UNIVERSITY OF CALIFORNIA SAN DIEGO

Political Representation in American State Governments

A dissertation submitted in partial satisfaction of the
requirements for the degree Doctor of Philosophy

in

Political Science

by

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The Dissertation of Zoe Nemerever is approved, and it is acceptable in quality and form for publication on microfilm and electronically.

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DEDICATION

To my undergraduate mentor Dr. John Kincaid, for daring me to pursue academic research.

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Chapter 1, in full, is a reprint of the material as it appears in "The Source of the Legislative Professionalism Advantage: Attracting More Knowledgeable Candidates" in *State Politics and Policy Quarterly*, 20(4), 416-436. The dissertation author was the primary investigator and author of this paper and this paper was co-authored with Dr. Dan Butler.

Chapter 2, in full, is a reprint of the material as it appears in "Contentious Federalism: Sheriffs, state legislatures, and political violence in the American West" in *Political Behavior*, 43(1), 247-270. The dissertation author was the sole author of this paper.

Chapter 3, in full, is a reprint of the material as it appears in "Measuring the Rural Continuum in Political Science" in *Political Analysis*, 29(3), 267 – 286. The dissertation author was the primary investigator and author of this paper and this paper was co-authored with Dr. Melissa Rogers.

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ABSTRACT OF THE DISSERTATION

Political Representation in American State Governments

by

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Professor Seth Hill, Co-Chair
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My research is motivated by the relationship between American political institutions and political inequality, with an emphasis on state political institutions and rural citizens. This dissertation is comprised of the three articles I published during graduate school and my job market paper, all of which address various aspect of democratic representation. My dissertation begins with an interrogation on why there is a knowledge gap of constituents' preferences between high and low-professionalism institutions. Next is a study about the representation of anti-federal ideology during the policymaking process and by county sheriffs. The third paper outlines measurement methods necessary for studying rurality in American politics. I conclude with a paper on the representation of rural Americans by their state legislators.

CHAPTER 1

The Source of the Legislative Professionalism Advantage: Attracting More Knowledgeable Candidates

Article

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The Source of the Legislative Professionalism Advantage: Attracting More Knowledgeable Candidates

Zoe Nemerever[1] and Daniel Butler[1]

Abstract

Legislators who know their constituents' opinions are more likely to be successful in providing substantive representation on issues of the day. However, previous work suggests that state legislators and candidates commonly misestimate their constituents' preferences. Some of that work also finds that candidates and current incumbents in highly professionalized legislatures are less likely to misestimate constituent opinion. We investigate why this professionalism advantage exists. We use a Blinder–Oaxaca decomposition to determine how much of the professionalism advantage can be attributed to three sources: attracting knowledgeable candidates, fostering legislator knowledge in office, and retaining incumbents. We apply the decomposition to data on candidates' perceptions of public opinion from the 2014 National Candidate Survey. Fostering knowledge in office and retaining incumbents are not responsible for the professionalism advantage. We find evidence that the professionalism advantage occurs because higher professionalism legislatures attract more knowledgeable nonincumbent candidates.

Keywords

representation, legislative professionalism, legislative politics, legislative behavior, public opinion, issue preferences

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Introduction

Substantive representation occurs when legislators act in accordance with their voters' preferences in the policymaking process (Mansbridge 2003; Pitkin 1967). Accordingly, researchers have adopted ideological congruence between constituent preferences and legislator actions as a normative benchmark by which to assess the quality of representation (e.g., Lax and Phillips 2009; 2012). Part of being able to act on constituents' wishes is first knowing what those wishes are (Miller and Stokes 1963; Verba and Nie 1972). Consistent with this view, legislators become more likely to act in accordance with voters' preferences when they learn constituent opinion (Butler and Nickerson 2011).

Despite the importance of knowing voters' preferences, Broockman and Skovron (2018) find that candidates for state legislative office consistently misperceive public opinion in their district on a variety of issues.[1] However, they also find that legislative professionalism attenuates legislators' and nonincumbent candidates' misperceptions of district opinion. In other words, there is a professionalism advantage to knowing the district's opinion. Candidates and incumbents in states with high professionalism legislatures have more awareness of district opinion than their counterparts in states with low professionalism legislatures. This is consistent with other studies that find that legislative professionalism produces a range of benefits for constituents.

Previous work has identified numerous advantages of high professionalism legislatures. Legislators in more professional legislatures provide higher levels of constituency service and govern more effectively than less professionalized legislatures (Berry, Berkman, and Schneiderman 2000). Professionalized legislatures are also more responsive to constituents' policy preferences (Maestas 2000) because they have more capacity to monitor public opinion (Maestas 2003) and tailor legislation to the specific needs of the state (Jansa, Hansen, and Gray 2019). Legislative professionalism strengthens the relationship between party competition and social welfare spending (Carmines 1974). Similarly, more professionalized legislatures are better equipped to manage the public sector and liaise between constituents and state bureaucracy (Malhotra 2006).

Our study is interested in understanding why professional legislatures have more knowledgeable incumbents. In the context of this study, we define knowledge as the ability of a legislator or candidate to more accurately perceive their district's opinion. While many things go into being a high-quality representative, we focus on the knowledge aspect of legislator quality because having more awareness of district opinion should make it easier for politicians to implement their constituents' wishes, which is an important part of representation (Harden 2015). Our research question is as follows:

> Why do legislators and candidates from professionalized legislatures know public opinion in their district better than legislators and candidates from hybrid or citizen legislatures?

We explore three sources that might explain why candidates and legislators in professional legislatures better know their constituents' opinions. First, more

knowledgeable candidates may be more likely to run for office in professionalized legislatures because it is a more attractive position. Second, the higher level of resources in professional legislatures may foster legislator knowledge by allowing them to focus more on the job. Third, professionalized legislatures may be able to retain legislators longer because of the relative attractiveness of the position. Politicians in professionalized legislatures may simply be less likely to seek higher office or otherwise retire, such that more professionalized legislatures may be more likely to retain incumbent representatives (who because of their service have more knowledge about the district) than less professionalized legislatures. In other words, is it the attraction of knowledgeable candidates, the fostering of incumbents in office, the retention of incumbents, or some combination of these three sources that leads to the professionalism advantage?

We investigate how much each of these sources contributes to the observed professionalism advantage using a Blinder–Oaxaca decomposition. We test the model with data on candidates' perceptions of public opinion from the 2014 National Candidate Survey (NCS; Broockman and Skovron 2018). We find that fostering legislator knowledge in office and retaining incumbents are not responsible for the professionalism advantage in the NCS sample. The results provide evidence that the professionalism advantage that exists occurs because higher professionalism legislatures attract more knowledgeable people to office.

The Effects of Professionalism

Legislative professionalism describes the ability of a legislature to "command the full attention of its members, provide them with adequate resources to do their jobs in a manner comparable to other full-time political actors, and set up organizations and procedures that facilitate lawmaking" (Mooney 1994, 71). Professionalism is typically measured using the Squire Index (Squire 1992; 2007). The Squire Index weights each of three components—salary, legislative staff, and days in session—equally. The Squire Index ranges from 0 to 1, with 1 indicating that the legislature perfectly resembles the professionalism of the U.S. Congress and 0 indicating no resemblance. The measure thus captures the degree to which the state legislature looks like Congress versus a "citizen" legislature that is a part-time position with few resources. We use the Squire Index as opposed to the individual components because all three components should have effects that move in the same direction.[2]

Legislative professionalism has been associated with a variety of positive outcomes, such as more award-winning programs and policies (Kousser 2005), increased policy responsiveness (Maestas 2000), and active legislature participation in fiscal policy and oversight (Thompson 1986). Directly related to our inquiry, other previous research finds that members of professionalized legislatures have higher awareness of their constituency's preferences than members from citizen legislatures. Broockman and Skovron (2018) find that legislative professionalization has a statistically significant negative effect on legislator errors in perception of their districts' preferences on immigration, guns, gay rights, reproductive rights, welfare, and universal healthcare (see

their Figure 6). In addition, Maestas (2003) finds that the resources of a high professionalism legislature increase legislator's capacity to monitor their district opinion.

To better understand how legislative professionalism affects legislative awareness of public opinion, we test hypotheses about the effects of legislative professionalism throughout a legislators' service. At the most basic level, legislative professionalism can affect legislators at the three key parts of their legislative career. It can affect who runs for office, it can affect how they improve over time while in office, and it can affect when they leave office. In turn, exposure to legislative professionalism at the three stages in a legislator's career can affect their ability to correctly perceive their district's opinion. These three stages correspond to the three sources we explore as laid out in the following hypotheses.

First, professional legislatures may be more likely to attract more knowledgeable candidates. A variety of studies have shown that candidates use a cost–benefit analysis when they decide whether to run for office (Black 1972; Rohde 1979; Schlesinger 1966). Serving in a professional legislature is more attractive because it offers a higher salary and more resources in the form of staff and longer sessions. Individuals who are highly knowledgeable legislators are likely to be high quality on a range of characteristics and thus are also likely to have attractive job opportunities outside of the legislature (Fiorina 1994). If serving as a legislator does not offer a competitive salary, the more knowledgeable individuals will not run for office (Squire 2007). Thus, greater professionalism should make more knowledgeable candidates more likely to run for office.

Attracting Knowledge Hypothesis: Professional legislatures attract candidates who are more knowledgeable.

Second, legislative professionalism may affect the degree to which legislators develop knowledge while serving in office. The higher salary means that they do not need a second job to financially support themselves so they can focus fully on legislating and working on behalf of their constituents (Fiorina 1994). Professional legislatures also have longer sessions, leading them to spend more time on their job and working to deliver policy results to their districts. Furthermore, having more staff to whom they can delegate routine tasks frees up time for legislators to engage with their constituents and learn about their policy priorities and preferences. When legislators face competing demands for their attention, they are more likely to use heuristics or simplify tasks related to learning about their constituents (Miler 2007). More professionalized legislatures should better equip their members to balance these competing demands without having to make shortcuts in learning about their districts' preferences that may be detrimental to substantive representation. Spending more time in the legislator role and focusing more on constituents should advantage these legislators in learning about their constituents' preferences. This advantage should grow the longer that legislators are in office and accessing high professionalism resources. With the passage of time, legislators should gain more knowledge and get better at learning about constituents' opinions. This learning over time (i.e., the return for an additional year in office) should occur equally for all legislators within a legislature but should

be greater for those who are serving in a more professional legislature because of their advantage in resources.

Fostering Knowledge Hypothesis: Legislators with more resources increase in knowledge more quickly.

Third, more professional legislatures may retain their incumbents for longer because they are a more attractive place to serve than less professional legislatures. These legislators do not have to run for higher office to get a position with prestige. Serving in a professional legislature is also a financially sustainable career option because it provides sufficient income to legislators. Coupled with higher desire to maintain their seats, legislators in professionalized legislature have higher reelection rates than legislators in less professional legislatures (Berry, Berkman, and Schneiderman 2000). Berry et al. find that the resources available to legislators serving in professionalized chambers aid incumbents in overcoming adverse national coattails or economic conditions in their reelection. Longer average tenures create more experienced legislative bodies (Squire 2007; cf. Maestas 2003). It follows that more experienced legislators have amassed more knowledge of their district's opinion and have developed strategies to keep current on changes in public opinion.

Retaining Incumbents Hypothesis: Professional legislatures are more likely to retain incumbents.

Decomposing the Professionalism Advantage into Its Component Parts

In this section, we derive an empirical model that allows us to identify how much the three sources identified in the hypotheses above contribute to the professionalism advantage. Our decomposition approach is an application of the Blinder–Oaxaca decomposition model. The Blinder–Oaxaca decomposition is a statistical method that explains the difference in the means of a dependent variable between two groups that can be attributed to the differences in the mean values and interactive effects of independent variables. Broockman and Skovron (2018) established a knowledge gap between high and low professionalism legislatures. This project extends their analysis to explain the origins of this "professionalism advantage." Why do differences in legislator knowledge exist between high and low professionalism legislatures? The Blinder–Oaxaca decomposition method enables us to identify how much of the professionalism advantage comes from three sources: attraction of knowledgeable legislators, fostering of legislator knowledge, and retention of incumbent legislators.

We estimate the following regression separately for each group where the subscript g indexes the group (high vs. low professionalism) and i indexes the legislator or candidate:

$$\mathrm{KG}_{gi} = \alpha_g + \beta_g \mathrm{Years}_{gi} + \varepsilon_{gi} \tag{1}$$

In this equation, α_g gives the knowledge gap for someone who has served 0 years. In other words, this gives the knowledge gap for nonincumbent candidates, which directly relates to the *attracting knowledge hypothesis*. Similarly, β_g indicates how much each additional year of service in the legislature affects the knowledge gap, which directly relates to the *fostering knowledge hypothesis*. Finally, Years_{gi} gives the number of years that each legislator has served, which relates to the *retaining incumbents hypothesis*.[3] We look at these three hypotheses by using a decomposition approach that allows us to see how much of the professionalism advantage in knowledge can be attributed to each of these three sources. The next step in our decomposition approach, equation 2, follows directly from equation 1 where the bar over the variables indicates the average value of the variable for group g:

$$\overline{\text{KG}}_g = \alpha_g + \beta_g \overline{\text{Years}}_g \tag{2}$$

We use this information to decompose the professionalism advantage in the knowledge gap. The professionalism advantage is simply the difference between the average level of knowledge in the low professionalism states versus the high professionalism states, that is, $\text{Professionalism Advantage} = \overline{\text{KG}}_L - \overline{\text{KG}}_H$. If the high professionalism states have a smaller knowledge gap as Broockman and Skovron (2018) find, then the Professionalism Advantage will take a positive value. Equation 3 then uses equation 2 as a starting point to decompose the professionalism advantage into the three factors:

$$\begin{aligned}
&\text{Professionalism Advantage} = \\
&\overline{\text{KG}}_L - \overline{\text{KG}}_H \\
&\quad = \left(\alpha_L + \beta_L \overline{\text{Years}}_L\right) - \left(\alpha_H + \beta_H \overline{\text{Years}}_H\right) \\
&\quad = \left(\alpha_L - \alpha_H\right) + \beta_L \overline{\text{Years}}_L - \beta_H \overline{\text{Years}}_H \\
&\quad = \left(\alpha_L - \alpha_H\right) + \beta_L \overline{\text{Years}}_L - \beta_H \overline{\text{Years}}_H \\
&\qquad + \left(\beta_L \overline{\text{Years}}_H - \beta_L \overline{\text{Years}}_H\right) \\
&\quad = \left(\alpha_L - \alpha_H\right) + \left(\beta_L \overline{\text{Years}}_H - \beta_H \overline{\text{Years}}_H\right) \\
&\qquad + \left(\beta_L \overline{\text{Years}}_L - \beta_L \overline{\text{Years}}_H\right) \\
&\quad = \left(\alpha_L - \alpha_H\right) + \left(\beta_L - \beta_H\right) \overline{\text{Years}}_H \\
&\qquad + \beta_L \left(\overline{\text{Years}}_L - \overline{\text{Years}}_H\right)
\end{aligned} \tag{3}$$

Line of 1 of equation 3 follows directly from equation 2. The second line simply rearranges the terms. The third line of equation 3 adds and subtracts the exact same term $(\beta_H \overline{\text{Years}}_L)$ from the right-hand side of the equation. The fourth line simply rearranges terms. The final line of equation 3 pulls the common terms out. This final line identifies the three sources of the professionalism advantage that we are testing. We can restate equation 3 as follows:

$$\begin{aligned}\text{Professionalism Advantage} = {} & \text{Differences Due to Knowledge} \\ & \text{of Non-incumbent Candidates} + \\ & \text{Differences Due to Legislator} \\ & \text{Learning during Tenure} + \\ & \text{Differences Due to Length of Tenure}\end{aligned} \tag{4}$$

These three portions of the equation correspond to the three hypotheses that we discussed earlier.

Attracting Knowledge

The quantity $(\alpha_L - \alpha_H)$ gives the knowledge gap among the nonincumbent candidates running for office. If professional legislatures attract more knowledgeable candidates, then $\alpha_H < \alpha_L$ This then gives the portion of the professionalism advantage that can be attributed to differences in the knowledge of nonincumbent candidates who run for the position (i.e., challengers and candidates for open seats).

Fostering Knowledge

The quantity $(\beta_L - \beta_H)\overline{\text{Years}}_H$ gives the amount of the professionalism advantage that is explained by the differences in the returns to years in office. If incumbents increase their knowledge while in office, then the coefficient β should be negative (because the knowledge gap would decrease with years of experience). If high professionalism legislatures are better at fostering knowledge in incumbents, then the knowledge gap should decrease faster with years of experience in the higher professionalism states (i.e., $\beta_H < \beta_L$). Multiplying this by the average number of years served in high professionalism legislatures gives the amount of the professionalism advantage that is attributable to high professionalism states fostering knowledge more quickly among incumbents.

Retaining Incumbents

The quantity $\beta_L(\overline{\text{Years}}_L - \overline{\text{Years}}_H)$ gives the amount of the professionalism advantage that is explained by the differences in how long incumbents serve in high professionalism states relative to low professionalism states (i.e., $\overline{\text{Years}}_L - \overline{\text{Years}}_H$). If high professionalism states are better able to retain incumbents, then $\overline{\text{Years}}_H > \overline{\text{Years}}_L$. This quantity indicates the portion of the professionalism advantage that can be attributed to differences in how long legislators serve in high versus low professionalism legislatures.

Method

We use data from the 2014 NCS (Broockman and Skovron 2018). In that survey, candidates (both incumbents and nonincumbent candidates) who were running in state

legislative elections were asked for their perceptions of public opinion in their district. In the survey, the candidates were asked questions that covered the following topics: abortion rights, gun rights, religious exemptions for birth control under the Affordable Care Act, policies for undocumented immigrants, and same-sex marriage. Specifically, survey respondents were asked questions in the following format: "What percent of your constituents would agree with the following statement: Implement a universal healthcare program to guarantee coverage to all Americans?" This question was repeated for the five unique policy items. Broockman and Skovron (2018) compare the survey answers with actual district opinion to measure which candidates have more accurate perceptions of their constituents' preferences. We use these same questions to assess candidate and legislator knowledge.

We laid out our hypotheses and research design in a pre-analysis plan that we placed with the Evidence in Governance and Politics (EGAP) pre-analysis plan repository.[4] This includes the preceding hypotheses and the decomposition laid out in the previous sections. As for the data analysis, even though the dataset already existed prior to our project, we did not have access to it. Instead, we wrote the R-script for the analysis and gave it to Broockman and Skovron (who initially conducted the survey and possess the proprietary data). They ran the script for us and then gave us the output. We report the results of the one and only run of the R-script.

We, like Broockman and Skovron, study the legislators' knowledge of their districts' opinion measured as the difference between district opinion and the candidate's perception of district opinion. We use the average difference across the five issues in the survey as our dependent variable. We refer to this as the knowledge gap. We average across all five issues because we do not have any priors or theories for why the professionalism advantage would vary by topic. Equation 5 gives the formula for calculating the knowledge gap with i indexing the candidate and j indexing the issue[5]:

$$\text{Knowledge gap}_i = \frac{\sum_{j=1}^{n} \left(\left| \begin{array}{c} \text{Perceived district opinion}_{ij} - \\ \text{Actual district opinion}_{ij} \end{array} \right| \right)}{n} \tag{5}$$

We use the Squire Index to measure legislative professionalism (Squire 1992; 2007). We divide the sample into high and low professionalism groups using the same cutoff between high and low professional legislatures as Broockman and Skovron (2018), which is Squire Index = 0.2.[6] We wanted to use the same cutoff because we are directly following up on Broockman and Skovron's finding that more professional legislators were more accurate in their perceptions of district opinion. With the Broockman and Skovron cutoff, 28 states were coded as high professionalism states.[7] The other 22 states were coded as low professionalism states.[8]

Table 1 gives the number of respondents by the level of professionalism and incumbency states. The response rate was 20.8%, which is substantially higher than most elite surveys (Broockman and Skovron 2018).[9] As the table shows, more respondents in low professionalism states responded to the survey. Over 1,400 respondents from the low professionalism states took the survey, including more than 500 incumbent

Table 1. Sample Size, by Incumbency Status and Legislative Professionalism.

	Low professionalism	High professionalism
Nonincumbent	741	215
Incumbent	461	131

legislators. In the high professionalism states, around 450 respondents filled out the survey. The distribution of legislative professionalism among respondents matches the overall distribution of legislative professionalism in the population of state legislators (see Figure A2 in Broockman and Skovron 2018).

Self-selection into the survey could bias the results if survey completion is correlated with level of professionalism and legislator attributes. For instance, if highly knowledgeable candidates from high professionalism states opted out of the survey and less knowledgeable candidates from low professionalism states opt out of the survey. This selection pattern would attenuate the observed professionalism advantage in the NCS sample, relative to the actual (albeit unobserved) professionalism advantage. In this case, our empirical results would understate the magnitude of the professionalism advantage.

A second possibility for bias is selection into the survey based on individuals' sensitivity to the separate components of the professionalism advantage and the professionalism of their legislature. Perhaps legislators who yield high returns to their years in office are more likely to opt in or opt out of the survey based on the level of professionalism in their state. However, this situation seems highly unlikely. We cannot think of a reason, or mechanism, that would cause legislators to behave in this way.

The Decomposition Results

Equation 3 gives the formula for decomposing the professionalism advantage and shows that we need eight pieces of information. This includes the average knowledge gap for each group ($\overline{KG}$), the average tenure of legislators in each group ($\overline{Years}$), and the regression coefficient estimates from equation 1 that give the knowledge gap for nonincumbent candidates (α) and the rate of learning associated with each year of service (β).

Accordingly, we estimated ordinary least squares regressions as specified in equation 1 for both the low professionalism and high professionalism legislatures. The coefficients from these regressions are reported in the bottom half of Table 2. The top half of Table 2 gives the average years of service and the average knowledge gap for the two groups.

Table 2 gives some initial insights into the various hypotheses. First, consistent with the *attracting knowledge hypothesis*, we see that the knowledge gap for nonincumbent candidates is lower in high professionalism states. This comes from the intercept of the model that regresses the knowledge gap on the years of service. The intercept (α) gives the estimated knowledge gap for a candidate who has served for

Table 2. Group Means and Regression Coefficients.

Quantities of interest	High professionalism	Low professionalism	Difference
Average knowledge gap ($\overline{KG}$)	19.47	20.58	–1.11* (0.60)
Average years served ($\overline{Years}$)	3.70	2.96	0.74* (0.39)
Nonincumbent knowledge gap (α)	19.71	20.99	–1.28* (0.66)
Rate of learning while in office (β)	–0.07	–0.14	0.07 (0.08)

Note: Standard errors in parentheses. *$p < .05$ (one-sided).

0 years (i.e., a nonincumbent candidate). The knowledge gap for nonincumbent candidates is 19.71 in high professionalism states but 20.99 in low professionalism states. Substantively this can be interpreted as nonincumbent candidates in high professionalism states having guesses 1.28 percentage points closer to the actual level of support (0%–100%) for a policy in their district than the guesses of nonincumbent candidates in low professionalism states. This is a 6% increase in legislator knowledge. In Table 6, we show that the increase in knowledge from attraction is comparable with the increase from having a competitive election. In summary, election contests in high professionalism states are attracting more knowledgeable candidates to run for office.

Second, there is also some evidence for the *retaining incumbents hypothesis*. If high professionalism states are better able to retain incumbents, then $\overline{\text{Years}}_H > \overline{\text{Years}}_L$. This is what we observe. The average length of service in high professionalism legislatures is 25% longer than the average length of service in low professionalism legislatures.

Third, there is no evidence to support the *fostering knowledge hypothesis*. The coefficient on the years in office indicates how the knowledge gap changes with years in office. Consistent with our expectations, the coefficient on this variable is negative for both samples; incumbents who serve longer are more accurate in their perceptions of district opinion. However, if the fostering knowledge hypothesis is correct, the legislators in high professionalism states should see a bigger impact on their accuracy from years in office (i.e., $\beta_H < \beta_L$). We observe the opposite of this prediction. The rate of learning in low professionalism legislatures (–0.14) is twice the rate of learning in high professionalism legislatures (–0.07). A potential explanation is the relative ease of improving district knowledge when the initial knowledge gap is larger compared with closing an already small knowledge gap. Legislators in high professionalism legislatures may face a ceiling effect in which after a certain threshold learning even more district knowledge is increasingly difficult. Regardless of the mechanism driving this effect, the results clearly contradict the *fostering knowledge hypothesis*.

We can also use the information in Table 2 to carry out the decomposition in equation 3. Table 3 presents the calculation results for the different parts of the decomposition. The top portion of the table gives the total professionalism advantage in the

Table 3. Decomposition Results.

	$= KG_L - KG_H$
Total professionalism advantage	$= 20.58 - 19.47$ $= 1.11$ (0.60)
Components of professionalism advantage	
Advantage from Attracting Knowledge	$= (\alpha_L - \alpha_H)$ $= (20.99 - 19.71)$ $= 1.28^*$ (0.66)
Advantage from Fostering Knowledge	$= (\beta_L - \beta_H) \times \overline{Years}_H$ $= (-0.14 - [-0.07]) \times 3.70$ $= -0.26$ (0.26)
Advantage from Retaining Incumbents	$= \beta_L \times (\overline{Years}_L - \overline{Years}_H)$ $= -0.14 \times (2.96 - 3.70)$ $= 0.10$ (0.07)

Note. Standard errors in parentheses. Bootstrapping was used to calculate the standard errors for the *Advantage from Fostering Knowledge* and *Advantage from Retaining Incumbents* quantities.
$^*p < .05$ (one-sided).

NCS sample. The rest of Table 3 then gives how much each of the three factors contributes to the overall professionalism advantage.

The top part of Table 3 gives the professionalism advantage of the NCS sample. The respondents from higher professionalism legislatures had knowledge gaps that were 1.11 points lower than those from lower professionalism legislatures. The original analysis in Broockman and Skovron (2018), that motivates this study, shows that this difference is statistically significant. Our contribution is to decompose this difference into the three components related to our hypotheses. We do this by calculating the values given in equation 3 and then dividing that amount by the total professionalism advantage. While Table 3 gives the results, we can also summarize it as follows[10]:

$$1.11\ (\text{Professionalism Advantage}) = 1.28\ (\text{Attracting Knowledge}) - 0.26\ (\text{Legislator Learning}) + 0.10\ (\text{Retention}).$$

As these results show, the overwhelming majority of the professionalism advantage among the NCS sample is derived from attracting highly knowledgeable nonincumbent candidates to legislative races. This factor alone accounts for a difference of 1.28. In other words, the knowledge gap of nonincumbent candidates is larger than the total professionalism advantage. This means that the professionalism gap starts with who runs for office. In fact, the gap is largest for nonincumbent candidates and decreases over time.

The reason why the professionalism advantage decreases among longer serving incumbents is that incumbents in lower professionalism states gain the most from each year of service, helping them to catch up to the level of knowledge of candidates from high professionalism states. This is why the calculation shows that the contribution from fostering knowledge has a negative sign (–0.26). The learning that occurs in office is not driving the professionalism advantage in the sample of NCS respondents. In fact, if it was not for the gains made over time by the low professionalism incumbents, the professionalism advantage would be larger. Specifically, it would be roughly 0.26 points larger, which would be a 23% increase ($0.26/1.11 = 0.23$). The fostering of knowledge in *lower professionalism* legislatures is mitigating the professionalism advantage and keeping it from being larger.

Finally, the retention of incumbents does not have a large influence on the professionalism advantage in this sample. The 0.10 value is in the correct direction, but it is not large in magnitude relative to the other components of the decomposition model. Only a very small amount (less than 10%) of the professional advantage comes from high professionalism legislatures retaining incumbents for longer periods than low professionalism legislatures.

In sum, the overwhelming majority of the professionalism advantage is derived from attracting more knowledgeable nonincumbent candidates to legislative races.

Robustness Checks

We performed four additional decompositions to look at the results among the partisan subsamples and then look at the results when changing how to code which states are high professionalism states.[11] For Decomposition 2, we use a professionalism cutoff of the Squire Index = 0.2 and the sample includes just the Republican candidates. For Decomposition 3, we use a professionalism cutoff of the Squire Index = 0.2 and the sample just includes the Democratic candidates. For Decomposition 4, we use a professionalism cutoff of the median value of the Squire Index in the sample and we use all the candidates. For Decomposition 5, we use a professionalism cutoff of the National Conference of State Legislatures (NCSL) gold versus green groups and we use all the candidates. Our results are robust for Decompositions 1, 2, 4, and 5. The complete results for all five decompositions are presented in the online appendix. Below, we discuss a couple of noteworthy findings.

First, the professionalism advantage for Decomposition 3 is not statistically significant. Democratic candidates in high professionalism legislatures do not exhibit a statistically significant professionalism relative to Democratic candidates in low professionalism legislatures. This is consistent with the Broockman and Skovron (2018) finding that the knowledge gap is significantly reduced among Democratic candidates. In fact, the results (Table 4) in the online appendix show that low professionalism Democratic candidates have a smaller knowledge gap (17.31) than high professionalism Democratic candidates (17.39), although the magnitude is substantively small and the difference is not statistically significant. This specific sample of the data does not exhibit the phenomenon we are studying. This result does not contradict our principal

Table 4. Group Means and Regression Coefficients for Decomposition 5: NCSL and All Candidates.

Quantities of interest	High professionalism	Low professionalism	Difference
Average knowledge gap ($\overline{KG}$)	19.23	21.04	−1.81* (0.68)
Average years served ($\overline{Years}$)	3.72	2.40	1.33* (0.43)
Nonincumbent knowledge gap (α)	19.53	21.28	−1.75* (0.75)
Rate of learning while in office (β)	−0.08	−0.10	0.02 (0.11)

Note. Standard errors in parentheses. NCSL = National Conference of State Legislatures.
*$p < .05$ (one-sided).

finding that the ability to attract more knowledgeable candidates is the primary component of the professionalism advantage.

Second, we run a decomposition substituting the NCSL professionalism categories for the Broockman and Skovron cutoff. The NCSL has divided states into three categories of professionalism. Green legislatures are full-time, well-paid, and have large personal staffs. Gold legislatures are part-time, low pay, and small staff. Gray legislatures are a hybrid between green and gold legislatures. For our decomposition, use the gold legislatures as the low professionalism group and the green legislatures as the high professionalism group. We exclude the gray group. We include gold-lite and green-lite with the gold and green groups, respectively. The sample for this analysis includes 866 candidates, comprised of 210 low professionalism incumbents, 329 low professionalism nonincumbents, 123 high professionalism incumbents, and 204 high professionalism nonincumbents. The group means and differences are presented in Table 4, and the decomposition results are presented in Table 5. The results are consistent with our original decomposition. Candidates for high professionalism legislatures have more accurate perceptions of constitutent opinion than candidates for low professionalism legislatures. The majority of this professionalism advantage comes from the attraction of more knowledgeable candidates, as opposed to fostering knowledgeable candidates or retaining knowledgeable candidates. This finding is consistent with our primary results.

Tests of the Professionalism Advantage Components

In addition to the decomposition, we pre-registered additional tests for each of the three sources of the professionalism advantage among NCS respondents. Because this is a pre-registered study, we were unaware that only one of the three professionalism components would have a meaningfully large contribution to the professionalism advantage. Nonetheless, we present all three tests to be transparent and to provide a more complete perspective of the professionalism advantage.

Table 5. Decomposition Results for Decomposition 5: NCSL and All Candidates.

	$= KG_L - KG_H$
Total professionalism	= 21.04 – 19.23
advantage	= 1.81
Components of professionalism advantage	
Advantage from	$= (\alpha_L - \alpha_H)$
Attracting	= (21.28 – 19.53)
Knowledge	= 1.75*
	(0.75)
Advantage	$= (\beta_L - \beta_H) \times Years_H$
from Fostering	= (–0.10 – [–0.08]) × 3.72
Knowledge	= −0.07
	(0.36)
Advantage	$= \beta_L \times (YearsL - YearsH)$
from Retaining	= −0.10 × (2.40 – 3.72)
Incumbents	= 0.13
	(0.13)

Note. Standard errors in parentheses. Bootstrapping was used to calculate the standard errors for the *Advantage from Fostering Knowledge* and *Advantage from Retaining Incumbents* quantities. NCSL = National Conference of State Legislatures.
*$p < .05$ (one-sided).

For all of the tests, we include the control variables used in Broockman and Skovron (2018) and use their professionalism cutoff value of 0.2. At the individual level, this includes gender, race, age, chamber, number of polls conducted, and race competitiveness. The control for district competitiveness accounts for previous research that finds that competitive races inspire legislators to serve with steadfast effort and monitoring of district opinion (Arnold 1990; Kingdon 1989). The state-level controls are indicator variables for being a split party control state and another for being a unified Republican state.

We also added four control variables of our own. The first is a dummy variable controlling for multimember districts. This is coded as 0 if the candidate is/would be the only legislator for that district, 1 otherwise.[12] The second control variable is term limits, also measured as a dummy variable at the state level. The third control variable is a measure of district population. These numbers come from state legislative districts drawn based on the 2010 Census and is measured in capita per district for both the upper and lower chambers. The fourth control variable is the change in district size following the 2010 Census and subsequent redistricting. For members who were in office prior to 2012 (first election with the new districts), this is the difference in 2000 state legislative district population and 2010 state legislative district population divided by the 2000 state legislative district population. For legislators who ran for the first time in 2012 or later, the value for this variable is zero because they were not representing a district during the redistricting process. We

Table 6. Regression Analysis.

	(1)	(2)	(3)
	Attracting knowledge	Fostering knowledge	Retaining knowledge
	Knowledge gap	Knowledge gap	In office August 2018
Squire Index	−1.11*	−1.18*	0.003
	(0.49)	(0.68)	(0.00)
Years served		−5.15e–07	−0.001
		(0.06)	(0.00)
Years Served × Squire Index		0.08*	
		(0.04)	
Competitiveness	−1.07*	0.04	−0.08*
	(0.37)	(0.39)	(0.02)
Split party state	1.16	−0.81	−0.11
	(1.57)	(1.42)	(0.07)
Republican state	2.21*	−0.65	0.02
	(0.76)	(0.89)	(0.04)
Term limits	0.32	−0.88	−0.08*
	(0.76)	(0.95)	(0.05)
District population	0.00001*	−0.00001	−5.53e–08
	(0.00)	(0.00)	(0.00)
District population growth		−4.09	−0.36
		(6.40)	(0.32)
Upper chamber	−0.92	0.91	0.09
	(1.02)	(1.11)	(0.06)
Multimember district	0.38	−1.14	0.09
	(1.20)	(1.17)	(0.06)
Male	−0.96	0.87	0.04
	(0.76)	(0.79)	(0.04)
Hispanic	−1.59	0.96	0.19*
	(2.10)	(2.11)	(0.11)
African American	−0.69	3.13*	0.06
	(2.04)	(1.82)	(0.09)
Age	0.95	−1.45	−0.20
	(1.78)	(2.65)	(0.13)
Republican	6.67*	10.13*	0.12*
	(0.74)	(0.85)	(0.04)
Elected post-2012 redistricting		1.98*	0.02
		(0.93)	(0.05)
Number of polls	−0.30	0.39	−0.03
	(0.25)	(0.40)	(0.02)

(continued)

Table 6. (continued)

	Attracting knowledge	Fostering knowledge	Retaining knowledge
	Knowledge gap	Knowledge gap	In office August 2018
Number of polls imputed	−0.78	−3.31*	−0.03
	(1.43)	(1.38)	(0.07)
Constant	16.42*	16.22*	0.89*
	(1.64)	(2.50)	(0.13)
Sample	Nonincumbent candidates	Incumbent candidates	2014 winning candidates
N	747	549	549
R^2	.13	.29	.09
Adjusted R^2	.12	.27	.06
Residual *SE*	9.34	8.14	0.41
	(*df* = 731)	(*df* = 529)	(*df* = 530)
F statistic	7.54*	11.64*	3.00*
	(*df* = 15)	(*df* = 19)	(*df* = 18)

Note. Standard errors in parentheses.
*$p < .05$ (one-sided).

also include an indicator variable for whether they were not in office before the 2012 election to ensure that setting the value to 0 is not driving the results. This variable in not included in Empirical Test 2, because that regression only includes nonincumbent candidates.

Empirical Test 2: Attracting Knowledge

We test the *Attracting Knowledge Hypothesis* by estimating a regression that includes only the nonincumbent candidates. The dependent variable is the knowledge gap of the nonincumbent candidate and the primary independent variable is the Squire Index as a continuous variable. If the *Attracting Knowledge Hypothesis* is correct, the coefficient on the Squire Index will be negative, meaning that candidates who run for seats in more professional legislatures have smaller knowledge gaps than candidates who run for seats in less professional legislatures.

The results are in the first column of Table 6. The direction of the effect is negative as expected and statistically significant so we reject the null hypothesis that legislative professionalism does not increase the knowledge of legislative candidates. This finding aligns with the decomposition model result that high professionalism legislatures' ability to attract highly knowledgeable candidates is the main source of the professionalism advantage.

Empirical Test 3: Fostering Knowledge

We test the *Fostering Knowledge Hypothesis* by restricting the sample to sitting state legislators in the sample. The dependent variable is the knowledge gap. The primary independent variables are the Squire Index, the years in office, and an interaction between the two. If the Fostering Knowledge Hypothesis is correct, we will observe a negative coefficient on the interaction between legislative professionalism and years in office indicating that legislators from more professionalized states decrease the knowledge gap faster with the time they serve.

The results are in column 2 of Table 6. The coefficient on the interaction term is positive and statistically significant at $p < .05$ (one-sided). The positive coefficient indicates that legislators in professionalized legislatures have a small, but statistically significant, increase in their knowledge gaps (decrease in overall knowledge) as their tenure in office progresses. This is contrary to our hypothesis that legislators in higher professionalism legislatures get a larger knowledge return on their time in office. The coefficient of 0.00 on Years Served indicates that the knowledge gap in less professionalized legislatures remains constant throughout a legislator's tenure when highly professionalized legislative institutions are absent. Although the net effect is consistent with the *Fostering Knowledge*, the mechanism is different. The regression results read that the knowledge gap closes because legislators in high professionalism become less knowledgeable, rather than the more desirable mechanism in which legislators in low professionalism legislatures become increasingly knowledgeable as they serve in office.

Empirical Test 4: Retaining Incumbents

The final test looks at whether incumbents are more likely to stay in office in higher professionalism states. We test this by creating a new dependent variable for whether or not the individual is still in office on August 1, 2018. The dummy dependent variable is coded as 1 for everyone who is in office on August 1, 2018, and 0 otherwise. August 1 is the date we used in the R-script we sent to Broockman and Skovron. We use a logit model for the binary dependent variable. The sample includes all incumbents in the dataset who were not term-limited out of office and also the nonincumbent candidates who won in 2014. In other words, start with all of the sitting legislators in the original survey. We then drop those legislators who would have not been able to run for reelection because term limits would have caused them to leave office before 2018. We use the Squire Index as the main independent variable. If incumbents in more professional states are more likely to stay in office, then they will observe a positive coefficient on the Squire Index. We include the controls used in Broockman and Skovron (2018) and control for years of service at the time of the 2014 survey. The *Retaining Incumbents Hypothesis* predicted a positive coefficient on the Squire Index; however, the coefficient in column 3 of Table 6 is zero and statistically insignificant, so we cannot reject the null hypothesis that high professionalism legislatures better

Table 7. Comparison of Results.

	Decomposition model	Additional empirical analysis
Attraction	Large effect	Reject null
Learning	No effect	Significant in opposite direction but substantially small effect
Retention	Small effect	Fail to reject null

retain incumbents than low professionalism legislatures. The level of legislative professionalism did not have an impact on these incumbents' decisions of whether to stay in office.

Discussion

Table 7 summarizes the findings from the decomposition model and the other tests. The decomposition results suggest that all of the professionalism advantage observed in the sample is through the highly knowledgeable candidates attracted to run for office, which is confirmed in the regression results of Table 4. Of the three hypotheses, the *Attracting Knowledge Hypothesis* is the only one that had consistent support in both the decomposition and regression models.

We are confident that legislator learning while in office is not a contributor to legislators in professionalized legislatures knowing their district's opinion. The decomposition model showed that none of the professionalism advantage originates from improvements in legislator knowledge while serving in office. Moreover, the effect estimated in column 2 of Table 6 shows that the coefficient actually goes in the opposite direction of what was hypothesized.

Finally, retention was not a source of legislator knowledge in this sample. We found that the difference in mean for the high and low professionalism legislatures among incumbents in the NCS is statistically significant but quite small (less than a year). Furthermore, the effect of professionalism on retention is substantively small in the decomposition. Also, the level of legislative professionalism did not predict the likelihood that the incumbents surveyed in the NCS were still in office four years later. The retention of legislators does not meaningfully contribute to the professionalism advantage among the NCS sample.

In this article, we delved into the connection between legislative professionalism and legislators' perceptions of district opinion. Using a Blinder–Oaxaca decomposition, we broke down how much of the observed professionalism advantage can be attributed to three sources: attracting knowledgeable candidates, fostering knowledge in office, and retaining incumbents. The evidence clearly shows that fostering knowledge in office and retaining incumbents were *not* driving the professionalism advantage in the NCS sample. The evidence suggests that attracting highly knowledgeable candidates is the main driver for the professionalism advantage among those who participated in the NCS survey.

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Supplemental Material

Supplemental material for this article is available online.

Notes

1. For a study on misperception of constituents' opinions in Congress, see Hertel-Fernandez, Mildenberger, and Stokes (2018).
2. For example, higher salary increases the relative attractiveness of a legislative position as does having more staff members to whom a legislator can delegate parts of the job.
3. This is equal to the days between entering the legislature and October 15, 2014 (the time of the survey), divided by 365.
4. The original pre-analysis plan is available at https://egap.org/registration/5021. The pre-analysis plan for the R & R is available at http://osf.io/6q8bj/.
5. If the candidate did not answer a given question, that survey question was not used in calculating their knowledge gap score.
6. The online appendix includes a graphic detailing how the 0.2 cutoff compares with a median cutoff and the National Conference of State Legislatures professionalism categories.
7. The high professionalism states included all of the following: AK, AR, AZ, CA, CO, CT, DE, FL, HI, IA, IL, MA, MD, MI, MN, MO, NC, NE, NJ, NY, OH, OK, OR, PA, RI, TX, WA, WI.
8. The low professionalism states included all of the following: AL, GA, ID, IN, KS, KY, LA, ME, MS, MT, ND, NH, NM, NV, SC, SD, TN, UT, VA, VT, WV, WY.
9. For more details on the survey procedure and empirical assessments of respondent representativeness, refer to Broockman and Skovron (2018).
10. Note that the slight discrepancy is due to rounding error.
11. More details about these robustness checks are given in our pre-analysis plan, posted to Open Science and included in our replication files.
12. The online appendix includes the distribution of National Candidate Survey (NCS) respondents across single member districts and multi-member districts.

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CHAPTER 2

Contentious Federalism: Sheriffs, State Legislatures, and Political Violence in the American West

Political Behavior
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ORIGINAL PAPER

Contentious Federalism: Sheriffs, State Legislatures, and Political Violence in the American West

Zoe Nemerever[1]

Abstract
Despite the extensive literature probing individual motivations for committing political violence, little existing academic research directly examines the role of local governments in encouraging political violence. I use a federalism perspective to consider how subnational governments can decrease the perceived costs of high-risk political violence against the state. This paper introduces three novel datasets to substantiate my theories: political violence against Bureau of Land Management employees, land transfer legislation in state legislatures, and a roster of constitutionalist sheriffs. As emblems of the contentious relationship between rural land users and the federal government, employees of the Bureau of Land Management (BLM) routinely deal with threats, harassment, and physical violence from civilians who are incensed by restrictions on the use of federal land. Counties with constitutionalist sheriffs are 50% more likely to have violence against BLM employees than other counties, even when controlling for other factors. Additionally, levels of political violence are higher in years following the passage of land transfer legislation in the state legislature. Elected officials' legislative activity, campaign promises, and law enforcement decisions all may promote political violence against federal employees. Incorporating federalism into the study of political violence uncovers how the actions of elected officials at the state and county levels can lower the perceived costs of violence against the national government.

Keywords Political violence · Federalism · Sheriffs · Public land · State legislatures

Introduction

In 2014, a dozen Bureau of Land Management (BLM) employees engaged in a standoff against four hundred armed protestors while attempting to round up Nevada rancher Cliven Bundy's cattle for unlawfully grazing on public land. The encounter

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followed a decade of government warnings as Mr. Bundy accumulated over a million dollars of unpaid grazing fees. Local sheriffs implicitly sided with Mr. Bundy and his supporters by refusing the BLM's requests for backup support. The standoff ended when the BLM retreated.[1] Following the standoff, Secretary of the Interior Sally Jewell issued a memo to all Department of Interior field employees that emphasized personal safety and how to avoid confrontations with civilians. Additionally, the BLM abandoned all of its posts in southern Nevada for 2 years following the Bundy standoff.

Strong political and moral convictions can inspire political violence, such as the Black Panthers (Davenport 2009) during the Civil Rights Movement, the Ku Klux Klan during Reconstruction (Wood 2011), and radical environmentalism in the 19th century (Eagan 1996). Despite the expansive political behavior literature probing individual motivations for committing political violence, little existing academic research directly examines the role of state and county governments in encouraging political violence.[2] Ranchers rising up against the government and getting what they want by pointing a gun at federal employees speaks to an essential question in American politics—what promotes political violence? This paper advances both the federalism and political behavior literatures by showing how subnational governments can stimulate civilian violence against federal employees.

Extensive federalism research centers on how one level of government reacts when a higher level of government transcends its jurisdiction. For example, a survey of city mayors uncovers extensive dissatisfaction with state laws that restrict local autonomy and local revenue sourcing (Einstein and Glick 2017). When municipalities independently pursue progressive policy interventions, conservative state legislatures can roll back local reforms through preemption laws (Riverstone-Newell 2017). Over the past half century, the increase of federal regulations over the past has engendered a contentious relationship between the federal government and the states (Kincaid 1990, 2008). State legislatures can resist federal authority by passing nullification legislation (Olson et al. 2017) and through discretionary implementation of federal policy implementation by the state bureaucracy (Napolio and Peterson 2018). I introduce a new retaliation mechanism by which state and county governments send signals that lower the costs of political violence against federal employees.

In this paper I ask, what is the role of subnational governments in promoting political violence in modern United States? I assert that political violence against federal bureaucrats is more likely when state legislation validates the views of those with complaints against federal land ownership and when county sheriffs signal that they hold anti-federal ideologies. First, the passage of land transfer legislation by

[1] The government's current *modus operandi* is to yield the monopoly on violence to citizens. In the 1990s the government responded aggressively in two citizen standoffs which created a public relations catastrophe. Ever since, the government is reluctant to use force against citizens, especially in the West where memories of Ruby Ridge and Waco are prominent (Lind 2016).

[2] It is already known that subnational governments can be instrumental in preventing or stopping political violence. For example, previous accounts of the Jim Crow South find that the absence of sheriffs increase lynchings (Clarke 1998).

state legislatures validates anti-federal political beliefs and can be perceived by citizens as a subtle endorsement for defying or harassing federal employees. Second, constitutionalist sheriffs[3] elevate levels of political violence against federal employees by increasing the salience of anti-federal sentiments and lowering the costs of political violence.

I substantiate these theories using three novel datasets: physical and verbal harassment against BLM employees over two decades, constitutionalist sheriffs in the American West, and land transfer legislation. In a multivariate analysis, I find that counties that elect constitutionalist sheriffs are more likely to have civilian violence against federal employees, and counties predisposed to political violence have higher rates of violence in the year following the passage of land transfer legislation. An under-explored consequence of American federalism is one level of government encouraging civilian violence against another level of government. This study offers a new perspective on federalism conflict by showing how violence can ensue as a consequence of disagreement between levels of government.

Federal Land Management and the Sagebrush Rebellion

Federal tensions over land and natural resources have been an integral part of politics in the western US. The 11 western states (Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming) have an average of 49.9% of their land owned by the federal government. In stark contrast, to only 4% of non-western land is owned by the federal government (see Fig. 1). Federal land ownership limits the ability of states to determine how to manage their land for economic purposes, such as grazing and mining, in addition to recreational use and conservation.[4] Throughout the 1960s Secretary of Interior Stewart Lee Udall scaled back grazing permits to prioritize land preservation over economic use, which had a negative effect on the ranching community located primarily in the western United States.

Federal environmental regulations continued to expand throughout the 1970s and inspired the Sagebrush Rebellion, a movement against federal land ownership and management. Former Colorado governor Richard D. Lamm described the motivation for the movement as "the West has become legally emasculated, that it is treated with arrogance and indifference, and that it still is living with the old, archaic federal-eastern assumption that the federal government is better equipped to rule the West than the West is to rule itself" (Lamm and McCarthy 1982). By the end of

[3] Constitutionalist sheriffs interpret the U.S. Constitution such that the federal and state government authorities are subordinate to county governments.

[4] The Taylor Grazing Act of 1934 created a permit system for the federal government to lease grazing land to ranchers while preventing overconsumption of the natural resources. Permits are distributed in animal unit months (AUMs) and change annually based on weather, natural disasters, and demand. For example, a rancher may own 100 cattle and receive 1200 AUMs 1 year (full grazing privileges), but only 700 AUMs the following year creating a difficult situation of owning cattle but having no land to graze them.

the decade, the Sagebrush Rebellion had entered the nation's mainstream consciousness. In 1979, Newsweek magazine ran a cover with a cowboy and the words "The Angry West: Get Off Our Backs, Uncle Sam" (Cawley 1993). The following year Reagan brought the Sagebrush Rebellion to the forefront of his environmental platform, promising "I renew my pledge to work toward a Sagebrush solution".[5] The decentralized nature of the Sagebrush Rebellion resulted in a movement composed of people united by a common grievance but divided over the appropriate response. This made Sagebrush Rebels an unfit competitor for the environmental movement. Over time the Sagebrush Rebellion splintered into two parts: the land transfer movement and constitutionalist sheriffs—both of which help us understand patterns of political violence in the American West.

Motivations for Political Violence in the American West

Conflict over public land management stems from culturally embedded, anti-government feelings in the American West (Leadingham and Garner 2018). Citizens perceive BLM employees as emblematic of unwanted government presence on western lands because their responsibilities include enforcing regulations and overseeing the distribution of economic and recreational land use permits (Lipsky 2010). As a result, employees of the Forest Service, National Park Service, Fish and Wildlife Service, and BLM routinely deal with politically-motivated threats, harassment, and physical violence from people upset about restrictions on the use of federal land.

Given the strongly-held and persistent resentments against federal land ownership, political behaviors should not be written off as irrational or impulsive solely because the risks are great. Evidence shows that despite serious legal and physical risks, individuals feel compelled to commit political violence because of moral, emotional, or even religious reasons (Oberschall 1973; Wood 2003). For example, Cliven Bundy co-authored *The Nay Book* which asks "What is the Constitutional duty of a member of the Lord's church?" and articulates how his Mormon faith inspires him to resist the federal government (Sottile 2017). As individuals' sense of grievance becomes more acute, they seek more intense forms of political behavior and assume higher costs and risks for their behavior (McAdam 1986; Schumacher 1980).

In addition to its expressive benefits, political violence can serve as a mean for obtaining material wealth. Greed-based violence is explained by circumstances that generate opportunities for private gain (Collier and Hoeffler 2004). This is especially common in populations with unmet economic needs and in economies that have lootable goods. Dwindling economic opportunities for rural Americans increases unemployment and financial hardship, plus grazing lands are one of the most lootable natural resources. Specifically, it is prohibitively difficult for the

[5] Reagan's delivery on this promise began and ended with appointing Sagebrush ally and fervent anti-environmentalist James Watt as Secretary of the Interior. Watt resigned in 1983 after describing a department coal leasing panel as "I have a black, a woman, two Jews, and a cripple. And we have talent."

Fig. 1 Map of federal land ownership in the western United States

federal government to fully monitor all grazing land and looting does not require expensive machinery or production economies of scale, just hungry cows.

Finally, obstructionist political action may deliver policy results to a passionate minority that majoritarian institutions otherwise would not achieve. Pluralist politics benefits only groups who have already gained access to the political system (Cobb and Elder 1983; Dahl 1961).[6] The "problem of the powerless" (Wilson 1961) is that poor populations lack the resources to be used as bargaining chips in the policy-making process so they engage in other political behaviors that do not require monetary resources (Scott 1985). If a group is unable to change policy, they could achieve the same effects by preventing undesirable policies from being implemented.

Land Transfer Legislation

The land transfer movement advocates federal lands are transferred to state ownership. The rationale is that federal land ownership violates western states' protection under the Equal Footing Doctrine because eastern states own nearly all their public lands and western states own between 15 and 70% of their public lands. However, constitutional law does not support this rationale because the western states explicitly granted the federal government ownership of their public lands when they were admitted into the union (Conable 1996). Undeterred by legal reasoning, the lands transfer movement uses the legislative process to advance its agenda.

Land transfer legislation includes bills, resolutions, and memorials in state legislatures that aim to reduce federal land ownership. Federal courts have ruled there is no constitutional standing for states to demand ownership of their land. Accordingly, these bills serve position-taking and credit-claiming purposes but have no tangible

[6] People of higher socioeconomic status have an easier time getting policy concessions from politicians because they turn out to vote at higher rates (Rosenstone 1982), are more likely to stay abreast of political affairs (Downs 1957), and can use their money to influence politicians through donations (Schattschneider 1960; Bartels 2008; Gilens 2012; Schlozman et al. 2012).

effect on land policy. The first land transfer bill was passed in 1979 by the Nevada legislature and claimed federal land as property of the state. Imitation legislation was subsequently passed in New Mexico, Utah, Wyoming, and Arizona. Every western state except for Washington and Oregon has at one point has passed a bill that funds a study on the transfer of federal lands to the state. Since 2012, Utah has spent over a million dollars paying a law firm to study the feasibility of a lawsuit against the federal government (Gehrke 2016). Several states have also passed memorials or resolutions stating that federal land management is a burden for their state, which provides ideological representation to constituents and is often easier to pass than bills.

Support for land transfer legislation is most prominent within the Republican Party, especially the Tea Party faction. Republican-controlled legislative chambers are much more likely to pass land transfer legislation. The most liberal western states, Washington, Oregon, and California, have never passed any land transfer legislation while the Sagebrush Rebellion continuously benefits from Republican super-majorities in the Utah and Idaho legislatures. Of all western legislatures, Utah's legislature is the most active in its pursuit of public lands. Utah is also home to the American Lands Council, a nonpartisan nonprofit that advocates for the transfer of public lands from the federal government to state governments. The American Legislative Exchange Council (ALEC) is another key player in the land transfer movement. ALEC promotes "free-market enterprise, limited federal control, and more power for state governments", and thus authors many of the land transfer bills introduced in state legislatures (Gilpin 2016).

Land transfer legislation ranges from expensive and impractical to outright unconstitutional, suggesting that legislators view these bills as opportunities to take a position on an issue that is important to their constituents. Constituents could interpret the passage of land transfer legislation as an endorsement of their anger toward federal land ownership. Individuals may discount the legal consequences of political violence if they feel supported by state politicians.[7] Additionally, the inclusion of land transfer on the state political agenda could inflame latent anti-government sentiments into strongly-held negative feelings towards the BLM, and even political violence. If the endorsement theory is correct, we would expect rates of political violence to be higher in the year following the passage of land transfer legislation.[8]

[7] For example, numerous western state legislators travelled to Oregon to show support for the armed occupation of the Malheur National Wildlife Refuge in 2016 (Maughan 2016).

[8] Alternatively, land transfer legislation could act as a steam valve for political frustrations. If constituents have grief or anger about the federal land ownership in their community, the passage of land transfer legislation may assuage their frustrations by demonstrating that their legislators are working to solve this problem. Someone who would otherwise commit political violence against an BLM employee may choose to trust that political institutions and processes will remedy the problem upon learning that the state legislature is working to transfer lands from federal to state ownership. If the steam valve theory is correct, we would expect rates of political violence to be lower in year following the passage of land transfer legislation.

Hypothesis 1 There will be more political violence against BLM employees in states that passed land transfer legislation in the previous year than in states that did not pass land transfer legislation in the previous year.

Constitutionalist Sheriffs

Sheriffs are law enforcement officers who are elected at the county-level.[9] Unlike police chiefs or commissioners who are generally appointed, sheriffs must run for office on a campaign platform that communicates a law enforcement record or philosophy. Sheriffs' campaign promises can meaningfully affect post-election law and order in a county. Relative to a municipal police force or state patrol, the office of the sheriff has more autonomy, more popular mandate because of direct election, and thus is more likely to allow personal attitudes to affect their job performance (Farris and Holman 2015). Previous research finds that sheriff's personal attitudes about immigrants influences their law enforcement decisions, such as whether or not to check for citizenship or immigration documentation at traffic stops (Farris and Holman 2017). Checking individuals' documentation at a traffic stop or crime scene is within the purview of sheriff duties, but what happens when a sheriff's job philosophy affects other levels of law enforcement such as federal employees enforcing federal land policy?

The political beliefs and behaviors of the Kane and Beaver county sheriffs help explain differences in political violence toward BLM employees across counties. Kane and Beaver are Utah counties identical in their population, land area, the percent of federally owned land, voter turnout, and support for GOP presidential candidates, yet Kane County has Utah's highest rate of political violence against BLM employees in the state while Beaver County has had no political violence against BLM employees. Kane County's sheriff, Lamont Smith, is a member of the Constitutionalist Sheriffs Peace Office Association. In 2003, Sheriff Smith went on a public tirade destroying over thirty "restricted access" signs posted on federal land. In 2013, Sheriff Smith signed a pledge to block law enforcement of President Obama's gun control executive action. That same year during a testimony to the Utah legislature he called BLM presence "an assault on the sovereignty of the state of Utah" (O'Donoghue 2013). Sheriff Yardley, from Beaver County with no violence, is politically unremarkable. Constitutionalist sheriffs can increase political violence by inciting anti-federal grievances and facilitating opportunities for citizens to illegally use public lands for private gain.

Constitutionalist sheriffs believe that the United States Constitution ordains sheriffs as the ultimate law-enforcement authority, even above the federal government (Chaloupka 1996). Although a sheriff does not have to formally declare oneself a constitutionalist sheriff, many sheriffs of this ideology have chosen to join

[9] Sheriffs are elected in all states except Alaska, Connecticut, Hawaii, and Rhode Island. Sheriffs are elected at the county-equivalent level in states that do not have counties, i.e., Louisiana sheriffs are elected at the parish-level.

the Constitutionalist Sheriffs Peace Office Association (CSPOA). According to the CSPOA mission statement, members of the CSPOA believe that county sheriffs "should take their rightful position and use their authority to assist in the transfer of control of the land, and prosecution of violations of citizens' rights by federal authorities."

Evidence from the rural West demonstrates that when particular sheriffs refuse to cooperate with federal authorities, federal policies are less likely to be enforced because the enforcement costs are higher. BLM spokesman Craig Leff explains that "Coordination with local law enforcement is critical to carrying out the BLM's mission and ensuring public health and safety on the public lands" (Taylor 2014). To illustrate, a law enforcement agent who was assigned to the Bundy Standoff testified that the mission to round up Mr. Bundy's cattle would have succeeded if "the local sheriff, whom Sagebrush Rebel-types tend to regard as the legitimate law of the land, might have been able to defuse the Bunkerville protest" (Swearingen 2016). Department of Interior agencies rely on local law enforcement to be their boots on the ground, but constitutionalist sheriffs can protest perceived federal overreach by refusing this request or obstructing federal employees from enforcing the law. In addition to denying federal agencies their help, sheriffs can make it unnecessarily difficult for federal employees to enforce the law. Constitutionalist sheriffs have threatened and attempted to arrest BLM rangers for denying citizens access to federal land that had been closed to the public (Siegler 2016). Outside of determining their own relationships with the BLM, constitutionalist sheriffs can encourage citizens to resist BLM policy and engage in violent confrontations.

Constitutionalist sheriffs create the opportunity for private material gain by reducing punishment for illegally using federal land or resisting federal agents. In the West, there is approximately one BLM ranger per public land area the size of Delaware, which makes it hard for the federal government alone to thoroughly monitor the land. Constitutionalist sheriffs' refusal to support the BLM reduces the ability of the federal government to enforce their policies on federal land. When western citizens witness or hear about federal land use policies not being enforced, it increases opportunity for private use of public lands by decreasing their perceived risk of being caught or prosecuted for violating federal land use policies.

Constitutionalist sheriffs increase citizens' grievances through anti-federal government position-taking. Grievance is the experience of "relative deprivation," or the discrepancy between what a citizen expects from the state and what the state delivers regarding rights, economic goods, and public services (Gurr 1970). When sheriffs make federal land ownership a salient topic in western communities, it can validate individuals' private or latent negative feelings about the federal government. In their role as a local opinion leader, the sheriff may persuade constituents to be more critical of federal land use policies. The intensifying of federal land grievances can motivate individuals to commit political violence against the BLM. The opportunity and grievance mechanisms lead me to my second hypothesis.

Hypothesis 2 There will be more political violence against BLM employees in counties with a constitutionalist sheriff than in counties without a constitutionalist sheriff.

Research Design

In this paper I ask, what is the role of subnational governments in encouraging political violence in modern United States? I answer this question using a dataset of political violence against the BLM over 21 years and four regressional models varying panel and cross-sectional specifications with event count and dummy definitions of the dependent variable.

The cross-sectional model tests the effects of stable county characteristics on political violence. The unit of analysis is the county, which yields 414 observations. The first specification is a logit model with dummy dependent variable indicating whether or not any political violence occurred in the county during the twenty-one year time period of the dataset.[10] The second cross-sectional model uses an event-count dependent variable to assess which counties experience higher rates of political violence.[11]

To investigate when political violence occurs, I use panel data to analyze the effect of time-variant political and economic conditions over the 21 years of political violence data. The unit of analysis is county-year, yielding 8687 observations. The dependent variable is political violence and the primary independent variable of interest is the passage of land transfer legislation. County-level fixed effects hold constant time-invariant characteristics. Analogous to the cross-sectional analysis, I use both logit and event count models.

Dependent Variable: Measuring Incidents of Political Violence

The dependent variable is political violence against the BLM. Data come from Freedom of Information Act (FOIA)[12] requests filed by Public Employees for Environmental Responsibility (PEER).[13] The FOIA requests returned 500 incident reports of physical assaults, verbal harassment, and violent threats. Encompassing the entire repertoire of violent modalities allows us to better understand patterns of political violence (Gutierrez-Sanin and Wood 2017). Each report contains the incident description, date, location, description of the action taken by law enforcement, and status of the deposition. Examples of incidents include shooting at tires of rangers' vehicles, bombing personal residences, death threats left on personal and work voicemails, and shoving, hitting, or spitting on BLM employees. Excerpts from

[10] The direction and significance of the coefficients are the same in a probit specification.

[11] For the event county model I use a negative binomial specification to account for over-dispersion in the data. The negative binomial distribution includes an extra parameter to correct for over-dispersion, in contrast to the Poisson model which assumes the dispersion parameter is equal to 1.

[12] The Freedom of Information Act allows citizens to request federal agency records or information.

[13] PEER filed FOIA requests for "A summary of all incidents of violence, threats, or harassment against BLM employees that occurred in calendar year [x]. The summary should include the date, location, and nature of the incident or threat together with a summary of what, if any, outcomes stemmed from the incident or threat (e.g., arrest, conviction, ongoing investigation)."

BLM incident reports portray clear political motivations.[14] The location was typically described as the state and the name of a park, intersection, or geographical landmark. I used the location descriptions to identify the county of each incident (see Fig. 2). I exclude 72 incidents for both theoretical and practical reasons.[15] To account for possible reporting bias, intentional or otherwise, I run year fixed-effects regression models and find that the results hold their significance and direction. The relatively low incident counts for 1995–1997 (see Fig. 3) could be related to possible changes in reporting protocol or administration.

Independent Variable 1: Measuring Land Transfer Legislation

There was no complete list of land transfer legislation to use as a data source so I collected a list of all land transfer legislation introduced between 1995 and 2015 by searching the websites of think tanks, and non-profit organizations, and newspapers.[16] I cross-checked this legislation list by searching each legislature's legislation repository for the phrases "federal land" or "land transfer". I read the text of each bill to ensure it met one of the following criteria: created or funded a commission to study the transfer of federal lands, explicitly supported the transfer of federal lands, stripped the federal government of its jurisdiction over federal lands, or appropriated money to pay a legal team to sue the federal government for land ownership. Western state legislatures introduced 49 pieces of land transfer legislation between 1995 and 2015. This legislation includes 37 bills, 4 memorials, and 8 resolutions (see Table 1 for a list and brief summaries). The majority of the legislation was unsuccessful; 35 pieces of legislation failed and 14 were signed into law. In the statistical models, I include only successful legislation because it is a more meaningful

[14] To illustrate, for many years the federal government has been controlling the prolific wild horse population by rounding up horses for adoption or slaughter. The Rock Springs, Wyoming BLM office received a threatening email pertaining to the wild horse protocol, "WHO DO YOU THINK YOU ARE TO DO THIS, THE ILLEGAL SAFARI CLUB?…FUCK YOU GO TO HELL WHERE U BASTARDS DESERVE AFTER YOU HAVE BEEN TERRIFIED TORTURED AND HUNG UPSIDE DOWN" (Bureau of Land Management 2013). A second example is a physical assault described by a female Forest Service ranger as, "He started getting even more upset and said oh your just another one of those BLM sluts who think you can do whatever you want to make all our recreation go away. So what is your job I bet you don't even know. I answered him to protect the forest health and manage the lands and that is why the Quagel Mussel are an issue and pose a huge problem to the drinking water systems… He said your just one of those environmental bitches who just think that you know it all well you don't know anything that everything is just fine you are just as stupid as the BLM."

[15] I restrict the sample to the 11 western contiguous states where the vast majority of BLM land and offices are located (see Fig. 1). I exclude 14 incidents because they took place outside of these states. Additionally, I exclude 37 incidents unrelated to political violence, such as Burning Man debauchery and harassment from fellow BLM employees. Finally, 6 incidents photocopied too poorly to read and 15 incidents had location descriptions too vague to locate the county.

[16] In my search for a list of land transfer legislation, I contacted the following academic, political, and public interest organizations: American Constitution Society, American Legislative Exchange Council, Cecil D. Andrus Center for Public Policy at Boise State University, Center for Biological Diversity, Center for Western Priorities, Coalition for Self-Government in the West at the Sutherland Institute, High Country News, Idaho Freedom Foundation, National Caucus of Environmental Legislators, National Conference of State Legislatures, and The Property and Environment Research Center.

signal of legislative support than introduction. Land transfer legislation is measured as a lagged binary variable, representing if a state passed land transfer legislation in the year prior to each county-year observation. Using a 1 year lag lessens the threat of legislation and violence arising simultaneously and comports with my theory of legislation serving as a signal prior to the decision to commit violence. I specify a binary measure of passed land transfer legislation because a count variable would necessitate that each additional bill has a relationship of equal magnitude with the likelihood of political violence. It is unreasonable to assume there is a linear relationship between passed legislation and the dependent variable. For example, I cannot reasonably assume that passing four bills in 1 year has four times the impact of a single bill's passage.

Although political violence occurs at a fairly consistent rate throughout all 21 years, land transfer legislation is present predominately in the last quarter of the time period. The amount of land in each state owned by the federal government is held constant throughout the time period, suggesting that changing political incentives motivated the surge of legislation beginning in 2015. Possible explanations include the rise of the Tea Party (a key proponent of federal-to-state land transfers), candidates posturing to voters in anticipation of the then-upcoming 2016 election, and backlash to President Obama's extensive national monument designations. Regression analyses will more thoroughly test this relationship by taking into account other explanatory variables.

Independent Variable 2: Measuring Constitutionalist Sheriffs

The second independent variable is a measure of whether or not a county has a constitutionalist sheriff in office. Prior to data collection here was no public list of constitutionalist sheriffs so I assembled an original list of constitutionalist sheriffs. The first data source is constitutionalist sheriffs serving in CSPOA leadership positions from the organization's website.[17] The second source is the membership roster of the Constitution Club, an organization similar to the CSPOA. Third, I reviewed all the articles including the key search term "sheriff" on the *High Country News*, a prominent independent media organization that covers current events specific to the American West. I classified sheriffs as constitutionalists if the article described them acting or speaking against federal land ownership or federal authority on public lands. I verified each *High Country News* article with at least one local newspaper article describing the political views of the sheriff. After gathering names of constitutionalist sheriffs, I collected the years each sheriff was in office using the records or election returns on the county website. If there was no information about

[17] In 2014, the CSPOA briefly published a list of 485 sheriffs who vowed to uphold the organization's mission. However, the Southern Poverty Law Center uncovered at least a dozen listed sheriffs who claimed to have never heard of the CSPOA, so it is likely false positives are on the list (Potok and Lenz 2016). I expect the leadership position list to contain fewer false positives than the 2014 member list because, assuming the CSPOA wanted to inflate the number of members, there is a limit to the number of plausible leadership positions for an organization.

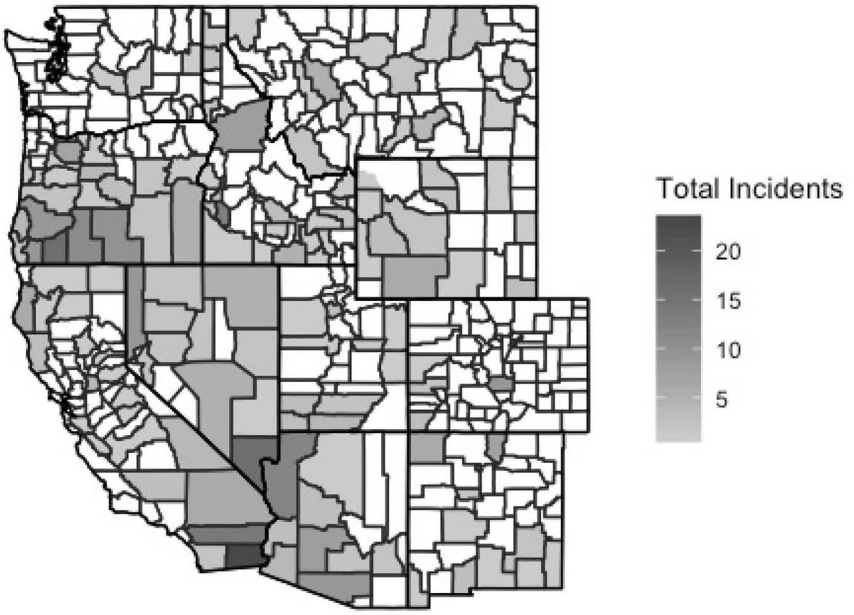

Fig. 2 County-level variation in political violence against public employees in the western United States 1995–2015

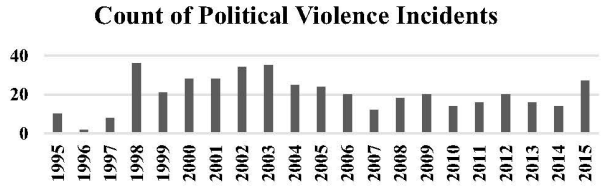

Fig. 3 Count of political violence incidents for 11 western states 1995–2015

a sheriff's dates of service on the county website, I referred to newspaper articles about sheriff elections.[18]

The final list of constitutionalist sheriffs included 49 unique sheriffs across 47 counties from 1995 to 2015. Figure 4 shows the counties that have ever elected a

[18] Constitutionalist sheriffs covered in the news may have stronger anti-federal convictions or have created more publicity for their political beliefs than any constitutionalist sheriffs not covered in news articles. If there is a systematic difference between the observed and unobserved constitutionalist sheriffs, I suspect constitutionalist sheriffs without news coverage have smaller average effect on political violence than sheriffs who spread or endorse anti-federal beliefs through the media. For this reason, any missing observations of constitutionalist sheriffs bias my results upwards and future research should seek better identification strategies.

Table 1 Land transfer legislation 1995–2015

Year	State	Legislation	Passed?	Summary
2011	**Montana**	**SJ 6**	**Y**	**Urges Congress to stop enforcing federal land regulations**
2012	**Utah**	**HB 148**	**Y**	**Establishes a commission to study land transfer**
	Utah	**HJR 3**	**Y**	**Demands the transfer of federal land to the state**
	Utah	HB 91	N	Appropriates funds for a land transfer lawsuit
	Utah	HCR 1	N	Demands the transfer of federal land to the state
2013	**Montana**	**SJ 15**	**Y**	**Audit of federal land management**
	Wyoming	HB 0228	N	Establishes a commission to study land transfer
2014	**Utah**	**HB 151**	**Y**	**Establishes a commission to study land transfer**
	Utah	SB 48	N	Directs Tax Commission to study fiscal impact of transfer
2015	Alaska	HB 115	N	Transfers federal land to state ownership
	Arizona	**HCM 2005**	**Y**	**Urges Congress to transfer federal land**
	Arizona	**HB 2658**	**Y**	**Establishes a commission to study land transfer**
	Arizona	HB 2176	N	Federal land relinquishment
	Arizona	HB 2318	N	Interstate Compact on Transfer of Public Lands
	Arizona	HB 2321	N	Transfers federal land to state ownership
	Arizona	HB 2644	N	Interstate Compact on Transfer of Public Lands
	Colorado	SB 39	N	Concurrent jurisdiction over federal land
	Colorado	SB 232	N	Establishes a commission to study land transfer
	Idaho	SCR 108	N	Establishes a commission to study land transfer
	Idaho	SCR 115	N	Model for state management federal land
	Idaho	HB 265	N	Interstate Compact on Transfer of Public Lands
	Idaho	SB 1134	N	Creates Office of Public Lands
	Montana	**SB 298**	**Y**	**Pursue financial compensation for federal land ownership**
	Montana	SB 348	N	Purchase of national forest must be approved by legislature
	Montana	HB 496	N	Establishes a commission to study land transfer
	Montana	HB 541	N	Legislature must approve transfer of lands rights to federal gov.
	Montana	SB 215	N	Prohibits future sales of federal land transferred to the state
	Montana	SB 274	N	Prohibits future sales of federal land transferred to the state
	New Mexico	SB 483	N	Establishes a commission to study land transfer
	New Mexico	SM 6	N	Ask the federal government to study public lands revenue
	New Mexico	HB 291	N	Establishes a commission to study land transfer
	Nevada	**SJR 1**	**Y**	**Urges Congress to transfer lands**
	Nevada	AB 283	N	State law enforcement power on federal public lands
	Nevada	AB 408	N	Sheriffs being the primary law enforcers on federal land
	Oregon	SJM 7	N	Urges Congress to transfer land title to state
	Oregon	HJM 13	N	Urges Congress to transfer lands
	Oregon	HB 3240	N	Establishes a commission to study land transfer
	Oregon	HB 3444	N	Transfers federal lands to state government

Table 1 (continued)

Year	State	Legislation	Passed?	Summary
	Utah	HB 398	N	Allow state access to and influence over federal roads
	Utah	**SCR 10**	**Y**	**Support for Public Lands Initiative in Congress**
	Utah	**HB 132**	**Y**	**Interstate Compact on Transfer of Public Lands**
	Utah	**HB 303**	**Y**	**Rewords statues to allow for eventual federal land transfer**
	Utah	**HB 384**	**Y**	**Fixes "unlawfully restrictive" federal grazing policies**
	Utah	SB 105	N	Fixes "unlawfully restrictive" federal management policies
	Washington	HB 1192	N	Establishes a commission to study land transfer
	Washington	SB 5405	N	Establishes a commission to study land transfer
	Washington	HB 1262	N	Establishes a commission to study land transfer
	Wyoming	**SB 56**	**Y**	**Establishes a commission to study land transfer**
	Wyoming	HB 209	N	Urges Congress to transfer lands

The bolded items are the passed legislation. Unbolded items are failed (not passed) legislation

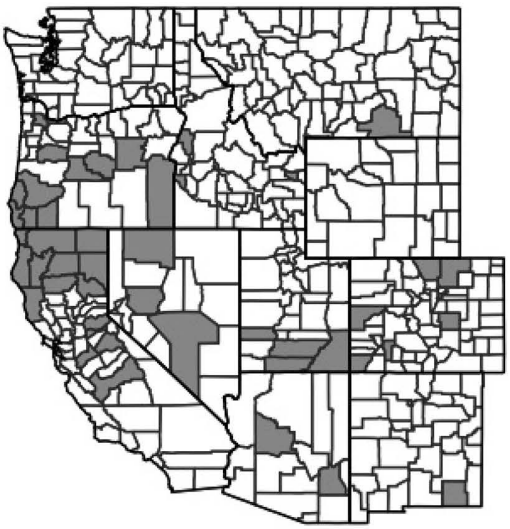

Fig. 4 Western U.S. counties that have ever elected a constitutionalist sheriff 1995–2015

constitutionalist sheriff during the 1995–2015 time period. Slightly over 1 out of every 10 counties in the western U.S. had a constitutionalist sheriff at some point during this time period, with positive cases geographically concentrated in northern California and southwestern Oregon.

Table 2 shows the bivariate relationship between political violence and constitutionalist sheriffs. Counties with constitutionalist sheriffs are over 40% more likely to have violence against BLM employees. The incident rate is the number of counties with at least one incident divided by the total number of counties in that category. The difference of proportions test is significant at $p < 0.01$. In the next section,

Table 2 Bivariate relationship between dependent variable and constitutionalist sheriff

	All counties (N = 414)	Counties with a constitutionalist sheriff (n = 47)	Counties without a constitutionalist sheriff (n = 367)
Political violence incident rate	33%	70%	28%

multivariate regression analyses will further probe the relationship between constitutionalist sheriffs and political violence by controlling for alternate explanations.

Controlling for Alternate Theories

The empirical analysis incorporates control variables for preexisting explanations in the political violence literature. Decreases in economic well-being lead to disruptive protests because of the increased amount of free time of the unemployed, as is observed in the relationship between the decline of manufacturing in the 1990s and the contemporaneous rise of militias (McVeigh 1999; Van Dyke and Soule 2002). Collier and Hoeffler (2004) also find strong support for scarcity of employment lowering the opportunity cost of violent rebellion. I include median household income as a stable measure to compare the economic status of counties relative to each other and county unemployment rate to measure shocks to a county's economic vitality. County-level data on unemployment is collected from the U.S. Bureau of Labor Statistics and median household income is collected from the U.S. Census. Median household income is measured in thousands of dollars. I include a control for education level because previous work has shown that education is associated with disapproval of political violence (Aitchison 2018; Muller et al. 1987; Schnabel 2018). Education is collected from the U.S. Census and measured as the percentage of county residents over the age of twenty-five who have at least a 4-year college degree.

I control for political preferences by including partisanship and presence of political hate groups. Republican candidates are more likely to approve of the land transfer movement,[19] so we would expect political violence against the BLM to occur at higher rates in Republican counties. Partisanship of each county is calculated using the average percent of county votes cast for the Republican presidential candidate across all general elections 1996–2012, which is collected from states' elections websites. Using a national election holds constant candidate quality across states, while averaging five presidential elections helps to minimize variation in candidate quality or idiosyncratic election characteristics. The Tea Party supports the transfer of federal lands to state governments to an even greater extent than the mainstream

[19] Roll call data for all land transfer bills 1995–2015 show higher levels of support from Republican legislators than Democratic legislators.

Republican Party so I include a county-level control for Tea Party members per 10,000 residents. Data is collected by the Patchwork Nation project at the Jefferson Institute. Tea Party membership was measured once in 2010 and is applied to all years in this study. The constitutionalist sheriff movement originated out of the far right, anti-government, anti-Semitic Posse Comitatus movement and the two movements continue to interact (Tsai 2017).[20] I control for hate group activity using data on number of hate groups per capita for each county collected annually from the Southern Poverty Law Center (SPLC) Hate Watch project.

Political violence and other types of non-institutional political behavior are also appealing to those who find traditional forms of political participation inaccessible. Unlike voting or visiting a representative's office, political violence is accessible to all citizens because there are no barriers to participation and no location or election timing constraints (Braun and Hutter 2016). Rural residents incur additional participation costs because they are likely to live farther from a polling location, district office, or state capitol, and public transportation is less available. I control for access to political institutions by including the percent of each county's population living in a rural area with data from the 1990, 2000, and 2010 U.S. Census. I control for access to voting by including turnout in the models.[21] Turnout data is collected from Secretary of State websites.

Rural populations are also more likely to be employed by natural resource extraction industries and have more exposure to the politics of public lands than their urban or suburban counterparts. Individuals with close ties to federal lands may be more likely to have grievances that motivate political violence or opportunities to unlawfully use federal land. To control for this possibility I include the U.S. Census' percent of the county population that is employed in the agricultural, forestry, fishing and hunting, or mining sectors.

I control for the percent of each county that is federal land. Residents of counties with a high proportion of federal land may be more likely to hold grievances about public land management because they encounter more land use restrictions. Federal land ownership was calculated using ArcGIS shape files from the U.S. Geological Survey. I also control for the number of BLM offices in each county using the list of offices on the BLM website.

Fearon and Laitin (2003) argue that terrain that is difficult to navigate makes it harder for the state to obstruct insurgency movements because the local populations have better knowledge of how to navigate the land than state actors. A single BLM ranger can be responsible for patrolling a district that is hundreds of square miles in size which makes it difficult for rangers to grow familiar with their entire district. Geographic size of the county and population density (measured as rural population)

[20] For example, in 2015 the CSPOA worked alongside extremist-group militia members in Montana and Oregon to obstruct federal authorities from closing two mines located on federal land after their government permits were not renewed (Potok and Lenz 2016).

[21] I calculate turnout by averaging sequential midterm and presidential elections to account for the difference in turnout between presidential and midterm elections. For presidential election years, turnout was averaged with the midterm election from two years prior. For midterm election years turnout was averaged with the presidential election two years prior. For odd-numbered years, turnout is measured as the average of the previous presidential election and the previous midterm election.

Table 3 Where does political violence occur?

	Where has it occurred? DV = incident (1), no incident (0)	Where has it occurred a lot? DV = incident count
Land transfer legislation	0.378 (4.166)	−1.185 (4.055)
Constitutionalist sheriff	2.467** (1.174)	0.615 (0.512)
Hate groups (per 10,000 capita)	15,436.59 (19,923.59)	13,575.67 (12,910.16)
Voter turnout (%)	0.057** (0.027)	0.04** (0.017)
County size (sq. thousand miles)	0.255*** (0.091)	0.058 (0.035)
Federal land (%)	0.012* (0.006)	0.016*** (0.004)
BLM offices	1.789*** (0.212)	1.265*** (0.173)
Rural population (%)	−0.024** (0.01)	−0.026*** (0.005)
College completion (% 25 + years)	−0.052 (0.037)	−0.042** (0.018)
Median household income	−0.014 (0.03)	−0.023 (0.016)
Constant	−3.759** (1.888)	−1.600 (0.974)
N	414	414
Unit of analysis	County	County
Clustered errors	State-level	State-level
Specification	Logit	Negative binomial

For the cross-sectional models, land transfer legislation is operationalized as the average number of land transfer legislation passed per year. For example, Montana passed land transfer legislation in 3 of the 21 possible years, so the value of the land transfer legislation variable is 0.14 for all Montana counties. Sheriff is the proportion of years 1995–2015 for which a county had a constitutionalist sheriff in office. Clustered standard errors are bootstrapped to accommodate the small number of states. I do not include partisanship, Tea Party membership, employment industry, or population because their inclusion does not achieve signficance and does not change the other coefficients

***p < 0.01, **p < 0.05, *p < 0.10

are proxies for how easily the BLM can navigate and monitor public lands. The size of counties was collected from the 1990, 2000, and 2010 U.S. Census.

Results

Land Transfer Legislation

The passage of land transfer legislation does not have a significant effect regarding where political violence occurs (Table 3), but it does have positive and statistically significant coefficient in the panel model for the timing of political violence (Table 4). Importantly, the passage of a bill has a statistically significant association with not only whether or not a county experiences political violence the following year, but also whether a county experiences one or many events. The passage of land transfer legislation is associated with a 10% increase in the probability of political violence occurring in the following year (Table 5). Future research should parse out the mechanism by which land transfer legislation is associated with political

Table 4 When does political violence occur?

	When has it occurred? DV = incident (1), no incident (0)	When has it occurred a lot? DV = incident count
Land transfer legislation passed in previous year, dummy	0.687*** (0.219)	0.571*** (0.002)
Constitutionalist sheriff	−0.334 (0.439)	−0.308 (0.413)
Hate groups (per 10,000 capita)	4561.274 (6326.325)	5487.407 (6802.508)
Voter turnout	−0.023*** (0.008)	−0.026*** (0.01)
Unemployment (%)	0.007 (0.04)	0.003 (0.025)
Unified democratic state	0.161 (0.375)	0.109 (0.362)
Clinton administration	−0.485*** (0.161)	−0.429*** (0.166)
Obama administration	−0.319 (0.304)	−0.243 (0.235)
Constant		1.779** (0.719)
N	2898	2898
Unit of analysis	County-year	County-year
Fixed effects	County-level	County-level
Clustered errors	State-level	State-level
Specification	Panel logit	Panel negative binomial

Clustered standard errors are bootstrapped to accommodate the small number of states

***p < 0.01, **p < 0.05, *p < 0.10

violence. For example, how do constituents hear about land transfer legislation—through their legislator's district communications, mailers from the American Lands Council, state capitol media coverage, or some other way?

Earlier in the paper, I stated why I expect the passage of land transfer legislation to be significant for political violence as opposed to the introduction of land transfer legislation. When I specify the land transfer legislation variable to include *introduced* legislation instead of only *passed* legislation, there is no evidence of a statistically significant relationship between land transfer legislation and violence against BLM employees. This suggests that for legislation to have an endorsement effect it needs to have been validated by a majority of the legislature, and in most cases the governor. The introduction of land transfer legislation by a single legislator sympathetic to the Sagebrush Rebellion is too weak a signal to effectively validate constituents' federal land grievances.

Constitutionalist Sheriffs

Table 3 shows counties that elect constitutionalist sheriffs are statistically significantly more likely to have political violence than counties that do not elect constitutionalist sheriffs. Election of a constitutionalist sheriff has a statistically significant relationship with the *presence* of violence, but not the *amount* of violence beyond the first incident. Specifically, the constitutionalist sheriff coefficient is significant only in the logit model, not the event count (negative binomial) model. The election

Table 5 Panel logit predicted probabilities

When this variable	Shifts from … to …	Change in the probability of violence in a county-year
Passed land transfer legislation	0 to 1	10.7% increase (0.4%, 21.0%)
Voter turnout (%)	68 to 77	2.4% decrease (1.8%, 3.1%)
Clinton administration	0 to 1	5.6% decrease (0.3%, 10.9%)

The table includes the predicted probabilities for only the statistically significant variables while holding all other variables at their means. Voter turnout is measured as the jump from the median (68) to one standard deviation (9) above the median. Upper and lower bounds show the 95% confidence level around the change in predicted probability

of a constitutionalist sheriff is association with a 54% increase in the probability of political violence (Table 6).

The lack of significance on constitutionalist sheriffs in the panel models represents that the election of constitutionalist sheriffs does not help to explain the timing of political violence (Table 4). Whether or not a constitutionalist sheriff is in office for any given year does not have a statistically significant relationship with political violence during that same year. This could be caused by the effect of a constitutionalist sheriff working through the grievance mechanism rather than the opportunity mechanism. If a sheriff encourages violence by inflaming grievance, then the significant effect of a sheriff could persist after they leave office. Alternatively, if a sheriff encourages violence by creating opportunities for lawlessness then you would expect the effect to be time-sensitive to when the sheriff is in office and the coefficient would be significant in the panel model. Another explanation is possible endogeneity between a county's proclivity for electing a constitutionalist sheriff and a predisposition for political violence. This also comports with the statistical significance of constitutionalist sheriffs coefficient in the cross-sectional model but insignificant coefficient in the time-series model.

Discussion

A couple control variables merit discussion.[22] First, the size of rural population has a significant and negative relationship with political violence. I interpret this in the context of political violence occurring almost exclusively in rural locations that are within geographically heterogenous counties (which describes most counties). To illustrate, San Bernardino County in California had six incidents over the 20 year period, all of which occurred in the rural parts of the county. San Bernardino county is majority urban and suburban[23] in population but majority rural in physical area.

[22] I do not include Republican partisanship, Tea Party partisanship, and population in the final cross-sectional or time-variant models because their inclusion does not achieve significance nor change the other coefficients.

[23] The vast majority of the population in San Bernardino County lives in cities on the edge of Los Angeles and Orange counties.

Table 6 Cross-section logit predicted probabilities

When this variable	Shifts from … to …	Change in the probability of violence in the county
Constitutionalist Sheriff	0 to 1	54.3% increase (20.1%, 88.4%)
Voter turnout (%)	68 to 77	11.7% increase (0.4%, 23.1%)
County size (sq. thousand miles)	2.1 to 4.8	15.1% increase (4.6%, 25.6%)
Federal land (%)	39 to 67	7.4% increase (−0.4%, 15.2%)
BLM offices	0 to 1	40% increase (30.4%, 49.8%)
Rural population (%)	49 to 82	14.3% decrease (4.5%, 24.2%)

The table includes the predicted probabilities for only the statistically significant variables while holding all other variables at their means. The values for all variables except for constitutionalist sheriffs and BLM offices are the median to one standard deviation above the median. Upper and lower bounds show the 95% confidence level around the change in predicted probability

Rural residents in predominately non-rural county may feel like their experiences and perspectives are erased by urban-centric politics and culture. After all, the Sagebrush Rebellion was created because rural interests felt excluded from the policy-making process (Cawley 1993). Groups excluded from agenda-setting and policy-making eventually stop trying to be involved in these processes (Cobb and Elder 1983). This perceived powerlessness within the political system can lead citizens to prefer aggressive political behavior over more traditional forms of democratic political behavior (Muller and Godwin 1984).

Second, the presence of hate groups has no significant relationship with political violence against the BLM. This finding is unexpected given the history of linked activities between militias and land use conflict. Some may find it comforting that violence towards the BLM is not a byproduct of having more hate groups in a county and that the violence studied in this paper is not a symptom of a more maleficent phenomenon.

Conclusion

This paper interrogates the role of subnational governments in stimulating political violence against BLM employees in western United States. Using a dataset of political violence reports from the BLM, I empirically support two theories that use a federalism perspective to advance our understanding of modern American political violence. First, constitutionalist sheriffs cam increase political violence against the federal government by stoking citizens' anti-federal grievances and by making it difficult for the BLM employees to enforce land regulations. Second, passage of land transfer legislation by state legislatures can increase subsequent rates of political violence by vindicating individuals' frustrations with the federal government.

Incorporating federalism into the study of political violence illuminates how the actions of elected officials at state and county levels can promote violence against the federal government, a phenomenon previously unexamined by political

scientists. Elected officials' legislative activity, campaign promises, and law enforcement decisions all may promote political violence against federal employees. Given that state and county politicians benefit from presenting the federal government as a straw man for a variety of policy areas, subsequent projects should examine the context-specific incentives of elected officials to send signals that undermine federal authority. Disputes over federalism and natural resources are just one facet of modern American political violence, and there are many more violent phenomena that merit attention. For example, I do not expect theories about constitutionalist sheriffs to explain the shooting of the congressional Republicans' baseball team in 2017 or the eleven assassination attempts of Democratic Party elites preceding the 2018 midterm elections.

I do expect my findings of constitutionalists sheriffs to generalize to policy domains in which sheriffs have a role in implementing federal law, such as immigration (Farris and Holman 2017), domestic violence (Farris and Holman 2015), public and traffic safety, and gun control. The effect of constitutionalists sheriffs on civilian compliance with gun policy would be an appropriate empirical test of the theories in this paper given the CSPOA's explicit refusal to enforce President Obama's gun control executive action. Generally, we should expect the actions of state and county governments to be more impactful on civilian non-compliance when the federal government cannot easily enforce a policy itself, such as drug policy enforcement. The Drug Enforcement Administration relies on the cooperation of local law enforcement to be their eyes and ears (and backup) in communities across the nation, yet we see state, county, and city governments intentionally thwarting federal marijuana restrictions.

Future research should examine the conditions under which vocal groups are likely to reap policy rewards from violent political resistance that they would not otherwise achieve through the legislative process. One cannot understate the extent to which social identity mediates the success rate of using political violence to extract concessions from the government. The Sagebrush Rebellion is popularly viewed as a movement of cisgender, heteronormative, Christian, white, male, American-born citizens. Consequently, the Sagebrush Rebels' ability to reap distributive benefits through political violence against the government is an exception to the larger pattern of extra-institutional political behaviors in minority social movements. This paper describes a phenomenon that is in stark contrast to the violent and oppressive government responses to obstructionist political behavior during the Civil Rights movement, Black Lives Matter protests, the Women's Suffrage Movement, and the Dakota Pipeline protests. Additional research could uncover why subnational governments decide to insert themselves into disputes between citizens and the federal government, and how this varies across issues and subconstituencies.

Political violence surrounding federal land management policy provides a unique opportunity to advance understanding of both individuals' decisions to engage in high-cost, unconventional political behavior and to explore the adverse consequences of federalist institutions. Symbolic land transfer legislation and sheriff elections are often given short shrift by both media and academia, but these political activities have important consequences for the safety of public employees. Scholars should continue to examine other contexts of political violence to increase the

discipline's understanding of which subnational political institutions encourage violent political behavior, and how it can be avoided in the future.

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Compliance with Ethical Standards

Conflict of interest The author declares that she has no conflict of interest.

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CHAPTER 3

Measuring the Rural Continuum in Political Science

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Measuring the Rural Continuum in Political Science

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Abstract

Recent accounts of American politics focus heavily on urban–rural gaps in political behavior. Rural politics research is growing but may be stymied by difficulties defining and measuring which Americans qualify as "rural." We discuss theoretical and empirical challenges to studying rurality. Much existing research has been inattentive to conceptualization and measurement of rural geography. We focus on improving estimation of different notions of rurality and provide a new dataset on urban–rural measurement of U.S. state legislative districts. We scrutinize construct validity and measurement in two studies of rural politics. First, we replicate Flavin and Franko (2020, *Political Behavior*, 845–864) to demonstrate empirical results may be sensitive to measurement of rural residents. Second, we use Mummolo and Nall's (2017, *The Journal of Politics*, 45–59) survey data to show rural self-identification is not well-captured with objective, place-based classifications, suggesting a rethinking of theoretical and empirical accounts of rural identity. We conclude with strategies for operationalizing rurality using readily available tools.

Keywords: measurement validity, rurality, political geography, modifiable areal unit problem

1 Introduction

News media focus intently on the urban–rural divide as a source of American political polarization. For example, *The New York Times* featured 48 articles about America's urban–rural political divide in 2018 and 32 more in 2019.[1] In one week in June 2019, *The Washington Post* wrote articles on "How rural America can grab a bigger megaphone," "Idealizing rural America," and "When we think of America, we shouldn't think rural." Clearly journalists and opinion writers believe the urban–rural gap is a critical political cleavage in American politics. This interest in the urban–rural gap is shared by political scientists trying to understand increasing geographic divides in politics around the world (Rodden 2019) and rising rural resentment in the American political system (Cramer 2016). Accessible information on how to best conceptualize and measure rural concepts relevant to political science will enable researchers to more deeply explore the geographic political divide.

We intend for this article to equip readers with a methodological toolbox for studying the rural continuum in politics, with application to the United States. We focus on rural politics as a specific case of political geography that has high salience in our current politics, although many of the principles and methods we discuss are applicable to studies of political geography in general. To this end, we outline the resources available to political scientists to select appropriate geographic units and account for different concepts of rurality within their indicators. Meanings of urban and rural are varied, based on characteristics of locations (such as geographic distance, population density, and the economic basis of the economy) and personal identity. We begin by dissecting two measurement decisions crucial to the study of rural politics. The first challenge is choosing a unit of aggregation that reduces measurement error without unduly limiting potential data sources. The second challenge is choosing a measurement classification schema that accurately accounts

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1 See the list of articles in Tables A11 and A12.

for the theoretical notion of rurality intended by the researcher. This discussion of construct validity is applicable beyond the field of American politics, and we encourage other subfields and disciplines to engage in similar discourses about geographic construct validity. To improve access and quality of rural indicators, we introduce a new dataset of urban–rural classifications of U.S. state legislative districts and use it to replicate Broockman's (2013) study of legislative responsiveness.[2] We then illustrate the consequences of geographic measurement decisions in studying rural American politics. First, we show that recent scientific knowledge on rural politics is sensitive to measurement decisions by replicating "Economic Segregation and Unequal Policy Responsiveness" by Flavin and Franko (2020). Second, we demonstrate the importance of differentiating rural identity and rural location by showing remarkably low correlations between rural self-identification and actual rural residence (Mummolo and Nall 2017). We argue that this distinction should be closely considered in research on the urban–rural divide. We conclude with a summary of the tools available to researchers to match their rural concept to existing datasets.

Despite its challenges, dismissing research on the urban–rural divide due to difficulties with conceptualization and measurement would miss out on very important political questions. Most evidently, rural political preferences and voting behavior may be crucial to understanding the rise of populism and growing political polarization in the United States and abroad. We provide practical advice for measuring the urban–rural continuum with a substantive emphasis on the rural end of the spectrum. Rural communities are critical to politically relevant topics of economic opportunity, economic mobility, and public health, and have outsized weight in American political institutions. Rural communities also feature prominently in discussions of political districting and gerrymandering. In this article, we provide guidance for empirically oriented scholars to examine the rural elements of these questions.

1.1 San Diego: Urban, Rural, or Both?

The example of San Diego, CA, sets forth the problem of measuring the concept of rurality for the purpose of conducting political science research. By many accounts, the city of San Diego is unequivocally urban, because it is the eighth largest city in the United States and home to 1.3 million people packed in at a density of 4,326 people per square mile. Much of the data on San Diego are measured at the level of its eponymous San Diego County, which has almost 2 million additional residents living outside San Diego city limits. It is the fifth most populous county in the United States, with more residents than 20 states. The county's economy is largely service-based, focused on healthcare, computer and biotechnology, higher education, and military services.

Despite its metropolitan reputation, San Diego is geographically large, and population density varies widely. Covering 4,525 square miles, it takes over 2 hr to drive across the county from the border with Mexicali, Mexico to Fallbrook, CA, on the Orange County border. Many of San Diego County's residents live in suburbs, exurbs, small towns, and remote rural areas. One such example is the unequivocally rural mountain town of Julian, CA, that has a population of 1,500, a population density of 190 people per square mile, and an agriculture-based economy.

San Diego County is commonly treated as an urban agglomeration, implicitly assuming a uniform distribution of people and preferences across the county. If we are trying to understand the causal links of rurality to political behavior, we obscure enormous variation on both factors by measuring San Diego County as urban. The political factors associated with urbanity, captured in San Diego's average value, may explain why the county voted for Democrat Hillary Clinton over Republican Donald Trump by a margin of 18 points, but its suburban, exurban, and rural residents

2 Replication materials are available in Nemerever and Rogers (2020b).

on the eastern edge of the county returned federally indicted Republican Congressman Duncan Hunter to office in 2018 by a margin of 4 points.[3]

Analyses that code San Diego County as metropolitan erase the geographic, economic, and cultural heterogeneity within the county and fail to account for its (likely related) political heterogeneity. Perhaps the averaging out of San Diego's population density, economic structure, or rural preferences reduces theoretical nuance, but may otherwise seem harmless from a measurement standpoint. After all, our theories are often primarily concerned with the "average resident" or the "median voter" in the county. Yet this logic is fundamentally challenged by concerns with the modifiable areal unit problem (MAUP), whereby measuring the same concept at different unit scales or zones results in different values (Lee and Rogers 2019; Wong 2009). We would get a very different accounting of the "rurality" of San Diego if we measured it as San Diego city, San Diego County, North–East–South-Coastal San Diego County (a common subdivision), zone improvement plan (ZIP) codes within, or the county's incorporated cities.

This problem is not unique to San Diego. One-fifth of rural Americans live in metropolitan counties. Each time we measure rurality, we encounter choices of: (1) the appropriate geographic unit of aggregation and (2) the appropriate conceptualization of rurality to our theory. In the next section, we describe geographic unit options in American politics, and the trade-offs involved in choosing them. In the following section, we discuss different conceptualizations of rurality and how scholars can account for their preferred conceptualization across different geographic units.

2 Units of Aggregation

For most questions of political behavior, the optimal unit of analysis is the individual. With aggregation of data, we introduce choices about the appropriate unit of aggregation and aggregation statistic. In the case of geographic data, we must also consider the MAUP. Nonetheless, many important political phenomena are place-based, requiring aggregations into neighborhoods, communities, or local areas. We focus on choosing a unit of aggregation that reduces measurement error without unduly limiting potential data sources.[4]

When studying geographic aggregations, researchers should be focused on choosing the unit that is theoretically relevant to the question at hand. For example, if we wish to evaluate preferences of state legislators from rural districts in comparison to those from urban districts, the clear unit of analysis is the legislative district. Similarly, we might examine voting in the U.S. Senate by comparing votes cast by Senators from predominantly rural states to those in majority urban states.

For many questions of political behavior, however, the unit of analysis will not be so clear. If we want to link individuals in surveys to the rurality of their location, for example, it is not obvious what the unit of aggregation should be. Is that individual's location best captured by her ZIP code? Her county? Her legislative district? None of those measures accurately captures a universal notion of a "community" or "neighborhood," the most common reference point when coding a location's rurality (Wong *et al*. 2012). Yet counties and districts frequently employed as indicators of an individual's location.

As discussed briefly above, the MAUP has important implications for the choice of unit of aggregation. The MAUP involves two central features—problems of zoning and problems of scale. The zoning problem refers to the choice of where to draw our lines of geography. In most cases,

3 Hunter's district is over 10% rural in a state that is just 6% rural. It is the eighth most rural congressional district of California's 53 districts and the most rural district in southern California. In comparison, the rural populations of the other congressional districts located primarily in San Diego County comprise just 1.4% (CA-49), 0.5% (CA-52), and 0.3% (CA-53) of the district population (2010 Census Congressional District Summary File, 115th Congress).

4 Scholars should avoid having multiple units of aggregation (e.g., county and ZCTA) in the same model. Should this be unavoidable, Cameron, Gelbach, and Miller (2011) offer advice to improve the clustering of errors at multiple, non-nested levels.

we are using administrative "zones" to draw our lines. Research on the MAUP reveals that if we used some other zoning schema, such as simply shifting the administrative boundaries in one direction or another while retaining their size, our new units would have different means and standard deviations than the previous units. Thus, our results using existing administrative units provide a specific characterization of our geography. If this characterization of our geography is theoretically appropriate, there is no concern with the MAUP. However, if we have simply chosen the unit of geography that is available (such as the county) but is not theoretically relevant for the question at hand, we are faced with the possibility of the MAUP and our results being contingent upon our selection of a theoretically arbitrary geographic unit. With a plausible reformulation of that geography, the results may differ (Lee and Rogers 2019).

The MAUP scale problem refers to the size of the units employed. If we employ big units, such as the U.S. state, or counties such as San Diego, we have an average value that obscures considerable heterogeneity on most variables. If we use a smaller unit, such as the ZIP code tabulation areas (ZCTAs) or Census blocks, we include many "extreme" values that mischaracterize the experience of those living within them. Intuitively, the scale of the aggregation will be consequential for the characterizations we will discern from those units. These concerns need to be considered carefully when choosing the unit of analysis. Some of the classification schema discussed below may help to "scale" the measure to reduce concerns with the scaling problem of the MAUP.

Although the MAUP cannot be "solved," we provide advice on how to minimize its potential impact. To summarize, we advocate focusing on the unit of aggregation implied by the author's theory. If no clear theoretical unit is identified, scholars can demonstrate robustness in their results by aggregating to different units of analysis and by "scaling" the results to the closest approximate unit using the detailed urban–rural identification schema we lay out below.

2.1 Counties

County is a commonly selected unit of analysis in American politics research (e.g., de Benedictis-Kessner and Warshaw 2020; Nall 2015; Acharya, Blackwell, and Sen 2016). Counties are administrative units immediately below the state government.[5]

The geographic size and political relevance of counties vary tremendously across states. In some states, counties have immense political authority and taxation and redistribution power, while in other states, the counties exist solely as units of aggregation. Rhode Island, Connecticut, and half of Massachusetts' counties have no political function. In general, as one moves from the northeast corner of the country to the southwest corner, counties gain political importance, which is also highly correlated with the recency of county establishment. Counties may have broader authority in rural areas where unincorporated populations are more common (Scala and Johnson 2017). In addition to any political functions, counties are almost always employed as the substate unit used for data produced by the national and state governments. Because of their consistency over time and the preponderance of data availability, they are a common unit of geography in American politics research. However, counties have immense variation in their physical and population size.[6]

Counties are extremely heterogenous; they are enormous in the western states and much smaller in the eastern states. Counties in the eastern United States were determined using a system of metes and bounds, essentially a detailed description of the county's border using natural and cultural landmarks, such as rivers and churches. Counties in the western United States were

5 Instead of counties, Alaska has "boroughs," Louisiana has "parishes," and Virginia has "independent cities." These political subdivisions are very commonly considered county-equivalent for the purpose of political science research.

6 There are 3,142 counties, or county-equivalent units, in the United States. The average number of counties per state is 62, with a range from the 3 counties of Delaware to the 254 counties of Texas. On average, there are 104,127 residents per county. The standard deviation of the mean is 333,486 residents. The variance in average number of residents per county is too great for it to be used as a meaningful nationwide statistic.

drawn largely after the invention of land-surveying technology, which allowed for straight county borders that could extend into stretches of uninhabited land. For this reason, western counties are physically larger and can contain immense amounts of empty space. For example, San Bernardino County, CA, is geographically larger than nine states, and is close to the size of West Virginia.

Within-county heterogeneity is especially prevalent in the western United States, where much of the rural population of interest lives, because of the large physical size of counties. This raises concerns that the western counties are hiding much more variation in population density, political opinion, and economic structure when represented in research by county-level averages. Counties may not be comparable units in a theoretical or empirical sense for many studies.

Many scholars do not use a county-level urban–rural classification as their main independent or dependent variable but instead employ one in their control variables (e.g., Acharya *et al*. 2016; Gomez, Hansford, and Krause 2007; Cho and Nicley 2008). It may seem that such a choice would not impact the main results, because measurement error is within the controls, not the variables of focus. However, even a control for rurality with a county indicator, when the county is not the theoretical unit, can significantly alter the results of the main variables (Soifer and Alvarez 2017; Lee, Rogers, and Soifer 2019).

Given that the county is a common geographic unit of data collection of the American government, we may not be able to study smaller units.[7] The preponderance of data available at the county level may outweigh the costs of masking urban–rural divisions. To be sure, some questions, such as those about county sheriffs (Nemerever 2019) or county legislatures (de Benedictis-Kessner and Warshaw 2020) necessitate counties as the unit of analysis.

2.2 ZIP Code Tabulation Areas

Another commonly collected geographic unit is the ZCTA. The United States Postal Service uses ZIP codes to assign an address to a mail distribution center in a way that maximizes mail route efficiency. ZCTAs are created by taking the modal ZIP code in a census block and merging all adjacent census blocks with the same modal ZIP code.[8] There are 42,000 ZIP codes and 32,000 ZCTAs in the United States. The Census collects select demographic information for ZCTAs, and it is a preferred geographic unit of analysis for survey data, because ZCTAs are much smaller than counties. The mean population of a ZCTA is 7,638 people, with a standard deviation of 4,696 people. It is more common for a survey to ask for a respondent's ZIP code than their full address (which they may be reluctant to share) or their census block (which they are highly unlikely to know). Yet, ZCTAs are not likely to be theoretical units of political interest.

2.3 Census Tracts, Census Blocks, and Precincts

Less frequently used units of aggregation include census tracts, census blocks, and voting precincts. Census tracts are statistical subdivisions of a county ranging between 1,200 and 8,000 residents that are used primarily for purposes of the Census.[9] Census blocks are subdivisions of census tracts, and thus counties and states. Unlike census tracts, census blocks are not bounded by population requirements and tend to remain more stable over time than tracts.[10] Political outcomes (e.g., distribution of programs or government funding), election returns, and measures of public opinion are rarely made available at the census tract or block level, in part, because they are politically arbitrary aggregations. Conversely, demographic information is not often collected by voting precinct. Researchers can use geographic information systems (GIS) and

7 For example, unemployment statistics are regularly collected only at the county level.
8 Some addresses are assigned to a ZCTA that does not match their ZIP code, and not all ZIP codes have a corresponding ZCTA. Very rarely do ZCTAs span two states, but it occasionally occurs in border metropolises. Currently, 153 ZIP codes span more than one state. There are 9,000 ZIP codes in more than one county.
9 See https://www2.census.gov/geo/pdfs/education/CensusTracts.pdf.
10 See https://www.census.gov/newsroom/blogs/random-samplings/2011/07/what-are-census-blocks.html.

aerial interpolation to overlap census tract or block boundaries with voting precincts to ascribe demographic data to precincts (see Karp and Banducci 2000 for an applied example).[11] A second option is to seek out state-specific relationship files, such as the 2010 Census Block to Precinct Conversion File provided by the California Statewide Database. However, this is not yet available for many states and remains a promising opportunity for data creation.

3 Urban–Rural Classification Schema

Research on rural politics measures rurality in myriad ways, including population density (e.g., Acharya *et al*. 2016; Cho and Gimpel 2010; Primo and Snyder 2010; Urban and Niebler 2014), absence of urbanity (e.g., Broockman 2013; Warshaw and Rodden 2012), agricultural economy (e.g., Scala and Johnson 2017), and population size (e.g., de Benedictis-Kessner and Warshaw 2020). A substantial amount of research, however, alludes to rural places or rural voters, without serious efforts at conceptualization. For example, rural areas are often assumed to have agricultural or extractive economies. The routine account of rural demography is characterized as the cross section of whiter, older, and less educated. Yet these notions are at odds with fuller accounts of rural populations, which include substantial minority populations, affluent areas holding second homes, and significant nonagricultural industry. An important step in advancing research on rural politics in America will be closer consideration of what is theoretically important about rural America for researchers, and how those theoretical ideas of rurality might be operationalized. In this section, we discuss construct validity and lay out possibilities for coding common geographic units according to different classifications.

In our Supplementary Materials, we include an annotated bibliography of rural measurement strategies used in the *American Political Science Review*, *American Journal of Political Science*, and *Journal of Politics* in the last 10 years. We categorize the authors' operationalizations as: Archival (i.e., using urban–rural designations from historical sources), Land Use Laws, Multiple Measures, Percent Urban, Population Density, Population Size, Self-Identification, and the largest category, Unclear. This bibliography provides a broad perspective of the variation in rural measurement in recent research, including inattention to careful measurement.

Once we have chosen the theoretically relevant unit of analysis, we must select the rural classification that best fits the theoretical construct of the research. The choice of rural classification is a theoretical one. Scholars may be interested in rurality, as it relates to population size or density, adjacency or proximity to a metropolitan area, commuting population, agricultural economy, or distance to public services. These measurement strategies use objective classifications to assign individuals or geographic areas to urban–rural categories, regardless of how urban or rural they believe themselves to be.[12] In contrast, recent rural ethnographies, such as Cramer (2016), focus on rural self-identification, i.e., people's beliefs that they are rural. Rural individual or group identity, or rural consciousness, should be measured by self-identification, which we discuss in Section 7.[13]

3.1 Metropolitan, Micropolitan, or Nonmetropolitan

The Office of Management and Budget (OMB) classifies counties as Metropolitan, Micropolitan, or Neither. By definition, Metropolitan Statistical Areas must contain an urban core of 50,000 or larger population, while a Micropolitan Statistical Area contains an urban core of at least 10,000 population. All counties that are not part of a Metropolitan Statistical Area are considered nonmetropolitan, or rural (Office of Management and Budget 2010). Importantly, this is not equivalent to a measure of urban–rural. Counties included in metropolitan and micropolitan statistical areas

11 Using GIS of aggregated data, however, would raise concerns with the MAUP (Lee *et al*. 2019).
12 Examples of studies concerned with assigned rurality include Acharya *et al*. (2016) and Nemerever (2019).
13 To be sure, there is also variation in urban areas that is not easily captured in common classification schema that might be politically relevant, such as access to transit or housing costs.

Table 1. USDA rural–urban commuting area codes.

Code	Description	U.S. population (%)
1	Metropolitan area core: primary flow within an urbanized area (UA)	73%
2	Metropolitan area high commuting: primary flow 30% or more to a UA	10%
3	Metropolitan area low commuting: primary flow 10%–30% to a UA	1%
4	Micropolitan area core: primary flow within an urban cluster (UC) of 10,000–49,999 (large UC)	6%
5	Micropolitan high commuting: primary flow 30% or more to a large UC	2%
6	Micropolitan low commuting: primary flow 10%–30% to a large UC	1%
7	Small town core: primary flow within a UC of 2,500–9,999 (small UC)	3%
8	Small town high commuting: primary flow 30% or more to a small UC	1%
9	Small town low commuting: primary flow 10%–30% to a small UC	0%
10	Rural areas: primary flow to a tract outside a UA or UC	3%

contain both urban and rural territory and populations, such as the vast Grand Canyon, which spans two "metropolitan" counties in northeastern Arizona.

Studies of voting behavior that use this OMB measure (Morrill, Knopp, and Brown 2007; Scala, Johnson, and Rogers 2015) may not directly capture urban–rural electoral dynamics. Instead, these studies using metro/nonmetro counties capture the voting behavior of counties that contain a metropolitan area of 50,000 or more people compared with counties that do not contain a metro area of this size. Scholars interested in political behavior would be better-off employing measures that capture economic, cultural, or political differences across rural and urban areas, rather than the OMB metro/nonmetro classification of counties.

3.2 Holistic Scales: Rural–Urban Commuting Area Codes, Rural–Urban Continuum Codes, and Urban Influence Codes

A more detailed schema for coding the urban–rural spectrum is rural–urban commuting area (RUCA) codes. RUCA codes are released by the Department of Agriculture Economic Research Service (ERS) and use population density, urbanization, and daily commuting to classify census tracts into the 10 categories listed in Table 1. Within each integer category are subcategories for different commuting patterns. For example, category 6.2 has more commuting to a large UC than category 6.3. This allows researchers to distinguish between people who live in rural areas but have access to urban job opportunities and resources (such as hospitals) from those who live in rural areas and do not have regular contact with urban areas. Commuting distances can also proxy for access to political participation. Gimpel and Schuknecht (2003) find that the distance and congestion of the commute to polling locations is associated with voter turnout rates. The RUCA code is a more specific operationalization than using a single factor such as population size or population density, maximizing researchers' ability to detect differences between the lived experiences of rural and nonrural populations. RUCA codes are available for 1990, 2000, and 2010.

Although the Census Bureau publishes RUCA codes only for census tracts, the University of Washington Rural Health Research Centers publishes RUCA approximations for ZCTAs.[14] ZCTA-level codings are especially useful to political scientists because ZIP code is often the lowest geographic unit identified in major surveys, such as the cooperative congressional election study (CCES). ZCTA RUCA codes are available based on: (1) 2004 ZIP code areas and 2000 Census commuting data and(2) 2006 ZIP code areas and 2000 Census commuting data.

After opting to use RUCA codes, researchers must decide whether to use them as a categorical variable or to aggregate them into urban and rural bins. Choosing which categories belong in the urban and rural bins changes not only the qualities of the populations, but the size of the sample and sampling frame. Sixteen percent of the U.S. population is rural if rurality is defined as those not living in a metropolitan area (codes 4–10). However, only 3% of the United States is rural using a strict definition of rural areas (code 10).[15] To see this visually, A1 shows how the size of the rural population shrinks, as the classification standards become more stringent.

Given more extensive county-level data availability, many researchers will decide to use county-level schema that classify counties according to similar criteria as the RUCA codes. The rural–urban continuum codes (RUCCs) and urban influence codes (UICs) are released by the USDA ERS. RUCCs distinguish counties by the population size of their metro area, degree of urbanization, and adjacency to a metro area (if nonmetro; Monogan and Gill 2016). UICs distinguish metropolitan counties by population size of their metro area, and nonmetropolitan counties by size of the largest city or town and proximity to metro and micropolitan areas. UIC codes are available for 1993, 2003, and 2013. RUCC codes are available for 1974, 1983, 1993, 2003, and 2013. RUCC codes span a larger period of time (1974–2013).

The RUCC and UIC codings are similar. When applied to CCES respondents, for example, RUCC and UIC correlate at 0.92. Table A1 enumerates these schemas alongside the OMB county-level codes. The USDA ERS has classified RUCC and UIC categories into a metropolitan/nonmetropolitan binary, but like the RUCA codes, researchers can choose to combine the categories or maintain the original coding and use it as a categorial variable.[16]

3.3 Measuring Education, Economic Structure, Healthcare, Etc.

Scholars may also wish to study geographic units tied to specific policy delivery, such as school districts or proximity to healthcare. For scholars interested in differences in urban and rural schools, all U.S. public schools and school districts are coded on a 12-point scale incorporating both population size and distance to metropolitan areas.[17] Alternatively, ArcGIS enables researchers to overlap election returns with other data.

Measures of population size or density should not be used as a proxy for other concepts that might be more directly accounted for with existing data. For example, if scholars want to know which counties have low education levels and persistent poverty, two characteristics common in, but not unique to, rural areas, scholars can use the USDA ERS County Typology Codes. County typology codes classify counties by most prominent economic sector (farming, mining, recreation, nonspecialized, or government) and by individual indicators for the presence of any of the above categories. The typology also includes nonmutually exclusive binary indicators of low education, low employment, population loss, retirement destination, persistent poverty, and persistent child poverty. For example, USDA typology codes have been used to show how

14 For information on their coding procedure, see https://depts.washington.edu/uwruca/ruca-approx.php.
15 Unit of aggregation is census tracts.
16 Urban–Rural Classification Scheme for Counties is published by the National Center for Health Statistics. It is a six-level county-classification scheme most commonly used for public health research. For most purposes, this measure is inferior to RUCC and UIC, because it has fewer categories.
17 For Public Schools: National Center for Education Statistics. Private school urbanicity is available by only population size (city, suburban, town, and rural): NCES Private School Universe Survey.

vote choice varies between rural recreation-based economies and rural farming-based economies (Scala *et al*. 2015).[18]

4 State Legislative District Urban–Rural Dataset

Holistic measures of urban–rural geography are not always available at the units of analysis of interest to scholars. For example, scholars of American politics may be interested in measuring the urban–rural makeup of state legislative districts to answer a wide range of questions. However, existing data do not provide high-quality mapping of urban–rural indicators onto state legislative districts.[19] To fill this need, we created a dataset of RUCA codes assigned to state legislative districts for boundaries in 2007, 2010, 2012, 2014, and 2016.

We created the *State Legislative District Urban–Rural Dataset* using the geographic relationship files from the Missouri Census Data Center's Geocorr program. The Geocorr program allows us to match the census tract RUCA codes from the U.S. Census onto corresponding legislative districts. We use three methods for assigning RUCA codes to state legislative districts.

The first method probabilistically assigns RUCA codes to state legislative districts. Probability-based assignments allow researchers to avoid averaging the RUCA codes, which are ordinal variables and should not be treated as numbers. This method is similar to the approach used by Tausanovith and Warshaw (2013). They probabilistically assign survey respondents to state legislative districts based on the proportion of people in their ZIP code that live in each district. For the creation of our dataset, we probabilistically assign RUCA codes to state legislative districts based on the proportion of the district population belonging to each of the 10 RUCA categories. One downside of this method is that it is possible that a state legislative district is assigned a RUCA code that represents a very small population of the district. While this procedure may introduce noise into the dataset, this type of assignment occurs without systematic bias.

The second method is using the averages of the RUCA scores weighted by population. Unlike probabilistic assignment, this value represents the diversity of RUCA codes within a district by using the average of RUCA values within the district instead of selecting a single RUCA value within the district. A drawback of this method is that the RUCA codes are ordinal values that thus should not be averaged, although this is common practice among political scientists.

The third method is to assign the RUCA code that describes the plurality of the legislative district. Unlike the first method, it ensures that the RUCA code is representative of a plurality of the district. This method is more accurate for districts in which a clear majority of the population belong to a specific RUCA code than it is for legislative districts nearly evenly split among many different RUCA codes. This method is likely too imprecise for statistical analyses but would be a useful descriptive statistic of the most common geographic classification within a district.

We encourage researchers to use data produced by the method that best aligns with their theory and to employ more than one measure in robustness checks. The correlations between the measures are shown in Table 2. The weighted average and plurality methods are highly correlated. Using them interchangeably is unlikely to significantly alter empirical results. As noted above, the plurality measure is not an appropriate method for drawing conclusions about a district overall.

More information on the creation of this dataset and diagnostic tests are included in the online Supplementary Materials. The methods used to create this dataset can be applied to other political units of aggregation, such as assigning RUCA codes to congressional or school districts.

18 The Rural Health Information Hub provides a very useful summary of how rural is defined for purposes of government services, and whether a given address is rural, here: https://www.ruralhealthinfo.org/am-i-rural

19 The most common strategy to measure the geographic makeup of state legislative districts is using urban–rural population counts from the U.S. Census. The Census defines rural as "all population, housing, and territory not included within an urban area." Urban areas include urbanized areas (UAs) of 50,000 or more people and urban clusters (UCs) of at least 2,500 and less than 50,000 people. This measure does not distinguish between urban, suburban, exurban, and rural locations, nor does it account for proximity to population centers or population density.

Table 2. Correlations among state legislative district RUCA classification methods.

	Probability	Plurality
Plurality	0.720	
	(0.715, 0.725)	
Weighted	0.846	0.854
average	(0.843, 0.849)	(0.851, 0.857)

Notes: Pearson's correlations between methods of assigning RUCA codes to state legislative districts. Ninety-five percent confidence intervals in parentheses below the correlation coefficients.

We pilot this dataset in a replication of "Black Politicians Are More Intrinsically Motivated to Advance Blacks Interests: A Field Experiment Manipulating Political Incentives" (Broockman 2013).[20] Broockman controls for the urbanity of state legislative districts with the variable "Urban Percent." We replicate the analyses from Brockman (2013) using the weighted average RUCA score and the probabilistically assigned RUCA score. These results are presented in Table 3.

Across all three model specifications, both of the RUCA substitutions result in increased the statistical significance of Broockman's experimental treatment effects, despite a decrease in sample size. The variables "out of district email" and the conditional effect "out of district email*black legislator" increase from $p < 0.05$ to $p < 0.01$ in the replications. There are also changes in the control variables. In Equation 5, the control variable for black legislator is no longer statistically significant, but it increases in its statistical significance for Equations 3 and 4. Also in Equation 5, the magnitude and statistical significance of the South control variable increases. Finally, for all three equations, the coefficient on the Squire Index variable increases from $p < 0.05$ to $p < 0.01$. Overall, after substituting a more precise measure of district geography for "Urban Percent," we can be more confident, now at $p < 0.01$, that black legislators are intrinsically motivated to advance black peoples interests, given the increase in significance from Broockman's original results.

5 Empirical Consequences of Measurement Decisions

In this section, we use descriptive data to show how choices of unit and rural concept may be consequential for measurement precision and group-level estimates.

Many studies in American politics rely on the CCES; thus, we demonstrate our next point using the geographic locations of CCES respondents, 2006–2018. This group is a commonly studied sample of respondents, so it is particularly useful to know more about their geographic distribution. Figure 1 depicts the ZCTA-level urban–rural heterogeneity within counties, even when they are sorted into RUCC codes. Each row is a different RUCC category. The density curve shows the distribution of rurality within each category of county, measured at the ZCTA level. The geographic heterogeneity is not too surprising, given that most counties contain urban, suburban, and rural populations. In fact, less than 2% of the population lives in a completely rural county, and less than 4% lives in a completely urban county. In general, ZIP codes are much less heterogenous due to their small size. Slightly over 20% of ZIP codes in the United States are rural, and slightly less than 40% of ZIP codes are core metropolitan areas. The other 40% of ZIP codes are in some classification between mostly urban and mostly rural. ZCTAs offer significant improvement on measurement precision and should be used in place of county whenever possible.

Second, classification decisions can affect descriptive statistics or group means. For example, studies concerning socioeconomic status should be especially mindful of differences in demographic variables based on measurement decisions. Using county as the unit of analysis and

20 We also piloted our new measure on "The Primacy of Race in the Geography of Income-Based Voting: New Evidence from Public Voting Records" (Hersh and Nall 2016). This analysis is included in our Appendix.

Table 3. Replication of Table 2 from Broockman (2013).

	Equation 3: OLS			Equation 4: Logistic Regression			Equation 5: OLS, CEM matched/weighted		
	Urban percent (Original)	RUCA Weighted average	RUCA Probability	Urban percent (Original)	RUCA Weighted average	RUCA Probability	Urban percent (Original)	RUCA Weighted average	RUCA Probability
Experimental treatment effects									
Out-of-district e-mail	−0.276	−0.276	−0.276	−1.185	−1.176	−1.176	−0.311	−0.320	−0.320
	(0.013)	(0.013)	(0.013)	(0.059)	(0.060)	(0.060)	(0.012)	(0.012)	(0.012)
Out-of-district e-mail	0.128	0.128	0.126	0.552	0.553	0.546	0.161	0.160	0.148
black legislator	(0.051)	(0.053)	(0.053)	(0.227)	(0.233)	(0.233)	(0.046)	(0.048)	(0.048)
Covariates									
Black legislator	−0.112	−0.016	−0.106	−0.462	−0.441	−0.439	−0.085	−0.043	−0.037
	(0.045)	(0.046)	(0.046)	(0.197)	(0.201)	(0.201)	(0.033)	(0.034)	(0.034)
Other minority legislator	−0.035	−0.038	−0.037	−0.162	−0.174	−0.170	0.018	0.038	0.036
	(0.031)	(0.030)	(0.031)	(0.140)	(0.140)	(0.140)	(0.041)	(0.041)	(0.041)
Democratic legislator	−0.051	−0.060	−0.059	−0.232	−0.267	−0.265	0.088	0.071	0.077
	(0.014)	(0.014)	(0.014)	(0.061)	(0.062)	(0.062)	(0.022)	(0.023)	(0.022)
State senator	0.089	0.083	0.083	0.398	0.370	0.368	0.191	0.188	0.188
	(0.016)	(0.016)	(0.016)	(0.072)	(0.073)	(0.073)	(0.016)	(0.016)	(0.016)
South	−0.004	−0.007	−0.007	−0.018	−0.029	−0.029	−0.041	−0.094	−0.102
	(0.017)	(0.017)	(0.017)	(0.076)	(0.078)	(0.077)	(0.019)	(0.019)	(0.019)
Black population percent	0.084	0.104	0.111	0.377	0.463	0.493	−0.039	−0.331	−0.311
	(0.067)	(0.068)	(0.068)	(0.298)	(0.299)	(0.299)	(0.036)	(0.035)	(0.036)
Black median HH income	−0.000	−0.001	−0.000	−0.001	−0.005	−0.002	0.069	0.096	0.105
	(0.007)	(0.007)	(0.007)	(0.032)	(0.032)	(0.032)	(0.019)	(0.019)	(0.019)
White median HH income	0.021	0.021	0.023	0.093	0.094	0.104	−0.113	−0.090	−0.093
	(0.010)	(0.010)	(0.009)	(0.045)	(0.044)	(0.044)	(0.015)	(0.015)	(0.015)
Squire index	0.489	0.438	0.446	2.183	1.950	1.984	−0.036	−0.335	−0.282
	(0.071)	(0.072)	(0.072)	(0.322)	(0.324)	(0.324)	(0.105)	(0.107)	(0.107)
District total population	−0.004	−0.004	−0.003	−0.016	−0.157	−0.016	0.006	0.008	0.008
	(0.001)	(0.001)	(0.000)	(0.004)	(0.004)	(0.004)	(0.001)	(0.001)	(0.001)

Table 3. (continued)

	Equation 3: OLS			Equation 4: Logistic Regression			Equation 5: OLS, CEM matched/weighted		
	Urban percent (Original)	RUCA Weighted average	RUCA Probability	Urban percent (Original)	RUCA Weighted average	RUCA Probability	Urban percent (Original)	RUCA Weighted average	RUCA Probability
Urban percent	**0.014**			**0.065**			**0.232**		
	(0.023)			**(0.106)**			**(0.023)**		
RUCA weighted average		**−0.002**			**−0.008**			**−0.002(0.004)**	
		(0.003)			**(0.014)**			**(0.004)**	
RUCA probability			**0.001**			**0.005**			**0.013**
			(0.002)			**(0.010)**			**(0.003)**
Constant	0.442	0.480	0.463	−0.281	−0.111	−0.190	0.584	0.674	0.612
	(0.025)	(0.032)	(0.029)	(0.113)	(0.141)	(0.130)	(0.043)	(0.045)	(0.045)
R-squared	0.091	0.086	0.089	NA	NA	NA	0.240	0.225	0.230
N	5593	5335	5335	5593	5335	5335	5125	5052	5052

Note: Dependent variable in all regressions is whether the legislator responded to the e-mail.

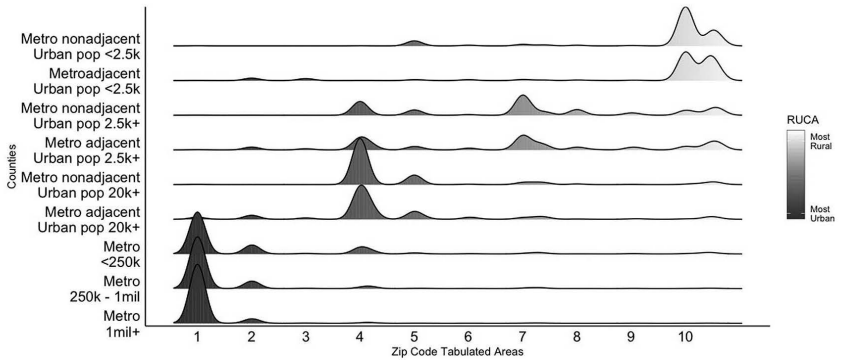

Figure 1. Geographic heterogeneity of CCES respondents within counties.
Notes: Counties are coded by RUCC. ZCTAs are coded by RUCA.

RUCC as the coding schema, the median rural household income is $4,168 less than the median nonrural household. Measured using RUCA at the ZCTA level, the median rural household income is $6,938 less than the median nonrural household.[21] The rural gap in median household income increases by over two-thirds when the measurement strategy is refined.

Finally, the measurement schema can distort the geographic divide in public opinion. Scala and Johnson (2017) examine public opinion across geographies in the United States. Crucially, the authors further divided the counties beyond the metropolitan/nonmetropolitan binary. The metropolitan category contains four types of counties: large core, large suburbs, small core, and small suburbs. The nonmetropolitan category contains four types of counties: adjacent micro, adjacent other, nonadjacent micro, and nonadjacent other. If you collapse the data in their Table 1 (our Figure A3), you will find that 50% of individuals in metropolitan counties identify as Democrats, compared to 28% of individuals in nonmetropolitan counties. This cut of the data obscures that small metropolitan suburbs have the lowest levels of Democratic identification of *all* counties, both metropolitan and nonmetropolitan. Scala and Johnson's (2017) division of public opinion across eight types of counties demonstrates how careful selection of measurement schema generates more precise conclusions.

Thus far, we have addressed how to choose units of analysis and classification schema and demonstrated some of their empirical consequences. Next, we illustrate these concepts by replicating and extending recent political science findings.[22]

6 Replication of Flavin and Franko (2020)

In the 2020 *Political Behavior* article "Economic Segregation and Unequal Policy Responsiveness," Flavin and Franko examine the links between economic context and policy responsiveness in the U.S. House of Representatives. They find that regardless of an individual's level of income, those who live in affluent areas are better represented by their member of Congress. They also find that living in rural parts of the country leads to significantly better representation. They measure representation by matching CCES survey items asking individual citizens their preference on legislation to the roll call votes by their representatives on those exact pieces of legislation. We selected this research to replicate, because it is a recent, top-rated article that features an easy-to-interpret urban–rural variable in their main analysis.

21 Source: Income In The Past 12 Months (in 2017 Inflation-Adjusted Dollars) 2013–2017 American Community Survey 5-Year Estimates.
22 The online Supplementary Materials provide a detailed explanation of the replication selection and an annotated bibliography of select works on rural politics.

One of the covariates in their analysis is the rural/urban status of each ZIP code. Flavin and Franko employ rurality as a proximate sociopolitical context that may affect political behavior, similar to its function in other political behavior studies such as Nall (2015). In their article, they define rural ZCTAs as those that are not located within an urban area or UC.[23] The Census defines urban areas and clusters as 'UAs of 50,000 or more people and UCs of at least 2,500 and less than 50,000 people." Problematically, this definition conflates rural with nonurban.[24]

Wilson's Mills, NC, provides an example of the potential problems of this coding scheme. Wilson's Mills has a population of 2,400 and is classified as rural under this coding schema. However, Wilson Mill's is only 30 miles from Raleigh and the greater Research Triangle region. The majority of that 30-mile drive is not through sparse farmland but sprawling suburbs. The RUCA code for Wilson's Mills is 4.2, a micropolitan area core with primary flow within a large UC of 10,000–49,999 (large UC). We should not consider Wilson's Mills rural considering that it is a half-hour's drive from Raleigh, which is the state's second largest city of nearly half a million residents, with significant job opportunities, healthcare providers, and educational opportunities.

We replicate their analysis by replacing their measurement schema with ZCTA-level RUCA codes from the University of Washington. For the binary iteration of our variable, we classify all ZCTAs with a RUCA value of 7 or greater as rural.[25] The categorical version of our new variable leaves the value of the rural variable as the RUCA code so that each observation takes an integer from 1 to 10. Tables A5 and A6 show our results alongside the original results published in Flavin and Franko (2020).

The results of interest are visualized in Figure 2, which depicts the coefficient values of the dependent variable and rural variable across three different models. Each model uses a different measurement of rurality, as detailed in the previous paragraph. The original rural variable, labeled Original Binary Rural, is significant and positively related to opinion-vote congruence. The authors interpret this as, "living in rural parts of the country and residing in areas with higher levels of income inequality both lead to better representation in our model" (Flavin and Franko 2020, p. 856). When we recode the variable to only capture rural locations as defined by RUCA greater than or equal to 7, labeled New Binary Rural, the variable is no longer statistically significantly different from zero, but we cannot be certain that it is "different" from the original coding, because the confidence intervals of the two coefficients overlap. The second recoding, Categorical Rural, is more consequential than the first. Categorical Rural is not statistically significantly different from zero but is different from the original coding (the confidence intervals do not overlap). Moreover, the reduction of the standard error on Categorical Rural relative to the other two rural variables demonstrates that is a more precise measure of rurality, resulting in less variation in the coefficient estimate. In general, researchers should opt for measurements that more precisely capture the conceptual definitions of their variables.

Their study includes two subsidiary dependent variable tests including "contact by a campaign" and "made political donations." Our replications for these variables are in Table A6. In their original analyses, Flavin and Franko do not find statistically significant effects of rural residence on either of these variables. However, upon substituting our measurement strategy for theirs, rurality becomes statistically related to making political donations. When interpreting empirical analyses and drawing conclusions about rural populations, it is important to consider that models using a less precise measure of rurality could be statistically insignificant, while an alternative measure is statistically related to the dependent variable in question.

23 Census Bureau. (2010). "Explanation of the 2010 Urban Area to ZIP Code Tabulation Area (ZCTA) Relationship File," retrieved from https://www2.census.gov/geo/pdfs/maps-data/data/rel/explanation_ua_zcta_rel_10.pdf.

24 This is not the only study to define rural as simply, "nonurban." See also Parker (2009) and Dimick, Rueda, and Stegmueller (2016).

25 The results for our replication hold if you classify rural using a cutoff of equal to or greater than 5, 6, 8, 9, or 10. The sensitivity analyses are in the replication code.

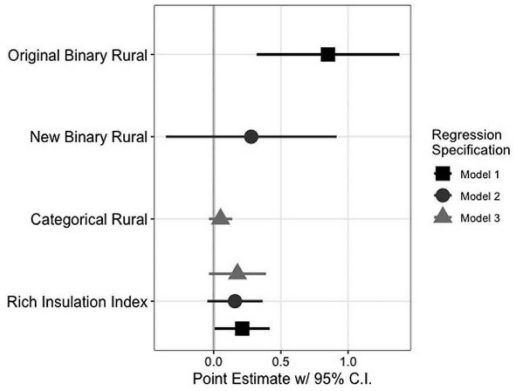

Figure 2. Coefficient plot of Flavin and Franko (2020) replication.

More importantly, perhaps, the recoding of the rural variable changes the main results. Flavin and Franko argue that rich, segregated areas are "better" represented by members of Congress. With our two alternative codings of rurality, however, the statistical association between rich areas and representation quality becomes weaker and insignificant in common metrics. We cannot say that the new Rich Insulation Index coefficients are statistically different from the original Rich Insulation Index, because the 95% confidence intervals of the three coefficients overlap. However, an important difference in the two new models measuring rural differently is that zero is now inside the 95% confidence interval for the Rich Insulation Index—calling into question whether or not there is a nonzero effect of Rich Insulation on substantive representation.

Yet there is no definitive way to account for geographic location in our studies, and therefore, our alternative results are not more objectively "correct" than Flavin and Franko's. Without changing the measurement strategy—and consequently, the significance of the primary results—their results might be more accurately presented by changing the framing of the analysis. If the concept and/or measurement is about urbanism, then the variable should be labeled nonurban rather than rural. However, this erases important political differences between suburbs, exurbs, and rural areas. A potential explanation that merits further exploration is whether suburbs are better represented than other nonurban areas, and well-represented suburban districts are driving the results in the original study. Because rurality is not central to their analysis, aside from it being an appropriate control variable, changing "rural" to "nonurban" (or conversely "urban") would not change the article's motivation, empirical strategy, or conclusions.

Scholars who do not focus on rural issues may wonder if our discussion so far in this paper has direct bearing on their research. Most American politics research evaluates rurality as a control variable, not the variable of interest. These results highlight that how we measure rural, even as "just" a control variable, is consequential to our empirical results and interpretation of scientific findings. Again, we emphasize that even a rural control variable can impact the main empirical results. Many scholars in American politics use such variables regularly and should be aware of the potential consequences for their results.

We also replicated Broockman (2013) above, as well as Hersh and Nall (2016) and Urban and Niebler (2014), both shown in our Appendix. The "Selection Process for Replication" document in our Supplementary Materials provides a more detailed description of our selection process. The Broockman Replication shows that more refined rural measurement can potentially enhance the fit of scholars' models. The Hersh and Nall replication found very similar results across rural indicators in a very rigorous set of specifications. The Urban and Niebler results show broadly con-

sistent results with the original, but the underlying estimates for their propensity scores change when substituting RUCC scores for their density measure. Moreover, the coefficient estimates for their main effects are smaller and the standard errors somewhat larger, when substituting RUCC for a county population density measure. Overall, we find that rural measurement impacts model estimates, as demonstrated across a range of replication studies.

7 Rural Location Versus Rural Identity

Some researchers may be interested in rural identity, distinct from rural location. Researchers should not assume that people who live in rural areas self-identify as rural or that people living in nonrural areas do not identify as rural. This is an unfounded assumption that could undermine both conceptual understanding and empirical findings. Mummolo and Nall's (2017) survey design provides us leverage to answer the question of whether or not self-identification is interchangeable with geographic location. Using their data, we show that studies of rural consciousness may be sensitive to the measurement choice of geographic identification versus self-identification. Thus, we suggest scholars concerned with rural identity collect self-identification data.[26]

Participants in the Mummolo and Nall (2017) study were asked, "Which best describes the neighborhood where you now live?" and could choose from the following options: City (downtown with a mix of apartments, offices, and shops), City (in a more residential neighborhood), Suburb (in a neighborhood with a mix of apartments, offices, and shops), Suburb (in a neighborhood with houses only), Small town, Rural area (on a farm), or Rural area (not on a farm).

For our analysis, we collapsed the pairs of City, Suburb, and Rural categories. To compare the self-identification with actual geographic location, we coded each respondent as City, Suburban, Small Town, or Rural using the provided ZIP codes. We assigned the RUCA codes to the Mummolo and Nall (2017) categories using the following schema: "City" includes RUCA 1–3, Suburban includes RUCA 4–6, Small Town includes RUCA 7–9, and Rural includes RUCA 10 (RUCA code descriptions are listed in Table 1).[27] These data come from the ZCTA version of the RUCA codes provided by the University of Washington Rural Health Research Center.

The left graph in Figure 3 shows the breakdown of geographic location for all respondents who consider themselves to be rural. Strikingly, a minority of respondents who described their neighborhood as rural actually live in an area considered rural by RUCA, either 15% or 28% depending on whether small towns are considered rural. A more forgiving interpretation of the data which classifies the rural, small town, and suburb categories as rural increases the proportion of self-identified rural respondents who live in a noncity area to 52%—barely better than a coin flip. The right graph in Figure 3 shows how respondents from rural areas self-identify. The majority of rural respondents say that they are indeed rural. The second most popular answer is small town, with hardly any rural respondents saying they live in a suburb or city. Considered together, these figures inform us that rural people accurately self-identify as rural most of the time, but respondents from small towns, suburbs, and even cities commonly describe themselves as rural.[28]

To be sure, we may not expect there to be perfect alignment between self-identification and RUCA identification. First, RUCA and similar measures are objective, uniformly applied standards to all data points, transparent, and replicable. Self-identified respondents likely apply different standards, compare themselves to different reference points, and may be influenced by group identities or rural stereotypes propagated by media. Second, although ZCTAs are far more precise

26 The 2009 CCES asks "What type of community do you live in?" This is the only CCES wave with this question. The answer options were: In a large city, Immediate suburb of a large city, Outer suburb of a large city, In a medium-sized city, Suburb of a medium-sized city, In a small city, Suburb of a small city, Town, and Rural area.

27 For this exercise, we dropped the 1,344 respondents who did not provide a ZIP code on the survey. We also dropped 71 respondents from the remaining 5,355 respondents, because their ZIP code did not directly match onto a ZCTA.

28 We draw a similar conclusion when looking at the self-identification and geographic location of small-town respondents. Those figures are included in Appendix Figure 1.

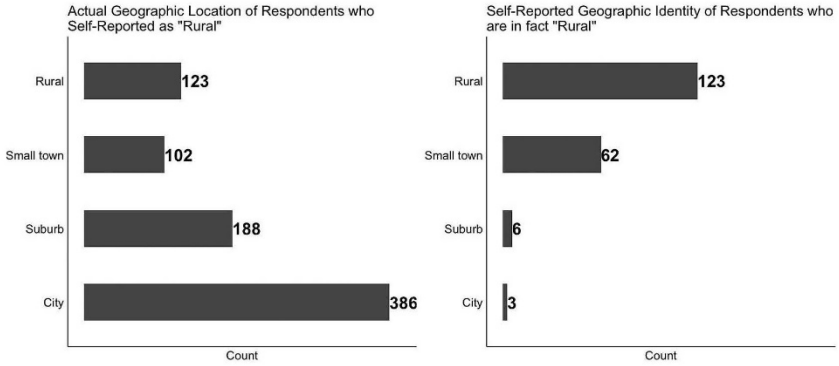

Figure 3. Geographic analysis of respondents from Mummolo and Nall (2017).

than counties, there could still be zoning issues that account for the geographic mismatch (e.g., a rural respondent lives on the edge of a small town ZCTA). Given that the conclusions hold when rural and small town are combined, this is less of a concern than the first point.

The first implication is that rural identity is not the same as rural residence (Bell 1992). As we stated earlier, concepts such as "rural consciousness" (Cramer 2016) do not necessarily require rural residence (Wong *et al*. 2012). Mummolo and Nall measure rural identification in a very direct way by asking people if they live in an urban, suburban, small town, or rural area. This is not quite the same as rural consciousness. Cramer (2016) defines rural consciousness as an ethos containing three core beliefs: decision-makers (policymakers) ignore rural places, rural places do not get a fair share of resources, and rural folks are fundamentally different than urban folks (lifestyle, values, and work ethic). It is possible for someone to hold the three core beliefs of Cramer's rural consciousness without residing in a rural area, or for someone who lives in a rural area to not hold any of these three beliefs. Although recent political science research cites Cramer's concept of rural consciousness (e.g., Lacombe 2019; Jacobs and Munis 2018), rural consciousness has yet to be measured at the aggregate level.[29]

The second implication of this analysis is that self-identified rural people live in locations at every point on the urban–rural spectrum. These results also suggest potential challenges for classification of urban locations and urban-identifying individuals. A significant population of individuals living in dense urban locations identify as rural, indicating that they may hold preferences or identities typically associated with those in more rural locations. Political science has not yet come to grips with the difference between geographic self-identification and geographic location. This disconnect merits additional research.

8 Advice for Choosing Measurement Schema

Having laid out the menu of options and demonstrated their use through replications, in this section, we offer suggestions for how scholars might think about choosing a rural classification schema—both the concept and the unit—for their research. The first principle of classification is theoretical—scholars should have a notion of what is important about rural location or rural identity from the perspective of their research to guide their selection of concept. Table A4 provides examples of classification schemes for common concepts of rurality in political science. As noted by Scala and Johnson (2017),"any rural–urban classification system is a compromise

29 Future research could study rural consciousness at the aggregate level by adding questions corresponding to Cramer's three core beliefs to the CCES battery, or a survey of similar sampling magnitude that would adequately sample rural survey respondents and provide their ZIP code identification for the purposes of measuring their rurality.

between detail and summary," and we advise authors to carefully weigh these trade-offs. Other notions of rural may relate to agricultural production, in which case USDA typology codes are sensible. If the idea is rural identity, scholars will likely need to ask that in surveys themselves (e.g., Mummolo and Nall 2017). We emphasize the need to take the concept of rural seriously, because rural variables have often been included in analyses uncritically.

Once scholars have a classification in mind, they must choose an appropriate unit. Again, this should be a theoretical choice. For scholars examining county-level phenomena, the county is the correct unit, and the county-level classifiers should be employed. For many facets of political behavior, however, we do not know the theoretical unit. To capture those living in a rural "community" or "neighborhood," there is no theoretical unit that can be captured in aggregated data (Kwan 2012). People identify their community or neighborhood differently (Wong *et al*. 2012), further complicating researchers' use of respondents' self-identification to measure geographic location. The definition of a community or neighborhood is individual even if the concept is aggregated.[30]

When scholars do not know the theoretical unit, a few choices are available to alleviate concerns with operationalization and minimize the MAUP. If scholars have individual-level location data, it may be possible to use ArcGIS to map different "zones" and scales to capture the rural location concept to include in their analysis. By showing the (lack of) sensitivity of their analysis to the choice of rural concept, readers can be more assured of the validity of the results. For certain research questions, the collection of individual data on the rural concept to aggregate to different levels may be the most appropriate path.

Many scholars will not have individual point data because of limitations of survey or government data. Table A2 lists the aggregation levels found in surveys common to the study of American politics. In many cases, scholars may want to select a relatively small unit, such as a ZCTA, to pair with individual level data. As described above, the ZCTA is a much more precise accounting of rural geography than county. The concept of rural is much more homogeneous within ZCTAs, so there should be a better mapping of concept to measure at the individual level. Classifying survey respondents at lower levels of classification may substantially reduce sample sizes, however. Furthermore, "going smaller" will not eliminate concerns with the MAUP. The best option to reduce concerns with the MAUP is to show robust results at different "zones" and scales.

Even if a scholar knows the theoretical unit, there may not be data at that unit. For example, if scholars wondered how unemployment rates in manufacturing affects voting in rural towns or in elections in the House of Representatives, they would find that industry-specific unemployment data in the Quarterly Census of Employment and Wages are only produced at the county level. The use of county-level data to address questions at the town or House district level would, in most cases, be problematic. For these questions, the data cannot approximate the unit, so scholars would need to revise the research question or collect original data to achieve a viable research approach. Using data at inappropriate units, even as a control variable, has the potential to alter empirical results in unpredictable ways (Soifer and Alvarez 2017; Lee and Rogers 2019; Lee *et al*. 2019).

9 Conclusion

In this article, we have detailed the challenges to studying rural America and offered potential solutions. We point to two important choices—the geographic unit and the classification—that should guide the researcher's choice of measurement. We distilled technical information for political scientists to provide descriptions of the unit and classification options and linked them to available tools and data. We provide an original dataset of urban–rural classifiers at the U.S.

30 This is known as the "uncertain geographic context problem" (Kwan 2012).

state legislative district level. We demonstrated the consequentiality of measurement choices in a replication study. Critically, we also showed empirically that rural self-identification is not the same as objectively defined rural location. This result has bearing on important questions of political behavior linked to the urban–rural divide. We hope that our efforts will prove useful to a range of scholars in American politics and public policy, and with adaptation, to scholars in comparative politics.

The study of political geography, including rurality, requires scholars to use observational, aggregated data. These data may not be provided in the format preferred by the researcher, forcing researchers to consider suboptimal data and operationalizations. We have emphasized that these decisions can matter. Given the potential impact of these choices, we implore scholars to think carefully about what they mean by rural, to state their notion explicitly and to try to match their concept to measurement. Failure to specify appropriate geographic conceptualization, or to substitute geographic concepts for identity concepts, may result in a disconnect between readers and writers and between concept and measurement. Much like the ubiquitous "South" control variable in state politics, many political scientists have relegated rurality to a dummy variable control or a catch-all term for people who do not live in urban areas. We hope to push scholars to place more effort in their research on the conceptualization and measurement of rurality.

Acknowledgments

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Data Availability Statement

Replication code for this article has been published in Code Ocean, a computational reproducibility platform that enables users to run the code and can be viewed interactively at Nemerever and Rogers (2020a). A preservation copy of the same code and data can also be accessed via Dataverse at Nemerever and Rogers (2020b).

Supplementary Material

For supplementary material accompanying this paper, please visit
https://dx.doi.org/10.1017/pan.2020.47.

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CHAPTER 4

Rural Representation Gaps in the American States

ABSTRACT

Influential studies have demonstrated a troubling representation gap in American politics: elected officials are less responsive to the needs of racial and ethnic minorities, to the less affluent, and to sexual orientation minorities. Do geographic minorities also face a representation gap? Rural Americans are a numerical minority group facing considerable socioeconomic obstacles, but whose representation in state government has been largely unexamined. This project is the first to quantitatively evaluate how policy preferences between rural and non-rural co-partisans vary and the extent to which state legislators represent rural constituents relative to their non-rural constituents. Using original data combining the preferences of constituents with legislator roll call votes on state legislative bills pertaining to issues covered in the CES, I assess the quality of dyadic substantive representation between rural voters and their state legislators relative to other politically marginalized groups, including race and ethnic minorities and women. Republican legislators provide slightly better representation to their rural constituents relative to their non-rural constituents. On the other hand, rural voters face a democratic deficit when being represented by Democratic legislators, and the rural representation gap is persistent across race, ethnic, education, and gender subgroups. Although rural voters received disproportionate representation through malapportioned U.S. Senate districts, state legislatures are not the bastions of rural interests they were once thought to be. Accurate assessments of representation should incorporate both federal and state levels of government.

INTRODUCTION

Rural Americans are a minority group that faces considerable socioeconomic obstacles, but whose political representation has been largely unexamined. Previous work has examined the preferences and policy representation of low-income voters (Gilens 2005, Ellis 2012, Rigby and Wright 2013), Latinos (Griffin and Newman 2007), African-Americans (Griffin and Newman 2008), women (Swers 2002, Griffin et al. 2012), LGBT individuals (Hansen and Treul 2015, Saraceno et al. 2020), but research on the preferences and political representation of rural Americans is far less common despite a multitude of troubling statistics on the well-being of rural Americans, including below average health, education, income, food and housing security, life expectancy, and economic mobility. Large and prominent bodies of work within political science have been motivated around normative concerns about the political roots or consequences of human welfare, save for rural Americans.

Declining socioeconomic and human well-being outcomes for rural Americans is ironic given that rural voters have an advantage in American federal institutions because of their outsized voting power in the Electoral College and Senate and House of Representatives districts.[1] Rural Americans also disproportionately occupy presidential swing states, which attract exorbitant media attention, increased campaigning (Shaw 2006), and particularistic policy benefits (Kriner and Reeves 2015). These political circumstances, along with poor well-being of rural Americans, comprise an alluring intellectual puzzle for political scientists that draws on knowledge of both political behavior and institutions, including identity politics, parties, legislative processes, and elections.

[1] The Electoral College and Congress give inflated numerical representation to small states. The population size of a state is negatively correlated (-0.5, statistically significant at $p < 0.01$) with population rurality , thus rural states are favored by these institutions through their status as small states.

Previous work has generated insight on public opinion and political behavior in rural America, including ruralites' views on same-sex marriage (Anderson et al. 2015), perceptions of fairness in resource allocation (Lyons and Utych 2021), place-based resentment (Cramer 2016, Munis 2020) and identity (Lee and Blackford 2020), political party support (Gimpel et al. 2020), political networking (Van Duyn 2018), and presidential vote choice (McKee 2008, Scala and Johnson 2017, Scala et al. 2015, Gimpel and Karnes 2006). Yet, an understanding of geographic differences in representation requires systematic public opinion data on a wide range of policy topics and corresponding actions taken (or not taken) by elected officials to advance their constituents' policy preferences. To this end, I use CES questions covering 45 unique issue policy issues that fall under state jurisdiction to show the divide between the preferences rural and non-rural[2] co-partisans on twelve policy themes. The difference in preferences between rural and nonrural voters, even within party, forces legislators to choose between representing their rural and nonrural co-partisan constituents on issues that geographically divide legislators' districts. When there is an intra-partisan geographic divide regarding a bill being considered in a state capitol, is a legislator more likely to represent the preferences of their rural or nonrural constituents? The *State Policy Representation Database* enables me to answer this question. This dataset pairs constituent preferences expressed on the CES with state legislator roll call votes on over 1,300 corresponding bills, resulting in several million constituent preference - legislator vote observations that can be used to study dyadic substantive representation in state government.

[2] I use the categories *rural* and *nonrural* instead of the more commonly used urban and rural categories because urban and rural are not comprehensive nor mutually exclusive categorizations of voters, who also reside in suburban and exurban communities. I discuss the assignment of individuals to nonrural and rural categories in the measurement section of this paper. For more detail on geographic classification in political science, see Nemerever and Rogers 2020.

I find that ruralites have diametric representational patterns when being represented by Democratic legislators versus Republican legislators. Rural voters face a democratic deficit when being represented by Democratic legislators, and the rural deficit is persistent across race, ethnic, education, and gender subgroups. On the other hand, Republican legislators are more likely to represent the preferences of their rural constituents relative to their nonrural constituents..

This research engenders new insights into how rural Americans are a disadvantaged group within the American political system, at least in Democratic districts. Future work to identify political institutions, such as electoral rules and legislative institutions, associated with the substantive representation of rural voters will provide direction for policy practitioners who are charged with alleviating urban-rural inequalities in socioeconomic status, educational attainment, and health outcomes.

MEASURING THE RURAL GAP IN AMERICAN LIBERALISM

It is necessary to establish how the preferences of rural voters systematically differ from the preferences of nonrural voters prior to investigating whether rural and nonrural voters receive different qualities of substantive representation. If the policy preferences of rural and nonrural voters are indistinguishable, then legislators can represent both geographic factions on the same bill with a single roll call vote. However, if a legislator's co-partisan base is geographically divided on a policy, the legislator will not be able to represent both rural and nonrural positions with their single roll-call vote. I measure the rural divide in public opinion on state legislative issues using survey responses to the Cooperative Election Study (CES) and find that rural and nonrural co-partisans are divided on the majority of policy areas surveyed.

A prominent vein of American politics research concerns how policy preferences vary across demographic groups and socially-constructed identities. Pertinent to the representation of rural Americans, previous studies find that geographic location and identities[3] are related to differences in policy preferences in both the social and economic domains (Lyons and Utych 2021, Anderson et al. 2015). Although these one-issue studies are useful for deeply understanding geographic nuances on singular policy issues, they do not facilitate understanding comprehensive political representation of voters. This study meets this need by examining over 160 unique CES questions across the 45 issues and 12 policy themes show in Table 4.1.

To accurately study representation at the state level, I exclude survey items concerning exclusively federal issues, such as defense and foreign policy, debt ceiling, and Social Security. I include questions only if they concern a policy that falls under state jurisdiction (such as marriage or driver's licenses) or could be legislated at the state level (investment in clean energy can be done at both the federal and state levels). Regarding the latter, the Violence Against Women Act is an example of a federal policy for which the states could pass their own version to provide protections equal to or more than federal policy. An exception to this rule is bills or policy areas that could elicit the federal government in the minds of CES respondents, such as the Paul Ryan Budget Bill, Bush Tax Cuts, the Lilly Ledbetter Act, and Obamacare or the Affordable Care Act. Although budgets, taxes, equal pay, and healthcare all fall within purview of the states- the naming of these policies may provoke respondents to project their attitudes towards federal politicians onto broader policy areas. I also exclude questions that are tangentially political (existence of climate change, civic organizations). Alike questions are

[3] These two features are correlated but not necessarily the same. For more explanation, see Nemerever and Rogers (2020).

Table 4.1: State policy questions in the CES

Theme	Issue	Coverage
Education	Charter schools	2013
	Education spending	2016, 2018
Environment	Carbon emissions	2008-2011, 2014-2018
	Climate change	2006, 2007, 2009, 2010, 2012, 2013
	Environmental regulations	2006-2008, 2010, 2012-2018
	Renewable energy	2014-2018
Gender	Equal pay	2009
	LGBT hate crimes	2009
	Same-sex marriage	2008-2016
	Violence Against Women Act	2013, 2015
Guns	Assault rifles	2013-2018
	Background checks	2013-2018
	Concealed carry	2013-2018
	High-capacity magazines	2009, 2010, 2012
	Registration	2008
Healthcare	Children's health insurance program	2013, 2014
	Medicaid expansion	2008-2010
	Medicare for all	2012-2017
	Public option	2014
	Repeal Affordable Care Act	2007-2011
Immigration	Funding for sanctuary cities	2017
	Hiring undocumented immigrants	2009
	Police questioning	2010-2015
	Police reporting requirement	2017
	Public services	2007, 2010, 2012-2017
Labor	Minimum wage	2006-2008, 2016, 2018
	Unions	2006, 2007
Law	Mandatory minimums	2016
	Police body cameras	2016
Redistribution	Food stamps	2013
	Welfare	2016, 2018
Reproduction	Abortion illegal	2015-2018
	Abortion Likert scale	2006-2013
	Government funding of abortions	2014-2018
	Government funding of stem cell research	2006-2008, 2010, 2011
	Insurance for abortions	2014-2018
	Insurance for birth control	2012, 2014
	Prohibit abortion after 20 weeks	2006, 2007, 2013, 2018
Tax	Capital Gains tax	2006, 2007
	Corporate Income tax	2018
	Earned Income Tax Credit	2007
	Income tax	2018
	Sales tax	2013, 2018
Voting	Election Day registration	2008
	Photo Identification	2008
	Vote-by-mail	2008

Note: The wording of all CES questions organized by theme, issue, and year is available in the Supplementary Materials.

combined across waves of the CES. Response options are re-coded into binary responses, with 1 being the liberal position and 0 being conservative.

The CES offers a couple measurement advantages over other surveys commonly used in studies of American public opinion (e.g. the American National Election Survey). First, the sample size is sufficiently large to study uncommon demographic profiles, such as urban Oregonian Republicans or rural Wyoming Democrats. Second, the CES provides ZIP code-level identification of survey respondents. Although many academic and government publications have used counties as the unit of measurement for urban-suburban-rural residents, zip codes are a superior unit of analysis because of the inconsistency across states of how counties are determined and the geographic heterogeneity within counties. Counties can contain urban, suburban, and rural populations. (Nemerever and Rogers 2020) discuss why ZIP code is the superior unit of analysis for respondent geography, especially compared to counties. Nearly all counties are a mix of urban, suburban, and rural. Less than two percent of the population lives in a completely rural county and less than 4 live in a completely urban county. Geographic aggregation at the county-level mis-characterizes rural Americans who live in a large county that also contains a metropolitan area. The CES sample in the 2006-2018 cumulative file facilitates precise geographic identification of respondents and adequate coverage of rare demographic and partisan profiles.

To this end, I sort CES respondents into rural and nonrural categories according to Rural Urban Commuting Area (RUCA) Codes originally published by the United States Department of Agriculture Economic Research Service. RUCA codes classify census tracts on a ten-point ordinal urban to rural spectrum according to three factors: population size, population distribution, and commuting population (both size of the commuting population and size of the

integrated economic areas). The most precise location collected by the CES is ZIP code so I use ZIP Code Tabulated Area level estimates of RUCA Codes from the United States Department of Agriculture Economic Research Service. Table 4.2 shows the ten categories of RUCA codes and their frequencies within both the U.S. population and CES respondent pool.[4]

Table 4.2: Rural Urban Commuting Area Scheme

Code	Description	US Pop.	CES Pop.
1	Metropolitan area core: primary flow within an urbanized area (UA)	73%	76%
2	Metropolitan area high commuting: primary flow 30% or more to a UA	10%	8%
3	Metropolitan area low commuting: primary flow 10% to 30% to a UA	1%	1%
4	Micropolitan area core: primary flow within an urban cluster of 10,000 to 49,999 (large UC)	6%	7%
5	Micropolitan high commuting: primary flow 30% or more to a large UC	2%	2%
6	Micropolitan low commuting: primary flow 10% to 30% to a large UC	1%	0%
7	Small town core: primary flow within an urban cluster of 2,500 to 9,999 (small UC)	3%	3%
8	Small town high commuting: primary flow 30% or more to a small UC	1%	1%
9	Small town low commuting: primary flow 10% to 30% to a small UC	0%	0%
10	Rural areas: primary flow to a tract outside a UA or UC 3% 3%	1%	3%

I classify respondents living in code 7 and higher as rural, and respondents living in an area coded as 6 or lower as nonrural. The pool of CES respondents is almost identically distributed over the RUCA categories as the U.S. population. Table 4.3 shows the breakdown of CES respondents by partisanship and rural residence.[5]

Table 4.3: CES Respondent Counts by Partisanship and Rural Residence

Rural Democrats	Nonrural Democrats	Rural Republicans	Nonrural Republicans
11,394	192,172	13,395	149,715

[4] I drop respondents who have ZIP codes that are military areas, located in U.S. territories (i.e. Puerto Rico), or contain clerical errors that prevent me from matching them to a RUCA code.
[5] I exclude respondents that identify as Independents or "Other" because my theory focuses on within-party divisions and the co-partisan electoral connection between constituents and legislators.

GEOGRAPHICALLY DIVIDED PARTIES

In this section I present the difference of means in policy liberalism between rural and nonrural respondents. I present difference of means tests rather than a regression because the research question concerns if there is a difference between rural and nonrural individuals, independent of how much of that difference is attributable to different facets of intersectional identities such as race or class.[6]

It is well-established that there is an increasing trend of geographic polarization with rural voters sorting into the Republican Party and urban voters into the Democratic party. I divide Republican and Democrat into separate analyses to avoid capturing differences in liberalism that may arise from partisan socialization (voters adopted their policy preferences from party cues). These tests address the question, is there a difference between the policy preferences of rural and nonrural voters while controlling for partisanship?

Figure 4.1 shows differences in policy liberalism among rural and nonrural individuals (numeric values underlying the figure are in Table A4). Unsurprisingly, Democrats have higher liberalism than Republicans on every policy theme. More interestingly, there is variation in both the magnitude and direction of the liberalism gap within both parties.

Examining the Democratic party first, nonrural partisans are more liberal than rural partisans on all but two policy areas. Rural Democrats are more liberal than nonrural Democrats on the issue of law policy and there is no statistically significant liberalism gap on labor policy. Guns, immigration, redistribution, reproduction, and voting have the largest liberalism gap between nonrural and rural Democrats.

[6] For those interested, Table A3 uses OLS to show that rurality has a statistically significant relationship with policy liberalism looking within party while controlling for race, education, income, and gender (although a thorough understanding of how geography intersects with other identities to shape public opinion necessitates far more than a single regression.)

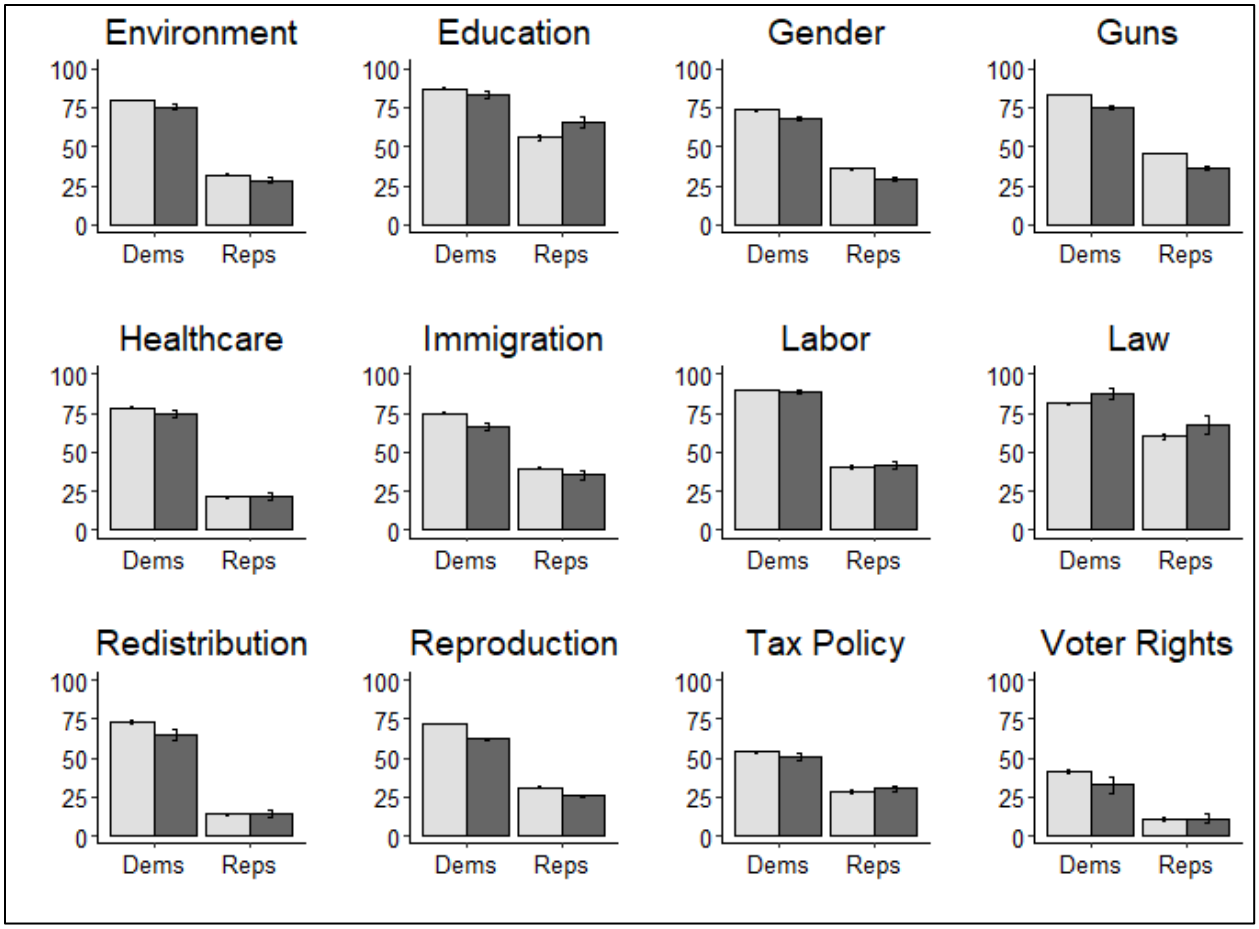

Figure 4.1: Rural and Nonrural Differences in Liberalism by Policy Area
Dark gray represents rural, light gray represents nonrural

Turning to the Republican party, there is no statistically significant liberalism gap on five of the twelve policy issues: healthcare, labor, redistribution, tax policy, and voter rights. In this respect, the Republican party is less geographically divided than the Democratic party. Rural Republicans are more conservative than nonrural Republicans on five issues: environment, gender, guns, immigration, and reproduction.

Rural Republicans are more liberal than nonrural Republicans on education and law policies. In addition to being the only two policy areas where rural Republicans are more liberal

than nonrural Republicans, the liberalism gap on education[7] and law[8] are also the largest two gaps between rural and nonrural Republicans. Law policy includes CES questions police body cameras and mandatory minimums for nonviolent drug offenses.

The Republican and Democratic party have two geographic divides in common. First, there is no difference in labor preferences between rural and nonrural constituents. Second, both rural Republicans and Democrats hold more liberal preferences on law policies than their co-partisan respondents.

The results of this section establish that urban and rural constituents have distinct policy preferences while subsetting by partisanship. Geographic sorting is homogenizing the parties such that rural voters are increasingly sorting into the Republican party and urban voters into the Democratic party, yet there remains non-negligible amounts of rural Democrats and urban Republicans. It is crucial for scholars of representation to acknowledge the geographic divisions within the parties because often they will result in one group receiving better representation on a policy on which different geographies of voters disagree.

[7] Public schools are especially important in rural areas, where private and charter schools are less likely to exist. Additionally, school sports teams are frequently the core of rural towns' identities (Cramer Walsh 2012). Sporting events are some of the only places to gather that are not bars or churches. When there is only one high school in a rural community, the school's sports teams represent the whole community and are a source of pride. Many rural residents have strong connections to place (Munis 2020), in part because they are more likely to have grown up there and have parents or grandparents who also lived there, which can deepen their personal attachment to and support for the school and sports that represent it.

[8] Law enforcement may be less politicized in rural places where Black Lives Matter and Defund the Police movements are less common, whereas nonrural Republicans may feel the need to take a stronger stance against body cameras to differentiate themselves from these largely, if not entirely, Democratic movements. Additionally, the primary drug epidemic in rural and small-town American is the opioid crisis, which many folks attribute to the healthcare and pharmaceutical industry and less to common drug dealers.

EXPECTATIONS FOR RURAL REPRESENTATION

The previous section shows clear state-level differences between rural and non-rural voters within each party. When rural and non-rural partisans disagree on a policy, a legislator cannot represent both geographic factions of their same-party constituency with their single roll call vote. I expect that on average, rural preferences will be less likely to be represented in legislator roll call votes than non-rural preferences because on average ruralites are the geographic minority within a state legislative district.

> *Hypothesis 1: Rural preferences are less likely to be represented by state legislator roll-call votes than non-rural preferences.*

Hypothesis 1 expects that rural representation will be worse than non-rural representation. Rural districts should be the exception to this pattern. I expect that rural voters will not have a representation deficit in rural districts.

> *Hypothesis 2: There is no rural representation gap in rural districts.*

MEASURING POLICY REPRESENTATION IN THE STATES

Deficiencies in substantive representation have been observed consistently in American politics using various measurement approaches. Substantive representation in state legislatures has been measured using both ideological representation (overall policy liberalism/conservatism) and issue-specific representation (e.g. abortion restrictions). Regarding the former, the canonical *Statehouse Democracy* aggregates New York Times and CBS public opinion data from 1976 to 1988 to calculate state-level measures of mass public opinion liberalism, which they compare to a state policy liberalism index based on eight issues: education spending per pupil, Medicaid scope, consumer protection, criminal justice, legalized gambling, Aid to Families with Dependent Children (AFDC), tax progressivity, and ratification of the Equal Rights Amendment

(Erikson et al. 1999). Their analyses indicate robust responsiveness of state policy liberalism to public opinion liberalism. Caughey and Warshaw (2018) build on *Statehouse Democracy* by creating time-variant measures of state-level public opinion liberalism 1936 – 2014 separately for social and economic policy areas. Like Erikson et al. (1999), Caughey and Warshaw (2018) find evidence of state policy responsiveness to public opinion. The second approach to studying substantive representation in state politics examines representation within a single policy domain, such as abortion (Kreitzer 2015) or federal spending across policy domains (Griffin et al. 2012). In this vein, Lax and Phillips (2012) look at 39 issues, each in a separate analysis to capture issue-specific representation. These two approaches allow social scientists to look at different facets of substantive representation.

For this study I use aggregated public opinion across CES questions, saving issue-specific analyses for future research.[9] However, I do use policy theme fixed effects when appropriate. Additionally, although representation at both the district and legislative levels are normatively desirable, I begin by examining the representation of rural voters in their districts, where rural voters are more likely to be in the majority bloc of their district than at the state level.

THE STATE POLICY REPRESENTATION DATABASE

I measure policy representation by looking at the congruence between constituents' policy preferences and their legislators' roll call votes on corresponding legislation.[10] The CES

[9] An exception to this is Figure 6, which looks at rural representation gaps by policy themes. However, this is an exploratory analysis and does not yield statistically or substantively significant results.

[10] Roll call votes typically occur at the end of the legislative process after conceptualization, introduction, committee edits, and agenda-setting. This may introduce bias by not being representative of all potential policies considered at different stages of the policy-making process.

data on public opinion is paired with legislative roll call votes is collected from the Project Vote Smart (PVS) and Open States.

Bills are selected from the PVS repository of Key Votes spanning 2009 - present. PVS uses the following criteria to select the legislation that comprises the Key Votes dataset: the vote should be helpful in portraying how a member stands on a particular issue, the vote should be clear for any person to understand, the vote has received media attention, and the vote was passed or defeated by a very close margin. I match 1,715 of the designated 12,212 key votes bills to the CES issues listed in Table 4.3. The distribution of bills across themes is detailed in Table 4. Figure 4.2 shows the distribution of bills and themes per state[11] and Table 4.4 shows the number of Project Vote Smart (PVS) Key Votes bills per policy themes across all state legislatures. Some of these bills reached the roll call stage in both chambers and produced two sets of roll call votes, while other bills were voted on in just one chamber. Although this dataset is a vast improvement on previous datasets linking public opinion to legislator roll call vote, the generalizability of this bill selection should be considered when drawing broad conclusions from the empirical results.

Table 4.4: Bills per Policy Theme

Theme	Number of Bills
Education	104
Environment	125
Gender	74
Guns	347
Healthcare	97
Immigration	96
Labor	160
Law	21
Redistribution	52
Reproduction	323
Taxes	265
Voting	51

[11] Table A5 shows the count of unique bills, themes, and issue per state.

In addition to limitations imposed by the breadth of topics included on the CES and in the PVS Key Votes, political institutions, such as professionalization and chambers rules, also affect how many bills may be included in the dataset, which begets problems with statistical power and precision for potential theme-specific or state-level analyses. First, legislators who spend more time in their legislator role may produce higher numbers of bills. For example, the states with the highest number of bill observations, New Jersey and California, meet yearlong. Second, higher numbers of legislators may results in higher volumes of bills introduced each session. Nebraska, the nation's only unicameral legislature, has the fewest number of state legislators with just 49 members and the fewest bills in the dataset with only 4 bills covering three issue areas and themes. Finally, about a quarter of the 99 state legislative chambers have constitutional or procedural limits of the number of bills a legislators can introduce during a session (Erickson 2017).

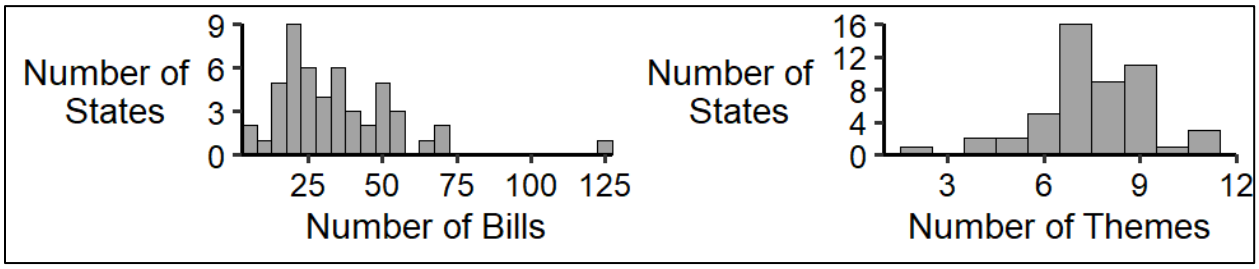

Figure 4.2: Coverage of Bills and Themes per State

The cumulative 2006-2018 CES file contains 452,755 unique respondents across the twelve survey waves. Drawing on measurement rationale presented in Nemerever and Rogers (2020), respondents are assigned to rural and nonrural categories at the ZIP code-level according to Rural Urban Commuting Area (RUCA) Codes published by the United States Department of Agriculture Economic Research Service. RUCA codes classify census tracts on a ten-point urban to rural spectrum according to three factors: population size, population distribution, and commuting population. Respondents are classified as rural if they live in a small-town core with

a primary commuting flow to an urban cluster of 2,500 to 9,999 people, or any area that is more rural. Respondents are classified as nonrural if they live in a micropolitan areas with a commuting flow of 10% to 30% to a large urban core, or any area more urban. Table 4.2 lists the descriptions of all ten RUCA categories. The pool of CES respondents is only slightly more rural than the American population. Ninety-one percent of CES lives in a nonrural area, compared to 93% of the U.S. population (Nemerever and Rogers 2020, Table 1). I probabilistically assign CES respondents to state legislative districts using the proportion of people in their ZIP code that live in each district using geographic relationship files from the Missouri Census Data Center's Geocorr program, adopting the method used by Tausanovitch and Warshaw (2013). There are 121,060 respondents who live in a ZIP code that exists entirely in a single legislative district and the rest of the respondents are assigned based on how the population of their ZIP code is distributed across districts. After accounting for missingness at the rurality and legislative district assignment stages, there are 397,213 unique respondents in the study. The sample size by state, party (republican, democrat, and independent), and rural status are included in Table A1.

Subgroups with fewer than 30 respondents were excluded from the analysis because sample sizes of less than 30 respondents are generally insufficiently small for application of the Central Limit Theorem. Subgroups excluded because of size include rural Democrats from Delaware and Connecticut and rural Republicans from Hawaii, Connecticut, Massachusetts. The comparisons groups for each of these populations were excluded accordingly (i.e., nonrural Republicans from Hawai'i were excluded because there was no rural population available for comparison). Additionally, New Jersey and Rhode Island samples are excluded from the data set because they do not have rural CES respondents. Commuting patterns within these states

geographically-small states makes it difficult to sample respondents from a ZIP code that does not have a primary commuting flow to an urban cluster with less than 10,000 residents.

Roll call votes are paired to CES respondent across all years to maximize power for hard to measure populations, such as rural Americans, and seldom-legislated policy areas.[12] For example, a respondent preference from the 2010 CES wave can be paired with a roll call vote on 2016 legislation as a representation dyad. Representation is coded as a binary variable: 1 if the legislator votes the voter's preference on the bill, 0 otherwise. Individual respondents may have more than one observation per roll call if they reside in a multi-member district, in which case they would have two observations for a roll call vote on a particular bill (one for each legislator's vote).

The unit of observation for the analyses is respondent legislator dyad for a specific legislative term. A respondent's representation score is the average of value of the binary match variable for a unique legislator in a unique legislative session. Table 4 shows the number of unique issues and themes (from Table 3) comprising each observation average. There are 4,693,462 respondent-legislator vote dyads in the dataset, which are aggregated into 732,874 respondent-legislator-term dyads. The plurality of observations are based on a single issue or theme, and the generalizability of these findings should take into account this data limitation.

Table 4.5: Frequency of Unique Themes and Issues per Respondent-Legislator-Term Observation

	Themes	Issues
One	310,607	302,015
Two	49,641	57,226
Three	6,189	6,794
Four	0	402

[12] Tausanovitch and Warshaw (2013) similarly treat multiple survey waves as cross-sectional.

RESULTS AND DISCUSSION

Table 4.6 shows the mean representation scores by Democratic and Republican legislators across partisanship and demographic groups. I present results separately for representation by legislator party because these two subsets have different, and often opposing, representational patterns that are obscured when aggregated.

Table 4.6: Group Means for Representation Scores (0-100), aggregated nationally

	Represented by Democratic Legislator			Represented by Republican Legislators		
	Score	Difference	Observations	Score	Difference	Observations
Democrat	69		101,929	30		98,459
Republican	43		51,884	63		102,871
		26			33	
Nonrural	60		147,368	46		181,243
Rural	55		6,445	50		20,087
		5			4	
White	60		103,640	48		165,932
Nonwhite	61		50,173	42		35,398
		1			6	
Male	57		70,273	51		91,961
Female	62		83,540	43		109,369
		5			8	
Bachelor's Degree	63		62,303	44		70,639
No Bachelor's Degree	58		91,504	48		130,684
		5			4	

Note: All differences are significant at $p < 0.01$.

As expected, partisans represented by a legislator of their own party have higher rates of representation than individuals represented by a legislator of the opposite party. Democratic respondents represented by Democratic legislators benefit from a 39 point representational advantage relative to Democratic respondents represented by Republican legislators. To a lesser extent, Republican respondents represented by Republican legislators benefit from a 19 point representational advantage relative to Republican respondents represented by Democratic legislators. The disparity between representational rates given to co-partisan constituents vs. out-partisan constituents is 24 points for Democratic legislators and 33 points for Republican legislators.

Turning to the population of interest, ruralites have diametric representational patterns when being represented by Democratic legislators versus Republican legislators. When represented by a Democratic legislator, ruralites fare worse than non-ruralites by 5 points, is equal to the gender and education difference among constituents of Democratic legislators. Rural respondents represented by Republican legislators have a representation advantage of 4 points compared to the representation of non-rural respondents by Republican legislators.

In addition to the rural representation gap, Table 4.5 shows the representation gaps for additional demographic and social divisions. Democratic legislators provide higher rates of representation to nonwhite respondents, female respondents, and respondents with a Bachelor's degree. Republican legislators exhibit the inverse pattern, such that white respondents, male respondents, respondents without a Bachelor's degree have higher representation scores than their counterparts. The largest representation gap for Republican legislators occurs is the gender of the constituent.

Next, I examine the consistency of the rural representation gap as it intersects with respondents other politically relevant identities. Figure 4.3 shows variation in the rural representation deficit among those who are represented by Democratic legislators. Rural respondents receive less representation than non-rural respondents across all subgroups. Across race, sex, and education, the rural representation deficit by Democratic legislators ranges between 5 and 10 percentage points, meaning that being rural carries a representation penalty even within groups already facing a democratic deficit.

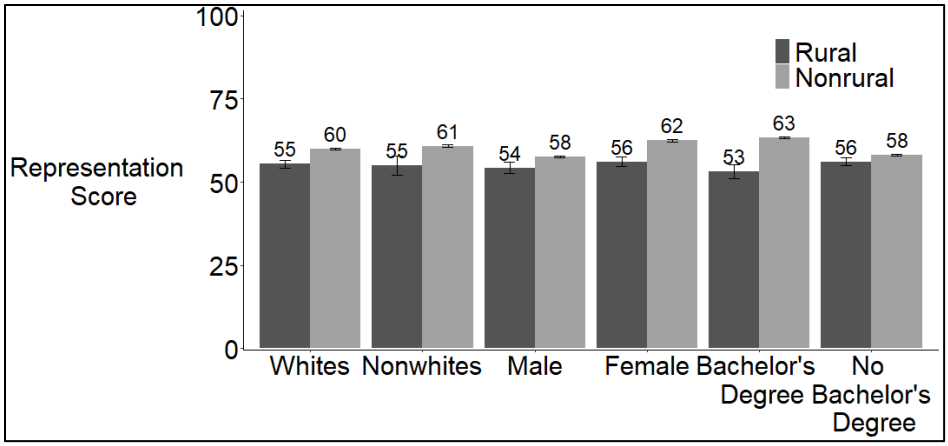

Figure 4.3: Representation Gaps by Democratic Legislators, across intersectional identities

Representation by Republican legislators, shown in Figure 4.4, is better for rural constituents consistently by 4 to 6 percentage points across sub-constituencies - except for among nonwhite constituents for whom the representation score is equal across rural and nonrural constituents. The primary takeaways from Figures 4.3 and 4.4 are that the rural representation gap by Democratic legislators is consistently negative across subgroups, while the rural representation gap by Republican legislators is consistently positive, although generally smaller in magnitude than the Democratic representation gaps.

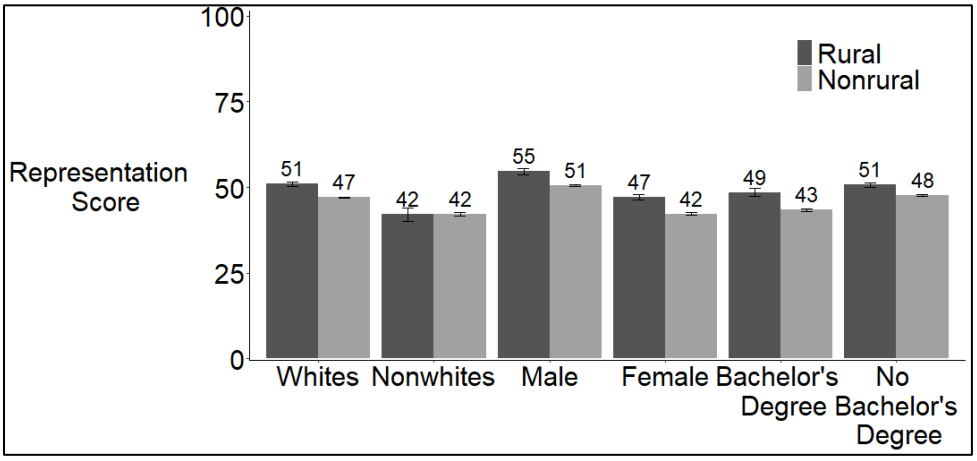

Figure 4.4: Rural Representation Gaps by Republican Legislators, across intersectional identities

The evidence shows a slight rural advantage from Republican legislators and a marked disadvantage from Democratic legislators. Hypothesis 1, that rural preferences are less likely to be represented by state legislator roll-call votes than non-rural preferences, is supported only for roll-call votes cast by Democratic legislators. Rural constituents do not have a representation deficit when represented by Republican legislators.

PARTY MATCHES

These analyses represent subset of co-partisan representation, a context in which we would expect the electoral connection and congruence between legislator and voter the strongest. This is not meant to be representative of rural representation in the United States[13], but rather a deeper look at the generalizability of the findings presented above. Figure 4.5 shows the rural representation gap for constituents who are co-partisans with their legislator.

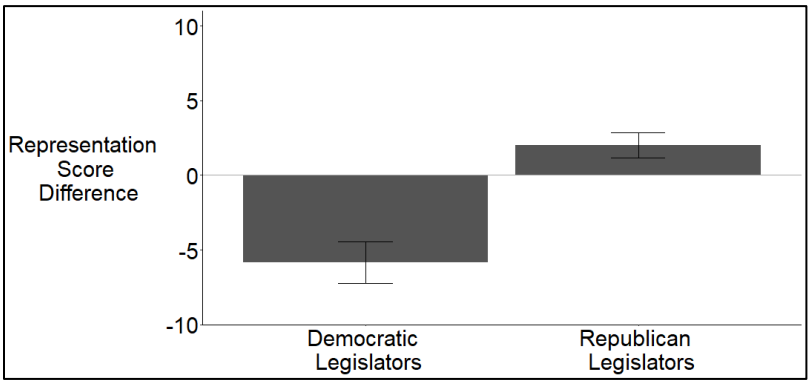

Figure 4.5: Rural Representation by Co-partisan Legislators Relative to Nonrural Representation

Rural Democrats receive less substantive representation than nonrural Democrats. Rural Republicans are slightly favored related to nonrural Republicans. These findings suggest that electing a co-partisan representative is not the end-all be all for rural Democrats seeking

[13] Whether urban or rural voters are more likely to be of the opposite party of their representative has not yet been systematically documented and remains a question worth answering.

substantive representation. Future analyses could further investigate what types of Democrats, both ideologically (Blue Dogs vs. The Squad) and contextually (jungle primary, electoral competition), do a better job of representing their rural constituents.

Table 4.7 presents OLS models exploring whether the differences in rural and nonrural representation by co-partisan legislators hold when controlling for other demographic variables and varying the measurement of constituent rurality. These estimates do not substantively change when including policy theme fixed effects, as shown in Tables A6-7.

Table 4.7: Representation (0-100) by Co-partisan Legislators

	Republicans	Republicans	Democrats	Democrats
Intercept	54.51*** (0.37)	55.35*** (0.34)	67.69*** (0.35)	65.89*** (1.61)
Rural (0,1)		2.60*** (0.43)		-5.64*** (0.67)
Rural (1-10)	0.42*** (0.06)		-1.17*** (0.08)	
Bachelor's Degree	0.26 (0.30)	0.21 (0.30)	4.29*** (0.27)	4.44*** (0.27)
Black	-7.23*** (1.14)	-7.33*** (1.14)	-9.02*** (0.31)	-8.63*** (0.31)
Hispanic	-4.45** (0.66)	-4.62** (0.66)	-5.51*** (0.44)	-5.17*** (0.44)
Asian	-7.14*** (1.42)	-7.32*** (1.42)	-3.03*** (0.80)	-2.78*** (0.80)
Income	0.40*** (0.04)	0.39*** (0.04)	0.60*** (0.04)	0.61*** (0.04)
Male	8.15*** (0.27)	8.14*** (0.27)	-0.38 (0.26)	-0.33 (0.26)
Observations	114,976	114,976	114,562	114,562
R-squared	0.01	0.01	0.02	0.02
Adjusted R-squared	0.01	0.01	0.02	0.02

Note: ***$p < 0.001$, **$p < 0,01$, *$p < 0.05$

The models reaffirm that there is a statistically significant relationship between rurality (both measurements) and representation in opposing directions for the two parties. Echoing the substance of Figure 4.5, the models show that there is a small positive relationship for rural

voters represented by Republicans and a larger negative relationship for rural voters represented by Democrats.

Additionally, we might want to know which policy themes are driving the representation gap, and how this varies by party. Figure 4.6 shows representation by policy theme and legislator party for constituents who are of the same party as their representative. There are no statistically significant differences, most likely due to lack of power derived from a small sample of bills (see Table 4.4). Nonetheless, the substantive differences on gender issues and gun control comports with previous work on social conservatism of ruralites vs. urban and suburbanites. Because of the rampant pro-life conservatism in rural America, the rural advantage for reproductive policy is most likely due to Democratic legislators voting conservatively (towards the median voter) on abortion and birth control bills (although this has yet to be confirmed empirically).

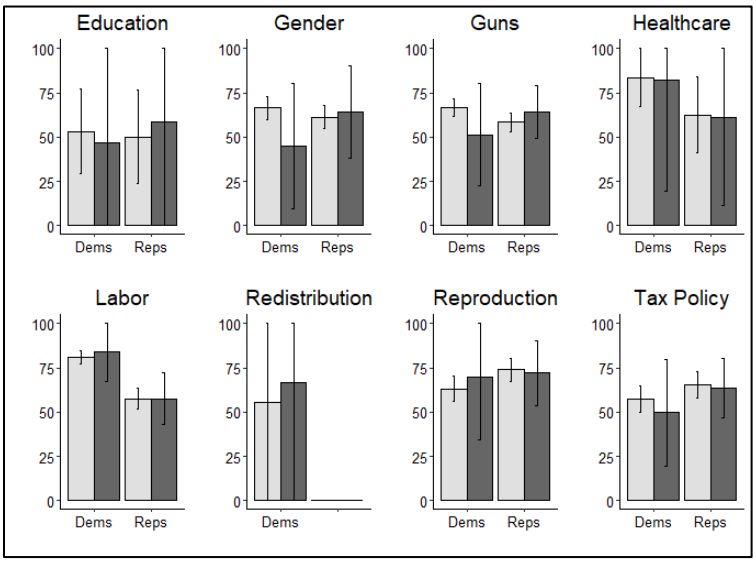

Figure 4.6: Policy Representation by Co-partisan Legislators, by theme
Dark gray represents rural, light gray represents nonrural

DEMOCRATIC DEFICIT FOR RURALITES

Lax and Phillips (2009) define "democratic deficit" as government not representing the preferences of the majority of voters. Another way to think about this is democratic dysfunction

because majoritarian institutions are designed so that government is responsive to the preferences of the majority, and failure to achieve this is a sign that majoritarian institutions, in this case American state legislatures, are not functioning as intended. I test for a democratic deficit by looking at rural representation when a rural constituent is in a rural district.

I measure rural districts using the *State Legislative District Urban–Rural Dataset* (Nemerever and Rogers 2021). For the creation of this dataset, RUCA codes were probabilistically assigned state legislative districts based on the proportion of the district population belonging to each of the 10 RUCA categories. While this procedure may introduce noise into the dataset, this type of assignment occurs without systematic bias. There are 6,593 unique district-session observations in the CES sample. Multi-member districts are counted once per member, i.e. if there are two members representing a single district per session it is counted as two district-session observations. Table 4.8 shows the distribution of districts by rural/nonrural classification and legislator party.

Table 4.8: Rural and Nonrural District-Session Observations in CES sample (2006-2018)

	Represented by a Democrat	Represented by a Republican
Rural Districts	404	686
Nonrural Districts	2,782	3,020

To what extent is this pattern present in rural versus non-rural districts? Table 4.9 shows the representation scores for rural and nonrural constituents across rural and nonrural districts. Consistent with Hypothesis 2, that there is no rural representation gap in rural districts, the difference between rural and nonrural constituent representation in rural districts is not statistically significant. In non-rural districts, rural constituents represented by Democratic legislators fare worse than nonrural constituents and rural constituents represented by Republican legislators fare better than nonrural constituents. The gap in Republican districts is two-thirds the

magnitude of the gap in Democratic districts. Tables A8 and A9 show the representation gap using OLS models to hold constant demographic variables and vary measurement between binary and ordinal operationalization of both constituent rurality and district rurality.

Table 4.9: Group Means for Representation Scores (0-100) for Rural and Nonrural districts

	Democratic Legislators			Republican Legislators		
	Score	Difference	Observations	Score	Difference	Observations
Rural Districts						
Rural voter	56		23,013	50		76,972
Nonrural voter	55		36,017	50		1,020,099
		1			0	
Nonrural Districts						
Rural voter	54		40,481	50		137,694
Nonrural voter	60		1,665,667	46		1,764,669
		6***			4***	

Note: An observation is a CES respondent – legislator dyad for a legislative session. ***$p < 0.001$

Finally, Table 4.10 presents models that interact the rurality of the constituent with the rurality of the district. In other words, is the effect of being a rural voter in a rural district different from the effect or being a rural voter in a nonrural district? I find that for constituents represented by Republicans, the interaction of voter rurality with district rurality is negative, meaning that the effect of the two characteristics combined is less than the sum of the individual effects. The more rural a district is, the less important it is that the voter is rural for the quality of representation by a Republican legislator, with district rurality having a negative association with representation. Although overall rural voters have a representational advantage in Republican districts, rural voters in the most rural Republican districts may receive worse representation. The opposite effect is present in Democratic districts. The rurality of the district is more important for increasing substantive representation for rural voters. Very rural districts are likely the context in which Democrats finally provide their rural constituents equal substantive representation.

Table 4.10: Regression of Representation Scores (0-100) by Legislator Party and District Rurality

	Republican	Democrat
Intercept	41.24*** (0.28)	61.85*** (0.31)
Rural (0,1)	5.16*** (0.62)	-7.14*** (1.06)
District Rurality (1-10)	0.69*** (0.05)	-0.94*** (0.07)
Rural * District Rurality	-0.74*** (0.11)	1.22*** (0.17)
Bachelor's Degree	-5.21*** (0.22)	5.28*** (0.24)
Black	-6.34*** (0.39)	0.83*** (0.31)
Hispanic	-4.15*** (0.44)	-0.34 (0.40)
Asian	-6.73*** (0.87)	2.75*** (0.73)
Income	0.34*** (0.03)	-0.04 (0.03)
Male	8.43*** (0.20)	-5.15*** (0.23)
Observations	206,946	158,494
R-squared	0.02	0.01
Adjusted R-squared	0.01	0.01

Note: ***$p < 0.001$, **$p < 0,01$, *$p < 0.05$

ACKNOWLEDGEMENTS

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APPENDIX

Table A1: CES Respondent Count by State, Party, and Rurality

	Republicans		Democrats	
State	Nonrural	Rural	Nonrural	Rural
Alaska	306	81	243	42
Alabama	2,197	464	1,949	300
Arkansas	1,271	361	1,362	317
Arizona	4,373	303	4,006	206
California	13,169	393	22,083	427
Colorado	2,495	261	2,728	153
Connecticut				
Delaware	511	57		
Florida	12,315	312	14,049	234
Georgia	3,970	470	4,844	325
Hawaii			587	30
Iowa	1,055	514	1,525	482
Idaho	1,038	287	596	133
Illinois	5,237	527	9,189	428
Indiana	3,479	427	3,842	288
Kansas	1,538	422	1,499	230
Kentucky	1,792	770	2,058	708
Louisiana	1,948	198	1,760	155
Massachusetts			3,377	41
Maryland	2,386	70	4,466	60
Maine	353	130	436	210
Michigan	4,422	603	6,690	633
Minnesota	2,361	440	3,343	456
Missouri	3,206	815	3,798	502
Mississippi	1,051	334	1,006	290
Montana	445	273	461	196
North Carolina	4,432	508	5,491	637
North Dakota	307	148	283	112
New Hampshire	841	149	886	186
New Mexico	1,000	87	1,269	79
Nevada	1,699	91	2,005	56
New York	6,385	491	12,886	521
Ohio	6,529	485	8,458	467
Oklahoma	1,788	374	1,519	274
Oregon	2,150	307	3,177	286
Pennsylvania	6,879	643	8,798	517
South Carolina	1,859	91	1,609	155
South Dakota	399	219	326	135
Tennessee	3,096	574	2,940	390
Texas	12,147	980	12,051	540
Utah	1,821	148	1,153	70
Virginia	4,012	644	5,058	545
Vermont	136	118	252	249
Washington	2,951	263	4,328	265
Wisconsin	2,590	723	3,315	636
West Virginia	722	284	879	355
Wyoming	251	159	165	58

Table A2: Excluded CES Question Topics

Theme	Issues
Foreign Policy	Iraq, Afghanistan, Israel-Lebanon, Iran Sanctions Act, Syria, Cuba
Defense	justifications for war, foreign surveillance, Don't Ask Don't Tell
Science	existence of climate change
Governance	redistricting, corruption, Tea Party, third parties
Federal Economic Issues	Paul Ryan Budget Bill, debt ceiling, Social Security, stimulus, bank bailouts

Table A3: Regression of Liberalism (0-100) Within Party

	Republicans	Democrats	Republicans	Democrats
Intercept	43.32*** (0.14)	73.29*** (0.09)	44.19*** (0.10)	74.39*** (0.10)
Rural (0,1)	-2.42*** (0.20)	-3.66*** (0.16)		
Rural (1-10)			-0.59*** (0.03)	-0.64*** (0.02)
Bachelor's Degree	-0.95*** (0.12)	7.19*** (0.08)	-1.03*** (0.12)	7.09*** (0.08)
Black	12.87*** (0.39)	-3.64**** (0.10)	11.00*** (0.49)	-3.83*** (0.10)
Hispanic	9.21*** (0.24)	-2.51** (0.13)	-5.56*** (0.38)	-2.72*** (0.13)
Asian	-0.69*** (0.02)	0.52*** (0.01)	-0.71*** (0.02)	0.50*** (0.01)
Income	16.57*** (0.48)	-3.92*** (0.25)	16.39*** (0.02)	-4.12*** (0.25)
Male	-8.48*** (0.11)	-0.06*** (0.08)	-8.50*** (0.11)	-0.08*** (0.08)
R-squared	0.07	0.08	0.07	0.08
Adj. R-squared	0.07	0.08	0.07	0.08
Observations	165,585	206,353	165,585	206,353

Note: ***$p < 0.001$, **$p < 0,01$, *$p < 0.05$

Note: The dependent variable is policy liberalism, measured on a scale from 0 to 100 with higher values representing higher levels of liberalism. The model specification is OLS> The models include controls for race and ethnicity, education, and income. White, Black, and Hispanic are binary demographic variables. Education is measured in six categories ranging from "No HS" to "Post-Grad." Income is measured categorically in increments of 10,000 dollars beginning with "Less than 10k" and ending with "150k+." Columns 2 and 4 use a categorical measure of rurality instead of the binary indicator used in the first and third columns. As stated in the previous section, the binary measure groups together RUCA categories 1-6 and 7-10. The categorical variable maintains all ten RUCA values as separate categories (see Table 1).

Table A4: Geographic Liberalism Gap by Party and Policy

Party	Policy Theme	Liberalism Gap	Rural Mean	Rural C.I.	Nonrural Mean	Nonrural C.I.
Democrats	Education	1.9	75.2	73.6, 76.8	79.6	79.3, 79.9
Democrats	Environment	4.8	83.4	80.7, 86.0	86.9	86.3, 87.6
Democrats	Gender	5.5	67.7	66.2, 69.2	73.5	73.2, 73.9
Democrats	Guns	4.5	74.8	73.6, 75.9	83.3	83.1, 83.5
Democrats	Health	2.1	74.7	72.1, 77.4	78.6	78.1, 79.1
Democrats	Immigration	6.5	66.2	63.7, 68.6	74.9	74.3, 75.5
Democrats	Labor	0.7	89.0	87.7, 90.2	90.1	89.8, 90.4
Democrats	Law	0.9	87.9	84.3, 91.4	81.1	80.2, 81.9
Democrats	Redistribution	8.0	64.7	61.1, 68.2	72.6	71.7, 73.6
Democrats	Reproduction	9.7	62.1	61.2, 62.9	71.7	71.5, 72
Democrats	Tax	2.7	50.9	48.9, 52.9	53.7	53.1, 54.2
Democrats	Voting	8.6	32.6	27.1, 38.1	41.2	39.6, 42.8
Republicans	Education	3.4	28.3	26.5, 30.2	31.7	31.2, 32.2
Republicans	Environment	-9.8	65.5	61.6, 69.4	55.7	54.3, 57.2
Republicans	Gender	6.9	29.0	27.4, 30.5	35.9	35.4, 36.4
Republicans	Guns	9.3	36.2	34.9, 37.5	45.5	45.1, 45.9
Republicans	Health	-0.0	21.4	18.9, 23.8	21.3	20.7, 22
Republicans	Immigration	4.3	35.3	32.7, 37.8	39.6	38.8, 40.4
Republicans	Labor	-1.0	41.5	39.5, 43.4	40.4	39.8, 41.1
Republicans	Law	-7.4	67.3	61.4, 73.2	59.9	58.4, 61.5
Republicans	Redistribution	-0.6	14.4	12.1, 16.6	13.8	12.9, 14.6
Republicans	Reproduction	5.6	25.5	24.7, 26.3	31.1	30.8, 31.4
Republicans	Tax	-2.0	30.3	28.5, 32.1	28.3	27.6, 28.9
Republicans	Voting	-0.9	11.2	7.9, 14.5	10.3	9.2, 11.3

Table A5: Bills, Themes, and Issues per State

State	Bills	Themes (of 12)	Issues (of 45)
Alaska	10	7	8
Alabama	18	7	11
Arkansas	18	7	14
Arizona	37	7	18
California	71	11	24
Colorado	33	9	18
Connecticut	17	9	13
Delaware	16	7	11
Florida	19	9	12
Georgia	21	9	15
Hawaii	14	7	11
Iowa	25	7	15
Idaho	29	9	15
Illinois	31	10	21
Indiana	21	8	13
Kansas	31	8	17
Kentucky	7	4	5
Louisiana	20	6	13
Massachusetts	14	7	10
Maryland	32	10	18
Maine	13	7	10
Michigan	39	10	18
Minnesota	23	8	14
Missouri	35	9	15
Mississippi	19	7	13
Montana	29	8	15
North Carolina	20	8	13
North Dakota	24	6	12
Nebraska	4	3	3
New Hampshire	48	11	17
New Jersey	47	11	25
New Mexico	17	9	11
Nevada	11	8	11
New York	16	8	9
Ohio	22	6	12
Oklahoma	32	8	16
Oregon	33	9	17
Pennsylvania	15	8	11
Rhode Island	15	7	9
South Carolina	9	5	7
South Dakota	20	8	15
Tennessee	27	8	15
Texas	16	7	10
Utah	23	9	13
Virginia	33	9	15
Vermont	5	4	4
Washington	16	8	10
Wisconsin	15	7	11
West Virginia	10	6	8
Wyoming	14	8	9

Table A6 Regression of Co-partisan Republican Representation (0-100)

	Republicans	Republicans	Republicans	Republicans
Intercept	0.50*** (0.02)		0.50*** (0.02)	
Rural (0,1)			0.03*** (0.005)	0.05*** (0.005)
Rural (1-10)	0.01*** (0.001)	0.01*** (0.001)		
Bachelor's Degree	0.0002 (0.003)	0.002 (0.003)	-0.001 (0.003)	0.001 (0.003)
White	0.001 (0.01)	0.002 (0.01)	0.002 (0.01)	0.001 (0.01)
Black	-0.08*** (0.01)	-0.08*** (0.01)	-0.08*** (0.01)	-0.08*** (0.01)
Hispanic	0.02** (0.01)	0.03** (0.01)	0.02** (0.01)	0.03*** (0.01)
Income	0.004*** (0.0004)	0.004*** (0.0004)	0.004*** (0.0004)	0.004*** (0.0004)
Male	0.09*** (0.003)	0.09*** (0.003)	0.09*** (0.003)	0.09*** (0.003)
Observations	93,225	93,225	93,225	93,225
R-squared	0.01	0.01	0.01	0.01
Adjusted R-squared	0.01	0.01	0.01	0.01
Model	OLS	Theme F.E.	OLS	Theme F.E.

Note: F.E. stands for fixed effects. ***$p < 0.001$, **$p < 0{,}01$, *$p < 0.05$

Table A7 Regression of Co-partisan Democrats Representation (0-100)

	Democrats	Democrats	Democrats	Democrats
Intercept	67.69*** (0.35)		65.89*** (0.32)	
Rural (0,1)			-5.64*** (0.67)	-0.02*** (0.001)
Rural (1-10)	-1.17*** (0.08)	-1.26*** (0.08)		
Bachelor's Degree	4.29*** (0.27)	4.86*** (0.26)	4.44*** (0.003)	5.02*** (0.26)
Black	-9.02*** (0.31)	-7.99*** (0.30)	-8.63*** (0.01)	-7.58*** (0.30)
Hispanic	-5.51*** (0.44)	-3.30*** (0.44)	-5.17*** (0.44)	2.95*** (0.44)
Asian	-3.03*** (0.80)	-1.86** (0.79)	-2.78*** (0.80)	-1.60 (0.79)
Income	0.60*** (0.04)	0.52*** (0.04)	0.61*** (0.04)	0.54*** (0.04)
Male	-0.38*** (0.26)	-0.64*** (0.25)	-0.33*** (0.26)	-0.59*** (0.25)
Observations	114,562	114,562	114,562	114,562
R-squared	0.02	0.02	0.02	0.02
Adjusted R-squared	0.02	0.02	0.02	0.02
Model	OLS	Theme F.E.	OLS	Theme F.E.

Note: F.E. stands for fixed effects. ***$p < 0.001$, **$p < 0,01$, *$p < 0.05$

Table A8 Regression of Republican Representation (0-1) with District Rurality

	Republicans	Republicans	Republicans	Republicans
Intercept	40.88*** (0.28)	41.42*** (0.27)	41.61*** (0.27)	42.65*** (0.25)
Rural (0,1)	0.48*** (0.05)	0.60*** (0.05)		
Rural (1-10)			1.69*** (0.37)	2.51*** (0.36)
District Rurality (1-10)	0.40*** (0.05)		0.54*** (0.04)	
Rural District (0,1)		1.83*** (0.34)		2.65*** (0.34)
Bachelor's Degree	-5.19*** (0.22)	-5.21*** (0.22)	-5.26*** (0.22)	-5.32*** (0.22)
Black	-6.22*** (0.39)	-6.29*** (0.39)	-6.36*** (0.39)	-6.51*** (0.39)
Hispanic	-4.01*** (0.44)	-4.09*** (0.44)	-4.19*** (0.44)	-4.37*** (0.44)
Asian	-6.60*** (0.87)	-6.67*** (0.87)	-6.79*** (0.87)	-6.96*** (0.87)
Income	0.35*** (0.03)	0.35*** (0.03)	0.34*** (0.03)	0.33*** (0.03)
Male	8.44*** (0.20)	8.44*** (0.20)	8.43*** (0.20)	8.42*** (0.20)
Observations	206,946	206,946	206,946	206,946
R-squared	0.02	0.01	0.01	0.01
Adjusted R-squared	0.02	0.01	0.01	0.01

Note: ***$p < 0.001$, **$p < 0,01$, *$p < 0.05$

Table A9 Regression of Democratic Representation (0-1) with District Rurality

	Democrats	Democrats	Democrats	Democrats
Intercept	62.05*** (0.32)	61.59*** (0.31)	61.49*** (0.31)	60.43*** (0.29)
Rural (0,1)	-0.56*** (0.08)	-0.78*** (0.08)		
Rural (1-10)			-1.06*** (0.01)	-2.46*** (0.01)
District Rurality (1-10)	-0.51*** (0.07)		-0.72*** (0.06)	
Rural District (0,1)		-1.60*** (0.54)		-3.29*** (0.53)
Bachelor's Degree	5.24*** (0.24)	5.25*** (0.24)	5.30*** (0.24)	5.33*** (0.24)
Black	0.74** (0.31)	0.82*** (0.31)	0.89*** (0.31)	1.08*** (0.31)
Hispanic	-0.40 (0.40)	-0.30 (0.40)	-0.28 (0.40)	-0.08 (0.40)
Asian	2.71*** (0.73)	2.76*** (0.73)	2.81*** (0.73)	2.92*** (0.73)
Income	-0.04** (0.03)	-0.04*** (0.03)	-0.03*** (0.03)	-0.03*** (0.03)
Male	-5.18*** (0.23)	-5.17*** (0.23)	-5.16*** (0.23)	-5.15*** (0.23)
Observations	158,494	158,494	158,494	158,494
R-squared	0.01	0.01	0.01	0.01
Adjusted R-squared	0.01	0.01	0.01	0.01

Note: ***$p < 0.001$, **$p < 0,01$, *$p < 0.05$

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