

Religion and Educational Attainment in the United States

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Abstract

This paper examines the relationship between educational attainment and religious adherence rates at the county level for all 3,143 counties and county equivalents in the United States. Other control variables are median earnings, unemployment rate, population density, percent white, teen fertility rate, and female labor force participation rate. Education attainment variables -- percentages of male and female populations attaining high school diplomas and Bachelor's Degrees -- are regressed against religion adherence rates -- total adherence and for the three biggest categories -- Catholic, Mainline Protestant, and Evangelical Protestant (ARDA). The results are mixed: (1) total religious adherence rates are negatively related to female high school attainment and Bachelor's degree attainment for both males and females, (2) Evangelical Protestant rates are negatively related to high school and college attainment for both males and females, (3) Catholic rates are negatively related to female high school attainment, and (4) Mainline Protestant rates are positively related to high school and negatively related to Bachelor's Degree attainment.

Keywords: religion, gender, educational attainment

JEL codes: I2, J1, Z12

Introduction

Educational attainment is the predominant measure for a society's human capital and a key determinant of a country's productivity growth (Baier, Dwyer, and Tamura 2006). The overall and female educational attainment levels in a society are, at some level, reflective of religion. Cultural norms, which may be based on religious beliefs and values, can affect women's education attainment and their participation in the labor force. In less developed countries, high infant mortality rates, as well as belief in the value of large families, result in gender role differentiation that is often supported by religious codes and institutionalized authority differences (Malik 1995). Cultural, religious, or caste norms can also reflect gender-specific educational levels; in India, for example, religion affects caste, which affects the family's ability to provide education (Borooah and Iyer 2005). Religion can perversely affect overall education attainment levels, as well as increased gender inequality in attainment levels (Norton and Tomal 2009; Malik 1995).

Lehrer (1999) documents an extensive literature review on studies linking religion and education in the United States that also report a relationship between religion and education. Her own research uses National Survey of Families and Households data for individuals growing up in Jewish, Catholic, mainline Protestant, and fundamentalist Protestant families and finds that educational attainment is highest for Jews and lowest for fundamentalist Protestants. Keister (2011) finds the same relationship between the four religious groups and education attainment. Darnell and Sherkat (1997) find similar results for the negative relationship between fundamentalist Protestant and educational attainment using data from the Youth Parent Socialization Panel Study.

Keister (2011) reports that religious affiliation is linked with educational attainment, not only between religious groups but also between Christian groups, since conservative Protestants have lower education attainment levels than either mainline Protestant or Catholic; Jewish respondents had the highest education attainment. Chiswick (1988) theorizes that Jewish families have fewer children to allow a greater investment of resources into the children's education. Massengill (2008) reports that being raised conservative Protestant negatively affects bachelor's degree attainment when compared to mainline Protestant. Garasky (1995) found that while being raised in a formal religion had no effect on educational attainment, attending religious services had a positive effect, similar to results for Lehrer (2004), who studied U.S. women raised as conservative Protestants and found that regular religious service attendance as an adolescent increased educational attainment by one year compared to less regular attendance

Virtually all the research on international educational attainment levels, religion, and economic growth has been done with country-level data. Rupasingha and Chilton (2009), however, use United States county-level data to study the relationship between religious adherence and economic growth and find a negative relationship between religious adherence and economic growth and mixed effects for various Christian denominations. This paper will, likewise, use county-level data to study the relationship between religious adherence, both overall and for Christian groups, and educational attainment levels, both male and female.

Purpose of Study

Based on the literature, religion can influence educational attainment levels. This study determines to evaluate this relationship in the United States by using county-level data. In addition to using total religious adherence rates, the three biggest religious groups – Catholic, Mainline Protestant, and Evangelical Protestant – are also used to evaluate the impact of religious adherence on educational attainment levels for both males and females, for both high school diplomas and Bachelor's degrees.

Background

Education, Gender, and Economic Growth

In developed economies, education attainment levels are very similar between males and females (Topel 1997). Not only do these countries provide extensive public education, but rates of return on education investment are higher in these countries, as birth rates decline, wage rates rise, and more married women enter the labor force (Becker et al. 1990; Psacharopoulos and Patrinos 2004).

Many researchers claim that female education is an important determinant of economic growth. Knowles, Lorgelly, and Owen (2002) find that female education raises a country's labor productivity. In fact, female education can be considered the most important opportunity available for investing in the world's poorest citizens (Summers 1994) and is critical to increasing the children's human capital stock (Behrman et al. 1999). Brown (2004) provides an extensive list of research that claims that variation in economic development can be partially explained by a country's education gender gap. So, economic development is enhanced not only with higher female education attainment levels but also great gender education equality (Todaro 1997; Marshall 1985; Charles 1992; Clark et al. 1991).

Religion and Economic Growth

Adam Smith is claimed to have laid the foundation for linking religion and economics (Anderson 1988; Iannaccone 1998). Max Weber, however, is generally credited with initiating the discussion of religion's impact on economic development with his claim that the Protestant Reformation was the primary cause of economic development through the growth of capitalism. Grier (1997) offers empirical support for Weber's hypothesis with her conclusion that Protestantism was a factor contributing to ex-colonies' economic growth rates. Woessman and Becker (2009) also find a link between Protestantism and economic growth but claim the link is due to literacy gained through Bible reading, rather than because of the Protestant work ethic as claimed by Weber. Other scholars debunk Weber's claims by insisting that capitalist institutions preceded the Protestant Reformation (Samuelsson 1993). Regardless of the direction of the link between the Protestant Reformation and economic growth, many researchers have analyzed the link between Protestantism and/or Catholicism and economic growth. While some find no difference in economic development between European Protestant and Catholic countries (Delacroix 1995), other researchers claim a negative correlation between Catholicism and economic growth for a variety of reasons (Harrison 1985; Lenski 1961; Morse, 1964; Andreski 1969; Grier 1999).

Fanfani (1993) claims that all religion is negatively related to growth and that it is the separation of church and state in many predominantly Protestant countries that is the cause of economic development.

More recent studies also find links between religion and economic growth (Noland 2005). Catholicism is now positively related to economic performance in almost all Latin American countries (Ortiz 2009), explained by religious views now accepting and promoting wealth accumulation. Exploring the religion variable in more depth and using World Value Survey country-level data, Guiso et al. (2003) find that Christian religions have a positive effect on economic growth, and Barro and McCleary (2003) report that the prevalence of strong religious beliefs – rather than participation in a specific religion or denomination -- stimulates economic growth.

Education and Religion

The overall and female educational attainment levels in a society are, at some level, reflective of religion. Religion and education can also be linked through a country's democracy level (Barro 1999b), since the "propensity for democracy" rises with per capita GDP, primary schooling, and a smaller primary education gender gap – and Protestant countries are generally more democratic than predominantly Catholic countries. Cultural norms, which may be based on religious beliefs and values, can affect women's education attainment and their participation in the labor force. In less developed countries, high infant mortality rates, as well as belief in the value of large families, result in gender role differentiation that is often supported by religious codes and institutionalized authority differences (Malik 1995). Cultural, religious, or caste norms can also reflect gender-specific educational levels; in India, for example, religion affects caste, which affects the family's ability to provide education (Borooah and Iyer 2005). In an analysis of 97 countries, female educational attainment is negatively related to the proportion of ethnoreligions, Hindu, and Muslim adherents (Norton and Tomal 2009).

Within the United States, using NLSY data for descriptive purposes, Keister (2011) reports that religious affiliation is linked with educational attainment, not only between religious groups but also between Christian groups, since Evangelical Protestants have lower education attainment levels than either Mainline Protestant or Catholic; Jewish respondents had the highest education attainment. Chiswick (1988) theorizes that Jewish families have fewer children to allow a greater investment of resources into the children's education. Evangelical Protestants also had the lowest net worth, lowest median level of financial assets, and the lowest percentage of home ownership when compared with Mainline Protestant, white Catholic, and Jewish in the United States.

Data and Methodology

Regression analysis (OLS) is used to determine the statistical relationship between religious adherence and education attainment levels for both high school and college in the United States. Data are for all 3,143 counties and county equivalents (as defined by the U.S. Census Bureau). Educational attainment levels for both male and female and for both high school and Bachelor's degree are used; the measure is the 2010 U.S. Census percent of county population (1) with a High School diploma or higher and (2) a Bachelor's degree or higher. The religious adherence variable is the number per 1,000 county residents that are members or regular attendees of any religious group in 2010. Religious adherence rates for the three biggest categories – Catholic, Mainline Protestant, and Evangelical Protestant – are also used. Other control variables are Median Earnings (overall, male, female), Percent White, Unemployment Rate, Population Density, Teen Fertility Rate, and Female Labor Force Participation Rate. The variables and sources are listed in Appendix A.

Educational Attainment

The educational attainment variables reflect the percent of county population that have (1) a High School diploma or higher and (2) a Bachelor's Degree or higher. These variables are not exclusive; a person with a Bachelor's Degree is counted in both the High School variable and the Bachelor's Degree variable. Four education variables are used as dependent variables in separate regressions. The educational attainment level variables are (1) Male: percent High School or higher, (2) Female: percent High School or higher, (3) Male: percent Bachelor's Degree or higher, and (4) Female: percent Bachelor's Degree or higher.

Appendix B lists the descriptive statistics. High School attainment levels have similar county averages, minimums, and maximums for males and females. County averages are 82.5 percent (male) and 84.9 percent (female), minimums are 48.0 percent (male) and 44.9 percent (female), and maximums are 98.9 percent (male) and 100 percent (female).

Bachelor Degree percentages are also similar for males and females, except for the maximums. County averages are 18.9 percent (male) and 19.7 percent (female), minimums are 0 percent for both genders, and maximums are 78.7 percent (male) and 69.4 percent (female).

Tables 1 and 2 present information on the level of education attainment – (1) High School Diploma and (2) Bachelor’s Degree. The table for High School includes people with Bachelor’s Degrees as well, since the U.S. Census Bureau computes percent of high school or higher.

Table 1

Education Attainment: High School Diploma or Higher

| Percent of <u>Population</u> | MALE <u>(Percent of Counties)</u> | FEMALE <u>(Percent of Counties)</u> |
|---------------------------------|--------------------------------------|--|
| 40 - 50 % | 0.10% | 0.03% |
| 50 - 60 % | 0.80% | 0.45% |
| 60 - 70 % | 6.97% | 2.10% |
| 70 - 80 % | 25.33% | 20.27% |
| 80 - 90 % | 50.87% | 52.59% |
| 90 - 100 % | <u>15.94%</u> | <u>24.56%</u> |
| | 100% | 100% |

Table 1 shows that in more than 90 percent of counties, at least 70 percent of the population possess a high school degree, although a larger percentage of females have at least a high school diploma. Between 90 and 100 percent of males have high school diplomas in 16 percent of the counties, compared with 25 percent of the counties for females. Half the counties have 80-90 percent of their population possessing high school diplomas.

Table 2

Education Attainment: Bachelor’s Degree

| Percent of <u>Population</u> | MALE <u>(Percent of Counties)</u> | FEMALE <u>(Percent of Counties)</u> |
|---------------------------------|--------------------------------------|--|
| 0-20% | 65.31% | 63.38% |
| 20-40% | 30.58% | 33.57% |
| 40-60% | 3.91% | 2.93% |
| 60-80% | <u>0.19%</u> | <u>0.13%</u> |
| | 100% | 100% |

The gender distribution of Bachelor’s Degree is more homogeneous than is the High School distribution presented in Table 1. Table 2 shows that in almost all counties, fewer than 40 percent of the population has a college degree. In almost two-thirds of counties, fewer than 20 percent of their populations have a Bachelor’s Degree. Less than 5 percent of counties have more than 40 percent of their population holding a Bachelor’s Degree. In one county out of the total 3,143 counties, not a single person had a Bachelor’s Degree.

Religious Adherence

For the variable measuring the level of religious adherence in each county, 2010 data from The Association of Religious Data Archives (ARDA) was used. The data were collected by the Association of Statisticians of American Religious Bodies (ASARB) and include county-level numbers of “congregational adherents” (members, their children, and regular attenders) for 236 religious groups/denominations. Almost half (48.8%) the U.S. population in 2010 was considered a “congregational adherent” in one of these 236 groups. Of the 236 groups, 207 are Christian (44.5% of U.S. population): Catholic (3 denominations, 19.1% of U.S. population), Evangelical Protestant (146 denominations, 16.2%), Mainline Protestant (23 denominations, 7.3%), Black Protestant (12 denominations, 1.6%), and Orthodox (23 denominations, 0.3%).

The remaining 29 religious groups are labeled as Other (4.3%) and include Judaism, Buddhism, Hindu, Muslim, Jehovah’s Witnesses, and other smaller groups; these groups are generally either highly concentrated or non-existent within a county. The remaining 51.2% of the U.S. population are classified as “Unclaimed.”

Consistent with another study that used ARDA data (Rupasingha and Chilton, 2009), the three biggest categories are used as the primary control variables – Catholic, Mainline Protestant, and Evangelical Protestant. The measure used is the rate of adherence – the number of adherents per 1,000 population. In some counties, adherent totals exceed the U.S. Census population, perhaps because of U.S. Census undercount, church membership overcount, and adherents’ residence county differing from church membership county.

Appendix B lists the descriptive statistics. The mean Total Adherence Rate is 514 (per 1,000 population); Total Adherence Rate includes all religious groups measured by ARDA. Of the three biggest religious groups, the Evangelical Protestant mean is 231.2 adherents per 1,000 population, the Catholic mean is 123.6, and the Mainline Protestant mean is 115.4.

Table 3

Religious Adherence

| Percent of Population | TOTAL ADHERENTS (Percent of Counties) | EVANGELICAL PROTESTANT (Percent of Counties) | MAINLINE PROTESTANT (Percent of Counties) | CATHOLIC (Percent of Counties) |
|--------------------------|--|--|---|--------------------------------------|
| 0-20% | 1.69% | 53.04% | 85.24% | 78.01% |
| 20-40% | 26.69% | 30.32% | 12.06% | 17.15% |
| 40-60% | 42.67% | 14.06% | 2.29% | 4.01% |
| 60-80% | 22.27% | 2.20% | 0.38% | 0.57% |
| 80-100% | <u>6.68%</u> | <u>0.38%</u> | <u>0.03%</u> | <u>0.25%</u> |
| | 100% | 100% | 100% | 100% |

Table 3 presents the adherence rates for all four groups – Total Adherence, Evangelical Protestant, Catholic, and Mainline Protestant. About 30 percent of the counties have at least 60 percent of their population belonging to a religious group (Total Adherents). About 40 percent of the counties have between 40-60 percent of their population belonging to a religious group. Just under 30 percent of the counties have fewer than 40 percent of their population considered a religious adherent.

Every county has at least some religious adherents, although 22 counties have no Evangelical Protestant, 30 counties have no Mainline Protestant, and 186 counties have no Catholic. Virtually the entire population in about 1 percent of the counties (29 of 3,143) is considered an adherent in a religious group. Virtually the entire population in two counties is Evangelical Protestant, and virtually the entire population in one county is Catholic.

These three groups are a majority presence in very few counties. Evangelical Protestant is a majority religious group in 7 percent of the counties; Mainline Protestant in 1 percent of the counties; and Catholic in 2 percent of the counties. The majority of counties have fewer than 20 percent of their population considered adherents in any of the three groups individually, although Evangelical Protestants have a bigger presence in more counties than do Mainline Protestant and Catholic. Just under half the counties have more than 20 percent of their population as Evangelical Protestant, compared with 15 percent of the counties for Mainline Protestant and 12 percent for Catholic.

Other Control Variables

Additional control variables were included in all the regression models to reflect socio-economic and demographic differences between counties:

- Percent White – race is proved to be linked with educational attainment
- Unemployment Rate – may reflect low returns to investment in education

Population Density – urban areas are associated with overall higher education levels
 Median Earnings (Overall Median Earnings in the High School regressions and gender-specific Median Earnings in the Bachelor’s Degree regressions) – higher median earnings are an incentive for young people to attain high education levels.

Teen Fertility Rate for the High School attainment (male and female) regressions – teen pregnancy may result in leaving the education system to support the new baby/family.

Female Labor Force Participation Rate in the regression models for Female: Bachelor’s Degree attainment – a higher rate may reflect incentive for young women to attain education.

Descriptive statistics for these variables are provided in Appendix B.

Regression Results

Regression Models

To examine the statistical relationship between religion and educational attainment, the following equations were estimated, where equations 1, 3, 5, and 7 use the total religious attainment as the control variable, and the other equations use the three religious groups (Evangelical Protestant, Mainline Protestant, and Catholic) as the control variables.

- (1) $HS_{mi} = \beta_0 + \beta_1R_{1i} + \epsilon_i$
- (2) $HS_{mi} = \beta_0 + \beta_1R_{2i} + \dots + \beta_3R_{4i} + \epsilon_i$
- (3) $HS_{fi} = \beta_0 + \beta_1R_{1i} + \epsilon_i$
- (4) $HS_{fi} = \beta_0 + \beta_1R_{2i} + \dots + \beta_3R_{4i} + \epsilon_i$
- (5) $BD_{mi} = \beta_0 + \beta_1R_{1i} + \epsilon_i$
- (6) $BD_{mi} = \beta_0 + \beta_1R_{2i} + \dots + \beta_3R_{4i} + \epsilon_i$
- (7) $BD_{fi} = \beta_0 + \beta_1R_{1i} + \epsilon_i$
- (8) $BD_{fi} = \beta_0 + \beta_1R_{2i} + \dots + \beta_3R_{4i} + \epsilon_i$

Table 4
 Religion and Education Attainment

HIGH SCHOOL/BACHELOR'S DEGREE OR HIGHER -- PERCENT OF COUNTY POPULATION (n = 3,143)

Regression Coefficient (t-Statistic)

| | Male High School | | Female High School | | Male Bachelor's Degree | | Female Bachelor's Degree | |
|-------------------------|--------------------|------------------------|-----------------------|------------------------|------------------------|------------------------|--------------------------|------------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Total Religious | -4.9E-4 (-0.63) | | -2.6E-3 (-3.87)*** | | -2.1E-3 (-2.30)** | | -3.3E-3 (-4.05)*** | |
| Evangelical Protestant | | -1.5E-2 (-18.09)*** | | -1.6E-2 (-22.20)*** | | -1.4E-2 (-12.72)*** | | -1.4E-2 (-14.42)*** |
| Mainline Protestant | | 1.9E-2 (15.02)*** | | 1.8E-2 (16.66)*** | | -1.3E-3 (-0.81) | | -6.9E-4 (-0.50) |
| Catholic | | 2.0E-3 (1.95)* | | -1.2E-3 (-1.4) | | 7.5E-3 (5.76)*** | | 7.1E-3 (6.21)*** |
| Adjusted R ² | 0.00% | 18.83% | 0.44% | 22.75% | 0.14% | 8.81% | 0.49% | 10.86% |

Statistically significant at * .10, ** .05, *** .01

The results of these eight equations are presented in Table 4. The level of religious adherence at the county level does play a role – both positive and negative – in the percentages of county populations achieving high school diplomas and Bachelor’s Degrees. The level of total religious membership negatively affects three of the four groups – female High School and both female and male Bachelor’s Degree.

When just the three Christian groups are analyzed, Evangelical Protestant membership is strongly negatively related to educational attainment for all four groups – high school and Bachelor’s Degree, male and female – with t-values from -12.72 to -22.2.

The other two religious groups – Mainline Protestant and Catholic – have positive effects for at least some of the four groups – Mainline Protestant for high school, both male and female (t-values of 15.02 and 16.66); and Catholic for all the groups except female high school (t-values of 1.95, 5.76, and 6.21).

The eight regressions were then repeated but with the inclusion of all the control variables, again with just the total religious adherence variable in half the equations and the other equations with the three religious groups.

- (1) $HS_{mi} = \beta_0 + \beta_1R_{1i} + \beta_2C_{1i} + \dots + \beta_6C_{5i} + \epsilon_i$
- (2) $HS_{mi} = \beta_0 + \beta_1R_{2i} + \dots + \beta_3R_{4i} + \beta_4C_{1i} + \dots + \beta_8C_{5i} + \epsilon_i$
- (3) $HS_{fi} = \beta_0 + \beta_1R_{1i} + \beta_2C_{1i} + \beta_6C_{5i} + \epsilon_i$
- (4) $HS_{fi} = \beta_0 + \beta_1R_{2i} + \dots + \beta_3R_{4i} + \beta_4C_{1i} + \dots + \beta_8C_{5i} + \epsilon_i$
- (5) $BD_{mi} = \beta_0 + \beta_1R_{1i} + \beta_2C_{1i} + \dots + \beta_6C_{5i} + \epsilon_i$
- (6) $BD_{mi} = \beta_0 + \beta_1R_{2i} + \dots + \beta_3R_{4i} + \beta_4C_{1i} + \dots + \beta_8C_{5i} + \epsilon_i$
- (7) $BD_{fi} = \beta_0 + \beta_1R_{1i} + \beta_2C_{1i} + \dots + \beta_5C_{4i} + \epsilon_i$
- (8) $BD_{fi} = \beta_0 + \beta_1R_{2i} + \dots + \beta_3R_{4i} + \beta_4C_{1i} + \dots + \beta_7C_{4i} + \epsilon_i$

High School or Higher Regression Results

Table 5 presents the results for High School attainment or higher for both female and male percentages of county population.

Table 5

High School Attainment

HIGH SCHOOL OR HIGHER -- PERCENT OF COUNTY POPULATION (n = 3,143)

Regression Coefficient (t-Statistic)

| | Male High School (1) | (2) | Female High School (3) | (4) |
|-------------------------|----------------------------|-----------------------|------------------------------|-----------------------|
| Evangelical Protestant | | -0.010 (-14.68)*** | | -0.012 (-19.94)*** |
| Mainline Protestant | | 0.007 (6.03)*** | | 0.007 (7.09)*** |
| Catholic | | 0.001 (1.11) | | -0.002 (-2.44)** |
| Total Religious | -4.9E-4 (0.43) | | -0.003 (-5.25)*** | |
| Median Earnings | 0.001 (29.36)*** | 0.001 (27.41)*** | 4.5E-4 (27.22)*** | 4.2E-4 (26.04)*** |
| Percent White | 0.138 (24.47)*** | 0.129 (23.12)*** | 0.122 (25.48)*** | 0.112 (24.23)*** |
| Unemployment Rate | -0.492 (-13.04)*** | -0.397 (-10.68)*** | -0.469 (-14.58)*** | -0.354 (-11.40)*** |
| Population Density | -2.7E-5 (-0.43) | -6.4E-5 (-1.07) | -1.1E-4 (-2.11)** | -2.6E-4 (-3.05)*** |
| Teen Fertility Rate | -0.018 (-6.47)*** | -0.012 (-4.60)*** | -0.018 (-7.42)*** | -0.012 (-5.37)*** |
| Adjusted R ² | 45.4% | 50.7% | 46.1% | 53.3% |

Statistically significant at * .10, ** .05, *** .01

Religion again matters for high school attainment but with opposite effects for Catholic adherence levels. Catholic adherence now negatively affects female percentages and has no effect on male percentages. The results of religious adherence are the same for the other variables: (1) total religious adherence negatively affects females, (2) Evangelical Protestant negatively affects males and females, and (3) Mainline Protestant positively affects males and females.

The t-values are highest for Evangelical Protestant (-14.68 and -19.94), compared with Mainline Protestant (6.03 and 7.09) and Catholic (-2.44) and total religious (-5.25). The coefficients are also largest for Evangelical Protestant (-0.010 and -0.012) than for the other religious variables, which range from absolute values of 0.002 to 0.007.

All but one of the other five control variables is statistically significant in all four regressions. For male and female high school attainment, the variables that contribute to higher percentages of high school attainment are Median Earnings and Percent White, both with high t-values (between 23 and 29). The coefficient for Percent White is also relatively significant; a one-percent increase in Percent White population increases the population attaining a high school degree by 0.11 percent. Variables that, not unexpectedly, are highly statistically significantly related to fewer high school graduates are Unemployment Rate and Teen Fertility Rate (which negatively impacts male as well as female high school attainment). The coefficient for Unemployment Rate is somewhat significant; a one-percent increase in Unemployment Rate decreases high school graduation by between .35 and .49 percent. Population Density statistically reduces female high school attainment.

Bachelor's Degree or Higher Regression Results

Table 6 presents the results for Bachelor's Degree attainment or higher for female and male percentages of county population.

Table 6

Bachelor's Degree Attainment

BACHELOR'S DEGREE OR HIGHER -- PERCENT OF COUNTY POPULATION (n = 3,143)

Regression Coefficient (t-Statistic)

| | Male Bachelor's Degree | | Female Bachelor's Degree | |
|--|---------------------------|-----------------------|-----------------------------|-----------------------|
| | (5) | (6) | (7) | (8) |
| Evangelical Protestant | | -0.009 (-10.45)*** | | -0.006 (-8.69)*** |
| Mainline Protestant | | -0.003 (-2.30)** | | -0.005 (-4.84)*** |
| Catholic | | -0.002 (-1.62) | | -0.001 (-1.12) |
| Total Religious | -0.004 (-5.97)*** | | -0.003 (-4.25)*** | |
| Median Earnings* | 6.9E-4 (38.47)*** | 6.6E-4 (35.89)*** | 8.5E-4 (34.26)*** | 8.4E-4 (34.13)*** |
| Percent White | -0.035 (-5.24)*** | -0.031 (-4.44)*** | -0.024 (-4.43)*** | -0.017 (-3.13)*** |
| Unemployment Rate | -0.558 (-12.10)*** | -0.527 (-11.09)*** | -0.434 (-11.09)*** | -0.480 (-12.29)*** |
| Population Density | 7.2E-4 (9.50)*** | 0.001 (9.14)*** | 3.1E-4 (5.19)*** | 2.9E-4 (4.88)*** |
| Female Labor Force Participation Rate | | | 0.271 (14.49)*** | 0.240 (12.30)*** |
| Adjusted R ² | 42.3% | 43.7% | 55.6% | 56.7% |

Statistically significant at * .10, ** .05, *** .01

*Median Earnings: Male, Female

Again, religion is statistically significantly related to education attainment levels with the inclusion of all control variables, with the same results for total religious and Evangelical Protestant and with different results for Mainline Protestant and Catholic. Total religious and Evangelical Protestant adherence rates are still negatively related to county percentages of males and females earning a Bachelor’s Degree or higher. Mainline Protestant is now negatively related to attainment rates for both male and female, and Catholic now has no effect on attainment levels. The t-values are again highest for Evangelical Protestant (-8.69 and -10.45), but still large for the other statistically significant coefficients for Mainline Protestant and total religious (-2.30, -4.25, and -4.84).

Unlike the High School results, all the other control variables are statistically significant for all the regressions. Female Labor Participation Rate has a significant positive effect on female attainment, both statistically (t-values are 12.3 and 14.5) and in the size of the coefficient; a 10 percent increase in the number of women in the labor force increases the percent of women with a Bachelor’s Degree by 2.4 to 2.7 percent. Male Median Earnings and Female Median Earnings, rather than overall Median Earnings, were used in the Bachelor’s degree regressions and have the most statistically significant positive impact, with t-values between 34 and 38. T-values are also large for Unemployment Rate (between -11 and -12) and for Population Density (between 4.9 and 9.5). The signs change for two variables, however; whereas Percent White increases percentages of High School graduates, it surprisingly decreases percentages of Bachelor’s Degree graduates. Likewise, whereas Population Density negatively affects High School attainment, it positively affects Bachelor’s Degree attainment; this result is not necessarily unexpected, as population density is often associated with increased levels of poverty, which affects high school attainment, but is also associated with increased job opportunities and skill levels, which would result in more people pursuing college degrees or more college graduates moving to urban areas for employment.

Summary of Religion and Educational Attainment

Table 7 summarizes the results of the six regression analyses presented in Tables 5 and 6 -- the effects of the religion variables on female and male high school and Bachelor’s Degree attainment.

Table 7

Summary of Regression Results

Effects of Religion on Educational Attainment

| | <u>Total Religious</u> | <u>Conservative Protestant</u> | <u>Mainline Protestant</u> | <u>Catholic</u> |
|--------------------|------------------------|--------------------------------|----------------------------|-----------------|
| HIGH SCHOOL | | | | |
| Male | None | negative | positive | no effect |
| Female | negative | negative | positive | negative |
| BACHELOR'S | | | | |
| Male | negative | negative | negative | no effect |
| Female | negative | negative | negative | no effect |

The overall level of religious adherence in a county negatively affects graduation rates for both males and females from both high school and college. Of the three religious groups, Evangelical Protestant has the strongest negative relationship for all graduation rates – male and female, high school and college. Catholic adherence levels negatively affect only female high school attainment. Only Mainline Protestant has a positive effect on educational attainment, and only for high school percentages, for both males and females.

Conclusion and Discussion

Previous research has shown that religion does impact education attainment on an international level (Norton and Tomal, 2009), with the percent of Hindu and Muslim adherents having a negative effect on female education. In another international study using only Christian adherents (Norton and Tomal, 2012), the Pentecostal-Charismatic groups had a positive effect on female education.

In a study linking religion and economic growth at the U.S. county level (Rupasingha and Chilton, 2009), religious adherence has a negative effect on county income growth, although no effect was found for the categories of Catholic, Mainline Protestant, and Evangelical Protestant.

The study presented in this paper combines elements of these previous studies by using the three biggest religious categories in the United States – Catholic, Mainline Protestant, Evangelical Protestant – to determine the effect of religion on educational attainment at the county level.

This study finds that religion is primarily a negative influence, similar to religion having a negative effect on county economic growth (Rupasingha and Chilton, 2009). For the relationship between religious adherence rates and educational attainment, the rate of overall religious adherence has a negative influence on female high school attainment and both male and female Bachelor's Degree attainment, with t-statistics between -4 and -6. When only the three religious adherence rates are used, the results are not consistent. Catholic adherence rates are related only to negative female high school attainment, with a t-statistic of -2.4. Mainline Protestant has opposite effects on high school and Bachelor's Degree – positive for male and female high school (t-statistics of 6 and 7) and negative for male and female Bachelor's Degree (t-statistics between -2.3 and -4.8). Evangelical Protestant is the only group that negatively impacts educational attainment for all four categories – male and female, high school and Bachelor's Degree; the t-statistics are large -- up to almost -20, even controlling for several socio-economic and demographic variables: Median Earnings, Percent White, Unemployment Rate, Population Density, Teen Fertility Rate, and Female Labor Force Participation Rate.

The study clearly shows the positive effect of income (as measured by Median Earnings) on both high school and Bachelor's Degree attainment, as the t-statistics are very large, between 26 and 38; conversely, the Unemployment Rate is negatively related to educational attainment, with t-statistics between -10 and -14. Population Density is negatively related to female high school attainment but positively related to Bachelor's Degree attainment for both male and female, which is to be expected as urban areas are generally the source of higher-level positions compared with rural areas.

As more women participate in the labor force, more women have Bachelor's Degree, with t-statistics between 12 and 14. An increased Teen Fertility Rate, as expected, results in lower levels of high school attainment for both males and females, with t-statistics between -4 and -7.

The religious coefficients, while statistically significant, are not large. For example, an increase of 10 percent of a county's population becoming a Religious Adherent (100 more people per 1,000 population) results in, *ceteris paribus*, on average, a decrease of only 0.3-0.4 percent of the county's population attaining a Bachelor's Degree.

Religion does affect education attainment levels in the United States. The unanswered question, however, is the cause of this negative effect on education attainment levels by increased levels of total religious adherence as well as Evangelical Protestant.

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Appendix A

VARIABLE DESCRIPTIONS AND SOURCES

| Variable | Description | Source |
|----------------------------------|---|---------------------------------------|
| Male High School | Male: Percent High School graduate or higher | US Census Bureau (2010) ¹ |
| Female High School | Female: Percent High School graduate or higher | US Census Bureau (2010) ¹ |
| Male Bachelor's Degree | Male: Percent Bachelor's Degree or higher | US Census Bureau (2010) ¹ |
| Female Bachelor's Degree | Female: Percent Bachelor's Degree or higher | US Census Bureau (2010) ¹ |
| Total Median Earnings | Total: Median Earnings, population 25 and over | US Census Bureau (2010) ¹ |
| Male Median Earnings | Male: Median Earnings, population 25 and over | US Census Bureau (2010) ¹ |
| Female Median Earnings | Female: Median Earnings, population 25 and over | US Census Bureau (2010) ¹ |
| Unemployment Rate | Unemployment Rate | US Dept. of Labor (2010) ² |
| Percent White | Percent White, non-Hispanic, non-Latino | US Census Bureau (2012) ³ |
| Population Density | Population per Square Mile | US Census Bureau (2010) ³ |
| Teen Fertility Rate | Fertility per 1,000 women 15-19 years old | US Census Bureau (2011) ⁴ |
| Female Labor Force Participation | Female Labor Force Participation Rate (Percent Females 16 and over employed in Civilian Labor Force) | US Census Bureau (2011) ⁴ |
| Total Religious | All denominations/groups: rates of adherence per 1,000 | ARDA (2010) ⁵ |
| Evangelical Protestant | Evangelical Protestant: rates of adherence per 1,000 | ARDA (2010) ⁵ |
| Mainline Protestant | Mainline Protestant: rates of adherence per 1,000 | ARDA (2010) ⁵ |
| Catholic | Catholic: rates of adherence per 1,000 | ARDA (2010) ⁵ |

¹US Census Bureau. American Fact Finder. Tables S1501 (High School, Bachelor) and S1902 (Income). <http://www.factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml>. Obtained 4/13.

²US Department of Labor. Bureau of Labor Statistics. Local Area Unemployment Statistics. <http://www.bls.gov/lau/>. Obtained 8/13.

³US Census Bureau. State and County QuickFacts. http://quickfacts.census.gov/qfd/download_data.html. Obtained 8/13.

⁴US Census Bureau. American Fact Finder. Tables DP02 (Selected Social Characteristics) and DP03 (Selected Economic Characteristics), 2011 ACS Survey, 5-year estimates <http://factfinder2.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t>. Obtained 8/13.

⁵Association of Religious Data Archives. US Membership Report: Religious Traditions. <http://www.thearda.com/rcms2010>. Obtained 4/13.

Appendix B

DESCRIPTIVE STATISTICS (n = 3,143)

| Variable | Mean | Median | St. Dev. | Minimum | Maximum |
|----------------------------------|--------|--------|----------|---------|---------|
| Male High School | 82.5 | 84.1 | 7.9 | 48.0 | 98.9 |
| Female High School | 84.9 | 86.2 | 6.8 | 44.9 | 100.0 |
| Male Bachelor's | 18.9 | 16.6 | 9.4 | 0.0 | 78.7 |
| Female Bachelor's | 19.7 | 17.7 | 8.3 | 0.0 | 69.4 |
| Total Median Earnings | 30,394 | 29,650 | 5,771 | 16,128 | 71,565 |
| Male Median Earnings | 36,891 | 35,852 | 7,557 | 16,211 | 96,667 |
| Female Median Earnings | 24,219 | 23,331 | 5,028 | 9,444 | 61,250 |
| Unemployment Rate | 9.2 | 9.0 | 3.1 | 1.6 | 29.9 |
| Percent White | 77.7 | 85.2 | 19.9 | 3.2 | 98.6 |
| Population Density | 259.3 | 45.2 | 1,724.2 | 0.0 | 69,468 |
| Teen Birth | 31.6 | 22.0 | 38.8 | 0.0 | 444.0 |
| Female Labor Force Participation | 51.8 | 51.9 | 7.2 | 20.8 | 88.2 |
| Total Religious | 514.1 | 497.2 | 182.0 | 30.7 | 1,924.6 |
| Evangelical Protestant | 231.2 | 186.9 | 163.0 | 0.0 | 1,308.7 |
| Mainline Protestant | 115.4 | 85.1 | 100.9 | 0.0 | 835.4 |
| Catholic | 123.6 | 78.7 | 134.8 | 0.0 | 999.57 |