Religion, Life Expectancy and Active Life Expectancy in the United States

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Previous studies have shown a link between religion and health status among older adults in the U.S. On balance, this research has shown a beneficial influence of religion on different aspects of physical and mental health and mortality. Much of this research has been cross-sectional and/or examined health outcomes or mortality separately, but not in combination. In this study we are interested in quantifying the effect of religion/religiosity on morbidity and mortality simultaneously by estimating active life expectancy.

Data and Methods

Data for this study come from the Health and Retirement Study (HRS), an ongoing panel study of men and women over the age of 50 in the United States. The study began in 1992 with a cohort of then preretirement-aged individuals born between 1931 and 1941. New cohorts were added in 1993 and 1998 to round out the sample over age 50, and additional cohorts are enrolled every 6 years (e.g., in 2004, 2010, etc.) to refresh the sample at the younger ages. Response rates range from 70% to 82% in the baseline wave (depending on birth cohort and entry year), and from 87% to 89% at each follow-up wave. HRS conducts about 20,000 interviews every 2 years using a combination of telephone and in-person interviews. The questionnaire includes measures of employment and retirement, financial status, health and health care utilization, family composition and exchanges, cognition, expectations, and psychosocial factors. Fact and date of death are verified through linkage to the National Death Index.

Using data from the 1998-2012 waves of HRS, we estimate total, active and inactive life expectancy for persons over age 50, by sex and three indicators of religion, controlling for other socio-demographic factors. We use IMaCh (Interpolated MArkov CHain), a computer software program developed by researchers at INED in France, for estimating active life expectancy. IMaCh estimates total, active and inactive life expectancy using a multistate life table method.

We define active vs. inactive by utilizing 6 questions on Activities of Daily Living (ADL): dressing, bathing, eating, walking across a room, getting in/out of bed, and using a toilet and 5 Instrumental Activities of Daily Living (IADL): preparing for own meals, shopping for personal items, using a telephone, taking medications and managing money. Those who have any difficulty performing at least one ADL/IADL are defined as inactive, otherwise as active. Three key indicators of religion that we examine are religious affiliation (Protestant,

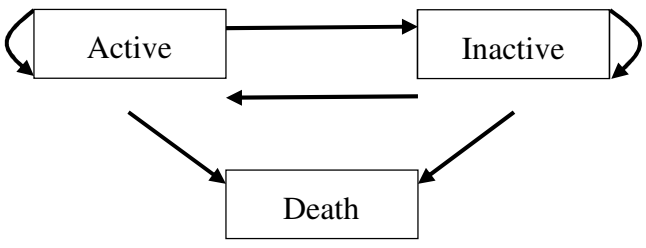
Catholic, Jewish, None/no preference and Other), attendance at religious services (more than once a week, once a week, two or three times a month, one or more times a year and not at all), and importance of religion (very important, somewhat important, not too important).

HRS includes a question on religious affiliation, which is asked only in the baseline wave ("What is your religious preference; is it Protestant, Catholic, Jewish, some other religion, or do you have no preference?"). We examine two different classifications: any affiliation vs. no affiliation and, among those who have an affiliation, Catholic vs. Protestant. (Sample sizes for other affiliations were not sufficient to examine other groups separately.) A question on religious service attendance was added in 2004 ("About how often have you attended religious services during the past year?"). This question is asked of all individuals regardless of whether they report any religious affiliation. We used a 3-category indicator of religious attendance: at least once a week; less than once a week; never. Finally, a question on self-rated importance of religion was asked in 1998 and 2004 ("How important would you say religion is in your life; is it very important, somewhat important, or not too important?"). We use this as a 3-category variable in the analyses.

For analyses that examine religious affiliation and importance of religion we used 8 waves of data (1998-2012) to estimate life expectancy, active life expectancy and inactive life expectancy, and for analyses examining religious attendance, we used 5 waves of data (2004-2012). All models are stratified by sex.

Active life expectancy estimation begins with the calculation of the probability of transitioning across health states and mortality. The figure below illustrates a basic transition model. Here, the possible transitions among two health states and the absorbing state of death are shown. As represented by each arrow, there are six transitions including retention in healthy or unhealthy states, movements from health to unhealthy or vice versa, and movements from healthy and unhealthy to death. People can deteriorate or improve in health over time and the model allows us to take into account different mortality rates by initial health status.

Figure 1. Depiction of Possible Transitions among Health States



The sample for our study is comprised of 8,657 men and 11,293 women. For this sample, we observed a total of 102,583 transitions in health status between 2 successive waves. A breakdown of the transitions is shown in Table 1. There is a fair amount of stability in the transitions, with over half (63,445) starting and ending in an active state and roughly 15 percent (15,579) starting and ending in an inactive state. The number of transitions indicative of recovery (inactive to active) is only slightly smaller than the number signaling a decline in health (active to inactive).

Table 1. Transitions by sample persons

	Active	Inactive	Dead	Total
Active	63,445	6,929	2,889	75,963
Inactive	5,795	15,570	5,255	26,620
Total	69,240	25,199	8,144	102,583

We estimated simple total life expectancy by sex to compare with published life table values for 2005, mid-year for our study period. Our estimated values are slightly higher than the published life expectancies but very reasonable.

Table 2. Comparison of life expectancy from 2005 published life tables and estimated based on study sample at age 50

	Males	Females
2005 published	28.5	32.2
Estimated (1998-2012)	28.8	32.7

Table 3 presents distributions for the three religion measures used in the study for men and women combined. The vast majority of people report some religious affiliation, with most identifying as Protestant. About two-fifths attended religious services at least once a week during the past year and slightly over one-quarter never attended in the past year. Most individuals consider religion to be very or somewhat important in their lives.

Table 3. Percentage Distributions for Religion Measures (weighted)

Religious affiliation	%	Frequency of attendance	%	Importance of religion	%
Protestant	62.5	> once a week	13.9	Very important	61.5
Catholic	27.6	Once a week	24.6	Somewhat important	26.5
Jewish	2.5	2-3 times a month	12.2	Not too important	12.0
Other	1.4	1+ times per year	23.0		
No affiliation	6.0	Never	26.3		

Preliminary Results

We estimated total, active and inactive life expectancies, controlling for sex, by religious affiliation (any versus none), by Catholic/Protestant, by self-rated importance of religion, and by religious service attendance. For illustrative purposes we include results for religious service attendance in Table 4. These results are based on population-based multistate life table methods and standard errors are in parentheses.

Table 4. Estimated total, active and inactive life expectancy at age 50 by sex and religious service attendance

		Total LE	ALE	IALE
Males	At least once a week	31.4 (0.459)	25.1 (0.402)	6.4 (0.246)
	< once a week	29.8 (0.443)	23.8 (0.380)	6.1 (0.232)
	Never	27.0 (0.426)	21.4 (0.386)	5.6 (0.223)
Females	At least once a week	35.7 (0.367)	27.1 (0.313)	8.6 (0.238)
	< once a week	32.7 (0.413)	24.2 (0.334)	8.6 (0.272)
	Never	28.7 (0.421)	21.0 (0.380)	7.8 (0.268)

Preliminary results suggest that religious service attendance is the only indicator of those that we examined that shows a large and consistent association with the life expectancies measures. For both men and women, more frequent attendance at religious services is significantly associated with higher total and active life expectancy, but not inactive life expectancy. Men who attend services at least once per week live about 4 years longer in total than those who do not attend services at all. Most of these gains are in active as opposed to inactive life expectancy. The differentials for women are even larger.

These findings are consistent with other studies that have examined different aspects of health, and suggest that actual behavior may be more important than affiliation and subjective importance of religion in influencing health. Underlying health is an important factor that affects an individual's ability to attend services; thus, it will be important to control for this in subsequent analyses. In the interim we will calculate status-based life tables to assess whether religion has an effect on length of remaining inactive life if already classified as inactive.

Acknowledgements

This research is supported by the John Templeton Foundation, Grant No. 57521, "Linking spirituality and religiosity to life and health expectancy: A global comparative study." The HRS (Health and Retirement Study) is sponsored by the National Institute on Aging (grant number NIA U01AG009740) and is conducted by the University of Michigan.