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# Religion Still Matters

Brooks B. Hull<sup>1</sup>

**ABSTRACT.** Research by Lipford, McCormick, and Tollison and by Hull and Bold shows a negative relationship between church membership and crime rates. The results are important but do not employ the most recent available data. This paper reproduces Hull and Bold's results using more contemporary 1990 data by United States county. This paper also compares 1980 and 1990 county data. Results are consistent with the earlier research. County crime rates are significantly negatively related to county church membership share. Other factors affecting county crime rates include unemployment, poverty, expenditures on police, population density, and income. (K42, L39, Z00)

## I. Introduction

The economics literature does not lack for explanations for crime. Factors asserted to influence crime include those closely related to costs and benefits of crime like unemployment, wages, welfare payments, expenditures on police, probability of arrest, probability of conviction, and severity of sentence, examples being work by Andreoni (1995), Cover and Thistle (1988), Doyle, Ahmed, and Horn (1999), Ehrlich (1975), Ehrlich and Brower (1987), Layson (1985), Lott (1990), and Zhang (1997). Other researchers emphasize demographic factors like income, race, age, gender, education, and population density (Fox, 1978; Usher, 1997). Still other explanations include crime being caused "by males not properly fathered" (Eberly, 1996) or as a result of what amounts to herd behavior (Glaeser and Scheinkman, 1996).

Religion's impact is curiously neglected in the literature on crime. Apparently only three scholarly papers address the issue, and the earliest of these does so almost as an afterthought. In an examination of U.S. time series data, Layson (1985) finds, but barely acknowledges, a significant inverse relationship between church membership and capital crime. More recently, Lipford, McCormick, and Tollison (1993) find a significant inverse relationship between total church membership by U.S. state and various forms of social misbehavior. Hull and Bold (1995) obtain similar results using U.S. county data on church membership and various crime rates.

One explanation for the lack of attention to religion may be a

perceived lack of relevant data. Yet the Glenmary Research Center publishes estimates of church membership by denomination by U.S. county and county-level criminal data are readily available. Another possible explanation is that researchers believe the United States to be a secular country or that religious belief is declining in the United States. Neither notion is accurate. Church membership increased after the Revolution to about 60% (one of the highest levels in western countries) in 1950 and has remained relatively constant since (Finke and Stark, 1992, p. 16). Other measures of religious commitment also have remained high and constant in the last several decades.

On the other hand, there are good reasons to include religion in our analysis of crime. The economic literature on crime, pioneered by Becker (1968, 1976), focuses on individuals who respond predictably to the costs and benefits of committing crime. Religions doctrine includes provisions that increase the cost of crime. All major United States religions have rules against and punishment for committing crime. The Judeo-Christian religions have rules including the Ten Commandments, which prohibit murder and theft, for example. Islam, being what Hodgson (1974) describes as an "Abrahamic" religion, has similar prohibitions. The Koran even refers to the Ten Commandments (*Koran*, 7:144-149, "The Heights, Al-A'raf"). Both Islam and Judaism have extensive bodies of criminal and civil law and interpretation. Religious temporal punishment in the United States mainly consists of social pressure and the threat of ostracism. Religions also punish crime in the afterlife. This form of punishment can be extreme indeed, including eternal damnation.

Religious rules arguably have affected human behavior throughout history, and may have contributed to economic growth in some regions. Weber (1958) argues, for example, that the behavior standards promulgated by Protestant denominations encouraged economic growth in Europe at the end of the medieval period. Those who dispute this view either argue that Catholic Church doctrine encouraged growth as well (Ekelund, et al., 1996) or that the separation of church and state encouraged growth (Kaufman, 1997). Note especially that even Weber's critics argue that religion played an important role in European economies before and during the Reformation. In a cross-cultural analysis, Hull and Bold (1994) examine circumstances where religion is relatively important in encouraging appropriate individual behavior. Closer to home, Heath, Waters, and Watson (1995) argue that religious

doctrine influences per capita personal income by state in the United States.

The purpose of this paper is to show that religion and crime are significantly negatively related, a result consistent with the limited earlier research incorporating religion but ignored by most researchers on crime.

## **II. Regressions Using 1980 and 1990 Data**

Crime rates can be thought of as the result of the interaction of the supply of and demand for crime. In analyzing crime rates, researchers like Ehrlich (1975), Layson (1985), and Ehrlich and Brower (1987) explicitly model crime supply and demand and employ two-stage least squares simultaneous equation regression models. However, both Layson (1985) and Trumbull (1989) show that single-equation OLS regression models perform as well as the simultaneous equation versions.

The standard regression equations include the following common independent variables asserted to influence crime rates: unemployment, income, poverty, population density, race, and police spending. Relevant for this paper, Lipford, McCormick, and Tollison (1993) include statewide measures of church membership share and church membership market concentration. Hull and Bold (1995) use 1980 county data, include a more comprehensive Herfindahl index of church membership concentration, and add the squared membership share to allow for a non-linear (diminishing marginal) relationship between church membership and crime.

Given that they commit the largest share of crimes, the proportion of young males in the county population would be an obvious variable to include in the regressions. Unfortunately, the available county-level demographic data for 1980 and 1990 do not classify residents by the same age ranges. Gender ratios are also unavailable by age range. Omitting a measure of the proportion of young males is potentially serious, but unavoidable.

Table 1 first generally replicates Hull and Bold's multiple regression analysis and shows coefficients from the as yet unexploited 1990 data. The number of church adherents by county comes from *Churches and Church Membership in the U.S., 1980 and 1990* compiled by the Glenmary Research Center.

TABLE 1—Regressions on Crime and Church Adherents

Dependent Variable	Property Crime		Violent Crime	
	1980	1990	1980	1990
Constant	3892.7 (0.000)	4626.5 (0.000)	658.4 (0.000)	878.6 (0.000)
<b>ADHERENTS %</b>	<b>-71.6</b> <b>(0.000)</b>	<b>-40.4</b> <b>(0.000)</b>	<b>-7.26</b> <b>(0.000)</b>	<b>-2.68</b> <b>(0.016)</b>
<b>ADHERENTS SQUARED</b>	<b>0.405</b> <b>(0.000)</b>	<b>0.195</b> <b>(0.000)</b>	<b>0.040</b> <b>(0.000)</b>	<b>0.012</b> <b>(0.168)</b>
UNEMPLOYMENT RATE	66.2 (0.000)	13.6 (0.170)	2.86 (0.015)	3.42 (0.047)
URBAN %	29.6 (0.000)	30.8 (0.000)	2.31 (0.000)	2.98 (0.000)
POPULATION DENSITY	0.104 (0.001)	0.359 (0.000)	0.074 (0.000)	0.161 (0.000)
WHITE %	-11.8 (0.000)	-25.2 (0.000)	-4.77 (0.000)	-7.24 (0.000)
PERSONAL INCOME	0.132 (0.000)	0.017 (0.115)	0.0090 (0.000)	0.0016 (0.383)
POLICE SPENDING %	204.4 (0.000)	183.5 (0.000)	20.3 (0.000)	16.5 (0.000)
POVERTY %	-47.6 (0.000)	-28.1 (0.000)	-0.747 (0.302)	-1.96 (0.037)
HERFINDAHL INDEX	-0.126 (0.460)	-0.0054 (0.979)	0.013 (0.551)	-0.053 (0.127)
N	2926	3023	2926	3023
$\bar{R}^2$	0.498	0.470	0.460	0.462

P-values in parentheses.

The Glenmary data report membership in about 110 Judeo-Christian denominations in the roughly 3100 counties in the United States. The data are compiled from surveys sent to virtually all churches in the United States. Results are adjusted to account for differences in defining church members and believers and potential problems with incomplete reporting, especially for urban African-American churches. Other data are drawn from the *County and City Data Book* (1983, 1988, and 1994 editions).

The four columns of the table show coefficients for regressions on property crime (burglary, larceny-theft, and motor vehicle theft) and violent crime (murder, forcible rape, robbery, and aggravated assault) for 1980 and 1990. The coefficient on the ADHERENTS% variable shows that a 1% increase in the share of county population that are church members results in a decrease in property crime of about seventy-two per 100,000 county population in 1980 and forty per 100,000 population in 1990, holding other factors constant. As background, the mean property crime rate was about 2900 per 100,000 county population in 1980. A 1% increase in the share of county population that are church members results in a decrease in violent crime of seven per 100,000 county population in 1980 and three per 100,000 county population in 1990. The mean violent crime rate was about 230 per 100,000 county population in 1980.

An ADHERENTS SQUARED variable is included to test whether the relationship between church membership and crime is linear. For property crime in both 1980 and 1990, the coefficient is positive and statistically significant, implying that church membership has a negative but diminishing marginal effect on crime. The coefficient in the 1980 violent crime equation is statistically significant but small and for the 1990 violent crime equation is not statistically significant, suggesting a near-linear relationship between violent crime and church membership.

Coefficients on some of the other independent variables are intuitively appealing. For example, the county unemployment rate positively affects crime rates, although the coefficients are not consistently significant. Both the urban population proportion and population density are positively related to crime. Crime is lower in counties with a larger white population.

Contrary to intuition, crime rates are positively related to county personal income, police spending, and poverty. Although counter to intuition, signs on these coefficients are consistent with those reported by the aforementioned researchers. Part of the reason for the unexpected coefficients is doubtless due to multicollinearity between poverty,



unemployment, and income. For the police expenditures variable at least, the sign is a result of employing OLS equations in a situation where some factors appear in both the demand for and supply of enforcement (Hoenack and Weiler, 1980; Levitt, 1997). Further, more crimes are reported in areas with more police simply because the additional police are able to compile more crime reports. Police spending and personal income are also likely interdependent. Additionally, police spending does not include private expenditures on security and other protection against crime, also likely tied to personal income. Importantly for this paper, however, the inverse relationship between church adherence and crime is consistent across the time periods and types of crimes.

Finally, the regressions include the Herfindahl Index, a measure of religious market concentration. Coefficients are not statistically significant. Apparently denominational concentration or diversity has little effect on crime rates.

A potential problem with county-level data is that a substantial share of U.S. counties have few residents. Median county population is only about 21,600 in 1980 and about 22,300 in 1990. With such small populations, a single crime can significantly influence the crime rate in a given county. This is especially the case for violent crimes, which have relatively low rates per 100,000 population.

An additional problem might arise because the dependent variables (crime rates) do not take values below zero and so the regression coefficients could be biased. Fortunately, only a small proportion of counties have no crime. Less than 1% of counties report no property crime in 1980. The same is true in 1990. Less than 4% of counties report no violent crime in 1980 and about 12% report no violent crime in 1990. Limited dependent variable regression models like Tobit are only necessary for data with a significant share of zero values for the dependent variables (Kmenta, 1986, p. 561).

Notwithstanding the above, Table 2 reports regression coefficients using the same equation as before but omitting counties with fewer than five thousand residents, roughly 10% of counties. This addresses both the problem of crime variability in less populous counties and any potential concern with limited dependent variables. With regard to the latter, virtually none of the remaining counties report zero crime rates. As Table 2 shows, regression coefficients are similar to the previous  $\bar{R}^2$  results, but the explanatory value of the equations as measured by the  $\bar{R}^2$  statistics are stronger.

TABLE 2—Regressions on Crime and Church Adherents  
County Population 5000 or Greater

Dependent Variable	Property Crime		Violent Crime	
	1980	1990	1980	1990
Constant	3076.6 (0.000)	4818.4 (0.000)	564.4 (0.000)	910.2 (0.000)
<b>ADHERENTS %</b>	<b>-60.9</b> <b>(0.000)</b>	<b>-40.4</b> <b>(0.000)</b>	<b>-5.84</b> <b>(0.000)</b>	<b>-1.69</b> <b>(0.093)</b>
<b>ADHERENTS SQUARED</b>	<b>0.324</b> <b>(0.000)</b>	<b>0.188</b> <b>(0.001)</b>	<b>-0.028</b> <b>(0.000)</b>	<b>0.0047</b> <b>(0.646)</b>
UNEMPLOYMENT RATE	82.1 (0.000)	11.9 (0.277)	4.83 (0.000)	3.54 (0.065)
URBAN %	31.4 (0.000)	32.6 (0.000)	2.53 (0.000)	3.29 (0.000)
POPULATION DENSITY	0.090 (0.001)	0.354 (0.000)	0.070 (0.000)	0.162 (0.000)
WHITE %	-12.0 (0.000)	-26.2 (0.000)	-4.81 (0.000)	-7.36 (0.000)
PERSONAL INCOME	0.179 (0.000)	0.0076 (0.570)	0.013 (0.000)	-0.0054 (0.022)
POLICE SPENDING %	170.2 (0.000)	188.2 (0.000)	17.8 (0.000)	17.8 (0.000)
POVERTY %	-38.8 (0.000)	-26.3 (0.000)	0.149 (0.852)	-2.21 (0.044)
HERFINDAHL INDEX	-0.501 (0.004)	-0.193 (0.394)	0.0005 (0.983)	0.098 (0.014)
N	2687	2735	2687	2735
$\bar{R}^2$	0.534	0.464	0.463	0.462

P-values in parentheses.



In both Table 1 and Table 2 the significance of the coefficient on the ADHERENTS% variable in the violent crime equation is weaker than in the property crime equation. The sociologist Stark (1984) notes the same result and argues that people might be more “rational” about property crime than violent crime and so more responsive to evaluation of religious doctrinal costs and benefits in decisions about the former.

Even in Table 2, a substantial amount of the variation in crime remains unexplained by the regression equations. As Glaeser and Scheinkman (1996) show, the network-like interaction among criminals means that a variety of equilibrium levels of crime can occur even when other characteristics of communities are similar. Because criminals respond as groups, otherwise similar communities can have significantly different crime rates.

### **III. Regressions Using Differenced Variables**

The obvious next step is to calculate new variables that are for each county the difference between the 1980 and 1990 values. Some observations are lost in this process because of the creation of new counties or changes in the way some city-county combinations are reported. Table 3 summarizes these regressions.

Note first in Table 3 that the explanatory values of the equations as measured by the  $\bar{R}^2$  are trivially small. The regression equations explain only about 3% of the variations in crime rates. Although not shown, the results are not meaningfully improved by removing the least populated counties as was done in Table 2.

Interestingly, the signs on the ADHERENTS% coefficients are positive and statistically significant. Because the magnitudes of the coefficients are small and overall explanatory power of the regression equations are so weak, these positive coefficients can hardly be regarded as refuting the results in Tables 1 and 2. The signs on the other coefficients are inconsistent between property and violent crime and not often statistically significant.

In some ways, the weak explanatory power of the differenced equations is surprising. County average crime rates fell and average church membership increased between 1980 and 1990. The total crime rate fell from a county average of 3134 per 100,000 population in 1980 to 2862 per 100,000 population in 1990.

TABLE 3—Regressions on Crime and Church Adherents  
1990 Minus 1980 Values

Dependent Variable	Property Crime	Violent Crime
Constant	165.5 (0.091)	30.56 (0.058)
<b>ADHERENTS %</b>	<b>12.5</b> <b>(0.000)</b>	<b>2.02</b> <b>(0.000)</b>
<b>ADHERENTS SQUARED</b>	<b>0.050</b> <b>(0.398)</b>	<b>0.002</b> <b>(0.850)</b>
UNEMPLOYMENT RATE	48.7 (0.000)	1.87 (0.261)
URBAN %	-38.2 (0.257)	15.9 (0.004)
POPULATION DENSITY	1.68 (0.000)	0.277 (0.000)
WHITE %	-5.81 (0.481)	-6.32 (0.000)
PERSONAL INCOME	0.070 (0.000)	-0.0005 (0.805)
POLICE SPENDING %	0.286 (0.989)	-5.86 (0.084)
POVERTY %	-30.1 (0.000)	-4.45 (0.001)
HERFINDAHL INDEX	0.268 (0.222)	0.025 (0.492)
N	2924	2924
$\bar{R}^2$	0.036	0.026

P-values in parentheses.

The average percent of church adherents rose from 55.3 to 59.6 in the same period. These aggregate effects are consistent with the regressions in Table 1 and Table 2.

In other ways, the weak results are predictable. For the Glenmary data, collection and reporting are not entirely consistent between decades. For example, predominately African-American churches are underreported in 1980 (Stark, 1987). In 1990, the researchers attempt to improve reporting from these churches (Glenmary 1992, Appendix F). This issue alone doubtless accounts for some of the increase in overall average church membership for the decade and surely affects the reliability of the differenced data. In the case of the police expenditures variable, the values by county do not change significantly over the decade. The largest changes in county police expenditure share are about plus or minus 0.05%, a small portion given that the average police expenditure share is about 4%. Perhaps most important, a decade might well be too short a time period for religion to influence crime rates. Both religion and crime are integrally linked to the underlying character of a community. Perhaps communities simply tend not to change significantly in ten years, or, more precisely, changes within communities in ten years are much smaller than differences between communities in a given time period. The issue bears further investigation.

#### **IV. Conclusion**

Lipford, McCormick, and Tollison (1993) and Hull and Bold (1995) found a significant inverse relationship between church membership and crime. Employing more contemporary data, this paper confirms that result. U.S. counties with a larger proportion of church members in the population have lower crime rates, holding other factors constant. This relationship is statistically significant for both 1980 data and 1990 data, for a variety of model specifications (some not shown), and for data excluding the least populous counties. Church membership share is a significant factor in predicting crime rates.

Of course, the regression analysis cannot prove that religious doctrine actually causes individuals to behave properly. The causation might well be reversed. Law-abiding citizens might be more religious than criminals, so an increase in church membership share necessarily reduces the crime rate, simply because fewer criminals are present in that

population. Importantly, church membership is also voluntary, suggesting that religious affiliation is a signal of individual preference, not that religion is an external force compelling good behavior. A complete investigation of this possibility might require a 2SLS or instrumental variables approach, both beyond the scope of this paper.

On the other hand, religious doctrine does proscribe crime, and crime is punished by religions in this life and the afterlife. If the causality is reversed and so law-abiding citizens tend to be more religious, what purpose would such a proscription serve? Further, although voluntary, individuals do not change religious affiliation as readily as they change brands of ordinary products. Denominational switching is rare, as is religious intermarriage, and most people adopt their parents' religion (Iannaccone, 1995).

At least some research supports a direct causal link between religion in a community and crime. Stark (1984) summarizes research showing that membership in a religious community affects delinquency while individual religious affiliation does not. That is, an individual is less likely to commit a crime in a community with a high level of religious belief and participation regardless of whether that individual is religious. This research suggests that religion affects delinquency through a set of group norms or standards and a person is less likely to be delinquent if he or she has religious friends or is a member of a religious community. Thus, church membership might influence an entire community, not just the faithful, and religious rules against crime affect both church members and nonmembers.

Regardless of whether it simply signals good behavior or whether it causes good behavior, church membership is an important but often neglected factor in the study of crime.

Religion still matters.

### **Variable Definitions**

VIOLENT CRIME

Murder, forcible rape, robbery, and aggravated assaults reported to police per 100,000 population in the county.

PROPERTY CRIME

Burglary, larceny-theft, and motor vehicle thefts reported to police per 100,000 population in the county.

ADHERENTS %	Total church adherents per 100 population in the county.
ADHERENTS SQUARED	ADHERENTS squared.
HERFINDAHL INDEX	Sum of squared market shares of denominations. Share of denominations is calculated as denomination adherents divided by total adherents in the county. Index equals one thousand for a monopoly church.
PERSONAL INCOME	Per capita personal income in the county.
POLICE SPENDING %	Police expenditures as a percent of total government expenditures in the county.
POPULATION DENSITY	Population per square mile in the county.
POVERTY %	Percent of the county population below the poverty level.
UNEMPLOYMENT RATE	Unemployment rate in the county.
URBAN %	Percent of the county population living in urban areas.
WHITE %	Percent of county population that are white (including Hispanic).

### Endnotes

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