

**MEDICAID EXPANSION AND THE U.S. SECULAR BOOM:
THE CROWDING OUT OF RELIGION'S SOCIAL INSURANCE FUNCTION**

By
SAMUEL HAMMOND

A Thesis Submitted to
Saint Mary's University, Halifax, Nova Scotia
in Partial Fulfillment of the Requirements for
the Degree of **BACHELOR OF ARTS WITH HONOURS**

April, 2014, Halifax, Nova Scotia

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Approved: Dr. Atul Dar
Department Chair

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Date: April 9th, 2014

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SUBMITTED APRIL 14, 2014

Abstract

Since 1990 the share of the U.S. population claiming no religion has more than doubled. This paper analyzes the causes of this “secular boom” using the conception of religious organizations as informal insurance providers. Applying panel estimation techniques to data from the General Social Survey and Religious Congregations & Membership Study, my results consistently demonstrate that the growth in the non-religious population was caused by the massive expansion of public assistance medical benefits, principally Medicaid, in the early 90’s. Transmission mechanisms are discussed, including the role of religious public hospitals.

Date: April 9th, 2014

Table of Contents

I. Introduction	5
II. Literature Overview	6
II.a. Religion and Market Structure	6
II.b. Religious Organization.....	7
II.c. The Religion Commodity	8
II.d. Religion as Insurance	11
III. Data and Methodology	15
III.a. Preliminary Evidence	15
III.b. Religious Congregations & Membership Study (RCMS).....	17
III.b.i Empirical Model using RCMS data.....	23
III.b.ii Discussion of Results from RCMS	25
III.c. General Social Surveys (GSS)	29
III.c.i Empirical Model using GSS data.....	31
III.c.ii Discussion of Results from GSS	37
IV. Conclusion and Suggestions for Further Research	39
V. References.....	41
Appendix.....	51

I. Introduction

The last two decades have seen a sweeping change in the American religious landscape. Since at least the early 1990s, both religious affiliation and metrics of involvement in religion such as the frequency of church attendance have shown significant, historically unprecedented declines across all fifty states (Pew, 2008; Gallup, 2014; Kosmin, & Keysar, 2009). Christianity, in particular, which once constituted over 90 percent of the American public, now appears to be in relative decline from its status as the religion of the overwhelming majority, with considerable losses among both Catholic and Protestant congregations (Pew, 2008). Simultaneously, the population of so-called “Nones” or “Nips” (believing in “nothing in particular”) has grown dramatically, nearly doubling their share of the American population with the expectation of continued growth. Researchers have dubbed this phenomenon the “secular boom” (Kosmin & Keysar, 2008).

In this paper, I propose and verify the accuracy of a particularly compelling explanation, rooted in past theoretical models. I hypothesize that the U.S. secular boom can be linked to the dramatic expansion of public health assistance benefits such as Medicaid, beginning in the late 1980s. I conceptualize my model by viewing religious organizations as providers of social insurance and intermediaries for risk pooling, for the benefit of committed members (Franck & Iannaccone, 2009; Chen, 2010; Clark & Lelkes, 2006). My direction of research is closest in spirit to Gill and Lundsgaarde (2004) which

is believed to be the first to test the link between aggregate welfare spending and measures of religiosity.

The two main data sources I will use on religion are the General Social Survey (GSS) and the decadal church membership data compiled in the Religious Congregations & Membership Study (RCMS). Among my results is the finding that a \$100 increase in per-capita Medicaid spending is associated with a 1.3 percentage point increase in the population share of the non-religious. My objective being the measurement of the impact of the state subsidized healthcare on measures of religious preference, I use panel-data techniques on a model tested for robustness to alternative specifications.

The paper begins with a review of the existing literature. The past research reviewed, with a focus on “rational choice” or “social exchange” theories about religious markets, helps to determine the exact nature of the religious commodity. This is followed by an empirical section where my results are reported. I conclude with a discussion of the findings and suggestions for further research.

II. Literature Overview

II.a. Religion and Market Structure

Adam Smith introduced the economics of religion in a chapter of *The Wealth of Nations* (Smith, 1981, Book V, Chapter I). Focusing on market structure, he emphasized the unintended consequences of a state monopoly on religion. He argued that religiosity suffers under state monopoly relative to the nations with deregulated religion markets,

wherein a plurality of religious institutions engages in monopolistic competition seeking to have a larger market share through recruiting adherents (Iannaccone, 1996; Ekelund et al., 2005). Subsequent empirical research has provided evidence for Smith's insight, finding that government regulation and monopolization of the religion market leads to lower rates of religious belief and church attendance (see: Iannaccone, 1996; Cojoc, 2010; North & Gwin, 2004, Finke & Stark, 1992).

The generality of these results has been contested, though the disagreement in the literature has focused on the validity of various indices of religious pluralism as accurate proxies for religious "competition" (see: Finke & Stark, 1988; Chaves and Gorski, 2001; and Voas, Olson & Crockett, 2002). Separate from this specific debate, religious deregulation *per se* still appears to lead to increased levels of religious participation, quantified through conventional measures (Olav, et al., 2010; North & Staha, 2004). This fact helps to explain the high historical religiosity of the United States, which constitutionally separated church and state, compared to Western Europe where monarchy and state religion went hand in hand (Finke & Stark, 1992).

II.b. Religious Organization

Economists since Smith have gone further to consider the internal organisational structure of religious institutions as sources of their success. In this vein, the work of Lawrence Iannaccone (1992) was seminal. He modeled religious organizations as clubs in the business of supplying local public goods with positive returns to increased participation. Since religious institutions are mainly funded through voluntary donations or customs

such as titheing, like many other types of clubs they may encounter the problem of free-riding as the congregation grows. Seemingly unproductive and even bizarre practices and rituals, from stigmas to self-sacrifice, Iannaccone (1992 & 1994) argued, could thus have “rationally” emerged as a solution to “screen out” people with low willingness to contribute to religious groups’ activities (see also: Henrich, 2009; Aimone et al., 2010).

A key prediction of this model is that stricter religious organizations will be able to better screen out free-riders and therefore be more successful in terms of longevity and popularity. Iannaccone’s influential “Why Strict Churches Are Strong” (1994) argued that the distinctiveness of a religious denomination was a better predictor of religious participation than any standard individual-level variable like age, education, region or marital status (Iannaccone, 1994: 1200). Olson and Perl (2001) and (2005:123) provided further evidence that high demands on congregants serve to limit free- and cheap-riding members, and generate increased contributions (See also: Scheitle & Finke 2008:815).

II.c. The Religion Commodity

Whereas Iannaccone’s earlier work left the exact nature of the religious commodity relatively ambiguous, Stark and Bainbridge (1987: 46) interestingly distinguish between two potential types of benefits: “Rewards” and “Compensators”. Rewards are any material returns that humans are willing to incur a cost to obtain, from participatory activities like church choir, to the status conferred in being an active church member. Compensators, on the other hand, are a postulated set of nontemporal rewards, such as

answers to existential questions, or the divine guidance derived from prayer, which reduce or eliminate existing costs.

Compensators allow many of the seemingly unproductive doctrines and rituals of a religion to exist because followers genuinely perceive theological truth. Conversely, rational choice transforms sacrosanct doctrines and symbols into a superficial kind of product differentiation or commitment signalling mechanism. In Iannaccone's own words:

"Mormons abstain from caffeine and alcohol, Seventh Day Adventists avoid eating meat, Krishnas shave their heads, wear robes, and chant in public, Moonies submit to arranged marriages, Jehovah's Witnesses refuse transfusions, Orthodox Jews wear sidecurls and yarmulkes, conduct no business on the Sabbath, and observe numerous dietary restrictions, and monks take vows of celibacy, poverty, and silence. These practices are problematic, not only because they deviate from "normal" behavior, but also because they appear completely counterproductive."

(Iannaccone, 1994: 1182)

From the point of view of the religious, things seem different: The practices are not only considered productive – they may represent the only behaviour-set conducive to eternal salvation. Azzi and Enrenberg (1975), for example, model believers as investing in religious organizations in order to receive benefits in the afterlife. While religions often promise rewards for certain behaviours in the afterlife, this does not help explain religious group formation. Versions of Hinduism and Buddhism, for example, give promises of an

afterlife with greater emphasis on personal behavior over organizational affiliation, and therefore deal in rewards and compensators with more non-exclusivity relative to Christianity (Stark and Bainbridge, 1987:36). Not all of the benefits of religions can be qualified as “intangible” or incomparable with commodities exchanged in the markets against money.

Consistent with a Iannaccone-type “commitment signalling for club goods” model is the view that the primary commodity being provided by religious organizations is a form of mutual aid or social insurance through heightened solidarity among members (Franck & Iannaccone, 2009; Berman 2000; Berman & Laitin, 2008; Chen, 2010; Scotchmer, 2002). This brings to the fore a relevant stylized fact: the *prima facie* positive correlation between secularism and state welfare spending. Among advanced economies, the Scandinavian countries are possibly among the least religious nations on earth while also having some of the most comprehensive social democratic welfare states. The United States, in contrast, is perhaps the most religious advanced economy, and one of the most laissez-faire regarding welfare spending. Cross-national studies show this to be much more than a spurious correlation (Gill & Lundsgaarde, 2004; Franck & Iannaccone, 2009). Gill (2004), which claims to be the first study to directly test welfare spending aggregates against religiosity, declares “there is likely to be a substitution effect for some individuals between state-provided services and religious services” (Gill & Lundsgaarde, 2004. page 425)

II.d. Religion as Insurance

Work by Daniel Hungerman provides strong evidence of substitution between state social insurance and religious services. His recent work (2009) using data from the United Methodist Church found that a \$1 increase in Supplemental Security Income (SSI) spending crowded out 30 cents of per-member charitable church spending in a county of average racial diversity, with the effect increasing as diversity decreases. A similar study by Hungerman (2005) of charitable giving in the Presbyterian Church found a similar crowding out effect, using the 1996 welfare reform as an instrument. Interestingly, the study was able to control for a range of church membership sizes and found steadily larger negative coefficients with respect to per-capita welfare spending as church size increased (See also: Gruber, 2004).

Studies have found evidence of the insurance function of religion in a variety of distinctive ways. Clark and Orsolya (2006) find substantial evidence of the insurance function using life satisfaction surveys and job replacement rates, concluding that religion helps buffer against “psychic” harms of unemployment as well as the material ones. Dehejia et. al (2007) find contributors to religious organizations are proportionately insured against income shocks. Chen (2010) finds a similar role in enabling consumption smoothing. Research done by health professionals have also shown the role played by religion in self-care and coping with illness and physical pain (see: Coleman & Holzemer, 1999; Colman, 2003; Coleman, 2004; Chou, 2004; Coleman et al., 2006).

The function of religion as a coping mechanism, i.e. internal insurance, helps make sense of the substantial body of studies showing a connection between religious participation and a wide range of health outcomes. The literature considers both physical and psychic harms, from reduced morbidity (See: Levin et al, 1996; Aaron, et al, 2003; Van Olphen, 2003) to the finding that the subjective well-being of religious participants increases with a religion's conservatism/strictness (Ellison, 1991). This has lead medical researchers such as Levin (1989) to propose an epidemiology of religion. In epidemiological terms, religious participation seem to imbue protective factors (Ellison & Levin, 1998), or conditions which help communities or individuals effectively cope against stressful events and mitigate risk. This social support function of religious organizations appears to work both formally through direct outreach programs (Ellison & Levin, 1998:703) and informally through social-integration and information dissemination of best health practices (Levin, 2009).

By construction, insurance functions as means of consumption smoothing and hence it presuppose the presence of risk. Miller and Hoffman (1995) were among the first to explicitly suggest a correlation between religiosity and high risk aversion. They convincingly show that gender differences in religiosity can be parsimoniously explained by the differing risk preferences of men and women. This may help explain the male bent in the demographics of the contemporary American non-religious. The risk-preference hypothesis remains controversial within sociology, but the empirical evidence continues to pile up. Miller (2000) finds strong support for the risk preference hypothesis on a cross national level. Liu (2010), in a study of religious participation in Taiwan, shows a

statistically significant relationship between risk preference and religious participation, but not affiliation. Jiang et. al. (2013) discovered that religious family firms in China are more risk averse than nonreligious family firms, as manifested in lower levels of leverage, fixed asset and R&D investments. Lastly, in a panel study on the determinants of individual risk attitudes, Bartke and Schwarze (2008) find religiosity is significantly associated with lower risk tolerance, and that risk aversion strengthens with the strictness of the religion, even across nations. Atheists in contrast were the most risk-tolerant.

Research in the development economics literature on the relationship between risk pooling and group formation provides a plausible model of religious group formation that goes beyond a generic club perspective. Indeed, models of self-enforcing risk-sharing agreements from Coate and Ravallion (1993) to Ligon, Thomas and Worrall (2002), imply many of the properties of religious clubs described by Iannaccone, but in what I believe to be a more unifying and coherent way. Take the two phenomena Iannaccone (1992) placed most emphasis on: stigma and sacrifice. On stigma, ostracism due to noncompliance falls straight out of self-enforcing insurance arrangements. On sacrifice, note that the voluntary risk-sharing literature was partially kicked-off by the insight that such arrangements could emerge through reciprocal altruism via gift exchange (Posner 1980; Arrow 1976). That is, stigma and sacrifice are specifically predicted by informal insurance models, as opposed to being a couple hypothetical solutions to an enforcement problem among many.

The club model, in contrast, simply requires any generic cost or benefit to correct behaviour in light of a participation externality. For example, Iannaccone, collaborating with Aimone et al. (2010), have tested endogenous group formation via unproductive costs in a laboratory experiment. Their results support the conclusion that “sacrifice” is an effective mechanism for engendering cooperation and improving voluntary contributions in a public goods game. But it is not clear how a religious club discovers sacrifice specifically, as opposed to other potential unproductive costs. Further, they do not explicitly test or model risk aversion, despite it being a detectable source of heterogeneity in their data (2010: 34).

An informal insurance model is also more conducive to the study of the U.S. secular boom as I have conceived it, for it provides clear parameters for self-enforcing insurance arrangements to lose relevance and collapse. For example, in the model presented in Genicot & Ray (2004) with stationary transfer payments, individuals are always updating whether to continue in the insurance arrangement based on the realization of the most recent income shock. If something exogenous reduces the probability of a severe income shock (like a state run social safety net) it is very easy for autarky to become dominant and thus for the informal arrangements to disintegrate. Moreover, informal insurance models often emphasize incentive compatibility over constraints that merely induce participation (Genicot & Ray, 2004:10). This is useful for explaining how religions can elicit greater seriousness of purpose that extends beyond being in attendance. High degrees of risk aversion relax the enforcement constraint, and vice versa. Genicot & Ray’s model also allows for the stable sub-groups to form,

potentially but not necessarily destabilizing the larger group. This has clear analogues in the study of religious schisms.

The picture that is emerging from the preceding literature review all strongly supports the view of religious organizations as informal insurance arrangements that harness the social-cohesive powers of religious beliefs and practices to address limited commitment (f. ex. Aimone et al, 2010). The insurance benefits of religion are incentive compatible and positively related to individual contribution and participation. These benefits are particularly strong when health and income shock are faced by the individual (f. ex. Ellison & Levin, 1998), and show potential to be crowded out by state provided substitutes (f. ex. Hungerman, 2009). Finally, the cross-country evidence suggests that state welfare spending may ultimately impact religiosity and even affiliation (f. ex. Gill & Lundsgaarde, 2004). My next step will be to review some preliminary evidence of the above dynamics at work in the contemporary U.S.

III. Data and Methodology

III.a. Preliminary Evidence

The U.S. Census is prohibited by law from asking a question on religious affiliation on a mandatory basis, and has not systematically collected information on religion since 1936.¹ Instead there are a series of private voluntary surveys, including regular surveying by the likes of Gallup and Pew. Gallup collects annual state level data, ideal for a panel

¹ US Census Bureau (2010), “Does the Census Bureau have data for religion?” US Census Bureau: Frequently Asked Questions. Retrieved from <https://ask.census.gov/faq.php?id=5000&faqId=29>

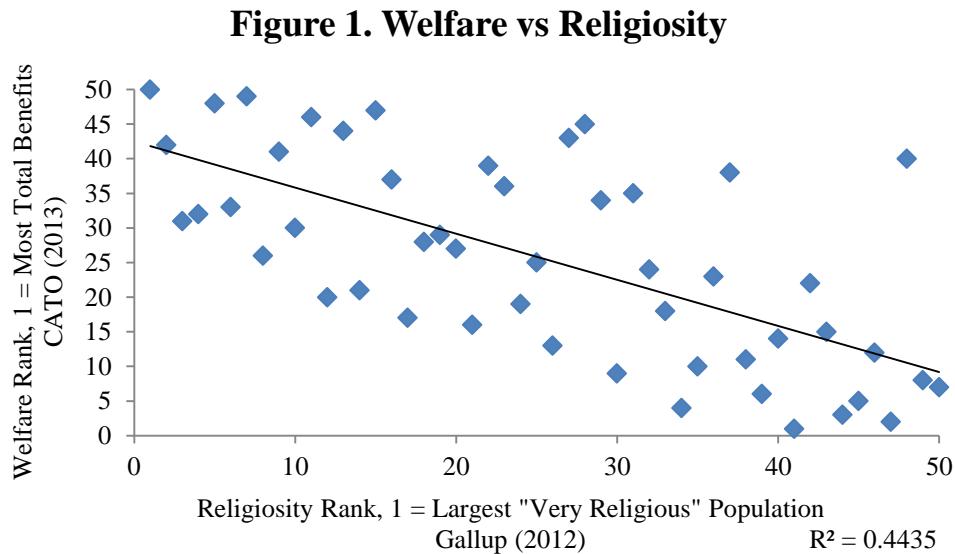
analysis; however, this paper primarily draws on the General Social Surveys (GSS) and the Religious Congregations & Membership Study (RCMS). This is mainly due to the proprietary nature of Gallup's annual state surveys.

Gallup's 2012 survey ranking state religiosity is publically available, however, and gives some stylized support to the notion that state social insurance is correlated with secularism in the U.S.. In the same way that cross national panel studies were motivated by the observed increased in secularism of European social-democracies relative to the laissez-faire religiosity of the U.S. republic (Gill & Lundsgaarde, 2004), a similar observation is possible of the internal U.S. religious landscape. The most religious states in the union tend to be in the American South, where poverty rates tend to be higher, and state social spending tends to be lower compared to the more secular North East. According to Gallup in 2013, Mississippi was the most religious state, while Vermont was the least. Incidentally, 2011 saw passage of Vermont's Green Mountain Care act, establishing Vermont as the first state to create a single-payer health care system.²

In 2013, the libertarian CATO institute came out with their "Work versus Welfare Trade-off" report (Tanner, M. & Hughes, C., 2013), which estimates the total welfare benefits available by state from a set of the seven largest social programs. It ranks Mississippi as the least generous state for welfare, while Vermont ranks 8th among the most generous. Indeed, comparing the top and bottom 15 states in both rankings, the expected pattern holds. Of the fifteen least generous states for welfare according to

² Davenport, M. (2011), "Vt. Senate approves single-payer plan." WCAX News. Retrieved from: <http://www.wcax.com/story/14518224/vt-senate-approves-single-payer-plan>

CATO, 9 are also ranked within the fifteen most religious states according to Gallup. Comparing the state ranks on a scatter diagram, a striking negative relationship emerges (See: Figure 1).

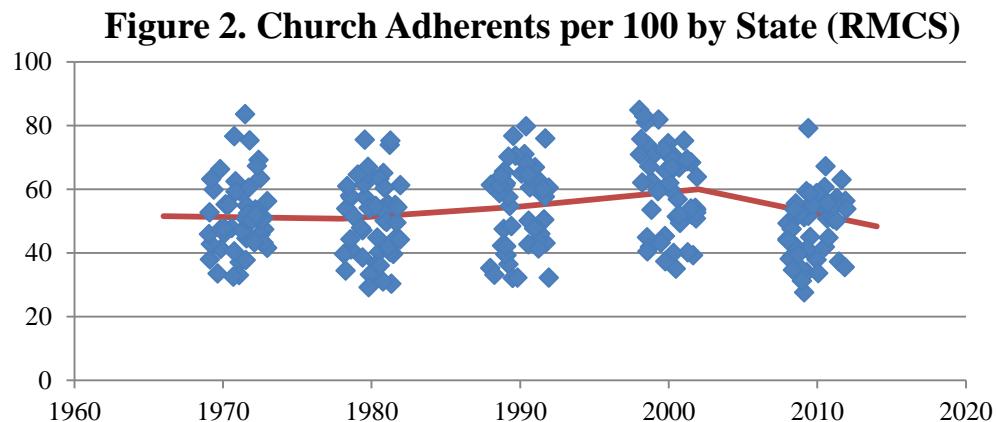


This is of course only suggestive and does nothing to control for other factors that could be driving the correlation. A clue may be the largest benefits shaping CATO's ranking in dollar terms, Housing followed by Medicaid. However, 17 states lack any state housing program whatsoever. Thus to dig deeper into this correlation I will turn to my first main religious data source, with a focus on public medical assistance programs.

III.b. Religious Congregations & Membership Study (RCMS)

The RCMS is a decadal census that provides a county level enumeration of congregations, adherents and congregational members by religious denomination. The voluntary census was conducted in 1952, 1971, 1980 and every ten years thereafter.

Different years have different slightly different response rates and sampling procedures, therefore there are potentially comparison issues between the surveys due to selection bias effects. Before 1980, for example, the survey was exclusively of churches and thus ignored synagogues and congregations of other non-Christian faiths. Using the county level also potentially introduces a lot of noise into the sample, with some counties having more purported adherents than their resident population. A choice couple sentences from the 1990 survey documentation summarizes the data issues succinctly: “This data set contains statistics by state for 133 Judeo-Christian church bodies, providing information on the number of churches and members. It is not known exactly what percent of total Judeo-Christian adherents this actually represents.”



There is no discernible long run trend in the RMCS data (Figure 2); however the sudden 12 point decline in the 2010 mean is notable, along with the relative dearth at the top of the distribution. The 2000 and 2010 surveys were both conducted by the Association of Statisticians of American Religious Bodies, and are very reliable sets for within state change. RMCS adherents rates are most strongly correlated with Gallup’s “very

religious” respondents by state, as opposed to their moderate or non-religious respondents, which makes some sense: More deeply religious individuals ought to be more easily identifiable as adherents to a particular congregation.

To investigate the relationship between adherents and state medical spending I used the Bureau of Economic Analysis’s (BEA) data on personal transfer receipts to calculate real per-capita medical benefits by state. Medical benefit transfer receipts are composed of three parts: Federal Medicare payments to intermediaries; Public assistance medical care for low income individuals, such as Medicaid and the Children’s Health Insurance Program (CHIP); and military medical insurance benefits, for dependent active and retired military personnel.

Of these three components, Medicaid and Medicare are the most significant in dollar terms. Medicare is delivered to people 65 years and older, people with long term kidney disease, and people who are disabled and cannot work. Medicaid in contrast was specifically created for low income individuals, children under 19, and pregnant women; in fact, three quarters of recipients are children and their parents.³ Seniors and the disabled can be eligible for both. Today, with over 60 million enrollees, Medicaid is the larger of the two programs (around 44 million are covered under Medicare), and on an expenditure per-capita basis has grown significant faster than Medicare.⁴ This is

³ Galewitz, P (2009), “Test your knowledge of Medicaid: True or False?” Kaiser Health News. Retrieved from: <http://mylocalhealthguide.com/2009/07/02/test-your-knowledge-of-medicaid-true-or-false/>

⁴ Graham, J. (2010), “Medicaid Spending Growth is Unrelated to Recession.” National Center for Policy Analysis. Retrieved from: <http://healthblog.ncpa.org/medicaid-spending-growth-is-unrelated-to-recession/>

important to keep in mind in comparing the growth in per-capita medical benefits across decades.

Figure 3 plots the ten-year change in real per-capita medical spending on the vertical axis for the stated decade. *On every graph*, the horizontal axis shows the change in adherents between 2000 and 2010. The graphs show that the states that had the large 2000-2010 decline in adherents also tended to have the greatest increases in per-capita medical benefits in very decade going back to 1970-80.

Figure 4 plots the medical benefit changes against the adherent changes of the same decade. The image that emerges is what I refer to as the “adherents shock.” At first, increasing medical spending was weakly associated with growing numbers of adherents, with the trend reversing in the 1990s, followed by a sudden loss in adherents in the 2000s.

Figure 3. Increasing Medical Benefits Foreshadowed Adherents Decline

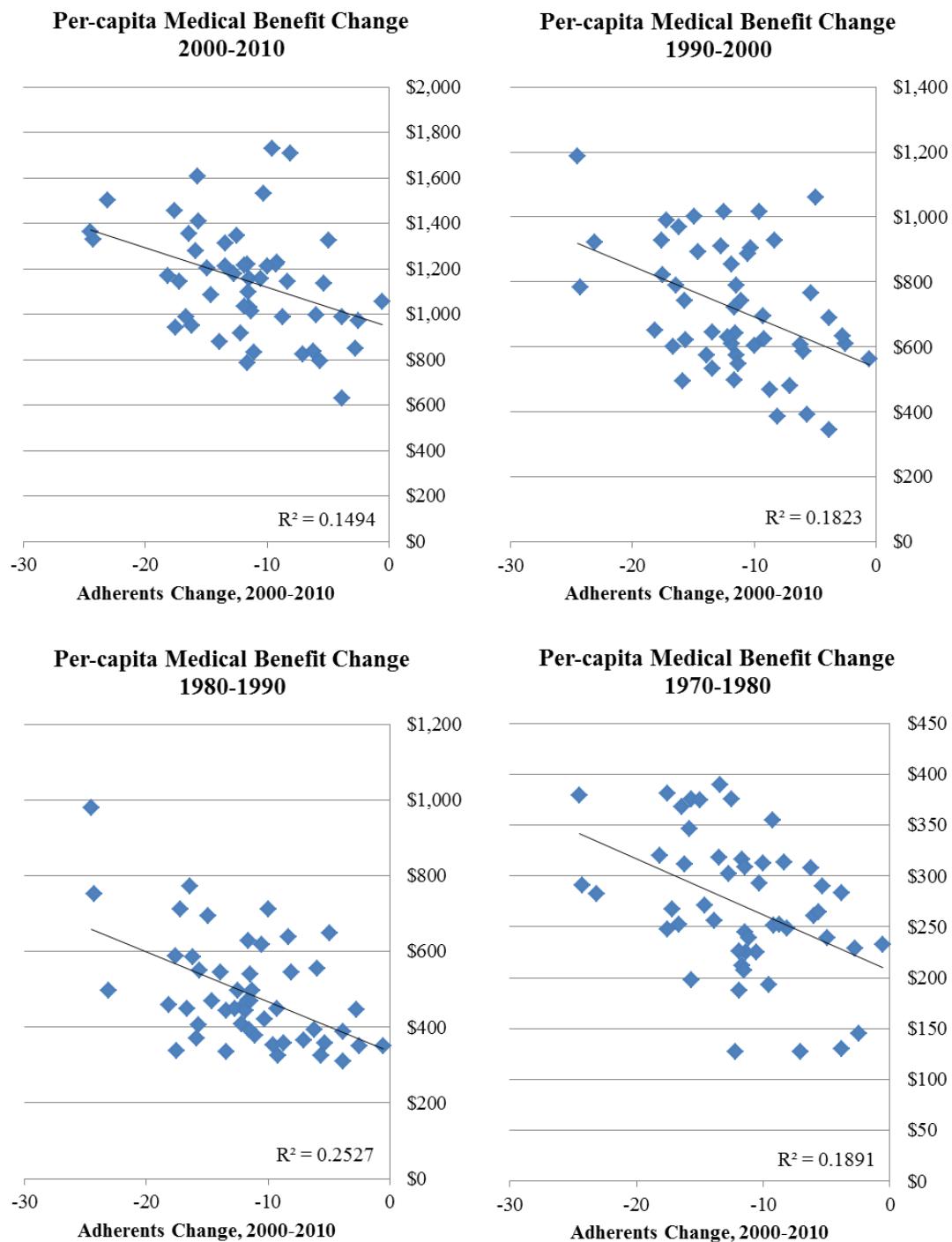
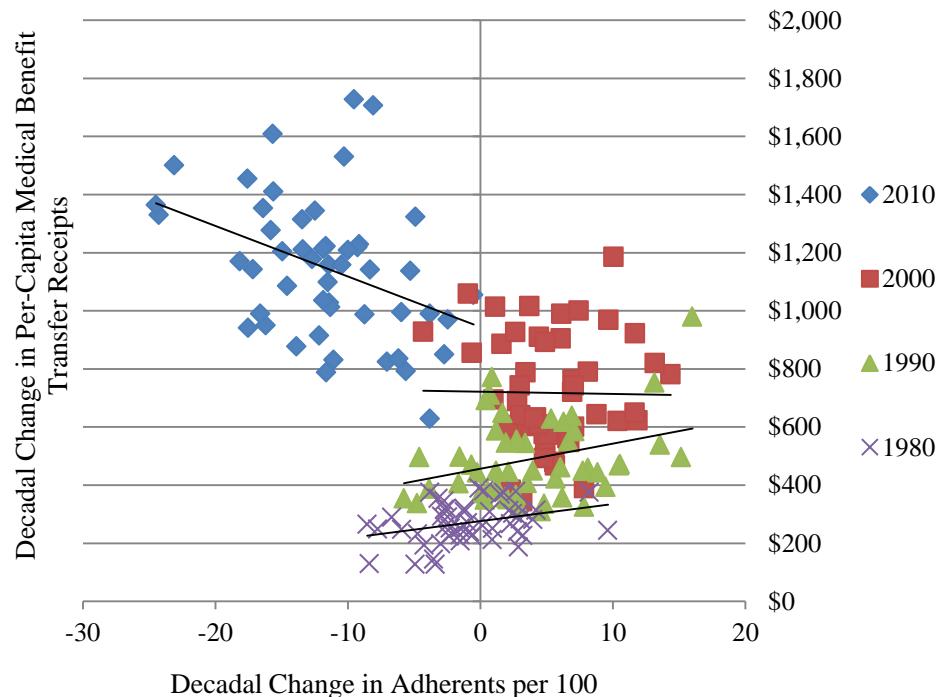


Figure 4. The Adherents Shock

Putting the data into a fixed effects model with robust standard errors gives a baseline estimate of the effect size. The dependent variable is the change in adherents per 100; the independent variable is the change in medical benefits, by state and decade; α_i is a fixed intercept; u_{it} is the error term.

$$\Delta \text{Adherents}_{it} = \beta_0 + \beta_1 \Delta \text{Medical Benefits}_{it} + \alpha_i + u_{it}$$

Table 1. Dependent Variable: Δ Adherents; N=200, 50x4

	Coefficient	Std. Err.*	p-value	95% Conf. Interval
Δ Medical Benefits	-0.01218	0.001278	0.000	-0.01475 -0.00961
Constant	7.189806	0.838719	0.000	5.5044 8.8753
R-squared	within = 0.2906 between = 0.0066 overall = 0.2511			*robust

Based on these 200 observations (50 groups, 4 periods), adherents declined by 1.2 people out of every hundred for every \$100 decadal increase in per-capita medical spending. That is, in states where medical spending increased \$1000 on average, they could expect a 12 person per 100 decline in adherents.

III.b.i Empirical Model using RCMS data

Fixed effects models are sometimes described as a blunderbuss approach to avoiding heterogeneity bias, as it works by treating all omitted variables as time invariant. This is a strong assumption, so in this section I will elaborate on the baseline model with a set of controls that may plausibly influence rates of adherents or medical spending:

Table 2. Variable descriptions, for decades 1980-2010

Variable	Description	Source	Mean	Std Dev.	Min.	Max.
Adherents	See above	RCMS	53.41	12.78	27.63	84.86
Medical	See above	BEA.gov	1539.54	956.06	284.83	4531.44
Δ Adherents			-0.803	8.05	-24.50	15.99
Δ Medical			656.25	368.12	126.80	1727.13
In(Median Income)	Wealth control	U.S. Census	10.80	0.16	10.45	11.19
Median Age	Demographic control	U.S. Census	35.91	2.35	26.65	42.23
Highschool Grad Rate	Education control	U.S. Census	10.85	7.81	55.8	91.4
Poverty	Annual poverty rate based on income thresholds	U.S. Census	12.49	3.58	4.5	25.3
Diversity	The probability that any two randomly chosen individuals are of a different race	ESRI.com	42.01	18.20	6.8	81.5

Table 3. Dependent Variable = Δ Adherents (RCMS)*

N=200, 4x50 1980-2010		<i>Fixed Effects</i>	
<i>Δ Medical</i>	-0.0182		
Robust standard errors	0.0032		
P-value	0.0000		
<i>Medical</i>		-0.0129	
		0.0012	
		0.0000	
<i>Ln(Median Income)</i>	16.4942	13.2819	
	6.9597	5.8153	
	0.0220	0.0270	
<i>High School Graduation Rate</i>	-0.3957	-0.0534	
	0.2336	0.1619	
	0.0970	0.7430	
<i>Median Age</i>	3.6685	5.3556	
	0.6737	0.5469	
	0.0000	0.0000	
<i>Poverty Rate</i>	-1.0739	-0.6275	
	0.2476	0.2018	
	0.0000	0.0030	
<i>Diversity</i>	-0.2253	0.4349	
	0.2216	0.2034	
	0.3140	0.0370	
<i>Constant</i>	-246.8715	-323.7847	
	71.8561	56.5148	
	0.0010	0.0000	
<i>R-Squared</i>	Within	0.5491	0.6910
Between		0.2136	0.0000
Total		0.0771	0.2021

* Note coefficients significant at the 10 percent level or better have been bolded.

Even with the introduction of these standard controls, both the change in per-capita medical benefits and the level of per-capita medical benefits have a highly significant impact. A Hausman test of the model rejects the null for a random-effects estimation. The

sign and magnitude of the coefficients for the medical variables were not sensitive to alternative specifications, including replacing Δ Adherents with the Adherents level variable.

The signs on the significant control variables are all as I expected. While one might expect median income to be negatively associated with adherents change, remember that fixed effects pull out *within group* variation. Median income in this data set is strongly negatively related to adherents rates when cross sectional regressions are employed. In this case, higher state median incomes were positively correlated with the change in adherents simply because they had fewer adherents to lose. The same point applies to median age. Higher poverty rate were expected to be negatively correlated to the dependent variable for the same reason as medical spending: greater poverty implies greater medical benefit eligibility. Finally, that racial diversity was positive comports with the findings from Hungerman (2009).

III.b.ii Discussion of Results from RCMS

To help interpret these results it is necessary to digress briefly on the history of the hospital care in the United States. In the early 19th century, most of American medical care was done at home, including surgeries⁵. If you were poor, sick or infirm, the only rudimentary aid available came through almshouses managed by the local community, often out of religiously motivated charity. Following the Civil War, industrializing and

⁵ America's Essential Hospitals (2013). "History of Public Hospitals in the United States," Retrieved from: <http://essentialhospitals.org/about-americas-essential-hospitals/history-of-public-hospitals-in-the-united-states/>

the development of large cities coincided with a greater demand for public hospital care. Many non-profit community hospitals developed directly from these almshouses, and as such retained the religious tradition of charity.

As the U.S. became wealthier its hospitals became more professionalized and grew by and large into municipal institutions. To date, 87% of U.S. registered hospitals are community (as opposed to federal) hospitals, 57% of which are nongovernmental and run not-for-profit.⁶ These hospitals can be further divided into religious or non-sectarian. Religious hospitals are operated and governed on a voluntary basis by religious groups and congregations, often with the mission of aiding the poor and needy. The Catholic Church, for instance, is the single largest non-profit health provider in the United States, with 620 hospitals accounting for 15.7% of outpatient visits annually.⁷ Religious hospitals are registered 501(c)3 tax exempt organizations and as such the IRS has a detailed and public record of their receipts and assets.⁸ In Alabama, for example, the Baptist Health System is the single largest public charity in the state by gross receipts, and third largest by total assets. In Mississippi, four of the top ten public charities are Baptist hospitals with combined assets broaching \$1 billion.

As University of Pennsylvania nursing science professor, Dr. Barbra Mann-Wall has written, rising healthcare costs in the 70's put pressure on voluntary hospitals, as they were transformed by the nascent Medicaid and Medicare programs. Thus the 1980s

⁶AHA (2014), "Fast Facts on US Hospitals." American Hospital Association. Retrieved from: <http://www.aha.org/research/rc/stat-studies/fast-facts.shtml>

⁷Filteau, J. (2010), "Catholic hospitals serve one in six patients in the United States." National Catholic Reporter. Retrieved from: <http://ncronline.org/news/catholic-hospitals-serve-one-six-patients-united-states>

⁸ Accessible through the National Center for Charitable Statistics <http://nccsweb.urban.org/>

... witnessed the growth of for-profit hospital networks, resulting in increased vulnerability of smaller not-for-profit institutions. More than 600 community hospitals closed. It was at this time that both for-profit and not-for-profit institutions began forming larger hospital systems, which were significant changes in the voluntary hospital arena. A system was a corporate entity that owned or operated more than one hospital ... Cost containment was the theme of hospitals in the 1990s. The balance of power in these institutions shifted from caregivers to the organized purchasers of care, with Medicare and Medicaid becoming a huge governmental influence in all types of hospitals. At the turn of the twenty-first century, rising costs have forced many hospitals to close, including public hospitals that have traditionally served as safety nets for the nation's poor. Some of the larger not-for-profit corporations have bailed out public facilities through lease arrangements, such as the one between the Daughters of Charity's Seton Medical Center and the public Brackenridge Hospital in Austin, Texas, that occurred in 1995. These types of arrangements have had their own problems, however, such as the complications that arise when a large secular organization such as Brackenridge tries to join forces with a hospital whose policies are dictated by its religious affiliation. (Mann-Wall, 1998)

How does this fit into the phenomenon of the “adherents shock”? To find out, I used data from the American Hospital Association (AHA) of community hospital beds-per-thousand people by state for the decades 1970-2010. I ran multiple cross-sectional regressions of adherents on beds-per-thousand and consistently found a strong positive

relationship. By pooling and using year dummies, one extra community hospital bed-per-thousand was associated with 5.3 more adherents per hundred people.

Table 4. Dependent Variable: Adherents; N=250, 50x5; OLS regression

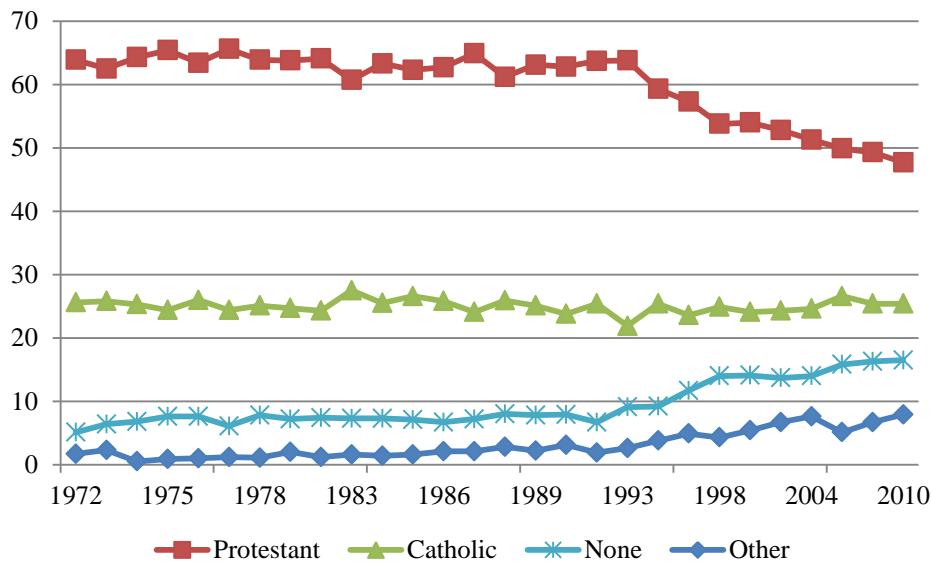
	Coefficient	Std. Err.*	p-value	95% Conf. Interval	
<i>Beds-per-thousand</i>	5.3441	0.7949	0.000	3.7783	6.9098
Year	7.189806	0.838719	0.000	5.5044	8.8753
1980	-1.4164	2.1130	0.503	-5.5785	2.7457
1990	5.8384	2.1946	0.008	1.5157	10.1611
2000	15.2749	2.4729	0.000	10.4041	20.1459
2010	5.2195	2.3624	0.028	0.5662	9.8728
Constant	28.0814	3.8967	0.000	20.4058	35.7569
<i>R-squared</i>	= 0.258			*robust	

Thus one possible mechanism by which Medicaid and Medicare growth crowded out religious adherents is by displacing community hospitals. Many congregations may have been gaining adherents through affiliation with hospital systems. As for-profit hospitals grow in number to capture Medicaid and Medicare reimbursement dollars, non-profit religious hospitals either close or change ownership. As a result, the potential for religious recruitment via religious hospitals fades, and current members are able to access state subsidized healthcare through purely secular institutions. This interpretation is broadly consistent with the economics literature on U.S. hospital dynamics. For example, Brewster (2010) shows that for-profit hospitals out compete non-profits by raising Medicare reimbursements per enrollee. Nevertheless, as a robust theory it requires more concentrated empirical investigation beyond the scope of this thesis.

III.c. General Social Surveys (GSS)

The GSS has been conducted either annually or biannually by the National Opinion Research Center (NORC) since 1972. It contains a large number of indicators for representative samples of the U.S. Census divisions, including religious preference, church attendance, and degree of fundamentalism. Many controls are available, including race, age, gender and region, however the relatively small sample of between 1500-2000 interviews a year becomes less reliable as more controls are imposed. This paper focuses on analysing the secular boom within groups of states and divisions over time, so samples will be controlled by census regions.

Figure 5. U.S. Religious Preference (GSS)



By the GSS's estimate, the secular boom begins in the early 1990, as shown by Figure 1 and Figures i and ii in the appendix. In 1991, 63.7% of the United States identified as a Protestant, 25.4% as Catholic, 1.9% as other and 6.7% claimed no religion. These relative

shares were roughly consistent with the preceding 18 years. Yet by 2010, the Protestant market share has declined to 47.7%, Catholics have held steady, and the Others and Nones have reached 7.9% and 16.5% respectively. The 2012 GSS survey now shows Nones at 18% nationwide.

At first blush it seems like the Nones and Others have grown over the past two decades solely at the expense of Protestants, whose share declined 16 percentage points. This underscores a significant shortcoming with the GSS data. According to research by Pew, the American Catholic Church has suffered substantial losses in its traditional membership but are obscured in the aggregate mainly due to offsetting immigration from Latin America.⁹ In fact, Pew's analysis, which otherwise accords with the GSS, finds that "Catholicism has lost more people to other religions or to no religion at all than any other single religious group" (Pew:19). Nonetheless, 44% of the contemporary Nones are former Protestants, compared to the 27% who are former Catholics, and 21% who are non-converts (Pew: 29). Due to these issues of internal demographic change I have elected to focus my analysis on the Nones, as it represent a convenient catch-all for all those who have left their faith or were raised without one.

While younger age groups boast a higher share of Nones, Pew and GSS alike show the category has increased substantially across every age group. One feature that makes the younger cohort distinct, however, is the relatively higher share of atheists and agnostics. While 15% of 40-49 year olds are currently unaffiliated with any particular

⁹ Immigrants have also contributed significantly to the "Other" category (Pew:19)

religion, 12% still consider themselves religious or merely secular. The GSS data shows a similar phenomenon, with up to 44% of self-proclaimed Nones still believing that the bible is either the direct or inspired word of God.

This is consistent with the commitment signalling view of religious organisation. Religions that have been crowded out by state social insurance would not immediately create a boom in atheism. Rather, the newly unaffiliated may be just as personally spiritual; they are simply no longer incentivized to maintain specific beliefs that function to identify with a particular religious *collective*, nor would they fear the same degree of stigma or forgone benefits for expressing potentially heretical views. Thus, the unaffiliated are nearly half as likely to say that it is very important to belong to a community of people who share values and beliefs, compared to the general public.¹⁰ Indeed, for both former Protestants and Catholics, the main reasons given for leaving their childhood religion is differing religious or moral beliefs, followed by disagreements with particular institutions, practices and people (Pew, 2008).

III.c.i Empirical Model using GSS data

My empirical approach with the GSS data is similar to the approach used for the RCMS data. Only this time it is a fixed effects model with Nones as the dependent:

$$\text{Nones}_{it} = \beta_0 + \beta_1 \text{Medical Variable}_{it} + \sum \beta_k X_{k,it} + \alpha_i + u_{it}$$

¹⁰ Logo, L. (2013), "The Decline of Institutional Religion," Pew Research Center Retrieved from: <http://www.washingtonpost.com/r/2010-2019/WashingtonPost/2013/03/25/Editorial-Opinion/Graphics/Pew-Decline-of-Institutional-Religion.pdf>

The medical variable is either real Medicaid per-capita or federal health spending as a percent of state GDP, while X represents my set of controls. Medicaid per-capita is the appropriate metric, as opposed to per-enrollee, because it holds the population constant and thus captures changes in eligibility rates and benefit size. Federal health spending is similar to the RCMS medical benefit data in that it is mainly composed of Medicare and Medicaid payments. To align with the GSS I have had to convert my k controls to census divisions. This was done by averaging the variables, weighted by population. The reported results will consist of the variables summarized in Table 5:

Table 5. Variable descriptions, for years 1970-2010

	N	Mean	Std. Dev.	Min	Max
Medicaid Per-Capita	81	646.67	448.84	88.81	1966.98
State Heath Spending % of GDP	81	1.79	0.93	0.64	4.35
ln(Median Income)	81	10.80	0.15	10.35	11.06
Median Age	81	34.48	1.95	31.22	39.62
Highschool Graduation Rate	81	73.77	5.21	63.10	85.69
Poverty Rate	81	13.40	2.91	8.05	20.75
Diversity	81	44.62	13.91	19.35	74.19

The panel has nine 5 year periods, from 1970 to 2010, and is strongly balanced. However, the GSS was conducted annually from 1972 to 1994 with a few gap years, and then biannually thereafter. Since most of my controls are based on the decade and half decade, some of the data points are imputed using adjacent years. For example, the Nones set to 1970 are actually from the GSS's earliest measure from 1972. This adjustment is minor and is not expected to impact on the final results.

For comparison purposes and to test the robustness of the results, I also ran the model as a pooled regression and as a panel with random effects. This is because fixed intercepts make less sense for census divisions, which are somewhat arbitrary collections of states, even though the Hausman test rejects random effects at the 0.05 level. The results are detailed in Table 6 and are surprisingly consistent with the RCMS results. With fixed effects, a \$100 increase in per-capita Medicaid spending results in a 1.3 percentage point increase in people claiming to have no religion. Similarly, a percentage point increase in federal health spending as a percentage of GDP lead to 3.5 percentage point increase in Nones. Together, the fixed effect models were able to explain 73-80% of the within group variation in non-religious rates. Table 7 shows how the results change dramatically if time effects are added. The Nones rose so forcefully after 1990 that the year dummies take all the credit. I believe this points to the significance of the policy changes that occurred around 1990 which led to a dramatic non-stationary increase in Medicaid eligibility, discussed in the next section. These changes were determined at the Federal level prior to the secular boom, and thus remove some of the concern that rising federal health spending is endogenous to the non-religious rate.

Table 6. Dependent Variable: None (GSS: Religious Preference)*

N = 81 9 groups, 9 observations per group: 1970-2010 at 5 year intervals	Pooled OLS	Fixed Effects	Random Effects	Pooled OLS	Fixed Effects	Random Effects
Medicaid Per-Capita	0.0084	0.0133	0.0095			
Robust standard errors	0.0022	0.0037	0.0031			
P-value	0.000	0.007	0.002			
State Health Spending % of GDP				3.4357	3.5504	3.4272
				0.8989	0.839	0.8608
				0.000	0.003	0.000
<i>ln(Median Income)</i>	31.1184	15.2438	28.617	29.7809	23.1593	29.6266
	7.6348	11.3767	11.655	7.6793	9.0126	8.5349
	0.000	0.217	0.014	0.000	0.033	0.001
<i>Median Age</i>	-0.3877	-1.7405	-0.3738	-0.1493	-0.7902	-0.114
	0.4402	1.0906	0.3111	0.4618	1.5066	0.6064
	0.381	0.149	0.230	0.747	0.614	0.851
<i>Highschool Graduation Rate</i>	0.0896	-0.4177	0.059	0.2045	-0.084	0.2033
	0.1303	0.3123	0.1051	0.123	0.3087	0.1171
	0.493	0.218	0.575	0.101	0.792	0.083
<i>Poverty Rate</i>	0.828	0.5809	0.7278	0.6483	0.6505	0.6476
	0.2971	0.308	0.4408	0.3069	0.4068	0.4068
	0.007	0.096	0.099	0.038	0.148	0.111
<i>Diversity</i>	0.0138	0.66	0.0224	0.0889	0.5976	0.0914
	0.0544	0.4176	0.053	0.0508	0.5355	0.0613
	0.801	0.153	0.673	0.084	0.297	0.136

Table 6. Continued

<i>Constant</i>		-338.374	-111.59	-309.311	-342.276	-250.327	-341.821
	79.5274	139.0417	120.1036	82.0844	115.9919	85.6434	
	0.000	0.445	0.010	0.000	0.063	0.000	
<i>R-Squared</i>	Within	0.8009	0.7734		0.7315	0.7163	
	Between	0.454	0.4166		0.0887	0.6186	
	Overall	0.7042	0.2245	0.7027	0.6998	0.2950	0.6997

*Note the variables of interest and coefficients significant at the 10 percent level or less have been bolded.

Table 7. Dependent Variable: None (GSS: Religious Preference)

N = 81 9 groups, 9 observations per group: 1970-2010 at 5 year intervals		<i>Entity & Time Fixed Effects</i>
<i>Medicaid Per-Capita</i>	-0.0077	
Robust standard errors	0.0051	
P-value	0.1710	
<i>State Health Spending % of GDP</i>		-3.9755
		1.0434
		0.0050
<i>ln(Median Income)</i>	16.2457	12.1106
	6.1208	5.7598
	0.0290	0.0690
<i>Median Age</i>	3.1639	2.0883
	1.4224	1.2052
	0.0570	0.1210
<i>Highschool Graduation Rate</i>	-0.8592	-0.8769
	0.3289	0.3164
	0.0310	0.0240
<i>Poverty Rate</i>	1.1290	0.7267
	0.1591	0.2562
	0.0000	0.0220
<i>Diversity</i>	0.2344	0.0890
	0.5057	0.4070
	0.6550	0.8320
<i>Year Effects</i>		
1975	-6.6492	-3.4812
1980	-9.4110	-5.1823
1985	-12.8203	-7.6388
1990	2.4591	4.7808
1995	3.4555	9.1676
2000	2.7245	8.2571
2005	1.4357	9.5349
2010	6.1912	16.3016
<i>Constant</i>	-232.2996	-140.1584
	101.6609	89.9609
	0.0520	0.1580
<i>R-Squared</i>	Within	0.8967
	Between	0.0510
	Overall	0.3563
		0.4747

III.c.ii Discussion of Results from GSS

The early 1990s saw a massive increase in health spending on the poor, recorded as vendor payments at the Federal level. Two main changes – one in law and one in policy – combine to explain the phenomenon.

First, Public Law 99-643, enacted in November 1986, made permanent a provision that allows current and former recipients of Supplemental Security Income (SSI) disability payments to be eligible for Medicaid, and to move freely between the programs. Then in 1990, the Supreme Court ruled on the *Sullivan v. Zebley*, a case involving the determination of childhood disability benefits. The decisions main impact was to dramatically relax the Social Security Administrations definition of disability for children, resulting into a sudden increase in both SSI and Medicaid enrollment. This ruling was used as an instrument in Hungerman (2009) to demonstrate SSI's effect in crowding out of charitable spending by Methodist churches. Around the same time, eligibility was expanded for low-income Medicare beneficiaries as well.

Second, both the Medicaid and Medicare statutes require that states make payments to so-called Disproportionate Share Hospitals (DSH). These are hospitals where a disproportionately large share of their services goes to of low income patients. The rule originated in the 1981 federal budget, conceived to soften the blow on safety-net hospitals in light of the states' new ability to decouple Medicaid and Medicare payment rates. But states were slow to begin paying DSHs. Thus in 1986 law makers passed a budget that

included provisions aimed at forcing states to make DSH payments. In 1989, these enticements backfired. As Spivey and Kellerman (2009) explain:

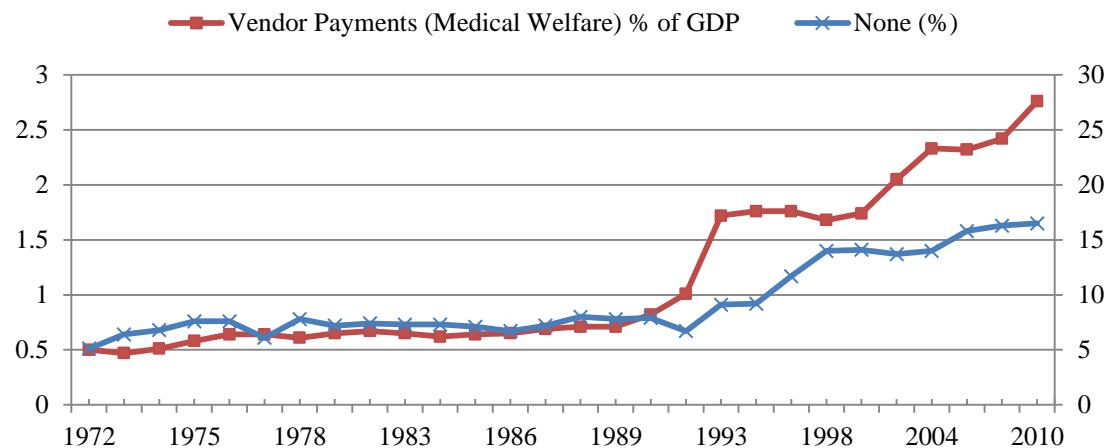
Matters changed in 1989, when enterprising budget experts discovered that they could claim federal DSH funds without expending general state funds. The hospitals that were slated to receive DSH funds were asked (or, sometimes, directed) to contribute the required state share; the state would then use this money to draw down a large federal matching payment. The hospitals would get their contributions back and perhaps a bit more, but the states often kept the lion's share of the federal payment. Some states even "recycled" a portion of their retained federal DSH funds and used it to draw down additional federal Medicaid dollars. With the DSH system effectively serving as a money pump that pulled federal funds into state coffers, the program experienced explosive growth. Between 1990 and 1996, federal DSH payments ballooned from \$1.4 billion to more than \$15 billion annually.

This massive increase in federal spending on the poor and infirm at the state level precedes and then, as Figure 6 shows, closely tracks within group changes in the rates of non-religious. As the GSS results demonstrate, the correlation is robust to a logical set of controls across U.S. census divisions.

Combining this result with the result from the RCMS analysis paints a compelling portrait of the U.S. secular boom as being the result of state and federal welfare

expansions, especially to the extent that it distorted the voluntary hospital system. The boom has been felt in two principal ways.

Figure 6. U.S. Non-religious vs Medical Welfare



First, the initial rise in health spending in the early 1990s enabled the more moderate to liberal religious adherents to let go of their affiliation. This is the increase in Nones observed in GSS data. Analysis of other GSS controls such as political party affiliation show the Nones of the early 90s tended to have liberal leanings, but have moderated over time. Second, as time wore on, Medicaid and Medicare expansions interacted with the increasingly profit-oriented hospital sector, and many religious hospitals closed down or converted to secular ownership. Falling congregational membership followed suit.

IV. Conclusion and Suggestions for Further Research

The narrative constructed in the preceding paragraph is still, in its detail, speculative. Nonetheless, my results demonstrate a remarkably consistent relationship between

spending on public assistance medical benefits and the decline in U.S. church adherent rates, and the emergence of a growing non-religious population. For example, a \$100 increase in Medicaid spending is associated with a 1.3% percentage point rise in the non-religious population within census divisions, using GSS data; and a \$100 increase in per-capita medical benefits (principally Medicare and Medicaid) is associated with a 1.2 adherents per 100 loss within states, using RCMS data. I have conceptualized this effect using a model of religious groups as informal insurance providers, combined with what I know of the history of the U.S. religious hospital system.

More concentrated and rigorous analysis of the secular boom is needed to verify these preliminary findings. In particular, research should focus on the many ways Medicaid and Medicare interact with the religious healthcare market. This is all the more important with the continuing roll-out of the Affordable Care Act (ACA), which is expected to enroll 8.7 million new people into Medicaid in 2014 alone, with an additional 8.8 million expected by 2016.¹¹ The ACA does this by mandating new higher minimum thresholds for Medicaid eligibility, some for groups that were never eligible before. This includes many childless adults and both working and non-working parents. Since 24 states will be allowed to opt out of the Medicaid expansion, it creates a nearly ideal natural experiment – 24 states in the control group, and 26 states plus D.C. in the treatment group – to further test the role of public health spending on the secular boom and adherents shock.

¹¹ CMS (2012), “National Health Expenditure Projections 2012-2022.” Centers for Medicare & Medicaid Service. Retrieved from: <http://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/downloads/proj2012.pdf>

Additionally, the IRS record of religious non-profit hospitals could be an important resource for confirming my adherents shock hypothesis. Since RCMS data is built up from the county level, in principal a researcher could identify counties where religious hospitals have closed or been converted, and compare the local loss of adherents to similar counties that didn't suffer closures. Finally, more theoretical and empirical attention should be paid to the model of religious organizations as providers of both formal and informal social insurance.

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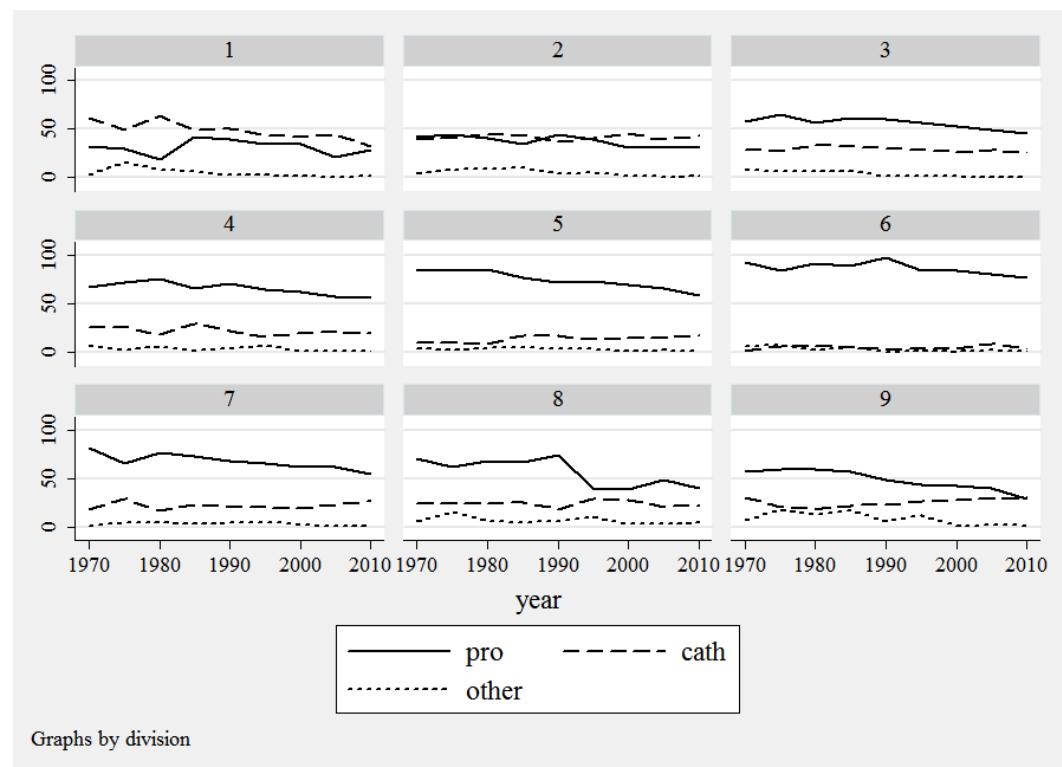
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Appendix

Figure i. Religious Change Within Census Divisions



- 1 New England
- 2 Mid Atlantic
- 3 East North Central
- 4 West North Central
- 5 South Atlantic
- 6 East South Central
- 7 West South Central
- 8 Mountain
- 9 Pacific

Figure ii. Nones Within Census Divisions