



# SO CLOSE, YET SO FAR AWAY? THE EFFECTS OF CITY SIZE, DENSITY AND GROWTH ON LOCAL CIVIC PARTICIPATION

ANTÓNIO F. TAVARES  
*University of Minho*

JERED B. CARR  
*University of Missouri-Kansas City*

**ABSTRACT:** *Recent studies in the U.S. context have suggested that political participation is a function of the size and concentration of a city's population. Most of this research focuses on the idea that there is an optimal size and concentration of population that favors active political participation in terms of a higher propensity to vote in local elections, contact local officials, and attend community meetings. The conventional argument suggests a negative relationship between city size and political participation that is mitigated to some extent by the deeper social interactions generated by increased population density. We extend this research by also investigating the influence of population growth on the broader concept of civic participation. Civic participation is a multidimensional concept that requires the use of a broad set of indicators. We expand the number of measures to gauge civic participation at the local level by including data on the formation of volunteer associations, volunteer fire brigades and not-for-profit organizations as well as voter turnout. We test the hypotheses derived from extant research using aggregate data collected from Portuguese cities and discuss the implications of our findings for the literature on local civic participation.*

In their 1963 seminal study *Civic Culture: Political Attitudes and Democracy in Five Nations*, Gabriel Almond and Sidney Verba explain how civic culture can contribute to democratic stability by fostering political participation. They describe a complex process of socialization involving social institutions (family, peers, school, work, and the political system itself) that contributes to the development of and participation in the civic culture. Their conclusion that political and civic participation varies across countries raises questions about the generalization of findings from recent studies examining the American context about the factors affecting civic participation.

Empirical research in the U.S. setting often employs socioeconomic status and metropolitan political structures as explanatory factors of political participation, typically measured as voter turnout in local elections (Kelleher & Lowery, 2004; Oliver, 1999). This research is centered

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*Direct correspondence to: A. Tavares, Department of International Relations and Public Administration, School of Economics and Management, University of Minho (Campus de Gualtar), 4710-057 Braga, Portugal. E-mail: atavares@eeg.uminho.pt.*

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on the role of city population levels and differences in the concentration of population within metropolitan areas as potential constraints or facilitators of political participation. Much of this scholarship, however, reflects the structural setting of the political system in the United States and it is not clear that these causal relationships apply to other contexts.

We have three specific objectives for this research. First, we focus on civic participation at the local level by arguing that political participation is just one aspect of a broader set of actions described as civic participation. Rather than simply looking at political participation, as is the convention in this literature, we also include the following measures of local civic participation: the numbers of volunteer associations, volunteer fire brigades, and nonprofit organizations. We offer an explanation for differences in civic engagement across local governments by focusing on the size, density, and growth of city populations in explaining differences in revealed civic participation.

Second, we seek a better understanding of how the size of cities in terms of population affects the civic engagement of the people who live there. Prior findings regarding the causal effect of city size on civic participation are mixed (Carr, 2008; Kelleher & Lowery, 2004; Oliver, 2000; Stein & Dillingham, 2004), confounding efforts to build theory on this topic. We contend this inconsistency is due, at least in part, to the failure of the research to properly examine the mediating effects of population density and population growth on civic participation. Population density may facilitate the creation of dense social networks that stimulate participation. Neighbors in closer geographical proximity are more likely to come into contact, share concerns on common problems, and organize for civic action (Stein & Dillingham, 2004). In contrast, people living in high-growth cities may feel less connection to their neighbors and be less likely to participate in the community. The contingent effects of population density have received some attention in previous research (Carr, 2008; Stein & Dillingham, 2004), but the mediating effects of population growth has been ignored.

Third, our goal is to extend this research beyond the U.S. setting by proposing and testing a general model of civic participation applicable to a wide range of institutional and cultural settings. We use data from Portugal to test the mediating effects of density and city growth upon the relationship between city size and participation, because this country offers a very different setting to examine this topic. In contrast to the highly fragmented system of autonomous governments used by the United States, local governments in Portugal are more dependent on the national government for funding, have greater levels of economic and racial homogeneity, and lack the regional institutions (e.g., counties, special districts, councils of governments, etc.) common in the United States.

The article is organized in five sections. First, we define civic participation as comprised of a broad set of behaviors and criticize the limited use of indicators in the literature addressing the determinants of civic engagement. Next, we review the literature on the effects of city size, density, and population growth on civic political participation. The third section presents the data and methods employed in our analysis, and this is followed by a discussion of the empirical findings in the fourth section. The paper closes with a set of conclusions and a discussion of prospective research.

## **CIVIC PARTICIPATION AS A COLLECTIVE ACTION CONTINUUM**

The classic work by Louis Wirth (1938) was one of the first to underline the role of size and density in the rise of civic organizations. Urban life entails close physical contact but distant social interaction responsible for “the weakening of bonds of kinship, and the declining social significance of the family, the disappearance of the neighborhood, and the undermining of the traditional basis of social solidarity” (p. 21). Moreover,

Being reduced to a stage of virtual impotence as an individual, the urbanite is bound to exert himself by joining with others of similar interest into organized groups to obtain his ends. This results in the enormous multiplication of voluntary organizations directed toward as great a variety of objectives as there are human needs and interests. (Wirth, 1938, p. 22).

Jurisdictions where individuals choose to join volunteer associations, to form nonprofit organizations and/or to participate in electoral and nonelectoral political processes are presumed to display larger success in tackling collective action problems. Although these endeavors cannot be entirely regarded as selfless acts, they nevertheless help to generate responsible citizenship, to promote reciprocal behaviors, and to encourage sentiments of trust among community members. In addition, civic participation is also productive as these activities contribute in varying degrees to the common good (Oakerson, 2004).

Trying to make sense of the conflicting evidence regarding the effect of community heterogeneity on participation, David Campbell (2006) argues that civic and political participation are, in fact, two ends in a collective action continuum. The main goal of political participation is to influence public policy and this frequently entails conflict over policy goals. In contrast, civic participation is inherently nonconflictual (Verba & Nie, 1972). Both forms of participation aim at collective action and require participants to invest resources in the form of information, time, and money to achieve them. An example should clarify this point. If a person wishes to support volunteer fire brigades in a community, there are two ways to achieve this goal. She can either make a donation or vote for a local candidate who promises to support the activity through subsidies or tax expenditures to the local fire brigades. Either way, that person is providing assistance to overcome a collective action problem.

Despite the recognition that civic participation entails a broader set of behaviors, prior research has placed a disproportionate emphasis on electoral and/or political endeavors as indicators of civic participation (see Hiskey & Bowler, 2005; Kelleher & Lowery, 2004; Oliver, 1999, 2000; Stein & Dillingham, 2004). The relevance of this body of work to the study of civic participation is somewhat limited by the measures employed in the analyses. For instance, Oliver (1999, 2000) uses four variables—contact local officials, attend organizational meetings, attend community board meetings, and vote in local elections—that are primarily political in nature, since participation in these activities entails at least a moderate degree of conflict over resources.

Robert Putnam's index of civic involvement includes a more diverse set of components, namely the incidence of cooperatives per capita, membership in mutual aid societies, and the longevity of local associations (Putnam, 1993). Other work recognizes the multifaceted nature of civic participation by including volunteering and charitable giving alongside voter turnout, participation in political meetings, and signing petitions as measures of civic engagement (Aars, Christensen, & Midtbø, 2009; Uslaner & Brown, 2005).

The central argument developed in the next section is that the differences in civic participation across jurisdictions are the consequence of variations in city size, density, population growth, and the way the latter measures mediate the effect of city size. In other words, civic engagement increases because certain demographic features of the community facilitate participation. In order to explore this causal link, we extend the conventional indicators of civic participation employed in the literature and test hypotheses using a broader set of indicators.

## **CITY SIZE, DENSITY, AND CIVIC PARTICIPATION**

The question of optimal city size for the purposes of civic participation has been an issue of debate since ancient Greece. In spite of the fact that we cannot know with certainty the actual population size of the typical Greek polis, it seemed to offer appropriate avenues for political

participation by its citizens. Athens, Pericles argued, was a school for the Grecians, meaning that civic education and political socialization were largely induced by the city's autonomy and self-government (Dahl, 1967).

The discussion of optimal city size in academic debates in political science faded away with the rise of the nation-state (Dahl, 1967). However, this situation has begun to change in recent decades. Over this period, authors have sought to explore the effect of municipal population size on the quality of citizenship (Dagger, 1981), local citizen satisfaction (Cusack, 1997), voter turnout (Kelleher & Lowery, 2004), and political participation in general (Carr, 2008; Oliver, 1999, 2000). Increased city size is generally thought to impede participation because individuals feel that their ability to make a difference in local politics is significantly diminished in larger jurisdictions. Even if they wish to participate, citizens in large cities have less control over local institutions and are less likely to affect outcomes as a result (Dagger, 1981; Dahl, 1967). Indeed, Oliver concludes that "the variations in political participation between the smallest and largest places are often greater than the differences between high school and college graduates, homeowners and renters, or single and married people" (Oliver, 2000, p. 371).

Oliver's findings support the idea that civic participation decreases in more populated jurisdictions. However, the empirical literature on this topic has yet to produce compelling evidence of the complex relationship between population levels and differences in how this population is concentrated in accounting for civic involvement (Carr, 2008). Population concentration may facilitate the creation of dense social networks that stimulate rather than hinder participation. Neighbors in closer geographical proximity are more prone to come into contact, share concerns on common problems, and organize for civic action (Stein & Dillingham, 2004). In addition, proximity also facilitates association and mobilization. Voluntary groups and associations are more successful in captivating the interest of new membership because proximity allows significant savings in communication and information dissemination. In other words, population density may attenuate the negative effect of larger city size on group mobilization and increase the likelihood of civic participation (Carr, 2008).

The contingent effects of variations in population density on the relationship between city size and political participation have been examined in a few studies of participation in U.S. local governments. Stein and Dillingham (2004) find no support for the hypothesis that city size hinders participation in an analysis of eight different indicators of political participation. In fact, the only link they find between population size and measures of local participation is membership in neighborhood organizations and it is positive rather than negative as suggested by previous work. In their study of turnout in city elections, Kelleher and Lowery (2004) reach a similar conclusion, finding no relationship between city size and voter turnout. Both studies argue that Oliver overlooks the contingent effects of other factors on the relationship between population size and political participation, but these analyses fail to produce empirical support for this proposition. The one study that does provide support for the impact of a contingent factor is Carr's (2008) analysis of political participation in local governments in Michigan. He finds that increases in population density reduce the depressing effect of increased city size on the probability that people vote in city elections. Following the work of these scholars, we expect that:

- H1:** Municipalities with larger populations are likely to display lower rates of civic participation;
- H2:** Municipalities with more dense populations are likely to display higher rates of civic participation; and
- H3:** Population density has a positive contingent effect on the relationship between the size of the local population and levels of civic participation.

Another factor that should affect the levels of civic participation is the rate of population growth. Large, fast-growth cities appear to provide the worst setting for civic engagement, since social connections are more difficult to establish and feelings of powerlessness may discourage citizen involvement in collective action (Oliver, 2000). New residents are also less likely to feel a strong psychological attachment to the community, since it takes time to develop social ties and to consider a community as one's own. Fragile social connections constitute an additional obstacle to mobilization. Thus, cities where the influx of new residents is larger are less likely to be favorable grounds for the expansion of altruistic behaviors and cooperation. In fast growing cities, the bystander effect takes hold; given the magnitude of big city problems and the increase in city population, each individual expects that someone else will get involved in civic activities, creating a collective action dilemma for the community as a whole (Oliver, 2001). As a result, the negative relationship between city size and civic participation may be further exacerbated in jurisdictions experiencing significant population growth in the recent past. We expect that:

**H4:** Higher growth jurisdictions are likely to display lower rates of civic participation;

**H5:** Population growth has a negative contingent effect on the relationship between the size of the local population and levels of civic participation.

## DATA AND METHODS

This research investigates these questions through an analysis of civic participation activities in the 278 municipalities of continental Portugal during the years of 2009 and 2010. The analysis uses data aggregated at the municipal level and each of our measures is an indicator of local civic activity. Table 1 provides descriptive statistics for each of the measures used in the analysis.

### Dependent Variables

The study uses four dependent variables to capture different types of civic participation. Political participation is measured by voter turnout in city elections. Although this is a weaker measure of active participation than are attendance at political meetings, political party membership, or contacting public officials, it is by far the most widely employed indicator of political participation for studies where participation is aggregated to the city level (see Kelleher & Lowery, 2004; Wood, 2002). The voter turnout data are from the mayoral elections held simultaneously in all municipalities in 2009.<sup>1</sup> Civic participation in these cities is measured by three count variables intended to capture different dimensions of the concept: the number of nonprofit organizations, the number of local voluntary associations, and the number of volunteer fire brigades. Nonprofit organizations are registered in the national Social Security Institute and include all organizations that provide human and social services such as childcare, nursing homes, home care assistance, youth leisure activities, and care for the homeless. In Portugal, these are typically entrepreneurial nonprofit organizations subject to a nondistribution clause "... that prohibits the distribution of residual earnings to individuals who exercise control over the firm, such as officers, directors, or members" (Hansmann, 1987, p. 28). Furthermore, other authors underline additional common features of nonprofits, including self-government, voluntary activities, and public benefit (Ferris, 1998; Salamon, 1995).

The number of local voluntary associations is available from the Forum for Local Development and Association. Most of these organizations are primarily concerned with the emancipation of the socially excluded (poor, minorities, and immigrant workers) through the recognition of skills, entrepreneurship initiatives, the promotion of active citizenship in Portuguese society, and of

**TABLE 1**

**Descriptive Statistics**

Variable Measures	Mean	Std. Dev.	Min	Max	No Obs
<b>Dependent Variables</b>					
Voter Turnout in City Elections (Percentage) (2009)	65.903	7.523	46.301	82.35	278
Number of Nonprofit Organizations in City (2010)	18.098	33.424	1	472	278
Number of Local Development Associations in City (2010)	0.612	0.966	0	9	278
Number of Volunteer Fire Brigades in City (2010)	1.464	1.161	0	9	278
<b>Independent Variables</b>					
<i>Theoretical Variables</i>					
City Population in 2006 (Log)	9.828	1.096	7.477	13.142	278
City Population Density in 2006 [Sq Kils] (Log)	4.398	1.478	1.738	8.901	278
City Population (Log) × City Population Density (Log)	44.543	19.665	14.067	114.360	278
City Population Growth from 2001–2006 (Percentage)	−0.116	1.111	−2.534	4.271	278
City Population (Log) × City Population Growth	−0.575	10.981	−30.355	46.051	278
<i>Control Variables</i>					
Number of Parish Governments in City	14.522	12.772	1	89	278
City is a District Capital	0.0647	0.247	0	1	278
City is in Metropolitan Area	0.115	0.320	0	1	278
Personal Income Per Capita in City (Log)	9.048	0.163	8.752	9.813	278
Elderly (over 65 years) Population in City (Percentage)	21.752	6.206	9.791	41.72	278
Catholic Weddings in City (Percentage of Total Weddings)	46.308	16.309	0	84	278
Average Margin of Victory (Percentage points) (2001, 2005, 2009)	20.016	10.98	0.953	56.643	278
Foreign-Born Population in City (Log)	5.680	1.728	1.386	10.681	278
City has a Professional Fire Brigade	0.086	0.281	0	1	278

The data for the variable measures are from 2008 unless otherwise indicated.

life. Unlike to nonprofit organizations, local voluntary associations rely primarily on the work of volunteers and donations to accomplish goals.

Finally, we use the number of volunteer fire brigades to capture a third dimension of the civic participation concept. Volunteer fire brigades are the ultimate altruistic organization, because their activities often entail risk to the volunteers in performing the mission of these organizations to combat urban and forest fires. The number of volunteer fire brigades was obtained from the *Administração Local em Números*, a statistical handbook of local administration published by the *Direcção-Geral das Autarquias Locais*.<sup>2</sup> The data for the three civic participation measures are from 2010.<sup>3</sup>

**Theoretical Variables**

In order to investigate the role of the size, growth, and concentration of city population in stimulating civic participation, we include population size, population density in square kilometers, and the rate of population growth over the previous 5 years in the models. Population size and density are in log form to fulfill the normality assumption.<sup>4</sup> The expected signs of the coefficients for the population size and population growth variables are negative, whereas density should be positively related with participation.



## **Control Variables**

The models also include two groups of variables to control for differences in participation due to the effect of variations in the institutional arrangements of the cities and their regions, and differences in the economic and demographic composition of the residents in these cities. The number of parishes in each municipality is expected to be positively associated with civic participation. Parishes operate as breeding grounds of political and civic skills and act as channels that allow citizens to express their views, consult with officials and achieve full participatory status, even more so than in the case of municipal government (Tavares, Rodrigues, Magalhes, & Carr, 2012). Dummy variables are also used to indicate the 18 cities that are district capitals and for the cities belonging to the two metropolitan areas of Lisbon and Porto. Both coefficients are expected to be positive.

We also include several measures of the economic and demographic composition of these cities.<sup>5</sup> The role of economic affluence on political and civic participation at the level of the individual is generally regarded as positive (Almond & Verba, 1963; Huckfeldt, 1979). Empirical work shows that individuals with less access to resources (money, time, and civic skills) are also less likely to participate, both in the U.S. context and elsewhere (Brady, Verba, & Schlozman, 1995; Magalhães, 2001). We control for variations in economic prosperity by employing the log of per capita personal income in the municipality.

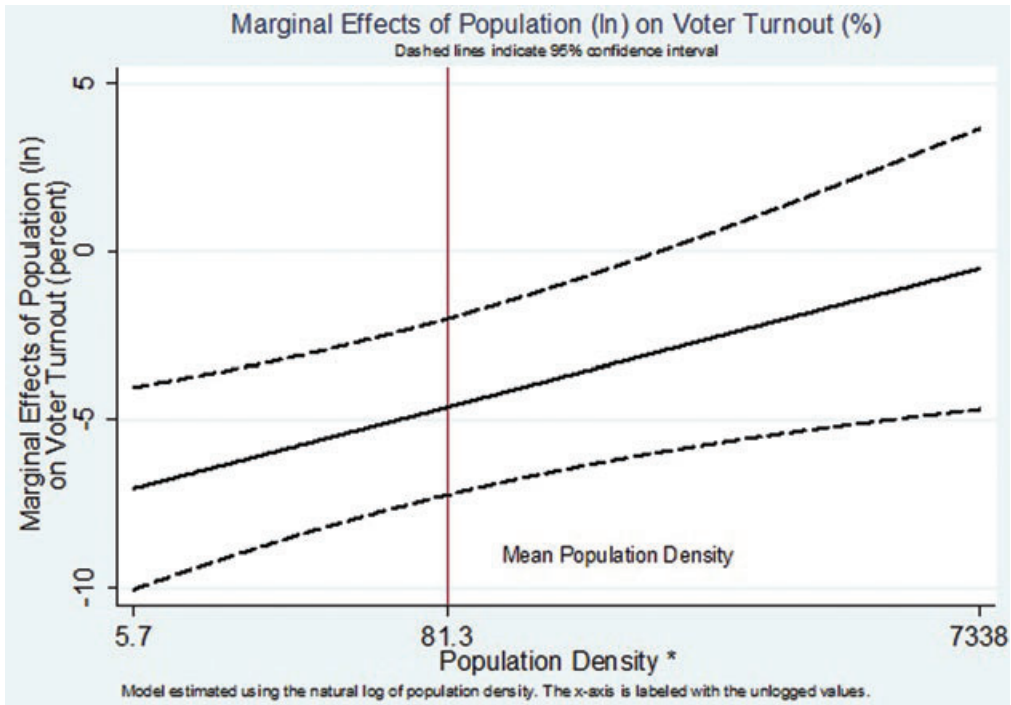
Prior studies of voting behavior in Portugal at the national level reveal that participation levels are lower among the younger and urban population and higher among those engaging in religious practices (predominantly Catholic) (Freire & Magalhães, 2002; Magalhães, 2001). The findings concerning age and religion in Portugal are also consistent with research from other European countries such as Germany, Hungary, and Poland (Viegas & Faria, 2004). The 2011 CIA World Fact Book reports that 85% of the Portuguese population is Roman Catholic and another 9% is self-declared as nonreligious. The remaining religious communities are too small to have an impact. Despite being the overwhelming majority, not all Catholics are engaged in religious practices. We include the proportion of Catholic marriages as a surrogate measure of the engagement in religious practices and the proportion of the elderly population in the municipality. Positive coefficients are expected for both variables.

The models do not include a measure capturing differences in the racial composition of these cities, since Portugal is essentially a racially homogeneous country. However, the size of foreign-born populations is not equally distributed throughout the Portuguese territory and these individuals are likely to have fewer resources available to engage in civic and political participation. Foreign born population living in each municipality is included in natural log form and a negative coefficient is expected.

Finally, we also include a few control variables that are specific to each model. The equation predicting voter turnout includes a measure of margin of victory to control for contested elections. This measure is the average difference in percentage points between the winner and the runner up in each city election in the last three election cycles (2001, 2005, and 2009) to minimize the specific dynamics of the 2009 election. A dummy variable accounting for the presence of a professional fire brigade is included in the equation that predicts the formation of volunteer fire brigades. The variable measuring the proportion of elderly population is omitted from the equations predicting the number of local development associations and the number of volunteer fire brigades, since there is no theoretically compelling argument to include this variable in these models.

## **FINDINGS**

Tables 2 and 3 present the findings of the regression models. Ordinary least squares (OLS) regression is employed in the models estimating voter turnout and the number of nonprofit



**FIGURE 1**  
**Contingent Effects of Different Levels of Population Density on the Relationship Between Population Size and Voter Turnout in City Elections**

organizations. Although the number of nonprofit organizations is a count variable, inspection of its distribution indicated an approximation to the normal distribution. Poisson regression is used to estimate the models examining the number of voluntary associations and volunteer fire brigades. These variables are both counts that are not normally distributed, and thus violate the assumptions of the OLS model.<sup>6</sup> Finally, the voter turnout model is corrected for spatial autocorrelation by estimating the model with clustered standard errors.<sup>7</sup> Errors are clustered by the regional district variable under the assumption that voter turnout is not completely independent of the district in which the city is located. In the remaining models the standard errors are calculated with a Huber/White/sandwich estimator.

We use two sets of models to assess the strength of the modifying effects of population density and city growth on the relationship between the size of the city’s population and the level of civic participation by its residents. The baseline models estimate the marginal effects of changes in the size of city population, population density, and city growth on the four measures of civic participation. We do this by estimating each model without the two interaction terms. Excluding the interaction terms from the four models enables us to assess the nature of the relationship between city size and civic participation, population density and civic participation, and city growth and civic participation without having to make restrictive assumptions about the level of the other measure(s) (Brambor, Clark, & Golder, 2006).<sup>8</sup>

Next, we analyze the findings of the contingent effects models presented in Tables 2 and 3 through a discussion of the plots in Figures 1–8 presenting the marginal effects of changes



TABLE 2

Determinants of Voter Turnout in City Elections and Number of Nonprofit Organizations in City

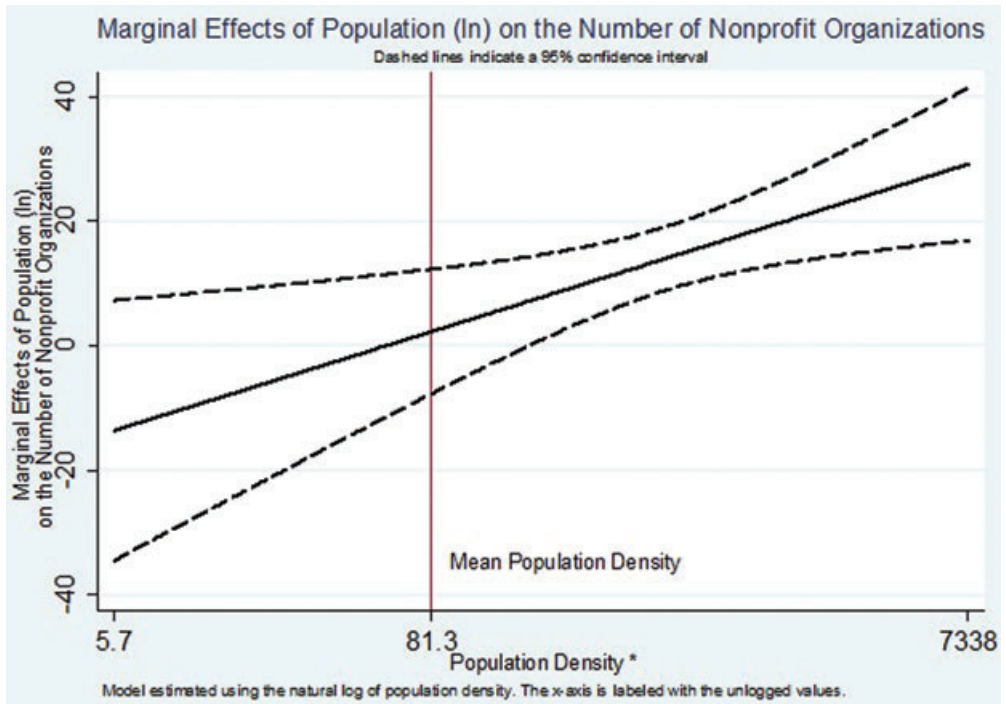
	Voter Turnout Full Model (w/PopSize* Density)	Voter Turnout Full Model (w/PopSize* PopGrowth)	Nonprofit Orgs Base Model	Nonprofit Orgs Full Model (w/PopSize* Density)	Nonprofit Orgs Full Model (w/PopSize* PopGrowth)
<i>Theoretical Variables</i>					
Population (Log)	-4.638 (1.298)***	-8.629 (1.449)***	1.961 (5.723)	-24.009 (14.387)*	3.356 (4.757)
Density (Log)	0.509 (0.531)	-9.051 (2.609)***	8.531 (5.692)	-53.993 (18.291)***	6.734 (4.043)*
Population (Log) × Density (Log)	-	0.911 (0.259)***	-	5.973 (2.224)***	-
Population Growth Rate	-0.381 (0.363)	0.073 (0.417)	-5.485 (2.341)**	-2.285 (1.368)*	54.918 (38.117)
Population (Log) × Pop. Growth	-	0.451 (0.217)**	-	-	-6.070 (4.002)
<i>Control Variables</i>					
Parishes	0.169 (0.042)***	0.154 (0.031)***	0.893 (0.415)**	0.796 (0.351)**	0.828 (0.337)**
District Capital	-0.449 (1.093)	-0.527 (1.068)	34.751 (10.948)***	34.060 (9.700)***	30.249 (8.258)***
Metropolitan Area	0.185 (2.336)	-1.940 (2.368)	8.362 (5.097)*	-10.121 (5.429)*	16.485 (9.238)*
Per Capita Income (Log)	-2.569 (2.454)	-3.729 (2.398)	42.660 (24.826)**	34.995 (21.253)*	34.990 (17.610)**
Percent Elderly	-0.127 (0.132)	-0.239 (0.147)	1.668 (0.900)*	0.984 (0.591)*	1.798 (0.885)**
Foreign Born	-0.743 (0.562)	-0.796 (0.508)	1.621 (1.455)	1.139 (1.258)	1.458 (1.393)
Population (Log)	-0.126 (0.033)**	-0.111 (0.030)**	-	-	-
Margin of Victory	0.112 (0.025)**	0.123 (0.023)**	-0.041 (0.084)	0.031 (0.0677)	-0.036 (0.073)
Percent Weddings					
Catholic					
Constant	134.234 (22.932)**	187.937 (28.924)**	-485.107 (226.227)**	-133.344 (122.423)	-419.835 (165.015)**
Model	OLS	OLS	OLS	OLS	OLS
R <sup>2</sup>	0.63	0.66	0.57	0.63	0.62
F Test	53.31***	32.10***	17.56***	21.03***	13.89***
Obs (Clusters)	278 (18)	278 (18)	278	278	278

Notes: Robust standard errors are in parentheses. \*\*\* p < 0.01; \*\* p < 0.05; \* p < 0.10 for two-tailed significance tests.

**TABLE 3**  
**Determinants of Number of Local Development Organizations and Volunteer Fire Brigades in City**

	Development Orgs		Development Orgs		Fire Brigades		Fire Brigades	
	Development Orgs Base Model	Full Model (w/PopSize* Density)	Full Model (w/PopSize* PopGrowth)	Base Model	Full Model (w/PopSize* Density)	Full Model (w/PopSize* PopGrowth)	Full Model (w/PopSize* PopGrowth)	
<i>Theoretical Variables</i>								
Population (Log)	0.851 (0.237)***	0.586 (0.311)*	0.931 (0.222)***	0.514 (0.106)***	0.234 (0.116)**	0.490 (0.099)***		
Density (Log)	-0.442 (0.104)***	-1.284 (0.582)**	-0.517 (0.099)**	-0.092 (0.043)**	-0.794 (0.215)***	-0.070 (0.040)*		
Population (Log) × Density (Log)	-	0.077 (0.053)	-	-	0.067 (0.021)***	-		
Population Growth Rate	-0.134 (0.120)	-0.054 (0.128)	1.286 (0.757)*	-0.074 (0.037)**	-0.013 (0.045)	-0.468 (0.286)*		
Population (Log) × Pop. Growth	-	-	-0.133 (0.068)*	-	-	0.038 (0.029)		
<i>Control Variables</i>								
Parishes	0.016 (0.009)*	0.013 (0.008)	0.014 (0.008)*	0.003 (0.003)	0.001 (0.003)	0.004 (0.003)		
District Capital	0.071 (0.262)	0.098 (0.263)	-0.003 (0.273)	-0.125 (0.166)	-0.065 (0.160)	-0.083 (0.164)		
Metropolitan Area	-0.124 (0.272)	-0.406 (0.333)	0.019 (0.270)	0.312 (0.123)**	0.113 (0.140)	0.263 (0.129)**		
Per Capita Income (Log)	0.5111 (0.717)	0.352 (0.667)	0.151 (0.695)	0.726 (0.246)**	0.574 (0.236)**	0.772 (0.242)***		
Foreign Born Population (Log)	0.007 (0.124)	-0.025 (0.122)	-0.016 (0.121)	-0.093 (0.050)*	-0.108 (0.049)**	-0.088 (0.050)*		
City Has Fire Department	-	-	-0.016 (0.121)	-0.557 (0.222)**	-0.625 (0.209)***	-0.542 (0.216)**		
Percent Weddings Catholic	-0.006 (0.006)	-0.005 (0.006)	-0.006 (0.007)	-0.001 (0.002)	0.000 (0.002)	0.001 (0.002)		
Constant	-11.795 (6.154)*	-7.281 (6.150)	-8.797 (6.097)	-10.400 (2.139)***	-6.085 (2.373)**	-10.727 (2.083)***		
Model	POISSON	POISSON	POISSON	POISSON	POISSON	POISSON		
Pseudo R <sup>2</sup>	0.16	0.16	0.16	0.12	0.12	0.12		
Wald Chi-Square (df)	79.60 (9)***	86.33 (10)***	84.72 (10)***	193.11 (10)***	279.21 (11)***	212.90 (11)***		
N (Observations)	278	278	278	278	278	278		

Notes: Robust standard errors are in parentheses. \*\*\*p < 0.01; \*\*p < 0.05; \*p < 0.10 for two-tailed significance tests.



**FIGURE 2**

**Contingent Effects of Different Levels of Population Density on the Relationship Between Population Size and the Number of Nonprofit Organizations in the City**

in the population measures. Our approach follows the technique developed by Brambor et al. (2006).<sup>9</sup> The plots illustrate how the marginal effects from changes in the city population vary over a substantively meaningful range of city population density and population growth. The plots illustrate the marginal effect of a one-unit increase in *X* (city population) on *Y* (measure of civic participation) as *Z* (population density or population growth) is increased from its minimum to maximum value. All other continuous variables in the model are held constant at their mean value and dichotomous variables are set at one. The dotted lines in the figures indicate the range of values within a 95% confidence level.

**Baseline Models**

The findings for the four baseline models provide mixed support for the hypotheses we outlined based on the work by Oliver and others who have examined these variables in the past. City population is negatively related to voter turnout as predicted, but it is positively related to the other three measures of participation.<sup>10</sup> Similarly, the coefficients for population density do not indicate the predicted effects in any of the four baseline models. The coefficient for this variable is negative and significant in two of the models (local development organizations and volunteer fire brigades) and positive and statistically insignificant in the other two models. The findings are more consistent in the case of population growth. The coefficient indicates a negative relationship in all four modes of participation, but the coefficient does not reach statistical significance in two of the four models (voter turnout and local development associations).

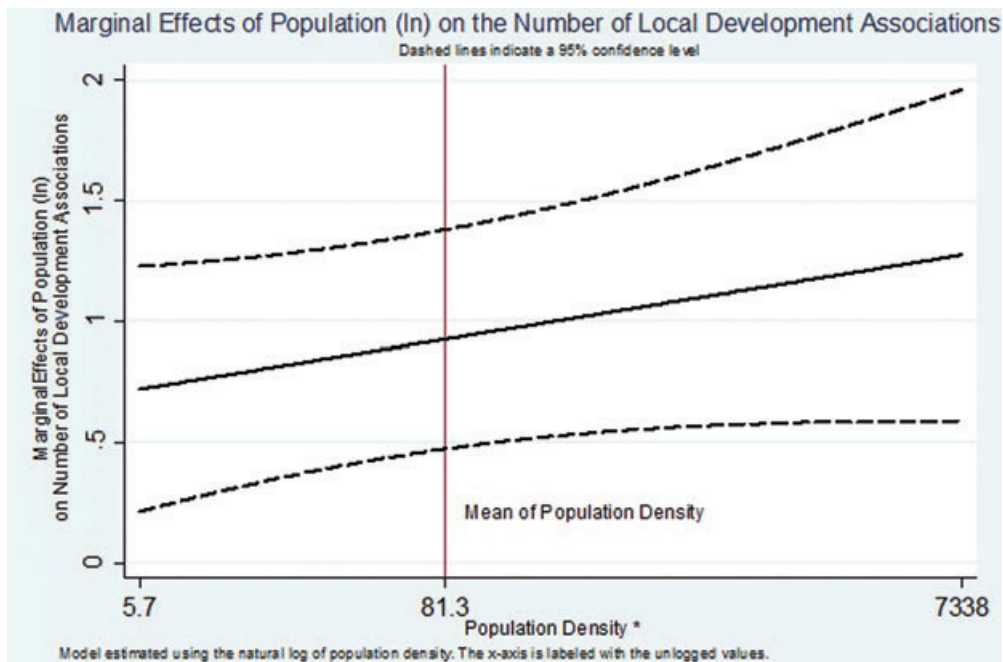


FIGURE 3

**Contingent Effects of Different Levels of Population Density on the Relationship Between City Population and Number of Local Development Organizations in the City**

The measures controlling for the differences in local and regional institutions show findings largely consistent with our predictions. The number of parishes in the city is positively and significantly related to three of the four modes of civic participation. The one exception is voluntary fire brigades; this measure is positive, but statistically insignificant. The evidence for the other two elements of local government structure is more mixed. The measure indicating that the city is a district capital is significant only in the model examining the number of nonprofit organizations in the city. The fact that the city is in a metropolitan area matters in only two of the models. Cities in metropolitan areas have more nonprofit organizations and are more likely to have greater numbers of volunteer fire brigades than the cities outside of the two metropolitan areas.

The demographic control variables display results consistent with the rationale for their inclusion in the equations. Margin of victory is negatively related with voter turnout, indicating that participation is higher in more competitive local elections. The results concerning religious practices in the jurisdiction also confirm prior findings for the Portuguese setting (Freire & Magalhães, 2002; Magalhães, 2001). Per capita personal income is positively related with the civic participation measures, but no discernible effect is found in terms of political participation. As expected, the presence of a professional fire brigade is detrimental to the formation of volunteer fire brigades.

**Contingent Effects Models**

Next, we turn to the models examining the contingent effects of population density on the relationship between city size and these four measures of civic participation. Figures 1–4 depict

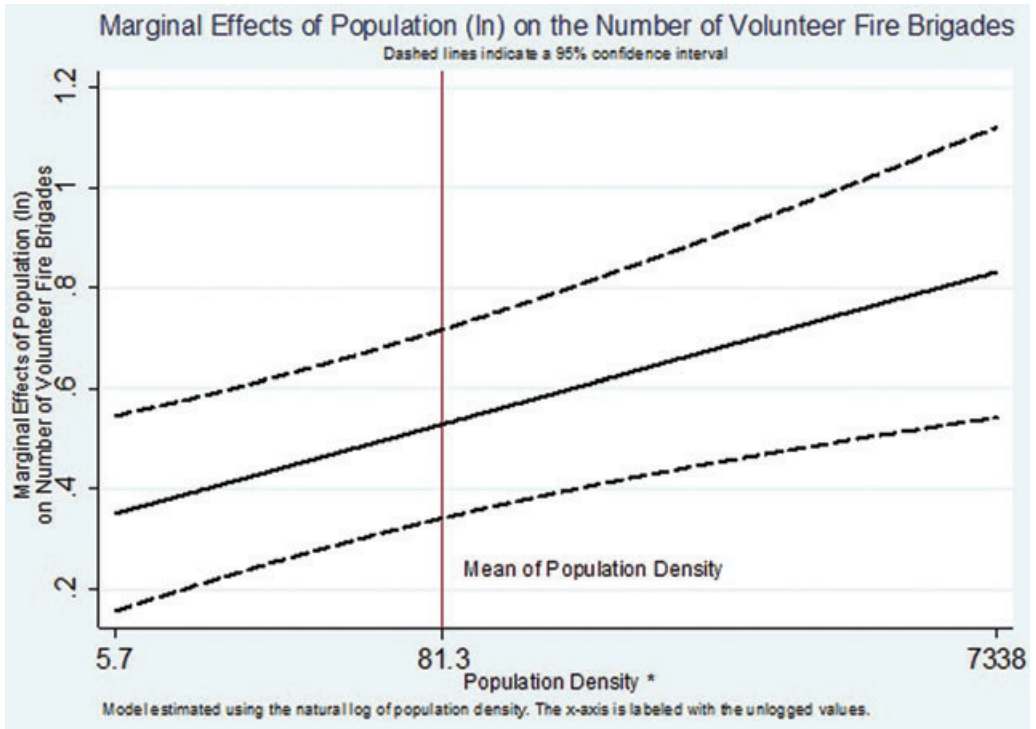


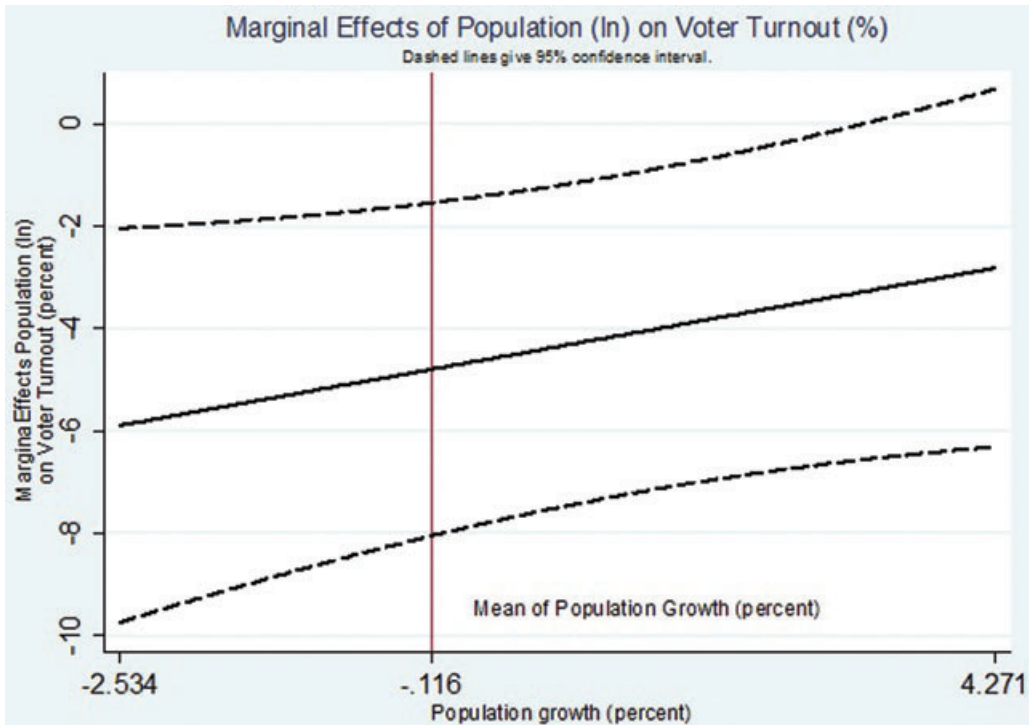
FIGURE 4

**Contingent Effects of Different Levels of Population Density on the Relationship between City Population and Volunteer Fire Brigades in the City**

the relationship between population and the four participation measures at different levels of population density. Figure 1 shows the analysis for voter turnout. This plot confirms that the relationship between city population and voter turnout is dependent upon the level of population density. As predicted, the depressing effect of an increase in city population on voter turnout lessens as population density increases. This is indicated by the upwardly sloping marginal effects curve. The contingent effect is statistically significant up to a density level of about 3,000 people per square kilometer, which is well above the mean density of 81.3 people per square kilometer.

Figure 2 shows the same analysis for the model examining nonprofit organizations. This plot differs in a couple of ways from the analysis of voter turnout. First, the contingent effect of population density is to amplify the positive relationship between city population and the number of nonprofit organizations in the city. Second, this plot shows a contingent effect of density that occurs over a smaller range of population densities than was the case in the turnout model. The contingent effect of population density is statistically significant only at levels of density exceeding approximately 300 people per square kilometer. Once again, this range is far above the mean density in Portuguese cities.

The plots produced for the two count models are shown in Figures 3 and 4. Figure 3 shows the analysis for civic participation measured through the number of local development organizations in the city. Once again, this plot illustrates that the relationship between city population and the number of development organizations is contingent on the level of population density in the city. Increased density amplifies the positive relationship between city population and the number



**FIGURE 5**

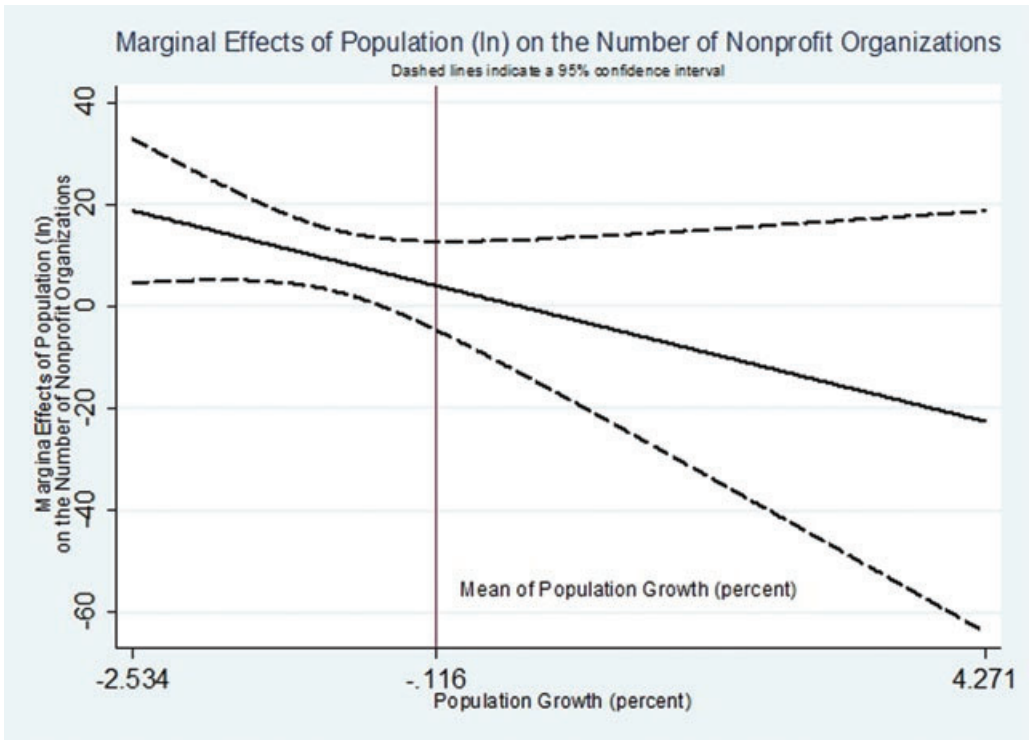
**Contingent Effects of Different Levels of Population Growth on the Relationship Between Population and Voter Turnout**

of development organizations. The contingent relationship is statistically significant across the entire range of population densities.

Figure 4 shows the analysis for civic participation measured through the number of volunteer fire brigades in the city. This plot illustrates that the relationship between city population and the number of volunteer fire brigades is contingent on the level of population density in the city. Once again, increased density amplifies the positive relationship between city population and the number of volunteer fire brigades in the city. This contingent relationship is statistically significant across the entire range of population densities.

Figures 5–8 depict the relationship between population and the four participation measures at different rates of population growth. These plots indicate differential contingent effects of population growth on the measures of political and civic participation. Figure 5 reveals that population growth reduces the negative effect of city size on voter turnout. In other words, the depressing effect of a larger population on voter turnout becomes less pronounced in fast growing cities. This result suggests that city growth affects the relationship between city size and voting in a different manner than it influences the relationship between city size and other forms of civic engagement. It also supports the idea that civic and political participation do not respond in a similar manner to the same set of predictors (Campbell, 2006; Rubenson, 2005; Verba and Nie, 1972). City growth increases the potential for conflict among individuals and interest groups with divergent preferences regarding local policies such as taxation, public education, affordable





**FIGURE 6**

**Contingent Effects of Different Levels of Population Growth on the Relationship Between Population and the Number of Nonprofit Organizations**

housing, and growth management. This clash of interests is likely to result in increased political involvement in environments that are less favorable to civic engagement.

Examination of Figure 6 indicates that city growth has a depressing effect on the relationship between population size and the presence of nonprofit organizations. Cities with positive growth rates may be less favorable environments for the expansion of nonprofit organizations, even though this result is not statistically significant for most of the levels of population growth seen in these cities. These findings are consistent with the place attachment difficulties typically associated with fast-growing jurisdictions. Higher levels of population growth reduce the positive relationship between city size and the number of nonprofits, but over a narrow range of negative population growth. The plot displays a similar reductive effect as growth turns positive, but it is not statistically significant.

The plot in Figure 7 displays the relationship between city size and the number of local development associations mediated by the rate of city growth. The results confirm the proposition that city growth has a depressive effect on the relationship between city size and the presence of these organizations. Local development associations are more prevalent in larger cities, but this effect is mitigated by the rate of city growth.

Finally, Figure 8 shows that the effect of population size upon the number of volunteer fire brigades is contingent on the level of population growth in the city. Contrary to our findings regarding nonprofit organizations and local development associations, this graph shows that

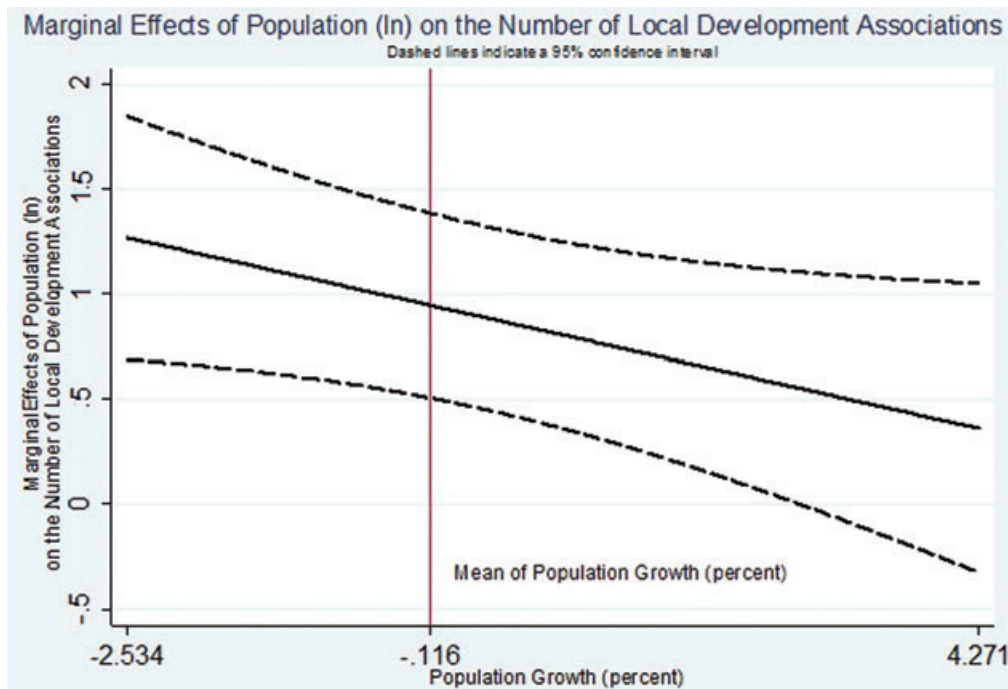


FIGURE 7

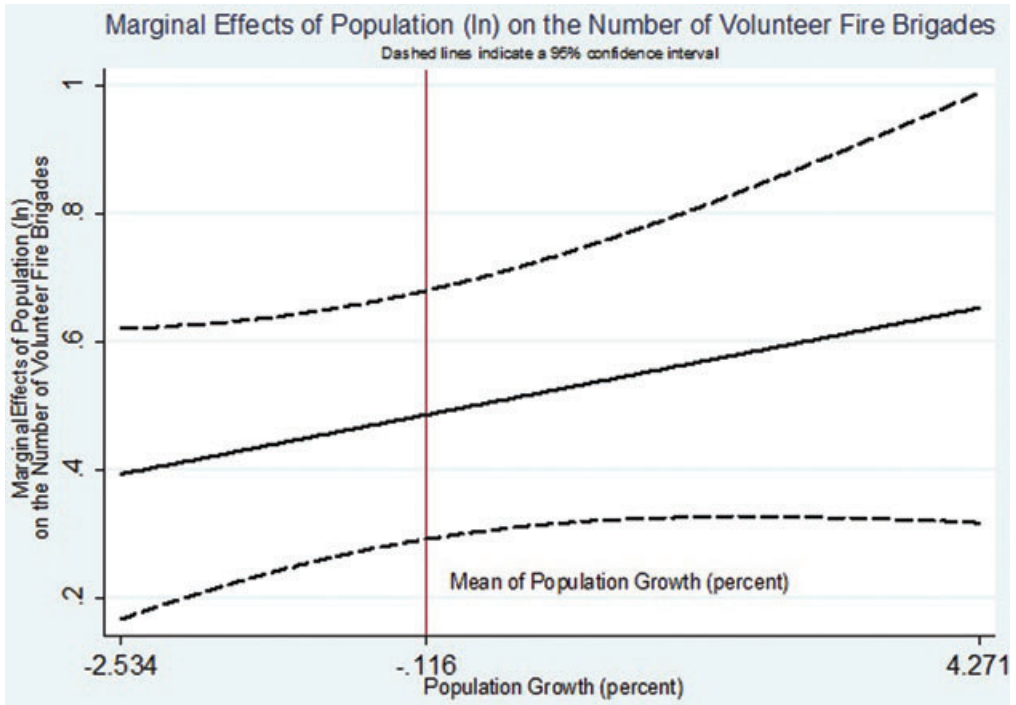
Contingent Effects of Different Levels of Population Growth on the Relationship Between Population and the Number of Local Development Associations

population growth exerts a positive contingent relationship between population size and the formation of volunteer fire brigades.

### CONCLUSIONS AND FUTURE RESEARCH

A decade ago, the publication of Eric Oliver’s work *Democracy in Suburbia* ignited tremendous interest about the effects of city size on civic participation. Since the publication of that groundbreaking work, other scholars have suggested that the influence of city size on participation is more complex than Oliver’s description and is mediated by factors such as population density (Stein & Dillingham, 2004) and the concentration of population within metropolitan areas (Kelleher & Lowery, 2004, 2009). These scholars provided a compelling logic for how these factors mediate the relationship between the size of a city’s population and the extent to which its residents engage in local politics, but they were unable to muster strong empirical support for their propositions. Our research improves upon their efforts in several ways, including the addition of population growth as a mediating variable, examination of a broader set of participation measures, and the use of local governments in Portugal as a context for this analysis.<sup>11</sup>

Our findings advance our understanding of this topic in several important ways. First, they provide strong support for the proposition that the contingent effects of population density and population growth are part of the explanation of local civic participation. We find that when city population and population density are modeled as exerting direct effects on these four measures of civic participation, neither measure is shown to be consistently statistically related to the level



**FIGURE 8**

**Contingent Effects of Different Levels of Population Growth on the Relationship Between Population and the Number of Volunteer Fire Brigades**

of civic engagement in the city. It is not until the model is estimated with population density and population growth as mediating the effects of city size on participation that the importance of these three factors is revealed. Our findings confirm Stein and Dillingham’s (2004) basic contention about the need to examine the contingent effects of population density on city spending. Our finding that density has a positive impact upon the relationship between city size and all our measures of civic participation also suggests that Oliver’s conclusions may be incomplete, since he fails to account for the mitigation effect of density upon the relationship between city size and participation.

Second, our findings contribute to this literature by showing that city growth has both direct and indirect effects upon civic participation. We find that city growth is detrimental to civic engagement, possibly due to reduced psychological attachment and less effective mobilization in fast growing communities (Oliver, 2001). In addition, we also find evidence of a positive indirect effect of city growth, since the negative relationship between city size and voting in local elections is attenuated in fast growing jurisdictions. Again, our work underlines the differences between political and nonpolitical participation. Whereas civic participation is negatively affected by growth because it requires deeper social interactions to take hold, voting is much less dependent on these close ties among residents. In fact, voting may be the first civic activity that a newcomer can engage in, even before he or she develops social networks in the community.

Third, we make substantial progress with this analysis toward the objective of examining measures of civic participation other than political participation. It is clear from this analysis that our political and nonpolitical measures of civic participation respond differently to the same set

of predictors. Our findings are still preliminary, but they suggest a need for further research to better specify the factors that explain levels of nonpolitical civic participation. Civic participation is a multidimensional concept that requires the use of a broad set of indicators. We think these efforts to develop more general models of civic participation are important advances in reframing how scholars conceive of this issue.

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## ENDNOTES

- 1 Because turnout in Portuguese mayoral elections is relatively stable over time, we limit the analysis to a single year. Some of this stability is likely due to the fact that municipal elections are not held concurrently with the elections for other levels of government. A second factor is that these elections are also held separately from elections on local referenda or other issues that may lead to large variations in turnout from one year to the next. The turnout in each city in 2009 is strongly correlated with the turnout in 2005 ( $r = 0.93$ ) and 2001 ( $r = 0.85$ ).
- 2 Descriptive statistics for the volunteer fire brigades variable indicate the presence of a few outliers. We estimated the models without these cases and the findings were largely unchanged.
- 3 Simple correlation coefficients indicate that voter turnout is mildly negatively correlated with all the other measures of civic participation. The number of nonprofit organizations is strongly correlated with both voluntary development organizations (0.59) and volunteer fire brigades (0.45). These two measures are also slightly positively correlated (0.18).
- 4 A few independent variables have highly skewed distributions and logged values of these measures are used in the models.
- 5 Prior work suggests that education is positively associated with the degree of civic and political participation (Aars & Strømsnes, 2011; Brady et al., 1995; Oliver, 2000; Uslander and Brown, 2005). Unfortunately, 34 municipalities do not have usable data for this variable, so these are not included in the analyses that follow. However, models including a measure of the residents' educational level (i.e., percent holding a high school degree) were estimated for each of the dependent variables. In each case, the findings for the key variables were unchanged.
- 6 The models were estimated using stata 11.0. In general, Poisson regression is the appropriate estimation technique to treat event counts when the conditional mean of the distribution equals the conditional variance (equidispersion). When this assumption is not met, negative binomial regression is appropriate. Tests of overdispersion were conducted for both variables. For both measures, the goodness-of-fit  $\chi^2$  test does not allow us to reject the null hypothesis that the data do not follow a Poisson distribution, so Poisson regression is used in the estimation. See Long and Freese (2006) for an excellent discussion of the range of the issues encountered in analyses of count data.
- 7 All models were tested for spatial autocorrelation. We collected data on the location coordinates (latitude and longitude) of each of the 278 municipalities, using its city hall as the reference point. The greatest Euclidian distance between two points is 5.99 so the spatial correlogram reports Moran's I for three distance band intervals (0–2; 2–4; 4–6). We ignore statistically significant values for higher distance bands as there is no theoretical reason to expect spatial autocorrelation between cities highly distant from each other. Examination

of the spatial correlograms reveals that only the voter turnout variable shows a significant peak in the  $z$ -score that indicates spatial autocorrelation at the lower distance band.

- 8 For example, in the following model, the effect of the independent variable  $X$  on the dependent variable  $Y$  depends on the value of a third variable  $Z$ :  $Y = B_0 + B_1X_1 + B_2Z_1 + B_3X_1Z_1 + \dots + \varepsilon$ . Brambor, Clark, & Golder (2006, p. 73) warn: “As a consequence, the coefficient on the constitutive term  $X$  must not be interpreted as the average effect of a change in  $X$  on  $Y$  as it can be in a linear-additive regression model. . . . [T]he coefficient on  $X$  only captures the effect on  $Y$  when  $Z$  is zero. Similarly, it should be obvious that the coefficient on  $Z$  captures the effect of  $Z$  on  $Y$  when  $X$  is zero.”
- 9 For each plot in Figures 1–8 all other continuous variables are held at their mean and dichotomous variables are set to one. All plots are produced using GRINTER, a Stata utility for graphing the marginal effect of an Interacted variable in regression models developed by Frederick Boehmke (<http://www.fredboehmke.net>).
- 10 Kelleher and Lowery (2009) also found a positive relationship between city population and measures of participation other than voter turnout. They found this relationship for registering to vote and membership in civic organizations.
- 11 Kelleher and Lowery (2004) emphasize the importance of differences in the concentration of population across the local governments of the metropolitan area in mediating the effects of city size on voter turnout. They argue that in those regions where residents are concentrated into a few city governments, political participation is higher because these city governments are able to resolve “regional” problems. In regions where the population is dispersed across many local governments, these individual governments are not able to effectively confront the problems people care about and, consequently, people are less likely to participate in local politics. Kelleher and Lowery examine their concentration hypothesis using urban counties as the basic measure of the relevant region. There is no analog to the urban county in the Portuguese system of local government, so we do not include a measure of population concentration in our analysis.

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