitment. Ideally, I would have a general measure about supernatural belief; however, the question about Biblical literalism is perhaps the closest variable available in the GSS that is asked over many years to a large number of respondents.

**Control variables.** At the PSU level, models include controls for basic demographic characteristics of the population which have long been shown to be associated with religious behavior (e.g., Finke 1989) such as percent male, population mobility, percent black, percent urban, and population growth. These variables are harvested from publicly available U.S. Census Bureau Public Use Microdata (PUMs) data, matched to the decades and the counties in which the GSS data were collected, and then aggregated from the county level to the PSU level by taking population-weighted means across counties within PSUs. Models also include controls for the region in which the GSS respondents lived. At the individual level, models include controls from the GSS including sex, age, race, education, income, and religious tradition. Income is assessed as family income in thousands of 1986 constant dollars. These controls are important because religious attitudes and behaviors are not evenly distributed across basic population demographics (see, for instance, Pew Research Center 2014). Furthermore, although family income is conflated with the focal predictor of human development, income is included among the controls in order to isolate the contextual-level effect of HDI from the compositional effect of individual-level income. In other words, the models are adjusted for individual-level income to determine whether the net effect of HDI on religious commitment is more than an artifact of high-income survey respondents being more or less religious than lower-income respondents.

The models also include controls for the religious tradition with which respondents self-identify. Religious traditions are categorized by matching the respondents' stated religious affiliation (religious group or denomination) against a coding scheme very similar to the widely-used RELTRAD method (Steensland et al. 2000; Woodberry et al. 2012). This set of controls is important because the outcome, religious commitment, is known to vary substantially by

religious tradition. Controlling for whether a person is, for instance, white evangelical Protestant can help rule out the correlation between the economics of an area and religiosity that will naturally emerge based on the kind of religions that predominate in an area.

Finally, the models include controls that adjust for the decade in which the data were collected to account for changes in the focal variables over time. However, although we use data from 1980 to 2010, we are compelled to simply pool the data and estimate what are essentially cross-sectional models. We are unable to estimate longitudinal models because the individual-level data are repeated cross-sections (not panels). Furthermore, we cannot treat aggregate observations on PSUs as longitudinal because different PSUs are included in different GSS years. Finally, because we are making inferences at the PSU level, we cannot simply treat all the observations as representing repeated measures on the United States as a whole (as we might do in age-period-cohort modeling, for example). The nature of the data thus limits our ability to examine change either in individuals or in geographic areas over time. But by controlling for the decade the individual was surveyed, we at least take into account the changes in levels of religious commitment that occurred over the 30 years covered in this study.

**Analytic strategy.** The analysis begins by demonstrating that individual-level religious commitment varies as a function of PSU-level of human development. This analysis involves mixed effects logistic regression models that leverage the nested structure of the data to model PSU-level HDI and individual-level religious commitment alongside control variables at both levels of analysis. The models take the following general form:

$$\text{Religious commitment} = \gamma_{00} + \gamma(W_{1j} \dots W_{nj}) + \gamma(X_{1ij} \dots X_{nij}) + \mu_{0j} + r_{ij}$$

Where  $\gamma$  represents a fixed effect slope estimate;  $\gamma_{00}$  represents the y-intercept;  $W_{nj}$  represents the n-th predictor at the jth primary sampling unit level (level 2);  $X_{ij}$  represents the n-th predictor at the level of the individual respondent  $i$  (level 1) nested in the jth PSU;  $\mu_{0j}$  represents the random intercept (the variation in prayer frequency between primary sampling units) for the jth PSU; and  $r_{ij}$  represents the residual (level 1) variance not explained by the predictors in the model.

The next stage of the analysis introduces PSU-level mental distress as an intervening variable in the HDI-religion relationship. As explained earlier, the PSU-level mental distress is a factor score comprising mean days of mental distress in the last 30 days, the percent of

respondents in a PSU who report low general happiness, and the percent of GSS respondents in a PSU who report low generalized social trust.

I then perform mediation analysis to see if PSU-level mental distress mediates the relationship between HDI and religious commitment. First, I test whether religious commitment, HDI, and mental distress are all interrelated. Finally, I introduce the mental health index into models that predict religious commitment as a function of PSU-level human development to look for evidence of a mediation effect. Note that, in Norris and Inglehart's original analysis, HDI is not the only economic predictor of religious commitment. In addition to other predictors such as the presence of violent conflict, Norris and Inglehart extensively rely on the Gini coefficient of income inequality to proxy for existential insecurity. This analysis foregrounds HDI over Gini because, as shown in Chapter 3, HDI is a stronger and more robust predictor of religious commitment in the U.S. data than Gini.

Mediation analysis is performed using methods described in Baron and Kenny (1986), in which two full regression models are estimated. The two regression models are nearly identical and both models include the full suite of control variables. The only difference between the two models is that the second model includes the mediating variable. The magnitude of the mediation effect is calculated as the percent change in the coefficient for the focal predictor after the mediating variable is introduced into the model.<sup>7</sup>

## Results

**Descriptive statistics.** Table 1 displays descriptive statistics for all the covariates in the analysis. Results suggest that, among the dependent variables, religious affiliation is the most prevalent. Fully 87% of respondents identified with a religious group.<sup>8</sup> About half (56%) of the sample reported praying daily; about one-quarter (27%) attended religious services weekly; nearly a third (32%) regarded the Bible as the literal word of God; and 36% reported that they were strongly affiliated.

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<sup>7</sup> More advanced mediation methods have become available since Baron and Kenney (1986); however, the modeling in this analysis using multilevel logistic regression analysis. To the author's knowledge, algorithms for implementing the more sophisticated mediation methods are not readily available in commonly used statistical software environments.

<sup>8</sup> The high prevalence of religious affiliation in the dataset reflects the time scope of the surveys: 1984 to 2010. In more recent surveys, about 22.8% of U.S. adults claim no religious affiliation (Pew Research Center, Religious Landscape Survey, <https://www.pewforum.org/religious-landscape-study/>).

Among the PSU-level predictors, results suggest that the mean Human Development Index score was about 4.94 out of 10; however, this varied widely across the 255 PSUs, ranging from less than 3 (2.88) to nearly 7 (6.96). The mean number of days of mental distress also varied widely across PSUs. In the least distressed PSU, respondents reported an average of 1.4 days of mental distress in the past 30. By contrast, in the most distressed PSU, the average respondent reported that they had experienced mental distress in over half (16) of the past 30 days.

**Table 5-1: Descriptive Statistics**

	Mean	SD	Min	Max
<b>Dependent variables</b>				
Prays daily	0.56	0.50	0.00	1.00
Attends weekly	0.27	0.44	0.00	1.00
Biblical literalist	0.32	0.47	0.00	1.00
Strongly affiliated	0.36	0.48	0.00	1.00
Religiously affiliated	0.87	0.34	0.00	1.00
<b>PSU-level focal predictors (N=255)</b>				
HDI (0-10)	4.94	0.85	2.88	6.96
PSU days of mental distress in past 30 days	10.08	1.38	6.26	15.95
% very happy	30.47	5.26	18.37	50.75
% high social trust	36.13	9.95	12.00	69.72
<b>PSU-level controls</b>				
Gini (0-100)	42.86	3.10	34.78	51.90
% male	48.99	1.09	46.61	55.19
% living in same residence 5+ yrs	53.50	7.17	30.90	70.37
% black	11.97	10.41	0.06	57.55
% urban	76.94	23.08	0.00	99.86
Pop. growth	1.12	0.12	0.76	1.71
% voted GOP in last pres. election	0.29	0.09	0.10	0.64
Census region				
- Northeast	0.18	0.39	0.00	1.00
- Midwest	0.26	0.44	0.00	1.00

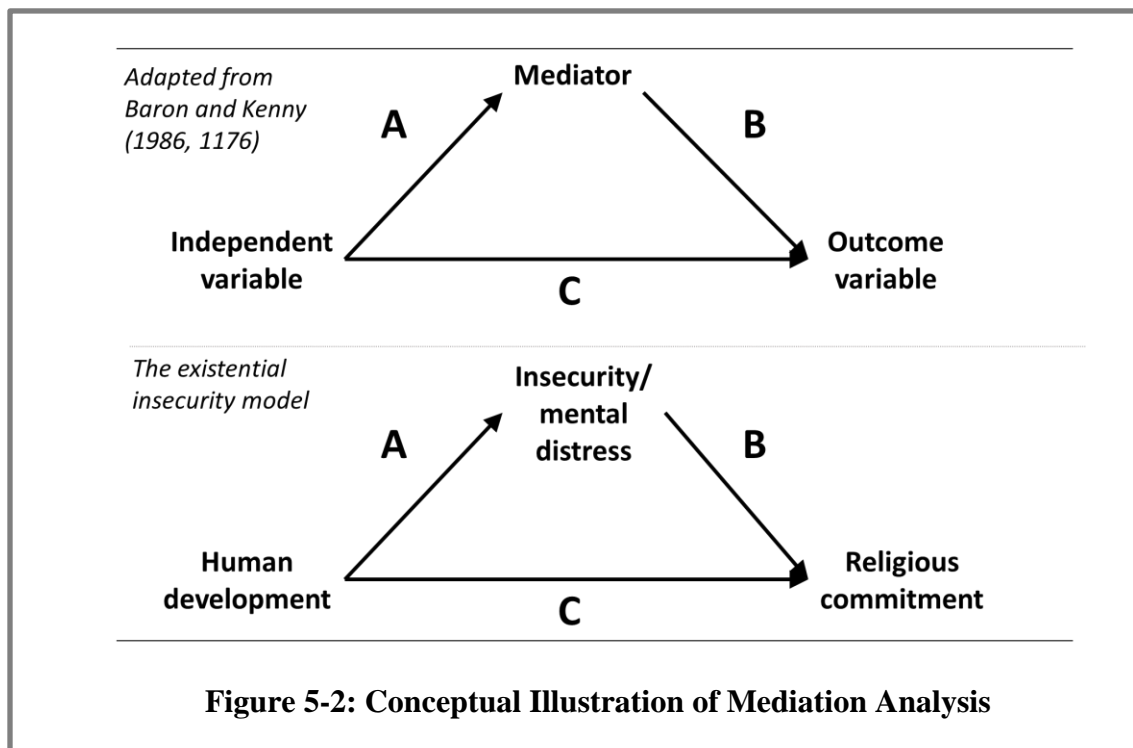
**Table 5-1 continued**

- South	0.35	0.48	0.00	1.00
- West	0.21	0.41	0.00	1.00
<b>Individual-level controls (N=17,783)</b>				
Female	0.55	0.50	0.00	1.00
Age (years)	45.57	16.94	18.00	89.00
Nonwhite	0.13	0.34	0.00	1.00
Education (years)	13.26	3.04	0.00	20.00
Income (thousands)	32.73	30.60	0.26	146.15
Religious tradition				
- Evangelical	0.26	0.44	0.00	1.00
- Mainline	0.17	0.37	0.00	1.00
- Black Protestant	0.12	0.32	0.00	1.00
- Catholic	0.27	0.44	0.00	1.00
- Jewish	0.02	0.13	0.00	1.00
- Other religion	0.03	0.16	0.00	1.00
- LDS	0.01	0.08	0.00	1.00
- No religion	0.13	0.34	0.00	1.00
Political party				
- Democrat	0.36	0.48	0.00	1.00
- Independent	0.36	0.48	0.00	1.00
- Republican	0.27	0.45	0.00	1.00
- Other political party	0.01	0.12	0.00	1.00
Decade				
- 1980s	0.30	0.46	0.00	1.00
- 1990s	0.33	0.47	0.00	1.00
- 2000s	0.37	0.48	0.00	1.00

**Relationship between HDI and religious commitment.** Recall that Chapter 3 reported a series of multilevel logistic regression models predicting each of the five measures of religious commitment. For each of the five dependent variables, HDI was a strong and statistically significant predictor of religious commitment net of controls. In terms of effect size, a one standard deviation increase in HDI is associated with an 10% decline in the predicted probability of praying daily; a 12% decline in the probability of weekly attendance; a 17% drop in the

probability of believing the Bible is the literal word of God; a 7% decline in the probability of affiliating strongly with a religious group; and a 25% drop in the predicted probability of affiliating with any religious group. These results essentially replicate one of Norris and Inglehart's key findings, but rather than comparing whole nations to one another as in Norris and Inglehart's original analysis, Chapter 3 used subnational variation within the United States to demonstrate that the level of human development in small geographic areas has a marked association with levels of religious commitment among the individuals who live in those areas. Furthermore, Chapter 3 was a multilevel analysis with a host of controls at both levels, presenting a more robust test of Norris and Inglehart's model. This analysis sets the backdrop for the following mediation analysis.

**Mediation analysis.** Key to mediation analysis is establishing the interrelationships among the outcome, predictor and intervening variables. Baron and Kenny (1986:1176) provide a diagram to visualize these relationships, which Figure 4 shows in an adapted form to fit the current study.



Whereas Chapter 3 established Path C (the direct link between human development and religious commitment), more work needs to be done to establish Paths A and B. As will be clear

from the following analyses, Path A emerged as a strong and robust effect. However, Path B, the link between insecurity and religious commitment, is more tenuous.

Table 5-2 shows a series of multilevel logistic regression models predicting the five measures of religious commitment used in this analysis. Results suggest that, after controlling for a host of controls at both levels of analysis, the PSU-level psychological distress index is significantly associated only with prayer and Biblical literalism. A one standard deviation increase in PSU-level psychological distress is associated with 14% increase in the predicted probability of praying daily and a 23% increase in the predicted probability of believing the Bible is the literal word of God.

**Table 5-2: Multilevel Logistic Regressions (Odds Ratios) Predicting Religious Commitment**

	M1: Daily prayer	M2: Weekly attendance	M3: Biblical literalism	M4: Strong affiliation	M5: Affiliation
PSU-level psychological distress index	1.14***	1.06	1.23***	1.04	1.09
<b>PSU-level predictors (n=255)</b>					
% male	0.98	0.96	0.99	1.00	1.03
% living in same residence 5+ yrs	1.00	1.01	1.01	1.01	1.03***
% black	1.00	0.99	0.99**	1.00	1.00
% urban	1.00	1.00	1.00**	1.00	1.00
Pop. growth	0.90	0.89	0.76	0.89	0.75
% voted GOP in last pres. election	2.14*	1.92	1.94*	2.23**	3.07*
Census region (ref = Northeast)					
- Midwest	1.04	1.21*	1.17*	1.08	1.30*
- South	1.38***	1.43***	1.71***	1.20*	2.09***
- West	1.13	1.00	1.21*	0.88	0.89
Survey decade (Ref = 1980s)					
- 1990s	1.11	0.82**	0.95	0.94	0.59***

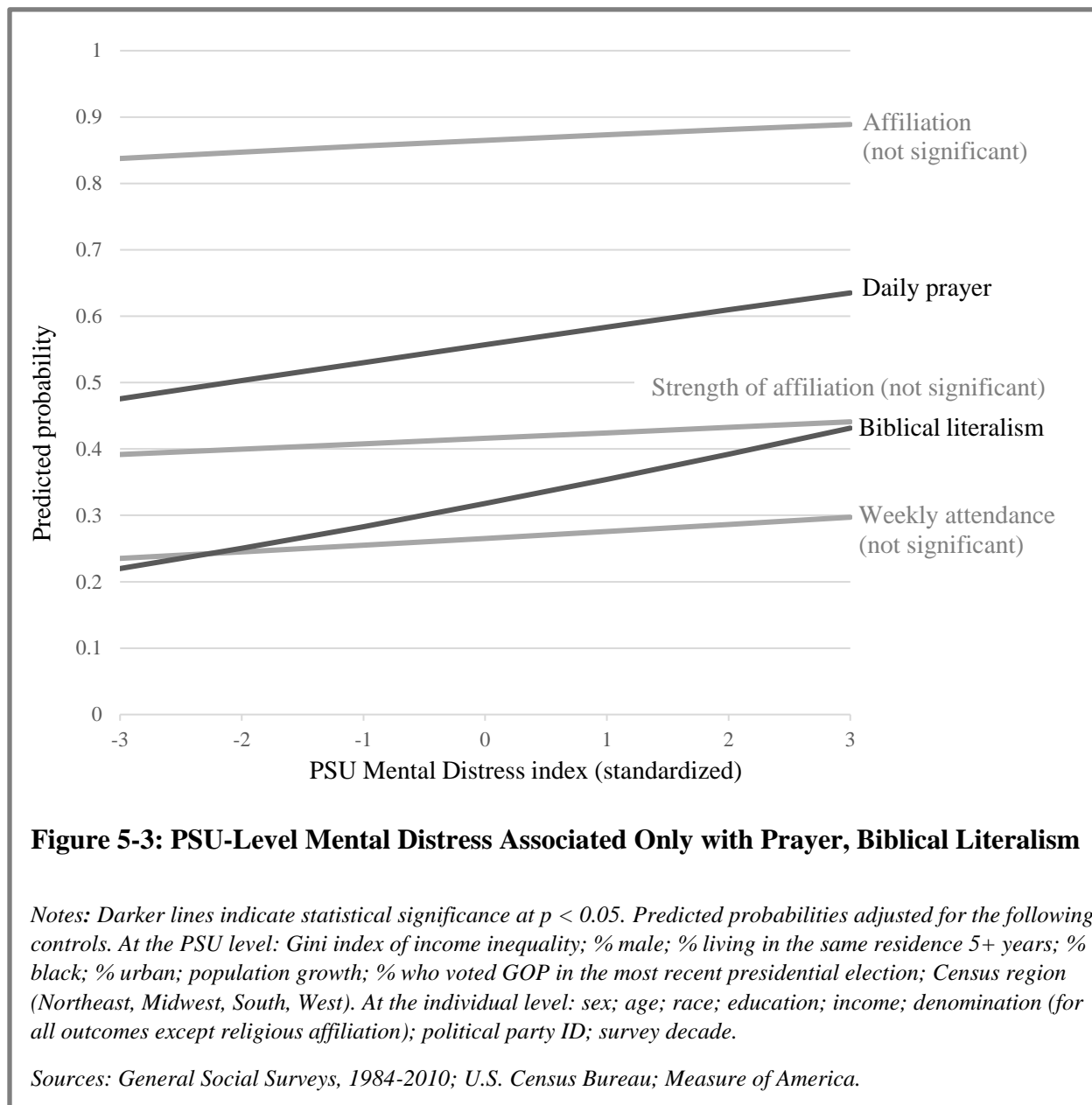
**Table 5-2 continued**

- 2000s	1.14 <sup>*</sup>	0.75 <sup>***</sup>	0.92	0.89	0.33 <sup>***</sup>
<b>Individual-level controls (n=17,783)</b>					
Female	2.54 <sup>***</sup>	1.55 <sup>***</sup>	1.36 <sup>***</sup>	1.52 <sup>***</sup>	1.80 <sup>***</sup>
Age (years)	1.03 <sup>***</sup>	1.03 <sup>***</sup>	1.00	1.02 <sup>***</sup>	1.03 <sup>***</sup>
Nonwhite	2.84 <sup>***</sup>	1.82 <sup>***</sup>	2.10 <sup>***</sup>	2.14 <sup>***</sup>	1.63 <sup>***</sup>
Education (years)	1.00	1.08 <sup>***</sup>	0.84 <sup>***</sup>	1.05 <sup>***</sup>	0.95 <sup>***</sup>
Income (thousands)	1.00 <sup>***</sup>	1.00	0.99 <sup>***</sup>	1.00	1.00
Political party (ref = Democrat)					
- Independent	1.04	1.01	0.86 <sup>***</sup>	0.85 <sup>***</sup>	0.71 <sup>***</sup>
- Republican	1.36 <sup>***</sup>	1.66 <sup>***</sup>	1.28 <sup>***</sup>	1.34 <sup>***</sup>	2.36 <sup>***</sup>
- Other pol. party	1.36 <sup>*</sup>	0.97	0.96	0.95	0.46 <sup>***</sup>
Religious tradition					
- Mainline	0.55 <sup>***</sup>	0.42 <sup>***</sup>	0.36 <sup>***</sup>	0.49 <sup>***</sup>	
- Black Protestant	0.62 <sup>***</sup>	0.48 <sup>***</sup>	0.71 <sup>***</sup>	0.51 <sup>***</sup>	
- Catholic	0.79 <sup>***</sup>	0.92	0.33 <sup>***</sup>	0.62 <sup>***</sup>	
- Jewish	0.22 <sup>***</sup>	0.15 <sup>***</sup>	0.19 <sup>***</sup>	0.67 <sup>**</sup>	
- Other	0.93	1.21	0.38 <sup>***</sup>	1.15	
- Latter-day Saints	2.08 <sup>**</sup>	3.81 <sup>***</sup>	0.98	1.74 <sup>**</sup>	
- None	0.15 <sup>***</sup>	0.04 <sup>***</sup>	0.14 <sup>***</sup>	1.00	

Notes: Table entries are Exponentiated coefficients. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Sources: General Social Surveys, 1984-2010; U.S. Census Bureau; Measure of America.

Figure 5-2 shows the relationships in Table 5-2 graphically. The plot lines represent predicted probabilities from multilevel logistic regression models predicting each measure of religious commitment. The directions of the lines indicate that, for all five religious commitment variables, higher levels of mental distress are associated with higher levels of religiosity. However, after adjusting for controls, the slope effect of mental distress is only significant for two measures of religious commitment: daily prayer and Biblical literalism.



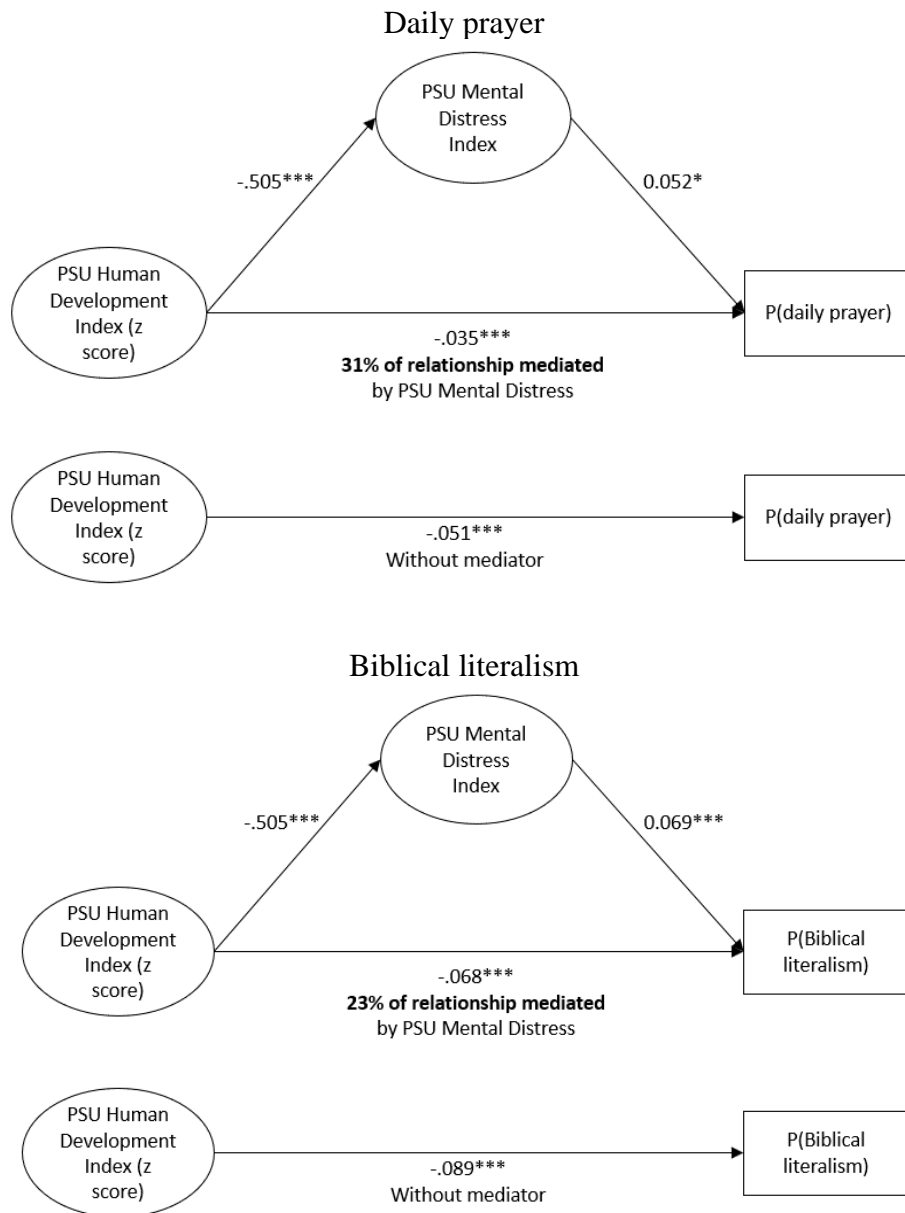
On one hand, there could be important substantive reasons why prayer and literalism are more responsive to the effect of mental distress than other measures of religious commitment. Among the five measures, prayer and literalism are the most private and the most supernaturalistic. When faced with an existential threat, one may be more likely to pray or believe more strongly than to perform some public act of devotion such as attendance at religious services. People in distress may seek greater supernaturalism so they can obtain real—not

symbolic—help in times of need. And if a whole geographic area experiences distress, there could be a collective response that teaches individuals to pray more and believe more strongly in the supernatural. On the other hand, all of the relationships are in the same general direction and, given the number of control variables and the limited number of geographic units at level 2 (256 PSUs), there is a risk of relying too heavily on the threshold of  $p < 0.05$  to determine which effects are worthy of attention. The models also include a number of controls at both levels of analysis, without which the coefficients would be much larger in magnitude. Nevertheless, the mediation analysis will focus only on prayer and Biblical literalism, the two measures of religious commitment most strongly linked to mental distress. Figure 5-4 displays the results of the final mediation analysis.

Note that all coefficients shown in Figure 5-4 are standardized regression coefficients. In cases where the prediction models are multilevel logistic regressions, the standardized regression coefficients are calculated as  $b_y * (sd_x / \text{latent\_sd}_y)$  where  $\text{latent\_sd}_y$  is the square root of the sum of the variances of the linear prediction plus the error parameter ( $\pi^2$ )/3.<sup>9</sup> The size of the mediation effect is calculated as the percent reduction in the magnitude of the coefficient without the mediator (the bottom path) with respect to the magnitude of the coefficient in a model that includes the mediator. For instance, for the uppermost diagram, the mediation effect is calculated as  $((0.051 - 0.035) / 0.051) * 100 = 31\%$ . All models shown in Figure 5-4 include control variables.

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<sup>9</sup> For more information on calculating standardized coefficients from logits, see the methods outlined in the Sage Foundations series, <http://dx.doi.org/10.4135/9781526421036>.



**Figure 5-4: Mediation Analysis**

**Notes:** All coefficients shown are standardized regression coefficients. All models and all paths with labeled coefficients include all available control variables. Models predicting prayer and Biblical literalism are multilevel logistic regressions adjusted for the following controls: Gini index of income inequality; % male; % living in the same residence 5+ years; % black; % urban; population growth; % who voted GOP in the most recent presidential election; Census region (Northeast, Midwest, South, West); sex; age; race; education; income; denomination (for all outcomes except religious affiliation); political party ID; survey decade.

Models predicting the PSU Mental Distress Index are ordinary least squares regressions where cases are whole PSUs. These analyses are adjusted for the following controls: Gini index of income inequality; % male; % living in the same residence 5+ years; % black; % urban; population growth; % who voted GOP in the most recent presidential election; Census region (Northeast, Midwest, South, West)

The visualizations in Figure 5-4 show the details of the mediation analysis. Most importantly, the PSU-level mental distress index partially mediates the relationships between human development and religious commitment. Mental distress mediates about 31% of the relationship between HDI and prayer, and about 23% of the relationship between HDI and Biblical literalism.

**Comparison of PSU- and individual-level measures of mental distress.** Two final remaining questions are whether 1) PSU-level measures of mental distress are better *predictors* of individual religiosity than individual-level measures of mental distress and 2) whether PSU-level measures of mental distress are better *mediators* than the individual-level measures. If both are true, this suggests that the kind of mental distress that motivates religiosity is not just an internal issue. Rather it is when other people in the local subculture are also distressed and are also turning to religion that an individual decides it is prudent to seek out religion as an answer to distress. Parallel to this, it suggests that perhaps mental distress is partly socially constructed. One judges the danger of the situation by how other people respond to it. If others are distressed, this is a signal that the situation is dire and therefore requires prayer. But if others are not very distressed, then the situation may not be extreme enough to turn to religion.

The answers to the above questions are complicated because the PSU-level mental distress index is difficult to recreate with individual-level measures. One of the key constituents of the mental distress index is the CDC/BRFSS measure that indicates the number of days out of the past 30 days that an individual has experienced mental distress. Although there is an individual-level GSS analog to this item, it only appears in a few survey years, so the comparative analysis cuts the sample of about 17,000 down to about 2,800. Nevertheless, to try and approach answers to questions 1 and 2 above, I constructed an index at the individual level that roughly mirrors the PSU-level index of mental distress. At both levels of analysis, the constituent variables are: happiness, generalized trust, and the number of days (out of the past 30) in which the respondent (or the average respondent) has experienced poor mental health.

Figure 5-5 presents a correlation matrix of the individual-level and PSU-level measures of mental distress. Note that the PSU-level indicators of mental distress are not perfectly—or even strongly—related to their individual-level counterparts.

**Table 5-3: Zero-order Correlation Matrix of Mental Distress Variables**

		<u>PSU-level variables</u>			<u>Individual-level variables</u>		
		Percent low social trust	Mean days of mental distress in past 30	Percent unhappy	Low trust	Days of mental distress in past 30	Unhappiness
<b>PSU-level variables</b>	Percent low social trust	1.00					
	Mean days of mental distress in past 30	0.44	1.00				
	Percent unhappy	0.39	0.27	1.00			
<b>Individual-level variables</b>	Low trust	0.21	0.10	0.08	1.00		
	Days of mental distress in past 30	0.05	0.03	0.05	0.11	1.00	
	Unhappiness	0.05	0.04	0.13	0.12	0.28	1.00

*Notes: individual-level observations are from the U.S. General Social Survey with the sample limited to cases included in the regression models shown elsewhere in this manuscript. PSU-level data are from aggregations of the individual-level GSS data except in the case of PSU-level mental distress, which is a measure taken from the Centers for Disease Control and Prevention's Behavior Risk Factor Surveillance System (BRFSS), aggregated to the county level using small area estimates (c.f. Dwyer-Lindgren et al. 2017) and matched to GSS Primary Sampling Units via population-weighted averaging.*

Despite the challenges in answering the first question (are PSU-level measures of mental distress better predictors of religiosity than individual-level measures of mental distress), some tentative answers are possible. Table 5-4 shows the results of four separate multilevel logistic regression models with the output for the control variables suppressed. Results in Table 5-4 show that the coefficients for the PSU-level and individual-level mental distress indexes have opposite signs. PSU-level mental distress positively predicts religious commitment while individual-level distress negatively predicts religious commitment. Note that the pattern of results shown in Table 5-4 hold whether the PSU-level and individual-level mental distress indices are in the model together or whether they are modeled separately on religious commitment. This unusual pattern

of results should be treated with caution given that the missing data in the individual-level index cuts the sample down to a small subset.

**Table 5-4: Are PSU-Level Measures of Mental Distress Better Predictors of Religious Behavior Than Individual-Level Measures of Mental Distress?**

*Predicted change (odds ratios) in the probability of religious commitment given a 1-SD increase in the predictor*

	<b>Daily prayer</b>		<b>Biblical literalism</b>	
	No controls	With controls	No controls	With controls
PSU mental distress index	1.31***	1.18*	1.55***	1.09
Individual-level mental distress index	0.90**	0.91*	0.99	0.88**
Number of individuals	2,802	2,802	2,802	2,802
Number of PSUs	173	173	173	173

*Odds ratios \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$*

*Control variables: Gini index of income inequality; % male; % living in the same residence 5+ years; % black; % urban; population growth; % who voted GOP in the most recent presidential election; Census region (Northeast, Midwest, South, West); sex; age; race; education; income; denomination (for all outcomes except religious affiliation); political party ID; survey decade.*

Finally, regarding question 2 above (whether PSU-level measures of mental distress are better mediators of religiosity than individual-level measures of mental distress) the answer is potentially yes. The PSU-level measure of mental distress is a better mediator than individual-level distress in the model predicting Biblical literalism. And in regards to daily prayer, the individual-level mental distress index amplified rather than mediated (decreased) the effect of HDI on daily prayer. Table 5-5 shows the results of four regressions with the output from the control variables omitted to save space. Results show that the PSU-level index mediated 31% of the relationship between HDI and daily prayer while the individual-level index mediated 0% of the relationship. Similarly, the PSU-level index mediated 31% of the relationship between HDI and Biblical literalism while the individual-level index mediated 10% of the relationship.

**Table 5-5: Are PSU-Level Measures of Mental Distress Better Mediators of Religious Behavior Than Individual-Level Measures of Mental Distress?**

*Percent of the relationship mediated in the relationship between Human Development Index and religious commitment*

Mediator	Outcome	
	Daily prayer	Biblical literalism
PSU mental distress index	31% mediated	24% mediated
Individual-level mental distress index	0% mediated <sup>A</sup>	10% mediated
n <sup>B</sup>	2,802	2,802

*Odds ratios \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$*

*Notes:*

*A: The individual-level mental distress index acts as an effect maximizer in the relationship between HDI and daily prayer, increasing the magnitude of the log-odds coefficient of HDI from -0.11 to -0.15.*

*B: Sample size is limited to 2,802 because the variables in the individual-level mental distress index are only included in some GSS survey years.*

*Control variables: Gini index of income inequality; % male; % living in the same residence 5+ years; % black; % urban; population growth; % who voted GOP in the most recent presidential election; Census region (Northeast, Midwest, South, West); sex; age; race; education; income; denomination (for all outcomes except religious affiliation); political party ID; survey decade.*

## Discussion and Conclusion

Results from multilevel analyses of General Social Survey (GSS) data matched to Census and CDC data on subnational geographies yield three key findings. First, levels of human development in geographic areas across the U.S. are strongly related to aggregate levels of mental distress in those areas. Even after controlling for population demographics and other aggregate properties such as voting patterns, a model regressing aggregate mental distress on human development yields a standardized regression coefficient of about 0.5. Economic conditions in U.S. counties and cities are strongly linked to aggregate mental distress.

Second, as shown in Chapter 3 and again in the mediation analyses in this chapter, GSS respondents are more religiously committed on average when they live in U.S. counties and cities (GSS Primary Sampling Units) where human development is lower (i.e., when the local population is less wealthy, less healthy, and less educated). This effect holds net of a host of controls at both the individual level and PSU level.

Third, a direct measure of the aggregate level of mental distress in U.S. geographic areas partially mediates the relationship between human development and religious commitment. The PSU-level mental distress index in this analysis mediates 31% of the relationship between HDI and daily prayer and 23% of the relationship between HDI and Biblical literalism. The PSU-level measures of mental distress function as better mediators than individual-level measures of mental distress, which mediate very little of the focal relationships.

The pattern of results in this chapter are largely consistent with Norris and Inglehart's (2004; 2011) existential insecurity model, in which the economic wellness of a geographic area is thought to affect levels of existential insecurity that in turn increase or decrease demand for religion in the population. However, the results presented here differ from Norris and Inglehart's expectations in that aggregate rather than individual psychological distress emerges as the most important mediating variable.

Chapter 6, the concluding chapter, returns to this point in more detail. There I will discuss further implications of this chapter's results, along with a discussion of how these results point to new avenues for future research on secularization in general and existential insecurity in particular.

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## CHAPTER 6: CONCLUSION

This dissertation began with two key questions: 1) Is the existential insecurity model of religious commitment model valid at the subnational level? And 2) do direct measures of existential insecurity mediate the relationship between the economic wellness of geographic areas and the religious commitment of the individuals who live in those areas?

Chapter 3 investigated the first question. The answer is a qualified “yes.” When calculated at the level of U.S. counties and metropolitan areas, the American Human Development Index is significantly and strongly linked to variation in religious commitment between individuals. However, the results did not match Norris and Inglehart’s (2004; 2011) expectations perfectly. Unlike in Norris and Inglehart’s cross-national analyses, the current analysis using U.S. data suggests that the Gini coefficient of income inequality is not linked to some measures of religious commitment such as prayer frequency unless the sample is restricted only to certain parts of the country.

Chapters 4 and 5 focused on the second question. Importantly, the pattern of results in this dissertation do not match the Norris and Inglehart’s theoretical expectations. Direct measures of individual-level psychological distress do not mediate the relationship between human development at the level of Primary Sampling Units (PSUs) and individual-level religious commitment. Rather, the most important mediator uncovered in this analysis is an aggregate measure of psychological distress that comprises mean levels of happiness, social trust, and a measure of the frequency of mental distress pulled from the U.S. Center’s for Disease Control’s flagship mental health survey. When aggregated up to the level of PSUs, the aggregate psychological distress of a geographic area mediates between one-quarter and one-third of the association between PSU-level human development and individual-level religious commitment.

Aside from the two marquee findings, a few other results in this dissertation stood out as particularly striking. Most notable was the robustness of the focal relationship between the human development index (HDI) and religious commitment. This statistical link was consistently significant, relatively large in magnitude and robust to different model specifications and combinations of control variables, including many that are not shown in this dissertation. The final set of control variables shown in this dissertation even include some variables that are admittedly colinear with HDI and—although these controls increase the risk of artificially

depressing the statistical importance of HDI—they probably represent a conservative test of the existential insecurity model. For instance, all the models in this dissertation include controls for education and household income. These variables are colinear with PSU human development (higher-income, well-educated people tend to live in higher-income, well-educated areas), and could, if anything, make HDI appear less important in the models than is really the case. However, including these control variables also brings to light the interesting possibility that even highly privileged people in low-HDI areas could demonstrate greater levels of religiosity than similarly privileged people in high-HDI areas. In other words, even if one's personal assets mitigate existential threats to survival, the economic precarity experienced by one's neighbors and community members could still have a measurable effect on one's own religious beliefs and behaviors. This possibility, however speculative, lends additional weight to the idea that the mechanisms through which existential insecurity operates may occur primarily at the level of local subcultures, not individual psychological processes.

The key limitation in this dissertation, however, is the pooled cross-sectional nature of the data that necessarily limit any claims to causality. The statistical associations shown in this analysis do not rule the possibility of reverse causation. It is possible—and even likely—that levels of religious commitment in an area could affect levels of human development. Prior research has shown that American mainline Protestants tend to engage in community activities that promote civic welfare and social trust (see, for instance, Beyerlein and Hipp 2006, Chaves, Giesel, and Tsitsos 2002, Marshall and Olson 2018). The same can be said of American Catholics (Casanova 1994, Adloff 2006). Through various mechanisms such as volunteering, charitable giving and involvement in local government, the religious beliefs of individuals in an area could increase (or decrease) the economic benefits available to everyone in the area. In fact, religious dynamics and economic conditions in an area probably becomes institutionalized together over long periods of time in ways that are difficult to parse statistically.

Other, more complicated causal arrangements are also possible. For instance, the final analyses in Chapter 5 imply that economic conditions affect aggregate emotional insecurity that in turn lead to lower or higher levels of religious commitment. However, an alternative explanation could be that aggregate existential insecurity leads to higher levels of individual-level insecurity, which in turn drives one toward religion. In other words, there are two steps along the path from human development to religious commitment: precarious economic

circumstance lead to collective anxiety; an individual then experiences existential insecurity, which is in part socially constructed through interactions with others who give cues to the individual that they *ought* to be concerned about existential threats. This leads the individual toward religion as a source of security. So the path could lead from economic circumstances to aggregate insecurity, then to individual insecurity and finally to religious commitment. All of these possibilities are left open to future research that should explore these questions using data and methods that are better suited to parse the temporal ordering of effects.

Future research on this topic may also push further on the subcultural values explanations suggested in this analysis. This dissertation has raised the somewhat speculative possibility that the kind of mental distress that pushes people toward religion is not solely or even primarily the result of an internal psychological state. Rather it is when an individual learns through interaction with others that conditions are threatening and that turning to religion is the right course of action. The experience of mental distress and the decision to turn to religion do not take place in a vacuum; both may be partly socially constructed as individuals judge the danger of their circumstances by the actions and reactions of relevant others. Religion is a social phenomenon, and this research highlights again the importance of realizing that behavior is not just the result of individual calculations within a single person multiplied thousands of times to estimate the opinions and behaviors of whole populations. Rather public opinions are often the results of debate, persuasion, social messages, teaching, etc. In other words, collectively held values and solutions may occur more through public discussion and interaction with others than through internal, private, calculations in the individual's mind.

Future research may also broaden the set of threatening circumstances that generate existential anxiety. In addition to human development and economic inequality, other conditions such as government spending on healthcare, pollution, pathogen load, violent conflict and the geographic distribution of schools, hospitals and access to nutritious food could all create the conditions that drive people to or away from religion. Norris and Inglehart discuss some of these possibilities, but future research could parse out which of these contributing factors create the conditions that are most likely to affect religious beliefs and behavior across the population.

In conclusion, the results shown in this dissertation speak to two broader theoretical concerns within the social scientific study of religion. First, this analysis joins a growing body of literature that rejects the notion that religion will inevitably survive in post-industrial advanced

economies. Groups of people tend to secularize under certain conditions, and this can be observed at the level of whole countries or at the local level among smaller geographies within the same national context. This does not mean that religion will decline everywhere or that the world as a whole will become less religious. In fact, other conditions such as religious revivals across the southern hemisphere, high birth rates in very religious countries and comparatively low birth rates among religious nonaffiliates have led to projections that the world will contain more—not less—religious affiliates in 2050 than it has today (Pew Research Center 2015). As a paradigm, secularization theory does not claim to be universal or inevitable. Nevertheless, societies can and do secularize, especially in geographic areas where more desirable and equitable economic conditions that drive down demand for religion in the population.

Second, this dissertation speaks to much broader concerns about the geographic distribution of ideological communities across the United States, the regional animosities that animate much of U.S. national politics, and the political divisions that are inseparably linked to economic concerns, religion and geography. Although this dissertation makes no attempt to explain why Americans are increasingly disaggregated into seemingly impermeable ideological camps or whether religion is the cause or the effect of current conditions, it is situated within a broader discourse that foregrounds social class as an important proximate cause of deep-seated anxiety, distress and insecurity. It is therefore one small piece in a much larger puzzle of life in the United States that connects two fundamental American realities: religion and human inequality. Both religion and inequality are pervasive throughout American history and both are deeply connected to almost every aspect of contemporary American society. This dissertation is one small contribution that highlights the importance of interrogating the connections between religion and inequality as a lens through which to understand American society.

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