Laboratories of Politics: There is Bottom-up Diffusion of Policy Attention in the American Federal System

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A persistent question in the study of American federalism is if the states actually serve as "laboratories of democracy" for the country as a whole. I argue that political attention to policy areas can diffuse upwards, from state legislatures to Congress. National and state legislators share a party brand and can learn from policy debates in other levels. In particular, we should expect to see the diffusion of messaging legislation, or bills that were introduced without the intention of becoming law, after members of Congress observe their political effects in the states. Using an original dataset of introduced bills in all 50 state legislatures in 22 policy areas since 1991 drawn from LexisNexis, I show a positive association between changes in the number of state legislative bills introduced in 12 policy areas and the number of Congressional bills introduced in the next session, which is taken as evidence of "bottom-up" diffusion. This relationship is more prevalent between Republican state legislators and members of Congress, within state delegations, and in issue areas where the interest group community lobbies before both the states and national government. To the extent that states are laboratories for the nation, they may be political laboratories.

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Introduction

Americans have long believed in the promise of the states serving as the "laboratories of democracy," where lessons from a state's policy implementation could later benefit the country at large. For example, President Barack Obama said the ideas in the 2010 Affordable Care Act (ACA) were from a 2006 Massachusetts law.[1] But the ACA may be an exception to the rule, as scholars have found scant evidence of bottom-up diffusion on isolated policies (Weissert and Scheller, 2008; Mossberger, 1999) or across the agenda (Lowery, Gray, and Baumgartner, 2010).

While policy may not often travel up the federal ladder, scholars have argued that *attention*

[1]See "Interview With Matt Lauer on NBC's *Today*": 30 March 2010, URL: https://archive.md/PAf1U. Accessed November 30, 2021.

to different policy areas can diffuse upwards (Karch and Rosenthal, 2016; Shipan and Volden, 2006). Even if a policy is not implemented, legislators at one level can learn from the political experience of their counterparts. The policy debate in a different venue can reveal important political information about public opinion, media coverage and interest group positions. For example, in 2013 the Arkansas legislature overrode Gov. Mike Beebe's (D) veto to pass a "Heartbeat" bill that bans abortions after an ultrasound can detect a fetal heartbeat. Beebe had called the bill "blatantly unconstitutional"[2] and federal courts agreed, striking the bill down. Despite the legal opposition to the bill, in the 2015 legislative sessions, heartbeat bills were introduced in 9 different states.[3] In 2017, Rep. Steve King (R-IA) introduced the first heartbeat bill in the U.S. House of Representatives,[4] and it has since been introduced in each subsequent Congress. So while heartbeat bills are not a successful policy experiment from the states, they clearly have a political utility to national actors.

I argue that conditions in the United States are ripe for the vertical diffusion of attention, particularly in a bottom-up fashion. National and state legislators share a "party brand" consisting on positions on a host of issues and can introduce bills to satisfy intense policy demanding interest groups (Bawn et al., 2012), and focus media and public attention on favorable policy areas (Groeling, 2010). As the country's politics have become increasingly nationalized (Hopkins, 2018; Rogers, 2016), state politics have become more relevant to national political actors, and vice-versa, making it more likely they will mimic each other to maintain the party brand. However, Groeling (2010) also notes that legislative parties are not unitary organizations and individual members of the same legislative party may compete for attention. National legislators get far more media attention than state legislators (Rogers, 2017), so I expect that diffusion will be bottom-up more than top-down, as state legislators looking to get attention from an issue may have to act before their national counterparts.

To observe the relationship between state and federal attention to the policy agenda, I introduce a dataset of state legislation coded by 22 policy areas from 1991-2017. I reproduce and dramatically expand a prior effort at measuring the policy agendas of all 50 states employed by Virginia Gray, David Lowery and a number of their coauthors (Fellowes, Gray, and Lowery, 2006; Kirkland, Gray, and Lowery, 2010). Approximately one million bill citations were exported from LexisNexis, and have been cleaned for analysis. Validation exercises provide confidence in the reliability of the estimates, as they closely track estimates of state agendas that were hand-coded using "gold standard" procedures, like the Pennsylvania Policy Agendas Project (McLaughlin et al., 2010). In an extensive appendix, I describe the data collection process, validation exercises and features of the data. The data will be available on the Harvard Dataverse upon publication.

Relating the number of bills introduced in twelve policy areas in Congress and the states, I find that changes in the number of bills introduced about an issue in the states are positively

[2]Eckholm, Eric (2013) "Arkansas Adopts a Ban on Abortions After 12 Weeks" *New York Times*, 6 March. URL: https://https://archive.md/oQLQm. Accessed November 30, 2021

[3]See the Guttmacher Institute's database of abortion bans at https://www.guttmacher.org/state-policy.

[4]See H.R. 490 https://www.congress.gov/bill/115th-congress/house-bill/490.

related to changes in bills introduced about that issue in the subsequent Congress. A one standard deviation increase in state legislative bills in a policy area (about two bills per state) leads to approximately five more bills being introduced in that policy area in the following Congress, holding other factors equal with the method proposed by Mummolo and Peterson (2018). I also check if the Congressional agenda affects subsequent state legislative agendas, but when considered together, there is only a positive relationship between state legislative agendas and the subsequent Congressional agenda. I take this as evidence of bottom-up diffusion.

Breaking down the model by policy type shows the mechanisms underpinning this relationship. For example, bottom-up diffusion is more likely to be found on issues where the state-level interest group population also lobbies in Congress, which Garlick (2017) labels "national policies." There is also a partisan dimension to this diffusion, as the number of bills introduced by Republican members of Congress is associated with the number of bills introduced by Republican state legislators in the previous biennium from 2009-2016. This behavior could reflect the structural asymmetry between the parties (Grossmann and Hopkins, 2015), as Republicans demonstrate more ideological cohesion. Sharing constituents also appears to matter, as there is a positive relationship between the number of bills introduced by members of a state legislative party and their state's partisan congressional delegation.

I conclude with implications of these results. This paper breaks new ground in the study of the nationalization of American politics, as changes in the media and interest group community have established closer links between national and state politics (Darr, Hitt, and Dunaway, 2018; Hopkins, 2018). This analysis also has produced stronger evidence of bottom-up diffusion than a previous paper that investigated it systematically (Lowery, Gray, and Baumgartner, 2010). However, the papers can be reconciled as Lowery, Gray, and Baumgartner operationalized Congressional attention using hearings, not bill introductions, which is less likely to detect messaging behavior by rank-and-file members. Therefore, the results reflect the prominence of the practice of introducing messaging legislation in recent Congresses (Lee, 2016). It also highlights a consequence of the asymmetric structures of the modern parties (Grossmann and Hopkins, 2015).

Current literature on vertical diffusion

The diffusion of policies throughout the American federal system is well documented. In particular, scholars have uncovered many aspects of *horizontal* diffusion, or a policy that is adopted by a number of states (Walker, 1969; Gray, 1973; Shipan and Volden, 2012; Pacheco and Boushey, 2014; Mallinson, 2021). *Vertical* diffusion, between the national and state governments, is a more complicated process, as looking at the national and state governments is not an apples to apples comparison. Notably, the states and national governments often focus on different policy areas and the Constitution stipulates that the national statutes supersede state statutes when in conflict. However, Supreme Court Justice Louis Brandeis popularized the concept of vertical diffusion when he branded the states as the "laboratories of democracy" for their ability to

experiment on a policy that could later be applied nationwide.[5]

The evidence for the existence of vertical diffusion is mixed. Policy certainly diffuses in a top-down fashion, as the U.S. national government can spur later state activity by statue. For example, the ACA created a heavily subsidized opportunity for states to expand Medicaid or establish health care insurance exchanges, kicking off a flurry of health care policymaking in subsequent years (Barrilleaux and Rainey, 2014; Hertel-Fernandez, Skocpol, and Lynch, 2016). However, there is less evidence to be found of bottom-up policy diffusion. Case studies of health care (Weissert and Scheller, 2008) or tax policy (Mossberger, 1999) found national legislators generally ignored the lessons of policies implemented in the states.

Recent literature has found that *attention* paid by legislators to policy proposals can diffuse vertically, even if the bills are not passed. McCann, Shipan, and Volden (2015) found that Congressional anti-smoking hearings and bill introductions later led to anti-smoking policy enactments in the states. These authors noted that national attention to an issue raises its salience and the debate informs state legislators on many aspects of a policy area, leading to later passage. Information that state legislators can collect from a national policy debate include the tone of media coverage, public approval sentiment, or interest group mobilization over an issue. Karch and Rosenthal (2016) found that members of Congress from states that with internet sales tax policies introduced more bills on the subject; however, they only diffused to the early stages of Congressional process, and were not necessarily enacted into law.

However, the studies that found vertical diffusion include an enacted policy at one end or another, and have usually been of isolated policy areas. The most systematic treatment of the question of bottom-up diffusion that looked across the agenda, from Lowery, Gray, and Baumgartner (2010) found that patterns of attention to policies, as observed by state legislative bill introductions, did not translate to later Congressional hearings. The following section advances a theory for why we should expect to see similar attention being paid to policy areas between legislators at the national and state-level, and why state legislators would act before national legislators.

Theory for bottom-up diffusion

Members of Congress have a substantial platform that they can use to steer media and public attention (Cook, 1989), and they tend to devote attention to issues that can help them reach their goals. Fenno (1973) provided a classic definition of a Member of Congress's goals as winning reelection, advancing within a chamber, advancing to higher office or passing good public policy. In recent decades, as competition for partisan control of Congress has intensified, achieving majority party status has also become a clear goal for individual members and party leaders (Lee, 2016). So lawmakers use their legislative party to reach a number of goals, mostly by building a party brand that will be popular with voters (Aldrich, 1995).

[5]In *New State Ice Co. v. Liebmann* (1931), Brandeis wrote: "A single courageous State may, if its citizens choose, serve as a laboratory; and try novel social and economic experiments without risk to the rest of the country."

However, it's not always clear to legislators what issues will be popular. One way for legislators to decide which issues the party brand should include is to look elsewhere in the federal system. In their anti-smoking study, McCann, Shipan, and Volden (2015) discuss how a major policy debate taking place in a different level of the federal system can be very informative for legislators. By observing a policy debate, legislators can become aware of interest group positions, constituent preferences, media interest, framing strategies and electoral implications even though state and national lawmakers have different formal powers and constituencies.

While the national and state legislative parties are not a unified organization,[6] Groeling (2010) states that they do share a party brand. This has particularly become the case amidst changes in the way citizens consume news about the parties. News consumers are increasingly consuming information about national politics at the expense of local news (Hayes and Lawless, 2015). Technological change has led to a reduction in local media sources, as newspapers close (Darr, Hitt, and Dunaway, 2018) and national television news conglomerates expand in local markets (Martin and McCrain, 2019). One result of these changes is that the American electorate has nationalized, where state partisan behavior is similar to national contests (Hopkins, 2018; Rogers, 2016).

A nationalizing electorate should lead state and national legislators to attend to similar issues as they build a common party brand. Another set of actors forcing that issue are interest groups. Bawn et al. (2012) argue that modern parties are "best understood as coalitions of interest groups and activists" (p. 571) and use endorsements in primary contests to influence legislators to take up their policy demands. Members of Congress often file or advance bills to demonstrate their commitment to interest group requests, even if they are not likely to pass (Gelman, 2017). Groups can also serve as a *source* of legislation, as they author "model legislation" (Hertel-Fernandez, 2014; Garrett and Jansa, 2015) and their endorsements encourage bill advancement in Congress (Box-Steffensmeier, Christenson, and Craig, 2019). Groups that operate at the state and national level will likely lobby in pursuit of similar demands (Garlick, 2017), which can also encourage state and national legislators to pursue similar issues.

However, there is not always perfect cooperation within the party tent. Groeling (2010) shows how legislators receive media attention for criticizing senior members of their party, like the president, which creates incentives for members defect from the party line. Groeling illustrates this with a business analogy, saying a legislative party is structured like a franchise organization (like the McDonald's restaurant chain) where individual members usually take advantage of the larger brand, but also operate individually. This distinction is of particular importance in a federated structure where national and state lawmakers compete alongside one another under the same party brand in elections and compete against each other for constrained resources like media attention, financial contributions and party nominations.

Attention is more likely to diffuse bottom-up than top-down. Structural factors can encourage state legislators to generate more ideas. There are thousands of state legislators, and they usually

[6]Former senator Elbert Thomas (D-UT) once said: "There are forty-eight Democratic Parties which unite once in every four years in an attempt to elect a President and there are about thirty-seven Republican Parties which attempt the same thing every four years" (Thomas, 1949).

have a closer connection to their constituents as they have smaller districts and spend more time in their states. This proximity to their constituents may alert legislators to burgeoning issues more quickly. Also, smaller state legislative districts are also likely be more homogeneous than Congressional districts (Bowen, forthcoming), which makes it easier for legislators to discern the preferences of the district.

In terms of temporal order, if state and national legislators are both involved on an issue, state legislators are likely to be overshadowed (Hopkins, 2018). Therefore, state legislators looking for attention from donors, party leaders or the public to sustain or advance their careers must act first Thomsen (2014). National attention to a policy may also define it in the public's eye, which can dissuade state legislators from attending to the issue. For example, a there was a flurry of state activity on universal healthcare in the early 1990s, but after the Clinton administration's notable failure on the issue, the states dropped the unpopular issue from their agendas (Gray, Lowery, and Benz, 2013). Therefore, entrepreneurial state legislators need to move before their national counterparts.

Therefore, my first prediction is that there will be vertical diffusion of attention, as national and state lawmakers facing an increasingly similar political environment will work on the same issues. My second prediction is that this attention will diffuse from the bottom-up, as state legislators will move first before being overshadowed by national legislators.

Which type of legislation will diffuse vertically?

As Congress tends to not adopt policies that were implemented at the state level (Weissert and Scheller, 2008), I expect to observe this diffusion in a more political fashion. Specifically, I expect this diffusion of attention to manifest in the introduction of "messaging" legislation, which is authored with the goal of scoring political points and not securing compromise (Gelman, 2017). Messaging legislation is a tool to reach several of the above-mentioned goals, including building a party brand, highlighting unpopular aspects of the opposition party's agenda, and signaling to interest groups. My next set of predictions refer to where this behavior should be found in the Congressional record. First, the partisan nature of messaging legislation means that Republicans (or Democrats) in Congress will be more responsive to same policy areas that Republican (or Democratic) state legislators are working on. This could follow from state legislative parties establishing "ownership" over an issue (Banda, 2016), or a successful frame to positively affect public opinion of a policy (Stokes and Warshaw, 2017). It also could reflect a "policy backlash" among the opposition to a governing party's policy agenda (Patashnik, 2019). Second, there should be a geographic dimension to this diffusion, as many state legislators and members of Congress share constituents (Karch and Rosenthal, 2016). Therefore I expect to observe bottom-up diffusion within states, between their respective state legislatures and Congressional delegations.

Certain members should be more likely to introduce messaging legislation. It is a potent tool for the opposition party looking to highlight unpopular issues that the majority would like to

avoid. Messaging legislation is also of particular value for rank-and-file members to make a name for themselves. The other channels for legislators to build a personal brand, like claiming credit for securing appropriations or headlining major legislation are easier for senior and majority party members to access.

As interest groups are a key source and audience for messaging legislation, vertical diffusion should be more likely if the groups concerned about an issue operate at the state and national levels. The degree to which groups in different industries choose to lobby in both Congress and the states varies across the agenda. For example, Garlick (2017) found that 70 percent of health care firms that lobbied in Pennsylvania from 2011-2014 also lobbied in Congress, while only 49 percent of education organizations lobbied in both (p.968). Therefore, if groups on a nationalized issue like abortion consider legislation at the state-level successful, regardless of its policy effects, that may increase their demands for it from members of Congress. For example, consider the rapid evolution on the previously mentioned "heartbeat bills." In 2012, Ohio Right to Life, the state affiliate of the National Right to Life Committee (NRLC) opposed the bill as too extreme; by 2016, it had added the bill to its agenda and challenged Republican Governor John Kasich's veto of the bill;[7] in 2017, after heavy Congressional lobbying by the NRLC,[8] nine of the 12 Republican House members from Ohio co-sponsored King's version of the "heartbeat bill."

Differences in the structure and behavior of the major parties could also affect the likelihood of attention diffusing on party lines. Grossmann and Hopkins (2015) argue that the Republican party is best understood as an "ideological movement," while the Democratic party is a "coalition of social groups" (p. 120). Since the Democratic network of groups has been relatively stable for decades (Mayhew, 1966), it has groups and actvists consistently attending to the same issues on an annual basis, making it less likely to produce sudden temporal shifts. However, if Republicans have a more narrow focus on certain issues, they can cycle in their centrality to the ideological platform in a way that would lead to more dramatic shifts in attention. There is also asymmetry in the media environments surrounding the parties, as Fox News is a far more influential source of ideological content for Republicans than any single media outlet is for Democrats (Grossmann and Hopkins, 2018). Having a single major media outlet to amplify a state legislator serves as a target for Republicans that Democrats lack. Another difference is that Republicans behave more cohesively across state lines, as Linder et al. (2020) found that Republican state legislators are more likely to re-use legislative text introduced by other Republicans in other states than their Democratic counterparts. As a result, a shift in state legislative attention may be more likely among Republicans than Democrats, and it may send a clearer signal to their national counterparts than such a shift among Democrats.

[7] Associated Press, "Gov. Kasich vetoes 'heartbeat bill' for second time." December 21, 2018. FOX8, URL: https://archive.is/xWMIF. Accessed November 30, 2021.

[8] See OpenSecrets profile of Right to Life, URL: https://archive.is/38Ogx. Accessed November 30, 2021.

Methods

Studies of vertical diffusion that have focused on specific policy areas have produced inconsistent evidence. To overcome this deficiency, Lowery, Gray, and Baumgartner (2010) argue for a more macro-level view that encompasses the whole state policy agenda. Using that prior work as a departure point, this section describes a broad study of policy attention that puts greater emphasis on changes within policy areas, and less on cross-sectional differences between states.

Dependent variable: Congressional bill introductions

I observe Congressional attention to different policy areas with the number of bills introduced in 12 policy areas.[9] These data are drawn from the Congressional bills project that is fully-coded by the Policy Agendas Project (Adler and Wilkerson, 2015) from 1991-2016. Members of Congress face no limits on bill introductions, so the number of bills they introduce is a fairly unencumbered view of a member's attention.

Lowery, Gray, and Baumgartner (2010) argue that Congressional attention should be observed using hearings, as calling a hearing has more institutional costs than introducing a bill, making it a more valuable signal (Jones and Baumgartner, 2005). Moreover, Congressional bill introductions are fairly consistent from time to time or "sticky"; therefore, hearing data provides more variation which is helpful to observe shifts in attention. While these are both valid reasons, I chose bill introductions for two reasons. First, my theory section focused on the role that messaging legislation may play in diffusion, and this is a practice favored by opposition (or minority) parties and rank-and-file members. Second, it is the closest available comparison to state-level bill introductions, which is how Lowery, Gray, and Baumgartner (2010) measure state-level attention.

Independent variable: State legislative bill introductions

Observing variation in state legislator attention to different policy areas requires a broad view of the state legislative agenda. This is challenging as no central repository maintains a registry of state policy agendas, like which exists for Congress. There are expansive datasets of *enacted* legislation (Sorens, Muedini, and Ruger, 2008; Boehmke et al., 2019), but there are only pockets of data about legislation under consideration. For example, the Pennsylvania Agendas Project has coded that state's legislative agenda since 1979 (McLaughlin et al., 2010). Other studies have either observed a handful of policies across all 50 states, (Bromley-Trujillo and Karch, 2019; Reingold, Widner, and Harmon, 2019; Filindra, 2019; Kreitzer, 2015) or attempted to observe the the whole agenda for all 50 states for a period of a few years (Olson, 2019; Kirkland, Gray, and Lowery, 2010; Fellowes, Gray, and Lowery, 2006).

This section describes a procedure to code a sample of bills introduced in every major policy area in all 50 states, with a particular focus on changes over long periods of time. To do so,

[9]Drawn from Lowery, Gray, and Baumgartner (2010), they are: Agriculture, Civil Rights, Commerce, Construction, Education, Energy, Health, Legal, Social Welfare, Taxes, Telecommunications, and Transportation.

Table 1: Codebook for Lexis Nexis Searches derived from Fellowes, Gray, and Lowery (2006)

No.	PAP Code	Full Name	Short Name	Keywords* 1	2	3	Number of bills (1991-2017)
1	G0201	Civil Rights	civilr	civil rights			5,854
2	G0205	Environment	enviro	environment			18,318
3	G0207	Religion	relig	church			14,534
4	G0208	Tax Policy	tax	tax			278,419
5	G0300	Health	health	health			219,722
6	G0400	Agriculture	agric	agriculture			22,767
7	G0600	Education	educ	education			200,721
8	G0701	Utilities	util	utilities			36,963
9	G0702	Natural Resource	resourc	gas	oil	minerals	29,154
10	G1000	Transportation	trans	highways	transit	airports	67,279
11	G1200	Law	law	legal			24,495
12	G1300	Welfare	welf	social services	charities		14,700
13	G1400	Construction	const	construction			57,381
14	G1500	Bank	bank	banking	real estate		64,728
15	G1502	Small Business	smallb	retail			14,197
16	G1503	Sports	sport	sports	recreation		19,350
17	G1510	Insurance	insur	insurance			132,446
18	G1520	Manufacturing	manuf	manufacturing			6,640
19	G1600	Military	mili	military			†
20	G1700	Communication	comm	media	telecommunications		14,664
21	G2400	Local Government	govt	municipality	public employees		105,100
22	G2401	Police and Fire	pfire	police	fire		50,195

*Multiple keywords are separated by "OR" (e.g. the search for G0702 is: "gas OR oil OR minerals").
†Dropped due to data collection error.

I substantially expand the method employed by Fellowes, Gray, and Lowery (2006) that used LexisNexis for 1995-1999. LexisNexis's database starts in 1991, and, to my knowledge, is the longest running collection of state legislation. However, LexisNexis's data is proprietary, which necessitates that researchers extract data using keyword searches. A further consideration is that LexisNexis limits the number of citations that can exported in each search.[10] Therefore, I conducted thousands of queries of the LexisNexis server to export over approximately one million citations of state legislative activity per policy area. Table 1 lists the search terms for each policy area, derived from Fellowes, Gray, and Lowery (2006, p. 52), for example "Transportation" includes a search of the synopses in bill tracking reports containing the words "highways", "transit", or "airports."

I diverge from the approach described in Fellowes, Gray, and Lowery (2006) in two ways. First, these authors did full-text searches of the state legislation. This leads to right-censoring issues as LexisNexis limits the number of results in a search to 1,000 citations. Instead, I follow the guidance in Ragusa and Birkhead (2020) and use bill descriptions, which are an apt replacement, especially as there is a great deal of "boilerplate" text in state legislation (Burgess et al., 2016).

[10]LexisNexis limited searches to 1000 citations in its legacy service *State Capital Universe*, and when it replaced that service with *Lexis Nexis Uni* in 2019, it further restricted researchers to only exporting 250 citations at a time. A validation exercise in the appendix show that these services produce essentially identical results.

Table 2: Example citation drawn from an email from LexisNexis

138. 2015 Bill Tracking MN S.B. 2191, 89TH REGULAR SESSION, SENATE BILL 2191, DATE-INTRO: MAY 15, 2015, LAST-ACTION: MARCH 24, 2016; Rereferred to SENATE Committee on FINANCE., Relates to agriculture; establishes a pollinator investment grant program; appropriates money; awards a pollinator investment grant to a person who implements best management practices to protect wild and managed insect pollinators in this state., MINNESOTA BILL TRACKING Copyright 2016 LexisNexis. All Rights Reserved.

Table 3: Correlation between LexisNexis Keyword Searches and Policy Agendas Project coding of state legislation by policy area in Pennsylvania: 1991-2016

Major Topic Code	Policy	Correlation
2	Civil Rights	0.73
3	Health	0.94
4	Agriculture	0.77
6	Education	0.86
7	Utilities	0.83
8	Natural Resources	0.89
10	Transportation	0.75
12	Law	0.78
13	Social Welfare	0.55
14	Construction	0.83
15	Commerce	0.85
17	Communications	0.59
Total		**0.78**

Therefore, I search LexisNexis "Bill Tracking Reports," which feature paragraph-long synopses of each bill that is introduced, shown in Table 2. Second, each time a bill is updated in a state legislature, LexisNexis creates a citation. Fellowes, Gray, and Lowery (2006) counts each of these updates as a new bill, such that their measure overweighs bills that advance through the process. Since I am observing the introduction of bills, I only count one entry per bill number. I also only include regular bills introduced during regular sessions.

The LexisNexis method produces a representative sample of bills in a policy area that is consistent over time. The LexisNexis method closely tracks the hand-coded Pennsylvania Policy Agendas Project data. Table 3 shows that from 1991-2016, there is an average correlation of 0.78 between the number of bills introduced in the Pennsylvania legislature as coded the method described by McLaughlin et al. (2010) and the LexisNexis approach for the policies used in this study. One major discrepancy between these methods is that the LexisNexis keyword searches assign some bills to multiple policy areas, while the human coders deduce which policy area is the best fit for each bill in the Policy Agendas Project datasets. The relationship is even more robust when considering that potential source of measurement error.

Validation exercises in the appendix that use data from other published work as a benchmark demonstrate the features of this data. In technical terms, it has strong precision, or confidence that a bill identified by the keyword searches is actually in the named policy area. However, it only has moderate recall, or the share of all bills in that policy area that are identified by the keyword. For example, Figure 1 shows the number of "Utility" bills (with a correlation of 0.83, it is the median issue in Table 3) coded by these two methods. The Pennsylvania PAP found far more bills, however, the relationship between the two measures is strong. In other words, in the years where PAP identified more utility bills, so did the LexisNexis searches. This figure also shows that there are substantially more bills introduced in the first year of two-year sessions in both methods, which is why I aggregate sessions by biennium in the main analysis. The extensive validations in the appendix also suggest the keyword estimates are a fairly representative sample of state agendas, which makes them particularly well suited to observing changes in attention within a policy area over time.[11] These data are available on the Harvard Dataverse.[12]

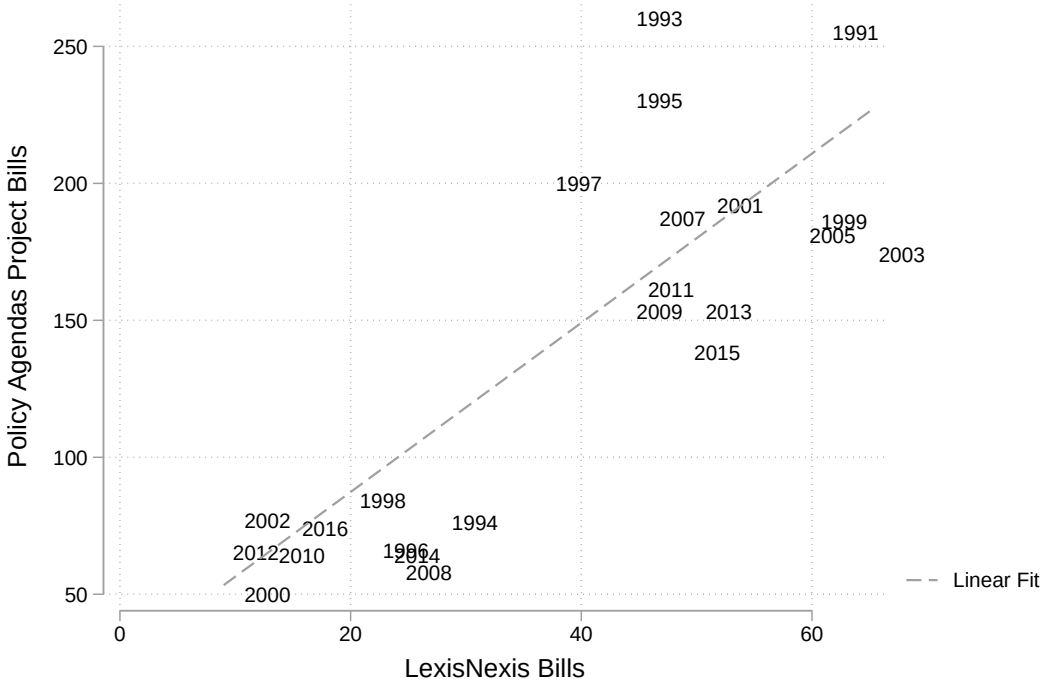

Figure 1: There is a strong correlation between the number of "Utility" bills as coded by the Policy Agendas Project and the LexisNexis keyword searches: Pennsylvania, 1991-2016

[11] Specifically, to test the validity of these estimates, aggregate counts are compared with the results published by Fellowes, Gray, and Lowery (2006) and Kirkland, Gray, and Lowery (2010) that were collected using a similar process. For an out-of-sample test, the estimates are compared against the states that report the content of their legislation in the OpenStates project.

[12] Link to be available when manuscript is unblinded.

Modeling vertical diffusion

To observe the upward transfer of policy attention between state and national legislators over time, equation 1 features the number of bill introductions in both houses of Congress (*USBills*) in one of twelve policy areas (p) for each two year period (t) as a dependent variable. For independent variables, it observes the sum of the number of bills in each policy area in the 50 states (*StateBills*) in the two-year period prior to each Congress (t-1). This is a fixed effects model that also includes indicators for each of 12 policy areas (α). Using fixed effects in this model provides a different intercept for each policy area, therefore the coefficients are reflecting changes within the policy area over time. It also includes fixed effects for each Congress (γ), to address temporal changes.

The model accounts for other factors that may induce Congressional action beyond state legislative policy attention. The Congressional policy agenda often follows concerns expressed by the mass public in "most important problem" survey questions (Bevan and Jennings, 2014). This indicates that members of Congress may be responding to their perception of constituent demands. A second concern is that Congressional policy agenda follows the media agenda, as it has a closer relationship to national media coverage than it does to the public's "most important problem" concern. I account for these two factors by first including a measure of national press attention, drawn from the Policy Agenda Project's sample of *New York Times* articles coded by major policy topic. Second, to show that Members of Congress are not responding to the public's concern to issues, I include a measure of the change in the public's belief that government spending on an issue is too high, drawn from the General Social Survey.[13]

$$\begin{aligned} USBills_{p,t} &= \alpha_p + \gamma_t + \beta_1 StateBills_{p,t-1} \\ &+ \beta_2 NYTStories_{p,t} + \beta_3 \Delta PublicConcern_{p,t} + \mu \end{aligned} \tag{1}$$

In order to determine if diffusion of attention is predominantly bottom-up or top-down, Equation 2 shows a model that expands on Equation 1 with the number of state legislative bills in all policy areas in the contemporaneous two-year period to each biennium (t) and the subsequent biennium (t+1). Including three observations of the state legislative agenda serves two purposes; first, it can show if there is a greater association between the state legislative attention to these issues and later Congressional attention, or vice-versa. Second, including the contemporaneous agenda accounts for real world events that could lead to a spurious relationship between state and national attention.

[13]Every two years, the GSS asks a nationally representative sample of respondents: "I'd like you to tell me whether you think we're spending too much money on it (3), too little money (1), or about the right amount (2)" on a series of issues that correspond to the major policy topics. I include the change in the average of respondents that report spending is "too high" to identify any shifts in public concern about the whole range of the policy agenda, not just issues becoming the country's most important problem.

$$USBills_{p,t} = \alpha_p + \gamma_t + \beta_1 StateBills_{p,t-1} + \beta_2 StateBills_{p,t} + \beta_3 StateBills_{p,t+1} + \beta_4 NYTStories_{p,t} + \beta_5 \Delta PublicConcern_{p,t} + \mu \quad (2)$$

Results

Column (1) of Table 4 shows a positive relationship between the number of Congressional bills introduced in a policy area and the number of state legislative bills introduced in the previous two-year period. This is evidence that state legislative attention can diffuse vertically over time. The magnitude of the effect is meaningful; increasing the number of state legislative bills in a policy area in the previous session by one standard deviation, or just under two bills per state[14] increases the expected number of bills introduced in that policy area in the following Congress by about 5 bills.

Column (2) considers three iterations of the state legislative agenda at once. Not surprisingly, it shows that the strongest relationship across the federal system is during the contemporaneous period, as legislators at both level react to real-time events. However, there is still a positive coefficient for bottom-up diffusion of attention, where changes in a state legislative session have a positive relationship to changes in the subsequent Congressional agenda, when accounting for the contemporaneous agenda. Column (2) also shows more evidence of bottom-up diffusion than top-down diffusion, which is not distinguishable from zero. While this does not rule out the possible of top-down diffusion, it shows that on average, attention flows in the other direction.

Neither of the measures of outside demand attenuate this relationship. There is a positive partial correlation of changes in public concern for an issue to Congressional bills, but it is not statistically significant. There is also a negative relationship between the number of *New York Times* articles in the Policy Agendas Project sample and Congressional bills.[15]

Identifying mechanisms

To identify the mechanisms underlying this relationship, Table 5 breaks out the model by the type of policy under consideration. The theory section discussed the role that interest groups play as an audience and potential source for legislation. There is also variation in how "national" different portions of the interest group are, as the groups operating in some policy areas tend to lobby in both Congress and the states, while others only operate at the state level. Garlick (2017) provides a measure of how "national" the agenda was by measuring if the groups lobbying on

[14] See Mummolo and Peterson (2018) for a discussion of the need to account for the variation absorbed by the policy and temporal fixed effects. Following their method, the standard deviation of the residuals of $statebills_{t-1}$ = 88.1, or 1.76 per state.

[15] A cursory examination of the underlying data shows that legislative attention at both levels is stickier than press attention, which could explain part of the negative relationship. For example, there was a spike in NYT attention to "Construction" during the housing bubble that preceded the 2008 financial crisis. However, after the 2008 financial crisis, both states and Congress attended to this issue in earnest for several subsequent sessions while the *Times* lowered its coverage once it was no longer "news".

Table 4: There is a positive relationship between the number of bills introduced in a policy area in Congress and the states during the previous two-year period: 1993-2016.

DV: Congressional bills in policy area		
	(1)	(2)
Policy fixed effects	✓	✓
Session fixed effects	✓	✓
State legislative bills (*t-1*)	0.036**	0.015†
	(0.008)	(0.009)
State legislative bills (*t*)		0.057**
		(0.015)
State legislative bills (*t+1*)		0.002
		(0.013)
Outside demand for legislation		
NYT (articles)	-0.537*	-0.873**
	(0.248)	(0.246)
Public concern (Δ)	174.200	53.226
	(357.452)	(330.481)
Constant	237.759**	34.453
	(43.621)	(64.273)
Observations	131‡	131
Absorbed indicators:		
Sessions (2-years)	12	12
Policy Area	12	12

Standard errors in parentheses.

‡Limited GSS Questions: Agriculture (2007-2015), and Science (2001-2015).

† $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Table 5: The relationship between state legislative bill introductions and Congressional bill introductions in the subsequent sessions is concentrated in nationalized policy areas: 1993-2016.

DV: Congressional bills in policy area			
	(1)	(2)	(3)
National Policy Type	Low†	High‡	Both
Policy fixed effects	✓	✓	✓
Session fixed effects	✓	✓	✓
State legislative bills (*t-1*)	0.024*	0.064**	0.026**
	(0.009)	(0.015)	(0.008)
State legislative bills (*t-1*) X High NP			0.034**
			(0.012)
Outside demand for legislation			
NYT articles	-0.531	-0.673*	-0.615*
	(1.742)	(0.292)	(0.242)
Public concern (Δ)	-191.168	122.476	75.095
	(609.900)	(526.520)	(347.338)
Constant	188.268*	268.935**	224.181**
	(71.191)	(71.256)	(42.440)
Observations	72	59	131
Absorbed Indicators:			
Sessions (2-years)	12	12	12
Policy Areas	12	12	12

†Low: Budget and Taxes, Education, Energy, Real Estate, Social Welfare, Transportation.

‡High: Agriculture, Civil Rights, Commerce, Health, Legal, Telecommunications

* $p < 0.05$, ** $p < 0.01$

different policy areas in the states also lobbied in Congress. Highly nationalized issues according to this measure include civil rights and health care, while less nationalized issue areas include transportation and education. Table 5 splits the sample in half to show how policies with low or high levels of nationalization diffuse.

There is a positive association between the number of state level bills and Congressional bills in the subsequent session for both low and highly nationalized policies. Column (2) shows that this relationship is stronger in highly nationalized policies like health care or civil rights than it is in less nationalized policies like education or social welfare. The interaction term in column (3) indicates that the difference between these coefficients is statistically significant. These results indicate vertical diffusion is more likely to occur in parts of the policy agenda with a nationalized interest group community.

A partisan pattern of bottom-up diffusion

The theory section discussed a rationale for expecting bottom-up diffusion of messaging legislation. If this were the case, the behavior should fall on partisan lines. This section uses a sample of the legislation from 2009-2016 when the party of each state legislator introducing a bill can be observed with data from the OpenStates project. The unit of analysis in this section is the number of bills introduced by members of a party in a policy sector in a given year. The fixed effects are for each party in a policy sector by year. Due to the limited amount of temporal coverage, there are no session fixed effects.

Table 6 shows that the bottom-up pattern of diffusion is found on the Republican party line during this period. Specifically, Republican members of Congress introduce more bills in a policy sector following an increase in bills introduced by state legislative Republicans in the previous biennium. This pattern could reflect two dynamics. First, as Barack Obama was president throughout this period, Republican members of Congress were the opposition party, and were incentivized to propose and advance messaging legislation. For example, as of October 2015, Congressional Republicans had taken 61 votes to repeal part or all of the Affordable Care Act,[16] and would eventually pass a bill to that end, which Obama vetoed in January of 2016.

Second, it could show how Democrats spread their attention broadly across the agenda, by introducing bills all over the agenda to satisfy their interest group based coalition. Republicans comparatively introduce more bills about the tax code, but fewer bills about the other major issues that Democrats attend to, such as health care and education. The dispersion in attention within states is higher for Democrats than it is Republicans, as the average standard deviation of bill introductions is higher for Democrats (64.1) than it is for Republicans (43.0). As Democrats are saturating the agenda on a regular basis, they are less likely to cycle new issues to the forefront than Republicans.

To detect a geographic dimension to vertical diffusion, this section separates out members of Congress by their state delegations. In Table 7, the unit of analysis is the two major legislative parties in each state. The dependent variable the number of bills introduced by each state's partisan delegation. There is an uneven number of observations as OpenStates observes 3 sessions for some states, and two for others, and some states only has one partisan delegation (e.g. Massachusetts Democrats or Wyoming Republicans). This model will show if bottom-up diffusion has a geographic basis, for example, if there is a relationship between the number of bills introduced by Florida state Republicans and the Republican members of Congress that represent Florida in the following biennium. While it appears to be a slight effect, this table does show evidence of bottom-up diffusion when measures are limited to within-state dynamics. Again, much like Table 6 there is only a positive relationship within the Republican party network. Altogether, these results indicate that bottom-up diffusion of attention is happening on partisan lines, and when members of state and national legislatures share constituents.

[16] See Herszenhorn, D.M. "House Republicans' Budget Bill Deepens Rift as U.S. Debt Deadline Nears" *The New York Times* October 23, 2015, URL: https://archive.is/s2TPg. Accessed November 30, 2021.

Table 6: There is a positive relationship between the number of bills introduced by Republican state legislators and members of Congress in the subsequent biennium: 2009-2016

Column	(1)	(2)	(3)
DV: Congressional bills introduced by:	All	Dem.	GOP
Policy/Party fixed effects	✓	✓	✓
State legislative bills (*t-1*)	-0.005	-0.037**	0.026**
	(0.008)	(0.010)	(0.009)
Outside demand for legislation			
NYT articles	0.562	0.675	0.412
	(0.436)	(0.563)	(0.528)
Public concern (Δ)	-43.837	100.699	-243.876
	(372.424)	(483.549)	(449.743)
Constant	188.819**	268.003**	117.974**
	(24.409)	(31.997)	(29.234)
Observations	96	48	48
Sessions	4	4	4
Absorbed indicators (policy/party)	24	12	12

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$

Table 7: There is a positive relationship between the number of bills introduced by Republican state legislators and members of Congress in the subsequent biennium: 2009-2016

Column	(1)	(2)	(3)
DV: Congressional bills introduced by:	All	Dem.	GOP
Policy/Party fixed effects	✓	✓	✓
State legislative bills (*t-1*)	0.003	-0.006†	0.018**
	(0.003)	(0.004)	(0.007)
Constant	4.833**	5.709**	3.801**
	(0.157)	(0.169)	(0.272)
Observations	2424	1188	1236
Sessions	4	4	4
Absorbed indicators (policy/party)	24	12	12

Standard errors in parentheses

† $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Discussion

Policy advocates from diverse ends of the ideological spectrum, including the conservative American Enterprise Institute[17] and liberal Center for American Progress[18] have extolled the virtues of the states serving as the "laboratories of democracy" within the American federal system. However, scholars have uncovered little evidence of that process when it comes to policy adoption (Weissert and Scheller, 2008). While the federal government does not systematically mimic what is enacted in the states, that does not mean there is no *political* diffusion between the states and national levels. This paper joins a growing literature that asks if *ideas* or attention are diffusing between the levels (Karch and Rosenthal, 2016; McCann, Shipan, and Volden, 2015; Lowery, Gray, and Baumgartner, 2010). Specifically, it theorizes that the practice of messaging legislation, or bills introduced with the goal of political points being scored more so than the bill actually being signed into law, could diffuse upwards. Members of Congress could observe the political results of a policy debate in the states before engaging in it themselves.

Using a time-series, cross-sectional dataset of bills that were introduced in twelve policy sectors in the states and in Congress from 1991-2016, I find that changes in attention to policy areas by state legislators precede similar changes in behavior at the national level. This bottom-up pattern follows from state legislators having smaller districts than their federal counterparts and being more familiar with the issues and opinions of their shared constituents. Furthermore, since national lawmakers receive more press and public attention than state lawmakers, there is political incentive for state actors to move first, when there is still attention to be gained. The analysis shows where this association is concentrated in the record, as nationalized policies, or sectors where more members of the state interest groups communities also operate in Congress, are more likely to diffuse upwards. This suggests one group of actors driving this relationship: interest groups operating at both levels that can use the lessons from the states to encourage national legislators to take subsequent action.

There is a partisan flavor to the policies that diffuse from the states to Congress. In this sample, Republican members of Congress in particular mirror changes in the Republican state legislative policy agenda, a relationship that holds even when only diffusion within a state, from its legislature to its Congressional delegation, is considered. This pattern suggests there could be a fundamental difference between the major parties. In line with Grossmann and Hopkins' (2015) asymmetric theory of the parties, Republican state legislators, and later their Congressional counterparts, attend to issues that serve their ideological views and move on. This behavior is not as evident for Democrats, who apparently respond to a wider network of group demands for attention without as many shifts.

These results are stronger evidence of bottom-up diffusion than a prior systematic study of the topic with mostly null results (Lowery, Gray, and Baumgartner, 2010). These two papers

[17]Greve, M. "Laboratories of Democracy: Anatomy of a Metaphor." (2001), URL https://archive.md/goboi. Accessed November 30, 2021.

[18]"Bold Ideas for State Action" (2005), URL: https://archive.md/iMMlk. Accessed November 30, 2021.

can be reconciled as the projects operationalize attention in different ways, which can partially explain the divergence. Lowery, Gray, and Baumgartner measured attention using Congressional hearings, while I measured it using bill introductions. Minority party and rank-and-file members have more ability to introduce bills than call hearings, which are the turf of committee chairs, who skew more senior and to the majority party of the chamber. So ultimately we are looking for different types of attention. However, it is worth noting that this study has greater temporal coverage, and statistical power, than prior efforts.

Finding a relationship between introduced legislation, but not hearings or enacted legislation, leads to the conclusion that this process ultimately has political ends. That notion is consistent with the concept of messaging legislation, where a legislator introduces a bill without the intention of producing policy, but rather contributing to the party brand or highlighting an unpopular aspect of the opposition's policy agenda. The prominence of messaging legislation in this model will be no surprise to observers of the turn-of-the-21st century Congress, as this behavior has become more prevalent in recent decades (Gelman, 2017). Lee (2016) argues that as competition for the control of the chamber has intensified in recent years, members look to score political points to gain or maintain control of a chamber instead of sincere efforts to change the status quo in a policy area. The behavior reinforces how "gridlocked" Congress has become (Binder, 2003), as passing legislation through regular order is a much harder task.

This paper also reinforces the degree of nationalization that has taken place in the country's politics. With changes in the media environment making the public more likely to pay attention to national politics, it has changed the equation for both state and national politicians. State politicians will look for issues that can reach a national audience, and members of Congress will find value of the work of their state-level counterparts. There can also be specific career incentives to keep in mind (Maestas, 2000), as many state legislators later serve in Congress and members of Congress may want to stave off primary challenges from their co-partisans in the states.

In order to conduct this analysis, this paper introduced a collection of state legislation coded by policy that is unprecedented in its size and breadth. Despite a boom in the amount of information about subnational politics in the United States being made available to scholars by the digital age, there is no standardized measure of the policy agenda of state legislatures. This is unfortunate as the policy agenda is a useful tool to measure the power of interest groups, legislative branch and executive branch actors. To address this paucity, this paper expanded an ambitious approach to observe the policy agendas of all 50 states for several years using keyword searches in LexisNexis (Fellowes, Gray, and Lowery, 2006; Kirkland, Gray, and Lowery, 2010).

Validation exercises show that this data is a representative sample of the number of bills introduced in these policy areas over time. Therefore, this data could be used in the future to provide a better observation of the state legislative policy agenda. In an ideal scenario, these bills which have been coded could be used to build an automated procedure to deductively code the universe of state legislation. Similar efforts have been taken to code an annual census of the interest group population by their economic sector (Garlick and Cluverius, 2020). This paper

shows that what happens in the states has national consequences, so researchers should observe the states as best they can.

While scholars of federalism mark the passage of the ACA as a watershed moment in bottom-up policy diffusion, the ACA also inspired bottom-up messaging politics in a different part of the agenda. One of the bill's key features was expanding Medicaid, which Republicans used to focus public attention on an item more suited to their policy agenda: social welfare programs. In 2013, *The Atlantic* declared "The Return of the Welfare Queen"[19] to describe the surge in attention among Republican state legislators to welfare spending, harkening back to former president Ronald Reagan's use of the derogatory term. In the article, Iowa state senator Joni Ernst said that Medicaid recipients have "no personal responsibility for their health." From 2011 to 2013, Republican state legislators doubled the amount of welfare bills they introduced, while there was no almost change among Democrats.

Ernst was elected to the US Senate in 2014, and she arrived in Congress alongside a wave of attention to welfare. There was 35% increase in the introduction of welfare bills in the 114th Congress. However, this case also shows the limits of messaging legislation, as Republicans won control of the White House and both chambers of Congress in the 2016 election, but did not pass any major welfare reforms during those two years of unified control (DeSilver, 2019). The states may be serving not as policy laboratories, but as political laboratories.

Conceiving of the states as political laboratories raises its own set of concerns. In recent years, Americans have increasingly counted on their state and local officials to handle major issues from public health to election administration. But a system where state legislative action is rewarded for causing partisan rancor, and then repeated at the national level, is not built to properly address those challenges.

[19]Reinhard, B. "The Return of the Welfare Queen" *The Atlantic*, December 14, 2013, URL:https://archive.is/F8BAr. Accessed November 30, 2021.

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Appendix for "Laboratories of Politics: There is Bottom-up Diffusion of Policy Attention in the American Federal System" by Alex Garlick

Contents:

1. I survey the literature for different approaches to coding the legislative agendas, and describe the procedure I used featuring keyword searches of LexisNexis Bill Tracking Reports.
2. I validate this measure by comparing it to bills that have been coded by the state legislatures themselves, and by published work that uses the same method.
3. I present descriptive results of the outcome of the coding procedure.

Coding State Legislative Agendas

The policy content of the 50 state legislatures is not consistently measured by scholars or any central agency. After reviewing extant efforts in the literature, this appendix section describes in detail the approach used in this paper that uses keyword searches of LexisNexis Bill Tracking Reports to estimate how many bills were introduced in 22 policy areas since 1991. The measure is validated using data from the states that do code their legislation by topic, showing high levels of agreement.

Previous coding efforts

There is a great deal of information available about the Congressional agenda, which scholars have prepared for applied research. The Library of Congress maintains a useful search engine of Congressional legislation, but the best resource for scholars is the Congressional Bills Project, which sorts bills by the Policy Agendas Project codebook from 1947 to the present, using a combination of hand-coding and automated coding procedures (Purpura and Hillard, 2006). A number of other efforts have coded *enacted* legislation by its content, dating back to 1877 (Lapinski, 2013), primarily using research assistants to code bills by hand, although Ragusa and Birkhead (2020) used keyword searches of bill descriptions to code legislation according to the Policy Agendas Project codebook.

In terms of the states, there have been efforts to code *enacted* policies in all 50 states (Sorens, Muedini, and Ruger, 2008; Boehmke et al., 2019), but no such dataset exists for policies under consideration. This is is despite most of the raw data being on the internet. The digital era has led to an explosion in the amount of data of American state legislatures is available to researchers. However, even though researchers have access to the full text of every bill and nearly every roll call vote taken in state legislatures, this data is not prepared for applied research. 36 states report the policy content of their legislation, albeit in an inconsistent fashion. The OpenStates project has collected and standardized these codes; however, there are no policy codes for 14 states, data collection has only begun in 2009, and the data has not been validated.

Before setting out on a coding expedition, it's worth knowing what type of route one will take. There are essentially two approaches to coding a legislature's policy agenda: inductive and deductive. An inductive scheme starts with a topic (e.g. abortion) and identifies each bill within a legislature that addresses a topic. For example, Bromley-Trujillo, Holman, and Sandoval (2019) downloaded the bill titles, sponsors, and history of approximately 527,000 bills from 2010-2016

Table 8: Selcted scholarly work that has coded state legislation by its policy content.

Authors	Policies	Years	States	
Deductive coding schemes				*Taxonomy*
Fellowes, Gray, and Lowery (2006)	22	1995-1999	50	Economic sectors
Gamm and Kousser (2010)	3	1880-1997	13	Statewide, local or district
Kirkland, Gray, and Lowery (2010)	10	2000, 2004	50	Economic sectors
McLaughlin et al. (2010)	PAP*	1979-2012	1	Policy agenda
Garlick (2017)	31	2011-2014	26	National or state
Olson (2019)	PAP	1879-1916	2	Policy agenda
Inductive coding schemes				*Policies targeted*
Kreitzer (2015)	1	1973-2013	50	Pro and anti-abortion
Reingold, Widner, and Harmon (2019)	5	1997, 2005	15	Women, black, latinx, poverty
Filindra (2019)	1	2005-2011	50	Immigration
Bromley-Trujillo and Karch (2019)	3	1993-2015	50	GMO food, HPV, tanning beds
Bromley-Trujillo, Holman, and Sandoval (2019)	1	2010-2016	50	Climate change
Reingold et al. (2020)	1	1997-2012	21	Anti-abortion

*The Policy Agendas Project has 20 major topic codes, and 229 minor topic codes.

from Legiscan. They then used keyword searches of the bill titles to identify climate change legislation, which they validated using a list of climate change legislation maintained by the National Conference of State Legislatures (NCSL).[20] A deductive approach starts with a coding scheme, and assigns each bill to one or more of those categories. McLaughlin et al. (2010) has adapted the Congressional Policy Agendas Project codebook for state politics by adding a handful of categories, notably to address intergovernmental relations.

Table 8 shows a sample of papers using state legislative data coded by content.[21] There is impressive coverage of all 50 states, as well as a variety of temporal periods. The inductive papers listed are the tip of the iceberg, as there is much more work that has focuses on a handful of policy areas. However, these works do not necessarily aggregate easily.

The decision to use an inductive or deductive approach depends on the research question of the project. For example, if one is interested in which states are considering legalizing marijuana, the appropriate coding scheme would be inductive, starting with keywords relating to marijuana. However, if one is interested in how much attention is paid to marijuana legalization in different states, the appropriate coding scheme would have to account for the other bills under consideration, as a legislator's attention span is a zero-sum game. In this case a deductive approach is more appropriate.

Combining inductive approaches will lead to bills fitting in multiple issue areas, which could pose a conceptual challenge. The Congressional Bills Project codes each bill into a single policy area, just as the larger Comparative Agendas Project does for State of the Union speeches, newspaper articles and many other political documents (Baumgartner, Breunig, and Grossman, 2019). However, this decision could be challenged for a number of reasons. One of the most consequential state legislative bills in recent decades was the 2006 Massachusetts bill "Providing Access to Affordable, Quality, Accountable Health Care" which became known as "Romneycare" and later served a template for the federal Affordable Care Act of 2010. This bill is obviously about health care, but it also instituted an individual mandate to hold health insurance, making it the most consequential insurance bill in Massachusetts history as well. It also changed the tax code to pay

[20]The NCSL often identifies legislation across states addressing unique policy trends (e.g. the states that require restaurants to place labels with calorie counts on menus, such as https://www.ncsl.org/research/health/trans-fat-and-menu-labeling-legislation.aspx), but it does not maintain a central directory of legislation.

[21]Thanks go out to the scholars on Twitter who responded for my request looking for these papers.

for a massive slice of the Commonwealth's budget, making it a consequential tax bill. Scholars need to take care when dealing with multiple issue codes, but from a substantive perspective, it is a defensible position. An emerging best practice in the automated text classification literature is for scholars not to "solve" these difficult coding decisions, but rather to estimate the uncertainty of such decisions with a bootstrap procedure (Garlick and Cluverius, 2020).

Sampling state legislative bills by subject area using LexisNexis

To address this lack of data availability, I reproduce and dramatically expand a prior effort at measuring the policy agendas of all 50 states employed by Virginia Gray, David Lowery and a number of their coauthors (Fellowes, Gray, and Lowery, 2006; Kirkland, Gray, and Lowery, 2010). The measure is a hybrid of inductive and deductive approaches, as it appends 22 inductive searches, by using keyword searches of bill descriptions provided by LexisNexis. Using 22 policy areas covers all of the relevant categories, and is a more than suitable proxy of the Policy Agendas Project approach for the states.[22]. Approximately one million bill citations were exported from LexisNexis via email, and have been cleaned for analysis.

The goals of this procedure are to replicate a deductive coding procedure of state legislative agendas with as much geographic and temporal coverage as possible. While many state governments have made their legislation available online in the 21st century, LexisNexis maintains a database of legislation for all 50 states dating back to 1991. The LexisNexis *State Capital Universe* product allows for keyword searches of "bill tracking reports" that feature a short description of legislation, as well as the full-text of legislation for some years.[23]

A notable drawback is that using LexisNexis as a source of data is that their bill tracking reports are proprietary and only available to researchers through a search function (hence the keyword-based approach). *State Capital Universe* offers several means of searching their underlying database, including a search by "synopsis", which appears to be the bill descriptions shown in Table 2 and a search by "subject" function. However, the subject coding procedure is proprietary and not transparent.[24] Moreover, LexisNexis redesigned their search portal in 2019 as it transitioned from *LexisNexis Academic* to *LexisNexisUni* and while the procedure can be replicated,[25]

I followed the approach Fellowes, Gray, and Lowery (2006) used to estimate the collect the agenda for 1995-1999 with only minor modifications. Table 1 shows the keyword that were used to search LexisNexis State Capital Universe (SCU) using the "Bill Tracking by Keyword" function. For each policy, I input the keywords (e.g. "education") in the "Synopsis only" box, as well as the session ("2011"), state ("Illinois") and a temporal limitation. SCU will only return a search with less than 1000 entries. This can be a challenge as some searches would return more than 1000 results for a year. In some extreme cases, certain searches, like "tax" in New York, would exceed the 1000 limit even if the search were limited to a single day. My understanding is that SCU returns all of the bills under consideration for a given time period, so even though there wouldn't be 1000+ bills introduced in New York on those days, there would be that many bills in the process. Therefore, I would conduct overlapping searches (sometimes on a day by day basis) to ensure temporal and geographic coverage, in the hopes of capturing bills that were may have excluded by the search limit. This can create redundant entries in the dataset. This process

[22] In the main text, I compare to estimates favorably with the Pennsylvania Policy Agendas Project's estimates of the legislative agenda since 1991 (McLaughlin et al., 2010)

[23] During original data collection, the full-text search of legislation ended in 2012.

[24] During data collection, search by subject was not available after 2012.

[25] I successfully replicated the 2017 collection of Bill Tracking reports for three policy areas.

Table 9: Two-year sessions

Year2	48 states	NJ + VA
1991	1991-1992	
1993	1993-1994	1992-1993
1995	1995-1996	1994-1995
1997	1997-1998	1996-1997
1999	1999-2000	1998-1999
2001	2001-2002	2000-2001
2003	2003-2004	2002-2003
2005	2005-2006	2004-2005
2007	2007-2008	2006-2007
2009	2009-2010	2008-2009
2011	2011-2012	2010-2011
2013	2013-2014	2012-2013
2015	2015-2016	2014-2015
2017	2017-2018	2016-2017

required tens of thousands of search queries, so I automated this process using iMacros[26] or Kantu.[27] When LexisNexis transferred its process to *Uni* (LNU), my automation methods failed. However, I was able to replicate the above procedure in LNU by searching for each term with the phrase (e.g., for Energy the term was "summary(oil) OR summary(gas) OR summary(minerals)"), and manually exporting those results in batches of 250.

SCU allows users to export up to 1000 citations from a search via e-mail. Table 2 in the main text features a single citation. I imported this unformatted text into Stata, and using regular expressions, pulled out the 1) session of introduction, 2) bill prefix (which indicates which chamber the bill was introduced in), 3) bill number. For LNU, I exported the bill headings, which only indicate the session, bill prefix and number (in other words, no synopsis).

These two procedures allow me to create a registry of all the bills introduced across sessions for each individual policy in each state legislature by a "bill code" formed by its state, session, prefix and bill number (e.g. "Colorado 2011 HB 1001"), while ignoring redundant copies. These are not exclusive categories, so a bill can be assigned to more than one subject. I only include conventional house, assembly and senate bills introduced during regular sessions. Table 9 shows how bills in states with one year sessions are aggregated into two-year sessions. In most states, I start with the odd-year, except in New Jersey and Virginia, which hold off-cycle state legislative elections, in those states a two-year session starts with the even year.

My approach departs from Fellowes, Gray, and Lowery (2006) in two key ways. First, they include each version of a bill, whereas I collapse all of the versions down by bill code. Therefore, their measure lists multiple versions for bills that advance through the legislative process, in essence it is measuring the "action agenda" and not what is introduced. The method I employ is more similar to the Congressional Bills Project in that each bill gets a single entry. The second major difference is that they reported using LexisNexis's "Subject" search, and I used a "Synopsis" search. In both SCU and LNU, LexisNexis lists subject information that is a percentage, and it includes the top several subjects. This is a proprietary measure with no information on how it is

[26] A free browser plugin is available at http://imacros.net/overview.
[27] A free browser plugin is available at https://ui.vision/.

Table 10: There is high agreement between searches of State Capital Universe and LexisNexis Uni: 2017 Bill Tracking Reports for selected policy areas.

Policy	Matches	LNU only	SCU only	Share of matches
Agriculture*	1,238	1	1	99.8%
Energy†	600	6	38	93.2%
Communications‡	1,398	35	1	97.5%
			Total	**97.5%**

*Search terms: summary(agriculture) .
†Search terms: summary(gas) OR summary(oil) OR summary(minerals).
‡Search terms: summary(media) OR summary(telecommunications).

assessed. In practice, their measure found more bills. However, I have grave concerns about the transparency and replicability of using LexisNexis Subject scores.

Comparing State Capital Universe to LexisNexis Uni

In about 2019, LexisNexis apparently phased out academic use of SCU in favor of LNU, although it still provides access to the same underlying population of Bill Tracking Reports that date back to about 1991. The major change for researchers relates to access, as SCU allowed for automated retrieval of documents, which LNU has mostly shut off. Where researchers could export up to 1000 bill descriptions via email in SCU, they can only export up to 100 in LNU or 250 bill titles at a time. Table 10 shows that about 98 percent of the bills that are retrieved by one method are found in the other. Furthermore, the bills that do not demonstrate agreement often have unusual codes (e.g. "2017 Bill Tracking WV S.B. 1007A" was only an Energy bill in SCU.). While laborious, this replication shows that this method will be able to be extended into the future using LNU.

Validations

Validation exercises provide confidence in the reliability of the estimates produced by the LexisNexis keyword search procedure. An external validation using the universe of legislation from 36 states that have reported the content of their legislation in recent years, I find that there is an 83% chance that the state identifies it in that same category. However, while the precision of the method is high, its recall of potential documents is not as strong. The LexisNexis procedure assigns less than half of all bills to a policy area. An internal validation using aggregate counts reported in Fellowes, Gray, and Lowery (2006) and Kirkland, Gray, and Lowery (2010) produces mixed results, however, the discrepancies mentioned in the previous section explain this lack of agreement.

External validation

This section evaluates how the LexisNexis keyword search procedure codes legislation. To draw this comparison, I use data from the OpenStates project. OpenStates scrapes state government websites to collect the universe of state legislation since about 2011. Many states have categorized their own legislation by its policy area, which OpenStates has collected for up to 36

states and aggregated to 44 policy areas (see Garlick, 2017, p. 966).[28] In addition to being a fairly direct measure of policy content of legislation, the OpenStates codes reflect a deductive coding process, which should give a more complete view of the agenda.

The OpenStates data allows for an individual-bill level validation of the estimates drawn from LexisNexis using an F1-score, which is the weighted harmonic mean of precision (P) and recall (R) shown in equation 3 (Schütze, Manning, and Raghavan, 2008). Precision is the share of estimations that are "correct." Since both of these procedures assign individual bills to multiple policy areas, an estimation is deemed to be "correct" if each bill's policy area has also been recognized in the OpenStates version of the bill for the 15 policy areas shows to be matches in Table 11. Recall is the share of possibly relevant documents that are retrieved. The precision is 0.806 (n = 100,914), and the recall is 0.617 (n = 122, 719), which leads to an F1 score of 0.698. This is an impressive association considering the degree of measurement error in these comparisons. For example, a LexisNexis bill about "Women's issues" is compared to OpenStates bills about "Sexual Orientation and Gender Issues." Therefore a bill about discrimination against homosexuals that is not about women's issues would be coded as a failure of a potentially relevant document in the recall exercise.

$$F1 = \frac{2PR}{P+R} \tag{3}$$

Figure 2 shows the raw count of bills for the "Agriculture" and "Health" policy areas under these coding schemes. It presents a similar pattern to the Pennsylvania Policy Agendas Project validation in the main text. OpenStates identifies many more bills. However, these measures do closely track each other. Aggregating the bills by year, there is a strong relationship for the number of bills introduced across all 50 states for both health (r = 0.96, n= 6) and agriculture (r = 0.75, n= 6). So while the method is wanting in terms of potential coverage, the validity of the Lexis codes that are reported is high. In practice, researchers can have confidence the keyword searches produce representative sample of legislation in different policy areas, as coded by the state legislatures themselves. The following section contains technical details for this comparison.

Codebook for the OpenStates validation

Table 11 relates the LexisNexis search terms from Table 1 with the 44 Open States codes. This alignment is meant to fit the LexisNexis terms within corresponding OpenStates subject, in order to minimize Type I errors. For example, see G0201, where a bill being coded as Civil Rights should be a necessary condition to fit "Civil Liberties and Civil Rights", even though the inverse would not be true. Table 12 shows that states that report the subject of their legislation, which has been standardized by the OpenStates project. These 36 states demonstrate a useful amount of variation on geographic, ideological and professionalization dimensions who provides confidence that the validation sample is not based by the states which choose to code their legislation. However, the subject matter of legislation in these states is taken at face value. Future work may look to validate these codes as well.

Internal validation

To assess how this method compares to previous efforts to estimate the agenda using LexisNexis keyword searches, I compare the measure to aggregate counts of groups reported by

[28] The 36 states are listed in Table 12, and demonstrate a representative sample of states across geographic, ideological and professionalization dimensions.

Table 11: Subject coding scheme from LexisNexis to OpenStates

No.	PAP code	LexisNexis Subject	OpenStates Subject
1	G0201	Civil Rights	Civil Liberties and Civil Rights
2	G0202	Women	Sexual Orientation and Gender Issues
3	G0205	Environment	Environmental
4	G0209	Good Government	Campaign Finance and Election Issues
5	G0300	Health	Health
6	G0400	Agriculture	Agriculture and Food
7	G0600	Education	Education
8	G1000	Transportation	Transportation
9	G1200	Law	Legal Issues
10	G1500	Bank	Housing and Property
11	G1503	Sports	Recreation
12	G1510	Insurance	Insurance
13	G2400	Local Government	Municipal and County Issues
14	G2401	Police and Fire	Public Services
Unmatched codes			
x1	G0207	Religion	Animal Rights and Wildlife Issues
x2	G0208	Tax Policy	Arts and Humanities
x3	G0701	Utilities	Budget, Spending, and Taxes
x4	G0702	Natural Resource	Business and Consumers
x5	G1300	Welfare	Commerce
x6	G1400	Construction	Crime
x7	G1502	Small Business	Drugs
x8	G1504	Business Services	Energy
x9	G1520	Manufacturing	Executive Branch
x10	G1700	Communication	Family and Children Issues
x11			Federal, State, and Local Relations
x12			Gambling and Gaming
x13			Government Reform
x14			Guns
x15			Immigration
x16			Indigenous Peoples
x17			Judiciary
x18			Labor and Employment
x19			Legislative Affairs
x20			Nominations
x21			Other
x22			Reproductive Issues
x23			Resolutions
x24			Senior Issues
x25			Social Issues
x26			State Agencies
x27			Technology and Communication
x28			Trade
x29			Welfare and Poverty

Table 12: States that report the subject of their data, as aggregated by OpenStates

State	First report	Last report
AK	2011	2018
AL	2011	2018
CA	2010	2018
CT	2011	2018
HI	2011	2018
IA	2011	2012
ID	2011	2018
IN	2011	2018
KY	2011	2015
LA	2010	2012
MD	2010	2018
ME	2011	2018
MI	2011	2018
MN	2010	2018
MO	2012	2018
MS	2011	2018
MT	2012	2017
NC	2011	2018
ND	2011	2017
NJ	2010	2018
NM	2011	2018
NV	2011	2018
NY	2011	2013
OK	2012	2016
OR	2011	2012
RI	2012	2018
SC	2011	2016
SD	2011	2018
TN	2012	2018
TX	2010	2017
UT	2011	2018
VA	2010	2018
VT	2013	2014
WA	2011	2018
WI	2011	2018
WV	2014	2018

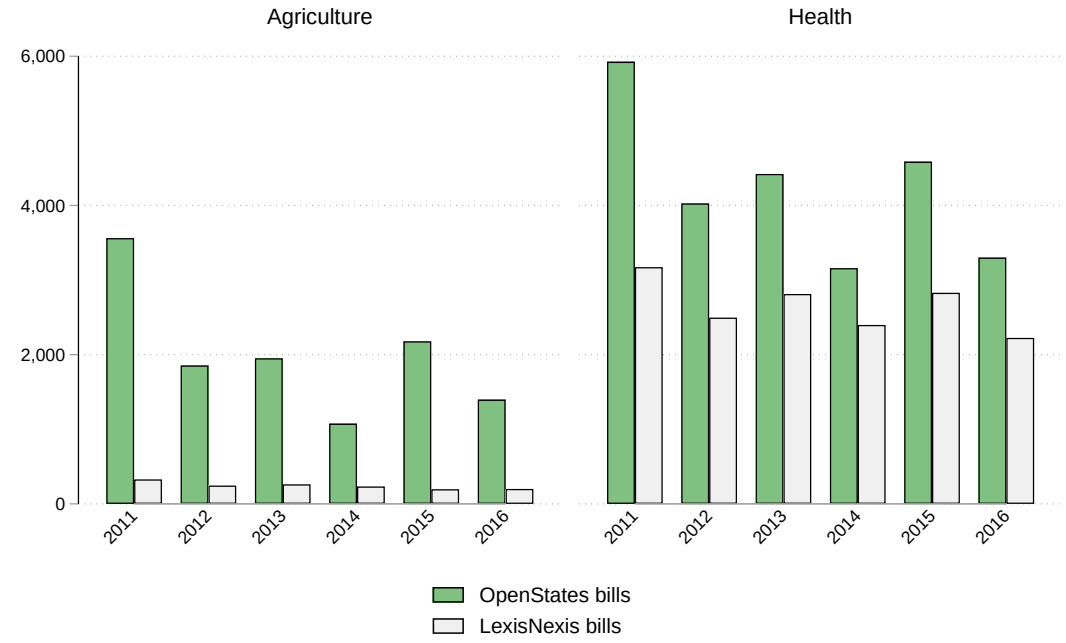

Figure 2: Number of bills in the states in the OpenStates validation sample by year.

Fellowes, Gray, and Lowery (2006) and Kirkland, Gray, and Lowery (2010). The search terms for my measure were drawn from these sources, so it is an appropriate comparison to make. Kirkland, Gray, and Lowery (2010) collect the number of bills introduced in eight policy areas in 2000 and 2004 using the same keywords as my search,[29] and there is a moderately strong relationship between the data at this level of aggregation (r = 0.57, n = 505). This relationship is shown in Figure 3.

Fellowes, Gray, and Lowery (2006, p. 40) report the total number of bills across all 22 policy areas for 1995-1999,[30] and Figure 4 shows the relationship between these estimates and the keyword estimates. There are about 2.5 times more bills in each session in their data compared to my estimates, which is likely a function of their coding decision to use each version of a bill as a unique bill.[31] With these caveats in mind, there is again a moderate relationship between these data, whether they are aggregated by each year (r 0.56, n = 204) or aggregated into two-year sessions (r = 0.57, n = 147). The mixed nature of these results suggests that the LexisNexis search procedure is highly sensitive to researcher decisions.

[29] Agriculture, Bank, Communication, Construction, Health, Manufacturing, Natural Resources, Transportation.

[30] The original replication data de-aggregated by policy was not available from the authors.

[31] I tried to re-run the comparison using each unique version of the LexisNexis "description" as a unique bill but it did not improve this association. However, I do not think this is the appropriate approach to this data, as changes to the underlying text may or may not be reflected in the LexisNexis description of the bill, and vice-versa. My measure codes bills as unique by their bill id (All "HB 1001" observations are coded as a single bill).

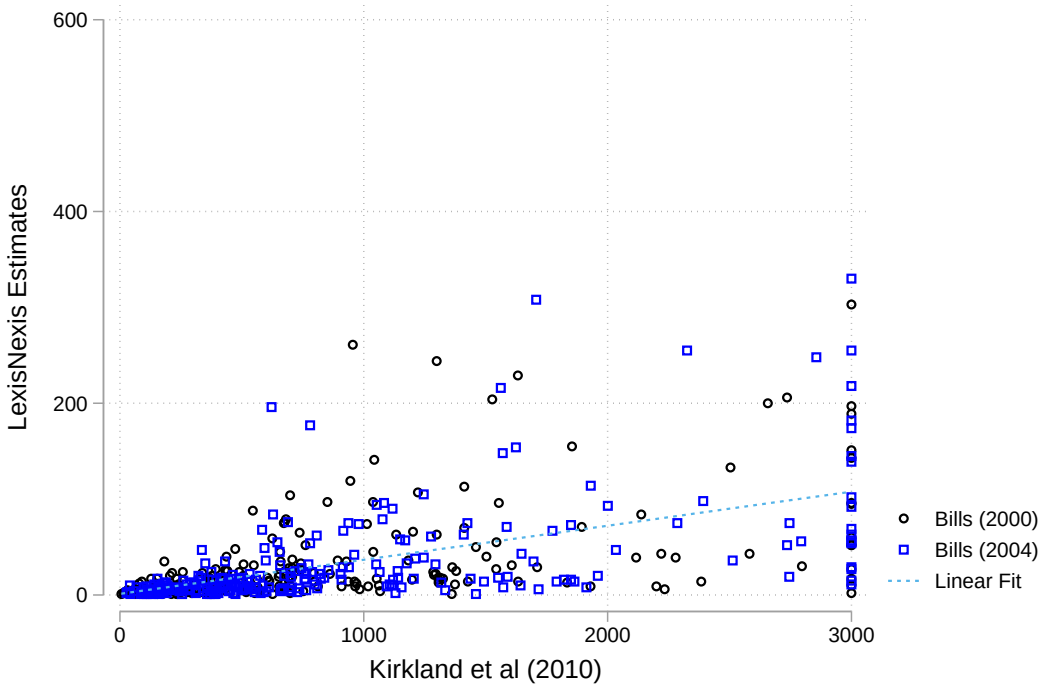

Figure 3: Correlation between the estimated number of bills per policy area and Kirkland, Gray, and Lowery (2010) estimates, aggregated by policy/state: 2000, 2004 (n=505)

Descriptive Results

Figures 5 - 8 show the number of bills introduced with all the states aggregated to two-year sessions. In reference to Table 1, it combines G2400 and G2401 into a single category. I also collected "Military" bills, but had a critical collection error after 2004, so that code was dropped that from further analysis beyond the validation of Fellowes, Gray, and Lowery (2006).

These agendas are fairly "sticky," in the sense that the amount of attention paid to a topic from one session to the next is relatively consistent. Table 13 shows the average biannual change in the number of bills in a policy area is less than 5 percent. There are exceptions to this rule: communication policy spiked in 1999-2002, around the period of the first ".com" boom. Natural resources had an increase after the implementation of fracking in 2013-2014. But generally this pattern fits a punctuated equilibrium model, where the number of bills about a policy topic are relatively static, with exceptions (Baumgartner and Jones, 1993). Table 13 also shows dramatic differences in the levels of attention to the different policy areas. On average, the keyword method detects about 100 times as many health and tax policy bills as it does religion or civil rights per two-year session.

Table 13: Average number of bills (and change) introduced in each two-year session

Policy Name	Bills per session	SD	Change	SD
Tax Policy	306.2	99.65	-0.01	0.40
Health	210.6	70.65	-0.01	0.33
Education	188.4	67.90	0.01	0.36
Insurance	137.3	21.91	0.02	0.18
Local Government	109.9	53.46	0.03	0.42
Transportation	65.0	9.74	0.04	0.16
Construction	56.1	18.20	-0.03	0.33
Police and Fire	49.7	48.29	-0.01	0.39
Utilities	38.9	6.68	0.06	0.23
Natural Resources	26.6	9.20	-0.03	0.31
Bank	26.0	4.63	-0.00	0.18
Law	25.1	3.34	0.04	0.18
Agriculture	21.8	2.81	0.04	0.14
Sports and Recreation	18.2	2.74	0.06	0.20
Small Business	17.4	8.39	0.12	0.46
Welfare	17.1	3.08	0.05	0.21
Communication	14.0	4.95	-0.01	0.32
Environment	12.6	2.24	0.04	0.20
Manufacturing	7.5	1.29	0.05	0.15
Religion	6.8	1.54	0.10	0.20
Civil Rights	4.8	0.92	0.05	0.24
Total	64.7		0.028	

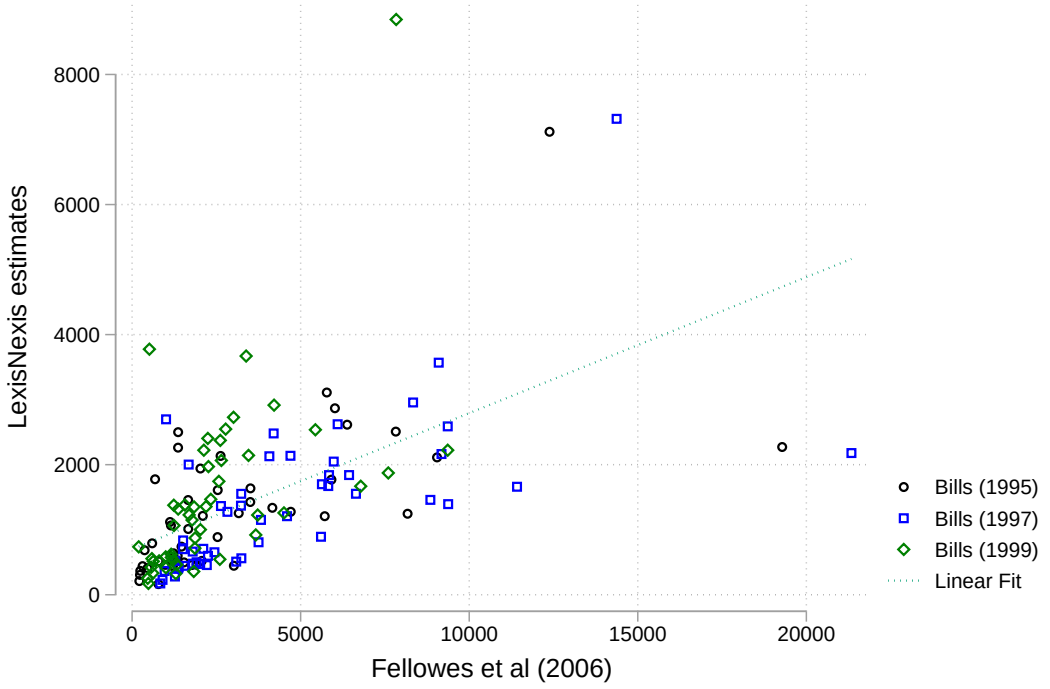

Figure 4: Correlation between the estimated number of bills per policy area and Fellowes, Gray, and Lowery (2006) estimates, aggregated by state: 1995, 1997, 1999 (n=147)

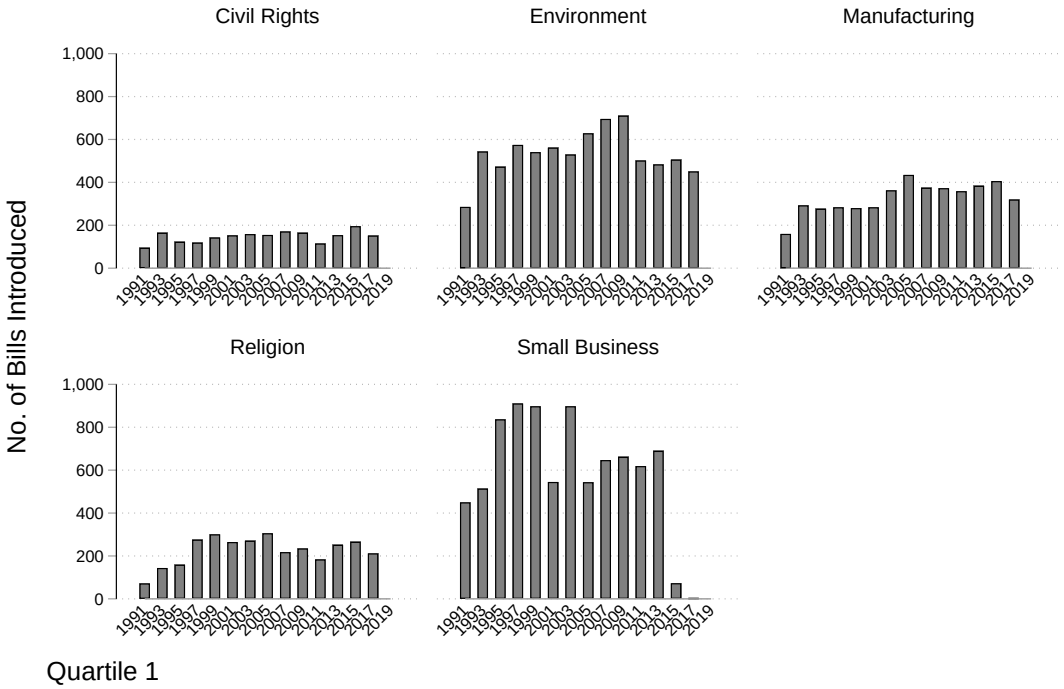

Figure 5: Number of bills in each 2-year period

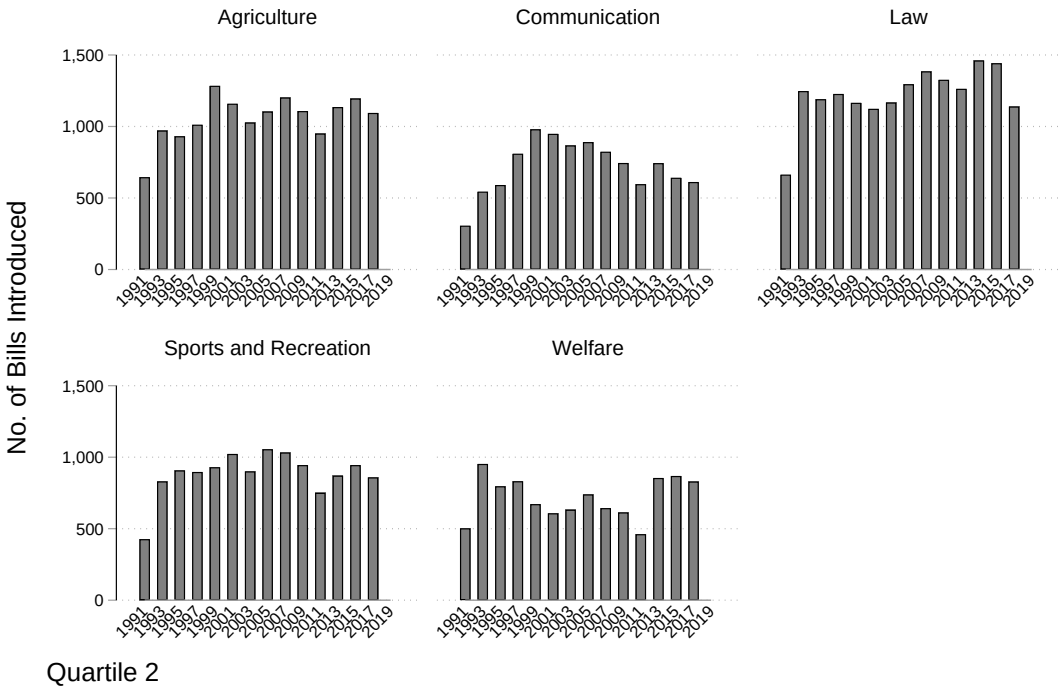

Figure 6: Number of bills in each 2-year period

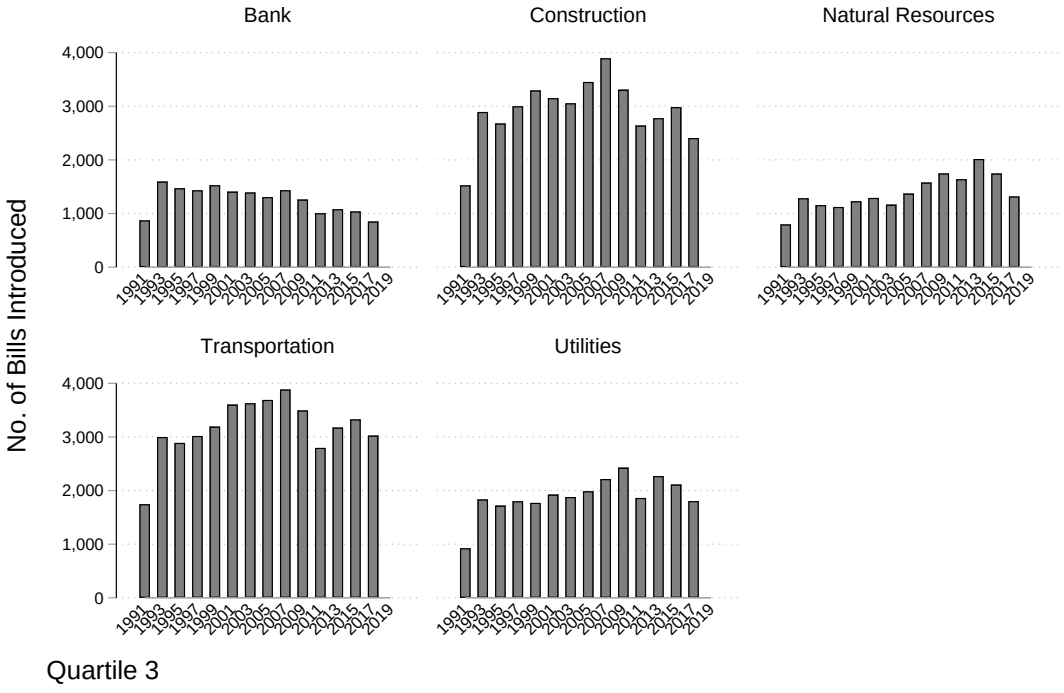

Figure 7: Number of bills in each 2-year period

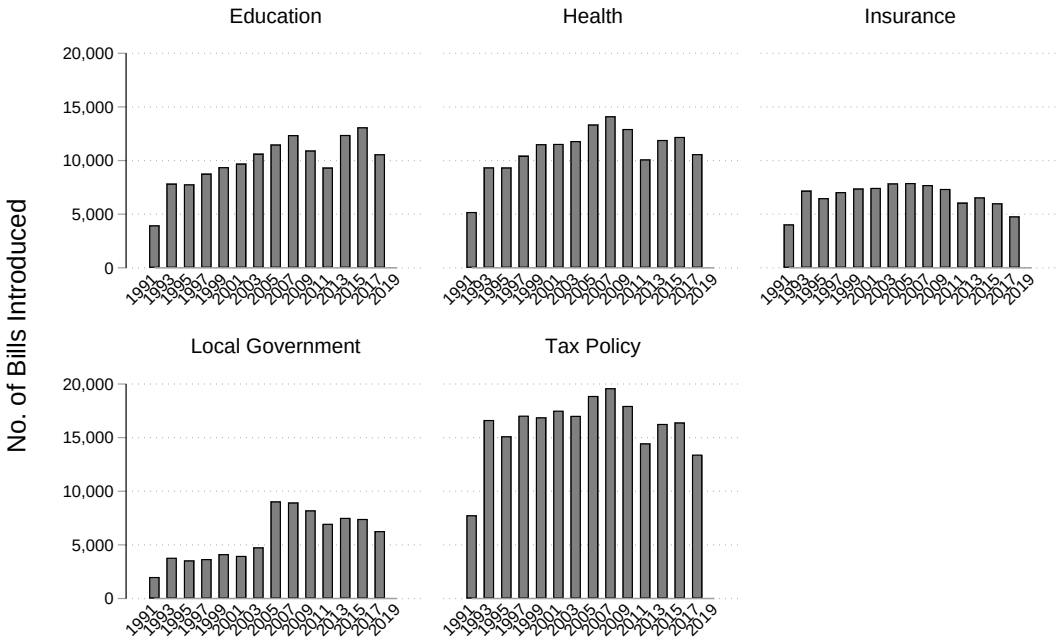

Figure 8: Number of bills in each 2-year period