Cross-Religious Denomination Analysis

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Abstract

One may find the fact that constituents of different religions are, on the whole, very similar in their views of religion and ethics. Using this as a jumping-off point, I examined how groups of differing levels of religiosity emerge within a single denomination and compare the similarity of these groups across denominations. In particular, I am interested in seeing how socioeconomic factors impact people of different denominations. Using multiple component analysis (MCA), a special form of nonlinear principle component analysis (PCA), I synthesized my own measures of religiosity to create a more easily understandable, lightweight regression model.

1 Introduction

My initial interest stemmed from class discussion, where the point that conventional measures of religiosity, particularly religious service attendance, is increasingly misleading. For example, the unaffiliated population has no religious service to attend, but may practice a set of ethics as fervently as any conventionally religious person. And just as postulated in Weber's secularization hypothesis, Hout and Fischer (2002) note that the unaffiliated population has been growing. Furthermore, even within the affiliated population, church attendance has been decreasing as secular opportunities take precedence and other factors, such as the Internet, allow believers to practice their faith in unconventional ways not captured by this metric. Finally, the church-like and sect-like denominations Iannaccone (1988) introduced helped crystallize my initial exploratory data analysis because of how he sought to find patterns in the data not captured by conventional labels.

To better capture the ethical and religious views of the changing American landscape, I focused less on religious denomination itself and more on how people view others of similar or different religious beliefs through cluster analysis. Interestingly enough, my initial analysis showed slight clustering based on denomination, but nothing conclusive enough to consider religious groups as completely disjoint sets of people.

I also tackled the problem of inadequate measures of religiosity by synthesizing religiosity variables that each tackled different aspects of religiosity while remaining topical. By doing so, I hoped to create a religiosity measure that addressed most of the shortcomings of each individual measure.

2 Data Analysis

To reaffirm work done by Barro et al. (2010) on conversion rates across different religious denominations, I ran t-SNE on nine hand-picked survey questions[1] from the World Value Survey regarding

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[1] 1) Importance in life: religion 2) Would not like to have as neighbors: People of a different religion 3) Tradition is important to this person; to follow the customs handed down by one's religion or family 4) How much you trust: People of another religion 5) Meaning of religion: To follow religious norms and ceremonies vs
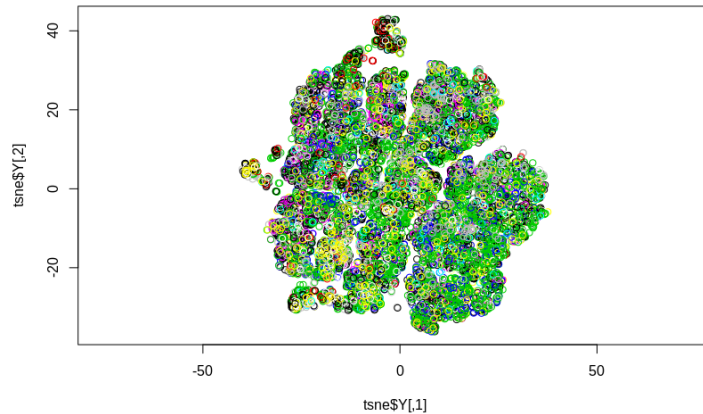
Figure 1: t-SNE plot of religious and ethical opinions clustered by denomination

their views on their own religion and how they felt about people of different religions. Although my initial conclusion was that there was little clustering based on denomination, a closer examination and a change in variables revealed that there were slight groupings of ostensibly similar religions. For example, we see that the unaffiliated subjects are closely tied to the Buddhist subjects. Since Buddhists do not espouse a belief in a particular deity, they are commonly seen as one of the more secular religious people. Interestingly enough, performing PCA on the data results in somewhat nonsensical patterns, leading me to conclude that the variables have a nonlinear relationship

3   Dimensionality reduction

Since t-SNE is a nonlinear visualization technique, it would not make sense to perform PCA, which maps high-dimensional data linearly into a lower-dimensional space. PCA is naturally incompatible with categorical data as there is no concrete scale with which to measure the strength of feeling towards certain questions. Instead, multiple correspondence analysis (MCA) is performed[2].

4   Variables of interest

I used the World Values Survey to create Figure 1, but I plan on using the General Social Survey (GSS) to perform the actual study. While this means my results cannot be extended to countries outside the US, I felt the questions in the WVS did not provide enough data to warrant further investigation and analysis.

With the following variables, I plan on investigating how much socioeconomic factors, particularly income, affect our religious and ethical views and whether these effects cut through conventional denominational labels.

To do good to other people 6) Meaning of religion: To make sense of life after death vs To make sense of life in this world 7) Whenever science and religion conflict, religion is always right 8) The only acceptable religion is my religion 9) People who belong to different religions are probably just as moral as those who belong to mine.

[2]It is possible to binarize each of a variable's answer choices and perform PCA on the modified matrix, but doing this procedure by hand does not make much sense when an automated alternative exists

Table 1: Exogenous controls

Variable	Description
age	Age of respondent
educ	Highest level of education respondent attained
region	Region of interview
income	Total family income

Table 2: Variables of interest

Variable	Description
relig	Religious preference
relig16	Religion in which one was raised
attend	How often one attends religious services
switched	Has one ever had a different religion
mywaygod	Whether one has one's own way of connecting with God without churches or religious services.
howrel	How religious is respondent
fund	How fundamentalist is respondent currently
permoral	Respondent agrees that morality a personal matter
marhomo	Homosexuals should have right to marry
natsoc	How much do you agree with the current spending on Social Security?

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