

# Legislature Size and Non-Elite Populations

## *Theory and Corroborating Evidence*

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### Abstract

This research tests the association between legislature size and the size of ‘non-elite’ populations in the American states. The theoretical assumption is that larger legislatures will be populated by a more diverse group of members, who will better represent and advocate for non-elites. Data are drawn from three time periods, which captures considerable variation in important variables, and provides a robust test of association between the size of state legislatures and certain sub-populations. The research demonstrates that larger Lower Chambers are marginally associated with a lower percentage of adults without a high school diploma, easily associated with a larger percentage of the states’ poor receiving Medicaid, and also related to smaller state prison populations. This is the case after controlling for demographic and economic factors that also predict the size of these sub-populations. The findings suggest legislature size plays a role in dominant contemporary policy arenas and that there may be societal benefits associated with larger—more diverse—assemblies.

**Keywords:** constituency size, high-school dropouts, legislature size, Medicaid, prison populations, representation, state legislatures

### 1. Introduction

It was a rare occurrence at the Constitutional Convention of 1787 when George Washington made his opinion known. In one instance, when he did, he argued for a larger House of Representatives. The soon to be first president won out and it was settled: There would be one member of the House for every 30 000 citizens instead of one for every 40 000 (Van Doren, 1948).<sup>1</sup>

Washington’s position was motivated by concern that a smaller legislature, and larger constituencies, threatened the rights and interests of the people. Subsequently, the relative size of constituencies at the national level has grown. Some have explored the implications of larger legislatures from an efficiency standpoint (Stigler 1976), while others have paid special attention to variable spending in legislatures of different sizes (Baqir, 2002; Bradbury & Stephenson, 2003). Less attention has been paid to the “body politic” or the effect legislature size has on the well-being of non-elite citizens.

This research addresses this deficit, using data from the American states, to investigate the broad question: *Does the size of legislatures influence the well-being of “non-elite” members of society?*<sup>2</sup> Put more directly, does the size of state legislatures forecast the size of non-elite populations in the United States? What follows is a brief exploration of previous works that have wrestled with the question of legislature size, followed by a test of the descriptive representation of state legislatures in 2010. These serve as the setup for systematic tests, which uncover evidence that legislature size may play a significant role in three distinct policy arenas of considerable

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<sup>1</sup> The final calculation used to determine membership in the House of Representatives was based on one representative for every 33 000 citizens. Today, there are over 700 000 constituents per House member.

<sup>2</sup> The term ‘non-elite’ is used to convey the sterile-objective approach used here to study groups that others may consider ‘criminal’ or ‘disadvantaged’. For example, some might consider residents over 25 years old without a high school diploma, Medicaid recipients, and prison populations deserving of their plight, while others may consider them victims of an unjust society. It is hoped that anyone can see these groups as “non-elite.” Although some very wealthy people go to prison, this research suggests their “elite” status is dealt a blow with incarceration.

contemporary importance in American state politics: Education, Healthcare, and Criminal Justice.

## 2. Previous Work on Legislature and Constituency Size

Constitutional scholars including Dahl and Tufte (1973) and Buchanan and Tullock (1962) provide sound theoretical expectations regarding the relative costs and benefits of legislatures of varying size. There is broad agreement that tradeoffs exist and that legislatures which are either too big or too small cause problems for democracy. For instance, rational choice theory recognizes that larger legislatures reduce 'external costs' (i.e. costs associated with bad decisions) but add to 'decision-making costs' (Buchanan & Tullock 1962, pp. 214-17). Dahl and Tufte write: 'Any increase in the number of constituents [per legislator] makes it more difficult to achieve an accurate match between the views of voters and politicians' (1973, p. 85). Moreover, they recognize this is all the more a problem with 'increased social difference' or population heterogeneity (1973, p. 85). Using the insights of Dahl and Tufte, it is conceivable in the American states, today, that the policy preferences of a relatively small group of legislators might not match up well with the views of non-elites in the state. More specifically, the small group might not possess the requisite empathy to represent non-elite views effectively.<sup>3</sup>

Scholars have noticed, 'one of the peculiar features of the American legislative systems [is] that only those with relatively high occupational status have a good chance of achieving legislative membership' (Squire & Hamm, 2005, p. 131). Others find the typical state legislator is a white-male, well-educated, and well-off financially (Moncrief, Squire, & Jewell, 2000). These works suggest an important demographic gap between the rulers and the ruled and it is not difficult to imagine the gap being larger when legislatures are smaller. Robert Preuhs, for his part, has shown convincingly that the descriptive representation of African Americans (2006) and Latinos/Latinas (2007) in state legislatures can influence the level of government services provided to these groups. Preuhs' argument suggests legislative size may matter, *if* smaller legislatures are found less descriptively representative. To be certain, it is the insight of Hero and Prueh (2013), that institutional arrangements (i.e. the size of a legislature) influence policy decisions. The implication of their research is that underrepresented groups are hurt by policy outcomes emanating from state legislatures that are less diverse.

Still others note that larger constituencies (i.e. smaller legislatures) compromise the quality of the representative/constituent relationship (Lee & Oppenheimer, 1999; Oppenheimer, 1996), which leads to less citizen contact (Hibbing & Alford, 1990), and less popular politicians (Binder, Maltzman, & Sigelman, 1998; *on governors see* King & Cohen, 2005; *on state legislators see* Squire, 1993). The U.S. Senate has been a frequent testing ground for work on constituency size because the number of representatives from each of the 50 American states is constant, but populations fluctuate wildly. Yet, Frederick (2010), uses population change across the decades to test the effect of the relative size of Lower Chambers, and finds that smaller constituencies (relatively larger legislatures) are associated with better representation and more popular members in the House of Representatives. In all, the works of Oppenheimer and Lee and Frederick suggest the representational experience is compromised for constituents represented by smaller legislatures.

This research, in an attempt to unravel a possible causal association between legislature size and the size of non-elite populations, first tests the descriptive representation of groups that might be expected to be either sympathetic or unsympathetic to the plight of non-elite members of society. If the theory just espoused about legislature size and policy outcomes has merit, it would seem a logical first step would be to test for a descriptive representation gap in state legislatures of varying size.

## 3. Legislature Size and Descriptive Representation

Using data from 2010, the most recent Census, Table 1 exhibits bivariate correlations between groups who might be comparatively more or less considerate of the welfare of non-elites. The percentage of a state population and the percentage of a state legislature that fall into the selected groups are differenced (percent in population – percent in state legislature) and the values are correlated with the relative size of state legislatures. Relative size is defined as the total size of the state legislature divided by state population (House + Senate/population). The matching exercise tests whether there is a larger representation gap for women, African Americans, Latinos/Latinas, and professional educators in smaller legislatures; included as a control are people or legislators over 65 years of age who are expected to be less considerate of non-elites. Census Bureau data are used to define each population group and their numbers. To illustrate the matching exercise, in 2010 in the state of Illinois, 15.4

<sup>3</sup> In pondering the pros and cons of larger legislatures scholars have attempted to construct a rule for optimal size. Taagepera (1972) hypothesizes if the effects of all other factors average zero that the size of a legislature should be the cubed root of a population. He and others note that there has been a tendency, in legislatures around the world, for the cubed root of the population to be highly correlated with the actual size of legislatures (Lucas & McDonald, 2000).

percent of the state legislature was African American while this group made up 18 percent of the state's population—a fairly close match. In Oklahoma, on the other hand, Latinos/Latinas held about one percent of state legislative seats in 2010, but made up nearly nine percent of the state's population. The question becomes: Do the larger gaps in descriptive representation correlate with the size of state legislatures?

Table 1. Descriptive representation of state legislatures: 2010

Representation Gap <sup>a</sup>	Legislature Size/Population Size
Women	-.22 <sup>t</sup>
African Americans	-.21 <sup>t</sup>
Latinos/Latinas	-.57 ***
Professional Educators	-.52 ***
Pop. 65+ Years Old	.45 ***
N = 50	

\*\*\*  $p < .001$ ; <sup>t</sup>  $p < .10$

<sup>a</sup> A negative association suggests a larger representation gap occurs in smaller state legislatures. A positive correlation indicates overrepresentation of a particular group, or a smaller gap, in smaller legislatures.

From Table 1 we learn, in 2010, that women and African Americans were marginally less likely to be represented in smaller legislatures ( $p < .10$ ) and that Latinos/Latinas and professional educators are clearly underrepresented in smaller state legislatures ( $p < .001$ ). The only group to be over-represented in smaller state legislatures are people over 65 years old, a group arguably less progressive in their attitudes toward the non-elites studied here (see Day, 1990 who finds older Americans are less likely to support government welfare programs, even in the form of old-age assistance). In sum, when state legislatures are smaller, the four groups believed to be more concerned with the condition of non-elites are under-represented and the one group arguably less concerned with the plight of non-elites is over-represented. This preliminary test is, of course, not the whole story. But, the demographic matching exercise arguably is an essential first step in establishing a pivotal link between legislature size and the subsequent size of non-elite populations. If the size of state legislatures is related to the size of non-elite populations, the demographic miss-match uncovered here might be important part of the story.

#### 4. Legislature Size and Non-Elite Populations

Following the dictum expressed by Montana's Governor Brian Schweitzer, that the primary business of state governments is to 'educate, medicate, and incarcerate',<sup>4</sup> this research checks the association between the size of state legislative chambers and the percentage of a state's citizens over 25 years old without a high school diploma, the percentage of a state's poor who receive health insurance through the Medicaid program, and the percentage of state residents residing in jails. If larger legislatures are populated by individuals who are more likely to empathize with non-elites, and try to improve their social standing, size should be negatively related to residents *without* a high school diploma, positively linked to Medicaid recipients, and negatively associated with incarceration rates.

In this first attempt to isolate an association between the size of state legislatures and the size of certain non-elite populations, and to ascertain the plausibility of a causal relationship, the research begins by conducting two brief case studies. Instances when state legislatures, in contemporary times, fluctuated in size. First, is the decline in size of the state legislature, which took place in Rhode Island early in the 2000s and the second is an increase in the size of the New Jersey state legislature in the 1970s. A comprehensive historical overview of policy outcomes that occur when legislatures have either shrunk or increased in size is beyond the scope of this initial inquiry; however, it is possible to observe some congruency using the two cases.

When the Rhode Island legislature became smaller in 2002—the Lower Chamber went from 100 to 75 and the *Senate* from 50 to 38—the state prison population grew. Controlling for state population growth and considering the seven years before (1995-2001) and the seven years after (2003-2009) the reduction in the size of the state

4 "States Set Big Spending Plans As Washington Preaches Austerity." Wall Street Journal February 24, 2007 <http://online.wsj.com/article/SB117226890441117724.html> (last accessed June 11, 2014).

legislature, there is a statistically significant increase in the state prison population ( $t = 2.09$ ;  $p < .05$  one-tailed test).<sup>5</sup> Moreover, it can be noted, during 2003, the first legislative session after Rhode Island's state legislature got smaller, new laws were passed providing for stiffer apprehension and holding policies for people who failed to appear in court after receiving a summons (RI - Chapter 122, 2003). A second law was passed reducing the amount of back child support that would be grounds for imprisonment (RI - Chapter 367, 2003).<sup>6</sup> Whether these policy changes made a measureable difference in the state prison population is unknown. However, and importantly, a thorough examination of laws passed in Rhode Island over a four year period after the legislature got smaller (2003 to 2006) uncovered no new statutes which made the state more lenient on lawbreakers or the state prison population (e.g. early release programs).<sup>7</sup>

Second, when the New Jersey state legislature grew in size in the late 1960s and early 1970s, from 81 to 120 members (both chambers combined), the state Medicaid program took off. The health insurance program for the poor was created by the national government in 1965 and when the New Jersey state legislature was smaller, the state was considered a laggard in the adoption of the program. Indeed there was no state participation prior to 1970. Then, in the immediate aftermath of the legislature growing in size in the early 1970s new policies were passed that led to nearly a tripling of state Medicaid spending (Grimaldi, 1975, p. 509). A scholar who studied the policy change argues the funding swell was due to 'increases in utilization and the *number of eligible persons* rather than because of price increases' (Grimaldi, 1975, p. 513, italics not in the original). Again, there is no unequivocal proof that the size of the legislature mattered. Yet, a sincere effort to uncover contradicting evidence in New Jersey, which would support a null hypothesis, was unfruitful. Instead, additional anecdotal evidence was uncovered to support the contention that *new members*, arriving after the legislature increased in size, may have made a difference in terms of Medicaid generosity.

### 5. Systematic Testing of the Relationship between Legislature Size and Non-Elite Populations

The unit of analysis in all tests which follow will be the American states. Tests are conducted using data from the three most current Census enumerations (1990, 2000, and 2010). The application of multiple time points provides additional variance for all variables in the models, including legislature size,<sup>8</sup> and arguably produces a more robust assessment of hypothesized relationships. The testing uses both the size of the state House and the size of the state Senate in the same models. Nebraska's unicameral legislature causes it to be excluded from the analysis resulting in a sample size of 147 (49 states \* 3 time periods).

The key explanatory variables are the *Size of State House* and the *Size of State Senate*. There is no strong expectation that the size of one chamber will matter more than the other. However, if there is any truth to the Lower Chamber being the 'People's House' then we might expect the *Size of State House* to be more consequential for non-elites. In the testing it will be necessary to control for the *Size of State Population* in every model because the most industrialized states and the most populous states have attracted the largest migrant populations (e.g., African Americans from the South during the Great Migration and others from all over the world in various time periods) who could easily land in the categorical non-elite groups studied here. A second key control variable, used in all models, will be *State Liberalism*, operationalized as the Democratic Party vote for president in each state during the elections that fall closest to the census time points.<sup>9</sup>

As noted, three distinct dependent variables are used to better determine the relationship between legislature size and non-elite populations. Results are reported based on the full sample ( $n = 147$ ), but also with the largest legislature (New Hampshire) omitted. The New Hampshire House of Representatives has 400 members; nearly twice as many as the next largest Lower House, Pennsylvania, which has 203. The median size of the Lower Chamber in the 49 states is 100; one-fourth the size of New Hampshire. Pindyck and Rubinfeld (1998, p. 7) argue, in the presence of outliers, it is important 'to recalculate the least-squares line with the outlier removed' and report 'both the original and the new least-squares slopes and intercepts', which will help determine the

<sup>5</sup> Data on annual state prison populations obtained from the U.S. Census Bureau.

<sup>6</sup> Rhode Island laws can be accessed at <http://webserver.rilin.state.ri.us/legislation/> (last accessed July 15, 2015).

<sup>7</sup> Due to budget constrains in recent years, the state of Rhode Island has passed some prison liberalizing legislation, particularly, since 2010. <http://www.doc.ri.gov/administration/planning/docs/POP%20report76-present%202011.pdf> (last accessed July 15, 2015).

<sup>8</sup> New York, North Dakota (twice), Rhode Island, and Wyoming have each changed, marginally, the size of their state legislature since 1990.

<sup>9</sup> The research uses an average of the 1988 and 1992 Democratic Party presidential vote in each state as a predictor of 1990 dependent variable values, the 2000 Democratic Party vote in each state is used for 2000, and the 2008 Democratic Party vote is used for 2010. The relationship is also tested with an indicator of state citizen ideology developed by Berry, Ringquist, Fording, and Hanson (1998). The measure we use correlates with the Berry et al. measure at  $r = .96$ ;  $p < .001$  and there is no difference in any of the findings when the alternative measure is employed.

sensitivity of results to the presence of outliers. The following sections provide additional details about model specification for each of the three dependent variables.

### 5.1 Educate

Data on the percentage of state residents over the age of 25 without a high school diploma are obtained from the U.S. Census Bureau. Considering all cases, the state with the lowest value is Wyoming in 2010 (8.3 percent) and the highest percentage of residents without a high school diploma occurs in South Carolina in 2000 (50.6 percent). The average value for all 50 states, across the three time periods, is 22.2 percent with a standard deviation of 9.3 percent.

The size of state populations and state liberalism are key control variables, as noted. Considering the size of the state population a positive relationship is expected. However, expectations regarding state liberalism and graduation rates are somewhat mixed. It is possible that more liberal states, with a stronger commitment to spending, might have better education results. Alternatively, it is conceivable that less urban states, with more conservative Republican voters, will associate with fewer dropouts because rural schools perform at higher levels, due in part to lower truancy rates (Green & Carl, 2000).<sup>10</sup> Moreover, support for better education outcomes are offered by politicians of all stripes and are valued by the vast majority of citizens. Even if more liberal states spend more in an attempt to increase graduation rates, this consideration is likely to be picked up by one of the other control variables in the model (*Per Pupil Expenditures*). In the end, it is hypothesized that there will be a positive association between State Liberalism and the number of state residents over 25 years of age without a high school diploma.

The research also controls for state Per Pupil Expenditures, along with the *Percent Unemployed*, and *Southern* states. Per Pupil Expenditures may be a surrogate for state wealth and the antecedent condition of wealth might be the “true” causal agent;<sup>11</sup> nonetheless, some measure of a financial commitment seems particularly important. It can be noted that Per Pupil Expenditures and the education variable are highly correlated ( $r = -.55; p < .001$ ).

Likewise, the Percent Unemployment should relate negatively with the dependent variable, but again, the causal argument is compromised. In this instance, there is the possibility of two-way causation. On the one hand, students, in the aggregate, may stay in school if job prospects are dim, which suggests higher unemployment will reduce educational attainment. Just as likely, higher high school graduation rates will result in a better educated state population capable of obtaining and holding a job. What is known is that states like North Dakota which have lower unemployment (4.3 percent in 2010) also have more people graduating high school (89.6 percent in 2010), while states like South Carolina have relatively high unemployment (11.7 percent in 2010) and fewer residents with a diploma (83.2 percent in 2010). Scholars have documented that unemployment and high school graduation rates run together (Wood & Theobald, 2003).

Last, the models assess a dummy variable for the South scored ‘1’ for the eleven states of the former Confederacy and ‘0’ otherwise. Morris and Monroe (2009) argue that a major explanation for the low graduation rates of African Americans and others in the United States has to do with the cultural legacy born of slavery in the South. The authors demonstrate how and why the South is critical to understanding the educational achievement gap (*see also* Fitzpatrick and Yoel 1992).

### 5.2 Medicate

The second dependent variable is the percentage of individuals living below the poverty line who receive Medicaid or government subsidized healthcare. The state with the lowest percentage is Nevada in 1990 (38.3 percent) and the highest value occurs in New Hampshire in 2000 (272.2 percent). Using the logic of this research, the New Hampshire state legislature, in 2000, is deemed to be more considerate of the healthcare needs of poorer state residents than the Nevada state legislature, in 1990. But, more importantly, this research looks to uncover any relationship between healthcare empathy and the size of the state legislature. We already know New Hampshire’s Lower Chamber is very large. Given the state has the high value on the dependent variable it will be important to run the test with and without New Hampshire included in the model.

The average value on the Medicaid variable, across the three decades, is 113.8 percent with a standard deviation of 43.3 percent. Values in excess of 100 percent suggest the state provides Medicaid health insurance to more people than those living below the federally established poverty line. This occurs because many states provide

<sup>10</sup> Rumberger and Thomas (2000) find that the relative poorer performance of urban schools can be accounted for by lower family socio-economic status and higher rates of non-attendance.

<sup>11</sup> For alternative takes on this question see Downes (1996) who finds a relationship with education achievement and Sutton and Soderstrom (1999) who do not.

Medicaid to people using a more generous standard, and because children are often targeted for Medicaid healthcare benefits even if their family does not live in poverty. Control variables in these models include the Size of the State Population, State Liberalism, *State-Per Capita Income*, and the *Percent White Population* (non-Hispanic).

A negative association is expected between the size of the state population and Medicaid generosity and a positive relationship is anticipated with the indicator of State Liberalism. State Per-Capita Income is included in the model because states with wealthier citizens are expected to have more fiscal capacity, which should translate into greater government healthcare generosity. The Percent White Population is included as a surrogate for the racial/ethnic homogeneity of state residents. Scholars have found that population diversity depresses a commitment to means-tested welfare programs (Luttmer, 2001) and others have found that state welfare policies are shaped 'by the racial composition of families who rely on program benefits' (Soss, Schram, Vartanian, & O'Brien, 2001, p. 378; *see also* Larimer, 2005; Preuhs, 2007).

### 5.3 Incarcerate

The third dependent variable is the percentage of state citizens who are in jail. Considering all cases, the state with the lowest percentage is Minnesota in 1990 (.073 percent) and the highest percentage belongs to Delaware in 2000 (.883 percent). The average value across the three decades is .369 percent with a standard deviation of .168 percent. The models, again, control for the Size of State Population and State Liberalism. States with larger populations are expected to imprison more because these states have more unsettled residents. Liberal states ought to imprison a lower percentage, based on the supposition they will be less likely to accept mandatory sentencing laws and more likely to embrace alternative sentencing programs and policies. Additional controls include *Relative Prison Expenditures*, the *Percent African American Population*, and the *Population over 25 without a High School Diploma*. Considering the fiscal commitment to prisons, the total dollars spent on state prisons in each state during each of the three years analyzed is used and divided by the state population in the same year. In effect, this creates a measure of per capita prison expenditures. A positive association between money spent and prison populations is expected (bivariate correlation,  $r = .42$ ;  $p < .05$ ).

The Percent African American Population is included—and a positive relationship with incarceration rates is expected. Researchers have long noted the over-representation of African Americans in U.S. prison populations (Higginbotham, 1996), due largely to inequality in incarceration policies (Pettit & Western, 2004). Last, following Pettit and Western (2004), we control for the population over 25 without a high school diploma. More state residents without a high school diploma should associate positively with state prison populations.

Since data in all models are arrayed over time (three census years) and across sections (American states), Generalized Least Squares (GLS) regression models are used. GLS models account for the unequal variability of the dependent variable (Gujarati, 2003, p. 362) and also give 'more weight to observations that are closely clustered around their (population) mean than to those that are widely scattered about' (Gujarati 2003, p. 364). Problems such as autocorrelation and heteroskedasticity encountered when data is both time-series and cross-sectional are minimized with a GLS model specification (Beck & Katz, 1995). Finally, robust standard errors, clustered by state, are used to further address intra-group correlation of error terms or biased residuals. Footnotes to the Tables explain the results of diagnostic tests that led to other specific modeling decisions.

## 6. Results

Table 2 exhibits the results of the test of state educational outcomes. Although the size of each legislative chamber produces negative coefficients in Model 1, which includes all states except Nebraska and its unicameral legislature, it is the size of the House of Representatives that returns a statistically significant association ( $p < .01$ ). It must be noted, however, that this relationship is weakened when New Hampshire is removed from the analysis. It seems New Hampshire's very large Lower Chamber and higher graduation rates are, in part, responsible for the results reported in Model 1. However, it is not difficult to imagine that the larger New Hampshire legislature might cause more constituent contact and/or better demographic representation in a manner that aids high school graduation rates. If this were the case the state should not be left out of the analysis. Importantly, even with New Hampshire excluded the size of the Lower Chamber and graduation rates are still marginally, statistically, related ( $p < .10$  one-tailed test).

Table 2. State legislature size and percent of the population over 25 years old without a high school diploma: 1990, 2000, 2010

*Model: Random-Effects Generalized Least Squares Regression*<sup>a</sup>

<i>Key Explanatory Variable</i>	Exp. Sign	Model 1	Model 2 (without NH)
		Coefficient (robust s.e.)	Coefficient (robust s.e.)
Size of State House	-	-.015 ** (.006)	-.024 † (.017)
Size of State Senate	-	-.014 (.071)	.003 (.089)
<i>Key Control Variables</i>			
Size of State Population	+	2.37 x 10 <sup>-7</sup> * (1.06 x 10 <sup>-7</sup> )	2.43 x 10 <sup>-7</sup> * (1.10 x 10 <sup>-7</sup> )
State Liberalism	+	.18 † (.14)	.18 † (.11)
<i>Other Control Variables</i>			
Per Pupil Expenditures	-	-.0013 *** (.0003)	-.0013 *** (.0003)
% Unemployed	-	-1.56 *** (.32)	-1.57 *** (.33)
South	+	7.92 *** (1.87)	8.16 *** (1.79)
Constant		32.03 *** (5.52)	31.88 ** (5.52)
F-statistic		289.27 ***	264.84 ***
R <sup>2</sup> (overall)		.51	.50
n		147	144

\*\*\*  $p < .001$ ; \*\*  $p < .01$ ; \*  $p < .05$ ; †  $p < .10$  (one-tailed tests)

<sup>a</sup> A Breusch-Pagen Lagrange test for heteroskedasticity suggests that one must accept the null and conclude a Random-Effects model is necessary and that Ordinary Least Squares (OLS) should not be used. Moreover, following an OLS model run a Cook-Weisberg test for heteroskedasticity returns a Chi<sup>2</sup> value of 2.74 ( $p < .10$ ), suggesting that one should probably reject the null hypothesis of constant variance of residuals.

All other variables in the first two models perform as expected, although state liberalism is only weakly linked, statistically ( $p < .10$  one-tailed test). Per pupil expenditures and lower unemployment easily predict higher state educational achievement and the South performs markedly worse. Consistent findings regarding the control variables lend construct validity to the overall analysis. An interpretation of the coefficient from Model 1, representing the size of the state House, suggests an increase in 10 state legislators, in any state, is associated with about a 1.5 percent drop in state residents without a high school diploma, on average. An outcome which would, generally, be preferred by state residents.

Table 3 exhibits the analysis of state Medicaid recipients. Considering the two key control variables we learn more populous states have been less generous and more liberal states more generous, on average, as expected. Regarding legislature size, again, it is the Lower Chamber that seems to matter. The test of the size of state Senates actually returns negative coefficients, but the standard errors suggest one must accept the null hypothesis of no relationship. Considering the substantive significance of the size of the Lower Chamber one learns an increase in 10 state representatives, in any state, is associated with a 1.4 (Model 3) or 1.2 (Model 4) increase in the percentage of state residents living below the federally established poverty line who receive Medicaid health benefits, on average, all else being equal.

Table 3. State legislature size and percent of state residents living below the poverty line receiving medicaid: 1990, 2000, 2010<sup>a</sup>*Model: Random-Effects Generalized Least Squares Regression<sup>b</sup>*

		Model 3	Model 4 <sup>c</sup> (without NH)
<i>Key Explanatory Variable</i>	Exp. Sign	Coefficient (robust s.e.)	Coefficient (robust s.e.)
Size of State House	+	.14 *** (.02)	.12 * (.06)
Size of State Senate	+	-.19 (.21)	-.14 (.24)
<i>Key Control Variables</i>			
Size of State Population	-	-1.15 x 10 <sup>-6</sup> ** (4.61 x 10 <sup>-7</sup> )	-1.12 x 10 <sup>-6</sup> ** (4.38 x 10 <sup>-7</sup> )
State Liberalism	+	1.17 *** (.39)	1.14 *** (.35)
<i>Other Control Variables</i>			
Per-Capita State Income	+	.003 *** (.0003)	.003 *** (.0003)
Percent White Population	+	.64 * (.29)	.61 * (.29)
Constant		-79.23 ** (29.77)	-73.25 ** (28.73)
Wald Chi <sup>2</sup>		401.53 ***	414.74 ***
R <sup>2</sup> (overall)		.65	.64
n		147	144

\*\*\*  $p < .001$ ; \*\*  $p < .01$ ; \*  $p < .05$  (one-tailed tests)

<sup>a</sup> The value for the dependent variable in Arizona, in 1990, is missing. The average proportional change from 1990 to 2000 is calculated for the remaining 49 states and the Arizona value for 2000 is multiplied by this value to obtain an approximation of Arizona's value for 1990.

<sup>b</sup> A Breusch-Pagen Lagrange test for heteroskedasticity suggests that one can reject the null and conclude that a Random-Effects model is not necessary and that Ordinary Least Squares (OLS) may be used. However, following an OLS model run a Cook-Weisberg test for heteroskedasticity returns a Chi<sup>2</sup> value of 2.65 ( $p < .11$ ), suggesting that one can only marginally accept the null hypothesis of constant variance of residuals. Because nearly the same results are obtained whether one uses OLS or a Random-Effects model, the decision is made to opt for the later for the purpose of symmetry with other models reported in the paper.

In the Medicaid analysis, it can be noted the relationship between the size of the Lower House and non-elites is influenced by New Hampshire. Although the relationship is statistically significant with or without New Hampshire included in the analysis, the size of the association grows with New Hampshire in the analysis. The state with the largest state legislature led the nation in Medicaid generosity in both 2000 and 2010 (it was only 32<sup>nd</sup> in 1990). Pertinent to this research is whether the larger state legislature in New Hampshire can account for the state's relative Medicaid generosity in recent years. This question will be difficult to answer with any certainty, however, it is known that New Hampshire state legislators are paid only \$100 per year for their service and only about 53 percent of state legislators possess a bachelor's degree or better.<sup>12</sup> Given this, it is not difficult to imagine legislators in the state being able to better identify with the plight of the poor and with the need for health insurance, especially insurance for children. If this were the case, and New Hampshire state legislators are

<sup>12</sup> Data on legislator educational backgrounds can be accessed at <http://chronicle.com/article/How-Educated-Is-Your/127845/> (last accessed July 15, 2015).



more empathetic, it suggests the state should be included in the analysis. In other words, there may be real-world conditions that explain the state's status, which would mean in "truth" it is not an outlying observation.

Table 4 depicts results of the relationship between state legislature size and state residents in prison. All control variables are statistically related in the hypothesized correct manner. And now, the size of both chambers seems to matter. Larger legislative chambers associate with smaller state prison populations across the board. Intuitively, it is not difficult to image smaller, more elite, state legislatures being less willing to consider alternative sentencing policies and more willing to "lock 'em up." Likewise, it seems reasonable that a larger, more diverse, legislature might be more willing to consider early release and other such programs intended to reduce prison overcrowding. If these suppositions are accurate, what we have uncovered is a true causal link between the size of state legislatures and the size of the state body politic that resides in jail.

It must be noted, again, that with New Hampshire out of the picture (Model 6) the relationship attenuates some, but is still easily statistically significant. Interestingly, and without obvious explanation, it is the size of the state Senate which has the largest substantive relationship with state residents in jail. Considering the full model (Model 5), an increase in 10 state senators, in any state, associates with a .004 percent decrease in the percentage of state resident in prison, on average. The average state population during the time period of this study equals 5 580 644, so the results indicate about 239 fewer state prisoners ( $(5\ 580\ 644 * .0043)/100$ ), associated with an increase of 10 senators. Another decrease of about 24 state prisoners occurs with an increase in 10 members of the Lower Chamber, all else being equal.

Table 4. State legislature size and state prison populations: 1990, 2000, 2010

Model: Random-Effects Generalized Least Squares Regression<sup>a</sup>

		Model 5	Model 6 (without NH)
<i>Key Explanatory Variable</i>	Exp. Sign	Coefficient (robust s.e.)	Coefficient (robust s.e.)
Size of State House	-	-.0004 *** (.0001)	-.0006 * (.0004)
Size of State Senate	-	-.0043 *** (.0011)	-.0040 ** (.0013)
<i>Key Control Variables</i>			
Size of State Population	+	$4.11 \times 10^{-9}$ * ( $2.23 \times 10^{-9}$ )	$4.30 \times 10^{-9}$ * ( $2.37 \times 10^{-9}$ )
State Liberalism	-	-.0030 * (.0016)	-.0030 * (.0016)
<i>Other Control Variables</i>			
Relative Prison Expenditures	+	.0008 *** (.0001)	.0008 *** (.0001)
Percent African Am. Population	+	.0091 *** (.0012)	.0093 *** (.0012)
Pop. over 25 w/out H.S. diploma	+	.0038 *** (.0009)	.0037 *** (.0009)
Constant		.42 *** (.07)	.42 *** (.07)
Wald Chi <sup>2</sup>		233.58 ***	213.12 ***
R <sup>2</sup> (overall)		.63	.62
n		147	144

\*\*\*  $p < .001$ ; \*  $p < .05$ ; †  $p < .10$  (one-tailed tests)

<sup>a</sup> A Breusch-Pagan Lagrange test for heteroskedasticity suggests that one must accept the null hypothesis and conclude a Random-Effects model is necessary and that Ordinary Least Squares (OLS) should not be used. Moreover, following an OLS model run a Cook-Weisberg test for heteroskedasticity returns a Chi<sup>2</sup> value of 14.12 ( $p < .001$ ), suggesting that one must reject the null hypothesis of constant variance of residuals.

## 7. Conclusion

This research began with the wide-ranging question: *Does the size of legislatures influence the well-being of “non-elite” members of the body politic?* An analysis of the American states suggests the answer is—unequivocally, maybe. The exploration has returned findings consistent with the notion that smaller legislatures are more elite bodies who, in the end, produce less generous policies toward less well-off members of the body politic. Importantly, the findings are in harmony with earlier works on legislature size. For instance, the research produces nothing to counter the claims of legislative scholars (Frederick 2010; Lee & Oppenheimer 1999) who argue the representative/constituent relationship is compromised when the populations they serve get too large. Moreover, it is conceivable that less constituent contact, which occurs when legislatures are smaller (as documented by others) is part of the causal chain that allows legislators to turn a blind eye to the well-being of non-elites in their districts. The research is also perfectly consistent with the contention that institutional arrangements (i.e. size) matter for inclusive and competent representation in state legislatures (Hero & Pruehs, 2013).

Among those who follow state politics in the United States it has become cliché to note that state governments ‘educate, medicate, and incarcerate.’ Indeed, about 85 percent of all state spending is on these three initiatives.<sup>13</sup> When this research set out to test the association between non-elite populations and the relative size of state legislatures it was clear the place to begin was in the policy arenas that dominate state government activity in the modern era. The research finds, in all three policy areas, there is considerable state-wide variation in outcomes. Moreover, the outcomes are statistically linked in predictable ways to a whole host of control variables. And, after controlling for these other considerations, the relative size of state legislatures also seems to matter, with the size of the Lower Chamber most consistently relevant.

At minimum, the results of this research justify additional scrutiny of the relationship between legislature size and policies that suppress state generosity. The brief look at Rhode Island and New Jersey, two states that significantly altered the size of their state legislature in contemporary times, corroborates the plausibility of a causal connection. After the Rhode Island legislature shrunk the state passed more punitive policies that might grow the state’s prison population, while New Jersey increased Medicaid generosity when the size of the state legislature grew in the early 1970s. New Hampshire’s very large state legislature, small population, and Medicaid generosity solicits additional scrutiny, as well. Given “ordinary” citizens, undoubtedly, serve in the New Hampshire state legislature it is not difficult to imagine members of the assembly desiring government sponsored healthcare for people they know, family members, or maybe even for themselves. To be certain, causal mechanisms need to be further explored. However, this initial look suggests there may be societal benefits associated with larger—more representative—assemblies, which outweigh the higher payroll and decision-making costs occurring in these larger bodies.

## References

- Baqir, R. (2002). Districting and Government Overspending. *Journal of Political Economy*, 110(6), 1318–1354. <http://dx.doi.org/10.1086/342804>
- Beck, N., & Katz, J. N. (1995). What to do (and not to do) with Time-Series Cross-Section Data. *The American Political Science Review*, 89(3), 634–647. <http://dx.doi.org/10.2307/2082979>
- Berry, W. D., Ringquist, E. J., Fording, R. C., & Hanson, R. L. (1998). Measuring Citizen and Government Ideology in the American States, 1960-93. *American Journal of Political Science*, 42(1), 327–348. <http://dx.doi.org/10.2307/2991759>
- Binder, S., Maltzman, F., & Sigelman, L. (1998). Senators’ Home-State Reputations: Why Do Constituents Love a Bill Cohen So Much More Than an Al D’Amato? *Legislative Studies Quarterly*, 23(4), 545–560. <http://dx.doi.org/10.2307/440239>
- Bradbury, J. C., & Stephenson, E. F. (2003). Local Government Structure and Public Expenditures. *Public Choice*, 115(1-2), 185–198. <http://dx.doi.org/10.1023/A:1022857028836>
- Buchanan, J. M., & Tullock, G. (1962). *The calculus of consent: Logical foundations of constitutional democracy*. Ann Arbor: University of Michigan Press.
- Dahl, R. A., & Tufte, E. R. (1973). *Size and democracy*. Palo Alto, CA: Stanford University Press.

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13 “States Set Big Spending Plans As Washington Preaches Austerity.” Wall Street Journal February 24, 2007 <http://online.wsj.com/article/SB117226890441117724.html> (last accessed July 15, 2015).

- Day, C. L. (1990). *What older Americans think: Interest groups and aging policy*. Princeton, NJ: Princeton University Press.
- Downes, T. A. (1996). An Examination of the Structure of Governance in California School Districts Before and After Proposition 13. *Public Choice*, 86(3-4), 279–307. <http://dx.doi.org/10.1007/BF00136523>
- Fitzpatrick, K. M., & Yoels, W. C. (1992). Policy, School Structure, and Sociodemographic Effects on Statewide High School Dropout Rates. *Sociology of Education*, 65(1), 76–93. <http://dx.doi.org/10.2307/2112694>
- Frederick, B. (2010). *Congressional representation and constituents: The case for increasing the U.S. House of Representatives*. New York: Routledge.
- Green, R. L., & Carl, B. R. 2000. “A Reform for Troubled Times: Takeovers of Urban Schools.” *Annals of the American Academy of Political and Social Science*, 569, 56–70. <http://dx.doi.org/10.1177/0002716200569001005>
- Grimaldi, P. L. (1975). An Analysis of the Causes of Increases in Medicaid Payments, New Jersey, 1970-74. *Public Health Reports*, 90(6), 509.
- Gujarati, D. N. (2003). *Basic econometrics* (4th ed.). Boston: McGraw-Hill Irwin.
- Hero, R. E. & Preuhs R. R. (2013). *Black-Latino relations in U.S. national politics: Beyond conflict or cooperation*. New York: Cambridge University Press.
- Hibbing, J. R., & Alford, J. R. (1990). Constituency Population and Representation in the U.S. Senate. *Legislative Studies Quarterly*, 581–598.
- Higginbotham, A. L. (1996). *Shades of freedom: Racial politics and presumptions of the American legal process*. New York: Oxford University Press.
- King, J. D., & Cohen, J. E. (2005). What Determines a Governor’s Popularity? *State Politics & Policy Quarterly*, 5(3), 225–247. <http://dx.doi.org/10.1177/153244000500500302>
- Larimer, C. W. (2005). The Impact of Multimember State Legislative Districts on Welfare Policy. *State Politics & Policy Quarterly*, 5(3), 265–282. <http://dx.doi.org/10.1177/153244000500500304>
- Lee, F. E., & Oppenheimer, B. I. (1999). *Sizing up the Senate: The unequal consequences of equal representation*. Chicago: University of Chicago Press.
- Lucas, D. L., & McDonald, M. D. (2000). Is it Time to Increase the Size of the House of Representatives? *American Review of Politics*, 21, 367–382.
- Moncrief, G. F., Squire, P., & Jewell, M. E. (2000). *Who runs for the legislature?* (1st ed.). Upper Saddle River, NJ: Prentice Hall.
- Morris, J. E., & Monroe, C. R. (2009). Why Study the U.S. South? The Nexus of Race and Place in Investigating Black Student Achievement. *Educational Researcher*, 38(1), 21–36. <http://dx.doi.org/10.3102/0013189X08328876>
- Olson, M. (1965). *The logic of collective action: Public goods and the theory of groups*. Cambridge, MA: Harvard University Press.
- Oppenheimer, B. I. (1996). The Representational Experience: The Effect of State Population on Senator-Constituency Linkages. *American Journal of Political Science*, 40(4), 1280–1299. <http://dx.doi.org/10.2307/2111751>
- P. Luttmer, E. F. (2001). Group Loyalty and the Taste for Redistribution. *Journal of Political Economy*, 109(3), 500–528. <http://dx.doi.org/10.1086/321019>
- Pettit, B., & Western, B. (2004). Mass Imprisonment and the Life Course: Race and Class Inequality in U.S. Incarceration. *American Sociological Review*, 69(2), 151–169. <http://dx.doi.org/10.1177/000312240406900201>
- Pindyck, R. S., & Rubinfeld, D. L. (1998). *Econometric models and economic forecasts* (4th ed.). Boston, MA: Irwin McGraw Hill.
- Preuhs, R. R. (2006). The Conditional Effects of Minority Descriptive Representation: Black Legislators and Policy Influence in the American States. *The Journal of Politics*, 68(3), 585–599.
- Preuhs, R. R. (2007). Descriptive Representation as a Mechanism to Mitigate Policy Backlash: Latino Incorporation and Welfare Policy in the American States. *Political Research Quarterly*, 60(2), 277–292.

<http://dx.doi.org/10.1177/1065912907301981>

- Rumberger, R. W., & Thomas, S. L. (2000). The Distribution of Dropout and Turnover Rates among Urban and Suburban High Schools. *Sociology of Education*, 73(1), 39–67. <http://dx.doi.org/10.2307/2673198>
- Soss, J., Schram, S. F., Vartanian, T. P., & O'Brien, E. (2001). Setting the Terms of Relief: Explaining State Policy Choices in the Devolution Revolution. *American Journal of Political Science*, 45(2), 378–395. <http://dx.doi.org/10.2307/2669347>
- Squire, P. (1993). Professionalization and Public Opinion of State Legislatures. *The Journal of Politics*, 55(02), 479–491. <http://dx.doi.org/10.2307/2132277>
- Squire, P., & Hamm, K. E. (2005). *101 Chambers: Congress, state legislatures, and the future of legislative studies*. Columbus, OH: Ohio State University Press.
- Stigler, G. J. (1976). The Sizes of Legislatures. *The Journal of Legal Studies*, 5, 17–34. <http://dx.doi.org/10.1086/467542>
- Sutton, A., & Soderstrom, I. (1999). Predicting Elementary and Secondary School Achievement with School-Related and Demographic Factors. *The Journal of Educational Research*, 92(6), 330–338. <http://dx.doi.org/10.1080/00220679909597616>
- Taagepera, R. (1972). The Size of National Assemblies. *Social Science Research*, 1(4), 385–401. [http://dx.doi.org/10.1016/0049-089X\(72\)90084-1](http://dx.doi.org/10.1016/0049-089X(72)90084-1)
- Van Doren, C. (1948). *The great rehearsal: The story of the making and ratifying of the constitution of the United States*. New York: Viking Press.
- Wood, B. D., & Theobald, N. A. (2003). Political Responsiveness and Equity in Public Education Finance. *The Journal of Politics*, 65(3), 718–738.

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