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Does social context affect poverty?
The role of religious congregations

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Abstract

This paper contributes to the literature that aims at identifying and measuring the impact of social context on individual-level outcomes. We focus on religious congregations (social groups with which Christian worshipers feel associated) and investigate congregation effects on individual poverty using U.S. data and a multilevel approach. In order to correct for selection effects, we model congregation choice using a multinomial logit model and subsequently incorporate correction components into the multilevel model of congregation effects. Our empirical results support the existence of congregation effects and, therefore, the importance of social context on individual poverty. We find that congregation size, recreational services, initiatives to integrate new members and behavior standards play important roles in shaping the probability that churchgoers experience poverty. Individual behavior (in terms of participation in the religious life of congregations) also matters. These finding are in line with the idea that congregations' activities can foster social interactions and cooperation reducing individual probability of experiencing poverty.

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JEL: I32, Z12, C13

1. Introduction

This paper contributes to the growing literature that aims at identifying and measuring the impact of social context on a range of individual-level outcomes, such as income, education, employment and health. One important component of the social context is the impact of one's membership in a particular social group. Desirable social interactions and beneficial "social capital" are thought to be features of groups. The rich may keep getting richer, the argument goes, because they benefit from a better social environment than do poorer individuals.

In this paper, we focus on religious congregations that are organizations formed for the purpose of providing for worship of God, service and fellowship. Congregations are the basic unit of Christian organizations in the sense of being the social group with which their members in particular localities feel most closely associated (Beckford, 2001). Our paper contributes to the literature empirically investigating congregation effects on individual poverty. In particular, we wish to assess to what extent differences in the behaviors of individuals (in terms of participation in the religious life of the congregation) and congregation-specific factors can explain differences with respect to individual poverty status.

We use data from the U.S. Congregational Life Survey and a multilevel approach to evaluate congregation effects. The problem with estimating congregation effects on poverty is that people are nonrandomly allocated to congregations: people select into groups based on their preferences and resources (Van Ham and al., 2018). That is, people tend to move to congregations that match their preferences. As results of this selection process, parameter estimates of congregation effects are likely biased because the characteristics that drive individuals into certain congregations are highly correlated with the outcome of interest. In order to correct for selection effects, we model congregation choice using a multinomial logit model and subsequently incorporate correction components into our multilevel model of congregation effects.

Our empirical results support the existence of congregation effects and, therefore, the importance of social context on individual poverty. We find that congregation size, recreational services, initiatives to integrate new members and behavior standards play important roles in shaping the probability that churchgoers experience poverty. Individual behavior (in terms of participation in the religious life of congregations) also matters. These finding are in line with the idea that congregations' activities can foster social interactions and cooperation reducing individual probability of experiencing poverty.

The rest of the paper proceeds as follows. Section 2 contains a short literature review on possible congregation effects on poverty. In Section 3, we present our empirical strategy. In Section 4, we

present the data set and some descriptive statistics. In Section 5, we establish a typology of congregations and present empirical results on how individuals allocate to congregations. Section 6 presents empirical findings on congregation effects. Section 6 concludes.

2. A short literate review

In the majority of the cases, religious congregations are potentially useful in helping the poor to improve their socioeconomic status through their prominent role in fostering participation, cooperation and solidarity. Congregations often provide services and social resources to congregation attenders as well as social services to the geographic communities in which they are located. In particular, American congregations, whether alone or with other institutions of the nonprofit and public sectors, provide a variety of welfare services. They feed the hungry, give alms to the poor and heal the sick (Chaves, 2004; Cnaan, 2002). Their welfare services range from substance abuse counseling to job training to affordable housing development (Chaves & Tsitsos, 2001; Vidal, 2001). Depending on the services provided, organizational forms range from loosely structured fellowships to vastly complex organizations (Beckford, 2001). Congregation organizational forms, and their responsiveness to civil society, can facilitate or impede the capacity of communities to mobilize social resources (Cleaver, 2005; Rankin, 2002; Woolcock, 1998) and, therefore, to help the poor in improving their socioeconomic status.

Depending on the congregation organizational form, services can be congregation oriented or community oriented. In former case, the 'products' of religious congregations are consumed by congregation members. Thus, the congregation can be seen as a mutual-benefit organization dedicated to the collective production of worship services, religious instruction, social activities, and other quasi-public "club goods" (Iannaccone, 1998). Costly rituals serve to resolve free rider problems in the production of religious goods and players derive utility from the collective production of such goods within the group they belong to (Iannaccone, 1992). Services are community oriented if services are primarily available to and consumed by members of the broader geographic communities in which congregations are located. Owens and Smith (2005) find that the majority of congregations located in low-income neighborhoods make their welfare services available to the broader community rather than their congregation members. The majority of those who consume the social services of the congregations are not members of the congregations.

In some cases, congregations can constrain individual actions and may reproduce structural inequalities (Beall, 2001). Some organization forms, which require their members to accept centrally

imposed behavior standards, can lead to a higher level of intolerance of other people not fulfilling these standards (Guiso et al, 2003) and preclude attenders from the social networks beyond the congregations. Since the latter networks are important sources of information (e.g. about jobs and services), these congregation can limits the ability of the poor to improve their situations.

In this paper, we empirically assess whether congregation characteristics affect the individual probability of experiencing poverty as well as the existence of factors (e.g. behavior standards and prohibitions) limiting the ability of the poor to ameliorate their economic status.

Religious activities and social capital

Social capital (as conceptualized by Bourdieu, 1991 and Putnam, 2000) can contribute significantly to poverty reduction (Putnam, 1993; Bebbington, 1999; Grootaert and Van Bastelaer, 2002; Narayan, 2002; Woolcock and Narayan, 2000). Religion has a prominent role in the formation of social capital providing specific social resources available to individuals and groups through their social connections with the religious community. Thus, social capital can be seen as a by-product of the religious activities (e.g. worship services, religious instruction, social activities). It is available to congregation members and it is excludable to nonmembers. According Berman (2000), congregation members benefit from access to social interactions. The latter lead to a remarkably generous mutual insurance network based on religiously motivated charitable acts. The access to mutual insurance is excludable, making it a club good. Levy and Razin (2012) propose a simple model of religious organizations for analyzing the relation between religious beliefs, religious participation and social cooperation. They formalize an equilibrium notion of stable religious organizations which accounts for the social behavior as well as for the affiliation choices of individuals. In the equilibrium, members enjoy a higher level of cooperation from others. Cooperation and solidarity among members of the congregation can secure informal insurance against poverty (Narayan, 2002; Narayan & Pritchett, 1996; Woolcock, 1998; World Bank, 2001) and enable members to coordinate activities for mutual benefit (Levy and Razin, 2012; Dasgupta, 1988).

Empirical studies support the theoretical prediction that congregations produce social capital and suggest that the degree of participation in religious life is positively associated with the amount of accumulated social capital. Ellison and George (1994) find a positive relationship between religious participation and a variety of social resource in a survey of 2,956 households in the southeastern United States. In particular, they find a positive association between frequency of church attendance and (1) social network size, (2) frequency of telephone and in-person contacts, (3) variety of support

received, and (4) perceived quality of the supportive relationships in which respondents were involved. Bradley (1995) also find a positive relationship between religious participation and social interactions showing that, in comparison to less active churchgoers, attenders report larger networks, more frequent telephone and in person contacts, and enhanced perceptions of the supportive quality of their relationships (cooperation). Thus, evidence suggests a strong positive association between religious attendance and support network size.

In this paper, we empirically assess whether some congregation characteristics that can be presumable related to social capital accumulation affect the individual probability of experiencing poverty (e.g. congregation size could be correlated with social interactions and, therefore, to the chances of ameliorating economic conditions). We also test whether the degree of participation in religious life (that is in principle positively associated with the amount of accumulated social capital) is correlated with the individual probability of experiencing poverty.

3. Methodology

Our modelling strategy unfolds in two steps. First, we estimate the selection model, a multinomial logit model in which individuals select one congregation from a choice set of J congregation types. Second, we use multilevel methods for estimating congregation effects on individual poverty, controlling for the congregation type correction terms derived from the selection.

3.1 The selection model

We use a multinomial logit approach to model congregation selection. In this model, individual *i* selects congregation *j* with the highest utility from a choice set of *J* congregation types (Maddala, 1983). Congregation types are defined based on congregations attributes (size, number of worship services offered each week, outreach activities, welfare services, recreational services, follow-up activities and behavioral standards - see Section 4.3 for details). The utility of a certain congregation type to a specific individual depends on the match between individual attributes and congregation types and, thus, on the value of a set of congregation's attributes (that define a congregation type) to the specific individual. The multinomial logit model can be written as follow:

$$P_{ij} = \frac{\exp(\beta_j X_i)}{\sum_{k=1}^{J} exp(\beta_j X_i)}$$

Where the coefficients β_j may be interpreted as reflecting the effects of the individual characteristics on the odds of making a given choice or on the underlying utilities of the various choices.

From the multinomial logit model, we derive the linear probabilities reflecting the likelihood that an individual belong to a certain type of congregation (Van Ham and al., 2018). Following Ioannides and Zabel (2008), we transform these linear probabilities to generate correction terms akin to the inverse Mills ratios popularized by Heckman's (1979) two-stage regression framework. If the correction terms gleaned from the selection model display high levels of collinearity, we perform a principal component analysis to reduce the number of variables necessary to capture all variance in the correction terms and, therefore, remedy the high degree of correlation (as proposed by Ham et al, 2008).

3.2 The congregation Effects Model

We use multilevel methods for estimating congregation effects on individual poverty. We wish to assess to what extent differences in the behaviors of individuals (in terms of participation in the religious life of the congregation), congregation-specific factors and denomination-specific effects can explain differences with respect to individual outcomes (individual poverty status). Since we wish to empirically test whether both individual active participation in the religious life of congregations and congregations' policies affect the probabilities that worshipers experience poverty, these methods are particularly attractive. In fact, they offer a means of quantifying the extent to which differences in outcomes reflect differences in the effects of congregation-specific features, which are distinct from differences in outcomes reflecting differences in variations in the attributes of the individuals. We also control for differences in outcomes associated to denomination specific effects. In facts, congregations are affiliated to denominations and the latter can be defined as distinct religious bodies within Christianity, identified by traits such as a name, organization, leadership and doctrine.

We use three-level data with individuals at level 1, congregations at level 2 and denominations at level 3. In particular, individuals are clustered in congregations and congregations are clustered in denominations. Therefore, multilevel models are the most appropriate approach since they permit to fully exploit the richness of hierarchical data structures (Skrondal et al., 2004; Snijders et al., 1999; Goldstein, 1995; Hox, 1995). In fact, an individual belonging to a certain congregation tends to be more similar to the other individuals of that congregation than to some other individuals belonging to a different congregation. In the same way, congregation affiliates to a certain denomination tends to be more similar to the other congregations affiliated to that denomination than to some other congregations affiliated to a different denomination. As result, standard errors may follow denomination and/or congregation dependency paths. Ignoring these problems, i.e. pulling the data together, would produce downward biased estimated standard errors. Hence, significance test about

the effects of congregation covariates are not correctly estimated and may produce spurious "significant" results (Hox, 1995). A simple solution could be that of using robust methods to estimate standard errors but multilevel models are more appropriate since they permit to fully exploit the hierarchical structure of the data.

We specify the following three-level dynamic logit model where the first level is the individual (i) participating in the religious life of a certain congregation, the second level is the congregation (j) affiliated to a certain denomination, and the third level is the denomination (k). The equation of interest is

$$(1) \qquad y^*_{ijk} = z_{ijk}\gamma + \alpha_0 + z_{jk}\alpha_1 + a_{jk} + v_k + u_{jik}$$

where the dependent variable y_{ijk} is the poverty state of individual i belonging to congregation j affiliated at denomination k; α_0, α_1, α_2 and γ are the parameters to be estimated. z_{ijk} and , z_{jk} are, respectively the vector of individual and congregation explanatory variables (including the vector of correction terms derived from the selection model). a_{jk} is the random intercept for congregation j and v_k is the random intercept for denomination k. The random intercepts are assumed to be independently normally distributed.

The importance of congregation and denomination effects (in other words, the importance of clustering) may be evaluated estimating the three level null models (without covariates) and computing intra-class correlation coefficients (ICC). The overall error term can be decomposed into three additive components by adding the first, second and third level variances, given the assumption of independence between random effects belonging to different levels. This implies that we can compute the interclass correlation between both congregation variance (*ICC_c*) and denomination variance (*ICC_d*):

$$(5) \qquad ICC\_c = \sigma_a^2/(\sigma_v^2 + \sigma_a^2 + \sigma_u^2)$$

$$(6) \qquad ICC\_d = \sigma_v^2/(\sigma_v^2 + \sigma_a^2 + \sigma_u^2)$$

where $\sigma_u^2, \sigma_a^2, \sigma_v^2$ are respectively the first, second and third level variances. The ICC_c and the ICC_d give, respectively, information on the importance of congregation and denomination effects on poverty.

4. Data and descriptive statistics

In this paper, we use data from the U.S. Congregational Life Survey (CLS). The United States represents an interesting case study because of the vitality of religion and its religious structure. In fact, the U.S. is a religiously pluralistic society. It embraces hundreds of Christian denominations, several strands of Judaism and Islam, and dozens more varieties of non-western religions, some of whose adherents have sustained their faiths here for generations, while still others have built new institutions and houses of worship (Chaves and Eagl, 2015). In 2001, there were 207.983 million adults in the U.S., and 80% of them were religiously affiliated. We focus on the Christian share of the U.S. population, that is the 77% - 159.5 million adults (Barry and Keysar, 2006).

We use the random sample of U.S. congregations attended by individuals who participated in the General Social Survey (GSS). All GSS participants who reported that they attended worship at least once in the prior year were asked to name the place where they worshiped. Since the GSS involves a national random sample of individuals, congregations identified by GSS participants comprise a national random sample of congregations. Of 1,214 congregations invited to participate in 2001, 434 returned completed surveys from their worshipers (36%).[1]

Three types of surveys were completed in each participating congregation: an attendee survey completed by all worshipers age 15 and older who attended worship services; a congregational profile survey describing the congregation's facilities, staff, programs, and worship services completed by one person in the congregation; and a leader survey completed by the pastor, priest, minister or other leader. Together the information collected provides a unique multi-level look at religious life in the US.

After removing records containing missing relevant data, our 2001 sample includes information on over 65.780 worshipers in 303 congregations.[2] These congregations are affiliated to 26 denominations.

[1] A second wave took place in the fall of 2008 and spring of 2009. Response rate was very low, of 2544 congregations invited to participate, 254 returned completed surveys. Therefore, we do not use the second wave.

[2] We include in our sample only individuals aged 15+ belonging to congregations, visitors are not included in our sample since they could belonging to different congregations.

4.1 The worshipers

Our sample includes data on Conservative Protestant, Mainline protestant and Roman Catholic worshipers. Descriptive statistics are reported in Table 2. We observe the 40% of the churchgoing population in conservative protestant churches. The 36% of worshipers belong to mainline protestant congregations. The 24% of our sample belong to Catholic congregations.

Data give detailed information of the degree of individual participation in the religious life of congregations. Overall, 83% of worshipers attend frequently worship services - that is, they attend weekly or more often. The 78% of worshipers are involved in some small group associated with the congregation, beyond attending worship services. In particular, the 26% of worshipers are involved in church school, Sunday school, or other religious education class. The 22% are involved in prayer, discussion, or Bible study groups. The 30% are involved in fellowships, clubs, or other social groups. This means that worshipers connect with their congregation primarily during worship services. However, they also connect with their congregation thought small groups. Both worship services and small groups could be important means to accumulate social capital.

The 45% of worshipers have been attending the congregation for 10 years or more. Long-term commitment to the congregation is related to higher rates of worship attendance and participation. Weekly worshipers are more likely to be found among those who have been attending the congregation for 11 years or more (48% compared to 33%). Those who attend worship week after week are twice as likely as occasional worshipers to be involved in congregational small groups (88% compared to 36%).

The average worshiper aged 25 years or older is well educated: 44% of worshipers have at least a college degree compared to 30% for the U.S. population.[3] While the U.S. population is split fairly evenly between men and women, fewer men attend worship than women (40% compared to 60%). In 2001, only the 1.9% of worshipers is unemployed while the U.S. unemployment rate is more than 4%.[4] The poverty rate[5] in our sample is 9.8%, it is slightly lower than the poverty rates registered for the U.S. population in 2001 (11.7%).[6] Weekly worshipers are on average less educated than occasional worshipers are (48% compared to 43%). They are also older (24% compared to 11% aged

[3] U.S. Census Bureau

[4] U.S. Bureau of Labor Statistics

[5] We compute a proxy of the poverty rate. Unfortunately, we only have data on the household income ranges: <$10,000, $10,000-$24,999, $25,000-$49,999, $50,000-$74,999, $75,000-$99,999, and >$100,000. First, we compute the equivalent income applying the OECD equivalence scale to the midpoint of each interval. Second, we define as poor the individuals with an equivalent income below $15,000. This is our poverty variable (equals to one if the individual is poor, zero otherwise) and it is used in the multilevel analysis as dependent variable.

[6] U.S. Census Bureau

65+) Despite these differences, weekly worshipers are on average less likely to be poor and unemployed than occasional worshipers are. These descriptive statistics are coherent with previous literature (see Iannaccone, 1998 for a review of previous studies). They are also coherent with the idea analysed in this paper that participation is associated with lower probabilities of experience adverse events as poverty.

4.2 The congregations

Mainline Protestants comprise 44% of all congregations in our sample. Conservative Protestants comprise 31% of all congregations and Roman Catholics constitute the 24% of all congregations. Descriptive statistics are reported in Table 3.

Congregation size represents an important characteristic to understand the U.S. congregational landscape. Size is important because it produces different patterns of participation and financial support. The median annual per capita donation decreases as congregational size increases (e.g. Sullivan, 1985; Stonebraker, 1993; Zaleski and Zech, 1994). Moreover, people in smaller congregations participate more in the life of their congregations than do people in larger congregations (Iannaccone, 1998; Eagle, 2015). Observing the data, we note 18% congregations in our sample are small (100 or less regular participants, counting both adults and children) and 39% congregations are medium size (100-400 regular participants). Small and medium size congregations have on average a budget per participant of $1079. The 43% are large congregations with 400 regular participants or more and they have on average a budget per participant of $839.

Congregations mainly focus on collective worship, religious education, and pastoral care of their members. All congregations develop strategies to reach out to nonmembers and the majority of them have some planned procedures designed to ensure that new members become integrated into the life of the congregation. The majority of them serve the needy offering welfare services. Some offers also recreational services.

Congregations offer on average five worship services each week. Almost all work on recruiting new members using different strategies. Among the latter, congregations encourage people to invite others, establish/maintain a website, send letters to visitors, mail flyers or newsletters, have neighborhood activity, advertise on newspaper/radio/TV, participate in public event to bring people in, telephone visitors, visit visitors, have recruitment committee, contact people new to the area, email visitors and run community survey. The CLS includes 14 questions to identify whether congregations implement these strategies. We compute an index measuring the intensity of outreach activities

counting the number of strategies adopted over the total number of outreach activities considered in the survey. The index assumes value between zero (no outreach activities) and one (maximum commitment to outreach activities). We find that on average the index score 0.5 indicating a medium commitment to work on recruiting new members.

The 86% of congregations have some planned procedures designed to ensure that new members become integrated into the life of the congregation. Among these procedure, we find: follow-up visits by clergy, lay leaders, or members; designated people to extend hospitality and invite new members for meals; a group or course for new members; invitation to join a small group, fellowship group, or similar group; invitation to take on a task within the congregation or in service to the community; other procedures or activities. The CLS collects data on these procedures and we compute the number of procedures planned by congregations over the 7 procedures considered in the survey. We obtain a follow-up index that assumes a value between zero (no procedures planned) and one (maximum commitment in integrating new members). The index scores on average 0.3 indicating a modest commitment in integrating the new members in the life of congregations.

The vast majority of congregations (97%) are social welfare providers. Congregations engage in a great variety of welfare services including emergency relief, counseling/support groups, housing for seniors, other senior programs (not housing), health-related programs, political/justice work, abuse/recovery programs, voter registration, prison ministry, housing for others (not seniors), care for people with disabilities, community organizing, immigrant support services, environmental activities and activities for the unemployed. The CLS collects data on these services and we compute the number of welfare services offered by congregations over the 16 services considered in the survey. Our welfare services index assumes a value between zero (no welfare services) and one (all services provided). The index scores on average 0.28 with large congregations offering more services (0.36 compared to 0.15).

The 73% of congregations offer recreational services. The latter include sporting activities, arts/ music/cultural activities, hobby groups and other social/ recreational/leisure activities. The CPS has four questions regarding recreational services and we compute the number of recreational services offered by congregations over the total number of services considered in the survey. Our recreational services index assumes a value between zero (no services) and one (all services provided). The index scores on average 0.4 with once again large congregations offering more services (0.53 compared to 0.19).

Behavioral standards can be demanded by congregations to mitigate a religion's free-rider problems (that emerges when active members and individuals participating less frequently benefit from

congregation services in the same amount) and by screening out half-hearted members and inducing higher levels of participation among those who remain (Iannaccone, 1998). The 73% of congregations in our sample demands some behavior standards concerning how much money people give to the congregation, eating, prohibitions against gambling, prohibitions against homosexual behavior, prohibitions against unmarried adults living together, prohibitions against drinking alcohol and/or prohibitions against members smoking. The CPS collects information on seven possible prohibitions. We compute an index about the degree of strictness summing up the number of prohibitions demanded by congregations over the total number of prohibitions considered in the survey. Our index assumes a value between zero (no prohibitions) and one (maximum strictness). The index scores on average 0.32. Small congregations demand on average stricter behavioral standards than large congregations (0.37 compared to 0.28). In fact, congregations demanding strict behavioral standards tend to be small because each congregation must monitor members in order to maintain its behavioral requirement and monitoring costs increases with group size (Iannaccone, 1998).

5. Types of congregation and the estimation of congregation choice

Christianity established a comprehensive system for delivering religious and pastoral services to geographically demarcated areas known as parishes, which represented subdivisions of national or international churches. The idea is that the residents of a locality would belong to a parish and form a congregation of regular worshipers under the leadership of local clergy. This idea was especially effective in European regions (Beckford, 2001). Looking for a religious congregation that match individual preferences is, instead, common in the United States (e.g. half of American adults have at some point searched for a new congregation).[7] Even if location factored prominently in many people's choice of congregation, the distinctive 'products' of religious congregations appear also extremely important in their decision, e.g. worship services, presences of children's programs and the availability of volunteering opportunities (The Pew Forum, 2008). Socioeconomic status (e.g. education and income) affects the products of congregations that individuals value most in searching for a new congregation and, therefore, the decision to select a certain congregation (Schwadel, 2018).

As seen in the previous section, the distinctive products of religious congregations are immensely diverse: number of worship services offered each week, outreach activities, welfare services, recreational services, follow-up activities and behavioral standards. They are the result of a variety of organizational forms implemented by the religious leaders. These organization forms range from

[7] 2014, U.S. Religious Landscape survey

loosely structured fellowships to vastly complex congregations, which often require their members to accept centrally imposed behavior standards and rituals. In practice, most religious congregation fall somewhere on a continuum between these two extreme positions (Beckford, 2001). We establish a typology of congregations based on particular combinations of congregational products and, using cluster analysis (k-means non-hierarchical method), we identify three types of organizational forms: community-oriented, congregation-oriented and loosely structured (see Figure 1).[8]

The specific typology for the community-oriented is characterized by above the average scores for the number of worship services offered each week and welfare services in combination with below average outreach services and follow-up activities. These are complex organizations that have as primary function to be a place of worship and provide welfare services to the broader geographic communities in which they are located (rather than their congregation members). Some recreation services are also available to the broader communities. These congregations are not interested in recruiting new members (and integrating new members in the life of the congregations) since the religious activities are primarily community-oriented.

The typology for the congregation-oriented type is characterized by below average number of worship services in combination with above average recreational services, welfare services, follow-up activities, outreach services and behavior standards. These are complex organizations mainly dedicated to the collective production of club goods. Special care is given to attract new members and in integrating them in the life of the congregation. Above average demand for behavior standards can help in reducing free-riding problems in these organizations, as partially discussed in the previous section. High rates of church attendance can also be required to mitigate free-rider problems. Thus, the number of worship services tend to be small because congregations must monitor members' participation.

The profile of the loosely structured congregations is indicated by below average scores for all dimensions.

We assume that all congregation types are available in the areas where the individuals live (or at reasonable distance). Therefore, the individuals consider the full choice set of all alternative types of congregations and select the types that match their preferences.[9] We assume that the choice about the type of congregation is repeated in each period (e.g. in each period the individual decides to remain

[8] Prior to clustering data, we remove missing data and rescale variables for comparability using the z-score formula. The rescaled variables have a mean of 0 and a standard deviation of 1.

[9] Unfortunately, we have no information on location and, therefore, we cannot control for it in the people's choice of the type of congregations

in the congregation or move in a new type). This assumption implies that all individuals in the sample select their types of congregations in the period of study, which make sense because moving in a new congregation is always an available option.

We estimate the multinomial logit model of congregation choice (see Section 3.1). We use individual characteristics (gender, age, ethnic group, education, marital status, children, labor market participation, immigration status, poverty status) as explanatory variables. Estimates are shown in Table 4. Most of the parameter estimates from the explanatory variables are significant, demonstrating pronounced differences among ethnic groups, household types, education groups and income groups on congregation choice. For example, well-educated people are more likely to select complex congregations, while poor people are more likely to select loosely structured congregations. Individuals with young children are more likely to select complex congregations (especially congregation-oriented type), probably because these kind of congregations offer children programs (e.g. recreation activities). Black and African American people are more likely to select congregation-oriented type, while Hispanic, Latino and Spanish origin people are more likely to select community-oriented congregations. Immigrants are also more likely to select community-oriented congregations. People active in the labor market are less likely to select complex congregations, probably because they have less time to allocate for congregation activities.

The model just discussed is the basis for obtaining the predicted probabilities that are necessary to compute the sample selection bias correction terms used in the multilevel model below. We are aware of the fact that the selection correction terms that we compute are highly correlated (see Table 5). High correlation makes sense because, even if congregation types differ in their organizational forms, they also share similar characteristics, e.g. all of them are places of worship. As a result, correction terms tend to "hang together" for certain types of individuals, displaying high-levels of collinearity. Unfortunately, high correlation prohibits the estimation of the second-stage congregation-effects model with all correction terms entered simultaneously. To overcome the collinearity issues, we follow the approach proposed by Ham et al. (2018) and we perform a principal component analysis to reduce the number of variables necessary to capture all variance in the correction terms (and remedy the high degree of correlation). The model produces one principal component with eigenvalue greater than 1.0 that captures 80.8 % of the total variance (see Table 5). This component is included as correction term in the second-stage congregation-effects model. The correction component is measured at the individual level and it can be interpreted as the likelihood that certain types of individuals belong to a congregation instead of the likelihood of selecting a certain type of congregation.

6. Estimation of the congregation effects

We present the following estimates of poverty: (1) the three-level null model; (2) the three-level model controlling for observed congregation characteristics (without individual characteristics); (3) the three-level model controlling for both observed congregation and individual characteristics; and (4) the three-level model with the correction component derived from the selection model.

6.1. The null model

In order to evaluate the importance of clustering (as explained in Section 3), we estimate the three level null models (without covariates). Then, we decompose the total variance into between and within clusters and compute intra-class correlation coefficients (ICC). See Table 6. We find that the individual level variation is about 80.3% of the total variability. The 14.4% of the total variability is explained by the congregation level while the 5.3% of the total variability is explained by the denomination level. Results show that the cluster effects are considerable at both congregation level and denomination level. In other words, there is evidence about the existence of congregation effects: some individuals are more inclined to escape poverty than other individuals do simply on the basis the congregation they attend. Therefore, it is important to identify congregation characteristics affecting the probability of being poor.

6.2. The model controlling for observed congregation characteristics

We focus on congregation heterogeneity disentangling the role of observed and unobserved heterogeneity at congregation level. In particular, we test the impact of the following congregation characteristics on the individual probability of experiencing poverty: the size of the congregation (small/medium/large), the number of worship services offered each week, the total congregation budget per participant and some services implemented by congregations. Among the latter, we focus on initiatives designed to reach out to nonmember, to integrate new members into the life of the congregation, to serve the needy offering welfare services and to offer recreational services for members. Estimates are reported in Table 7: columns 1 and 2 report the parameter estimates and the standard errors of the three level model that includes congregation covariates (Model 1). This model presents the baseline effect of congregation characteristics on individual poverty.

We find that individuals in small congregations (defined as congregations with less than 100 individuals -children and adults- regularly participating) have larger probabilities of experiencing poverty than individuals attending medium-large congregations. This result is in line with the idea that individuals with larger networks are able to go beyond their immediate social circle in order to establish contact with external actors and mobilize high quality resources (Zhang et al, 2017). In larger congregations, the proportion of family members and relatives within the network decreases, which in turn improves network diversity and gives actors more heterogeneous social resources. The latter are important for creating opportunities for reducing the risk of poverty. Coherent with this idea, recreational services increasing social interactions and opportunities to mobilize social resources decrease the individual probability of experiencing poverty (the estimated coefficient is -0.9 and highly statistical significant).

Social interactions between people of different socio-economic backgrounds are important in terms of providing information and opportunities for escape poverty. Congregation members are generally heterogeneous in terms of backgrounds offering opportunities for heterogeneous social interactions. However, there are case in which congregations develop strategies aimed to reduce heterogeneity. High behavior standards and prohibitions can be used to screen out members and induce higher level of participation among those who remain. In these congregations, even if participation is high, the low level of heterogeneity across members could lead to limited social capital accumulation. Moreover, members could also develop high level of intolerance of others precluding themselves from the social networks beyond the congregation (e.g. sources of information about jobs and services). The result is that implementing behavior standards and prohibitions can increase the individual probability of experiencing poverty. Our finding confirms this intuition (see Table 7). The estimated coefficient of the strictness index (measuring the strictness in terms of behavior standards and prohibitions) is positive (0.8) and highly statistical significant.

The estimated parameter for the welfare services index is positive and statistical significant. We can explain this result as following. The majority of those who consume the welfare services of the congregations are not members of the congregations (Owens and Smith, 2018). Members are often the volunteers to serve needy people to overcome economic difficulties. They are not the needy. Therefore, we do not expect welfare services reducing the probability of experiencing poverty for members of the congregations. Note also that the number of provided welfare services are higher in low-income neighborhoods (Owens and Smith, 2018). Therefore, our welfare services index can be interpreted as a proxy of income deprivation in the neighborhoods in which congregations are located. Therefore, we simple find that the individual probability of experiencing poverty is positively

correlated with the levels of income deprivation registered in the neighborhoods in which congregations are located.

The estimated parameters for the number of worship services and the outreach activities index are negative and statistical significant; however, these results will not be robust to further specifications of the model (see below). The estimated parameter for congregation initiatives designed to integrate new member into the life of the congregation is negative but not statistical significant.

The estimate of the variances of the random intercepts for congregation and denomination (σ_a^2, σ_v^2) are positive and statistically significant, even after controlling for the congregation observed heterogeneity. The inclusion of the observed congregation characteristics reduce the proportions of the total variability explained by the unobserved congregation heterogeneity (from 14% to 9%) and the unobserved denomination heterogeneity (from 5% to 2.6%). Unobserved heterogeneity across denomination is small, but unobserved heterogeneity remains relative large across congregations indicating the existence of unobserved congregation characteristics impacting on individual poverty.

6.3. The model controlling for both congregation and individual characteristics

Table 7, columns 3 and 4, present the estimates and standard errors obtained using the three-level logit model that includes both congregation and individual covariates (Model 2).

The participation in the religious life of congregations is negatively correlated to the probability of experiencing poverty. In particular, we find that involvement in fellowships, clubs, or other social groups is very important: involvement in these activities is associated with a lower probability of experiencing poverty (the coefficient is -0.18 and highly statistically significant). This result can be explained as following: sharing life with other members permit individuals to access to information and support for basic needs that can help individuals to ameliorate their situations.

Long-term commitment to the congregation is also associated with a lower probability of experiencing poverty. Individuals attending congregations for many years have been able to develop more connections. In other words, time permits to construct social relations and consolidate them. Consequently, attending congregations for six years or more offers an insurance against adverse events and provides opportunities to access to social capital and promote interests with other members.

Participation in worship services, church schools, prayer groups and community services have not statistically significant impact on the risk of poverty. Note that frequent participation in worship

services seems to be not enough to accumulate social capital. This is not so surprising since social interactions during worship services are limited. Community services in principle permits to develop social interactions with individuals belonging to the congregation attenders. However, these individuals are often the needy and/or individuals searching for information, that are individuals not able to mobilize high quality social resources. Even if prayer groups, in principle, could enforce trust, we do not observe a statistical significant effect on the probability of experiencing poverty.

The specifications include also individual socio-demographic characteristics. We find that the level of education significantly reduces the probability of experiencing poverty. The chance to be poor seems to decrease when the individual is active in the labor market and when the individual is married. Nevertheless, the probability of experiencing poverty increases in households with children. We also find that the probability of experiencing poverty increase when the individual is females, belong on some ethnic groups and she/he is born abroad. The coefficients on age dummies indicate that an increase in an individual's age decrease the probability of experiencing poverty, but this phenomenon reverses in old age.

The inclusion of the observed individual characteristics reduce unobserved heterogeneity across congregations (from 9% to 6%) and denominations (from 2.6% to 1.5%). We find that the parameters estimate for the outreach activities index and the welfare services index become nonsignificant. The parameter estimate for the number of worship services also becomes nonsignificant. The congregation size effects, as well as the role of recreational services in creating opportunities for social relations, remain robust; the negative correlation between behavior standards and poverty also remains robust (see Section 6.2).

Finally note that the inclusion of the individual-level characteristics provides a significantly better fit to the model than the baseline model with the congregation characteristics alone (Pseudo R2: 0.355 vs 0.134).

6.4 The model with the correction component derived from the selection model

Table 7, columns 5 and 6, present the estimates and standard errors obtained using the three-level logit model that substitutes individual socio-demographic characteristics for the correction component derived from the selection model (Model 3).[10] Assuming that selection processes are at play, the parameter estimates for the correction component should emerge as statistically significant,

[10] Ham et al. (2018) also estimate the second-step model substituting individual characteristics for the correction components derived from the selection model.

and its inclusion in the model should modify the magnitude of the coefficients for the congregation-level variables. Indeed, the correction component emerges as statistically significant predictors of poverty, further supporting the contention that people select into congregations at least partially based on shared characteristics that will ultimately bear on their probability of experiencing poverty. In other words, congregation preferences are strongly correlated with poverty status.

The magnitude of the coefficients for the congregation-level variables slightly changes: some congregation effects seem to strengthen when congregation choice is controlled for, while other effects seem to weaken. More importantly, the congregation size effects, as well as the role of recreational services in creating opportunities for social relations, remain robust; the negative correlation between behavior standards and poverty also remains robust (see Section 6.2). There is some evidence of higher individual poverty risk in the low-income neighborhoods (that are geographical areas in which more welfare services are provided). The inclusion of the correction component points out the positive effects of follow-up initiatives on reducing the individual probability of experiencing poverty (the coefficient gains statistical significance). The latter effect can be explained as follows. Planned procedures designed to ensure that new members become integrated into the life of the congregation (e.g. invite new members for meals; invitation to join a small group, fellowship group, or similar group; etc.) offer to new members opportunities to develop social connections and access to social capital. More integration can foster cooperation and trust leading to resource-sharing activities among congregation members.

Finally, note that the inclusion of the correction components provides a better fit to the data than the baseline model (Pseudo R2: 0.164 vs.0.134).

7. Concluding Discussion

We use U.S. data and a multilevel approach to evaluate whether differences in the behaviors of individuals (in terms of participation in the religious life of the congregation) and congregation-specific factors can explain differences with respect to individual poverty status. In order to correct for selection effects, we identify three types of congregation organizational forms and we model the choice of congregation type using a multinomial logit model. We subsequently incorporate correction components into the multilevel model of congregation effects.

Our findings support the existence of congregation effects and, therefore, the importance of social context on individual poverty. We disentangle the role of observed and unobserved heterogeneity at congregation level and we find the following results. *First,* we find that individuals in small

congregations have larger probabilities of experiencing poverty than individuals attending medium-large congregations. This result confirms the idea that individuals with larger networks are able to go beyond their immediate social circle in order to establish contact with external actors and mobilize high quality resources. *Second*, recreational services, increasing social interactions and opportunities to mobilize social resources, decrease the individual probability of experiencing poverty. *Third*, initiatives designed to ensure that new members become integrated into the life of the congregations decrease the risk of poverty. In facts, these initiatives foster cooperation and interaction leading to resource-sharing activities among congregation members. *Forth*, behaviour standards and prohibitions (used to screening out members) increase the individual probability of experiencing poverty. Behaviour standards and prohibitions reduce heterogeneity across members limiting social capital accumulation. They can also enhance intolerance of others precluding individuals from the social networks beyond the congregation. *Fifth*, we find that individual behaviour matters: long-term commitment to congregations and involvement in social groups decrease the probability of experiencing poverty. This is because participation in social groups promotes social interactions and social capital accumulation leading, at the end, to a lower risk of poverty. Time permits to construct social relations and consolidate them. *Sixth*, some unobserved heterogeneity remains across congregations indicating that some individuals are more inclined to escape poverty than other individuals do simply on the basis the congregation they attend.

Our results indicate that, even if there is evidence of sorting of individuals into congregation types by socioeconomic status, the organizational form of the congregations still has a residual effect on individual poverty. In facts, poor people are more likely to select loosely structured congregations, but belonging to loosely structured congregations affects their future probabilities of experience poverty. From one side, recreational services (enhancing social interactions) and follow-up initiatives (fostering integration and cooperation) offered by complex congregations are negatively correlated with the individual probability of experiencing poverty. On the other side, high behavior standards required by some complex congregations are positively associated on individual probability of experiencing poverty. Further analysis should analyze more in depth the interactions of these congregation organizational traits and trying to identify further congregation characteristics impacting on individual poverty.

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Figure 1. Congregation typology

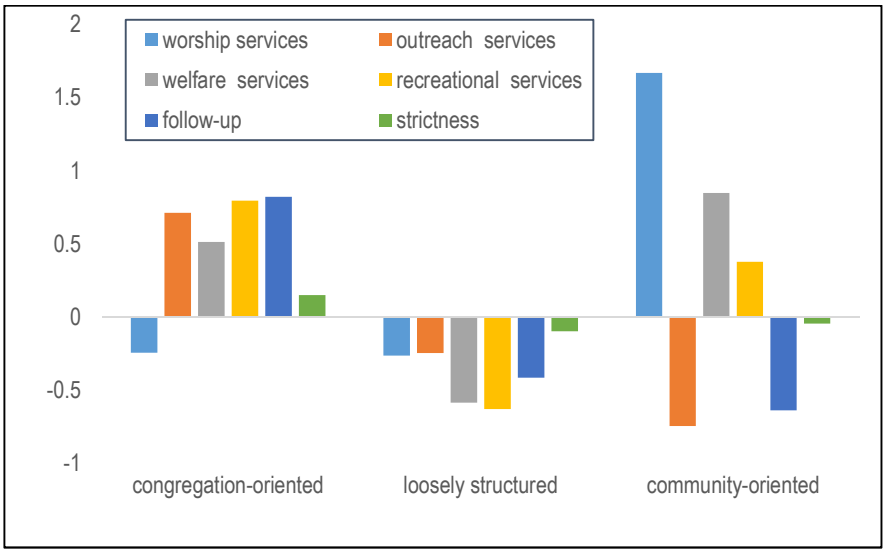

Table 1. Congregations by denomination

	Denomination
Mainline Protestant denominations	American Baptist Churches
	Disciples of Christ
	Episcopal Church
	Lutheran
	Evangelical Lutheran Church in America
	United Methodist Church
	Presbyterian Church USA
	Unitarian
	United Church of Christ
Catholic denomination	Roman Catholic Church
Conservative Protestant denominations	Seventh-day Adventist
	Baptist
	Conservation Baptist Association of Ame
	Free Will Baptist
	National Baptist Convention
	Southern Baptist
	Christian & Missionary Alliances
	Churches of Christ
	Anderson Church of God
	Church of the Nazarene
	Foursquare Gospel
	Lutheran Church, Missouri Synod
	Pentecostal
	Assemblies of God
	Conservative Christian
	Non-denominational Evangelical

Table 2. Descriptive statistics: worshipers (year is 2001)

Worshipers (%)	All	Weekly Worshipers	Occasional Worshipers
Demographics:			
All	100	82.78	17.22
age is less than 25 years	7.24	6.76	9.52
age is 25-64	71.08	69.59	79.1
age is 65+	21.68	23.66	11.37
Female	59.99	60.45	58.00
Have children living at home aged 0-12	20.53	19.44	26.12
ethnic group is White or Caucasian	76.26	77.57	71.28
ethnic group is Black or African American	5.80	5.67	6.51
ethnic group is Hispanic, Latino, or Spanish origin	11.01	10.09	14.64
other ethnic groups (including Asian, Pacific islander and American Native)	6.94	6.67	7.57
Low education (population aged 25+)	56.15	46.91	51.57
High education- Bachelor's and Graduate's degree (population aged 25+)	43.85	43.09	48.43
Married	68.03	69.09	63.44
Active	57.71	55.85	67.41
Born in another country (not USA)	11.43	10.59	14.31
Povety rate	9.77	9.26	11.46
Unemployed rate	3.08	2.90	3.70
Affiliations			
Catholic	24.40	23.96	26.51
Mainline Protestant	35.93	36.23	34.51
Conservative Protestant	39.67	39.81	38.98
Church involvement:			
Attending current church less than 1 year	10.57	8.74	19.35
Attending current church 1-2 years	11.54	10.85	14.91
Attending current church 3-5 years	16.64	16.43	17.67
Attending current church 6-10 years	16.41	16.72	15.10
Attending current church 11-20	17.97	18.62	14.92
Attending current church 20 plus	26.87	28.65	18.05
Involved in small groups	77.68	88.25	36.23
Involved in Sunday school, church school, or Sabbath school	26.13	29.44	11.15
Involved in prayer, discussion, or Bible study groups	22.10	25.57	6.15
Involved in fellowships, clubs, or other social groups	29.45	33.24	11.92
Participation in community service	19.64	21.95	8.94

Table 3. Descriptive statistics: congregations (year is 2001)

Congregation characteristics	
Affiliations	
Catholic	24.62
Mainline Protestant	44.00
Conservative Protestant	31.38
Size:	
% People (children and adults) regularly participating [1-100] -small congregations	18.0
% People (children and adults) regularly participating (100-400]- medium congregation	38.7
% More than 400 people (children and adults) regularly participating - large congregations	43.3
Strictness:	
Strictness index (mean number of prohibitions reported/7) - see note 1	0.32
Strictness index if congregation is small (100 participants or less)	0.37
Strictness index if congregation is large(400 participants or more)	0.28
Congregational programs:	
Number of worship services offered each week	4.69
outreach activities index (mean number of outreach activities reported /14) - see note 2	0.52
outreach activities index if congregation is small (100 participants or less)	0.43
outreach activities index if congregation is large (400 participants or more)	0.53
Follow-up index	0.33
Follow-up index if congregation is small (100 participants or less)	0.31
Follow-up index if congregation is large (400 participants or more)	0.32
welfare services index (mean number of community welfare services reported/16) - see note 3	0.28
welfare services index if congregation is small (100 participants or less)	0.15
welfare services index if congregation is large (400 participants or more)	0.36
recreational services (mean number of community recreational services reported/4) - see note 4	0.40
recreational services if congregation is small (100 participants or less)	0.19
recreational services if congregation is large (400 participants or more)	0.53
Financial situation:	
total congregational budget (TCB) per participant (US$)	973
TCB per participant if congregation is medium-small (<400 participants)	1079
TCB per participant if congregation is lagel (400 participants or more)	839

Note:
1. Seven possible prohibitions: homosexual behavior; unmarried adults living together; drinking alcohol; gambling; prohibitions against members smoking; how much money people give to the congregation; and what people eat
2. 14 possible outreach activities: encouraged people to invite others, established or maintained a website; letters sent to visitors, mailing flyers or newsletters, neighborhood activity, newspaper/magazine ads, worship or public event to bring people in, telephoning visitors, telephone book ads, visiting visitors, recruitment committee, contact people new to the area, email visitors, radio/TV ads, community survey.
3. 16 possible welfare services: emergency relief, counseling/support groups, housing for seniors, other senior programs (not housing), health-related programs, other welfare/service activities, political/justice work, abuse/recovery programs, voter registration, prison ministry, housing for others (not seniors), care for people with disabilities, community organizing, immigrant support services environmental activities, activities for the unemployed.
4. Four possible community services: sporting activities or teams; arts, music, or cultural activities or programs; hobby or craft groups; other social, recreational, or leisure activities

Table 4. Selection model

Multinomial logistic regression		coef.		s.e.
Worship-oriented				
	age is less than 25 years	-0.047		0.026
	age is 65+	-0.050		0.031
	female	-0.011		0.020
	high education	0.203	**	0.021
	married	-0.175	**	0.022
	Have children living at home aged 0-12	0.071	*	0.031
	active	-0.074	**	0.026
	ethnic group is Black or African American	-0.852	**	0.067
	ethnic group is Hispanic, Latino or Spanish origin	1.709	**	0.045
	ethnic group is Asian or others	-0.092		0.054
	born abroad	0.889	**	0.042
	living in poverty	-0.246	**	0.036
	constant	0.331	**	0.033
Service-oriented				
	age is less than 25 years	0.048		0.026
	age is 65+	-0.205	**	0.031
	female	-0.044	*	0.021
	high education	0.291	**	0.021
	married	0.085	**	0.023
	Have children living at home aged 0-12	0.085	**	0.031
	active	-0.188	**	0.026
	ethnic group is Black or African American	0.874	**	0.048
	ethnic group is Hispanic, Latino or Spanish origin	-0.177	**	0.058
	ethnic group is Asian or others	-1.302	**	0.078
	born abroad	-0.088		0.051
	living in poverty	-0.260	**	0.039
	constant	0.278	**	0.034
log-Likehood		-72286.072		
No. Obs		71279		
Pseudo-R2		0.062		

Table 5. Principal component analysis

Correlation	Correction term 1	Correction term 2
Correction term 1	1	
Correction term 2	0.594	1
Correction term 3	-0.929	-0.592

Principal component Analysis	component 1
Correction term 1	0.949
Correction term 2	0.790
Correction term 3	-0.948
Proportion explained variances	80.77%

Table 6. Evaluation of the importance of clustering

The null model			
poverty (t)	3-levels model		
	coef		std err
Constant	1.705	**	0.076
level congregation: σ_a^2	0.588	**	0.064
level denomination: σ_v^2	0.218	**	0.051
icc_congregation	14.4%		
icc_denomination	5.3%		
Log likelihood	-22178		

**p < 0.01, *p < 0.05

Table 7. Estimates: three-level model

	Model 1			Model 2			Model 3		
Dependent variable is poverty	Coef.		S.E.	Coef.		S.E.	Coef.		S.E.
Congregation attributes									
Small congregations: People regularly participating [1-100]	0.540	**	0.133	0.616	**	0.097	0.553	**	0.106
Large congregations: 400+ people regularly participating	-0.326	**	0.090	-0.282	**	0.099	-0.309	**	0.036
Number of worship services offered each week	-0.013	**	0.003	-0.006	*	0.003	-0.003		0.004
outreach activities index	-0.273	*	0.118	0.079		0.204	0.031		0.166
welfare services index	1.370	**	0.255	0.364		0.219	0.907	**	0.257
recreational services index	-0.917	**	0.147	-0.471	**	0.159	-0.838	**	0.084
Follow-up index	-0.088		0.166	-0.224		0.260	-0.470	**	0.141
Strictness index	0.841	**	0.143	0.699	**	0.133	0.849	**	0.147
total congregational budget (TCB) per participant (US$)	-2E-04	**	0.000	-3E-04	**	0.000	-4E-04	**	0.000
Individuals partecipation in the religious life of congregations									
Attending current church less than 1 year									
Attending current church 1-2 years				-0.259	**	0.049	-0.229	**	0.041
Attending current church 3-5 years				-0.391	**	0.089	-0.418	**	0.071
Attending current church 6-10 years				-0.450	**	0.068	-0.467	**	0.073
Attending current church 11-20 years				-0.431	**	0.091	-0.314	**	0.081
Attending current church 20 years or more				-0.541	**	0.085	-0.720	**	0.094
Going to worship services at this congregation weekly or more				0.027		0.038	-0.053		0.048
Involved in Sunday school or church school				-0.067		0.047	-0.060		0.047
Involved in prayer, discussion, or Bible study groups				-0.023		0.049	-0.106		0.067
Involved in fellowships, clubs, or other social groups				-0.184	**	0.039	-0.161	**	0.042
Participation in community service				-0.013		0.054	-0.013		0.054
Individuals characteristics									
age is less than 25 years				1.153	**	0.079			
age is 65+				0.091		0.080			
female				0.318	**	0.042			
high education				-1.046	**	0.059			
married				-1.400	**	0.078			
Have children living at home aged 0-12				0.824	**	0.067			
active				-0.881	**	0.053			
ethinc group is Black or African American				0.177		0.119			
ethinc group is Hispanic, Latino or Spanish origin				0.794	**	0.113			
ethinc group is Asian or others				0.127		0.146			
born abroad				0.917	**	0.103			
Correction factor							0.232	**	0.052
Constant	-2.179	**	0.131	-1.075	**	0.148	-1.398	**	0.102
level congregation: sigma_u squared	0.329	**	0.012	0.211	**	0.030	0.338	**	0.019
level denomination: sigma_u squared	0.097	**	0.016	0.055	**	0.012	0.049	**	0.010
icc_congregation	8.9%			5.9%			9.2%		
icc_denomination	2.6%			1.5%			1.3%		
Pseudo-R2	0.134			0.355			0.164		

**p < 0.01, *p < 0.05; No. individuals: 65780; No. Congregations: 303; No. Denominations: 26