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Kevin Austin Holley April 9, 2019

The Effects of Theology on Church Attendance

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Abstract

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By Kevin Austin Holley

This thesis seeks to understand why individuals decide to attend particular churches, dividing individuals by theology and observing how individuals with different theology respond to certain characteristics of churches. Using Azzi & Ehrenberg's utility theory of religiosity and Iannaccone's club theory of religion as lenses, this paper analyzes data from a sample of churches in the United States to determine what factors lead to church attendance. This study has found that liberal churchgoers fit the utility theory of religiosity best, while conservative churches fit the club theory of religion best. Most factors affect church attendance in the same direction across theologies. Long-tenured pastors are good for attendance, while long services are bad for attendance. This thesis hopes to open a new interest within the field of economic study of religion in how theology affects individuals' decisions.

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Table of Contents

INTRODUCTION.....1

DATA AND METHODOLOGY.....4

RESULTS.....8

ROBUSTNESS.....15

LIMITATIONS.....19

CONCLUSIONS.....20

REFERENCES.....22

APPENDIX.....23

Tables

1. 2012 Regression.....9

2. 2006 Regression.....23

3. 1998 Regression.....24

4. 2012 Robustness Regression.....25

5. 2006 Robustness Regression.....26

6. 1998 Robustness Regression.....27

7. Hypothesis Test Table.....28

The Effects of Theology on Church Attendance

I. Introduction

Why do people go to church? There are myriad factors that affect an individual's decision to go to church, and there is no lack of academic discourse on the topic. A far less studied area, however, is why people go to specific churches. In America, there is a veritable buffet of church options to choose from, each with their own beliefs and behaviors. Understanding why people go to church is important, certainly, but understanding why people go to certain churches is just as important. Knowing why First Presbyterian Church is growing while Second Presbyterian Church is shrinking is critical for churches as they ponder growth strategies and critical for researchers as they seek to understand human behavior. For many people, churches are communities, often primary communities, and choosing one church over another can lead to vastly different social circles. This paper seeks to correct this gap in the literature. By using data from churches themselves, instead of congregants, it is possible to study church attendance from the perspective of churches, providing answers as to why individuals choose certain churches. Further, by separating churches into theological categories, it is possible to understand how varied beliefs can lead to different factors having more importance for some individuals than others.

Nationwide trends in church attendance have been reasonably well-studied. In the second half of the 20th century, it became increasingly apparent that for many denominations, church attendance was dropping. Hout & Greeley (1987) argued that the decrease in Catholic church attendance was caused by the Pope's reassertion of traditional sexual ethics. At the same time, many conservative churches were growing, a fact studied by Kelley (1972). He concluded that

conservative churches were thriving relative to their liberal counterparts because of their stringent requirements of members. There is something fundamentally different about liberal churches and conservative churches, so it follows that certain characteristics of churches (such as egalitarian policies on gender roles) will impact attendance for liberal churches differently than for conservative churches. That is why this study focuses in on the differences in the factors of attendance between conservative, moderate, and liberal churches.

Why individuals go to church at all is the subject of much academic discourse. Azzi & Ehrenberg created the standard economic church attendance model in 1975. They contend that individuals participate in church based on a utility model with a trade-off between present-day utility and afterlife utility. While this model certainly makes sense for many churchgoers, it should have less impact on churches that emphasize salvation by grace alone (i.e. reformed and evangelical churches), since congregants in these churches are less likely to believe that going to church gets them into heaven.

Iannaccone (1992) posits a different model that presupposes no inherent religious motivation (such as Azzi & Ehrenberg's afterlife utility). He argues that strict rules and exclusivity make religion something of a club good. These requirements overcome free-rider costs, since those who meet the standards feel integrated into the club and will sacrifice their own time and money in order to ensure the survival of the group. Iannaccone's study examines the same phenomenon that Kelley did 20 years prior: why conservative churches are popular. While it is overly simplistic to eliminate intrinsic religious benefit a priori, Iannaccone's theory does explain conservative churches' thriving better than Azzi & Ehrenberg.

The relationship between religious participation (like church attendance) and charitable giving is a matter of some controversy. Gruber (2004) posits that religious giving (i.e. tithing) and religious participation are substitutes, which is largely in line with Azzi and Ehrenberg's model. Since individuals face a trade-off between current utility and afterlife utility, individuals will seek to "check the box" of church attendance or charitable giving. If their ideal afterlife utility is met with church attendance, individuals will forego charitable giving in order to preserve their current utility. Kim (2013), however, argues that charitable giving and religious participation are complements, tweaking the approach used by Gruber by using actual tax return itemization data (as opposed to imputed itemization data). Attending church itself provides an opportunity for religious giving as they "pass the plate", which also imposes social pressure to give. Both theories find support in this study, with Gruber's theory applying more to liberal churches and Kim's theory applying more to conservative churches.

Azzi & Ehrenberg and Iannaccone provide lenses through which it is helpful to interpret the results of my study. While some factors affect attendance similarly regardless of theology, such as the tenure of a pastor or the length of a service, other factors affect churches' attendance differently depending on the churches' theology. Church revenues per person clearly demonstrates a free-rider problem in liberal churches to a degree that is not seen in conservative churches. Liberal and moderate churches that impose rules on women's roles in the church experience an attendance boost that conservative churches do not experience, seeming to indicate that these churchgoers crave at least some strict rules. This study provides credibility for both theories, but differing theologies lead individuals to act in accordance with one model more than another. Liberal churchgoers behave like Azzi & Ehrenberg expect: they attend church to obtain afterlife utility at the expense of current utility. That is why Gruber found that individuals often

treat church attendance as a substitute for charitable giving, and that is why church revenues per person drop as attendance increases. Meanwhile, conservative churches behave like Iannaccone essentially expects them to behave. The free-rider problem is far less pronounced in conservative churches because those individuals are part of the "club good". Iannaccone's model alone is insufficient to explain why large churches (with less social pressure imposed) still experience relatively high revenues per person. Kelley (1978), in a follow-up to his study of growing conservative churches, said that "[f]or some time I have been wishing that someone would come along to do for religion what Freud did for sex: to show that it has its own elemental drives, dynamics, and necessities, and is not to be "explained" in terms of other (e.g., economic, demographic, or political) factors, at least not entirely". This intrinsic religious benefit is key to understanding why large conservative churches are successful. The best model for conservative churchgoers' behavior is that religion is a club good, per Iannaccone, which also has intrinsic religious benefit.

In section 2 I discuss the data and methodology, and in section 3 I present and discuss the results of this study. In section 4 I present the results of robustness checks, followed by section 5 where I discuss the limitations of this study. Section 6 will conclude the paper with a brief review of results and a discussion of potential future research in this field.

II. Data and Methodology

The dataset I have used is the National Congregations Study (NCS), a nationally representative study of churches in the United States. The data was collected by asking participants of the General Social Survey (GSS), a nation-wide survey, what congregation they attend. These congregations were then interviewed by the researches of this study.

The NCS was collected in three waves, in the years 1998, 2006-07, and 2012. A random sample of churches were interviewed each year, totaling 4,071 congregations from across America and 1,563 variables, providing a wide range of factors to account for. The response rates were 80% in wave 1, 78% in wave 2, and 73%-78% in wave 3. Interviews took place mostly by phone, with a key informant in the congregation (generally clergy or a staff member) answering a variety of questions about the nature of their congregation. This study will utilize the 3,823 Christian congregations within the study in order to allow for more accurate theological comparisons.

The basic empirical model being used is as follows:

$$\text{Log(Attendance)} = \alpha*\text{TH}\ \beta_1*\text{Pastor Quality}*\text{TH} + \beta_2*\text{Church Service Characteristics}*\text{TH} + \beta_3*\text{Church Revenues}*\text{TH} + \beta_4*\text{Proportion of Teenagers}*\text{TH} + \beta_5*\text{Church Use of Technology}*\text{TH} + \beta_6*\text{Women's Roles in the Church}*\text{TH} + \rho*\text{Controls} + \gamma$$

I am using OLS regressions to study the relationship between the log of attendance and these characteristics of churches. Each of the characteristics being studied is interacted with a set of theology dummies which identify each church as either conservative, liberal, or moderate. α is the constant, multiplied by theology because in each regression, the average attendance of churches varies by theology. Some of the above variables are categories which include two or three similar variables (in the actual regression, they are separate variables). Each β is a coefficient corresponding to the effect of the variable category following it on attendance for a given theology. The controls category includes demographic variables reported by the churches and census tract data. γ is the error term.

The outcome variable is reported by the church as the total number of people involved with the religious life of the church. This variable captures regular attendees and those who attend only occasionally. I will be using the log of this variable. Using only the regular attenders would cut out the decisions of casual attenders who still make decisions to be involved in a given church.

The 2012 regression contains 10 variables, each interacted with the theology dummy variables (liberal, moderate, and conservative), and 8 controls. There are 949 churches in this 2012 sample that can be used. The pastor quality variables are the length of time a clergyperson has been the leader of a church and two dummy variables for the clergyperson's education, one for a graduate degree and one for an undergraduate degree. The church service variables are the length of the church's service, the squared length of the church's service (in order to detect a potential non-linear or non-monotonic relationship), and the proportion of a service consisting of the sermon. The percentage of teenagers in a congregation is measured by dividing the number of regularly attending teenagers by the number of regularly attending members, then multiplying by 100 (so that it is a percentage). Likewise, church revenue per person is calculated by dividing the total church revenue by the number of regular attendees of that church.

The two composite variables are the technology and women's roles variables. The technology variable consists of two variables, the church having a website, and the church having a Facebook page. If a church has neither, the technology variable equals 0, while if a church has at least one of them, the variable equals 1. The women's role variable arises from the church's answer to five different questions as to whether or not women can hold all the same roles as men in a church when it comes to volunteer leadership positions, be full-fledged members of the main governing body of a church, teach by themselves a class with adult men in

it, preach at a main worship service, and be the head clergyperson of the church. The composite variable used in the regression equals 1 if the church answered yes to 4 or 5 of those questions, and 0 if the church answered yes to 3 or fewer of those questions. The distinction is made at this point because most churches answered yes to either 3 or 5 of these questions, the critical difference being whether or not women can preach and/or lead a church.

The 12 controls include 5 demographic dummy variables (based on the 2010 census), one indicating if the census tract contains 80% or more African-Americans, one indicating if the tract contains 5% or more Hispanics, and one indicating if 30% or more of the tract lives below the poverty line, and two dummy variables indicating whether or not a tract is suburban or rural (the urban dummy is omitted to avoid multicollinearity). 4 controls are the self-reported percentages of whites, African-Americans, Hispanics, and Asians within the church[1]. The other 3 controls are regional dummy variables that place each church in one of four American geographical regions (again, to avoid multicollinearity, one of these dummy variables was omitted.

Because different questions are asked each year, it is not possible to include every desirable variable in a regression that uses all three years' data. Therefore, three individual regressions were run, one for each year. The 2012 regression is the baseline regression, and I use the other two years (1998 and 2006) to check for the robustness of the results.

The 2006 regression includes all of the above variables with the exception of the bachelor's degree variable, since it is not present in the dataset for 2006. The technology variable

[1] These percentages are reported as the percentage of these races among the regular adult participants, as opposed to the percentage of these races among everyone involved in the religious life in the church. Nonetheless, there is no reason to believe that this discrepancy significantly changes these percentages.

is calculated the same way, except email replaces Facebook. The census tract controls are all the same, the only difference being the census used (2010).

The 1998 regression includes most of the 2012 regression's variables, with the exception of the women's roles variables and the proportion of teenagers variable. The technology variable is compiled the same way as in the 2006 regression. As with 2006, the census tract variables are unchanged save for using a different census year (1990).

When variables appear to affect the attendance different theologies in different ways, I have tested whether or not one is greater than the other and reported the results in Table 7 in the appendix. Any mention of differences in the effect of certain variables on attendance between theologies in this paper indicates that Table 7 shows a robust difference for these coefficients. Due to the relatively small sample size for liberal churches, only the largest differences between liberal churches and other churches are detected.

III. Results

The baseline 2012 regression shows that experienced pastors lead to more attendance in churches. Every year that a clergyperson has led a church leads to about a 2-3% increase in attendance. This increase is a result of two factors. First, more experienced pastors are better at leading churches, better at delivering sermons, better at interacting with congregants, and so on. Second, one pastor remaining at a church for a long time indicates stability. Stable churches are less likely to have division, less likely to split, and less likely to have an environment that causes potential congregants to leave. Thus, churches with long-tenured pastors have better attendance than those with short-tenured pastors.

Table 1: 2012 Regression

Variable	Liberal	Moderate	Conservative
Clergy Tenure	2.064 (1.542)	3.293*** (0.903)	1.906*** (0.563)
Clergy Grad Degree	96.26 (94.91)	38.37 (27.43)	74.00*** (16.57)
Clergy Bachelor Degree	-46.02 (94.01)	-43.74 (32.79)	20.77 (18.04)
Length of Service	-4.897 (2.774)	-3.110** (1.149)	-2.119*** (0.506)
Length of Service ^ 2	0.0182 (0.0146)	0.00751 (0.00480)	0.00516** (0.00158)
Sermon Proportion	-0.000610 (0.164)	0.0755 (0.116)	-0.0339 (0.117)
Church Revenues Per Regular Attendee	-0.0229* (0.00989)	-0.00425 (0.00315)	-0.000637 (0.00248)
Teenager Proportion	1.057 (1.995)	0.642 (0.849)	-0.524 (0.731)
Technology	84.96 (61.90)	115.3*** (23.29)	130.8*** (15.08)
Women's Roles	-111.9*** (29.21)	-93.59*** (15.92)	-46.67*** (10.97)
Constant	864.1*** (157.2)	784.8*** (90.29)	648.2*** (65.80)
Observations	949	949	949

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Conservative churches with pastors that have graduate degrees experience considerably higher attendance, about 74%, than churches with pastors that do not. There is some probable reverse causality here, as bigger churches are more likely to hire pastors with seminary degrees, but there is still good reason to believe pastors with graduate degrees bring in higher attendance to their churches. Moderate churches with pastors that have graduate degrees experience little

change in attendance, and the sample is too small to draw meaningful conclusions for liberal churches. Churches, regardless of theology, see little effect on attendance from their pastors having bachelor's degrees. While the effect of these degrees on attendance appears to be different across theologies, there is no statistical difference between these coefficients across theologies.

Seminary, graduate school for ministers, teaches pastors how to deliver more insightful sermons and lead their church and congregants better. Thus, conservative pastors who have graduate degrees are better at their jobs, leading to increased attendance for their churches. Meanwhile, an undergraduate education may provide some training, but it will not be as specialized as a seminary education, so pastors with undergraduate degrees likely don't lead their churches much differently than those without college education.

The church service itself, especially the length of the service, is a major factor for prospective churchgoers in choosing a church. Moderate and conservative churches experience a 2%-3% drop in attendance for every extra minute of a service. While the sample size for liberal churches is small, there is no reason to think that liberal churches differ from this trend. Conservative churches have a positive quadratic association between length and attendance, indicating a "U"-shaped curve. The scatterplot of length and attendance shows only the left side of this "U", indicating that this model cannot be extrapolated to claim that, at some point around 400 or 500 minutes, increasing the length of the service increases attendance. Instead, it shows that services around an hour to an hour and a half are popular, with services that last too much longer associated with steep declines in attendance. However, once a service is long enough,

adding length does not change much[2]. This result corroborates Azzi & Ehrenberg's model of religiosity.

The proportion of a service that is spent on a sermon is not significantly correlated with any theology. This indicates that if a church gives their pastor more time to preach, if the total length of the service is held constant, there is virtually no change in attendance. Possibly, this means that entertainment is not a major factor of a church service, since sermons may be considered the less exciting portion of the service (compared to the music portion). It can be said with more confidence that the structure of a service is not very relevant to church size, whether the sermon gets more time or music gets more time, attendance is not affected much.

Higher church revenue per person is associated with lower attendance for liberal churches. An increase of $40 of church revenue per regular attendee leads to a decrease in attendance of 1%. Moderate and conservative churches each experience little to no effect on attendance from this variable. These numbers suggest that Gruber's theory of a substitutability of attendance and giving may be correct for liberal churches, but not necessarily for moderate and conservative churches.

Small churches apply more pressure on individuals to give than large churches, for two reasons. First, congregants' donations make a genuine difference as to whether or not the church will survive. Second, in a church where everybody knows everybody, there is a social pressure to put money in the plate being passed around because everyone sees it. However, in large churches, individual congregants do not affect a church's survival, and there is little social

[2] For instance, the difference between a 60-minute service and a 75-minute service may be significant for a casual churchgoer who is already on the fence about going to a given church. However, the difference between a 3 hour service and a 3 hour and 15 minute service probably does not affect too many decisions, given the amount of time already committed to the church service.

pressure for individuals on the fringes (those who attend the main service but nothing more) who do not know many people in the church to donate. This agrees with Azzi & Ehrenberg's theory of utility maximization. Since, at large churches, many churchgoers can get away with tithing less, they will, since this group will have already maximized their afterlife utility by attending church.

This factor is prevalent in moderate and conservative churches to a degree, but there is a clear difference in magnitude. This indicates that there is a motivation to give beyond social pressures. These moderate and conservative churchgoers behave more like Iannaccone expects, with free-riding limited by the club nature of the church. An intrinsic religious benefit is necessary for understanding why large churches experience less free-riding, since the club nature is less prevalent as the organization gets larger and more difficult to police. If these churchgoers genuinely believe they are called to give of their resources, they will give more generously than those who do not believe in the same way. Conservative theology places a high emphasis on taking the Bible and its commands literally. Since the Bible often commands generous giving, this means that conservative and moderate churchgoers will likely follow the commands of the Bible regarding donations more literally than liberal churchgoers, leading to less free-riding.

Gruber's theory of the substitutability of charitable giving and religious participation may apply more to liberal churchgoers than conservative churchgoers. Meanwhile, Kim's theory of the complementarity of charitable giving and religious participation finds support in conservative churches which experience less free-riding, indicating that the attendance of a church does not impact these churchgoers' religious giving in a major way.

The proportion of teenagers in a congregation can be an imperfect proxy for the quality of a church's youth group. Churches with larger youth groups likely have youth pastors that are more engaging and teenagers who are more active in inviting friends to church, which indicates a high level of teenager engagement. Families with teenagers may seek out churches with strong youth groups in order to incentivize them to stay in church. However, the proportion of teenagers in the congregation has little to no effect on the attendance of a church, indicating that youth group quality is not extremely important for individuals seeking a new church.

It is not possible to perfectly isolate youth group quality from attendance, since bigger churches have more resources to devote to youth groups. It is logical for youth group quality to impact attendance positively due to parents seeking out churches that have good programs for their children, but the current data cannot confirm this idea.

Moderate and conservative churches that have websites and/or Facebook pages have higher attendance, and there is an ambiguous effect for liberal churches. While it seems like there would be some endogeneity in the data (larger churches have more resources for technology), most churches outside of the very smallest can set up a website, which does not cost a lot of money, though it may be time-intensive. Facebook pages are even more accessible, since they are free, and while there is a minor time component to actively maintaining a Facebook page, it is very unlikely that a church will choose not to set up a Facebook page solely due to time constraints. There are a couple of reasons that these technologies would lead to higher attendance in churches. First, having a website or a Facebook page allows potential congregants to research churches before attending and learn what time their service takes place. Facebook pages also allow current congregants to remain engaged and feel more involved with the congregation, which Iannaccone (1992) suggests is important. Second, these factors act as

proxies for a general behavior of a congregation to changing technologies. Churches that are more willing to make a website or a Facebook page may be more concerned about reaching out to a younger audience and more concerned about outreach in general. Not utilizing this technology may reflect a church that is content to remain an isolated church community.

All churches that implement egalitarian policies towards women's roles in the church have lower attendance. Liberal and moderate churches experience a significantly larger negative effect on attendance than conservative churches. The higher correlation in liberal and moderate churches suggests that there is a spectrum of belief within the liberal and moderate categories. Some churches may be liberal, but land on the more conservative side of the "liberal" category. Likewise, some moderate churches are more conservative than other churches in the "moderate" category. These "left-center" and "center-right" churches will be more likely to resist these egalitarian changes. This suggests that Kelley's study from 1972 still has relevance today. Kelley posited that conservative churches have higher attendance due to their high demands for congregants and relatively strict rules. Since churches that resist egalitarian policies will also likely have stricter standards of morality, and these churches have higher attendance, this result corroborates Kelley's claims.

The relationship between women's roles and attendance is less pronounced for conservative churches. This indicates that conservative congregants are probably less concerned about women's roles and more concerned with other areas of the church, such as stability. It also may be true that conservative churchgoers are less likely to switch churches. Broadly, conservative people tend to be creatures of habit, so even if a church embraces egalitarian policies, it may not be enough to cause their churchgoers to uproot from their church and leave their established social group. This accords with Iannaccone's (1992) club religion theory.

IV. Robustness

The 2006 and 1998 regressions provide opportunities to check the robustness of the results from the 2012 regression.

Clergy tenure has essentially the same effect on liberal and conservative church attendance in all three regressions. Moderate churches do not have an uptick in attendance from clergy tenure in 2006, unlike 1998 and 2012, but there are a number of unusual coefficients in 2006 on moderate churches specifically, so this is likely a quirk of random variation rather than a legitimate difference in how moderate churchgoers react to clergy tenure.

The 2006 data does not include data on pastors having undergraduate degrees, which likely explains the relatively small effects of seminary education on conservative churches' attendance in 2006, since the non-seminary educated group includes those with bachelor's degrees, which, while unimportant in the 2012 regression, shows positive correlation with attendance for conservative churches in the 1998 regression. The unusually high effect of a graduate degree on attendance in moderate churches may be due to random variation, like the clergy tenure.

As noted above, the 1998 data suggests that, unlike the 2012 regression, there is a positive association between bachelor's degrees and church attendance for conservative churches. A possible reconciliation of these two results is that, as more people attend college over the years, naturally talented pastors that would have only needed an undergraduate degree in 1998 to lead many churches now attend seminary to boost their credentials, while less talented pastors are not able to graduate from or attend seminary, and so take jobs with smaller churches that are less demanding in requirements.

The length of a service remains negatively correlated with attendance for moderate churches across all years and remains inconclusive for liberal churches across all years. The negative association between conservative churches that exists in 2012 and 2006 is hard to detect in 1998. Churches may be unable to hold long services today like they used to years ago due to the decreasing attention spans of congregants who may prefer a 60-minute service to a 90-minute service. The quadratic nature of this length association also disappears in 2006 and 1998, indicating that the nature of this relationship may have changed. While in 1998, an additional 15 minutes of service may have affected churches similarly regardless of their current service length, in 2012, going from 60 minutes to 75 minutes leads to a much steeper drop attendance than going from 120 minutes to 135 minutes.

The proportion of a service dedicated to a sermon remains a nonfactor for attendance in liberal and moderate churches each year, but conservative churches see a negative correlation between attendance and the percentage of a service devoted to a sermon in 2006. A 1 percentage point increase in this sermon percentage is associated with around a 0.8% decrease in attendance in each year. This would indicate a preference for churches that have a higher emphasis on singing worship songs, as sermons are often regarded as less exciting than the song-singing portion of the service. Importantly, the relationship between sermon proportion and conservative church attendance is not statistically different from the same relationship for moderate and liberal churches, so this may be a general trend across all theologies.

The negative association between church revenues per regular attendee and attendance is undetectable for liberal churches in 1998 or 2006 (though it may or may not exist), and moderate churches experience these negative associations in 1998 and 2006. As already noted, moderate churches in 2006 behave strangely compared to 1998 and 2012, so this may be random variation.

However, moderate churches in 1998 experience a major negative correlation between church revenues per regular attendee and church attendance, with an increase in church revenues per regular attendee of $12 associated with a 1% decrease in attendance. Moderate churches seem to have done a better job at reining in free-riders over the course of these 14 years. This may be due to institutional changes, such as stricter rules that encourage more commitment, but this is unlikely. Cultural change may explain this, though. Over these 14 years, American culture has changed drastically, and many of the prohibitions imposed by many moderate churches, such as a ban on premarital sex or same-sex marriage, may be untenable for some former congregants. These congregants that left these churches over these 14 years are probably among the least likely to take the Bible's commands literally, and as noted above, this likely means that conservative churchgoers are less prone to free-ride. That would explain why moderate churches have small negative correlations between church revenues per person and church attendance in the most recent data; the free-riders have left. In Azzi & Ehrenberg's terms, the afterlife utility was too small to make up for the increasing loss of current utility.

The proportion of teenagers in the congregation remains largely insignificant for attendance across 2012 and 2006 (the only two years we have data for). Conservative churches do experience a negative correlation in 2006 between the proportion of teenagers in a congregation and attendance. A peculiarity of this particular variable is that across theologies there is a decrease in this coefficient by about 1%. It is unwise to read too much predictive value into this variable.

Implementing technologies has a consistent positive effect on church attendance for moderate and conservative churches regardless of the year[3]. There is no robust positive effect for liberal churches due to the small sample size, nor in any regression is this relationship statistically different than those of moderate or conservative churches, so it is likely that having a website, Facebook page, or email has fairly similar effects across theologies. In 1998, it appears that these technologies were less important, which makes sense considering the relative infancy of the Internet at the time.

Egalitarian policies are linked with large decreases in attendance for liberal and moderate churches in both years for which there is data, 2006 and 2012. Conservative churches experience a drop in attendance from egalitarian policies as well, but this is considerably less pronounced than in other churches in 2012, and statistically different from moderate churches in 2006.

In order to ensure that the results are not sensitive to the choice of outcome variable, the 2012, 2006, and 1998 regressions were run with three separate outcome variables[4]. The results are reported in Tables 4, 5, and 6 in the appendix. All three regressions show very similar results to the initial regressions, indicating that my choice of outcome variable does not seriously affect the results.

[3] The positive effects appear to be smaller, but still robust, in 1998. This is most likely due to the nature of the Internet at the time, since this was still a very new technology, most people probably were not yet researching potential churches online, or contacting the church via email.

[4] The results have been reported with the number of people involved with the church as an outcome. The other variables used to check robustness involve the number of regular attendees and, in 2006 and 2012 the number of people who attended at least one service the prior week. For 1998, this variable is not available, so the number of attendees in the main service was used instead.

V. Limitations

Hadaway, Marler, & Chaves (1993) published a study of actual church attendance versus individuals' reported church attendance. Their study examined a rural Ohio county, comparing survey results for the county with actual attendance. They found that survey data overestimates church attendance by a considerable margin, perhaps by a factor of 2. This information validates a study using data from congregations, not individuals. While, of course, informants from churches may overestimate, it seems reasonable to assume that most informants are working with a figure that they or the church has already calculated. Abstractly, it makes more sense for an individual to lie about their church attendance than a church official to overstate their church's attendance, since the social pressure on an individual to attend church is far greater than the social pressure on a church official to have, say, 150 attendees as opposed to 100.

Nonetheless, this data does ultimately come from an informant from each church. While these informants are generally senior pastors or someone similar who has an intimate knowledge of their church, it is important to remember that many data points are just educated guesses. While they do offer us the most reliable estimate possible short of surveying every congregation, there is likely measurement error in this data.

The small sample sizes of liberal churches in this data severely hamper the ability to draw conclusions for these churches. This data did pick up the most prominent trends among liberal churches, but only having around 75 or 100 liberal churches for each year makes it difficult for less prominent trends to emerge.

VI. Conclusions

This study has examined factors that contribute to the size of a church, and how these factors affect church attendance differently based on their theology. Some factors are fairly uniform in their effects on attendance across theologies. A long-tenured pastor consistently increases his or her church's attendance, while longer services lead to lower attendance.

The roles of women in liberal and moderate churches have been changing for some time due to broader cultural trends, but many congregants appear to dislike the move of these churches towards egalitarian policies. Churches with a major egalitarian bent see much lower attendance among liberal and moderate churches than those churches which have fewer egalitarian policies. This result may be due to an underlying desire by congregants for conservative social norms to be enforced even within a more liberal church.

The church revenues per person data suggests that the free-rider problem is less prevalent in conservative churches than liberal and moderate churches, based on their respective negative relationships between income per person and attendance. This finding follows Kelley's narrative of the higher dedication of conservative churchgoers to their church.

This study's approach has given opportunities to examine religiosity theories from a new perspective. Data from liberal churches corroborates Azzi & Ehrenberg's utilitarian trade-off theory, and data from conservative churches corroborates a modified version of Iannaccone's club model for religions, where religion has its own intrinsic drive. Moderate churches are often better explained by Iannaccone's theory, but there are elements of both theories that impact moderate churches.

Future papers on this subject would benefit greatly from expanded datasets that include many more liberal churches. As cultural trends have continued to change since 2012, it would also be helpful to have updated data from a very recent year. I am convinced the future of the economic study of religion must recognize that different theories fit different theologies, and that there is no one-size-fits-all theory that fits every situation. A study which modifies Iannaccone's club theory by incorporating the intrinsic value of religion for conservative churchgoers would be heartily welcomed. I hope that this study has shown that theology is still important for how people interact with their churches.

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Appendix

Table 2: 2006 Regression

Variable	Liberal	Moderate	Conservative
Clergy Tenure	2.732 (1.847)	-0.0435 (0.854)	1.663** (0.608)
Clergy Grad Degree	82.66 (48.80)	85.50*** (24.48)	37.65* (15.70)
Length of Service	-6.093 (4.469)	-1.528 (0.783)	-1.554* (0.717)
Length of Service ^ 2	0.0283 (0.0256)	0.00259 (0.00288)	0.00361 (0.00300)
Sermon Proportion	-0.0592 (0.963)	0.0303 (0.319)	-0.733* (0.326)
Church Revenues Per Regular Attendee	-0.0161 (0.0145)	-0.0125* (0.00570)	-0.00706 (0.00431)
Teenager Proportion	-0.438 (2.195)	-0.246 (0.684)	-1.542* (0.684)
Technology	112.3 (57.69)	71.76** (24.07)	80.59*** (16.10)
Women's Roles	-106.7* (46.49)	-71.99*** (14.63)	-25.74* (10.44)
Constant	807.4*** (202.2)	664.4*** (71.20)	639.5*** (67.26)
Observations	917	917	917

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 3: 1998 Regression

Variable	Liberal	Moderate	Conservative
Clergy Tenure	1.708 (2.117)	2.932** (1.004)	1.267 (0.659)
Clergy Grad Degree	96.73 (85.64)	50.13 (34.57)	87.55*** (18.16)
Clergy Bachelor Degree	87.51 (80.99)	31.21 (37.29)	72.14*** (20.47)
Length of Service	-1.194 (2.540)	-2.495** (0.878)	-0.979 (0.879)
Length of Service ^ 2	0.00386 (0.0121)	0.00636 (0.00357)	0.00124 (0.00402)
Sermon Proportion	-0.314 (1.690)	-1.013 (0.593)	-1.096** (0.389)
Church Revenues Per Regular Attendee	-0.0326 (0.0274)	-0.0848*** (0.0165)	-0.00678 (0.0105)
Technology	6.321 (28.49)	46.64** (14.81)	43.93*** (12.25)
Constant	728.0*** (168.8)	901.6*** (74.63)	727.8*** (64.01)
Observations	772	772	772

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 4: 2012 Robustness Regression (Number of Regular Attendees)

Variable	Liberal	Moderate	Conservative
Clergy Tenure	1.879 (1.464)	3.557*** (0.857)	2.231*** (0.534)
Clergy Grad Degree	79.36 (90.10)	31.27 (25.65)	71.69*** (15.73)
Clergy Bachelor Degree	-48.54 (89.25)	-39.54 (30.82)	24.93 (17.12)
Length of Service	-3.348 (2.634)	-1.973 (1.091)	-1.579** (0.480)
Length of Service ^ 2	0.0123 (0.0138)	0.00363 (0.00455)	0.00340* (0.00150)
Sermon Proportion	-0.0360 (0.156)	0.0605 (0.110)	0.0127 (0.111)
Church Revenues Per Regular Attendee	-0.0327*** (0.00939)	-0.00575 (0.00299)	-0.00275 (0.00235)
Teenager Proportion	0.241 (1.894)	0.211 (0.806)	-0.832 (0.694)
Technology	87.22 (58.77)	113.8*** (22.09)	124.8*** (14.31)
Women's Roles	-100.1*** (27.73)	-82.44*** (15.11)	-41.09*** (10.42)
Constant	728.0*** (149.2)	645.1*** (85.69)	546.2*** (62.46)
Observations	950	950	950

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 5: 2006 Robustness Regression (Number of Regular Attendees)

Variable	Liberal	Moderate	Conservative
Clergy Tenure	3.310 (1.745)	0.890 (0.814)	1.486* (0.580)
Clergy Grad Degree	68.15 (46.17)	69.88** (23.33)	39.18** (14.96)
Length of Service	-4.865 (4.260)	-1.256 (0.746)	-0.873 (0.684)
Length of Service ^ 2	0.0228 (0.0244)	0.00229 (0.00274)	0.00127 (0.00286)
Sermon Proportion	0.256 (0.916)	0.0513 (0.304)	-0.371 (0.310)
Church Revenues Per Regular Attendee	-0.0222 (0.0137)	-0.0197*** (0.00543)	-0.00934* (0.00411)
Teenager Proportion	-1.554 (2.091)	-1.086 (0.652)	-1.449* (0.652)
Technology	88.28 (54.82)	77.24*** (22.94)	92.52*** (15.35)
Women's Roles	-92.26* (42.25)	-65.67*** (13.94)	-27.04** (9.951)
Constant	715.0*** (192.7)	607.2*** (67.88)	538.9*** (64.13)
Observations	918	918	918

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 6: 1998 Robustness Regression (Number of Regular Attendees)

Variable	Liberal	Moderate	Conservative
Clergy Tenure	3.113 (1.999)	2.973** (0.946)	1.152 (0.621)
Clergy Grad Degree	72.69 (80.87)	44.98 (32.64)	85.30*** (17.13)
Clergy Bachelor Degree	79.41 (76.48)	35.57 (35.21)	65.80*** (19.33)
Length of Service	-1.552 (2.398)	-1.610 (0.829)	-1.139 (0.830)
Length of Service ^ 2	0.00497 (0.0115)	0.00303 (0.00337)	0.00244 (0.00379)
Sermon Proportion	-0.503 (1.596)	-0.871 (0.560)	-0.998** (0.367)
Church Revenues Per Regular Attendee	-0.0457 (0.0259)	-0.111*** (0.0155)	-0.0181 (0.00989)
Technology	5.884 (26.91)	53.20*** (13.96)	48.56*** (11.54)
Constant	729.3*** (159.4)	825.0*** (70.47)	698.4*** (60.41)
Observations	774	774	774

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 7: Hypothesis Test (One-Sided t-test) Table

Variable	Liberal > Moderate	Moderate > Liberal	Liberal > Conservative	Conservative > Liberal	Moderate > Conservative	Conservative > Moderate
2012 Clergy Tenure		0.69 (0.246)			1.31 (0.096)	
2012 Clergy Grad Degree	0.59 (0.280)					1.12 (0.133)
2012 Clergy Bachelor Degree				0.70 (0.243)		1.73* (0.042)
2012 Length of Service				0.99 (0.160)		0.82 (0.207)
2012 Length of Service ^ 2			0.89 (0.186)			
2012 Church Revenue Per Regular Attendee		1.80* (0.036)		2.19* (0.014)		0.91 (0.182)
2012 Technology		0.46 (0.323)		0.72 (0.235)		
2012 Women's Roles		0.55 (0.290)		2.09* (0.018)		2.43** (0.008)
2006 Clergy Tenure	1.37 (0.086)					1.64 (0.051)
2006 Clergy Grad Degree			0.88 (0.190)		1.65* (0.050)	
2006 Length of Service	1.01 (0.157)		1.00 (0.158)			
2006 Length of Service ^ 2	1.00 (0.159)		0.96 (0.169)			
2006 Sermon Proportion			0.66 (0.253)		1.69* (0.046)	
2006 Church Revenues Per Regular Attendee				0.60 (0.274)		0.76 (0.223)
2006 Teenager Proportion			0.48 (0.316)		1.35 (0.090)	
2006 Technology	0.65 (0.258)		0.53 (0.298)			
2006 Women's Roles		0.71 (0.238)		1.70* (0.045)		2.57** (0.005)
1998 Clergy Tenure		0.53 (0.300)			1.39 (0.083)	
1998 Clergy Grad Degree	0.50 (0.307)					0.96 (0.168)
1998 Clergy Bachelor Degree	0.63 (0.264)					0.96 (0.168)
1998 Length of Service	0.48 (0.314)					1.24 (0.109)
1998 Sermon Proportion	0.39 (0.348)		0.45 (0.326)			
1998 Church Revenue Per Regular Attendee	1.64 (0.051)			0.88 (0.189)		4.03*** (0.000)
1998 Technology		1.26 (0.105)		1.22 (0.113)		

t-statistics reported in table
p-value reported in parenthesis
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$