

## SUMMARY OF REGRESSION ANALYSIS

### Methodology and Assumptions

With the goal of predicting new commitments per 100 attendees (NCPER) and retained new commitments per 100 attendees (RETPER), multiple regression was used. Potential explanatory variables included nearly all survey questions as well as census region and a variable for broad denominational tradition (Baptist, Christian/Church of Christ, Holiness, Lutheran, Pentecostal, Non-denominational, other traditions). Traditions were chosen based on those with sufficiently large representation within the sample (e.g. there are relatively few Evangelical and Black Protestant churches in the Methodist tradition so they were not analyzed separately). Questions on the number of new commitments (i.e. q8-q10) were excluded from the set of potential explanatory variables, as were q17 and q31 because of the likelihood that these values are a consequence of the response variables rather than an influence on them. Model selection was accomplished via stepwise selection, with a significance level of .05 required for entering into and remaining in the model at each step.

NCPER and RETPER were right-censored at 50 to keep the analysis immune to large outliers in our response variable. Doing so impacted less than 3% of all respondents on NCPER and less than 1% on RETPER.

While questions q11-q30 (frequency of activities), q33-q35 (level of agreement), and q38 (education level) are ordinal in nature, this analysis treated them as quantitative. This represents an assumption that every one unit change in a given variable is equivalent in terms of its effect on the response variable. This simplifying assumption allows for an analysis of the variables that makes use of the fact that they are ordered and provides for straightforward interpretation of estimated effect sizes. Should this assumption be moderately violated, all claims of variable significance would hold, but a more detailed comparison of the response variable at each level of the explanatory variable would be more appropriate. For all variables treated as quantitative, mean replacement was used on not sure/don't know/refused responses. The appropriateness of using mean replacement was checked by creating additional indicator variables for whether a response was missing or not for each significant predictor variable, and for those for which there existed sufficient evidence that missingness was informative, the model was rerun on the subset for which the predictor variable of interest was not missing. In each case these predictor variables were still significant and estimates of effect sizes did not drastically change, meaning the model's treatment of missing values was not driving findings of significance.

Variables that predict higher new commitments per attendee in the presence of other significant variables

**Higher percentage of attendees unchurched** – Holding all other significant variables fixed, every one percent increase in percent unchurched corresponds on average to a .078 increase in new commitments per 100 attendees. An otherwise similar church that has a 13% higher unchurched percentage averages 1 more new commitment per 100 attendees. When not controlling for other significant variables, every one percent increase in percent unchurched corresponds on average to a .111 increase in new commitments per 100 attendees. A church that has a 9% higher unchurched percentage on average has 1 more new commitment per 100 attendees.

**Church being made up of a higher percentage of Hispanics** – Holding all other significant variables fixed, every one percent increase in percent Hispanic in the makeup of the church corresponds on average to a .104 increase in new commitments per 100 attendees. An otherwise similar church that has a 10% higher percentage of Hispanics in their church makeup averages 1 more new commitment per 100 attendees. When not controlling for other significant variables, every one percent increase in percentage Hispanic on average to a .156 increase in new commitments per 100 attendees. A church that has a 6% higher percentage of Hispanic attendees on average has 1 more new commitment per 100 attendees.

**Lower attendance** – Holding all other significant variables fixed, every one person increase in attendance corresponds on average to a .022 decrease in new commitments per 100 attendees. An otherwise similar church that has 46 more attendees on average has 1 less new commitment per 100 attendees. When not controlling for other significant differences, every one person increase in attendance corresponds on average to a .008 decrease in new commitments per 100 attendees, with insufficient evidence from the sample to conclude that lower attendance correlates with more new commitments per attendee.

**Pastor more frequently asking a person to commit to Christ following a personal presentation of the gospel** – Holding all other significant variables fixed, every one unit increase in frequency of this behavior (e.g. once a month to once a week) corresponds, on average, to .818 new commitments per 100 attendees. When not controlling for other significant variables, every one unit increase in frequency of this behavior (e.g. once a month to once a week) corresponds, on average, to 2.042 new commitments per 100 attendees.

**Pastor more frequently attending a conference or training program to improve personal evangelism skills** – Holding all other significant variables fixed, every one unit increase in frequency of this behavior (e.g. once a month to once a week) corresponds, on average, to .809 new commitments per 100 attendees. When not controlling for other significant variables, every one unit increase in frequency of this behavior (e.g. once a month to once a week) corresponds, on average, to 2.050 new commitments per 100 attendees.

**Pastor more frequently offering a class for new attenders** – Holding all other significant variables fixed, every one unit increase in frequency of this behavior (e.g. once a month to once a

week) corresponds, on average, to .553 new commitments per 100 attendees. When not controlling for other significant variables, every one unit increase in frequency of this behavior (e.g. once a month to once a week) corresponds, on average, to 1.254 new commitments per 100 attendees.

**Church more frequently engaging in ministry outside the church in order to share the gospel with the unchurched** – Holding all other significant variables fixed, every one unit increase in frequency of this behavior (e.g. once a month to once a week) corresponds, on average, to .874 new commitments per 100 attendees. When not controlling for other significant variables, every one unit increase in frequency of this behavior (e.g. once a month to once a week) corresponds, on average, to 1.934 new commitments per 100 attendees.

**Higher agreement on hearing reports of members engaging in evangelistic conversations** – Holding all other significant variables fixed, every one unit increase in level of agreement (e.g. somewhat agree to strongly agree) corresponds, on average, to 1.022 new commitments per 100 attendees. When not controlling for other significant variables, every one unit increase in level of agreement (e.g. somewhat agree to strongly agree) corresponds, on average, to 3.374 new commitments per 100 attendees.

**Pastor more frequently blocking out time in their calendar for the purpose of sharing their faith with non-Christians** – Holding all other significant variables fixed, every one unit increase in frequency of this behavior (e.g. once a month to once a week) corresponds, on average, to .437 new commitments per 100 attendees. When not controlling for other significant variables, every one unit increase in frequency of this behavior (e.g. once a month to once a week) corresponds, on average, to 1.231 new commitments per 100 attendees.

**Higher percentage of church budget given to evangelism and missions** – Holding all other significant variables fixed, every one percent increase in percent of budget given to evangelism and missions corresponds on average to a .047 increase in new commitments per 100 attendees. An otherwise similar church that has a 21% higher percentage of their budget given to evangelism averages 1 more new commitment per 100 attendees. When not controlling for other significant variables, every one percent increase in percentage of budget given to evangelism corresponds on average to a .096 increase in new commitments per 100 attendees. A church that has a 10% higher percentage of their budget given to evangelism on average has 1 more new commitment per 100 attendees.

**Pastor being Native American or African American** – Holding all other significant variables fixed, a pastor identifying as American Indian or Alaska Native corresponds, on average, to having about 8.5 more new commitments per 100 attendees than white pastors. When not controlling for other significant variables, these pastors average about 12.9 new commitments per 100 attendees. Given the small sample of American Indian and Alaska Native pastors, it is worth noting that there is a high margin of error associated with these estimates, but there is sufficient evidence to conclude that there is a difference in new commitments per attendee between Native American and white pastors. Holding all other significant variables fixed, a pastor identifying as Black or African American corresponds, on average, to having 4.9 more

new commitments per 100 attendees than white pastors. When not controlling for other significant variables, these pastors average 7.2 new commitments per 100 attendees.

**More recently organized** – Holding all other significant variables fixed, every one year increase in church year organized (i.e., one year newer) corresponds on average to a .014 increase in new commitments per 100 attendees. An otherwise similar church that is 71 years older on average has 1 less new commitment per 100 attendees. When not controlling for other significant variables, every one year increase in church year organized (i.e. one year newer) corresponds on average to a .033 increase in new commitments per 100 attendees. A church that is 30 years older on average has 1 less new commitment per 100 attendees.

**Pastor more frequently investing in relationships with non-Christians with the specific purpose of introducing them to Christ** – Holding all other significant variables fixed, every one unit increase in frequency of this behavior (e.g. once a month to once a week) corresponds, on average, to .607 new commitments per 100 attendees. When not controlling for other significant variables, every one unit increase in frequency of this behavior (e.g. once a month to once a week) corresponds, on average, to 1.854 new commitments per 100 attendees.

**People more frequently joining church that were members of another church** – Holding all other significant variables fixed, every one unit increase in frequency of this behavior (e.g. once a month to once a week) corresponds, on average, to .628 new commitments per 100 attendees. When not controlling for other significant variables, every one unit increase in frequency of this behavior (e.g. once a month to once a week) corresponds, on average, to .716 new commitments per 100 attendees.

**Church coming from certain denominations** – Holding all other significant variables fixed, Baptist (2.332 more), Lutheran (2.545 more), and Pentecostal (3.822 more) average more new commitments per 100 attendees compared to “other traditions” (i.e., Evangelical and Black Protestant churches that are not non-denominational, Baptist, Christian/Church of Christ, Holiness, Lutheran, or Pentecostal). When not accounting for other variables, Baptist churches average 4.63 more new commitments per 100 attendees compared to other traditions, while Pentecostal churches average 7.867 more. Lutherans are not significantly different in new commitments per 100 attendees when not controlling for other variables. It is also worth noting that when not accounting for other significant variables, non-denominational churches average 4.79 more new commitments per 100 attendees, but that this difference is largely explained by other differences in behaviors related to significant variables.

**Pastors being less educated** – Holding all other significant variables fixed, every one unit increase in education level (e.g. Bachelor’s degree to Master’s degree) corresponds, on average, to .660 less new commitments per 100 attendees. When not controlling for other significant variables, every one unit increase in education level (e.g. Bachelor’s degree to Master’s degree) corresponds, on average, to 1.396 new commitments per 100 attendees.

## Summary of Analysis on NCPER

As you'd expect, congregations that see more new commitments per 100 attendees tend to be those with pastors and members who are prioritizing evangelism and engaging in evangelistic behaviors and those who are getting unchurched people in the door. We can see which of those evangelistic behaviors are the best indicators of higher new commitments per 100 attendees. Some of the demographic indicators are also perhaps what we would expect (less white, newer, smaller churches seeing more new commitments per attendee).

Overall, these variables combine to account for about a quarter of the variability in new commitments per 100 attendees. ( $R^2=.245$ ), meaning that while each of the variables identified is a significant predictor of new commitments per 100 attendees and provides some indication of a church having more or less new commitments, knowing all of this information still wouldn't mean we could predict with a great deal of accuracy how many new commitments a church of a given size would have.

## Variables that predict higher retained new commitments per attendee in the presence of other significant variables

**Higher percentage of attendees unchurched** – Holding all other significant variables fixed, every one percent increase in percent unchurched corresponds on average to a .056 increase in retained new commitments per 100 attendees. An otherwise similar church that has a 18% higher unchurched percentage averages 1 more retained new commitment per 100 attendees. When not controlling for other significant variables, every one percent increase in percent unchurched corresponds on average to a .075 increase in retained new commitments per 100 attendees. A church that has a 13% higher unchurched percentage on average has 1 more retained new commitment per 100 attendees.

**Lower attendance** – Holding all other significant variables fixed, every one person increase in attendance corresponds on average to a .022 decrease in retained new commitments per 100 attendees. An otherwise similar church that has 46 more attendees on average has 1 less retained new commitment per 100 attendees. When not controlling for other significant differences, every one person increase in attendance corresponds on average to a .011 decrease in retained new commitments per 100 attendees. A church that has 92 more attendees on average has 1 less retained new commitment per 100 attendees.

**Pastor more frequently offering a class for new attenders** – Holding all other significant variables fixed, every one unit increase in frequency of this behavior (e.g. once a month to once a week) corresponds, on average, to .525 retained new commitments per 100 attendees. When not controlling for other significant variables, every one unit increase in frequency of this behavior (e.g. once a month to once a week) corresponds, on average, to .910 retained new commitments per 100 attendees.

**Pastor more frequently attending a conference or training program to improve personal evangelism skills** – Holding all other significant variables fixed, every one unit increase in frequency of this behavior (e.g. once a month to once a week) corresponds, on average, to .723 retained new commitments per 100 attendees. When not controlling for other significant variables, every one unit increase in frequency of this behavior (e.g. once a month to once a week) corresponds, on average, to 1.479 retained new commitments per 100 attendees.

**Pastor more frequently asking a person to commit to Christ following a personal presentation of the gospel** – Holding all other significant variables fixed, every one unit increase in frequency of this behavior (e.g. once a month to once a week) corresponds, on average, to .524 retained new commitments per 100 attendees. When not controlling for other significant variables, every one unit increase in frequency of this behavior (e.g. once a month to once a week) corresponds, on average, to 1.252 retained new commitments per 100 attendees.

**Higher percentage of church budget given to evangelism and missions** – Holding all other significant variables fixed, every one percent increase in percent of budget given to evangelism and missions corresponds on average to a .043 increase in retained new commitments per 100 attendees. An otherwise similar church that has a 23% higher percentage of their budget given to

evangelism averages 1 more retained new commitment per 100 attendees. When not controlling for other significant variables, every one percent increase in percentage of budget given to evangelism corresponds on average to a .074 increase in retained new commitments per 100 attendees. A church that has a 14% higher percentage of their budget given to evangelism on average has 1 more retained new commitment per 100 attendees.

**Higher agreement on hearing reports of members engaging in evangelistic conversations –** Holding all other significant variables fixed, every one unit increase in level of agreement (e.g. somewhat agree to strongly agree) corresponds, on average, to .797 retained new commitments per 100 attendees. When not controlling for other significant variables, every one unit increase in level of agreement (e.g. somewhat agree to strongly agree) corresponds, on average, to 2.229 retained new commitments per 100 attendees.

**Church being made up of a higher percentage of Hispanics –** Holding all other significant variables fixed, every one percent increase in percent Hispanic in the makeup of the church corresponds on average to a .051 increase in retained new commitments per 100 attendees. An otherwise similar church that has a 19% higher percentage of Hispanics in their church makeup averages 1 more retained new commitment per 100 attendees. When not controlling for other significant variables, every one percent increase in percentage Hispanic corresponds on average to a .080 increase in retained new commitments per 100 attendees. A church that has a 13% higher percentage of Hispanic attendees on average has 1 more retained new commitment per 100 attendees.

**Higher agreement on pastor receiving feedback that he or she is strong at communicating with unchurched people in weekly worship services –** Holding all other significant variables fixed, every one unit increase in level of agreement (e.g. somewhat agree to strongly agree) corresponds, on average, to .750 retained new commitments per 100 attendees. When not controlling for other significant variables, every one unit increase in level of agreement (e.g. somewhat agree to strongly agree) corresponds, on average, to 2.272 retained new commitments per 100 attendees.

**Church more frequently engaging in ministry outside the church in order to share the gospel with the unchurched –** Holding all other significant variables fixed, every one unit increase in frequency of this behavior (e.g. once a month to once a week) corresponds, on average, to .540 retained new commitments per 100 attendees. When not controlling for other significant variables, every one unit increase in frequency of this behavior (e.g. once a month to once a week) corresponds, on average, to 1.258 retained new commitments per 100 attendees.

**People more frequently joining church that were members of another church –** Holding all other significant variables fixed, every one unit increase in frequency of this behavior (e.g. once a month to once a week) corresponds, on average, to .581 retained new commitments per 100 attendees. When not controlling for other significant variables, every one unit increase in frequency of this behavior (e.g. once a month to once a week) corresponds, on average, to .497 retained new commitments per 100 attendees.

**Pastor being Native American** – Holding all other significant variables fixed, a pastor identifying as American Indian or Alaska Native corresponds, on average, to having about 7.2 more retained new commitments per 100 attendees than white pastors. When not controlling for other significant variables, these pastors average about 10.0 retained new commitments per 100 attendees. Given the small sample of American Indian and Alaska Native pastors, it is worth noting that there is a high margin of error associated with these estimates, but there is sufficient evidence to conclude that there is a difference in retained new commitments per attendee between Native American and white pastors.

**Pastor more frequently blocking out time in their calendar for the purpose of sharing their faith with non-Christians** – Holding all other significant variables fixed, every one unit increase in frequency of this behavior (e.g. once a month to once a week) corresponds, on average, to .220 retained new commitments per 100 attendees. When not controlling for other significant variables, every one unit increase in frequency of this behavior (e.g. once a month to once a week) corresponds, on average, to .770 retained new commitments per 100 attendees.

### Summary of Analysis on RETPER

As you'd expect, congregations that see more retained new commitments per 100 attendees tend to be those with pastors and members who are prioritizing evangelism and engaging in evangelistic behaviors and those who are getting unchurched people in the door. We can see which of those evangelistic behaviors are the best indicators of higher retained new commitments per 100 attendees.

Overall, these variables combine to account for a fifth of the variability in retained new commitments per 100 attendees. ( $R^2=0.200$ ), meaning that while each of the variables identified is a significant predictor of retained new commitments per 100 attendees and provides some indication of a church having more or less retained new commitments, knowing all of this information still wouldn't mean we could predict with a great deal of accuracy how many retained new commitments a church of a given size would have.

### Differences in Significant Variables for NCPER and RETPER

While a variable's exclusion from the list of significant variables represents insufficient evidence of its usefulness as a predictor rather than proof of unimportance, it is worth examining variables for which strong predictive power was evidenced in predicting one but not both of new commitments per 100 attendees or retained new commitments per 100 attendees.

Significant predictors for NCPER but not significant for retained new commitments:  
q2 (year organized), q15 (pastor investing in relationships with non-Christians to share Christ), q38 (pastor's education), and denomination of church. Pastor's ethnicity was predictive in both but there is insufficient evidence to conclude African American pastors differ from white pastors in RETPER.

Significant predictor for RETPER but not significant for NCPER: higher agreement with q35: "I regularly receive feedback that I am strong at communicating with the unchurched people who attend our weekly worship services."

Some of these instances may coincide with intuition. That communicating with the unchurched in the worship service itself may be a better indicator of retained new commitments than new commitments itself makes sense. That newly organized churches may be better at reaching new commitments but are not necessarily better at having them become involved in their church may be unsurprising. However, to reiterate, the absence of sufficient information to conclude that one of these variables affects new commitments or retained new commitments does not correspond to proof that they have no effect on the variable of interest. But it is interesting to note places where there exists ample evidence for an explanatory variable's predictive power in one response variable but less evidence for the other response variable.