RELIGIOUS ADHERENCE AS A CORRELATE
County-level correlations between religion data, socio-economic factors, and voting trends in the United States

Everybody just knows that Episcopalians are rich, Southern Baptists vote Republican, Unitarians are well-educated, and Mormons have large families. Comparisons have now been made between the recent U.S. Religion Census, the U.S. government census, American Community Surveys, and the results from the last two presidential elections. How well do those stereotypes hold up? And what else can be learned from such comparisons?

2010 U.S. Religion Census

Each of the 236 groups that were included in the 2010 U.S. Religion Census (Grammich, *et al.*) reported congregational locations by county. These would at least indicate in which counties a given group is present. For correlations, however, the relative size of the group within each county is more important than mere presence. For 153 groups, adherent data by county is available. Many of these groups are present in just a small proportion of counties, so they have been omitted from this study. There were 54 groups present in 10% of the counties (a minimum of 308 of the 3,143 counties and county equivalents reported in 2010). These are the groups for which correlations have been made.

Possible Correlations

The 2010 national Census and the 2010 American Community Survey provide county-level data on many standard population categories:

- Racial/Ethnic categories
- Age groups
- Households, families, children present
- Income, home ownership, poverty
- Mobility
- Education levels, occupation categories

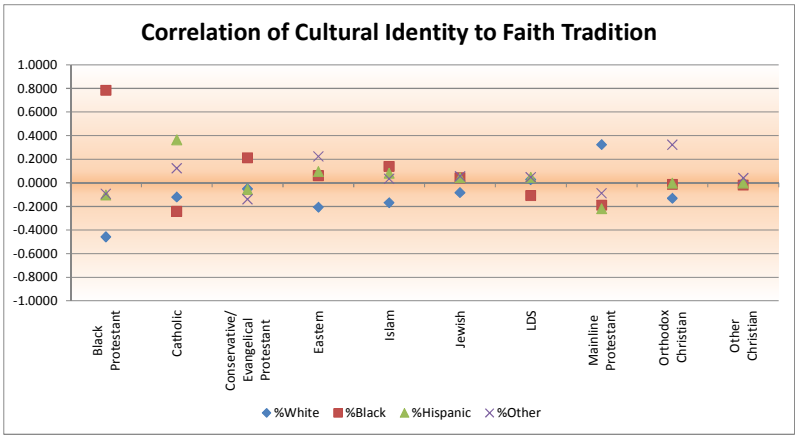
Additionally, county-level voting results are available from the 2004, 2008, and 2012 elections.

The 2010 U.S. Religion Census not only provides information about individual groups, which will be the focus of this paper, but also allows groupings into larger faith traditions. This is not as important for researchers, since these larger groupings will often show up in national samples. The advantage of using the Religion Census is to allow more detailed studies of smaller religious groups.

However, the larger faith traditions category will be helpful in pointing out one of the difficulties of straight county-level correlations at the national level.

Initial Correlations Misleading

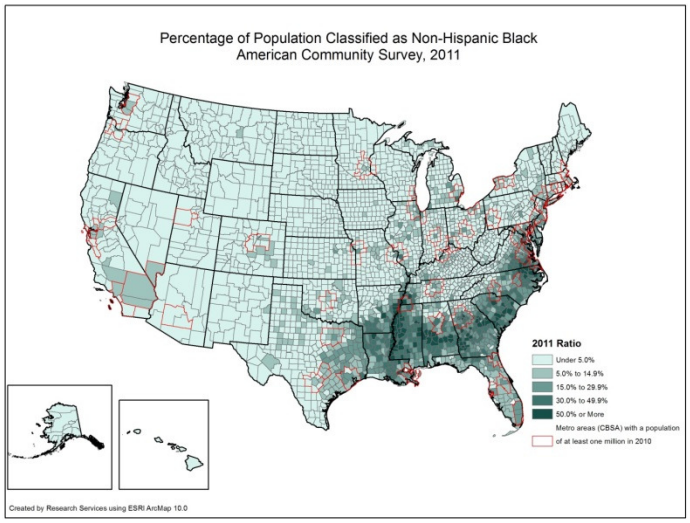
One might expect that the strongest correlation[i] between religious tradition and cultural identity is for the historically African American denominations. Twelve Black Protestant bodies were included in the 2010 U.S. Religion Census. As a group, their concentration within any county has a 0.78 correlation with the Black concentration.[ii] The concentration of Whites is negatively correlated with this group, but not as strongly (-0.46).



However, before going further with these comparisons, the relatively strong correlation between conservative Protestants and the Black population must be examined. This may be related to the relative high concentration of the latter group in the South, where there is also a higher-than-normal concentration of Blacks.

Here is an important distinction to be made about correlations: There may be a correlation, but it may be spurious—or at best, secondary to another factor.

In this case, the increased ratio of Blacks in a county is definitely tied to a larger concentration of Conservative Protestants—the largest group of these being Southern Baptists. In fact, the correlation between the percentage of Blacks in a county and the concentration of Southern Baptists is a very strong .306. But the reason for this is not a large number of Black persons in Southern Baptist or Conservative Protestant churches. Instead, this is the result of the historical forces that distributed non-Hispanic Blacks throughout the South but clustered them in large metropolitan areas elsewhere in the country.



Regional location is not easily correlated with other data items. But it is significant in the United States.

Every measure of the population—racial and ethnic concentrations, religious adherence, income levels, voting patterns, household size—varies by census region.[iii] Such differences are natural, and may sometimes be interrelated. They are natural in that it would be statistically unusual to have any four regions equally balanced in any given statistic. They may be interrelated in that college degrees appear to be concentrated where there are more managerial and professional jobs.

But in most categories, two of the four US regions have above-average concentrations of a socio-economic group and two have below-average concentrations. Further, the regions on one side of the norm in one category are not necessarily on the same side in another. But for Black population and poverty levels, the South is significantly higher than the national average and is the only region with that distinction. Other regional differences exist, but the racial/ethnic categories are the most dramatic.

Regions uniquely above or below national norms:

Region	Category	Regional Concentration	National Concentration
South	Non-Hispanic Black	18.8%	12.2%
South	Persons in Poverty	15.4%	13.8%
Midwest	Not Recently Abroad	95.8%	93.9%
West	Hispanic	28.6%	16.3%
West	Families with Children	23.8%	21.7%
West	No College Education	39.4%	44.0%

Two highlighted items differ by 50% or more from the national norm; no others exceed a 25% variation.

There is another non-statistical difference in American counties.

	Metropolitan Areas of 1,000,000 or more	Metropolitan Areas of 700,000 to 999,999	Metropolitan Areas of 250,000 to 749,999	Metropolitan Areas of 249,999 or less	Micro-politan area	Non-CBSA area	*National Ratio*
Non-Hispanic White	56.1%	58.5%	71.0%	76.0%	78.9%	81.2%	***63.7%***
Non-Hispanic Black	14.5%	9.7%	10.9%	9.2%	7.7%	8.7%	***12.2%***
Persons Aged 20 to 39	27.8%	26.4%	26.6%	26.7%	24.7%	22.1%	***26.8%***
Persons Aged 65 or Older	11.9%	13.1%	13.5%	14.3%	15.1%	17.3%	***13.0%***
Rental Households	37.8%	34.3%	33.2%	32.8%	30.0%	25.2%	***34.9%***
Average Household Income	$77,946	$68,375	$63,357	$58,724	$53,778	$9,701	***$69,372***
College Graduates	20.2%	17.1%	16.5%	14.7%	12.1%	10.1%	***17.6%***
Persons with Graduate Degrees	12.1%	10.2%	9.3%	8.5%	6.6%	5.1%	***10.3%***
Persons Living in Poverty	12.5%	14.8%	14.4%	15.3%	16.4%	17.2%	***13.8%***
Persons Employed	47.2%	45.0%	45.2%	44.8%	43.9%	42.1%	***45.9%***
Persons with Managerial Jobs	38.0%	34.7%	33.8%	31.8%	28.7%	27.7%	***35.3%***

Highlighted cells are those above the national average.

Many social indicators measured by the national census and the American Community Surveys are dramatically different depending upon whether the area is part of a metropolitan area of at least one million people.

The largest metropolitan areas consistently are the only community type to differ directionally from the national average. Racial and ethnic composition, age concentrations, household income, educational levels, and employment categories all demonstrate that the largest metropolitan areas are on the opposite side of the national norms from any other community type.[iv]

It is true that the nearly-as-large metropolitan areas have a lower-than-average concentration of non-Hispanic Whites. But McAllen, Texas, and Tucson, Arizona, are likely to become million-plus metros within the next few years, and Honolulu, Hawaii, will always affect whatever size category it is in.

Partial Correlations

To discover relationships between religious adherent levels and other socio-economic descriptors, correlations were controlled for the Southern region and for metropolitan areas of at least one million people. While the West is arguably unique in its Hispanic concentration, the relationship between Hispanics and various religious traditions is not as strongly obvious as that with Southern Blacks.

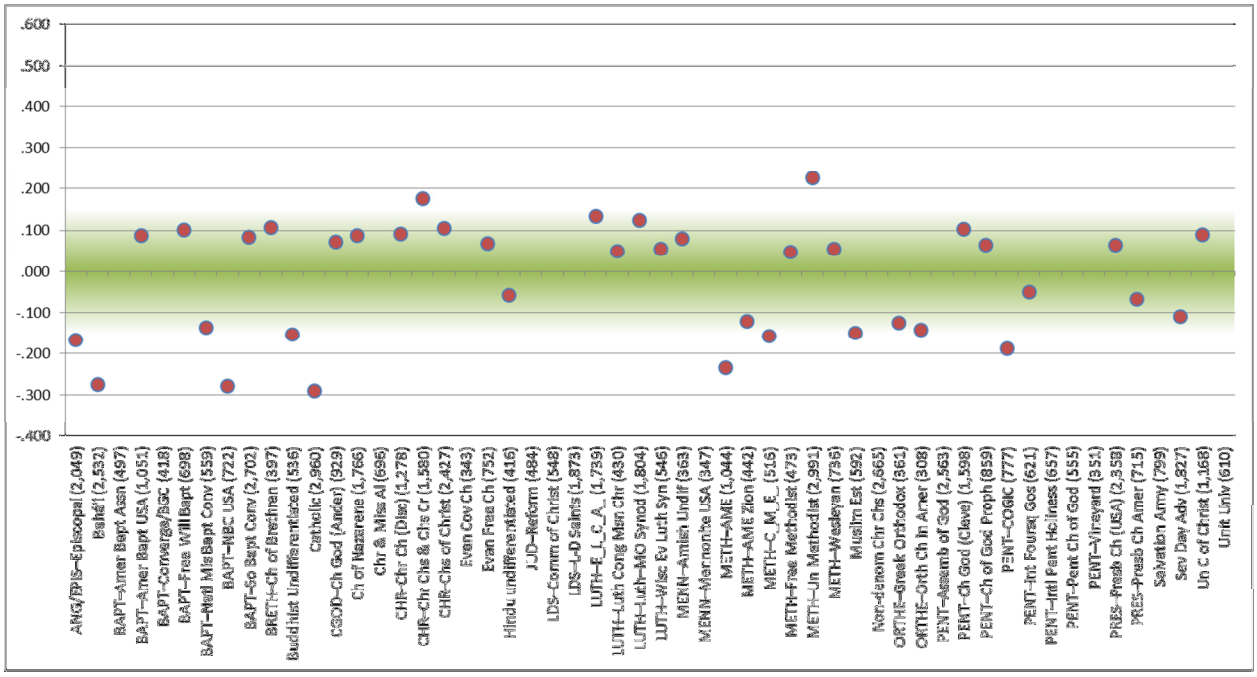
Many correlations between religious group adherents and socio-economic factors were found to be statistically significant at the 0.01 level (2-tailed). But statistically significant is not necessarily substantive. As a comparison, correlations between several factors commonly assumed to be related were checked.

Factors	Correlation
Hispanic to household size	0.374
Non-Hispanic Black to household income	-0.142
Non-Hispanic White to living abroad last year	-0.221
Dropouts to household size	0.362
Poverty level to blue collar jobs	0.103

With this in mind, the following charts including shading to indicate whether the correlation is above at least the 0.100 level.

Correlation between Religious Group Adherent Level and Non-Hispanic White Ratio

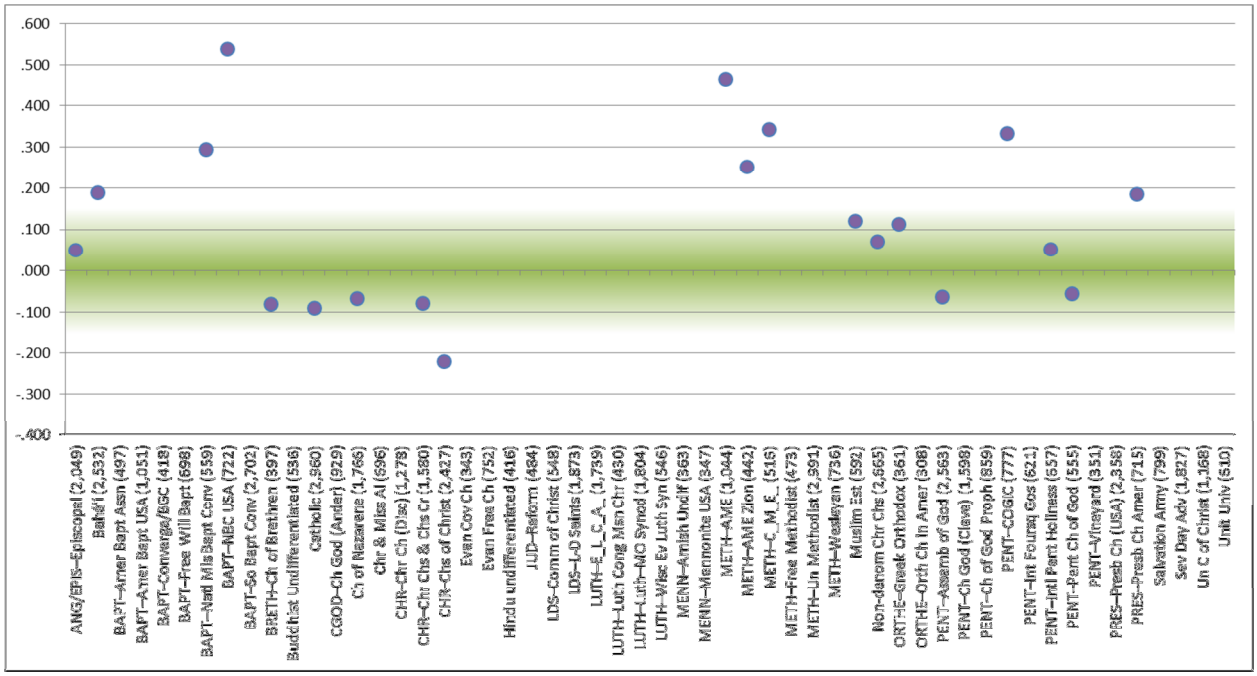
When Southern-ness and major metropolitan status are controlled for, two groups are moderately correlated to the ratio of non-Hispanic Whites in a county: United Methodists (0.226) and Churches of Christ (0.177). The latter especially demonstrates the importance of controlling for non-statistical factors. The original correlation was -0.038, not a large correlations but not a positive correlation, either.



Statistically significant correlations, controlling for Southern region and metros of one million or more

While several groups are negatively correlated with the White population, the strongest such correlation is for the Catholics (-0.290). The National Baptist Convention USA (-0.278) and the Bahá'í (-0.274) are also strongly correlated, followed by the AME, Zion, group (-0.122).

Correlation between Religious Group Adherent Level and Non-Hispanic Black Ratio



Statistically significant correlations, controlling for Southern region and metros of one million or more

As expected, the historically African-American denominations are most closely correlated with the ratio of Blacks in a county, with the National Baptist Convention USA (0.537) the strongest.

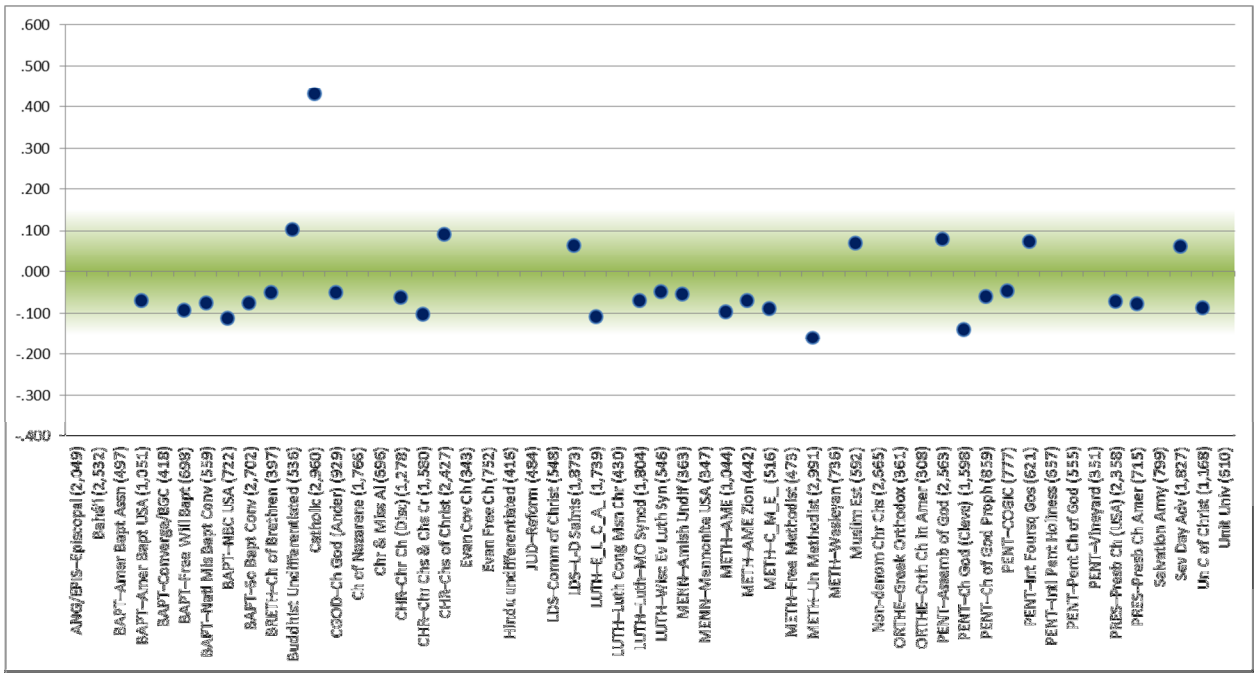
The Bahá'í (0.190) and Muslim (0.120) were positively correlated with Black presence, as was the Presbyterian Church in America (0.186). No ethnic statistics from the latter group are available to confirm whether this reflects their composition.

The Churches of Christ, strongly correlated with White presence, shows a strong correlation (-0.221) to Black concentrations. This negative relationship is not nearly as strong for other groups.[v]

The Catholic correlation is much weaker (-0.91) and in a negative direction, indicating that they are tied to some group other than the White or Black populations.

Correlation between Religious Group Adherent Level and Hispanic Ratio

And, in fact, the Catholic correlation (0.431) is very strong with Hispanic presence. Muslims (0.120) have the next strongest positive correlation, which again may be more a reflection of their communities than their congregations.



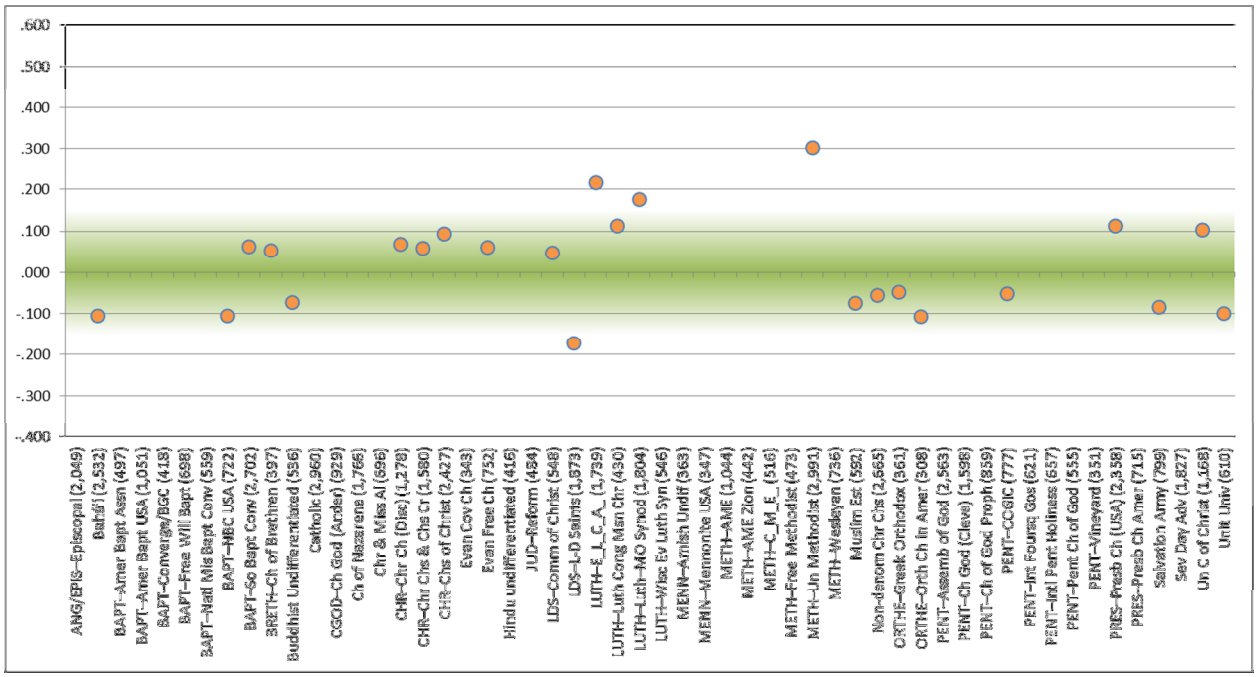
Statistically significant correlations, controlling for Southern region and metros of one million or more

The United Methodist Church (-0.159) is negatively correlated with Hispanic presence, though the relationship is only moderately strong. The Church of God (Cleveland, Tennessee) also has a moderate negative correlation (-0.138) with Hispanic concentrations.

Correlation between Religious Group Adherent Level and Ratio of Persons 65 or Older

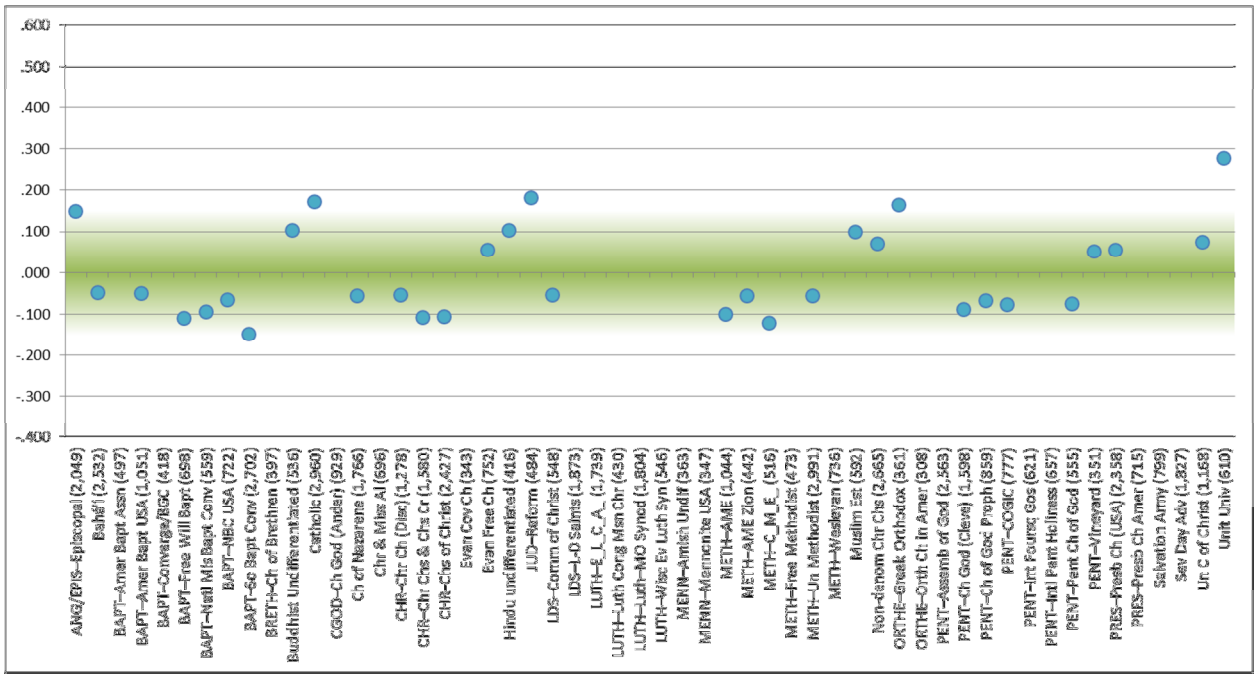
The United Methodist Church has the strongest correlation (0.303) to the presence of older persons in a county, followed by the Evangelical Lutheran Church in America (0.215) and the Lutheran Church—

Missouri Synod (0.176). The Church of Jesus Christ of Latter-day Saints had the next highest correlation (-0.173), this time in a negative direction.



Statistically significant correlations, controlling for Southern region and metros of one million or more

Correlation between Religious Group Adherent Level and Household Income



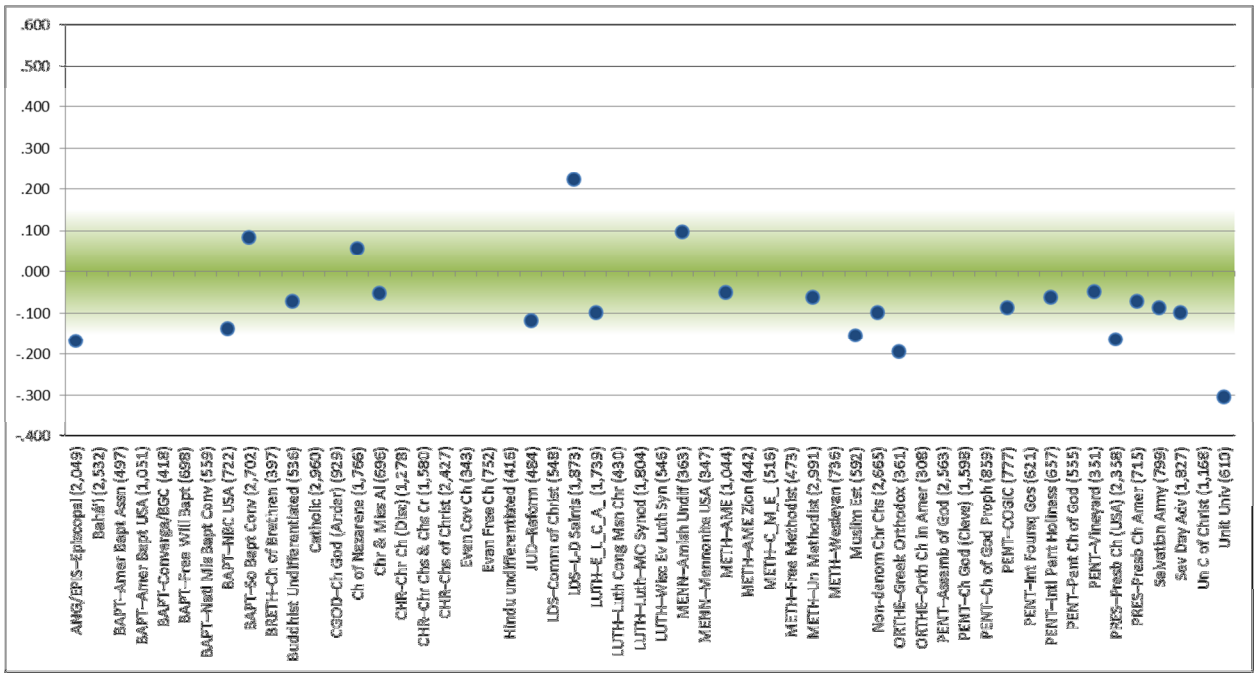
Statistically significant correlations, controlling for Southern region and metros of one million or more

Unitarian Universalist adherent rates have the strongest correlation (0.277) to household income. Other groups with moderate positive correlations are Reformed Judaism (0.181), Catholic (0.17),Greek

Orthodox (0.165), and the Episcopal Church (0.150). The strongest negative correlation is for the Southern Baptists (-0.149). Interestingly, the Buddhists (0.104), Hindus (0.103), and Muslims (0.098) are all at about the same positive level.

Correlation between Religious Group Adherent Level and Ratio of Family Households

The Church of Jesus Christ of Latter-day Saints has the strongest positive correlation (0.224) to the ratio of family households.[vi] Relatedly, but not shown in the charts, they are the group most strongly correlated with families with children and youth.[vii]



Statistically significant correlations, controlling for Southern region and metros of one million or more

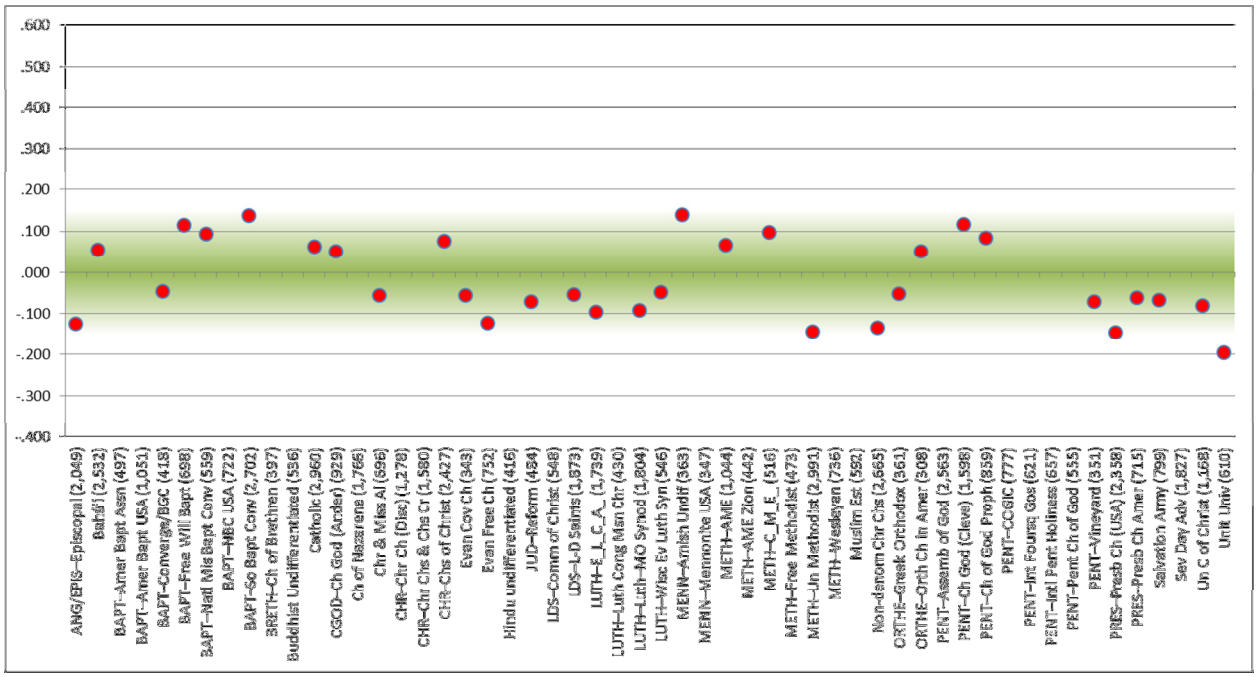
The Unitarian Universalist group has an even stronger negative correlation (-0.303) to this group. The Greek Orthodox Church (-0.195), the Episcopal Church (-0.168), Presbyterian Church (USA) (-0.163) and Muslims (-0.154) also have moderately strong negative correlations in counties with such concentrations.

Perhaps notable is the number of groups where no correlation with family groups was statistically significant. While the correlations are not strong, only the Amish (0.096), the Southern Baptist Convention (0.085) and the Church of the Nazarene (0.057) had statistically significant positive correlations to concentrations of families.

Correlation between Religious Group Adherent Level and Ratio of High School Dropouts

While it might have been expected that the Amish would have a positive correlation (0.139) to the ratio of high school dropouts, the Southern Baptists have almost the same correlation (0.138). While the South does have the highest level of dropouts (16.9%), the West (15.8%) is also above the national

average of 15.0%. The correlation with Black concentrations dropped out when the Southern region and large metros were controlled for, so this seems to be a realistic correlation.



Statistically significant correlations, controlling for Southern region and metros of one million or more

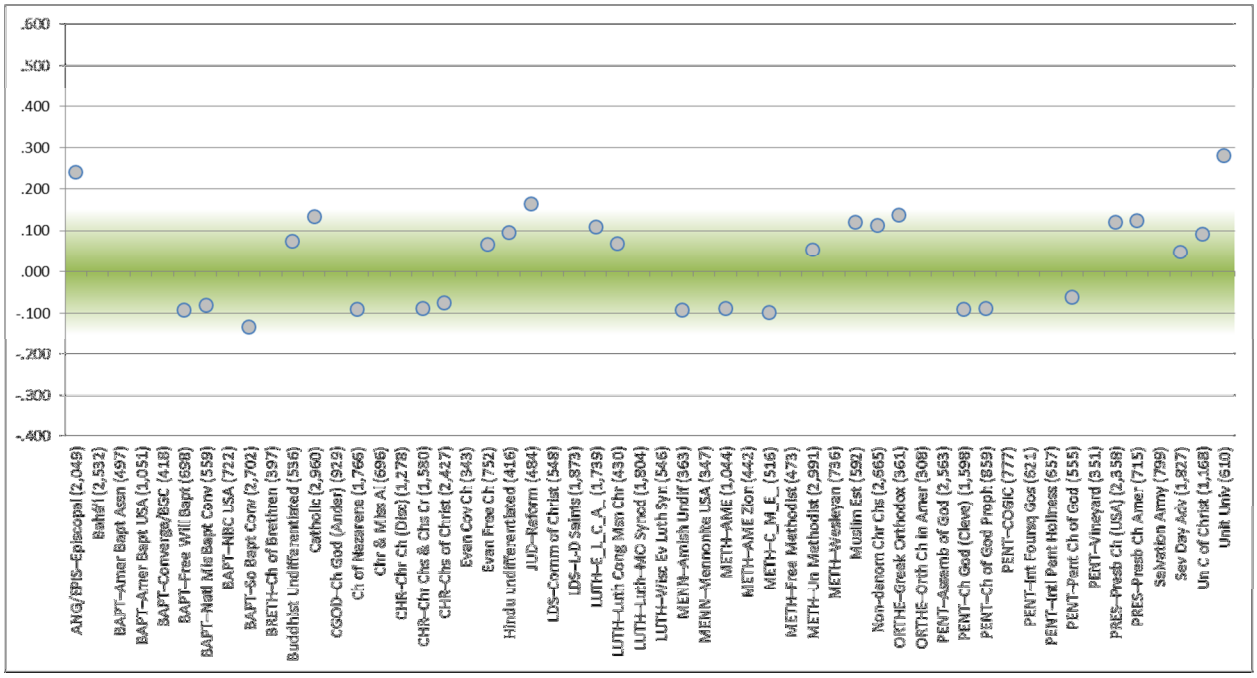
The Unitarian Universalists have the strongest correlation with the ratio of high school dropouts (-0.195) and it is a negative correlation. They also have the highest correlation (0.499) with the ratio of adults with graduate degrees. The Presbyterian Church (USA) (-.146) and the United Methodist Church (-.144) are also more strongly correlated with the ratio of high school dropouts, this time negatively, than the Amish or Southern Baptist Convention.

Correlation between Religious Group Adherent Level and Ratio of Persons in Professional Roles

The census grouped those employed in management, business, science, and arts into a single grouping which can be loosely described as “professional.” This classification excludes those in sales and office occupations.

The group with the strongest correlation to concentrations of persons in professional roles is the Unitarian Universalist (0.281) followed by the Episcopal Church (0.240). Others with moderately strong positive correlations are Reform Judaism (0.164), Greek Orthodox (0.137), Catholic (0.133), the Presbyterian Church in America (0.123), the Presbyterian Church (USA) (0.120), Muslims (0.120), Non-denominational Christian Churches (0.113) and the Evangelical Lutheran Church in American (0.109).

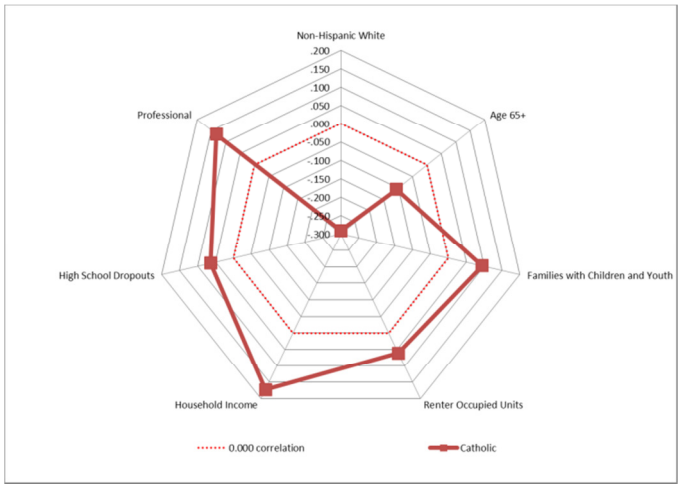
Only the Southern Baptist Convention (-0.133) had a moderately strong negative correlation to the ratio of those in professional roles.



Statistically significant correlations, controlling for Southern region and metros of one million or more

Socio-economic Correlation Patterns

The previous charts have shown each group's separate correlations. With a radar chart, a single group can be shown in several dimensions.

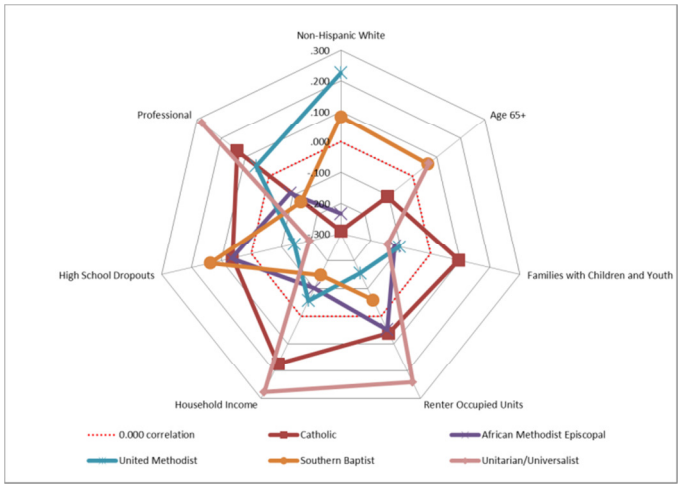


In this illustration, seven socio-economic indicators are displayed: non-Hispanic White; persons aged 65 or older; families with children (under 6) and youth (6 to 17); renter-occupied housing units; household income; high school dropouts; and those in professional job categories. These are the seven spokes radiating from the center of the chart.

The concentric lines connecting the seven spokes represent the range of correlation factors for any group or groups we wish to consider. The dotted line indicates the 0.000 correlation. Any points inside that dotted line would represent negative correlations; those outside represent positive correlations.

In this chart, the Catholic Church is plotted, showing seven of its correlates. The concentration of Catholic adherents is most positively correlated with higher household income and higher ratios of

people in professional occupations. The ratio of Catholic adherents is most negatively related to the proportion of non-Hispanic Whites in a county.



In this second radar chart, four additional groups from varying traditions are included.

From the Black Protestant tradition, the African Methodist Episcopal Church is most negatively correlated with non-Hispanic Whites. It is positively correlated with renter-occupied units and the number of high school dropouts, though not strongly so in either case. There is a weak negative correlation to household income, and to professional workers. The correlation with older persons is not statistically significant so is omitted.

From the Mainline Protestant tradition, the United Methodist Church is very positively related to non-Hispanic White concentrations and most negatively related to the proportion of high school dropouts. Again, this group has no statistically significant correlation with older persons.

From the Conservative Protestant tradition, the Southern Baptist Convention is most strongly correlated with the proportion of high school dropouts. Negative correlations are moderately strong with the concentration of professional workers and household income. This group has no statistically significant correlation to families with children and youth present.

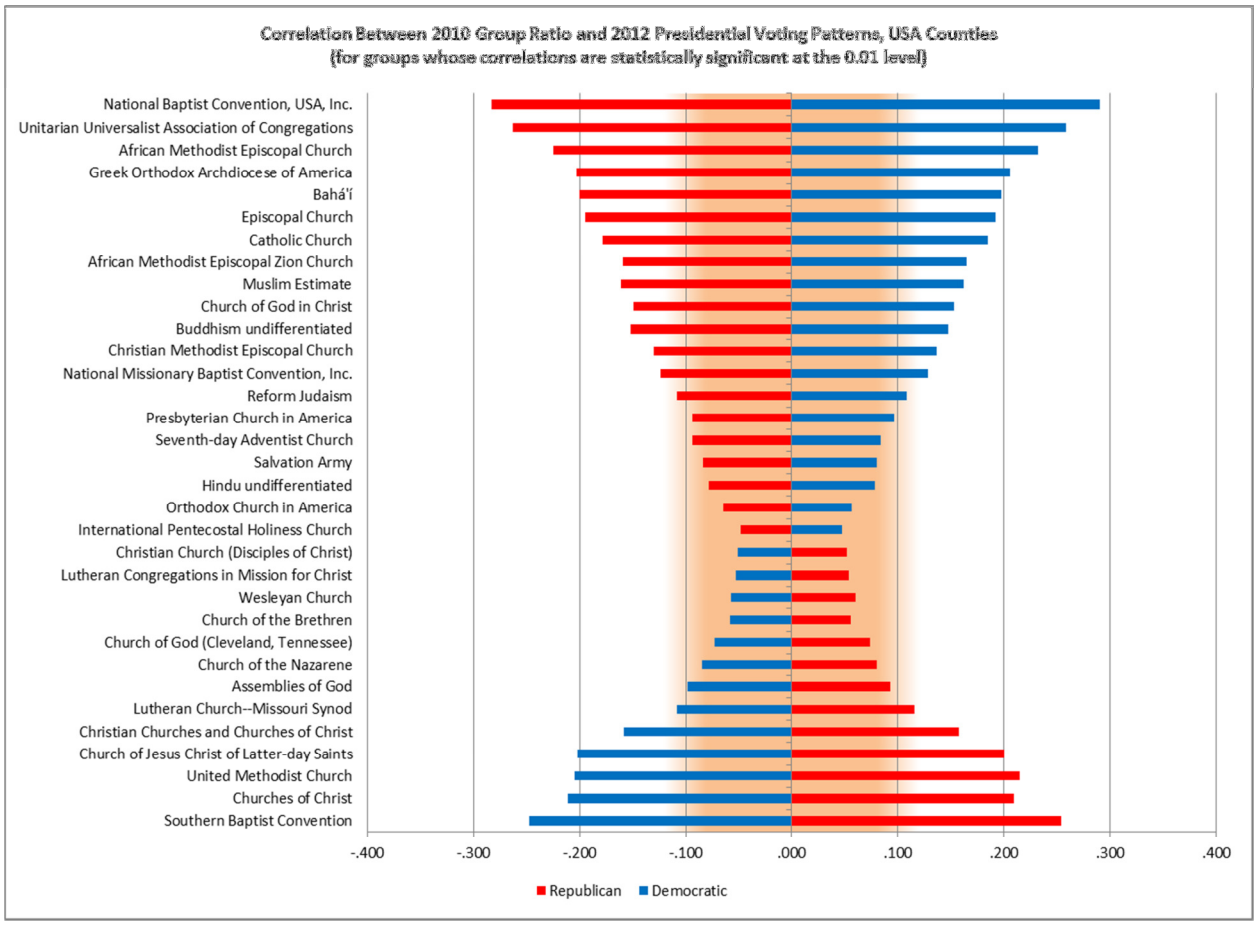
Outside the more orthodox Christian tradition, the Unitarian Universalists have strong positive correlations with professional workers, household income, and the proportion of renter-occupied units. They have strong negative correlations to high school dropouts and families with both children and youth. They have no statistically significant correlation to the presence of non-Hispanic Whites.

Voting Correlations

Because voting returns are usually compiled by county,[viii] correlations can also be made between religious group adherence rates and the strength of the major political parties in each county. Only 33 of the potential 54 religious groups had statistically significant correlations with the 2012 election results. The remaining 21 groups are these:

American Baptist Association	Converge Worldwide/Baptist General Conference	Mennonite Church, USA
American Baptist Churches in the USA	Evangelical Covenant Church	Non-denominational Christian Churches
Amish Groups, undifferentiated	Evangelical Free Church	Pentecostal Church of God
Christian and Missionary Alliance	Evangelical Lutheran Church in American	Presbyterian Church (USA)
Church of God (Anderson, Indiana)	Foursquare Gospel	United Church of Christ
Church of God of Prophecy	Free Methodist Church of North America	Vineyard USA
Community of Christ	Free Will Baptists	Wisconsin Evangelical Lutheran Synod

The 33 groups with statistically significant correlations to both the Democratic and Republican vote percentages are shown in descending order of correlation to county Democratic vote proportions.



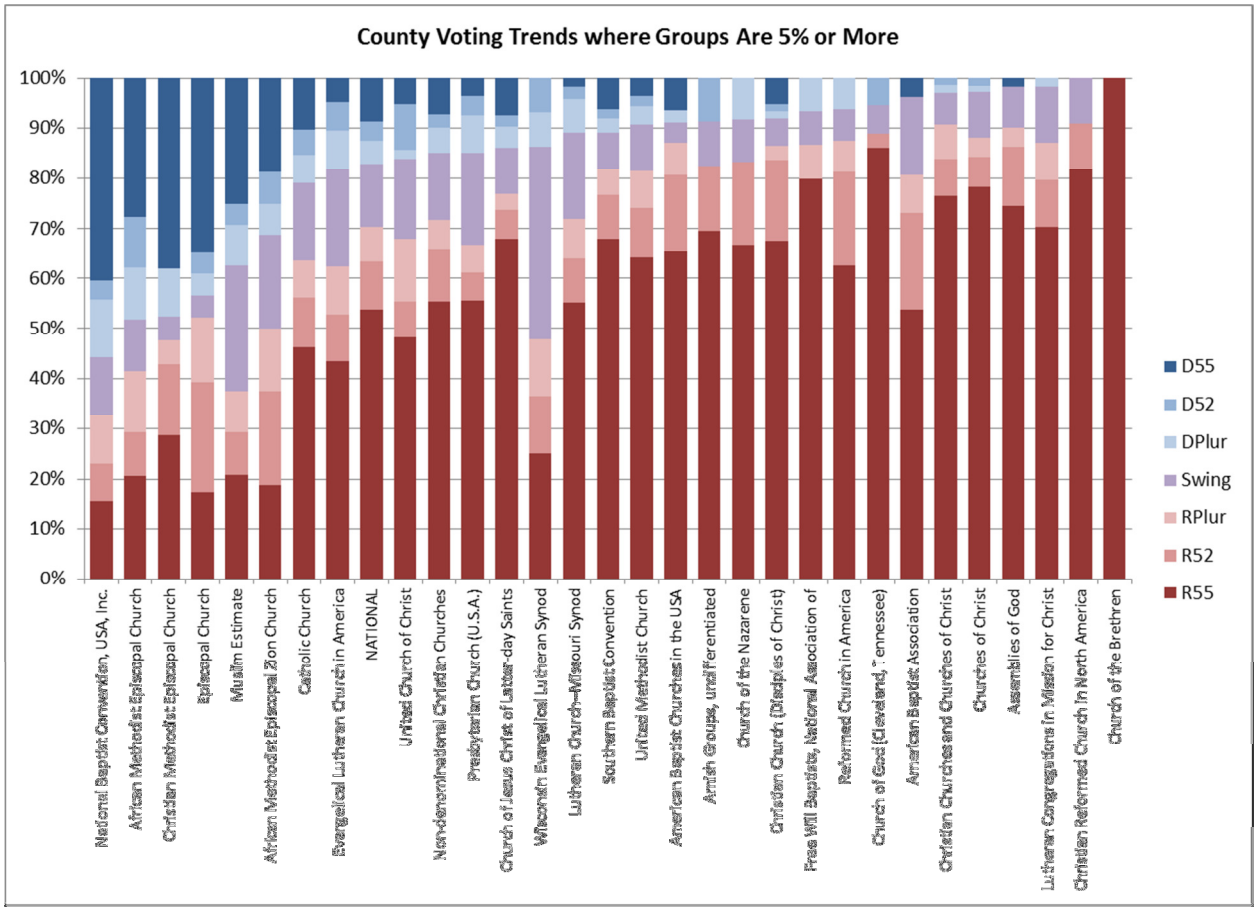
Statistically significant correlations, controlling for Southern region and metros of one million or more

Since the Republican and Democratic votes are inversely correlated, both ratios are shown on the same chart. The negative correlations are to the left of the center line, the positive to the right. The shaded area in the middle indicates weak but statistically significant correlations.

Other Voting Results

Since the Religion Census counts and the voting results are actually censuses and not samples, it is possible to look at the data in other ways. By comparing the 2004 and 2008 election results, it is possible to identify each county by its level of support for the major parties. These two elections are particularly useful for comparison. Since different parties were ultimately victorious, it is also possible to identify swing counties. The latter factor is especially difficult to quantify, so correlations would be difficult. However, an informative chart can be made.

The following chart shows the counties where each of 31 religious groups claims at least 5% of the county population. The ratio of counties in each of seven categories, from at least 55% Democratic in both elections to at least 55% Republican, can be seen.



For Further Exploration

Additional county-level data is available from the census bureau and from the American Community Surveys. Household structure, including data for single parents or marital status, could be explored. Education statistics, among others, could be grouped into broader categories than so far used.

Additional data sources are also available at the county level. Information on educational opportunities such as the presence or absence of private or parochial schools might prove useful. And crime statistics, especially when considered in the light of the growth or decline of overall county religious adherence, might provide a statistical basis in debates about the relevance of religious involvement in public life.

The Religion Census includes attendance figures for many groups. While too incomplete for overall comparisons, correlations within groups might be helpful. And just as education or age groups can be combined in new ways, so might the data for related groups be treated differently.

The “Renter Occupied” category is one obvious candidate for further exploration. Is this a surrogate for some non-statistical factor, as non-Hispanic Black was for the South region?

And of course correlations are just one analytical tool. Regression and cluster analyses can include religious adherence figures when analyzing social factors within the United States.

How did our original assumptions fare? Episcopalian concentrations are indeed correlated with higher income levels, but Catholics are more so. Southern Baptists do in fact have the strongest correlation with voting Republican, but United Methodists are close to them. Unitarian Universalists not only have a strong negative correlation with dropping out of high school, but also a very high correlation with graduate degrees. And yes, the Mormons have strong positive correlations both to families and to children.

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[i] Correlations: Defined as a range between -1 and 1. The closer to 1, the more the two factors are said to be "positively correlated." As one factor increases, so does the other. Assume that everyone in a county is either male or female. Then the ratio of females in the county to the ratio of non-males in the county would be a correlation of 1, since every increase in females is also an increase in non-males. On the other hand, the higher the concentration of females, the lower the concentration of males. The correlation of "Percent Female" to "Percent Male" is said to be -1. Every increase in the ratio of females has an equal decrease in the ratio of men. The ratio of Democratic votes to Republican votes within a population is not quite that strong since there are also votes for "others." Correlating the total presidential votes by county in 2004 and 2008 yields -0.998 between the Democrat and Republican figures. Correlations close to zero indicate that there is not a strong tie between the two factors.

[ii] Black and White are two of several racial categories; Hispanic is not. For the purposes of these comparisons, Hispanics are subtracted from each of the racial categories and treated as a separate cultural category. Therefore the Black, White, and Other cultural categories do not include Hispanics in these analyses.

[iii] The Census Regions are the Northeast, Midwest, South, and West.

[iv] It is true that the nearly-as-large metropolitan areas have a lower-than-average concentration of non-Hispanic Whites. But McAllen, Texas, and Tucson, Arizona, are likely to become million-plus metros within the next few years, and Honolulu, Hawaii, will always affect whatever size category it is in.

[v] The Southern Baptist Convention, which had an even stronger positive correlation to White presence, did not have a statistically valid correlation to Black presence (-0.005 with a 2-tailed significance of 0.799).

[vi] To be classified as a family household in 2010, the household had to include one person in addition to the householder who was related to the householder. This does create occasional anomalies. Two brothers renting an apartment together would be considered a family; if they had an additional non-related roommate who was considered the householder, this would not be a family household by the census definition.

[vii] The Church of Jesus Christ of Latter-day Saints has the highest correlation with three census-defined groups of households with children: Husband-wife families with children under 6 years only (0.352); Husband-wife families with children under 6 and children 6 to 17 (0.423), and Husband-wife families with children 6 to 17 only (0.165).

[viii] Alaska election returns are reported by election district. For these comparisons, the votes for each election district were compiled into the appropriate census division. In cases where the election district overlapped census division boundaries, the entire vote was assigned to the division in which the first-named community of the election district name was located.