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Examining the Policy Learning Dynamics of Atypical Policies with an Application to State Preemption of Local Dog Laws

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Abstract: Most of the literature on policy diffusion focuses on palpable issues such as economic or morality policies. As such, we know little about the mechanisms of diffusion for preemption of atypical policies such as animal regulations that lack a clear economic or ideological motivation. In this article, we propose and test a theory of conditional policy learning to explain the diffusion of atypical policies. We posit that a type of policy learning is occurring here, but that states only look to their neighbors when certain policy specific factors are present in their state. His theory is then applied to examine the dynamics of state adoption of laws preempting local Breed Specific Legislation from 1988 to 2014. Using an exponential model, two policy learning and two conditional learning hypotheses are tested. This study finds that policy learning is occurring through both external and internal pathways. This advances the literature by demonstrating that preemption occurs through the learning mechanism, but this learning effect is conditioned on policy relevant factors within the state.

1 Introduction

A fundamental concept behind federalist theory is that jurisdictions can serve as policy laboratories (Karch 2007) by experimenting with innovative policies. Jurisdictions learn from the successes and failures of another jurisdiction's policy experiment and may consider adopting the policy (Shipan and Volden 2006; Mallinson 2015) or reinventing it based on state-level contextual factors

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(Hays 1996; Mooney and Lee 1999). The increase in devolution of policies from the federal government to the states and from the states to localities has allowed such experimentation to flourish. However, this experimentation may be subject to preemption, or a process in which a higher government circumvents a lower government's policy in a federalist governing structure. While the preemption of issues such as smoking regulations and gun safety are "easy issues" in that they promote public safety and health, the motive behind other state preemptions remain puzzling. Furthermore, preemption is often done by multiple states, raising questions regarding the driving force behind interstate preemptions.

Policy diffusion, or the external factors that help explain multiple jurisdictions adopting the same policy, provides a framework that can help to explain causal pathways connecting policies among states. While voluminous amounts of research connects localities to state preemption (Shipan and Volden 2006) or examines national influence on state policy (Karch 2006), minimal work has examined the interstate adoption of preemption policies. Furthermore, most studies examine economic or morality policies; very few have looked at more atypical policies that lack a clear ideological direction or economic incentive. In this article, a policy diffusion framework is used to examine how internal and external factors explain laws preempting local breed specific legislation (BSL). To examine this, we use event history analysis (EHA) to model the diffusion of BSL preemption over time. Specifically, we estimate an exponential model due to the nature of the baseline hazard rate to examine the influence of various factors on the time until the adoption of BSL preemption in the US states over the 1988–2014 time period.

The key finding of this study is that that states are learning from their neighbors when making the determination of whether and when to adopt preemption of local ordinances in an atypical policy area, but that this learning is conditional on policy specific conditions internal to the state. Specifically, we find that when states are experiencing a higher number of criminal investigations into dog fighting cases, policymakers look to their contiguous neighbors for solutions. When their neighbors have BSL preemptions in place, the state is more likely to adopt their own preemption. This advances diffusion theory by examining the preemption of an atypical policy, and demonstrating that this policy exhibits both traditional and unique conditional dynamics. This study also finds that several internal determinants appear to have a significant influence on the adoption of BSL preemption including the state's median income, poverty rate, and number of fatalities from dog bites.

2 Policy Preemption and Policy Diffusion

Policy adoption is seldom done in a vacuum; often states adopt the policies of other states.[1] Many states take policy cues from other states that have implemented innovative policies. These innovative states, also called policy laboratories, are:

> one of the more positive aspects of federalism. Yet even if states are the places where new ideas emerge, are nurtured and grow into public policy, two alternative diffusion paths are possible. In one, policy spreads to other states facing similar situations. The other path involves the federal government. After its development in a state and its spread to other receptive states, the policy becomes federal law and, as such, imposed on the remaining states (Bowman and Kearney 1986: p. 12–13).

Thus, states may learn from one another, they may adopt the policies of other states that are facing similar situations, or another pathway that involves the federal government. This pathway occurs when policies adopted by states are eventually adopted by the federal government and then adopted by other states.

Although many types of policies may be adopted by governments, one unique type of policy is preemption. Preemption is a legal mechanism whereby a higher level government supersedes a lower government's laws or regulations in a specific policy domain. Put differently, it is the simultaneous expansion and reduction of power for the higher level and lower level government, respectively (Weiland 2000). Preemptions have ranged from smoking regulations to pesticide use, but many involve issues that impact public safety and health.

While a multitude of research has examined the vertical diffusion of preemptions (Shipan and Volden 2008), much less is known about horizontal

1 Policies are outcomes or the effects of government action on the citizens they are intended to impact. However, very little is known about how an idea becomes legislation or more importantly how they idea first emerges. According to Gray (2000): "numerous studies trace the diffusion path of an innovation as it travels across states. This literature has isolated the internal characteristics of states that make them more receptive to new ideas as well as external forces that shape the diffusion pathway. Almost no attention has been focused on the invention of the idea, however; innovation scholars take the new idea as a given and analyze the rate at which the idea diffuses from one place to another. Thus the diffusion literature can account for every action except the initial one: inventing the idea (574) (Gray and Lowery 2000).

diffusion,[2] such as diffusion from state to state or city to city. Furthermore, while an abundance of theories have developed that can better explain how policies can diffuse from one location to the next, work on preemptions is not quite as common. This may be partly explained due to the lack of a theory to explain how and why preemptions occur, given there is no obvious theoretical link among preempting jurisdictions.[3] This theoretical lacuna is especially problematic for understanding the diffusion of preemption in atypical policy areas where the normal ideological, economic, or electoral incentives that often motivate policy makers are absent.

Of the studies that have examined the horizontal diffusion of preemptions (e.g. Freeman 1985), most have found the key determinants to be either internal political factors or that diffusion occurs through learning conditioned by internal factors. For the former, one study found that politics is involved in the preemption of polices. Specifically, conservative state legislators have minimized the efforts of liberal local policies with help from various organized interests. While the policies examined were more ideologically based, such as LGBT friendly policies, regulations on fracking, sanctuary cities, or minimum wage policies, there has been evidence of overall blanket preemptions (Riverstone-Newell2017: p. 403). Blanket preemption laws ban governments from almost any type of regulation that differs from state law (Riverstone-Newell 2017). For the latter, conditional diffusion has been observed because some governments may be more or less susceptible to diffusion mechanisms. For example, one government may be more capable of learning from another (Shipan and Volden 2008). Conditional diffusion theory contends that the effects of diffusion may be conditional on internal

2 Horizontal federalism refers to interaction among higher and lower government actors, and vertical federalism is interaction occurring between the same types of government, such as states interacting with each other. It has noted that this interaction occurs in three ways, the first is interstate compacts, which are agreements (or contracts) between two or more states and are traditional mechanisms for cooperation among states. Compacts allow a set of states to pursue a common agenda or deal with a problem that affects them jointly (Bowman 2004: p. 537). Second, legal actions, where states join in with one another on lawsuits, and finally uniform state laws, or The existence of varying laws across states is often cited as a reason for congressional enactment of a national statute that preempts state laws and establishes a single, uniform law. An alternative to congressional preemption is for states themselves to adopt uniform statute. (Bowman 2004: p. 538.)

3 Since the devolution of policies from the federal government to states (and states to localities), governments have experimented with a multitude of policies. Home rule and preemptions are often linked, even though home rule is usually power that is given to local governments by state law or state constitutions, while preemption refers to a state's ability to take away powers from the local government. However, by defining a city's reserved powers, it may also limit these powers depending on the state (Alderdice 2013).

factors within the state. For example, the conditional effect of legislative professionalism on the proportion of a state's population with local smoking restrictions was found to have an impact on smoking regulation adoption (Shipan and Volden 2006). Another study examined the external learning mechanism and the internal government population and found there was a conditional effect on smoking regulation adoption (Shipan and Volden 2008; Mitchell and Toner 2016). Additional studies have examined the conditional nature of state population on states learning about policies from other states (e.g. Mitchell and Petray 2016). For example, Shipan and Volden (2012) find that politics and the capacity of certain governments (such as professionalism) impact the process of diffusion (Shipan and Volden 2012). They also note that other scholarly endeavors have explored the idea of conditional diffusion. In one such study, Stone (1999) observes that those governments that are experiencing economic turmoil are more likely to be coerced (Stone 1999; Shipan and Volden 2012). Similarly, (Bailey and Rom 2004) argue that generous governments may be more likely to engage in economic competition. Other studies have found that diffusion is conditioned on the internal state ideology (e.g. Martin 2010).

Existing research in this area has focused heavily on traditional policy arenas where clear ideological, economic, or morality based factors are paramount to the decision making of policy makers. For example, in the case of economic policies such as smoking regulations or morality policies such as Stand Your Ground Laws, policy learning theory explains the diffusion process (Shipan and Volden 2008; Butz et al. 2015). However, what mechanisms explain the diffusion of preemption of atypical policies? As mentioned previously, states may observe that they are facing similar situations to other states (Bowman and Kearney 1986). In the case of atypical policies, the most likely situation would be the threat perception of policy-relevant characteristics, or specific factors internal to the state that would be likely to shape elite (and mass) attitudes towards the policy in question. Based on these policy specific factors, states determine whether they should look to neighboring states for solutions in a manner that mirrors traditional conditional diffusion theory.

An alternative explaination borrows from theories of ideological learning, which has been found frequently in preemption diffusion studies (Martin 2010; Riverstone-Newell 2017). As atypical policy areas generally lack a strong ideological component, any ideological learning would likely be the result of blanket preemption, as mentioned previously. In such a case, a state will look to its most ideological similar neighbor when seeking input about the atypical policy illustrating evidence of ideological learning theory. A final possible mechanism to explain the diffusion of preemption of atypical policies might involve states looking to their most ideologically similar neighbor, but only when certain policy

relevant factors are present (or absent) in their state. In such a case, conditional ideological learning theory would explain atypical preemption among states.

3 Background on Breed Specific Legislation (BSL) and State Preemption

On October 3, 2016 the city of Montreal adopted a citywide ban on pit bulls, partially in response to a dog bite fatality that occurred earlier in the year.[4] This ban sparked a great deal of media coverage in the United States[5] as well as in Canada. In many ways, the Montreal ban is an exemplar of breed specific legislation (BSL) or policies that ban – or otherwise restrict – ownership of a specific dog breed or group of breeds. Similar laws are in place in over 800 cites, towns, and counties in the United States despite much evidence of their ineffectiveness (Bandow 1996; Collier 2006; Rosado et al. 2007; Patronek et al. 2013) and the inherent difficulty in breed identification that leads even experts to regularly misidentify dog breeds (Voith et al. 2013; Hoffman et al. 2014).

BSL refers to a general category of mostly municipal-level ordinances that ban or regulate ownership or possession of specific dog breed or set of breeds. These generally take one of three forms. The first type places a total ban on the ownership of a specific breed(s) of dog within the municipality.[6] The second type of BSL usually takes the form of an ordinance that lays out requirements that apply only to a specific breed or set of breeds. These include requirements such as confinement, muzzling, signage, and liability insurance.[7] The final type of BSL automatically defines all members of a specific breed or group of breeds as "dangerous" or

4 Interestingly, the dog involved in this incident, while initially identified as a pit bull, was actually a boxer according to its registration.

5 See, for example, "Montreal's Pit Bull Ban Is Suspended Until Wednesday" in the *New York Times* (Oct. 3, 2016) available at http://nyti.ms/2cM7rtT

6 Miami-Dade County's Code of Ordinances provides an example of this type. Section 5-17.6(b) of the code states "No pit bull dogs may be sold, purchased, obtained, brought into Miami-Dade County, or otherwise acquired by residents of Miami-Dade County."

7 Section 85A.02 of the Albia, Iowa Code of Ordinances requires that owners of "pit bull dogs" must keep their dogs "securely confined indoors or in a securely enclosed and locked pen or kennel," leashed and muzzled when not confined, must post "beware of dog" signs on their property, and must maintain "public liability insurance in a single incident amount of fifty thousand… for bodily injury to or death of any person or persons or for damages to property…" While the specific requirements vary from ordinance to ordinance, Alba's is rather typical of this types of BSLs.

"vicious." This designation, usually reserved for individual dogs that have been deemed a danger to humans, carries additional restrictions similar to the second type or an outright ban as with the first type.[8]

While BSLs have been used for decades to target various breeds, since the 1980s nearly all new BSLs have targeted a group of breeds routinely referred to as "pit bulls" or "pit bull type dogs."[9] This is likely due to a "pit bull panic" causes by a substantial amount of negative media coverage of these dogs (Cohen and Richardson 2002).[10] Despite opposition from the American Bar Association, the Centers for Disease Control and Prevention, the American Veterinary Medical Association, and numerous animal rights organizations including the Humane Society of the United States and the American Society for the Prevention of Cruelty to Animals, over 800 municipalities in the United States currently have BSLs. It appears that the main driver of BSLs is simply fear that the target breeds are more dangerous and pose a specific threat to public health and safety, combined with a belief that these measures will alleviate, or at least mitigate, that danger (Patronek et al. 2010). Some BSLs specifically highlight this as their justification. For example, Section 2-311(a) of the Andover, Kansas Code of Ordinances states that "The governing body of the city finds and determines that pit bull dogs… are unreasonably dangerous to persons and other animals within the city."

In addition to this opposition from relevant organization, a significant amount of empirical work reveals no evidence that BSLs reduce dog bites, and in some cases that dogs bite injuries have actually increased after the passage of BSLs (Bandow 1996; Collier 2006; Rosado et al. 2007; Patronek et al. 2010, 2013). Yet, there remains widespread belief among many local governments that this is an effective tool. Some states have begun to respond to the proliferation of these

8 Bonne Terre, Missouri is typical of those following this model. Section 205.010 of its Code of Ordinances defines a vicious dog as one that falls into any one of five categories: (1) one that has bitten a person unprovoked, (2) one that has attempted to bite a person unprovoked, (3) one that has "placed any person (not a trespasser) in apprehension of immediate serious physical injury," (4) one that has killed another domestic animal unprovoked, or (5) "Pit bull dogs". Section 205.030 then lays out four specific requirements for the possession of all vicious dogs.

9 In addition to "pit bulls" other breeds impacted by BSLs in US municipalities include, but are not limited to, Rottweilers, Doberman Pinschers, Presa Canarios, American Bulldogs, German Shepherds, Chow Chows, and Chihuahuas. However, "pit bull type dogs" are by far the most commonly targeted in the US and around the world.

10 Interestingly, this stereotype appears to be unjustified as empirical research on the causes of dog bites does not find breed to be a significant predictor (Patronek et al., 2013). Moreover, a pit bull is not even a specific dog breed. Rather, it is a generic term most often used to encompass three specific breeds: the American Pit Bull Terrier, the American Staffordshire Terrier, and the Staffordshire Bull Terrier.

Table 1: States adopting BSL preemption, 1989–2016.

State	Year	State	Year
Arizona	2016	New York	1997
California*	2001	Nevada	2013
Connecticut**	2013	Oklahoma	1989
Colorado	2004	Pennsylvania	2000
Florida***	1990	Rhode Island	2013
Illinois	2003	South Carolina	2014
Massachusetts	2012	South Dakota	2014
Maine	1991	Texas	1991
Minnesota	1989	Utah	2014
New Jersey	1989	Virginia	1993

*California has an exception allowing localities to have breed specific mandatory spay/neuter ordinances.
**Colorado courts have held that existing BSLs were not invalidated by the state's adoption of preemption under the home rule provision of the state constitution.
***Florida's preemption law contains a grandfather clause allowing localities with existing BSLs to keep them.

local laws. The most effective tool at the disposal of the states comes through the adoption of BSL preemption. Like other forms of state preemption of local ordinances, these state laws prohibit any local ordinance regulating dog ownership on the basis of breed alone. Table 1 shows the 20 states that have passed laws preempting the use of any breed specific language in local dog ordinances. These states represent a wide range of geographical, ideological, and socio-economic variation.

4 Explaining the Adoption of BSL Preemption

Given the existence of empirical questions about the tangibility and the efficacy of BSL preemption, it seems logical that state preemption of these law would be proliferate. However, preventing the existence of problematic local laws is rarely sufficient for state legislatures to pass laws preempting local regulations. However, such an instance may become more likely when an issue becomes salient. For example, if a dog bite or fatality occurs within a state there may be an increasingly likelihood that the the media and policymakers will become more cognizant of the issue (e.g. the mass media drawing attention to the matter). Since support for BSLs appears to be independent of any ideological or partisan basis, other factors must be influencing state decisions to preempt local BSLs. Unlike typical

economic or morality policies which have clear explanatory drivers at the state level, non-ideological, non-economic public health policies like BSL preemption must be explained by a set of other factors.

Policy diffusion research offers multiple frameworks to explain how policies spread. External determinants are those influential factors outside of a jurisdiction that are theorized to increase the likelihood policy adoption. Another theoretical explaination is the "vertical influence model" (Sabatier 2007: p. 231) or top-down diffusion (Shipan and Volden 2006). This approach posits that the national government can have an impact on whether or not a state adopts a policy (DiMaggio 1991; Baum and Oliver 1996; Jensen 2004; Karch and Rosenthal 2016). While this would provide a plausible explanation, there is no national legislation that states could have followed in terms of BSL legislation. Given the absence of a higher government influence, there is likely a mechanism linking states to other states given the widespread adoption of BSL preemption.[11]

One framework that may explain the interstate BSL preemption linkage is policy learning. Policy learning had its roots in the concept of social learning, which is a social psychological theory that posits that individuals learn from others based on observation. Specifically, individuals can learn by observations and no direct exchange of information is necessary. Since it is uncertain whether some policymakers directly exchange information, it is believed that they do observe the behavior of other states, especially through items like the mass media (Rogers 2010; Mitchell 2016). In the context of diffusion, policymakers initially start to learn about a policy through information or facts and their own personal experience or the experience of others. (Dobbin et al. 2007). Learning in the context of diffusion refers to policymakers learning from one another about public policies (Valente 1995; Mooney 2001; Berry and Baybeck 2005; Shipan and Volden 2008). Most often, policymakers learn from the experience of others. Thus, diffusion through policy learning refers to policymakers learning from one another, including those in other states when considering the adoption of a policy (Mooney 2001; Berry and Baybeck 2005; Shipan and Volden 2008). This theory aligns with the

11 A link between states to local governments is another possibility. It has been noted that policy diffusion is not necessarily beneficial, and it can take on the form of coercion (Shipan and Volden 2012), or the use of specific incentives to alter the policy outcomes of other governments. The concept of coercion "captures the interrelated policy decisions across governments, whether they are based favorably on the normatively appealing concepts of cooperation and learning or less favorably on the manipulation of incentives". (Shipan and Volden 2012: p. 791). Preemptive policies are also a form of coercion that can be used by states (Shipan and Volden 2008). However, given that we are interested in states, there is no clear mechanism of coercion or nothing nationally influencing states to preempt BSLs.

concept of policy laboratories, which refers to governments learning from the successes and failures of the policy experiments of other governments (Karch and Rosenthal 2016). This allows policymakers to use information shortcuts by learning from one another when they are considering the adoption of a policy (Mooney 2001; Berry and Baybeck 2005). Diffusion through learning is often theorized to operate through regional effects, and many studies often rely on a geographic proximity dimension to determine the extent to which diffusion by learning is occurring. Thus, policy learning may be geographically bound, and policymakers can learn from the experiences of their neighbors (Shipan and Volden 2008; Butz et al. 2015).[12] For policies such as lotteries, smoking regulations, or welfare benefits, the economic externalities are known, and there is a tangible incentive to adopt by policymakers. However, public health or safety policies such as BSL preemption lack an economic incentive, so the causal pathways to adoption are less evident and it is unclear how and why diffusion is occurring among states. Given the unique nature of BSL adoption, we feel that there may be different diffusion dynamics at work. For BSL preemption, we feel that this is likely given the uncertainty involved in the policy. For example, if a state's neighbor adopts BSL preemption, a state may be more hesitant to adopt their own, preferring to evaluate the consequences of their neighbor's preemption first. Learning not only involves observing policies, but assessing the outcomes and effectiveness of those policies (Nicholson-Crotty and Carley 2016).

> *Learning Hypothesis*: A state is more likely to preempt local BSL laws if a neighboring state has already done so.

However, given that BSL adoptions provide no obvious tangible benefits, it would be unlikely that a state would adopt without a reason. Therefore, we postulate that internal conditions related to policy-specific factors, may condition a state's decision to look to its neighbors. In the area of BSL preemption, the number of dog biting cases occuring in the state in the recent past would be an obvious candidate for such a conditioning factor. Thus, if a state experiences a greater number of dog fighting cases, we feel that they will look to their neighbors leading to a conditional learning effect. Conditional learning occurs when learning is conditioned by certain factors (Shipan and Volden 2008), especially those within a state. While not much work has been done on whether or not learning occurs based on policy specific conditions within a state, we feel that for BSL preemptions this may be occurring given the nature of the policy.

12 While not examined in this study, it should also be noted that non-geographic learning is also possible.

Conditional Learning Hypothesis: Policy learning from neighbors is conditioned on the number of dog fighting cases within a state.

Additionally, political dimensions are often found to exhibit an influence over the diffusion process. As research has found, legislatures embrace the policy agendas espoused by their constituencies (e.g. Mayhew 1974; Karch 2007) and diffusion has been found to be influenced by public opinion (Pacheco 2012). Put differently, electoral considerations affect which policies are ultimately enacted as well as the provisions of these policies (Karch 2007: p. 4). Given the lack of information available in regards to policy relevant information on BSL preemptions, we feel that the behaviors of other similar states may provide a cognitive shortcut in the decision to adopt BSL preemptions. Therefore, we feel that states may take cues from their most ideological similar neighbors, which has been examined in other diffusion studies (Grossback et al. 2004; Sylvester and Haider-Markel 2015). The most recent research suggests that ideology has an impact on policymakers' learning from others. Specifically, policymakers that are ideologically predisposed towards disliking certain policymakers exhibit a decreased willingness "to learn from others" (Butler et al. 2017: p. 37). While one could argue that conservatives may be more favorable towards social control, minimizing barriers to individual rights on certain issues, or less favorable to animal rights than their liberal counterparts, the exact link between ideology and BSL preemptions seems unclear. However, given previous findings and the potential for policymakers to use ideology as a cognitive shortcut, we include it as an alternative hypothesis in this study.

Ideological Learning Hypothesis: A state is more likely to preempt local BSL laws if its most ideologically similar neighbor has already done so.

Conversely, due to the nature of BSL preemption and its lack of a clear ideological component, it is possible that there may be a conditional ideological learning effect. Mirroring our conditional learning hypothesis above, we recognize that it is possible that when a state has experienced a significant number dog fighting cases in the recent past, they will look to their most ideologically similar neighbor (as opposed to all neighbors) for policy solutions. It may be that states may take cues from ideologically similar neighbors even in non-ideological policy domains, as states may want to evaluate the impact of even non-economic, non-ideological policies soley from states they can trust. Moreover, if a state experiences dog fighting cases, it is unclear how a state's citizens may respond to these policies, having a neighbor with an ideologically similar electorate adopt BSL preemption may enhance a state's motivation to adopt. Thus, we include

an alternative hypothesis to examine potential conditional ideological learning mechanisms.

> *Conditional Ideological Learning Hypothesis*: Policy learning from the most ideologically similar neighbor is conditional on the number dog fighting cases within a state.

Figure 1 provides a diagramatic representation of each of the theoretical mechaisms in the above hypotheses. In traditional policy learning, State A (the adopting state) learns about BSL preemption from other states and then considers adopting their own based on their observations of their neighbors. In conditional policy learning, State A only looks to other states when a particular policy related factor is present in the state, in this case, high levels of dog fighting cases in the recent past. If the internal factor is absent, then State A will have no need to look to its neighbors. In the case of ideological policy learning, State A will learn from other states, but only those states that they are the most ideologically aligned with. Finally, in the conditional ideological policy learning model, State A will look to its most ideologically similar neighboring states

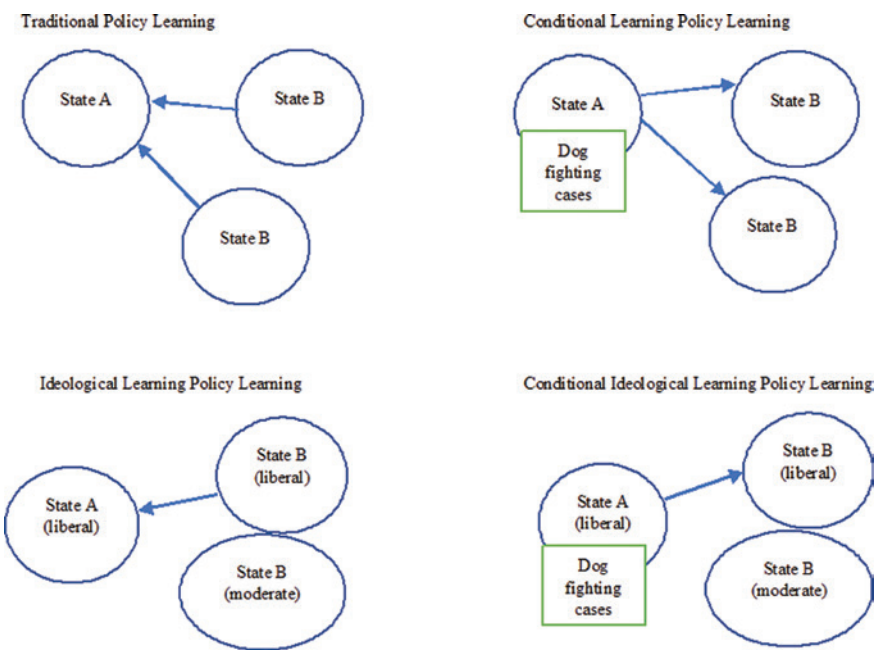

Figure 1: Diffusion theories.

for solutions, but only if it has a high number of dog fighting cases in its recent past.

5 Data and Measures

To assess the influence of policy learning on the diffusion process, one must examine how to empirically model learning. However, it can be difficult to distinguish among different diffusion theories (Maggetti and Gilardi 2016) as there is the potential for a pro-innovation bias (Karch et al. 2016) in neighbor defined diffusion research, and multiple mechanisms can occur simultaneously (Shipan and Volden 2008). As mentioned previously, there is an expectation that there will be a regional influence in terms of learning. However, the process of diffusion is more than the geographic nature of adoption (Shipan and Volden 2012). Previous research has measured the geographic influence of learning as either: the average number of neighboring adoptions (Hsieh 2011), the cumulative number of laggard state adoptions (Mitchell and Stewart 2014), the proportion of neighbors that have previously adopted the policy (Mooney 2001), the total number of neighboring jurisdictions that have adopted a policy in the previous year (Berry and Berry 1990, 1992; Pierce and Miller 2004; Makse and Volden 2011), or the ideological distance between the adopting state and its respective neighbors (Grossback et al. 2004). For this study, we rely on a simple dichotomous indicator of whether the state has any neighboring adopters of the policy.[13] If the effect is conditional on dog fight cases, there will be evidence for our conditional learning hypothesis. Additionally, we rely on an indicator of whether the state's most ideological similar neighbor had adopted BSL preemption in a prior year to evaluate our alternative ideological learning hypothesis and conditional ideological learning hypothesis.

While external diffusion processes influence inter-jurisdictional policy adoption, internal state-level factors must also be considered due to their likely influence on policy adoption (Berry and Berry 1990; Berry and Berry 2007). Internal determinants are economic, political, and other factors within a that could impact the likelihood of policy adoption (Walker 1969; Gray 1973). In these models, states

13 We also tested policy learning as the total number of a state's neighbors that adopted a BSL preemption in the previous year or earlier and the proportion of neighboring states that have previously adopted BSL preemption. These alternative operationalizations yielded substantively similar results.

are not conceptualized as being influenced by the actions of other states (Sabatier 2007: p. 224).

Given that most BSLs tend to be motivated by a belief that pit bull type dogs pose a unique a threat to public safety, we include two state-level factors that might drive this fear and thus be potentially relevant to the adoption of BSL preemption: the number of fatalities from dog bites and the number of dog fighting cases investigated by law enforcement agencies.[14] As incidents of deadly dog bites increase, governments are more likely to act to prevent them. While research continually shows BSLs to be an ineffective method of preventing dog bites (Bandow 1996; Collier 2006; Rosado et al. 2007; Patronek et al. 2013), they remain a popular, albeit misguided, solution based on erroneous assumptions about their effectiveness (Cohen and Richardson 2002). In the US all BSLs are local in nature,[15] thus even if an increase in deadly dog bites consistently leads to an increase in local BSLs, it remains unclear how the likelihood of the adoption of state preemption would be impacted. It is possible that state legislatures would be more likely to adopt preemption as dog bite fatalities increase to stop local governments from rushing to put ineffective policy solutions in place. Alternative, state legislatures could bow to media induced panic over these events and be less likely to preempt these local ordinances. Dog bite fatalities are relatively infrequent occurrences and data on these events are relatively poor, so using annual data is impractical. As such, we use Sacks et al.'s (1996) measure of the total number of dog bite fatalities in each state from 1979–1994. While this approach misses some of the nuance of annual data and fails to cover the full time period of our study, we feel that it is a good proxy for the climate of fear in a state produced by the frequency of these events over a long time period.

As with deadly dog bites, it seems intuitive that an increase in dog fighting cases in a state might be associated with increased attempts by localities to adopt BSLs. At the state level, however, the impact of a greater number of dog fighting cases could have mixed effects on the likelihood of the adoption of BSL preemption for reasons mirroring those discussed with respect to increased numbers of deadly dog bites. To examine the impacts of dog fighting cases on state adoption of BSL preemption, we include a measure of the number of investigations into dog fighting in a given state for the prior 5 years. This data is taken from

14 Ideally, we would also include a variable measuring the number of municipalities in a state with BSLs. Finding accurate data on all current municipalities with BSLs is exceedingly difficult and would not work for this project as we would need a measure of how many BSLs were present in the state with preemption prior to its adoption. Unfortunately, time series data on this is unavailable and even more difficult, if not impossible, to collect.

15 Ohio had a state level BSL in place that declared all pit bulls to be vicious until 2011.

pet-abuse.com's animal cruelty database. Additionally, we include interaction terms between dog fighting cases and each of our neighbor variables to test our conditional learning hypotheses.

Next, we include four demographic and socio-economic variables in our model. State-level demographic and socio-economic factors have been shown to influence the adoption of a wide range of policies. With respect to this specific policy area, we feel it important to account for the fact that most negative stereotypes associated with pit bull type dogs (the most common targets of BSLs) and their owners tend to generalize the latter as more poor, more rural, and more likely to be a minority. Therefore, with respect to the adoption of BSL preemption, three specific factors stand out for their potential relevance due to stereotypes associated with pit bull type dogs and their owners. First, as media portrayals of pit bull owners commonly present them as "the dregs of society" (Cohen and Richardson 2002: p. 287), we include a measure of the percentage of a state's population living in poverty as a rough proxy for this concept. Prior work has shown that the poverty rate of a state's residents can shape a its policy adoption patterns in an array of areas (Berry and Berry 1990, 1992; Godwin and Schroedel 2000; Boehmke and Witmer 2004; Bouchàand Volden 2011). Moreover, income levels are often linked to education and other factors differentiating social classes, therefore it could be linked to BSL preemption adoption. Second, we account for the urban versus rural division in a state. More urban states would likely exhibit a different policy dynamic than their more rural counterparts. For this we rely on the urban percentage of the population of the state, as reported by the US Census Bureau. Third, we account for the percentage of the population that is Black, again using data from the US Census Bureau to capture any potential associations between BSLs and the perception that pit bulls are more likely to be owned by minorities. Lastly, we include a measure of each state's annual median household income adjusted to 2011 from US Census Bureau data.

Finally, we include four variables to account for regional effects, state ideology, and the partisan makeup of state governments. These factors have been found to have a significant impact on policy adoption in many areas. First, prior work has shown Southern states to behave differently with respect to policy adoption in a number of areas (e.g. Butz et al. 2015). To account for this potential effect, we include a dummy variable indicating whether a given state is in the South based on the Census Bureau's regional classification scheme. Next, prior work has shown that states oriented towards a certain ideology (in terms of liberal or conservative) tend to be more likely to adopt certain policies and to not adopt others (Lawrence et al. 2004). Moreover, policymakers may choose policies to place on the agenda that will benefit them politically. Many state

laws preempting local legislation are clearly driven by ideological concerns as illustrated by the conservative American Legislative Exchange Council's promotion of model legislation on preemption of local minimum wages,[16] rent control regulations,[17] and other policies. As such, we include two measures of ideology – the ideology of the state government and the ideology of a state's citizens (Berry et al. 1998) – to examine potential ideological effects on the adoption of BSL preemption, although it is likely that the impact of ideology is muted or nonexistent in policy domains lacking a clear ideological dimension such as this one. To account for partisan conflicts in state government, we include a dichotomous measure of whether a given state was under divided government in a given year.

5.1 Modeling BSL Preemption

To examine the impact of these internal and external factors on state adoption of BSL preemption policies, we create a dataset of all state BSL preemptions from 1988 to 2014. Upon examining the data, BSL preemption follows an unusual diffusion pattern. While an additional six states adopted the policy in the first 5 years after the initial adoption by Minnesota and New Jersey,[18] only five states adopted it in the following 18 years (1994–2011).[19] Since 2012, there has been another rapid burst of diffusion as an additional six states adopted BSL preemption between 2012 and 2014.[20]

This study uses event history analysis (EHA) to model the diffusion of BSL preemption, which has been the most commonly used approach for modeling policy diffusion since the (Berry and Berry 1990) study (e.g. Mooney and Lee 1995; Mintrom 1997; Shipan and Volden 2006). This is particularly appropriate for this study due to our need to account for the nature of time in the policy diffusion process in order to test our learning and condition learning hypotheses. EHA

16 https://www.alec.org/model-policy/living-wage-mandate-preemption-act/

17 https://www.alec.org/model-policy/rent-control-preemption-act/

18 The six states are Florida (1990), Maine (1991), Oklahoma (1992), South Carolina (1992), Texas (1991), and Virginia (1993).

19 Those five are California (2001), Colorado (2004), Illinois (2003), New York (1997), and Pennsylvania (2008).

20 Those states are Connecticut (2013), Massachusetts (2012), Nevada (2013), Rhode Island (2013), South Dakota (2014), and Utah (2014). Moreover, another adoption occurred after the time period of our study, with Arizona adopting in 2016.

allows us to examine the influence of only those neighboring adopters who have adopted by a given time point on the likelihood of adoption by those states "at-risk" for adopting BSL preemption (i.e. those that have not yet adopted) at a given time point. Failing to account for this would lead to potentially spurious results (Berry and Berry 1990), as our analysis would not differentiate between states that adopted a policy after their neighbor or before their neighbor. Additionally, this approach allows for the inclusion of time-varying covariates where theoretically appropriate and feasible given data limitations, which is of vital importance given the specifics of our conditional hypotheses. As with the time of the neighboring state's adoption, this aspect of EHA prevents us from drawing conclusions based on potentially spurious findings absent the ability to differentiate whether the internal policy-relevant factors were present before or after the policy adoption.

We rely on a dichotomous variable that indicates whether a particular state has a BSL adoption initiative enacted in a particular year as our measure of BSL preemption adoption. This variable is coded as 0 each year prior to a state adopting and 1 the year the ordinance is enacted. Given that this is an EHA model, once a state adopts an ordinance, it is excluded in the years after the initial adoption. To examine the effect of our covariates on the adoption of BSL preemption, we utilize an exponential model for our policy and ideological learning models.[21] To account for unobserved heterogeneity, we cluster standard errors on states. Our model has a sample size of 904 over the 1988–2014 time period.[22]

6 Results

Table 2 presents the results of our analyses. Consistent with our conditional learning hypothesis, the hazard ratio for the interaction between neighboring adopter and dog fighting cases is below one and statistically significant, while

21 The widely used Cox Proportional Hazards Model is inappropriate due to violations of the proportional hazards assumption in both models apparent through visual examination of the baseline hazard rate in Kaplan-Meier graphs. Additionally, tests of the proportional hazards assumption using Stata's `phtest` algorithm, which is based on the (Grambsch and Therneau 1994) test using the Schoenfeld residual confirmed our visual inspection. Tests for most individual covariates and the test for global violations were statistically significant. See (Box-Steffensmeier and Zorn 2001) for an explanation of the proportionality assumption and diagnostic tests. Additional exploration reveals a flat baseline hazard rate making the exponential distribution most appropriate.

22 Appendix 1 provides descriptive statistics for all variables. Examination of our data reveals no significant collinearity issues.

Table 2: Determinants of time until adoption of BSL preemption.

	Hazard ratio (standard error)	*p*-Value
Neighboring adopter	82.407	0.001
	(106.864)	
Similar neighbor adopter	0.936	0.958
	(1.187)	
Bite fatalities	1.227	0.006
	(0.091)	
Dog fighting cases	1.257	0.000
	(0.051)	
Neighboring adopter×	0.744	0.007
Dog fighting cases	(0.082)	
Similar neighbor adopter×	1.132	0.233
Dog fighting cases	(0.118)	
% in Poverty	0.612	0.008
	(0.113)	
Urbanization	1.049	0.369
	(0.055)	
% Black	0.008	0.174
	(0.029)	
Median income	0.999	0.024
	(0.000)	
South	0.736	0.764
	(0.751)	
Citizen ideology	0.949	0.272
	(0.046)	
Elite ideology	1.066	0.219
	(0.055)	
Divided government	4.227	0.177
	(4.516)	
N	881	
χ^2	1449.08	0.000
AIC	55.067	
BIC	122.002	

Cell entries are hazard ratio estimates from an exponential model. Standard errors clustered on state are in parentheses. Alaska and Hawaii are excluded from both models.

the hazard ratio for the neighboring adopter variable is above one and also statistically significant. Directly interpreting interaction terms in this context is difficult, thus estimated survival curves are plotted in Figure 2 to show that this effect is substantive strong as well. The lines in the figures represent a situation with no dog fight cases, the mean number of dog fight cases, and a high level of dog fight cases (two standard deviations above the mean) each under the con-

dition of having and not having any neighboring adopter. The analysis shows that there is strong substantive support of our conditional learning hypothesis, as the probability of survival (i.e. not adopting BSL preemption) is extremely low for states that have a neighboring adopter regardless of the level of dog fighting cases. Similarly, it is relatively low when there is a high level of dog fighting cases without a neighboring adopter. Conversely, for states that do not have a neighboring neighboring adopter and either no dog fight cases or an average number, the probability of survival is extremely high consistent with our theoretical expectations. Unsurprisingly, given preliminary testing of the baseline hazard, these effects appear to be time invariant.

Turing to the other variables in the model, we see that the hazard ratio for the constitutive term dog fighting cases is greater than one and statistically significant. This implies, consistent with Figure 2, that when there are no neighboring adopters, dog fighting cases still exerts an independent impact on the probability a state will adopt BSL preemption in a given year. Additionally, the number of bite fatalities also has a strong positive impact on the probability of adoption. As Figure 3 shows, a shift from one standard deviation below the mean number of bite fatalities to one standard deviation above the mean corresponds to a decrease of approximately 0.6 in the probability of survival. In other words,

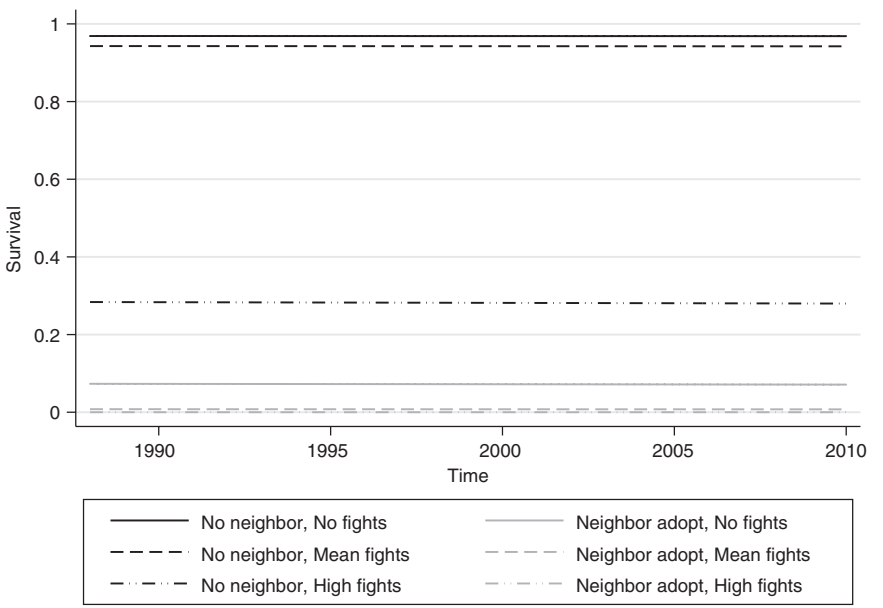

Figure 2: Survival curves for external determinants.

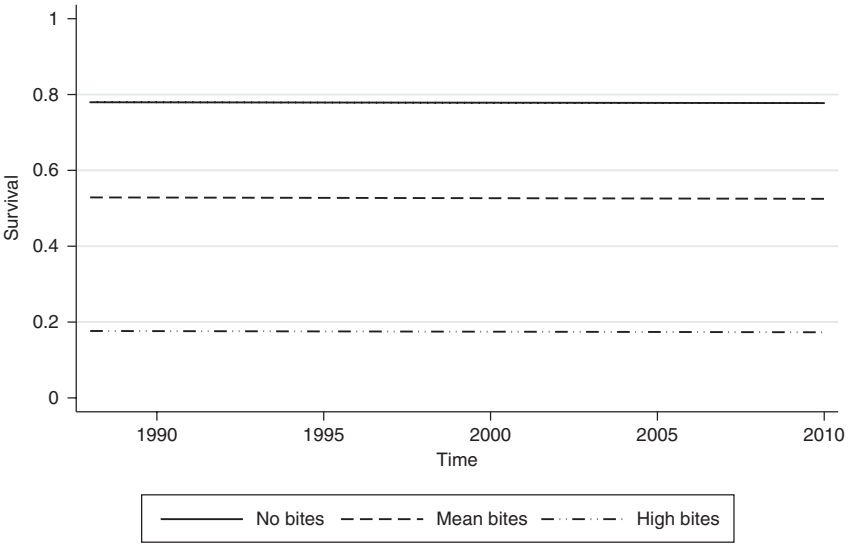

Figure 3: Survival curves for internal determinants.

as the number of dog bite fatalities in a state increase, the likelihood that a state will adopt BSL preemption in a given year increases quite substantially. At first glance this seems a bit counterintuitive, but we offer the following speculation of the possible mechanisms at work here. There are significant reasons to expect that local governments might be more likely to rush to pass BSL in response to the increased media attention that often follows attacks by pit bull type dogs (Cohen and Richardson 2002), mirroring the events that recently unfolded in Montreal. It is possible that state legislatures may then feel a stronger need to act in order to stop these municipalities from enacting such policies through preemption.

The impact of state demographic, socioeconomic, and geographic variables is mixed. Both poverty rate and median per capita income significantly impact the probability of BSL preemption adoption. However, the substantive impact of these variables on the likelihood of BSL preemption adoption is muted compared to that of the other significant variables. Additionally, the remaining variables – urbanization, the percentage of the state population that is Black, and the geographic region the state – all appear to have no systematic impact on the likelihood of adoption. Finally, none of the political or ideological or political variables achieve statistical significance at conventional levels. As expected, policy adoption of BSL preemption does not seem to be an ideologically motivated or partisan issue. This is consistent with the observation that while several extremely conservative states have adopted BSL preemption (e.g. Texas, Oklahoma, and Utah), several extremely liberal states have as well (e.g. Connecticut, Massachusetts,

and Rhode Island). Additionally, the lack of significance for any of the ideological or political variables helps to explain why we found no support for our ideological learning hypothesis or conditional ideological learning hypothesis.

7 Conclusion

While the literature is rife with policy diffusion studies, very few have examined state preemption. Even less have examined more intangible public health-related policies such as BSL preemption. This study offers some insight into both of these areas via an examination of the diffusion of state BSL preemptions. Using an event history analysis, we tested two policy learning hypotheses and two conditional learning hypotheses. We found that two types of learning are occurring, external learning (learning from a state's neighbors) and conditional learning (learning from others based on conditions within a policymaker's own state). For the former, a neighbor's adoption makes a policymaker more likely to adopt because there is uncertainty regarding the benefits or repercussions. Given the uncertainty, policymakers look to those most similar which are those in close proximity (Mooney 2001). Despite an ideological effect often being found in diffusion (e.g. Grossback et al. 2004; Sylvester and Haider-Markel 2015), we found no evidence of that occurring for BSL preemption. For the latter (the traditional conditional learning hypothesis), this study proposes that conditional learning stems from policymakers learning about dog fighting cases within their state, then seeking solutions by learning about their neighbors policies. This study also finds no evidence of a conditional ideological learning dimension. In this study, we found that several internal determinants, including a state's median income, poverty rate, and number of fatalities from dog bites all exhibited varying degrees of influence on BSL preemption.

This study advances diffusion theory in two ways. First, we show that policy learning also occurs with respect to the preemption of atypical policies. Rather than solely evaluating higher or lower level government's ordinances on a case by case basis, our findings show that states take cues from one another in terms of when to preempt of local laws. Second, we show that certain types of atypical policies can exhibit a conditional influence. Absent normal economic or ideological drivers, state adoption of preemption in atypical policy arenas depend heavily on internal factors of specific relvance to the policy in question, and these internal factors can condition the impact of learning by influencing when states look to their neighbors and when they do not. Future studies should delve deeper into the specific dynamics underlying policy learning with respect to state preemption of local regulations in others areas to see if these same mechanisms hold with respect to other atypical policies.

Appendix 1: Descriptive Statistics

Table A1: Descriptive statistics.

	Mean	Standard deviation	Minimum	Maximum
Neighboring adopters	0.190	0.186	0.000	0.800
Similar neighbor adopter	0.151	0.358	0.000	1.000
Bite fatalities	4.797	5.158	0.000	26.000
Dog fighting cases	2.603	6.602	0.000	47.000
% in Poverty	12.714	3.749	2.900	27.200
Urbanization	68.659	14.369	32.200	94.400
% Black	0.107	0.169	0.002	3.170
Median income	50,445.230	7828.115	31,363.000	74,118.000
South	0.309	0.462	0.000	1.000
Citizen ideology	50.109	15.357	8.450	95.972
Elite ideology	51.541	23.915	3.017	92.451
Divided government	0.779	0.415	0.000	1.000

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