How Courts Structure State-Level Representation

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Abstract

I examine how courts condition the relationship between state-level public opinion and policy. The system of federalism in the United States allows federal and state courts to establish the types of policies that states are constitutionally allowed to implement. In particular, federal courts can set "federal floors" for policy, below which no states can go. State courts, in turn, can raise the level of this floor. Thus, both federal and state courts shape whether state policy can match the preferences of the median voter in a given state. Analyzing data on public opinion, judicial decisions, and state-level policy on the issue of abortion, from 1973 to 2012, I show that changes in the set of allowable abortion restrictions, according to the combined decisions of state and federal courts, significantly affect whether states implement majority-preferred policies. I also show that ignoring the influence of courts on the policy-making environment significantly affects the estimated level of policy congruence, and thus conclusions about the scope of representation. These results demonstrate the importance of placing courts in the larger study of state-level representation.

1 Introduction

Due to the federal structure of government in the United States, the question of how well public policy aligns with public opinion is one that applies at both the national and state levels. Since Erikson et al.'s (1993) seminal *Statehouse Democracy*, and in contrast to previous conventional wisdom, scholars have amassed a sizable body of evidence showing that there exists a relatively strong, if imperfect, relationship between state-level public opinion and state-level policy (Burstein 2003). Lax and Phillips (2012), for example, find strong levels of responsiveness between opinion and policy, but also significant gaps in congruence between what state majorities want and what state legislatures provide. According to the broader literature on state-level representation, several political and institutional factors affect the likelihood of responsiveness, including issue salience, campaign finance regulations, term limits, and direct democracy institutions (see e.g. Page and Shapiro 1983, Gerber 1996, Burstein 2003, Lax and Phillips 2012).

In this paper, I point to an omitted factor in the study of state-level of representation that is consequential for conclusions regarding the extent and quality of representation in several policy domains: federal and state courts. The system of federalism, combined with the sweeping power of judicial review, allows federal and state courts to establish and modify the types of policies that states are constitutionally allowed to implement. This power, in turn, means that courts can shape the extent to which state policy can match the preferences of the median voter in a given state.

Based on the structure of judicial federalism in the United States, I develop expectations for how federal and state judicial decisions in a given policy domain shape state-level policy making. Based on the interpretation of the U.S. Constitution, federal courts—in particular, the U.S. Supreme Court—establish a minimal level of protection for individuals in a given area of the law, which states must meet. This level of protection thus serves as a federal

"floor" for state policy. For example, according to the Supreme Court's famous decision in *Miranda v. Arizona*, officers in every police department in the country must warn suspects of their right to remain silent. States are free to provide *greater* protections to suspects, but they cannot provide *lesser*. In addition, even when state legislatures meet the standard established by the federal floor, *state judges* can increase the level of protection beyond the federal floor—that is, they can raise the floor even further—based on their interpretation of their state constitution. Thus, the set of permissible policies for states, at a given point in time, will be defined by the interaction of rulings issued by federal and state courts. In turn, whether state legislatures can provide policies that align with the preferences of the median voter of a state will depend on the relationship between those preferences and where courts have established a floor for policy.

To test these expectations, I analyze data on public opinion, judicial decisions, and state-level policy on the issue of abortion. First, based on decisions rendered by federal and state courts following the Supreme Court's 1973 decision in *Roe v. Wade*, I measure the *constitutional level of protection*—that is, the location of the combined federal/state floor—for seven types of abortion restrictions. Many states sought to implement these restrictions—such as parental consent laws and waiting periods—following the Court's decision in *Roe*, which established a fundamental right of a woman to obtain an abortion. Since 1973, there has been significant variation across policies, across time, and across states (due to the decisions of state courts and lower federal courts) in whether each type of restriction is constitutionally permitted. Next, using multilevel regression and post-stratification (MRP), I develop *policy-specific* measures of state-level opinion, for each of the seven restrictions, for every year from 1973 to 2012. Finally, I measure whether each state had a given restriction in place over this period; that is, whether a policy was both in effect and enforceable, based on judicial decisions regarding the given policy.

I find that while there exists significant variation across both policies and states in the

level of public support for each restriction, the seven policies have been broadly popular over time. This means that the ability of states to match policy with opinion majorities has been greater in periods (and states) where a given restriction was constitutionally permitted. Using both aggregate and state-level analyses, I show this is indeed the case. For policies where either the courts have banned a given restriction, or in which its constitutionality was unknown, there is a non-existent and weak relationship between public opinion and policy, respectively. Conversely, for policies and periods where courts have allowed restrictions to be implemented, there is a strong—if imperfect—relationship between opinion and policy. This connection persists even when controlling for other predictors of abortion restrictions. Finally, I conduct an analysis of congruence between what opinion majorities prefer and whether state policy matches those preferences. I show that ignoring the influence of courts on the policy-making environment significantly affects the estimated level of congruence, and thus conclusions about the scope of representation. Taken together, these results demonstrate the importance of placing courts in the larger study of state-level representation.

2   Courts, Federalism and Representation

The question of how courts affect state-level representation is one that has been omnipresent in both the practice of American politics and in the political science and legal literatures on courts. With respect to the federal judiciary, questions of federalism have surrounded the federal courts since the founding. The Supreme Court's 1793 decision in *Chisolm v. Georgia*, in which it ruled in favor of the executor of a South Carolina merchant who sued the state of Georgia over outstanding payments, led to an immense backlash from the states and the quick passage of the 11th Amendment. A century later, during the period surrounding the Supreme Court's decision in *Lochner v New York* (198 U.S. 45) in 1905, the Court struck down approximately 200 economic regulations, under its interpretation of the due process clause of the 14th Amendment (Friedman 2000, 1448). Less infamously, the Court's decision in *Brown v. Board of Education* in 1954 struck down seg-

regation statutes in several states. These types of decisions helped give rise to the famous "counter-majoritarian difficulty"—the normative tension that arises from unelected justices striking down the actions of elected officials (Bickel 1962, Friedman 2009). This question has spurred several literatures on the extent to which federal courts (mainly the Supreme Court) act in a counter-majoritarian fashion (see e.g. Epstein and Martin 2010, Clark 2011, Segal, Westerland and Lindquist 2011).

Similarly, state courts in recent decades have actively weighed in on many important and far reaching state policies. For example, many state supreme courts have ordered legislatures to alter their school funding policies so as to reduce distributional inequalities across poor and rich jurisdictions (Berry 2007). State legislators have often criticized such decisions on representational grounds, arguing that courts have overstepped their bounds and have acted in a quasi-legislative manner (Reed 2003). In addition, many state courts (as well as federal courts) were responsible for striking down state bans on gay marriage (Keck 2009, Kastellec 2016a). Political scientists, in turn, have examined whether and to what extent state judges respond to state-level public opinion (Brace and Boyea 2008), and whether state court judges are constrained by legislative and gubernatorial practices (Langer 2002).

For the most part, however, these literatures have run on parallel tracks to the literatures on state-level representation discussed above. The result is that there has been little attention paid to the question of how courts may *directly* influence state-level representation by establishing and altering which policies are constitutionally admissible. More specifically (and germane to the empirical application below), the lack of consideration of the role of courts in shaping state-level policy making can be seen in the sizable literature on state-level abortion policy. Numerous scholars have examined the relationship between public opinion and state abortion restrictions, and generally find substantial correlations between opinion and policy (see e.g. Goggin and Wlezien 1993, Norrander and Wilcox 1999, Kreitzer 2015). This is particularly true in states with initiative processes (Arceneaux 2002). However, these

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papers do not account for the role of courts in shaping the connection between the two.[1]

Similarly, the vast literature on policy diffusion in the states (see e.g. Berry and Berry 1990, Shipan and Volden 2006) has also given little attention to the role of courts. There are two important exceptions worth noting—both of which examine abortion restrictions. First, Patton (2007) examines state adoptions of several abortion restrictions, and finds that the likelihood of adoption increases after the Supreme Court has deemed a given a type of restriction constitutional. Second, Hinkle (2015) examines how Supreme Court and circuit court decisions influence both the likelihood of policy adoptions and the extent to which states may borrow statutory text from other states. Collectively, these papers demonstrate that courts do play a role in influencing policy adoptions.

However, while these papers are important, they are not directly concerned with the question of representation. Both, for example, employ public opinion as a control variable, and do not evaluate whether the decisions by federal courts to restrict or allow certain types of policies either enhance or detract from substantive representation at the state level. In addition, because the papers do not employ policy-specific measures of opinion, they cannot conduct tests of congruence between public opinion and state-level policy. Finally, neither paper considers the role of state courts in influencing state-level policy making.

3   A Judicial Federalism Framework

To understand how courts structure state-level representation, I turn to the judicial federalism framework presented in Kastellec (2016b).[2] To summarize the framework, voters have single-peaked preferences over a one-dimensional policy space $x \in [0, \bar{x}]$. The policy

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[1]In addition, as I discuss in the Appendix, these studies tend to use highly aggregated measures of public opinion on abortion, which do not allow for a fine-grained matching of policy-specific opinion with particular policies, as opposed to the approach I employ below.

[2]In addition to the results summarized in this section, Kastellec (2016b) uses the framework to study how in the presence of status quo biases and/or cross-state externalities, voters (in the aggregate) may actually benefit from the introduction of federal floors. These ideas are not pursued in the present paper. However, based on the combined evidence in the two papers (as well as other related works), in the conclusion I note that the effect of judicial oversight of state policies on overall voter welfare is ambiguous.

space can be thought of as the "amount of protection" for a specified activity by an individual. In the abortion context, for example, a policy of 0 means a complete ban on all abortions under any circumstances, whereas $\bar{x}$ would mean a total protection of a woman's right to obtain an abortion under any and all circumstances. Voters prefer state policies that are closer to their ideal point. So a voter who favors fewer abortion restrictions would prefer a policy closer to $\bar{x}$, while one who favors more restrictions would prefer a policy closer to 0.[3]

In the absence of judicial activity, states are free to set policy anywhere on x. To foreshadow the empirical analysis, when courts have not weighed in on given policy, we can say its constitutionality is *unknown*. While states may make policy in the shadow of their expectations of how courts will rule, when the level of protection is unknown, states are constitutionally free to implement any policy they wish. Of course, presented with a legal challenge to an implemented restriction, federal courts have the option of establishing a *federal floor*, based on their interpretation of the U.S. Constitution; denote such a floor F. Following the implementation of a federal floor, the set of allowable policies shifts to $[F, \bar{x}]$.

What are the implications of the establishment of a federal floor? Suppose in the absence of judicial intervention, state policy perfectly reflected the median voter in each state (denoted m_S). If a federal court sets a floor, however, policies in the relevant jurisdiction below F are now deemed unconstitutional; state policy is set at $x_s^* = \max\{F, m_s\}$.[4] This means that all states where the median voter prefers policies "lower" than the floor see their state's policy shifted to F. Conversely, states where the median voter prefers "higher" policies— those above F—are unaffected by the federal floor. Thus, under the scenario where state

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[3]In the empirical analyses presented below, the policies considered are all measured dichotomously— e.g. does the state have a parental consent provision or not? The judicial federalism framework can easily accommodate a binary policy space—in this case, the policy space would simply be $\{0, 1\}$. I present the continuous version here to emphasize the generality of the framework.

[4]Floors established by the U.S. District Courts only apply to the state in which the district court is located. Floors set by judges of the Courts of Appeals (i.e. "circuit courts") generally apply to all the states in a given circuit. Finally, floors set by the U.S. Supreme Court apply nationally. I return to the idea of importance of this "level-specific" implementation of federal floors in Section 4.1.

policy perfectly reflected the median voter in each state, state policy will be (weakly) less representative of public opinion with a federal floor in place (compared to the absence of any federal floor).

Federal courts are not necessarily the last word on the location of the floor, however. Under the supremacy clause of the U.S. Constitution, state courts must respect floors set by the Supreme Court. However, state court judges can also decide that their own state constitutions grant greater constitutional protection to state residents than the level established by federal courts (Brennan 1977). Let SF denote a floor set by a state court in state s, where $SF \geq F$. The *combined floor* set by federal and state courts is thus $\max\{F, SF\}$. In other words, the combined floor is the maximum of the federal and state minimums.

While straightforward, the framework leads to two important implications. The first is that due to the structure of judicial floors, and the fact that courts can generally not set floors *and* ceilings, the effect of the introduction of a floor is asymmetric—states with policies below the floor must shift policy to accommodate the floor, while states with policies above the floor are unaffected. Second, and relatedly, conditional on voter preferences, altering the location of the floor (in either direction) will potentially affect state-level representation by changing the set of allowable policies that states can implement. In particular, if a majority of voters in a state (or states) are "low demanders" in the sense they prefer policies closer to 0, than lowering the location of the floor (or eliminating it altogether) will allow state legislatures to implement policies closer to (or exactly at) those preferences.

4   Examining Abortion Decisions, Policy, and Opinions

The adjudication and implementation of abortion restrictions is conducive to studying the interplay of judicial decisions, public opinion, and state policymaking for several reasons. First, the fight over abortion restrictions maps neatly into the policy space considered in the judicial federalism framework. As noted above, $\bar{x}$ represents a total protection of a woman's right to obtain an abortion, whereas 0 represents a complete ban on abortions. Second,

federal and state courts have been active in regulating the constitutionality of abortion restrictions for five decades; as I discuss below, the level of protection has varied significantly over time, allowing for leverage over the question of how shifting floors affect the implementation of state policy. Third, public opinion on abortion has been extensively (if irregularly) polled since 1973, allowing for the development of accurate measures of state-level opinion both over time and across several types of abortion restrictions. Finally, as noted above, abortion has been a prominent issue in the study of state politics. As I discuss below, not accounting for the role of courts in state policy may have led to both some inaccurate measurement in studies of policy and potentially incorrect conclusions regarding the relationship between public opinion and policy in this area.[5]

To briefly document the history of abortion regulation in the United States, no state enacted an abortion statute until the 1820s.[6] This meant that the effective policy level was near $\bar{x}$, in terms of the framework. In the middle of the 19th century, several state legislatures enacted laws making abortion illegal after roughly 16 to 18 weeks of pregnancy, except in cases necessary to save the life of the woman. This shifted policy toward zero somewhat, while still allowing for abortions early in a pregnancy. The mid-19th century, however, witnessed a shift toward restrictive abortion policies, and by 1880 abortion was illegal in every state (although some states created health exceptions). Thus, policy in every state was effectively near zero.

Courts played no role in the abortion arena until the 1960s, when lawsuits were brought in many states challenging the constitutionality of restrictive abortion statutes. As Kastellec (2016a) documents, some state courts and lower federal courts struck down these statutes as unconstitutional, which effectively implemented a floor of constitutional protection in those respective jurisdictions. In a majority of states, however, the 19th century statutes were still

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[5]At the same time, studying a single issue raises the question of how generalizable the findings I present are across issue areas. I return to this question in the conclusion.

[6]See Tatalovich and Daynes (1981, Ch.1) and Rubin (1987, Ch. 1) for detailed reviews of this history.

in place when the U.S. Supreme Court weighed in with its decision in *Roe v. Wade.*

Following *Roe*, states sought to regulate abortion within the confines of the trimester framework. As different types of regulations emerged, federal and state courts adjudicated their constitutionality. The decisions by federal and state judges—particularly the justices of the U.S. Supreme Court—over time both established and shifted the set of allowable policies. To study the effect of these determinations, I focus on the following seven restrictions, which, when enacted, have the described effect:

- *Bans on public funding.* The state to some extent restricts disbursement of public funds to abortion providers, usually through Medicaid programs.

- *Waiting periods.* Following consultation with her provider or after a woman provides her informed consent, she must wait a set period (of any length, but usually 24 or 48 hours) before she obtains an abortion.

- *Spousal consent provisions.* Women must receive the consent of their husbands before obtaining an abortion.

- *Spousal notification provisions.* Women must notify their husbands before obtaining an abortion.

- *Parental consent.* Minors must obtain the consent of one or both parents to obtain an abortion.

- *Parental notification.* Minors must notify one or both parents to obtain an abortion.

- *Partial-birth abortion* The state to some extent prohibits "partial-birth," "late-term," or "dilation and extraction" abortions.

4.1 Data and Measurement

For each policy, I developed measures of constitutional protections, public opinion, and state policy, for the period 1973 to 2012. Further details on the data collection procedures for each can be found in the Appendix.

Measuring the level of constitutional protections First, for each of these policies, I measured the level of constitutional protection—that is, the location of the combined federal/state floor—assigned to each of these policies over time. Specifically, I began with the Supreme Court's doctrine, and read the Court's relevant decisions on each policy in the post-*Roe* period, in order to determine the Court's doctrine on the constitutionality of each restriction over time. Next, I collected the available universe of federal and state court decisions that evaluated the constitutionality of the seven restrictions. For each decision, I coded whether the court allowed the restriction to remain in place or whether the court struck it down as unconstitutional.

Based on these measures, I constructed the level of constitutional protection for each policy—both across states and across time as follows. Beginning with the federal floor, I first measured the U.S. Supreme Court's doctrine. For each policy, I coded for each year whether the constitutionality was either a) unknown, because the Court had not adjudicated it yet; b) unconstitutional, or banned; c) constitutional, or allowed.[7] Whenever the U.S. Supreme Court has clearly banned or allowed a restriction, that determines the federal floor of protection, which is applicable to all states. Next, in periods where the Supreme Court's doctrine was unknown, I determined the states in which lower federal courts (i.e. district courts and circuit courts) either ruled a given restriction constitutional or unconstitu-

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[7]An "allowed" period is analogous to what Glick (1994) calls a "permissive" policy—one "that give[s] lower courts, legislatures, and others very wide discretion in implementation" (207). In addition, in her study of the effect of the Court's doctrines on state-policy diffusion, Patton (2007) uses an additional classification for years in which the constitutionality of a restriction is "suspect." This occurs when the Court decision suggests a restriction might be unconstitutional, but does not explicitly state so. Of the policies I evaluate, such a designation would be clearly appropriate only for one type of restriction (parental consent) and only for a few years (1977-1983), so I opt to use the simpler tripartite classification.

tional. Based on these decisions, I adjusted the level of protection from "unknown" to either "allowed" or "banned" for the states covered by these decisions.[8] Finally, I coded whether a state supreme court—based on its interpretation of a given state constitution—had ruled a given restriction unconstitutional during periods where the U.S. Supreme Court allowed it.

Figure 1 depicts the constitutionality of each restriction, from 1973 to 2012. The initial regions without diagonal lines depict periods in which the U.S. Supreme Court's doctrine was unknown; in such regions, the light gray blocks indicate the extent to which lower federal courts had struck down such policies—the height of these blocks indicates the proportion of states in which policies were found unconstitutional. Next, the regions with (red) solid diagonal lines depict periods in which the U.S. Supreme Court banned a given restriction, while the regions with (green) dashed diagonal lines depict periods in which the Supreme Court allowed a given policy. Finally, the solid dark (red) blocks at the bottom of each plot that appear during the allowed periods indicated the proportion of states where state supreme courts held a given policy unconstitutional.

To give a concrete example of how federal and state courts combine to alter the set of allowable policies, consider waiting periods. The Supreme Court did not weigh in on the constitutionality of waiting periods until 1983. Between 1973 and 1983, lower federal courts struck down waiting periods in several states. In 1983, the Supreme Court ruled waiting periods unconstitutional, which prevented their implementation in any state. However, in 1992, the Court reversed itself; since that decision, waiting periods have been deemed constitutional, as a matter of federal law. Finally, looking at state courts, Tennessee judges

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[8] As noted earlier, the precedent established by a circuit court generally applies to all states in that circuit. However, a decision by a circuit court that applies to a single state is not self-executing in other states in the circuit, but rather requires a separate challenge. In the results I present in the paper, I assume that a ruling of unconstitutionality only affects the state whose restriction is being adjudicated. However, I replicated the results assuming that circuit court decisions are binding on all states in the circuit, and all the results hold both statistically and substantively As an additional robustness check, I also replicated the results using *only* the U.S. Supreme Court's doctrine, which has the effect of more observations being coded as "unknown" (since the Supreme Court only weighs in after lower federal courts). These results were also substantively and statistically the same. (See Section A-5 in the appendix for these results).

Figure 1: The constitutionality of abortion restrictions, 1973-2012, as established by federal and state courts. The initial regions without diagonal lines depict periods in which the U.S. Supreme Court's [USSC] doctrine was unknown; in such regions, the light gray blocks indicate the extent to which lower federal courts had struck down such policies—the height of these blocks indicates the proportion of states in which policies were found unconstitutional. The regions with (red) solid diagonal lines depict periods in which the U.S. Supreme Court banned a given restriction, while the regions with (green) dashed diagonal lines depict periods in which the Supreme Court allowed a given policy. The dark solid (red) blocks at the bottom of each plot that appear during the allowed periods indicated the proportion of states where state supreme courts [SSCs] held a given policy unconstitutional.
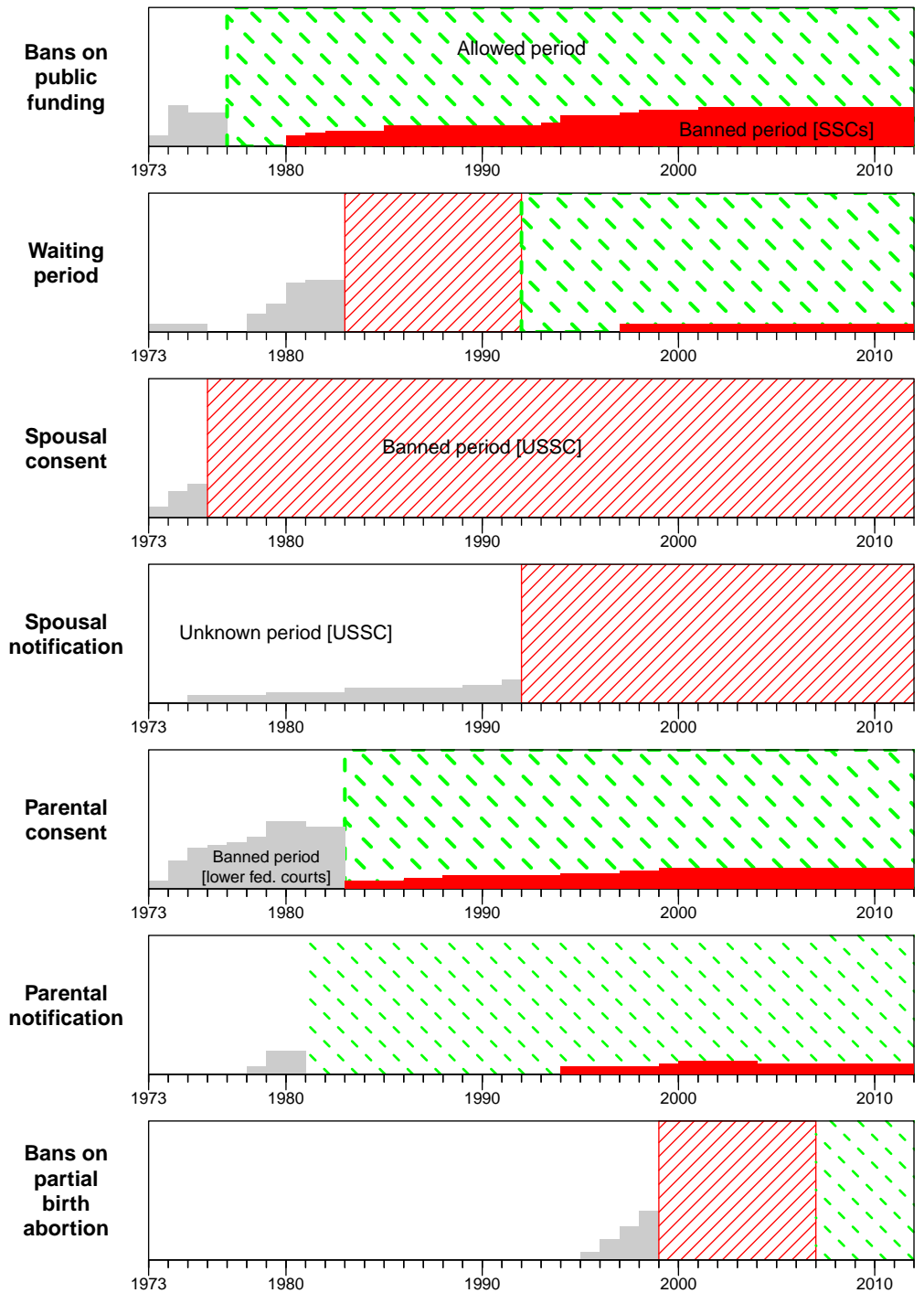
struck down the state's waiting period in 1998, effectively blocking the implementation of the restriction from that point forward.[9]

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[9]In 2014, Tennessee voters passed a constitutional amendment that effectively reversed a 2000 decision by the Tennessee Supreme Court upholding a lower court's determination that a waiting period violated

Focusing more generally on the level of protection established by the Supreme Court, Figure 1 depicts the well-known conservative shift in the Court's abortion doctrine over time. Whereas several policies were ruled unconstitutional as of the late 1980s, currently the only types of policies (among the seven) that are completely off-limits to states are spousal consent and notification laws. In addition, Figure 1 shows that for many of the restrictions, a number of lower federal courts found them unconstitutional before the justices weighed in. Finally, the figure reveals that in a number of areas—particularly bans on public funding and parental consent/notification laws—a number of state supreme courts have struck down bans as unconstitutional based on *state* constitutions. Considered as a whole, Figure 1 shows significant variation in the level of constitutional protections across time, policies, and states.

Measuring public opinion   Next, for each policy, I sought to obtain the universe of available and usable polling data (i.e. polls with individual-level data) that asked respondents about their opinion on the *specific* policies. That is, rather than using a single summary measure of opinion on abortion (see e.g. Brace et al. 2002, Norrander 2001, Pacheco 2014), I develop specific estimates of opinion for each of the seven restrictions. The advantage of this approach is that I can measure the direct linkages between opinion and state policy (as mediated by the level of constitutional protections), which allows for direct tests of the relationship between majority opinion and policies (Lax and Phillips 2012). To this end, I searched for questions that specifically asked about opinion on a given policy, and *not* just general opinion on abortion policy. In total I collected about 98,000 individual responses across all policy areas.

Given the structure of this data, estimating state-level opinion is not straightforward. To see this, it is useful to compare existing research that has produced state-level estimates of abortion opinion. There are two points of comparisons to note. First, at what level is

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the state constitution. In 2015, the governor signed a 48-hour waiting period into law. However, the voting procedures for the constitutional amendment are currently being challenged in federal court.

opinion estimated—is it general opinion on abortion policies, or is it policy-specific? Second, how is state-level opinion estimated, given a particular choice of opinion?

Most researchers have estimated general attitudes of abortion, rather than opinion on specific policies. In addition, most estimates have been created using disaggregation—that is, calculating mean levels of opinion by state either in a single survey with sufficient sample sizes, or by pooling together several surveys in order to generate sufficient responses from states with smaller populations (Erikson, Wright and McIver 1993). Brace et al. (2002), for example, use data from the General Social Survey to estimate a measure of opinion; they pool all responses from 1974 to 1998 on six questions and then use disaggregation to estimate an index of state opinion.[10] Other scholars have used the American National Election Studys survey of Senate races in 1988, 1990, and 1992, which contained larger within-state sample sizes than most national surveys— using disaggregation, Norrander (2001) develops a general measure of abortion opinion, while Gerber (1996) develops a specific measure of support for parental consent provisions.

While disaggregation is certainly useful, the method has its limitations. First, to generate reliable estimates of opinion in states with smaller population, it requires pooling many surveys together.[11] As a result, it is difficult to develop dynamic measures of opinion at the state-level. (Recall, for example, above that the Brace et al. (2002) estimates are based on pooling responses across 25 years.) This limitation has spurred the growing use of multi-level regression and poststratification (MRP), which allows for reliable estimates of opinion using a much smaller amount of data.[12] There are two stages to MRP. In the first stage, opinion is modeled a function of demographic characteristics of respondents and geography (i.e. the state they live in), using random effects. In the second stage, the estimates are poststratified

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[10]Arceneaux (2002) uses this measure in his study showing that states which have initiatives and referenda are more responsive to public opinion on abortion policy.

[11]Or, alternatively, only analyzing opinion in large states—see e.g. Cook, Jelen and Wilcox (1993).

[12]See Lax and Phillips (2009) and Warshaw and Rodden (2012) for validations of the method.

according to the true proportion of each "demographic-geographic" type in each state.

To date, most applications of MRP have been used to generate static estimates of opinion. Recent work, however, has shifted toward using the method to develop dynamic estimates. For instance, Shirley and Gelman (2015) develop dynamic estimates of state-level opinion on the death penalty using a model that combines time-series modeling with a multilevel approach. Caughey and Warshaw (2015) develop a group-level item-response model to estimate the overall liberalism of each state from 1972 to 2012. Finally, Enns and Koch (2013) use MRP to develop state-level estimates of policy mood over time.

Turning to applications that estimate abortion opinion, Pacheco (2011; 2014) develops a "rolling-MRP" approach to generate dynamic estimates of opinion on several issues, including abortion. Specifically, using the GSS and the NES, Pacheco develops state-level estimates of the proportion of Americans who favored legalized abortion regardless of the situation or who felt that abortion should always be permitted from 1980 to 1998. To measure dynamics, Pacheco conducts MRP within a "moving window" of the data—that is, sequentially implementing MRP over every possible consecutive five-year period.

While useful, there are two limitations to this approach. First, it requires the use of questions that are asked at regular intervals over time; as detailed in the appendix, a salient feature of my opinion data is that polls on particular policies are asked irregularly over time. Second, while using general questions on abortion tells us something important about public opinion, it is not straightforward how to map these estimates to opinion on *specific* abortion regulations.[13] For example, knowing that a person who thinks it should be possible

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[13]The GSS has asked the following battery of abortion questions since 1972 (more or less). 'Please tell me whether or not you think it should be possible for a pregnant woman to obtain a legal abortion if:

- a) If there is a strong chance of serious defect in the baby?
- b) If she is married and does not want any more children?
- c) If the woman's own health is seriously endangered by the pregnancy?
- d) If the family has a very low income and cannot afford any more children?
- e) If she became pregnant as a result of rape?

for a pregnant woman to obtain a legal abortion if she is she is married and does not want any more children—which would be a liberal position—does not tell us whether that person would favor parental notification laws or not, even if the two views are surely correlated. More generally, general indices of abortion policy correlate only loosely (in theoretical terms) with the choices that legislators faced in implemented abortion restrictions following *Roe v. Wade*. (Similarly, the estimates developed in Caughey and Warshaw (2015) are based on a model that reduces overall liberalism among the public to a single dimension.)

One article that *does* measure opinion on specific abortion policies using MRP is Lax and Phillips (2012), who develop state-level estimate of opinion on support for laws mandating informed consent, parental consent, and parental notification, waiting periods, as well as laws barring partial-birth notification. These estimates are static, however, as Lax and Phillips use the estimates to study responsiveness between opinion and state policies in a fixed period of time (i.e. around 2008).[14] In addition, the authors do not model any correlation in opinion across these policies.[15]

Accordingly, to estimate state-level opinion on the seven types of restrictions from 1973 to 2012, I develop a version of MRP that pools information across time and policies, in addition to demographics and geography. With respect to policy, for example, knowing whether a respondent supports a waiting period law tells us something about her propensity to support a parental notification law, even if the relationship between support for the two types of restrictions is not deterministic in the population. With respect to time, a state's opinion on a particular policy in 1980 likely helps predict its support for that policy in 2000—

- f) If she is not married and does not want to marry the man?
- g) The woman wants it for any reason?'

[14]Another paper that develops policy-specific opinion is Norrander and Wilcox (1999), which uses disaggregation to develop specific opinion estimates on parental consent restrictions and funding bans. These estimates, which are based on the 1988, 1990, and 1992 ANES, are static, however.

[15]In practice, however, state-level opinion across the abortion policies in their data is substantially correlated; the pairwise correlations range from .71 to .92.

even if it is possible that opinion will trend over time on some or all of the policies. This procedure results in estimates of opinion on each policy in every state from 1973 to 2012.[16] I also create national-level estimates of opinion, for each policy. Finally, I develop estimates of uncertainty for the opinion estimates, which I incorporate into the analyses below.

Measuring state-level policy   Finally, for each state-year combination, I measured whether a state had an active policy in place for each of the seven policies. To measure this, I relied on a number of sources, including reports by interest groups that monitor state abortion legislation and policy. (See the Appendix for complete details.) In practice, state policies that have either been directly struck down by a court (including lower federal courts or state courts), or whose unconstitutionality is implied by a relevant court decision, remain "on the books"—I code such policies as "inactive." Thus, active restrictions are only those that are legally enforceable by state officials.[17]

4.2   The national-level relationship between court rulings, policy and opinion

Before moving to a state-level analysis, it is useful to examine the national-level relationship between opinion and policy, as mediated by the set of allowable policies. Figure 2 is similar to Figure 1, but for the sake of visual clarity I present only the level of constitutional protection established by the Supreme Court; the white regions thus represent unknown periods. The solid (black) lines depict national public opinion, for every year—the width of these lines reflect 95% confidence intervals.[18] The figure shows that all of these

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[16]I exclude Washington D.C. from all analyses in this paper.

[17]This measure, by construction, assumes that states comply with judicial decisions. In practice, states may either directly resist or attempt to circumvent judicial invalidations of state legislation. I focus on *de jure* law for both practical and conceptual reasons. First, from a practical standpoint, it is difficult to measure in a valid and reliable way state compliance with judicial decisions in the abortion context across a wide range of policies. (See Silverstein (2007) for a clever qualitative—but, unfortunately, non-scalable—approach to measuring compliance with the U.S. Supreme Court's parental consent doctrine.) From a conceptual perspective, my aim is to situate the analysis within the broader literature on state policy, which almost exclusively focuses on "law on the books" as opposed to "law on the ground." A worthwhile extension of this paper would be to allow for state evasion of judicial doctrine, and to examine whether such evasion is done in a manner consistent with majority opinion.

[18]Bans on partial-birth abortion bans were only first implemented in 1995, and thus I plot both policy and opinion starting that year.

Figure 2: National level opinion and policy over time. The figure is similar to Figure 1, but only depicts the level of constitutional protection established by the Supreme Court. The solid (black) lines depict national public opinion, for every year–the width of these lines reflect 95% confidence intervals. The dashed (blue) lines depict the mean number of states with active policies in a given area, by year.
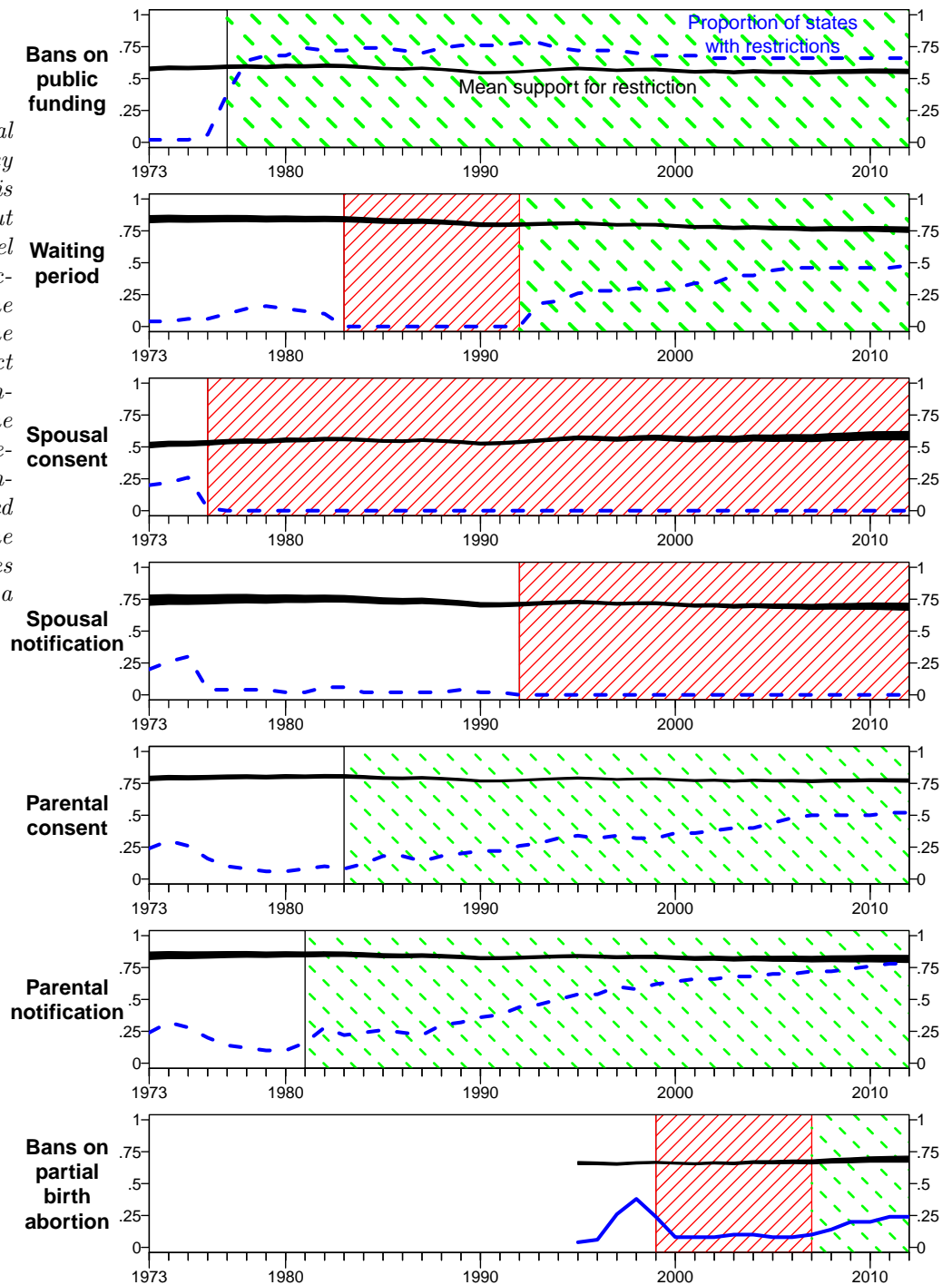
restrictions have been broadly popular over time—though, looking at overall opinions masks considerable heterogeneity across both states and policies.[19] Average support for parental

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[19]The general popularity of these restrictions does not mean that every potential or actual abortion restriction is or has been popular (though, according to Leonhardt's (2013) reading of the longitudinal data on abortion public opinion, "most Americans support abortion access with some significant restrictions"). For instance, the last several years has witnessed a wave of anti-abortion restrictions being implemented by states, such as requiring women to undergo ultrasounds before obtaining an abortion (Devins 2016); some

consent laws, for example, has remained steady at about 80%, whereas support for spousal consent laws has increased from about 50% in 1973 to about 60% in 2012.[20]

Given the broad support for these types of restrictions, state legislatures will be able to better match opinion majorities in "policy-years" where the courts have not deemed them unconstitutional. This is particularly true with respect to the Supreme Court, given its place atop the judicial hierarchy. Indeed this is what we see. The dashed (blue) lines in Figure 2 depict the mean number of states with active policies in a given area, by year. The percentage of states with active restriction tracks national opinion levels much more closely in policies and eras where the Court has ruled them constitutional. For example, spousal consent laws have been off-limits since 1976—no state has had such a law since then, even though majorities in many states would have preferred to implement such policies. Conversely, the Court has allowed bans on public funding of abortion since the 1970s; the average number of states with bans has closely tracked national opinion over time.

4.3 State-level responsiveness by the level of the federal floor

Next, I examine responsiveness between state-level opinion and state-level policy, as a function of the level of protection.[21] In analyzing these relationships, my purpose is less to

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of these are likely unpopular. (In June 2016, the Supreme Court struck down a Texas law that contained several of these types of newly implemented restrictions, such as requiring physicians that perform abortions to have admitting privileges at a nearby hospital.) Polling on these issues remains relatively scant, however, and my goal is to focus on restrictions that are "old" enough such that both sufficient polling exists, and for which federal and state courts have been active in ruling on their constitutionality.

[20]Inspection of the state-level estimates shows that this temporal stability has been broadly prevalent at the state level, as well as the national level. This finding of both national and within-state stability is consistent with prior research—see Luks and Salamone (2008) and Pacheco (2014).

[21] Studies of representation sometimes distinguish between responsiveness and congruence. The former refers to the degree to which variation in opinion correlates with policy, while the latter refers to whether policy matches what opinion majorities prefer (Lax and Phillips 2012, Canes-Wrone 2015). Because of the broad support for the seven abortion restrictions,, for the vast majority of state-year-policy observations, support exceeds 50%. (Considering only the point estimates of opinion, for 96% of observations support exceeds 50%. Across all 12,900,000 combined draws of opinions from the posterior distribution, 95% are greater than 50%.) Thus, to examine the correlates of responsiveness and congruence would effectively analyze the same quantity. However, in Section 4.6 I do conduct a basic analysis of congruence in order to demonstrate that the failure to consider the role of courts in shaping policy leads to inaccurate estimates of congruence.

causally identify the *effect* of courts and public opinion on state-level representation, and more to illustrate descriptively how judicial thresholds serve as an intermediary between opinion and representation. To this end, the congruence analysis I present below documents how not accounting for courts in studies of representation may lead to inaccurate assessments of the quality and extent of representation.

The unit of analysis I employ from this point forward is "state-year-policy." For each observation, a state either does or does not have a restriction in place. In addition, for each observation I define three periods of constitutional protection; this is based on the coding discussed above and depicted in Figure 1. A "banned period" is one where either a federal court or a state court has ruled a given policy unconstitutional. An "unknown period" is when no court (with jurisdiction over a given state) has weighed in on a given policy. An "allowed period" is when a federal court has ruled a policy constitutional.[22]
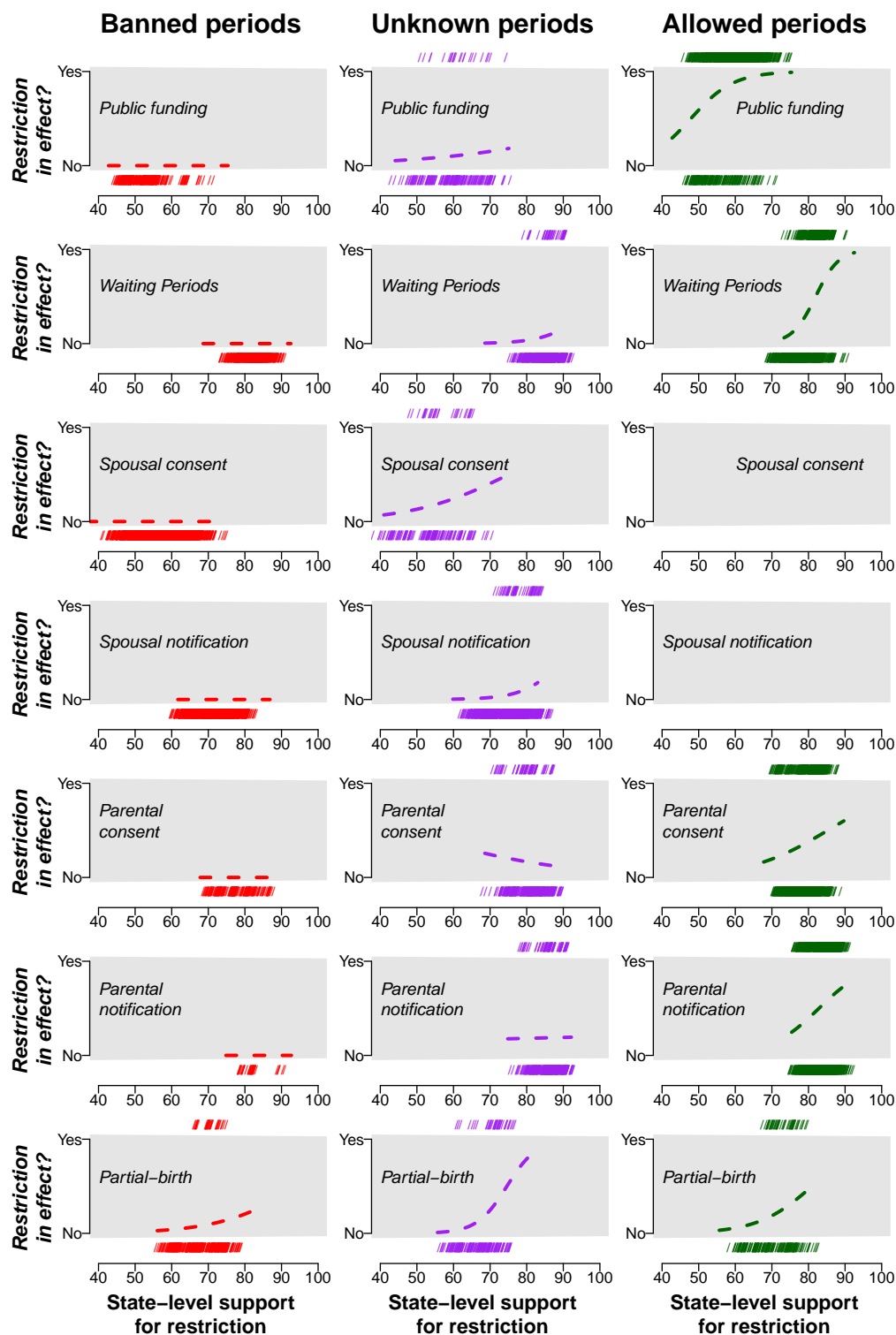
Figure 3 depicts the relationship between state-level opinion and state-level policy. Each column respectively depicts banned, unknown, and allowed periods, while each row contains a given policy. For each panel, the horizontal axis depicts state-level opinion, while the vertical axis depicts whether a state had a given restriction in place. The solid diagonal lines at the top and bottom of each panel depicts a "rug" showing the distribution of opinion in state-years where policies were and were not in place, respectively. Finally, the dashed lines depict the estimated curves from bivariate logits of restrictions on opinion.

Beginning with banned periods, the figure shows that for nearly every policy, no such restrictions have been in place, and thus there is zero relationship between public opinion and public policy. This can be seen in the absence of any rugs at the top of each panel for six of the seven policies.[23] This is the case even though in most state-years, majorities

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[22]In theory, a state court could weigh in on the constitutionality of a restriction before a federal court does. In practice, challenges to each policy were always brought first in federal courts, with litigants turning to state courts only after the U.S. Supreme Court had upheld a particular policy as constitutional.

[23] The exception is bans on partial-birth abortion. The reason is that when the Supreme Court struck down such bans, it did so in part because most states that had implemented them did not provide for a

Figure 3: The relationship between state-level opinion and policy, broken down by banned, unknown, and allowed periods. Each column respectively depicts banned, unknown, and allowed periods, while each row contains a given policy. For each panel, 5 the horizontal axis depicts state-level opinion, while the vertical axis depicts whether a state had a given restriction in place. The solid diagonal lines at the top and bottom of each panel depicts a "rug" showing the distribution of opinion in state-years where policies were and were not in place, respectively. Finally, the dashed lines depict the estimated curves from bivariate logits of restrictions on opinion.

health exception. A handful of states *did* have bans that contained such exceptions (enacted before the Supreme Court weighed in), and thus their policies remained in effect even after the federal courts struck

preferred each restriction to be in place. Turning to unknown periods, Figure 3 shows that many states had policies in effect during such periods. For most policies, the logit curves show a positive (if relatively weak) relationship between opinion and the likelihood of a restriction being in place (parental consent and notification laws are the exception), meaning the likelihood of a state enacting a restriction increases as public support for that relationship increases. Finally, turning to the last column, for each of the five policies with observations in the allowed period, there is a strong (if imperfect) relationship between state policy and opinion—the logit curves are both positively sloped and fairly steep. (Spousal notification and consent laws have never been held constitutional by any court, and thus there are no observations during allowed periods for either of these policies). Thus, Figure 3 collectively shows that the relationship between public opinion and state policy is strongly mediated by the level of constitutional protections afforded by both federal and state courts.

4.4 Modeling restrictions

As Figures 2 and Figure 3 show, there is significant heterogeneity in the data. This includes heterogeneity in the levels of public opinion across the seven restrictions, in the periods of time in which policies are more likely to be allowed by courts, and in the likelihood that a particular policy is likely to be enacted by states, conditional on the levels of protection. In addition, Figures 2 and 3 make clear that other factors beside public opinion and constitutional levels of protection influence state-level policy making. During allowed periods, for example, many states have not had specific policies in place, even when state majorities have favored them—see, for instance, the large number of state-years in which parental notification policies have not been enacted, even though opinion majorities always favor them. Accordingly, I turn to a series of regression models that evaluates how the likelihood of restrictions covaries with judicial decisions as public opinion, after accounting for

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state bans *without* health exceptions. In the other six policy areas, the policy choice is sufficiently blunt that no states had such policies in effect during banned periods.

both these types of heterogeneity and other predictors of abortion policy at the state level.

With respect to the latter, I use the following variables as statistical controls, which are based on Kreitzer's (2015) study of state-level diffusion in abortion policy.

- *Religious adherence rate*: The proportion of a state's population that are members of a church in a given year.

- *Initiative process*: Coded 1 if a state has an initiative process in place, 0 otherwise. Prior work has found greater responsiveness between opinion and policy in states with initiatives (Gerber 1996, Arceneaux 2002, Bowler and Donovan 2004).

- *Democratic women*: The proportion of Democratic women in a state legislature in a given year.

- *Democratic governor*: Whether the governor was Democratic or not in a given year.

- *Unified Democratic legislature*: Whether both state legislative chambers were controlled by Democrats in a given year.

- *State income*: The median income of a state in a given year.

- *State population*: The state's population in a given year. Both income and population size have been found to be positively associated with policy implementation in some studies (Kreitzer 2015, 50).

The inclusion of these predictors helps to provide a benchmark for assessing the importance of courts for the implementation of state policy, relative to other well-documented predictors of abortion policy.

For each regression model I present, the unit of analysis is "state-year-policy;" thus, each state-policy combination can be thought of as a separate time series. The dependent variable

is whether a restriction is in effect for a state-year-policy combination or not.[24] To account

for heterogeneity across time and space and policies, I use a multilevel modeling approach, in

which I estimate models with random effects for states, years, and/or policies, depending on

the main quantity of interest for each model (Beck and Katz 2007, Shor et al. 2007, Kreitzer

and Boehmke 2016).[25]

Following the structure of the data presented in Figure 3, I define *banned*, *allowed*, and

unknown periods as ones in which courts have respectively banned a given policy (for a

given state-year combination), allowed a given policy, or where the level of protection is

unknown. Because the probability of a restriction being in place during a banned period is

effectively zero, from this point I drop observations during banned periods, and then evaluate

the differences between allowed and unknown periods (as well as the role of public opinion,

denoted *state-level opinion*, across these periods).[26] Excluding banned periods, there are

8,544 state-year-policy observations; restrictions were in effect in 3,324 of these observations

(39%). Full descriptive statistics are presented in Section 2 in the Appendix.

Incorporating uncertainty   As noted above, the estimates of opinion are measured with

uncertainty, and it is important to propagate this uncertainty into the regressions model of

state policymaking. To do so, I employ the "method of composition" (Treier and Jackman

2008, 215-16).   The estimation procedure for creating the opinion estimates (detailed in

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[24]Studies of policy diffusion generally only examine the initial decision by a state to implement a policy
(see e.g. Hinkle 2015, Kreitzer and Boehmke 2016, Patton 2007). In such "event history" analyses, once a
state adopts a policy, they exit the dataset (and the analysis). Because the set of allowable policies is shifting
over time, and because sometimes states alter their policies (in both directions), it is important to analyze
state policy-making beyond the initial adoption decision. Accordingly, I pursue a time-series cross-sectional
approach, and examine the implementation of restrictions across the full time period, for every state.

[25]Note that the inclusion of random effects for years helps account for the fact that allowed periods have
generally started after 1973 and thus are correlated with time.

[26]Technically, the fact that some states enacted partial-birth bans even during the periods where courts
had banned most such bans (see footnote 23 and the bottom-left panel in Figure 3) allows for the estimates
of a regression model of restrictions using all observations, including those during banned periods. However,
the "identification" of such a model would rest on the 37 state-years in which states had enacted partial-birth
restrictions during the banned period (out of 4,356 total observations during banned periods), and thus it
seems more prudent to assume the probability of a restriction during a banned period is zero, and evaluate
the likelihood of restrictions across non-banned periods.

the Appendix) is fully Bayesian, and results in a posterior sample size of 1,000 for every state-policy-year combination. For each regression model I present (in Table 1), I run 1,000 regressions, each time using a different estimate opinion from the posterior sample. Each of these regressions, of course, has its own uncertainty; I incorporate this by simulating the coefficients from the model one time in each draw, so as to build in the standard errors and covariances from the regression models into the estimates. The result is a distribution of 1,000 coefficients that fully incorporates the uncertainty from the opinion estimates.[27]

Regression results   Table 1 presents six logistic regression models of abortion restrictions. There are three parallel sets of two models; in each set, the first model presents a regression without the control variables, while the second model includes them. To improve computational efficiency and to enhance the interpretability of the coefficients, I rescale each continuous predictor by centering them such that they have mean zero and by dividing them by two standard deviations (Gelman 2008). The pairs vary by the types of random effects included in each set. To best estimate how a shift from an unknown period to an allowed period affects the likelihood of a state adopting restrictions, while controlling for all types of potential heterogeneity, Models (1) and (2) include random effects for states, years, and policies. Next, because within a given state-policy combination opinion does not vary much over time, it is difficult to estimate how shifts in opinion affect implementation, while also including state and policy random effects. Accordingly, Models (3)-(6) omit state random effects, which allows more easily for the predictive effect of public opinion to be estimated based on *between-state* variation. Finally, as described below, Models (5) and (6) include an interaction between *allowed* periods and *state-level opinion*. To account for heterogeneity across time and policies, these models include random effects for the interaction of *years* × *allowed* and the interaction of *policies* × *allowed*. In each model, the brackets depict 95%

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[27]The models in Table 1 are estimated using the `GLMER` function in *R* (Bates 2005). To simulate the coefficients, I use the `sim` function from the `ARM` package (Gelman et al. 2015).

confidence intervals for the estimated coefficients (based on the simulations described above).

I first analyze how the likelihood of a restriction being in effect varies across the level of constitutional protection. Across all six models in Table 1, the coefficient is positive, meaning that the probability of a restriction is greater during an *allowed* period, as opposed to an unknown period. In all but one of these models, the confidence interval excludes zero.[28] Thus, even conditional on other predictors of abortion policy, and even accounting for heterogeneity across states, time, and policies, the level of constitutional protection significantly covaries with state-level policy making.[29]

Next, I analyze how the likelihood of a restriction being in effect varies with state-level opinion. In Model (2), public opinion has no significant predictive effect on state policy making. However, as noted above, this model includes state random effects, meaning the model mainly leverages within-state variation in public opinion, for each state-policy combination. Because opinion does not vary much over time with each combination, Models (3)-(6) omit state random effects, which allows the coefficient on opinion to be based on *between-state* variation.

In Model (3), which does not include the control variables, the coefficient on *state-level opinion* is positive and the confidence interval excludes zero. Model (4) adds the control variables, and the magnitude of the coefficient on opinion drops significantly, with the 95% confidence interval including zero (though it is greater than zero in 95% of simulations). However, this is not so surprising, given that public opinion is correlated with many of

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[28]In Model (5), the confidence interval on *allowed* includes zero, but this model includes an interaction between *allowed* and state-level opinion, so the interpretation of the main effect is less straightforward than in Models (1)-(4). However, even in Model (5), 94% of the simulated coefficients on allowed are greater than zero.

[29]The control variables operate largely as expected. Increases in the following predictors are significantly correlated with an *increased* likelihood of restrictions, *ceteris paribus*: a greater proportion of religious adherents in a state and states with initiative processes. Increases in the following predictors are significantly correlated with a *decreased* likelihood of restrictions, *ceteris paribus*: the proportion of Democratic women in a state legislature, unified Democratic legislatures, states with lower median incomes, and states with smaller populations.

	(1)	(2)	(3)	(4)	(5)	(6)
Intercept	-2.13	-2.25	-1.16	-1.54	-2.27	-3.26
	[-3.15, -.98]	[-3.45, -1.11]	[-2.75, .40]	[-2.46, -.46]	[-3.64, -.38]	[-4.57, -1.90]
Allowed period	1.34	1.33	1.10	1.11	1.95	2.66
	[1.07, 1.72]	[1.06, 1.69]	[.90, 1.32]	[.88, 1.48]	[-.37, 4.63]	[1.04, 4.48]
State-level opinion		-.23	2.85	.50	1.36	-.10
		[-1.64, .69]	[2.21, 3.40]	[-1.23, 1.25]	[.52, 2.18]	[-.94, .71]
Opinion × allowed period					2.62	1.47
					[1.50, 3.58]	[1.22, 2.34]
Religious adherence rate		1.27		.83		.86
		[.82, 1.74]		[.67, .99]		[.71, 1.02]
Initiative process		.52		.29		.32
		[-.36, 1.5]		[.16, .40]		[.17, .43]
Democratic women		-.94		-1.27		-1.26
		[1.23, -.668]		[-1.52, -1.03]		[-1.49, -1.03]
Democratic governor		-0.04		-.16		-.16
		[-0.19, .10]		[-.32, -.03]		[-.27, -.04]
Unified Dem. legislature		-.25		-.26		-.26
		[-.45, -.05]		[-.38, -.16]		[-.38, -.14]
State income		-.45		-.68		-.57
		[-1.1, .13]		[-1.00, -.28]		[-1.01, -.10]
State population		-1.3		-.31		-.28
		[-1.95, -.908]		[-.47, -.16]		[-.44, -.15]
Year REs?	Yes	Yes	Yes	Yes	Yes	Yes
Policy REs?	Yes	Yes	Yes	Yes	Yes	Yes
State REs?	Yes	Yes	No	No	No	No
Year × allowed REs?	No	No	No	No	Yes	Yes
Policy × allowed REs?	No	No	No	No	Yes	Yes
N	8,544	8,544	8,544	8,544	8,544	8,544
AIC	6813	6718	8226	7758	7827	7422
DIC	5908	5766	7785	7260	7254	6795

Table 1: Regression models. In each model, the dependent variable whether a state had a restriction in place for a given state-year-policy combination. Brackets indicate 95% confidence intervals. (Note that Model 1 does include state-level opinion, and thus does not have any predictors measured with uncertainty. I display confidence intervals for consistency with the other 5 models.) The AIC and DIC measures are based on the regression model run on the point estimates of opinion.

the other predictors, such as Democratic control of legislature and the proportion of female legislature. In addition, the estimated influence of state-level opinion in Models (3) and Models (4) pools observations in both *unknown* and *allowed periods*. As seen in Figure 3, for several policies the relationship between opinion and the likelihood of a restriction being in place is stronger during allowed periods.

Accordingly Models (5) and (6) allow the influence of opinion to vary across *unknown* and *allowed* periods. In each model, the coefficient on state-level opinion depicts the correlation between opinion and restrictions, *during unknown periods*. The coefficient is positive and significant in Model (5), but is effectively zero in Model (6). This means that, conditional on the other predictors, there is no relationship between opinion and policy during periods in which courts have not yet weighed in. Conversely, the coefficient on *Opinion × allowed period* is positive and significant in both models, meaning that there is a positive relationship between opinion and policy in periods where the courts have expressly ruled a policy to be constitutional. Thus, the results make clear that the mapping from public opinion to policy is conditional on how courts establish and alter the set of allowable policies.

4.5 Substantive effects

How substantively important are these differences? To answer this question, I examine how the average probability of a restriction being in place varies across the level of protection established by courts. The left plot in Figure 4 depicts the predicted probability of a restriction being in place across allowed and unknown periods, for all seven policies individually, as well as for all policies combined. The horizontal lines depict 95% confidence intervals. To calculate these probabilities, I use the results from Model (2) in Table 1. I set each covariate to its mean level in the overall data, and use the respective random effect for each policy to account for heterogeneity in the baseline likelihood of enacted restriction.

Beginning with the unknown periods, Figure 4 shows the likelihood of a restriction is always significantly greater than zero. This means that for each policy, the likelihood of
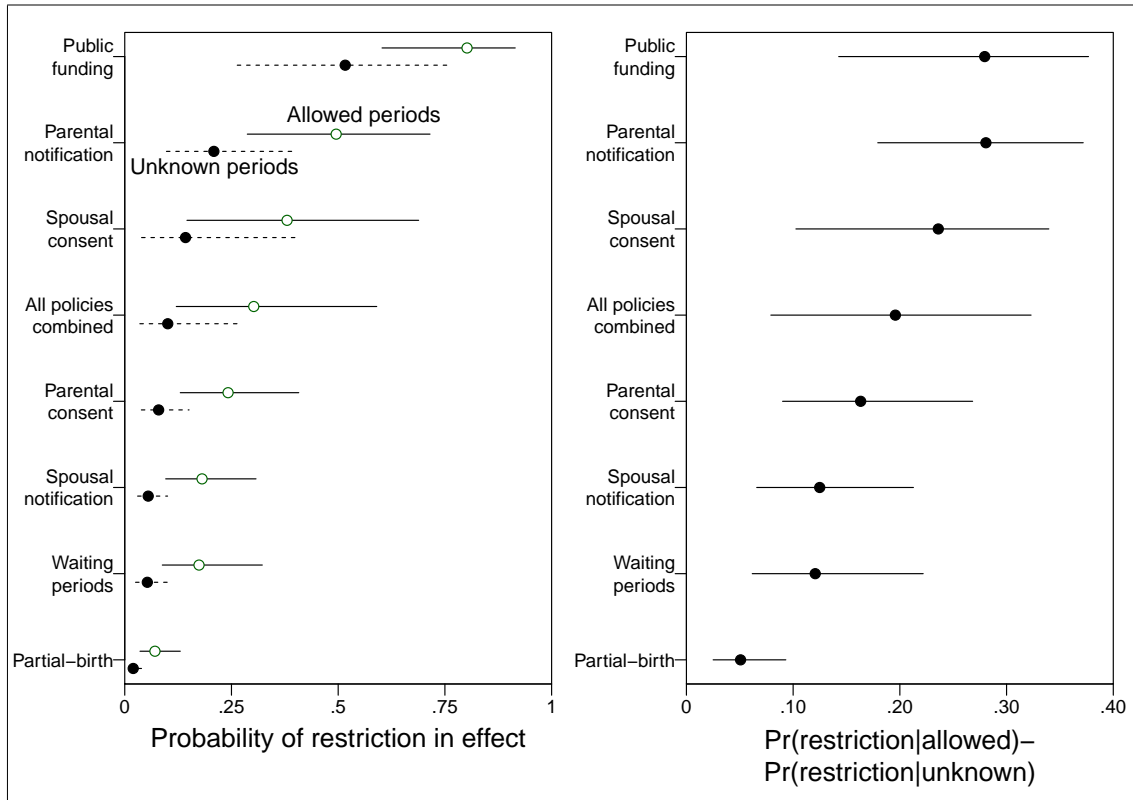
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Figure 4: The predicted probability of a restriction being in place, across allowed and unknown periods. The left plot depicts the predicted probability of a restriction being in place across allowed and unknown periods, for all seven policies individually, as well as for all policies combined. The horizontal lines depict 95% confidence intervals. The right plot in Figure 4 depicts the estimated difference *in the probability of a restriction, across the two conditions, along with 95% confidence intervals of those differences.*

a restriction being in effect (*ceteris paribus*) is always higher compared to banned periods (where, recall, it is zero). However, Figure 4 also shows that these differences are much smaller compared to the increased probability of a restriction during allowed periods.[30] For instance, the probability of a parental notification law being enacted by a state increases from .22 [.13, .37] during an unknown period to .51 [.33, .68] during an allowed period. The other polices show less sizable but still substantively large increases. Combining all policies, the probability of a restriction being in place increases from .09 [.03, .30] to .30 [.11, .58] when the level of constitutional protection shifts from unknown to allowed.

Finally, the right panel in Figure 4 depicts the estimated *difference* in the probability of a

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[30]Recall from Figure 3 that there are no allowed periods for spousal consent and notification laws. The estimates for these policies in Figure 4 (during allowed periods) are thus completely model-based.

restriction, across the two conditions. That is, for each policy (and for all policies combined), the point estimate depicts the probability of a restriction conditional on an allowed period (again fixing the other covariates at their means) minus the probability of a restriction conditional on an unknown period. The differences range from about 5 percentage points to about 30, and are thus substantively significant. The horizontal line depicts the 95% confidence interval of the difference across the two periods; the confidence intervals—while wide for some policies—always exclude zero, and thus all the differences are statistically greater than zero.

4.6   Courts and congruence

Having shown that courts significantly shape responsiveness of policy to opinion, I now examine how not accounting for the role of courts in altering the set of allowable policies may lead to inaccurate estimates of how well policy accords with majority opinion. In particular, I present a descriptive analysis of congruence. I define a state s as having policy p being congruent with opinion in year y if at least 50% of the state population favors a given restriction and it is in effect, or fewer than 50% favor a restriction and it is not in place, and 0 otherwise. (For simplicity, I ignore uncertainty here and just evaluate the point estimates of opinion.) As discussed in footnote 21, in most state-year-policy observations, support exceeds 50%, and thus the dependent variables of whether a restriction is in place and whether policy is congruent largely overlap. Nevertheless, a descriptive analysis of congruence is still useful for comparing these results to other studies of congruence.

Figure 5 depicts the congruence of policy and opinion. The horizontal axis depicts rates of congruence in the data. The vertical axis breaks down these rates by policy type; "all polices combined" (indicated by the shaded region) presents the aggregate rates across policies. The (blue) solid circles depict congruence across all periods; i.e. across the entire dataset. The (purple) open circles depict congruence when banned periods are excluded; that is, in allowed and unknown periods combined. Finally, the (green) triangles show rates of congruence just
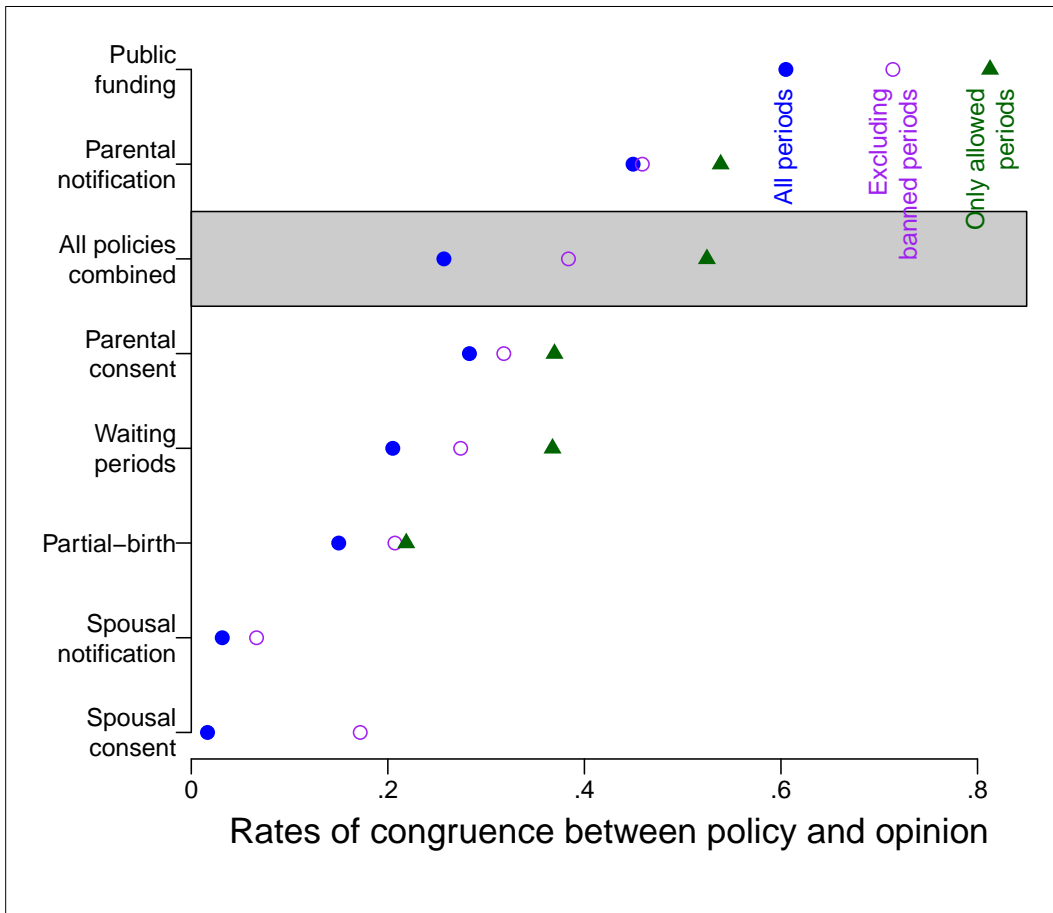
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Figure 5: The rates of congruence, by type of period selected for analysis. The horizontal axis depicts rates of congruence in the data. The vertical axis breaks down these rates by policy type; "all polices combined" (indicated by the shaded region) presents the aggregate rates across policies. The (blue) solid circles depict congruence across all periods; i.e. across the entire dataset. The (purple) open circles depict congruence when banned periods are excluded; that is, in allowed and unknown periods combined. Finally, the (green) triangles show rates of congruence just based on allowed periods.

based on allowed periods.

The figure makes clear that adjudication by courts affects conclusions regarding the degree to which abortion policy has been congruent with state-level majority opinion. Across all policies combined, the rate of congruence is only .26, meaning that for all state-policy-year combinations, policy has matched majority opinion only one out of four times. However, if we exclude banned periods—meaning we look only at periods where states *could* legally implement a restriction—congruence rises to .38. Finally, if we examine only observations during allowed periods congruences increases to .52. (Looking at the individual restrictions

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reveals a similar pattern.) To give this result some context, this proportion is very similar to an overall level of congruence (.48) that Lax and Phillips (2012, Table 1) find across all the policies they study. Obviously, courts are not the only factor affecting congruence, as there remains a large gap between policy and opinion in many states, even during allowed periods. Yet they clearly play an important role in shaping the extent to which policy is congruent with majority opinion.

5 Discussion and Conclusion

In any constitutional democracy, courts play an important role in establishing which types of policies are constitutionally permissible. In this paper I showed that the ability of federal and states courts to change this set of permissible policies has significant consequences for both state-level policy making and state-level representation.

These results have important implications for studying state-level representation—and illustrate how ignoring the role of courts in the policy-making process may lead to inaccurate or incomplete substantive conclusions. Consider the the results in Lax and Phillips (2012), who uncover what they call a "democratic deficit" in the correspondence between state-level public opinion and state-level policies, due to the large degree of incongruence in several policy domains. Implicit in their paper (and, as discussed earlier, most studies of state-level representation), is the notion that all of the policies under study *could theoretically be enacted by a state legislature*, as policies that have been ruled off-limits by courts are not included. For instance, the abortion policies that Lax and Phillips (2012) examine were either explicitly or implicitly ruled constitutional by the Supreme Court as of the time of their study (circa 2008). Had they included, say, spousal consent policies, which have been deemed unconstitutional since 1976, the level of policy-opinion congruence in the overall area of abortion would have declined significantly. Thus, with respect to abortion at least, the levels of congruence they identify likely constitutes an *upper bound*, as the rate of congruence across all abortion policies is likely lower.

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In addition, giving courts a role in state-policy making can alter the apportionment of "blame" for such a democratic deficit. It does not make sense to blame state legislatures for not implementing spousal consent or spousal notification policies, even though the have been majority preferred in many states, since those policies have been ruled unconstitutional since 1976 and 1992, respectively. Yet studies of state-level policy have not always recognized this distinction. For example, in constructing their measure of state policy liberalism over time, Caughey and Warshaw (2015) code several types of abortion restriction, and whether each state has implemented them over time. Their data, however, sometimes fails to distinguish between choices made by legislatures, and choices imposed by courts.[31]

To give one more example where judicial decisions over the set of allowable policies may confound conclusions regarding the correlates of state policy, consider Camobreco and Barnello (2008). They examine the relationship between abortion policy and public opinion over time (i.e. from 1983 to 2003), and find an increasing correlation over time. The authors attribute this change to the growing power of mass opinion over elite opinion. But the results in this paper suggest that their finding could simply result from the fact the set of allowable policies has expanded significantly since the early 1980s (recall Figure 1), thereby allowing for greater matching between opinion and policy over time.

Given that this paper has focused on a single policy area, it is worth speculating how widely applicable are the concerns I have raised about omitting courts from the study of state-level representation. On one end, there are matters of state law (such as tort law) where federal courts will have little to no role in establishing the legal parameters for state policy— though, of course, state courts will still play an important part in establishing levels of

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[31]For example, New Jersey is coded as having full Medicaid funding for abortions since 1980, and these observations are used to estimate that state's overall policy liberalism. However, this policy exists (at least in part) because a state court struck down the state's ban on funding in 1982, and so the ban was judicially imposed. (Note that abortion restrictions comprise a small percentage of the overall number of state policies that Caughey and Warshaw (2015) examine, and so the force of my point is likely more conceptual than practical.)

protections for individuals. On the other end, federal laws may preempt state laws, meaning that Congress may serve as the effective establisher of a federal law (subject to the extent, of course, that such laws are not struck down by federal courts). In the middle, however, lie a range of issues where both federal and state courts will jointly interpret the U.S. and state constitutions, including such important and salient issues as criminal law, gay rights, labor law, and gender discrimination. As such, the theoretical and empirical framework I have employed in this paper could easily be an extended to a wide range of important issues. In particular, the version of MRP employed in this paper could be employed to a study a wide range of issues where public opinion is likely to be correlated across closely-related policies.

From a substantive perspective, the results in this paper should not lead to the conclusion that the introduction of constitutional floors by federal and state courts always *hinder* state-level representation. As several studies have shown shows, in many circumstances—such as when the legislative status quo in a given state lags behind changes in public opinion—courts can actually *improve* representation by shifting policy towards what state majorities prefer (see e.g. Klarman 1997, Whittington 2005, Kastellec 2016*a*). These studies, combined with the results in this paper, collectively show that the effect of judicial review and judicial decision on state-level representation is ambiguous—the power of courts in the United States is such that the actions of judges can have both representation-*enhancing* and representation-*reducing* effects. Evaluating this question requires careful analysis of the contexts in which courts are acting.

Moving forward, one context is the extent to which one would expect state lawmakers to fully comply with judicial decisions. Rather than assuming perfect compliance with federal and state court determinations of allowable policies, one could examine the conditions under which state lawmakers may attempt to circumvent them. Alternatively, state legislators may enact statutes that are clearly unconstitutional—and thus certain to be overturned by state and/or federal courts—in an effort to placate constituents who favor such policies. Another

important context is the nature of judicial incentives. Whereas federal judges enjoy life tenure, most state court judges face re-election or re-appointment, and thus their incentives to strike down state law may be directly affected by their popularity. Relatedly, whereas this paper does not study federal and state courts as strategic actors, one could allow judges' determination of the set of allowable policies to be influenced by the distribution of opinion— both within and across states. These are a few additional avenues through which courts can be further incorporated into the study of state-level policy representation.

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Appendix

This appendix provides information on the data and measures used in the paper.

A-1   Descriptive statistics

This section provides descriptive statistics. Table A-2 gives summary statistics across the entire dataset. (There are 12,900 state-year-policy observations). Table A-3 breaks down the data by the level of constitutional protection, providing summary statistics across allowed, unknown and banned periods in the data. Finally, Table A-4 provides summary statistics across each of the seven policies. Note that the measure of *state income* is median state income divided by 10, and the measure of *state population* is actual state population divided by 10,000.

Variable	Mean	SD	Min	Max
Restriction in effect	0.26	0.44	0.00	1.00
State-level opinion	72.08	11.76	36.60	92.71
Allowed period	0.43	0.50	0.00	1.00
Unknown period	0.34	0.47	0.00	1.00
Banned period	0.23	0.42	0.00	1.00
Religious adherence rate	0.54	0.12	0.25	0.85
Initiative process	1.96	2.26	0.00	7.00
Democratic women	0.11	0.06	0.00	0.36
Democratic governor	0.53	0.50	0.00	1.00
Unified Dem. legislature	0.49	0.50	0.00	1.00
State income	3274.18	1377.91	797.10	6805.90
State population	523.27	574.53	33.15	3824.85

Table A-2: Descriptive statistics, full data.

Variable	Banned periods (n=4,356)				Unknown periods (n=2,988)				Allowed periods (n=5,556)			
	Mean	SD	Min	Max	Mean	SD	Min	Max	Mean	SD	Min	Max
Restriction in effect	0.01	0.09	0.00	1.00	0.12	0.33	0.00	1.00	0.53	0.50	0.00	1.00
State-level opinion	65.70	11.10	40.96	90.84	76.03	10.65	36.60	92.71	74.95	10.73	45.68	92.20
Religious adherence rate	0.54	0.12	0.25	0.85	0.52	0.12	0.29	0.83	0.54	0.12	0.25	0.85
Initiative process	2.07	2.29	0.00	7.00	1.92	2.27	0.00	7.00	1.90	2.24	0.00	7.00
Democratic women	0.12	0.06	0.00	0.36	0.08	0.05	0.00	0.30	0.12	0.06	0.00	0.36
Democratic governor	0.50	0.50	0.00	1.00	0.63	0.48	0.00	1.00	0.49	0.50	0.00	1.00
Unified Dem. legislature	0.47	0.50	0.00	1.00	0.61	0.49	0.00	1.00	0.44	0.50	0.00	1.00
State income	3658.99	1258.54	934.60	6805.90	1835.89	773.34	797.10	5277.90	3745.99	1180.64	934.60	6805.90
State population	577.08	653.07	37.07	3824.85	444.92	483.93	33.15	3346.05	523.21	548.27	38.04	3824.85

Table A-3: Descriptive statistics, by the level of constitutional protection.

Variable	Mean	SD	Min	Max
Public funding				
Restriction in effect	0.63	0.48	0.00	1.00
State-level opinion	58.41	6.21	42.74	75.40
Allowed period	0.73	0.44	0.00	1.00
Unknown period	0.12	0.32	0.00	1.00
Banned period	0.15	0.36	0.00	1.00
Religious adherence rate	0.54	0.12	0.25	0.85
Initiative process	1.96	2.26	0.00	7.00
Democratic women	0.11	0.06	0.00	0.36
Democratic governor	0.54	0.50	0.00	1.00
Unified Dem. legislature	0.50	0.50	0.00	1.00
State income	3188.65	1371.49	797.10	6805.90
State population	518.92	569.26	33.15	3824.85
Parental consent				
Restriction in effect	0.28	0.45	0.00	1.00
State-level opinion	79.44	4.24	67.76	89.67
Allowed period	0.67	0.47	0.00	1.00
Unknown period	0.22	0.42	0.00	1.00
Banned period	0.11	0.31	0.00	1.00
Religious adherence rate	0.54	0.12	0.25	0.85
Initiative process	1.96	2.26	0.00	7.00
Democratic women	0.11	0.06	0.00	0.36
Democratic governor	0.54	0.50	0.00	1.00
Unified Dem. legislature	0.50	0.50	0.00	1.00
State income	3188.65	1371.49	797.10	6805.90
State population	518.92	569.26	33.15	3824.85
Parental notification				
Restriction in effect	0.45	0.50	0.00	1.00
State-level opinion	84.34	3.53	74.82	92.71
Allowed period	0.76	0.43	0.00	1.00
Unknown period	0.22	0.42	0.00	1.00
Banned period	0.02	0.14	0.00	1.00
Religious adherence rate	0.54	0.12	0.25	0.85
Initiative process	1.96	2.26	0.00	7.00
Democratic women	0.11	0.06	0.00	0.36
Democratic governor	0.54	0.50	0.00	1.00
Unified Dem. legislature	0.50	0.50	0.00	1.00
State income	3188.65	1371.49	797.10	6805.90
State population	518.92	569.26	33.15	3824.85
Partial-birth bans				
Restriction in effect	0.15	0.36	0.00	1.00
State-level opinion	68.39	5.56	55.62	82.57
Allowed period	0.28	0.45	0.00	1.00
Unknown period	0.24	0.43	0.00	1.00
Banned period	0.47	0.50	0.00	1.00
Religious adherence rate	0.54	0.13	0.25	0.85
Initiative process	1.96	2.26	0.00	7.00
Democratic women	0.14	0.07	0.03	0.36
Democratic governor	0.43	0.50	0.00	1.00
Unified Dem. legislature	0.37	0.48	0.00	1.00
State income	4414.50	864.46	2488.00	6805.90
State population	581.18	639.53	47.37	3824.85

Variable	Mean	SD	Min	Max
Spousal consent				
Restriction in effect	0.02	0.13	0.00	1.00
State-level opinion	56.96	6.39	36.60	74.91
Allowed period	0.00	0.00	0.00	0.00
Unknown period	0.10	0.29	0.00	1.00
Banned period	0.90	0.29	0.00	1.00
Religious adherence rate	0.54	0.12	0.25	0.85
Initiative process	1.96	2.26	0.00	7.00
Democratic women	0.11	0.06	0.00	0.36
Democratic governor	0.54	0.50	0.00	1.00
Unified Dem. legislature	0.50	0.50	0.00	1.00
State income	3188.65	1371.49	797.10	6805.90
State population	518.92	569.26	33.15	3824.85
Spousal notification				
Restriction in effect	0.03	0.17	0.00	1.00
State-level opinion	73.37	5.28	59.82	86.86
Allowed period	0.00	0.00	0.00	0.00
Unknown period	0.47	0.50	0.00	1.00
Banned period	0.53	0.50	0.00	1.00
Religious adherence rate	0.54	0.12	0.25	0.85
Initiative process	1.96	2.26	0.00	7.00
Democratic women	0.11	0.06	0.00	0.36
Democratic governor	0.54	0.50	0.00	1.00
Unified Dem. legislature	0.50	0.50	0.00	1.00
State income	3188.65	1371.49	797.10	6805.90
State population	518.92	569.26	33.15	3824.85
Waiting periods				
Restriction in effect	0.20	0.40	0.00	1.00
State-level opinion	81.61	4.65	68.57	92.56
Allowed period	0.50	0.50	0.00	1.00
Unknown period	0.25	0.43	0.00	1.00
Banned period	0.25	0.43	0.00	1.00
Religious adherence rate	0.54	0.12	0.25	0.85
Initiative process	1.96	2.26	0.00	7.00
Democratic women	0.11	0.06	0.00	0.36
Democratic governor	0.54	0.50	0.00	1.00
Unified Dem. legislature	0.50	0.50	0.00	1.00
State income	3188.65	1371.49	797.10	6805.90
State population	518.92	569.26	33.15	3824.85

Table A-4: Descriptive statistics, by policy. Note that the number of observations (that is, "state-year-policies") for each policy is 2,000, except for partial-birth bans, where the number is 900.

## A-2 Measuring opinion of separate abortion restrictions

To develop public opinion measures on the seven abortion policies analyzed in the paper, I searched the *iPoll* archives (available at `ropercenter.cornell.edu/CFIDE/cf/action/ipoll/index.cfm`). I used a variety of search terms to look for questions that specifically asked about opinion on a given policy, and *not* just general opinion on abortion policy. For example, a typical question about opinion on spousal notification was worded: "Do you favor or oppose each of the following.... A law requiring that the husband of a married woman be notified if she decides to have an abortion." To give another example, a typical question on waiting periods asked: "Would you favor or oppose requiring a 24-hour waiting period for women seeking an abortion before the abortion could take place?"[32]

Only polls in which the underlying data was available and that data contained the state of residence for respondents were retained. I also coded demographic information for each respondent, including their race, age, gender, and level of education. This procedure left me with 60 unique, usable polls—the first was conducted in 1977, the last in 2011. For computational simplicity, I drop respondents with missing data on any geographic-demographic predictors, or who did not answer "yes" or "no" to the given policy question. Across all seven policies, the missing rate in terms of the policy questions was less than 10% for every policy except spousal consent, for which the rate was 15%. This procedure left me with 98,051 individual responses across all policy areas.

To estimate state-level opinion on the seven types of restrictions from 1973 to 2012, I develop a model that pools information across time and policies. Figure A-6 gives a sense of when the polls were conducted, along with raw national opinion for each issue over time. Specifically, for each policy, the tick marks depict the mean level of support for the restriction; ticks marks only appear in years in which opinion on a given policy was polled. The figure makes clear that polls on each policy were conducted irregularly over time; for most policies,

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[32]A complete inventory of poll information and question wording is available upon request.

Figure A-6: For each policy, the tick marks depict the mean level of support for the restriction; ticks marks only appear in years in which opinion on a given policy was polled.
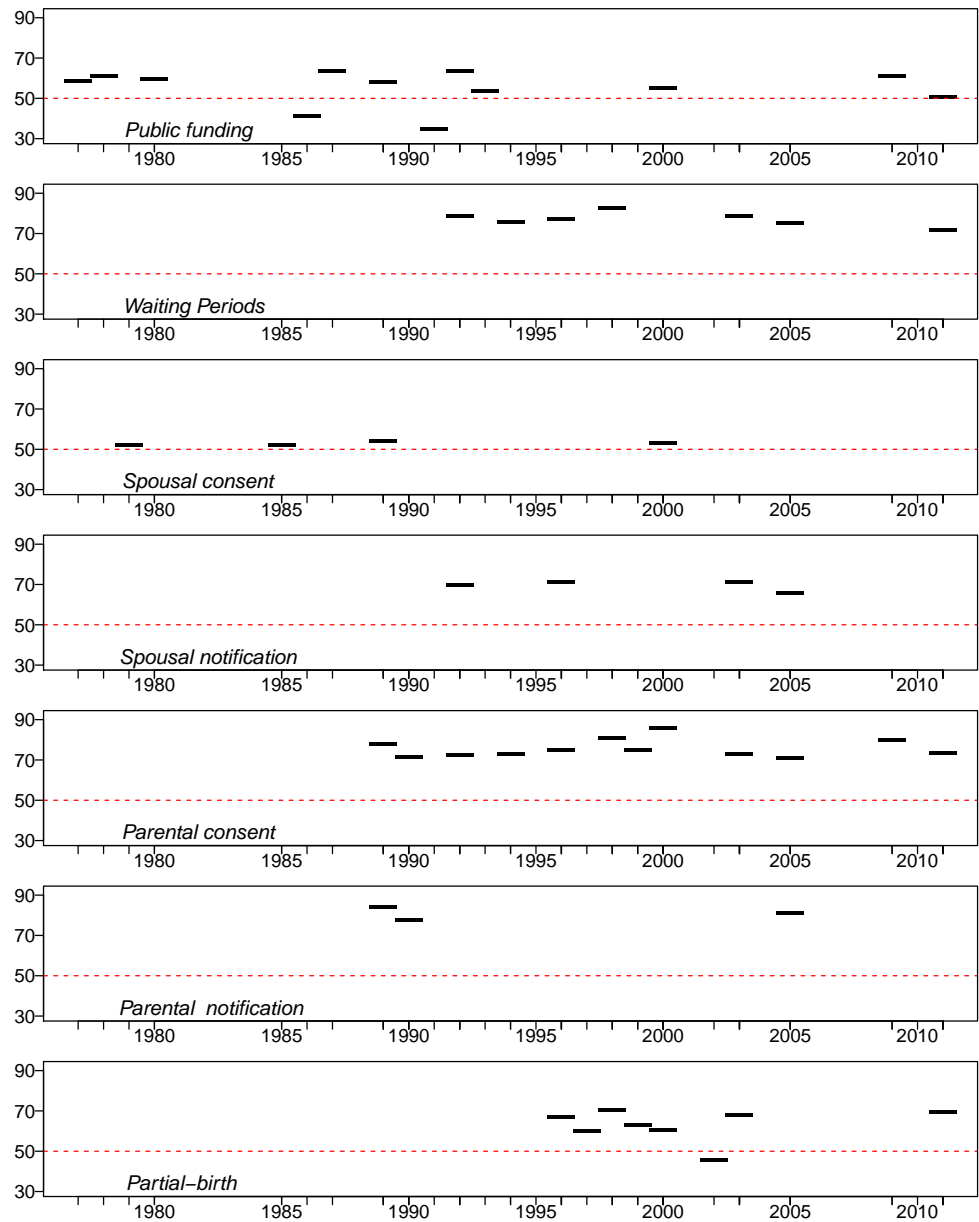
polls were not conducted until around 1990.

To account for this, I estimate a model that assumes opinion on abortion restrictions is correlated across both policies and time. Formally, let i denote individual response, and let $y_i = 1$ denote a response in favor of a given restriction (I coded the data such that responses in favor of a given restriction are always coded 1). Let n denote the number of respondents in the data. Let p, s, a, and e denote, respectively, indices for policies, states, age, and education. Let f denote the interaction of gender and race; this variable takes on one of

four values: female black, female white, male black, and male white. Next, let t denote a time trend; this variable takes on the value of the year the poll was taken minus 1977 (the year of the first poll in the dataset). For computational efficiency, I center this variable by subtracting each observation from the mean in the dataset, such that the average value is zero. Denote the Caughey and Warshaw measure of liberalism as cw, and the proportion of Catholics by state as $cath$.

I estimated the following model:

$$\Pr(y_i = 1) = \text{logit}^{-1}(\beta^0 + \beta^{time} \cdot t_i$$
$$+ \alpha_{f[i]}^{female,race} + \alpha_{a[i]}^{age} + \alpha_{e[i]}^{edu}$$
$$+ \delta_{s[i]}^{state} + \theta_{s[i]}^{state} \cdot t$$
$$1.5 \text{ in} + \phi_{p[i]}^{policy} + \zeta_{p[i]}^{policy} \cdot t), \text{ for } i = 1, ..., n$$

The random effects are modeled as follows:

$$\alpha_f^{female,race} \sim N(0, \sigma_{female,race}^2), \text{ for } f = 1, ..., 4$$

$$\alpha_a^{age} \sim N(0, \sigma_{age}^2), \text{ for } a = 1, ..., 4$$

$$\alpha_e^{edu} \sim N(0, \sigma_{edu}^2), \text{ for } e = 1, ..., 4$$

$$\begin{pmatrix} \delta_s \\ \theta_s \end{pmatrix} \sim N \left(\begin{pmatrix} \gamma_0^\delta + \gamma_1^\delta cw + \gamma_2^\delta cath \\ \gamma_0^\theta + \gamma_1^\theta cw + \gamma_2^\theta cath \end{pmatrix}, \begin{pmatrix} \sigma_\delta^2 & \rho\sigma_\delta\sigma_\theta \\ \rho\sigma_\delta\sigma_\theta & \sigma_\theta^2 \end{pmatrix} \right), \text{ for } s = 1, ..., 50$$

$$\begin{pmatrix} \phi_p \\ \zeta_p \end{pmatrix} \sim N \left(\begin{pmatrix} \mu_\phi \\ \mu_\zeta \end{pmatrix}, \begin{pmatrix} \sigma_\phi^2 & \rho\sigma_\phi\sigma_\zeta \\ \rho\sigma_\phi\sigma_\zeta & \sigma_\zeta^2 \end{pmatrix} \right), \text{ for } p = 1, ..., 7$$

The α's denote coefficients that only have varying intercepts. δ and θ denote respectively the varying intercepts and slopes for states, while ϕ and ζ do the same for issues. The ρ terms capture the between-group correlations for states and policies. Finally, due to the inclusion of the state-level predictors, the model does not force the state intercepts and slopes to vary linearly with time (see Gelman and Hill 2006, 314).

I estimated the model in a fully Bayesian manner using the program Stan, as called

from R, using the `rstanarm` package (Gabry 2016, Stan Development Team 2016a, 2016b). I used weakly informative N(0,5) priors for each parameter. I ran the model on four separate chains for 500 iterations, and saved the last 250 iterations on each, to form a posterior sample size of 1,000. Standard diagnostics indicated good convergence among the four chains. For every parameter, the potential scale reduction factor was less than 1.02, which indicates good mixture among the chains (Gelman and Rubin 1992). The effective sample size of the parameters ranged from 132 to 1,000; the minimum is well above the recommended number (Gelman et al. 2014); and for most parameters the effective sample size is 1,000.[33]

Post-stratification   The second stage of MRP estimates requires post-stratifying the results from the first-stage model, according to the true population proportion of "demographic-state" types. To do this, I use the population frequencies from the Census Public Use Microdata Area (PUMA) data for 1980, 1990, and 2000. I augmented this with data from the 2009 Census American Community Survey (the 2010 PUMA sample was never released). To estimate frequencies between these years, I use simple linear interpolation. (For years after 2009 in the opinion data, I simply use the 2009 data.) The resulting combined dataset gives the estimated population frequency for every demographic-state type for every year from 1970 to 2012. (The Caughey-Warshaw estimates of state liberalism and the data on church affiliation is then merged with this data).

There are 3,200 combinations of demographic and state values: 50 states × 4 age groups × 4 education groups × 4 race-gender combinations. From the individual-response model, I first calculate the predicted probabilities of support for each demographic-state type, for every policy and every year. There are thus 3,200 demographic-geographic types × 7 policies × 40 years = 896,000 cells—which we can denote "demographic-state-year-issue" types—in

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[33]As a robustness check, I estimated the model using the `GLMER` command in R (Bates 2005), which "approximately" Bayesian and only returns point estimates, rather than full posterior distributions. The median parameter estimates from the Stan model were very similar to the point estimates returned by `GLMER`. However, the fully Bayesian approach naturally provides estimates of uncertainty, and so I rely on those estimates throughout.

which to make a prediction. Let j denote a cell from the set of "demographic-state-year-issue" types, each of which has a predicted value of supporting a given restriction at a given point in time. Denote this prediction $\hat{\lambda}$, which comprises a matrix of 896,000 rows and 1,000 columns (one for each draw from the posterior distribution).

The final step is to post-stratify these predictions using the estimated population frequencies from the combined Census data, which we can denote N_j. Let $\hat{\omega}$ denote an estimate of support in a given state s, for each policy (p) and year (y); $\hat{\omega}$ is a matrix comprising 14,000 rows (50 states $\times$ 7 policies $\times$ 40 years) and 1,000 columns.[34] Then, $\hat{\omega}_{s_{\{y,p\}}} = \frac{\sum_{j \in s_{\{y,p\}}} N_j \hat{\lambda}_j}{\sum_{j \in s_{\{y,p\}}} N_j}$. The result is 1,000 estimates of opinion for every "state-year-issue" combination. I use the median estimate from the 1,000 draws to summarize the distribution of each combination.[35] For example, the median estimated support (across all simulations) for parental consent laws in New York in 1990 is 73%, with a 95% confidence interval of [71%, 75%].

A-2.1 Validity checks

As a simple validity check, it is useful to compare the MRP estimates to those produced by disaggregation—that is, simply taking the mean level of opinion in each state for every policy in every year. In these checks I focus solely on the point estimates of support and ignore their uncertainty.

Figure A-7A depicts a scatterplot of the estimates for every state-year-policy combination that appears in the data (i.e. combinations that are completely model-dependent are dropped). The overall correlation between the disaggregation and MRP estimates is .64 (the solid line is a 45-degree line). Of course, for many combinations with small numbers of respondents, the disaggregation estimates will suffer from large amounts of measurement error (25% of the disaggregation estimates in Figure A-7A are based on fewer than 10 respondents,

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[34] As explained in the paper, I drop observations for partial-birth bans before 1995, since that was the first year such a ban was implemented. This leaves me with 12,900 rows, or state-year-policy combinations.

[35] The correlation between the estimates using the mean of the draws and the estimates based on the median is .94.
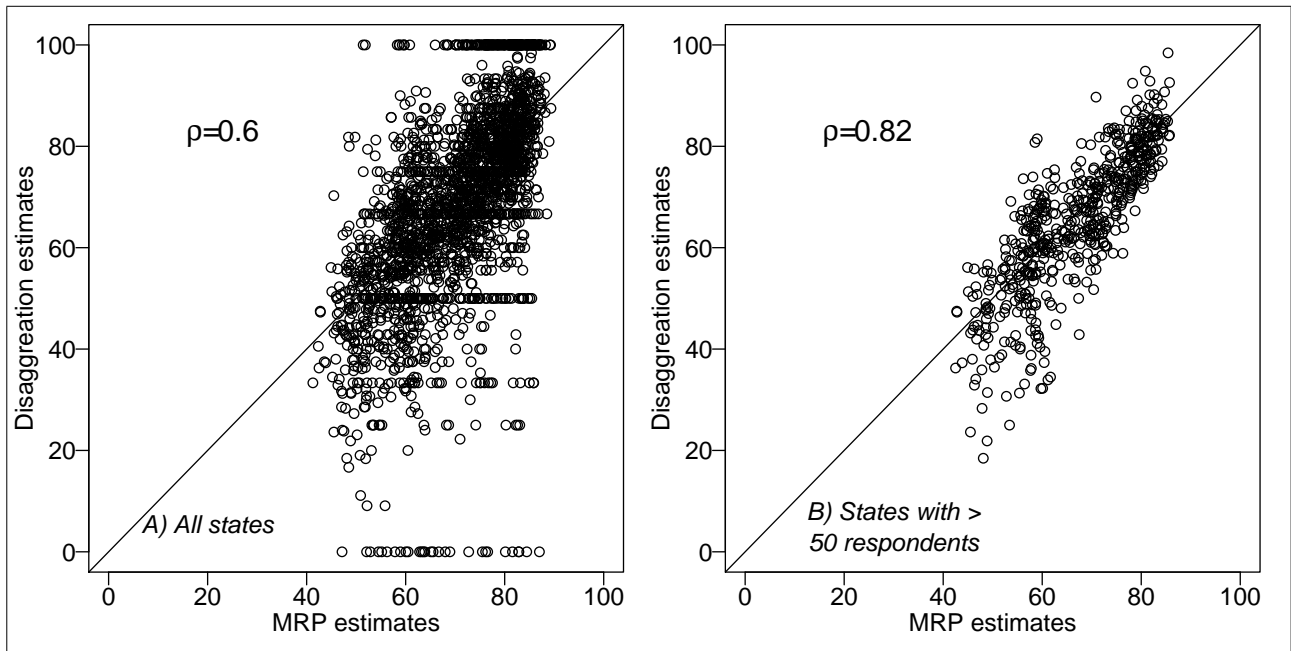
Figure A-7: Panel A plots the correlation of the MRP and disaggregation estimates for every state-year-policy combination that appears in the data. Panel B plots the correlation only among state-year-policy combinations with at least 50 respondents.

and 47% are based on fewer than 20 respondents); this can clearly be seen in the cluster of points at 0 and 100. A more useful comparison is to look at state-year-policy combinations with at least 50 respondents; most such combinations occur in the states with the largest populations, such as California, New York and Texas. Figure A-7B presents a scatterplot of the MRP and disaggregation estimates among such combinations. The correlation, at .83, is significantly stronger.

As a second validity check, I compare the MRP estimates to those generated by Pacheco (2011; 2014) (discussed above). Because Pacheco estimates a single dimension of abortion support, to make my estimates comparable I take the mean level of opinion across all seven policies for every state-year combination. We would not necessarily expect a perfect correlation between the two, as Pacheco measures general support for the legality of abortion, whereas I measure support for specific restrictions. (In addition, I model temporal dynamics in a different manner.) Nevertheless, both measures should tap into a common dimension of opinion on abortion policy. Figure A-8 presents a scatterplot of the two estimates—I rescale
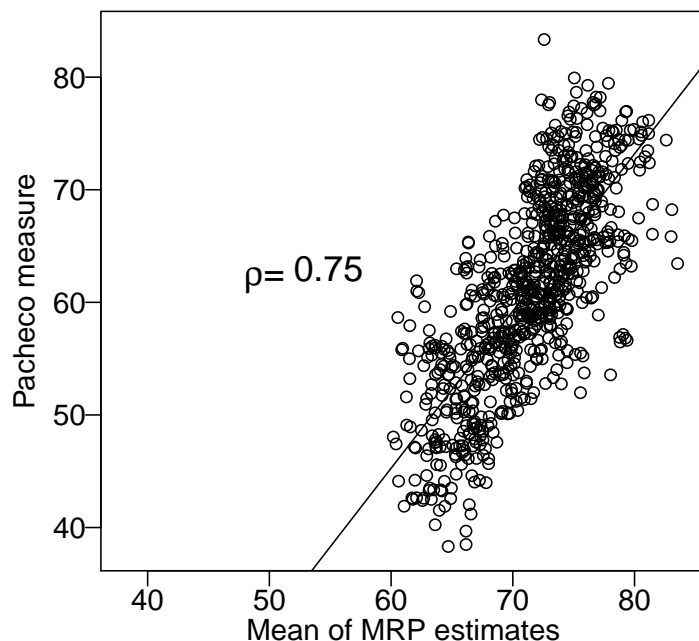
Figure A-8: A scatterplot of the mean level of opinion across all seven policies for every state-year combination versus Pacheco's estimates of support for the legality of abortion. The solid line depicts the estimated bivariate regression line.

her measure such that higher values indicate lack of support for the legality of abortion. The solid line depicts the estimated bivariate regression line. The correlation between the two measures is .75, which helps validate the MRP estimates.

As a third validity check, I compare the estimates from presidential election years (again using the mean opinion across all seven policies in each state) to the Republican candidate's share of the two-party vote in every presidential election from 1976 to 2012. As has been well documented, in the 1960s and 1970s, opinion on abortion was not neatly sorted by partisanship; polarization in support for abortion restrictions among Democrats and Republicans (at both the mass and elite level) has occurred gradually over time (Adams 1997, Carmines, Gerrity and Wagner 2005, Noel 2013, 158). Accordingly, the correlation between estimated support for abortion restrictions and presidential vote breakdowns by party should increase over time. Figure A-9 shows exactly that. In 1976 and 1980, the correlation was basically zero. Starting in 1984, a weak correlation developed (.33); it increased to a moderate size in 1992, 1996, and 2000, and has been above .75 in the 2004,2008, and 2012 presidential
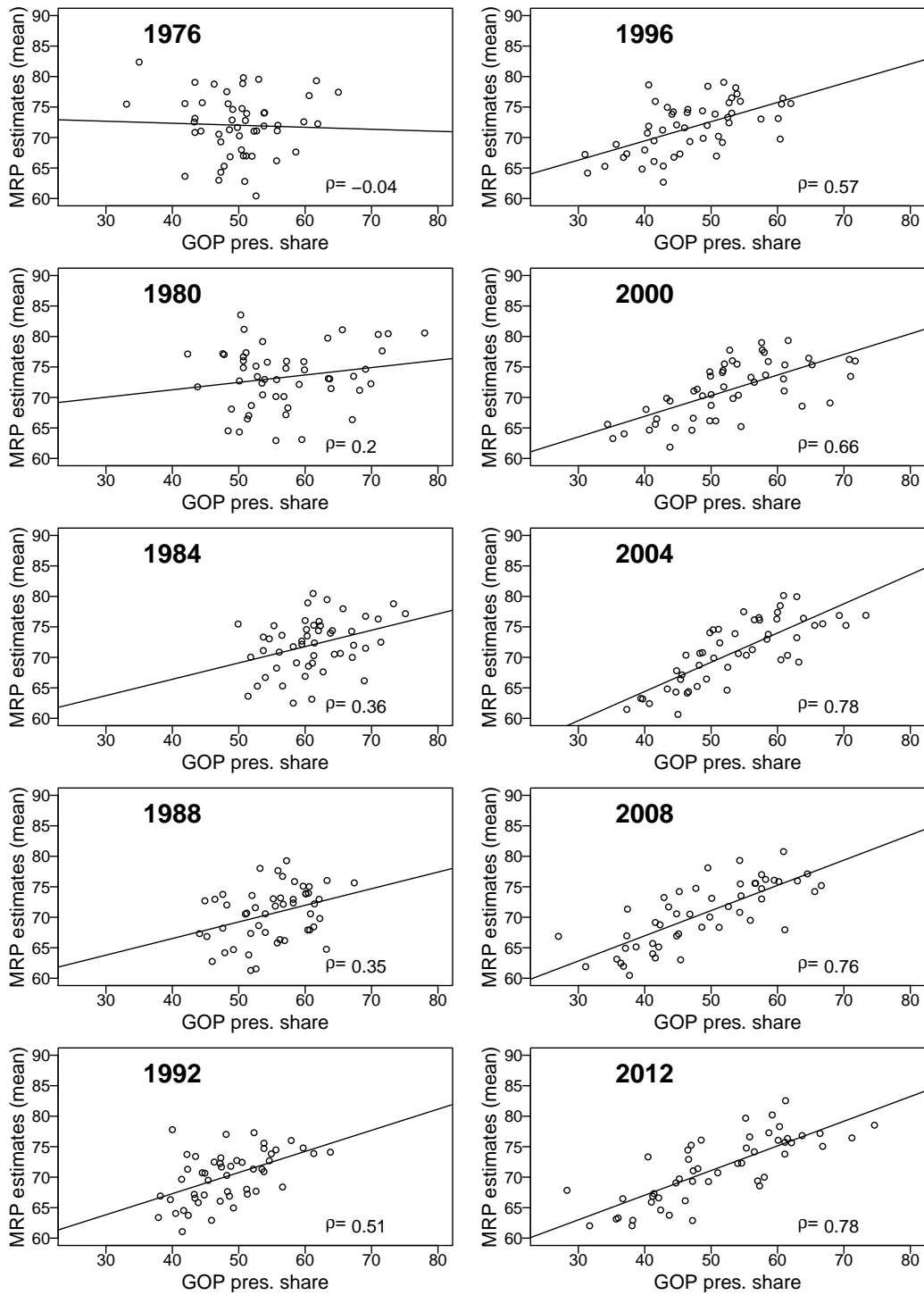
Figure A-9: Mean of MRP estimates for support for abortion restrictions versus Republican percent of the two-party presidential vote in each state, from 1976 to 2012.

elections.

A-3 State policy

To measure state policy across all seven policy domains, I relied on a variety of sources, including:

- The *Family Planning/Population Reporter*, published by Planned Parenthood several times per year from 1973-1981 and listing all abortion statutes passed in state legislatures.

- *Reporter on Human Reproduction and the Law*, published by Legal-Medical Studies several times per year from 1971 until the 1990s and listing many abortion statutes passed in state legislatures.

- The judicial decisions reviewing abortion statutes (see below) often list the year the statute in question was adopted, and always indicate when a court decision invalidates a statute.

- NARAL has published its "Who Decides" report nearly every year since 1989; the 1989 report cites the most recent update to state abortion laws for many types of abortion restriction.

- For 2001-2012, the Guttmacher Institute has published "State Policies in Brief"—these fact sheets list which states enforce which type of restriction.

In addition, several of the abortion restrictions were coded independently by Caughey and Warshaw (2015), Hinkle (2015), and Kreitzer (2015). Where possible I checked my codings against theirs, and sought additional sources to resolve any discrepancies.

For each state-year, a potential abortion policy was given one of four classifications:

- "no restriction"—There is no law of this type in place.

- "active"—A law is in place and currently being enforced.

- "banned"—Either a court has stepped in to permanently stop this particular law from being enforced, or a court has invalidated a similar law, so this state's law is presumably also invalid and not enforced even though it hasn't been specifically challenged in court.[36]

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[36]Note that this possibility is related to the choice of whether to classify circuit court decisions as self-executing in all states in a given circuit, when a decision is reached regarding the constitutionality a particular state's restriction (see footnote 8 in the paper.) If it is assumed that such decisions are self-executing in each state, then any restrictions in other states in the circuit are presumably invalid. If it is assumed that such

If a restriction was only temporarily enjoined by a court (usually pending a hearing and decision by that court), I coded the policy as active for that state-year. If the data source lists a law as simply "not enforced" or "deemed unenforceable," then I coded it as "banned" for that state-year.

A-4   Judicial decisions

In this section I describe how I coded the constitutional level of protection for each abortion restriction, as determined by state and federal courts.

A-4.1   Determining the Supreme Court's doctrine on the seven abortion policies

In this subsection I briefly describe the relevant cases decided by the U.S. Supreme Court, for each restriction.

Bans on public funding   In three decisions in 1977—*Beal v. Doe* (432 U.S. 438), *Maher v. Roe* (432 U.S. 464), and *Poelker v. Doe* (432 U.S. 519)—the Court respectively upheld the following policies as constitutional: banning Medicaid funds for non-therapeutic abortions, limiting Medicaid funds to medically necessary abortions, and denying funds for abortions in public hospitals. In the 1980 case of *Harris v. McRae* (448 U.S. 297) the Court respectively upheld the "Hyde Amendment," which barred the use of federal funds to pay for an abortion except in the cases of rape, incest, or to save the life of the woman. Also that year, in *Williams v. Zbaraz* (448 U.S. 358), the Court upheld a statute that prohibited state medical assistance payments for abortions except necessary to save the life of the woman.

Waiting periods   The Supreme Court ruled waiting periods unconstitutional in 1983 in *City of Akron v. Akron Center for Reproductive Health, Inc.* and then found them constitutional in 1992 in *Planned Parenthood of Southeastern Pennsylvania v. Casey.*

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decisions are *not* self-executing in each state, then such restrictions are potentially active until either the circuit evaluates the other states' restrictions, or until the U.S. Supreme Court weighs in on a given issue. Recall that the main results are robust to either assumption–see Section A-5 below.

Spousal consent provisions   The Court ruled unconstitutional a spousal consent law in 1976 in *Danforth v. Planned Parenthood of Central Missouri* (428 U.S. 52). It upheld this decision in 1992 in *Planned Parenthood of Southeastern Pennsylvania v. Casey*.

Spousal notification provisions   The Court did not directly address the question of spousal notification provisions until 1992, when it ruled them unconstitutional in *Planned Parenthood of Southeastern Pennsylvania v. Casey*.

Parental consent   In a series of decisions between 1976 and 1983, the Court incrementally articulated its doctrine on parental consent laws. In 1976 in *Danforth v. Planned Parenthood of Central Missouri* (428 U.S. 52), the Court ruled that a consent provision must include a judicial bypass option. In 1979 in Belloti v. Baird (443 U.S. 622), the Court struck down a statute that allowed minors to pursue a judicial bypass only after her parents had already denied consent. In 1983, in *Planned Parenthood Ass'n of Kansas City, Mo., Inc. v. Ashcroft* (462 U.S. 476), the Court upheld a consent provision with a judicial bypass. The Court then affirmed this ruling in *Casey* in 1992.

Parental notification   The Court ruled parental notification laws constitutional in the 1981 case of *H.L. v Matheson* (450 U.S. 398).

Partial-birth abortion   In the 1999 case of *Stenberg v. Carhart* (530 U.S. 914), the court struck down a state partial-birth abortion statute as unconstitutional. In 2007, the Court upheld a *federal* ban on partial-birth abortion in the case of *Gonzalez v. Carhart* (550 U.S. 124). While the Court did not explicitly overrule *Stenberg v. Carhart*, the holding in *Gonzalez* seems to imply the constitutionality of similar state partial-birth bans. I have thus coded the 2008-2012 period as allowed.

A-4.2   Data on lower federal court and state court challenges

Next, I describe how I coded relevant lower federal court decisions and state court decisions. As explained in Section 4.1 in the paper, whenever the U.S. Supreme Court has clearly

banned or allowed a restriction, that determines the federal floor of protection, which is applicable to all states. I periods where the Supreme Court's doctrine is unknown, lower federal courts (i.e. district courts and circuit courts) may rule a given restriction constitutional or unconstitutional. Finally, during periods where the U.S. Supreme Court has allowed a given restriction, state supreme court judges may nevertheless deem then unconstitutional based on their interpretation of a given state constitution.

As part of a larger project, I sought to collect data on every challenge to a state or federal abortion statute that was heard in a federal or state court between 1973 and 2012. I used Westlaw, and employed the following search: "4 abortion" and constitution! unconstitution!" 4 is the Westlaw key number for Abortion and Birth Control. Each search result was examined to determine if the case involved a constitutional challenge to an abortion statute. "Regular" abortion cases—such as minors suing to have an adverse parental consent bypass determination overturned by a higher court—were discarded. For each case that did meet the criterion of a constitutional challenge, I coded the issues at stake, and how the Court ruled on each issue. For simplicity, if the Court struck down any part of the statute, I coded the adjudicated restriction as "banned." For this paper, I retained only challenges involves the seven restrictions analyzed in the paper. Based on the year of each decision, I matched the outcome of these cases with the relevant Supreme Court doctrine at the time of the decision, in order to adjust the level of protection in the states affected by a given decision.[37]

A-5 Robustness checks

These section reports the results of two robustness checks, as discussed in footnote 8 in the paper. First, Table A-5 replicates Table 1 in the paper, but employs a measure of the level of constitutional protection in which it is assumed that decisions by the U.S. Courts of Appeals are binding on all states in a given circuit. Second, Table A-6 replicates Table 1,

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[37]In a small number of cases, I found relevant lower federal and state judicial decisions referenced in the policy sources described above that were not captured by the Westlaw search.

employing a measure of the level of constitutional protection that is based solely on the U.S. Supreme Court's doctrine. The key results reported in Section 4.4 hold across the models presented in Table A-5 and Table A-6.

	(1)	(2)	(3)	(4)	(5)	(6)
Intercept	-2.19	-2.23	-1.62	-1.69	-2.54	-3.24
	[-3.36, -1.10]	[-3.36, -1.07]	[-3.27, .04]	[-2.46, -.63]	[-4.01, -.96]	[-4.45, -1.97]
Allowed period	1.42	1.39	1.17	1.16	1.95	2.47
	[1.10, 1.74]	[1.05, 1.72]	[.85, 1.46]	[.88, 1.46]	[-.61, 3.80]	[.64, 4.18]
State-level opinion		-.33	3.21	.58	1.75	-.07
		[-1.73, 1.03]	[2.54, 3.90]	[-.19, 1.44]	[.89, 2.74]	[-.88, .99]
Opinion × allowed period					2.62	1.26
					[1.40, 3.78]	[.04, 2.63]
Religious adherence rate		1.24		.87		.88
		[.67, 1.75]		[.70, 1.01]		[.70, 1.04]
Initiative process		.49		.31		.32
		[-.49, 1.49]		[.17, .43]		[.18, .45]
Democratic women		-.94		-1.27		-1.27
		[1.21, -.67]		[-1.50, -1.03]		[-1.55, -1.01]
Democratic governor		-0.02		-.14		-.18
		[-0.17, .12]		[-.26, -.02]		[-.30, -.05]
Unified Dem. legislature		-.02		-.27		-.25
		[-.16, .12]		[-.40, -.15]		[-.38, -.13]
State income		-.39		-.68		-.57
		[-.94, .16]		[-1.09, -.28]		[-1.06, -.04]
State population		-1.38		-.34		-.28
		[-1.99, -.79]		[-.50, -.18]		[-.44, -.12]
Year REs?	Yes	Yes	Yes	Yes	Yes	Yes
Policy REs?	Yes	Yes	Yes	Yes	Yes	Yes
State REs?	Yes	Yes	No	No	No	No
Year/allowed REs?	No	No	No	No	Yes	Yes
Policy/allowed REs?	No	No	No	No	Yes	Yes
N	8,413	8,413	8,413	8,413	8,413	8,413
AIC	6692	6596	8084	7617	7704	7297
DIC	5788	5650	7645	7120	7135	6672

Table A-5: Regression models, assuming that circuit court decisions are binding on all states in the circuit. In each model, the dependent variable whether a state had a restriction in place for a given state-year-policy combination. Brackets indicate 95% confidence intervals. (Note that Model 1 does include state-level opinion, and thus does not have any predictors measured with uncertainty. I display confidence intervals for consistency with the other 5 models.) The AIC and DIC measures are based on the regression model run on the point estimates of opinion.

	(1)	(2)	(3)	(4)	(5)	(6)
Intercept	-2.66	-2.69	-1.97	-2.10	-2.57	-3.03
	[-3.57, -1.75]	[-3.58, -1.60]	[-3.19, -.70]	[-3.08, -1.00]	[-3.84, -.97]	[-4.13, -2.11]
Allowed	1.85	1.73	1.54	1.53	1.52	2.20
period	[1.58, 2.12]	[1.50, 2.00]	[1.28, 1.75]	[1.27, 1.81]	[-.76, 3.48]	[1.54, 3.70]
State-level		.27	3.50	1.20	1.53	.03
opinion		[-1.06, 1.76]	[2.87, 4.16]	[.38, 2.06]	[.64, 2.21]	[-.68, .90]
Opinion ×					3.3	2.41
allowed period					[2.11, 4.18]	[1.04, 3.43]
Religious		1.02		.78		.82
adherence rate		[.56, 1.41]		[.63, .91]		[.65, .98]
Initiative		.28		.15		.19
process		[-.44, 1.21]		[.04, .28]		[.05, .32]
Democratic		-.91		-1.13		-1.02
women		[1.19, -.67]		[-1.32, -.92]		[-1.25, -.73]
Democratic		-0.07		-.15		-.13
governor		[-0.19, .05]		[-.27, -.05]		[-.23, -.01]
Unified Dem.		-.32		-.31		-.30
legislature		[-.55, -.12]		[-.42, -.21]		[-.42, -.19]
State		.39		-.64		-.54
income		[.05, .77]		[-1.10, -.22]		[-1.03, .02]
State		-1.6		-.30		-.25
population		[-2.15, -1.15]		[-.41, -.12]		[-.39, -.08]
Year REs?	Yes	Yes	Yes	Yes	Yes	Yes
Policy REs?	Yes	Yes	Yes	Yes	Yes	Yes
State REs?	Yes	Yes	No	No	No	No
Year/allowed REs?	No	No	No	No	Yes	Yes
Policy/allowed REs?	No	No	No	No	Yes	Yes
N	9,250	9,250	9,250	9,250	9,250	9,250
AIC	7674	7564	9114	8714	8731	8414
DIC	6829	6692	8718	8253	8216	7848

Table A-6: Regression models, using only the U.S. Supreme Court's doctrine to determine allowed, unknown, and banned periods. In each model, the dependent variable whether a state had a restriction in place for a given state-year-policy combination. Brackets indicate 95% confidence intervals. (Note that Model 1 does include state-level opinion, and thus does not have any predictors measured with uncertainty. I display confidence intervals for consistency with the other 5 models.) The AIC and DIC measures are based on the regression model run on the point estimates of opinion.