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Mortality Differentials and Religion in the U.S.: Religious Affiliation and Attendance

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Abstract

Using data from the Health and Retirement Study, I examine the relationship between adult mortality and religious affiliation. I test whether mortality differences associated with religious affiliation can be attributed to differences in socioeconomic status (years of education and household wealth), attendance at religious services, or health behaviors, particularly cigarette and alcohol consumption. A baseline report of attendance at religious services is used to avoid confounding effects of deteriorating health. Socioeconomic status explains some but not all of the mortality difference. While Catholics, Evangelical Protestants, and Black Protestants benefit from favorable attendance patterns, attendance (or lack of) at services explains much of the higher mortality of those with no religious preference. Health behaviors do not mediate the relationship between mortality and religion, except among Evangelical Protestants. Not only does religion matter, but studies examining the effect of “religiosity” need to consider differences by religious affiliation.

Introduction

Mortality differentials exist by sex, socioeconomic status, race and ethnicity, and many other characteristics in the U.S. Less is known about the relationship between religion and mortality. The religious generally enjoy a mortality advantage relative to the unreligious (Bagiella, Hong, and Sloan 2005; Hummer, Rogers, Nam, and Ellison 1999; Koenig, McCullough, and Larson 2001; McCullough, Hoyt, Larson, Koenig, and Thoresen 2000; Musick, House, and Williams 2004; Strawbridge, Cohen, Shema, and Kaplan 1997), but studies have not examined mortality differentials by religion in the U.S. (Hummer, Ellison, Rogers, Moulton, and Romero 2004; Jarvis and Northcott 1987), although differentials exist in various areas in contemporary Europe (O'Reilly and Rosato 2008; Rasanen, Kauhanen, Lakka, Kaplan, and Salonen 1996; Shkolnikov, Andreev, Anson, and Mesle 2004).

Data that include both religious affiliation and mortality in the U.S. are difficult to find, because neither the Census nor vital statistics collect affiliation information. The Health and Retirement Study (HRS), a representative, longitudinal panel study of Americans over age 50, provides information on respondents' religious affiliation and other key measures of religious activity. Risks of developing chronic disease and of dying start to increase after age 50, making the HRS particularly useful for analyzing how religion affects mortality. Using HRS data, I document mortality differentials across Catholic, Jewish, three Protestant groups (Mainline, Evangelical, and Black), and those with no religious preference. I find more than six years of difference in life expectancy at age 55 by religious affiliation, as shown in Figure 1. Mainline Protestants and Jews have the lowest mortality of any religious group. This gap is comparable to the difference between males and females (5.1 years)

(National Center for Health Statistics 2007), Black and White males (6.2 years) (National Center for Health Statistics 2007), and educational subgroups (4.5 years) (Hayward, Crimmins, Hummer, Hidajat, and Brown 2008).

Many mechanisms may link mortality and religions; here I will focus on three key explanations. The first is differences in *socio-demographic composition* by religion. The variation in life expectancy could be explained by differences in gender, race, education levels, wealth, or a host of other characteristics. Second, variation could be due to differences in levels of *attendance at religious services*. Attendance at religious services both provides an opportunity to make social contacts and to receive encouragement to engage in healthy behaviors. In turn, variation in mortality by religion could be explained by disparate *health behaviors*. The rules or norms of a religion may forbid unhealthy activities such as drinking or smoking and thus have strong effects on health.

Literature review

Socio-demographic composition

Socio-demographic composition may be the underlying link between religion and mortality. Several studies in other contexts support this explanation. Differences in socioeconomic status (SES) have explained mortality or morbidity differences in contemporary Northern Ireland (O'Reilly and Rosato 2008), contemporary Scotland (Raftery, Jones, and Rosato 1990), and in Russia in the early 1990s (Shkolnikov, Andreev, Anson, and Mesle 2004).

Members of different religions in the U.S. have documented differences in demographic composition. Whites comprise a higher proportion of Mainline Protestant and Jewish faiths than in other religions; Catholics have a higher proportion (29 percent) of Latinos and Latin American immigrants (23 percent) than other religions (Pew Forum on Religion & Public Life 2008). On the other hand, Protestants are almost all (94 percent) U.S.-born (Pew Forum on Religion & Public Life 2008), which may be a disadvantage, considering that immigrants to the U.S. have lower mortality than those born in the U.S. (Singh and Siahpush 2002). Lastly, the unaffiliated and Black Protestants have higher proportions of never-married members than other religious groups. (Pew Forum on Religion & Public Life 2008)

Differences by religion also exist by SES (Ferraro and Albrecht-Jensen 1991; Smith and Faris 2005). Jews and Mainline Protestants have the most favorable SES distribution: they have the higher levels of income and education than other religious groups in the U.S. Those affiliated with Evangelical Protestant churches are at a disadvantage, mostly due to lower levels of education. (Iannaccone 1994; Keister 2003; Lehrer 2004; Massengill 2008; Pew Forum on Religion & Public Life 2008; Pyle 2006)

Attendance at religious services

In the literature on religion and mortality, attendance at religious services is the most commonly used measure of religion. Attendance measures exposure to and involvement in religion. Attendance is consistently associated with lower mortality, net of a range of controls, including demographics, SES, health status, and behavioral risk factors (Gillum, King, Obisesan, and Koenig 2008; Hummer, Rogers, Nam, and Ellison 1999; Koenig, McCullough, and Larson 2001; McCullough et al. 2000; Musick, House, and Williams 2004; Oman, Kurata, Strawbridge, and Cohen 2002; Oman and Reed 1998; Strawbridge, Cohen, Shema, and Kaplan 1997).

Why might attendance be inversely related to mortality? Attendance may affect mortality by psychological mechanisms, such as providing spiritual comfort or meaning. Most evidence, however, points to social support gained from attending services, (Ellison and George 1994;

Ferraro and Albrecht-Jensen 1991; Hummer et al. 2004; Jarvis and Northcott 1987; Musick, House, and Williams 2004), which is linked to better mental and physical health (House, Umberson, and Landis 1988; Thoits 1995). Religious social support might be higher quality than that from other sources (Ellison and George 1994). At the very least, those who attend religious services on a regular basis are more likely to have more close relationships with friends and family (Idler and Kasl 1997a; Oman, Kurata, Strawbridge, and Cohen 2002; Strawbridge, Shema, Cohen, and Kaplan 2001). Attendance also encourages better health behaviors, which will be discussed in the next section.

Frequency of attendance varies by religion. So-called “strict” churches, mostly found in the Evangelical and Black Protestant groups, have higher commitment and participation (Iannaccone 1994) than other religions. African Americans in general participate more in religious activities than Whites (Taylor, Chatters, Jayakody, and Levin 1996). Catholics traditionally have attended services with greater frequency than most other religions, although this pattern is becoming less pronounced (Schwadel 2010). Those with no religious preference are unlikely to attend services.

Less clear is how or even whether the effect of attendance may vary by affiliation (Jarvis and Northcott 1987). Again, lack of affiliation data has limited research on this topic. Although conservative Protestant groups are perceived as having denser and more tightly knit social groups, empirical tests fail to find differences in the effect of church attendance on social support for Conservative Protestants relative to other religious groups (Ellison and George 1994). On the other hand, Black churches provide more programming which may foster a stronger sense of community and encourage more significant social support networks than churches in White communities (Ellison, Hummer, Cormier, and Rogers 2000; Krause 2002).

It is important to note that attendance at religious services could be complicated by health status. Those who become ill or functionally impaired may be both less likely to attend and more likely to die; however, it is not clear how or even whether or not this would vary by religion. Previous studies have not found a significant association between the onset of illness and religious attendance (Benjamins, Musick, Gold, and George 2003; Idler and Kasl 1997b). Health selectivity accounts for only a small portion, if any, of any religion-mortality association (Hummer et al. 2004; Hummer, Rogers, Nam, and Ellison 1999; Idler and Kasl 1997b; Musick, House, and Williams 2004; Oman, Kurata, Strawbridge, and Cohen 2002; Strawbridge, Cohen, Shema, and Kaplan 1997).

Health behaviors

Health behaviors mediate the relationship between religion and mortality; those with any religious involvement display better health behaviors than those with no involvement (George, Ellison, and Larson 2002; Hummer, Rogers, Nam, and Ellison 1999; Oman, Kurata, Strawbridge, and Cohen 2002; Strawbridge, Cohen, Shema, and Kaplan 1997; Strawbridge, Shema, Cohen, and Kaplan 2001).

Most research on religion and health behaviors ignores any possible variation by affiliation, instead focusing on differences between the religious and the unreligious. Evidence from the few previous studies investigating whether differences in health behaviors explain mortality difference is mixed. Extensive evidence supports health behaviors as a key reason Mormons (Enstrom and Breslow 2008) and Seventh Day Adventists (Heuch, Jacobsen, and Fraser 2005) have such noted longevity (George, Ellison, and Larson 2002; Hummer et al. 2004). For other religions, some find suggestive, but not direct, evidence supporting this link (Merrill and Lyon 2005; O'Reilly and Rosato 2008). Others have found differences in health

behaviors, but these differences do not account for the mortality differences (Rasanen et al. 1996; Schlundt, Franklin, Patel, McClellan, Larson, Niebler, and Hargreaves 2008).

Health practices vary by religion. Generally, conservative Protestants are more likely to sustain from alcohol than more liberal Protestants, Jews, and Catholics (Koenig, McCullough, and Larson 2001; Michalak, Trocki, and Bond 2007). Clearly, excessive alcohol consumption is unhealthy; however, moderate use has been shown to be protective, particularly for older adults (Marmot 2001; Thun, Peto, Lopez, Monaco, Henley, Heath, and Doll 1997; White, Altmann, and Nanchahal 2002).

The extent of any religion's effect on health behaviors may vary by level of commitment to the religion (Hummer et al. 2004). Those who attend religious services have better health behaviors than those who do not (Idler and Kasl 1997a; Oman, Kurata, Strawbridge, and Cohen 2002; Strawbridge, Shema, Cohen, and Kaplan 2001). So, health behaviors may be affected by both religious affiliation and religious commitment.

Drawing on the prior literature, I test three possible explanations for the variation in longevity by religious affiliation.

Hypothesis 1: If mortality differentials by religion are due to differences in socio-demographic composition by religious tradition, the advantage of the high SES groups should be reduced or eliminated when controlling for socio-demographic composition.

Hypothesis 2: If mortality differentials by religion are due to differences in religious participation, the advantage of religions that attend most frequently should be reduced or eliminated when controlling for attendance.

Hypothesis 3: If mortality differentials by religion are due to differences in health behaviors, the advantage of religions that have low proportions of smokers and heavy alcohol consumers should be reduced or eliminated when controlling for health behaviors.

Methods

Data

The data are from the HRS (Health and Retirement Study)¹, a panel study (1992 through 2006) of older adults living in the U.S.. Respondents included in this study were recruited in 2002 and do not have missing data on any key variables such as religious affiliation, birth date, or gender. Respondents lost in subsequent years are censored at the date of their last interview ($n=2,030$). Otherwise, respondents are followed from entry until death ($n=4,156$) or the date of the last survey in 2006 ($n=12,541$). The total sample consists of 18,727 individuals.

To measure religion and religious affiliation, respondents were asked a series of questions, starting with, "what is your religious preference, are you Protestant, (Roman) Catholic, Jewish, or something else?" Protestants were asked which denomination, and those who said other were asked to specify. Because Protestants are a large and heterogeneous group, I classify them into smaller, more theoretically relevant categories using the groups proposed by Steensland et al. (2000). The HRS data for 1992, 1994, and 1996 give specific denominations for Protestant respondents. For respondents from the AHEAD sample (those born before 1924 and recruited into the study between 1991 and 1993) as well as those

¹The HRS is representative of the non-institutionalized adult population over the age of 50, starting in 1992. New waves of respondents are recruited every 6 years. More information on the HRS is available elsewhere (<http://hrsonline.isr.umich.edu/>)

entering the study in 1998 or later, the HRS only provides affiliation groups, which do not include denominations for Protestants. Therefore, the Protestant sub-groups are available only for respondents who entered the HRS in 1992, 1994, or 1996, whereas the non-Protestant religion categories include all waves. Some religious groups were omitted. A few Protestant categories had very few respondents and the “other religion” (*e.g.*, Muslim, Buddhism) category was too small and too diverse to be meaningful for analysis. Thus, the categories used here are Catholic, Jewish, None/No Preference, Mainline Protestants, Evangelical Protestants, and Black Protestants. More information on these categories is available in Steensland (2002).²

In most waves, the HRS asks respondents, “About how often have you attended religious services during the last year? (Would you say more than once a week, once a week, two or three times a month, one or more times a year, or not at all?)” I use each respondent’s answer to this question the first time they were asked in order to minimize confounding effects, such as health status, that may affect attendance as death nears. Since the HRS did not ask this question during the 1998, 2000, or 2002 interview waves, 6.5 percent of respondents were never asked about attendance, due to either attrition or mortality. I use multiple imputation methods (Royston 2009) to address this missing data. Using the Stata user-written program ICE (Imputation by Chained Equations), I create ten datasets with imputed values for attendance in cases where data are missing. Parameter estimates in the analyses are averaged across these imputed datasets.

Covariates used in this analysis include self-reported sex (male or female), race/ethnicity (non-Hispanic White, non-Hispanic Black, Hispanic, and Other), foreign born (versus U.S. born), years of education (0-17+), wealth, marital status (married/partnered, divorced/separated, widowed, and never married), smoking, and alcohol consumption. The HRS asks about current and former smoking behaviors, as well as alcohol consumption. Due to slight changes in how respondents were asked about alcohol consumption, the categories used here are broad: those who never drink, those who drink moderately, and those who drink heavily.

Table 1 presents characteristics of the sample by religion. Variation in mean year of birth by affiliation is due to the limited availability of Protestant affiliation in select waves. The proportion male in the no affiliation category (58.6 percent) is much higher than the others. As expected, Catholics include more Hispanics (24.7 percent) and those not born in the U.S. (22.1 percent) than the other groups, and the Black Protestant group is (by definition) almost entirely Black.³ Mainline Protestants and Jews include higher proportions of white people, higher mean years of education, and higher levels of wealth than the other religious groups. Black Protestants and those with no preference have the highest proportion of current smokers; Evangelical Protestants, as expected, have the highest proportion of those who do not drink. Black Protestants and those with No Preference have higher proportions separated or divorced than the other religions. Evangelical Protestants and Black Protestants report the highest attendance of all the groups.

To estimate mortality differentials by religious affiliation, I use Cox proportional hazard models (Cleves, Gould, and Gutierrez 2004). I created a dataset with one observation per respondent per survey wave. Respondents remain under observation until their death or age at last interview with age, rather than time on study, as the timescale (Kom, Graubard, and

²Due to how the HRS religion information was collected, a few minor exceptions do not correspond precisely to the categories as proposed by Steensland et al. (2000). “Reformed” Protestants are in the Evangelical Protestant, not Mainline Protestant category. All non-denominational Protestants were included in the Evangelical Protestant category. Lastly, 72 Black Protestants were assigned to the Black Protestant category although they could alternately have been Evangelical Protestants.

³The religious categories, as mentioned above, are based on those by defined by Steensland et al., not by race, so Black Protestant refers to denominations that are traditionally Black (*e.g.*, African Methodist Episcopal Church), not any Black who is a Protestant.

Midthune 1997). Respondent observations are split into spells to allow age, as well as marital status, alcohol consumption, and smoking status to vary with each survey wave. In the event that information on marital status, alcohol consumption, or smoking status was missing at any given wave, data from the most recent previous interview were used. I first estimate mortality by religion unadjusted for other characteristics, and then add in additional predictors according to the research hypotheses.

Results

Table 2 shows the relative hazard of mortality for each religious group relative to the others. For example, relative to Catholics, those with no religious preference have a 23 percent higher hazard of mortality. This table also shows that Black Protestants are significantly disadvantaged relative to every other religious group, and Mainline Protestants and Jews are advantaged relative to other religious groups. Those with no religious preference and Evangelical Protestants are disadvantaged relative to Mainline Protestants, Jews, and Catholics. Catholics have slightly higher mortality than Jews and Mainline Protestants, but the difference is not significant.

Table 3 shows the results from the Cox models testing hypothesis 1. As in Table 2, Table 3 Model 1 shows the effects of religion on mortality with no covariates. Black Protestants, Evangelical Protestants, and those with no religious preference have significantly higher mortality than Mainline Protestants. Jews and Catholics have hazards similar to Mainline Protestants.⁴

The next models test the extent to which differences in socio-demographic composition of religions explain mortality differences. Model 2 controls for gender, race, marital status (time varying), and nativity, which generally reduce disadvantages by religion but do not eliminate them. In fact, relative to Mainline Protestants, the disadvantage drops by about half for those with no religious preference (43 percent) and for Black Protestants (54 percent). Socio-demographic controls do not greatly affect the difference in mortality between Mainline Protestants and Evangelical Protestants.

I next test the hypothesis that socioeconomic status explains the religion-mortality variation by including education in Model 3. Not surprisingly, years of education is strongly and negatively related to mortality. Education reduces the disparity between Mainline Protestants and Black and Evangelical Protestants by 23 and 33 percent, respectively. The disadvantage of those with no religious preference is slightly reduced. Model 4 includes controls for household wealth. Evangelical Protestants display an additional 30 percent reduction in mortality relative to Mainline Protestants and the difference between the groups is no longer significant. Including both wealth and education does not eliminate the mortality disadvantage of Black Protestants or those with no religious preference. This suggests that the mortality disadvantage of these groups is not attributable to socioeconomic status or race alone.

⁴I tested the results for possible informative censoring by doing the analysis as though all censored cases died immediately after last interview and again as though all censored cases survived to the last interview wave (mid-point of July 2006). Results did not change much for any religion, with the exception of Catholics. Assuming all missing Catholics are dead, the relative hazard increases by a large margin relative to Mainline Protestants. Catholics are more likely to be foreign born and Hispanic than other religions. Catholics lost to follow-up are even more likely to be Hispanic (27.7 percent versus 24.8 percent) and foreign born (70.6 percent vs. 78.2 percent) than Catholics whose vital status is known. Research on the low mortality of foreign born Hispanics shows that return-migration plays a large factor (Palloni and Arias 2004). Thus, the mortality disadvantage of Catholics represents a conservative estimate; they in fact may have a larger mortality disadvantage relative to Mainline Protestants since some probably returned to their country of origin and died there (HRS does not follow those who leave the US).

The effect of attendance at religious services (hypothesis 2) is shown in Table 4. Net of the socio-demographic controls included in table 3, attendance at religious services is protective. As shown in Model 1 (which does not control for religious affiliation), attending regularly is highly protective relative to not attending at all (HR= 1.42), consistent with other research on religion and health. Including affiliation, as in Model 2, shows what an important religion-mortality link attendance is. Before including attendance (as in Model 4 of Table 2), Evangelical Protestants and Catholics had mortality hazards comparable to Mainline Protestants. Once attendance is included in the model, these two groups have mortality hazards significantly higher than Mainline Protestants. Favorable attendance patterns keep mortality levels relatively low. Similarly, Black Protestants, who had a 29 percent higher risk of mortality than Mainline Protestants, show a 13 percent increase in their relative hazard when attendance is controlled. For these groups, attendance makes mortality differentials larger. On the other hand, those with no religious preference, who have much lower rates of attendance, show reduced mortality risks relative to Mainline Protestants when attendance is controlled. To test whether the effect of attendance varies by affiliation, I ran models including interactions between attendance (2-3 time a month or more versus 1 or more times a year and less) and affiliation. Generally, interactions were not significant with two notable exceptions. Never or rarely attending services is less harmful for those with no religious preference than Mainline Protestants, but is more harmful for Evangelical Protestants than Mainline Protestants.

Hypothesis two, attendance at religious services explains mortality differentials by religion, can mostly be rejected. Although attendance at services explains most of the mortality disadvantage of those with no religious preference, it widens, rather than narrows, mortality differences between Mainline Protestants and most other religions.⁵

Health behaviors (hypothesis three) seem to explain mortality differences only between Mainline Protestants and Evangelical Protestants, as in Models 3-5. Not surprisingly, Model 3 shows smoking increases the hazard of mortality. Former smokers have a 30 percent elevated risk of dying, and current smokers have an even higher risk, 75 percent, relative to those who have never smoked.⁶

Those who consume alcohol at moderate levels have a much lower risk (HR=0.58) than those who do not drink at all. The true magnitude of the effect is hard to know for sure as some who do not drink at all abstain for health reasons. Conversely, heavy drinking increases the hazard of death. Controlling for alcohol use reduces the mortality differential between Mainline Protestants and Evangelical Protestants (who are much more likely to be abstainers). Including both smoking and drinking behaviors, as in Model 4, shows the full effect of these health behaviors. Health behaviors only seem to mediate much of the attendance and mortality relationship for those who never attend services.

In sum, controlling for health behaviors reduces the disadvantage of Evangelical Protestants relative to Mainline Protestants, who are, surprisingly, harmed from their health behaviors. Hypothesis three explains some, but not much, of the differences in mortality by religious affiliation.

⁵A model including importance of religion found those who said religion was “somewhat” or “not very” important to be at higher risk of death than those who said religion was important. However, once attendance was included in the model, the effect of importance disappeared, further supporting the claim that social support is a key mediator between religion and health.

⁶To see whether the effects of these health behaviors varied by religion, I ran a model with interaction effects, shown in the appendix. The results are significant; the effect of smoking and drinking does vary by religion. Within the current and former smoker categories is substantial variation in amount and duration of smoking, seemingly by affiliation. Alcohol consumption also varies within the ‘moderate’ and ‘heavy’ categories. In addition, alcohol consumption may be more strongly discouraged by some religions, causing it to be less social of an activity and thereby reducing psychosocial benefits

Conclusion

I have examined mortality differentials by religious affiliation using a large, nationally representative, longitudinal dataset from the U.S. Mainline Protestants have a large mortality advantage relative to many other religious groups. The magnitude of the difference between Mainline Protestants and Black Protestants (with no controls) is larger than the difference between Blacks and Whites or the richest and the least wealthy. Three explanations of these differentials are: socio-demographic status, health behaviors, and psychosocial support.

Socio-demographic status reduces much of the differences, particularly between Mainline Protestants and Evangelical Protestants and Black Protestants. Education and wealth both account for much of the mortality differential. Still, even with these controls, Black Protestants have an approximately 29 percent higher hazard of mortality than Mainline Protestants.

Attendance at religious services protects against mortality. Controlling for attendance eliminates the disadvantage of those with no religious preference, but increases the disadvantage for groups with high attendance behavior (Catholics, Evangelical Protestants, and Black Protestants).

Controlling for smoking and drinking behaviors (health behaviors that some religions prohibit or discourage) mediates the differentials, particularly for Evangelical Protestants, who are more likely to abstain from alcohol use. Mainline Protestants still have a sizeable, significant advantage, relative to Catholics and Black Protestants.

Previous research on religion find protective effects for attendance (*e.g.* Hummer, Rogers, Nam, and Ellison 1999; Musick, House, and Williams 2004)), but few studies address religious affiliation. The results here show that attendance differs by affiliation, and this difference in attendance behaviors affects the pattern of mortality by affiliation. Respondents' first report of attendance, as opposed to a time-varying measure, is used to minimize any reverse causation and selectivity problems. Although it seems possible that religious commitment may change with age or with the onset of illness, previous studies have found this not to be true (Benjamins, Musick, Gold, and George 2003; Hummer et al. 2004; Hummer, Rogers, Nam, and Ellison 1999; Idler and Kasl 1997b; Musick, House, and Williams 2004; Oman, Kurata, Strawbridge, and Cohen 2002; Strawbridge, Cohen, Shema, and Kaplan 1997). Additionally, the effect of importance of religion on mortality differentials, which may be less influenced by health status, did not differ from the effect of attendance.

The effect of attendance at services does not differ much by religious affiliation, although never or rarely attending services was more harmful for Evangelical Protestants than Mainline Protestants, which somewhat contradicts the findings of Ellison and George (1994). Contrary to expectations, no differences were found for Black Protestants. Rare attendance at services is less harmful for those with no religious preference than Mainline Protestants, which might be because those with no preference do not receive any benefit from attendance at services, psychosocial or otherwise. Future studies considering the health benefits of religious attendance need to consider exactly what the effect of attendance means across the different religious affiliations.

Evidence for health behaviors as the explanation linking mortality and religion is mixed. Studies on health behaviors and religion often find that health behaviors explain 10-35 percent of mortality differences by attendance at religious services (Hummer, Rogers, Nam, and Ellison 1999; Musick, House, and Williams 2004; Strawbridge, Cohen, Shema, and Kaplan 1997), but differences by affiliation are less clear. Here I find health behaviors only

mediate the relationship between affiliation and mortality for Evangelical Protestants. This group is more likely to abstain from alcohol, thus forgoing both the protective biological effects (Marmot 2001) and perhaps protective psychosocial effects, to the extent that drinking occurs in social contexts. Interestingly, health behaviors do not mediate much of the relationship between affiliation and mortality for other religions. This could be because health behaviors are measured imprecisely or the religious categories used here are too broad. The influence of religion, particularly on health behaviors, is only effective to the extent that members obey guidelines. On the other hand, it may be that being associated with any religious organization has an effect on health behaviors, and affiliation matters less.

There are some important limitations to this research. The categories of religions used here reflect important differences but are still broad; big differences may exist among religions, particularly in the Protestant groups. Also, we do not have information on the religion in which respondents were raised. Religion switching may mask early life effects of membership in different religions, and those who change religions may be unique. Lastly, this study does not incorporate any measure of private practice of religion, such as prayer, which has been shown to be beneficial for health and may vary by religious affiliation.

Understanding more about how different religious affiliations impact health and mortality can follow many directions. Future research should look into cause-specific mortality differentials by religion to see if any diseases show an affiliation differential. Future research should also address the specific psychosocial support from religion more directly. Is religion a unique type of social support, or do other organized groups offer the same mortality advantage? Lastly, I find suggestive evidence that health behaviors may not affect the mortality of members of different religions the same way. The explanation for this is another interesting subject for future research.

The U.S. is a unique context to study religion because of its exceptional diversity and extent of religious involvement (Gillum and Dupree 2007). As religion continues to play an important role in American society, it is important to understand more about the relationship between religion and health and mortality.

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Figure 1.
Life expectancy by religious affiliation at age 55, HRS.

Table 1

Descriptive statistics by affiliation, HRS sample. Proportion or mean, standard error in parentheses.

	Mainline Protestant <i>n</i> =2,856	Jewish <i>n</i> =707	Catholic <i>n</i> =7,838	None/No preference <i>n</i> =1,827	Evangelical Protestant <i>n</i> =3,369	Black Protestant <i>n</i> =1,532
<i>Year of birth</i>	1936.2 (5.7)	1927.8 (13.9)	1932.9 (12.9)	1937.3 (13.6)	1936.8 (5.7)	1936.5 (5.6)
% Male	47.3	44.4	43.4	58.6	45.9	41.7
<i>Race/Ethnicity</i>						
% White	94.3	98.3	70.2	81.4	87.9	0.6
% Black	3.0	0.6	3.1	10.3	5.0	99.2
% Hispanic	0.8	0.7	24.8	4.7	4.9	0.0
% Other	1.9	0.4	2.0	3.6	2.2	0.2
<i>Marital status baseline</i>						
Married/partnered	84.7	75.0	74.0	72.8	84.5	64.6
Divorced/separated	9.7	6.8	8.1	14.7	9.2	19.5
Widowed	3.3	16.3	14.3	9.0	4.8	10.6
Never married	2.2	2.0	3.6	3.5	1.6	5.3
Born in U.S.	93.7	85.1	77.9	90.0	95.3	97.2
Education (0-17 yrs)	13.1 (2.5)	13.9 (3.0)	11.4 (3.9)	12.6 (3.4)	11.7 (2.9)	11.0 (3.2)
<i>Wealth</i> *						
<2000	5.0	8.9	11.9	12.0	9.4	26.3
2,001-50,000	14.7	13.4	18.7	18.2	21.0	30.0
50,001-150,000	25.7	10.3	26.5	25.2	31.6	28.9
151,001-300,000	23.7	20.7	20.6	19.9	19.9	10.4
300,001+	30.9	46.7	22.2	24.7	12.0	4.3
<i>Attendance Frequency</i>						
1× per week +	25.3	9.3	43.4	6.0	43.3	46.3
2-3 per month	17.8	11.5	12.6	3.9	11.9	23.8
1× + per year	29.4	47.5	20.4	18.7	19.4	17.9
Not at all	26.4	25.2	15.6	55.2	24.2	9.5
Missing	1.1	6.5	7.9	16.2	1.3	2.5
<i>Health Behaviors</i> *						

	Mainline Protestant	Jewish	Catholic	None/No preference	Evangelical Protestant	Black Protestant
	<i>n</i> =2,856	<i>n</i> =707	<i>n</i> =7,838	<i>n</i> =1,827	<i>n</i> =3,369	<i>n</i> =1,532
Smoking (baseline)						
% Current	25.7	8.9	20.8	29.1	27.8	32.7
% Former	38.4	50.6	38.6	40.7	32.4	30.5
% Never	35.2	39.7	39.8	29.5	38.8	36.2
% Missing	0.7	0.7	0.8	0.7	1.0	0.6
Drinking (baseline)						
% Frequent	1.5	0.4	1.0	1.6	1.5	2.0
% Moderate	71.4	69.4	67.8	71.2	41.1	49.6
% Never	27.1	30.1	31.3	27.1	57.4	48.4
# deaths	493	255	2,185	446	648	425

* Wealth is household wealth at baseline interview, standardized to dollars in the year 2000

^ Marital status and health behaviors are updated each survey wave

Table 2
Hazard ratios from pairwise comparisons, Cox Proportional Hazard Models

	Mainline Protestant (reference group)	Jew	Catholic	None	Evangelical Protestant	Black Protestant
Mainline Protestant	---	0.92	1.04	1.28***	1.22***	1.84***
Jew	1.09	---	1.14	1.40***	1.33***	2.00***
Catholic	0.96	0.88	---	1.23***	1.17**	1.76***
None	0.78***	0.71***	0.81***	---	0.95	1.43***
Evangelical Protestant	0.82***	0.75***	0.85**	1.05	---	1.51***
Black Protestant	0.54***	0.50***	0.57***	0.70***	0.66***	---

*
 $p < 0.05$

**
 $p < 0.01$

 $p < 0.001$

Table 3
Hazard ratios from Cox Proportional Hazard Model, socio-demographic characteristics

	Model 1	Model 2	Model 3	Model 4
Religion (ref = Mainline Prot.)				
Jewish	0.92	0.98	1.04	1.04
Catholic	1.04	1.08	1.06	1.05
None/No Pref.	1.28***	1.16*	1.15*	1.15*
Evan Prot.	1.22***	1.21**	1.14*	1.09
Black Prot.	1.84***	1.39***	1.30**	1.29**
Gender (Female)		0.61***	0.61***	0.60***
Race/Ethnicity (ref = white)				
Black		1.27***	1.21**	1.05
Other/Missing		1.24	1.23	1.06
Hispanic		1.06	0.88*	0.81***
Marital Status ^ (ref =Married/partnered)				
Divorced/separated		1.60***	1.60***	1.36***
Widowed		1.28***	1.26***	1.14***
Never married		1.45***	1.45***	1.23**
Foreign born		0.84***	0.80***	0.77***
SES				
Yrs of Education			0.96***	0.98***
Wealth				
(ref = <=2,000)				
2,001-50,000				0.76***
50,001-150,000				0.65***
151,001-300,000				0.55***
300,001+				0.44***
Generalized R ²	0.001	0.004	0.006	0.007
Log likelihood	-34737	-34522	-34482	-34389

*** significant at $p < 0.001$

** significant at $p < 0.01$

* significant at $p < 0.05$

^ marital status is time-varying

Table 4
Hazard Ratios from Cox Proportional Hazard Model

	Model 1	Model 2	Model 3	Model 4	Model 5
Religion (ref = Mainline)					
Jewish		1.01	1.03	1.02	1.04
Catholic		1.13*	1.12*	1.15*	1.14*
None/No Pref.		1.04	1.04	1.07	1.07
Evan Prot.		1.14*	1.14*	1.03	1.03
Black Prot.		1.33**	1.32**	1.34**	1.32**
Attendance (ref=once a week or more)					
2-3 per month	1.23***	1.25***	1.22***	1.27***	1.23***
1 or more per year	1.22***	1.25***	1.18***	1.29***	1.21***
Not at all	1.42***	1.47***	1.36***	1.46***	1.35***
Health Behaviors					
Smoking (ref= never)					
Former			1.30***		1.35***
Current			1.75***		1.80***
Drinking (ref=never)					
Moderately				.58***	.57***
Frequently				1.68***	1.64***
Generalized R ²	.008	.008	.010	.013	.015

Note: Models control for gender, race/ethnicity, marital status (time-varying), foreign born, years of education, and baseline household wealth.

significant at $p < 0.001$

**
significant at $p < 0.01$

*
significant at $p < 0.05$