

1 **The diffusion of punitive firearm preemption laws across US states**

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13 **Abstract**

14 **Introduction:** Firearm violence is a public health crisis. The majority of states prohibit local
15 firearm laws but some states have laws which allow for lawsuits and other penalties against local
16 governments and lawmakers who pass firearm laws deemed preempted. These punitive firearm
17 preemptive laws may reduce firearm policy innovation, discussion and adoption beyond
18 preemption alone. Yet, it is unknown how these laws spread from state to state.

19 **Methods:** In 2022, using an event history analysis framework with state dyads, logistic
20 regression models estimate factors associated with adoption and diffusion of firearm punitive
21 preemption laws, including state-level demographic, economic, legal, political, population and
22 state-neighbor factors.

23 **Results:** As of 2021, 15 states had punitive firearm preemption laws. Higher numbers of
24 background checks (AOR =1.50; 95% CI 1.15, 2.04), more conservative government ideology
25 (AOR 7.79; 95% CI 2.05, 35.02), lower per capita income (AOR 0.16; 95% CI 0.05, 0.44), a
26 higher number of permissive state firearm laws (AOR 2.75; 95% CI 1.57, 5.30) and neighboring
27 state passage of the law (AOR 3.97; 95% CI 1.52, 11.51) were associated with law adoption.

28 **Conclusions:** Both internal and external state factors predict the adoption of punitive firearm
29 preemption. This study may provide insight into which states are susceptible to adoption in the
30 future. Advocates, especially in neighboring states without such laws, may want to focus their
31 firearm safety policy efforts on opposing passage of punitive firearm preemption.

32

33

34 **Introduction**

35 In 2021, more than 45,000 people died of firearm related injuries. Firearm-related deaths varied
36 widely across the states, with the highest firearm-related death rates in Mississippi (28.6 per
37 100,000 people) and Louisiana (26.3), and the lowest rates in Hawaii (3.4) and Massachusetts
38 (3.7).¹ These differences may be partially attributed to state law variation, among other factors.²
39 In light of the increase in firearm violence nationally, attention to firearm access, use, and
40 regulation has risen to the top of the federal, state and local policy agendas.

41

42 In the US, states are the primary regulators of firearms. Most states have a variety of firearm-
43 related laws, with the majority having laws that, on balance, support a gun-rights framework
44 (that is, facilitating gun acquisition, carry and use).³ In addition to these substantive firearm laws
45 (that is, laws governing the rights and obligations of individuals such as requiring background
46 checks, allowing carrying of concealed firearms), 45 states preempt or prohibit local
47 governments from enacting their own firearm-related laws.³ Preemption, or ceiling preemption,
48 occurs when a higher level of government removes the authority of a lower level of government
49 to enact laws on a specific topic. Preemption thus limits the ability of local governments to
50 respond to demands from their constituents to pass policies on such topics, which may
51 discourage local innovation and forestall “bottom-up diffusion,” the process by which successful
52 local initiatives may lead to state uptake.⁴

53

54 In theory, states can preempt local control over any type of firearm-related law, but in practice
55 preemption has almost universally been used to block municipalities from enacting laws that
56 restrict firearm acquisition, carry and use. Moreover, states have passed an even more extreme

57 form of preemption, “punitive firearm preemption laws”.³ In this paper, punitive firearm
58 preemption laws (hereafter, “punitive preemption”) are defined as laws that provide standing to
59 individuals or membership organizations to sue local governments or officials for passing
60 firearm-related laws that the plaintiff deems preempted or that they believe are preempted and
61 adversely effects them.⁵ Punitive preemption laws also include laws that specifically authorize
62 the state attorney general to sue (or individuals or membership organizations to petition the state
63 attorney general to sue) local governments or officials for passing firearm-related laws that the
64 aggrieved entity considers to have been preempted, or for legislators to strip or deny funding
65 from local governments should they pass laws deemed preempted.⁵ Some of these statutes also
66 include specific measures such as fines, legal liability, and even removal of the elected official
67 from office.⁵ Punitive preemption thus enhances the effect of state preemption and actually
68 started the modern trend of state governments’ support of private litigation to enforce their most
69 controversial laws.^{6, 7}

70

71 Scores of policy diffusion studies have yielded evidence explaining why public policies spread
72 across states.⁸ The main theories of policy diffusion include emulation (where one state simply
73 follows the actions of a nearby state), policy learning (where one state sees the impact or benefits
74 of a policy enacted in another state) and interstate competition (particularly when spillover
75 effects lead to positive or negative consequences for nearby states). Typically, studies of policy
76 diffusion have focused on internal factors (preferences, capacities, legislative professionalism,
77 and needs within a state), external factors (macroeconomic, federal, or regional developments)
78 and go-betweens (factors that act across multiple governments levels).⁹ These studies have
79 identified a number of common factors frequently associated with the diffusion of policies across

80 states, including characteristics of the state population, political orientation and governmental
81 context, presence of other laws within the same policy domain, and whether neighboring states
82 have adopted such policies.⁹ However, no study has investigated the diffusion of laws
83 specifically designed to discourage within-state policy adoption. Thus, this study investigates the
84 diffusion of punitive firearm preemption laws across states during the period of rapid expansion
85 of such laws, utilizing a new legal dataset.

86

87 **Methods**

88 **Study Population**

89 This is a longitudinal analysis of U.S. states from 2009-2018.

90 **Measures**

91 Data on punitive firearm preemption laws were sourced from statutes collated by the Giffords
92 Law Center to Prevent Gun Violence in 2019.^{10, 11} One author with legal training retrieved
93 sourced statutes and all others within the same code sections from Lexis+ that were in effect
94 2009-2018. Relevant to the current study, preemptive laws were coded for the presence of both
95 ceiling and punitive preemption.^{3, 11} Statutes were coded per the standard in the field, by
96 capturing laws in effect 2009-2018 and identifying the effective date for each law in each state,
97 as well as other features of the laws (e.g., who could be sued, whether fines could be assessed).¹²
98 In 2022, the same author revisited the legal statutes and confirmed that no additional punitive
99 firearm preemption laws were enacted through December 31, 2021.

100

101 Publicly available data were obtained for state characteristics for every state and every year,
102 2009-2018, the period when these laws rapidly diffused. Consistent with prior work on policy
103 diffusion, our dataset includes state political, demographic and economic characteristics
104 hypothesized to be associated with policy adoption, collected for each year.^{8, 9} First, validated
105 measures of state government and citizen political ideology (using state policy scales ranging
106 from 0 to 100, where higher values indicate a more liberal orientation) were included because
107 different ideological orientations may behave affect state law adoption behaviors.^{13, 14} Legislative
108 professionalism is measured using the Squire index, which is derived from variables including
109 length of time in session, payment for legislators, and presence of professional staff and is
110 included as a measure of state legislative volume and capacity.¹⁵ State resources are
111 operationalized by income per capita and overall population size (both from the U.S. Census
112 Bureau). The unemployment rate (from the Census Bureau) has been associated with crime rates
113 in some studies^{16, 17} and homicides per 100,000 (from the Federal Bureau of Investigation)
114 represent highly visible crimes. Both are theorized to be linked to citizen desires for greater (or
115 lesser, depending on the state) firearm ownership¹⁸. Background checks per capita (also from the
116 FBI) serve as a proxy measure for the number of (legal) firearms in the state.^{19, 20} A measure was
117 created to capture the number of neighbors (states with contiguous borders) each state has that
118 have already adopted punitive preemption, given evidence that firearm laws (much like other
119 types of laws) are more likely to be adopted by a state if their neighbors have already adopted the
120 law.²¹ Finally, to capture the prevailing state legal environment regarding firearms, a measure of
121 the total number of firearm laws (out of a possible total of 60) that are considered to be
122 permissive (that is laws that make it easier to obtain, carry and use a firearm) was developed for

123 each state in each year, 2009-2018. These data were obtained from the RAND corporation’s
124 online repository of state firearm laws.²²

125 This study has no human subjects.

126 **Statistical analysis**

127 Event history analysis (EHA) was used to model predictors of adoption of punitive preemption
128 laws in each state. In this approach, at the beginning of the period (2009) states without the law
129 are considered “at risk” for adopting the law and are classified as “sending” states once they have
130 adopted it.²³ Event history models with time-varying covariates can be estimated via logistic
131 regression once the dataset has been appropriately ordered.²⁴ The data were further modified to
132 contain directed dyads, which consist of a panel of state pairs for each year. This allows each
133 state to be compared to every other state, rather than simply to the grand mean as in standard
134 regression analysis.²⁵ Dyadic EHA analysis was then performed to obtain parameter estimates
135 for covariates by creating dyads, or state pairs, based on whether the state’s relationship in each
136 dyad is that of a “sender” meaning that it has already adopted punitive preemption and can now
137 diffuse it to the other state in its pair, or a “receiver” meaning that the state has not yet adopted
138 punitive preemption, but could do so if exposed to a “sending” state. Each state that has adopted
139 punitive firearm preemption is thus paired with every state that has not done so, while dyads
140 where both states have the law or where neither state does are dropped for each year that this
141 occurs. This approach, termed “conditional dyadic EHA”,²⁶ allows for better understanding of
142 whether the effect of the covariates identified above differ based on the role of the state in the
143 dyad. The model is estimated using standard errors that are clustered on the receiver state to
144 account any particular dyad being observed over multiple years²⁶ and duration dependence is
145 modeled through inclusion of linear and quadratic terms for time.²⁷ Multicollinearity was

146 assessed using the Variance Inflation Factor (VIF) and was found to be within acceptable limits
147 (<2.0). Overall model fit is assessed by the Akaike Information Criterion (AIC) statistic, where
148 lower values indicate better model fit and the Area Under the Curve (AUC), where higher values
149 indicate better fit.

150

151 Finally, to illustrate the substantive meaning of our final regression models, predicted probabilities,
152 calculated as marginal effects with other covariates held at their means, were computed from the
153 logistic regression results and graphically displayed.

154 Analyses were conducted using R (version 4.05) with a significance level set to 0.05 and below.

155 **Results**

156 Fifteen punitive firearm preemption laws were identified from legal statutes. See Appendix Table
157 1 for a summary of the laws. Thirteen laws became effective between 2011 and 2017, a period of
158 rapid diffusion. Of the total, 11 state laws permitted lawsuits by membership organizations or
159 individuals against local governments and 4 permitted lawsuits by membership organizations or
160 individuals against local officials themselves. Two states' laws provided liability for local
161 governments and 2 different states' laws provided liability to local officials for specific monetary
162 fines or penalties. Further, 2 state laws expressly permitted local officials to be removed from
163 office. One state's law permitted individuals and membership organizations to petition the state
164 attorney general to sue local governments and officials for violating the state's firearm preemption
165 statutes. See Figure 1 for a map of all identified state firearm punitive preemption laws and the
166 year in which each state's law became effective.

167

168 Table 1 presents average state characteristics for the beginning and end of the time period. Between
169 2009 and 2018, the unemployment rate across states fell significantly ($p<0.001$) from 8.45% to
170 3.73%. Median income per capita rose significantly ($p<0.001$) from \$49,791 to \$63,984. The
171 number of firearm preemption laws grew from 0 in 2009 to 1.44 on average across these states
172 ($p<0.0001$). Notably, significant changes were not observed in either citizen or government
173 ideology, the average number of permissive gun laws, background checks per capita, or the
174 homicide rate across states.

175

176 Table 2 presents EHA models that estimate the effects of covariates on states being either a sender
177 or receiver of punitive preemption laws. More liberal government ideology is negatively associated
178 with being a sending state (adjusted Odds Ratio (OR)=0.61; 95% Confidence Interval (CI)=0.24,
179 0.96), but not with being a receiving state, once other factors are controlled. Having a neighbor
180 that has already enacted punitive preemption increases the odds (OR=3.97; CI=1.52, 11.51) that a
181 receiving state will adopt this policy. Income per capita is negatively associated with being a
182 receiving and a sending state (OR=0.16, 0.24, respectively). The Squire Index was not significantly
183 associated with being either a sending or receiving state. Similar null findings were identified for
184 homicides, population size and unemployment. Background checks per capita are positively
185 associated (OR=1.50; CI=1.15, 2.04) with being a sending and receiving state, except in the final
186 model where background checks for receiving states are no longer statistically significant. More
187 liberal citizen ideology is negatively associated with being a sending state (OR=7.79; CI=2.05,
188 35.02), while it is positively associated with being a receiving state (OR=0.39; CI=.065, 0.87).
189 The number of previously adopted permissive firearm laws in the state is positively associated
190 (OR=2.75; CI=1.57, 5.30) with being a receiving state.

191

192 Figure 2 displays predicted probabilities from the best-fitting model (model 4) from Table 2.
193 Probabilities are stratified by the number of a state's neighbors that have adopted the law as well
194 by the number of permissive firearms laws that the state has already adopted. The left panel shows
195 that there is an overall low likelihood of adopting punitive preemption laws if the state has no
196 permissive firearm laws in place and no other neighboring states have already adopted this law.
197 The middle panel shows the predicted probability of adopting punitive preemption laws when the
198 state has three permissive firearm laws already in place. The predicted probability of adoption
199 increases as the number of background checks per capita and the number of neighboring states
200 with the law increases. In the right-hand panel, we see that in states with five or more permissive
201 firearm laws the predicted probability of passing punitive preemption laws increases as a function
202 of both background checks per capita and the number of neighbors with the law. For states that
203 have the highest number of background checks per capita the likelihood of adopting punitive
204 preemption is 21% if two neighbors also have the law. This probability is reduced to only 5% if
205 only one neighbor has the law and approximately 1% if no neighboring states have previously
206 adopted punitive preemption laws.

207

208 **Discussion**

209

210 This study finds that both internal and external factors were associated with the diffusion of
211 punitive firearm preemption laws. Results suggest that punitive preemption is being adopted by
212 states that already have a more permissive approach to firearm regulation and where guns are
213 plentiful. The number of permissive firearm laws a state had already adopted and the number of
214 guns in the state increased the odds of being an early adopter of punitive preemption (that is,

215 being a “sender” state). Notably, even when models controlled for the number of permissive gun
216 laws in the state, along with the other covariates, the number of guns within the state increased
217 the odds of adopting punitive preemption.

218

219 Several internal political and economic factors also were significant predictors of policy
220 adoption: more conservative states, whether measured by government or citizen ideology, had
221 higher odds of having adopted punitive preemption, as did poorer states, consistent with other
222 health policy diffusion studies ²⁸. Greater numbers of background checks in the state (a measure
223 of demand or support for firearms) were found to be positively associated with punitive
224 preemption law adoption.

225

226 Study results also support the neighbor state hypothesis: whether because of emulation, learning,
227 or competition, the behavior of neighboring states influences state policy choices. Here, having
228 two or more neighboring states with punitive firearm preemption increased the odds of a state
229 adopting the law more than four-fold. It may be that localities in neighboring states that pass
230 restrictive laws create pressures for surrounding states to also pass punitive preemption laws to
231 forestall such action, but this is an area for future research.

232

233 Previous research found that the majority of state gun laws included in this study have been in
234 place for decades, and relatively few new permissive, restrictive or preemption laws were passed
235 during the study period with the major exception of punitive preemption.³ While evidence is still
236 emerging, a few studies have found negative associations between the number of restrictive gun

237 laws and firearm mortality ²⁹⁻³². Despite this evidence, in passing these laws state governments
238 may be signaling their commitment to gun rights or responding to actual efforts by localities to
239 pass gun control measures.

240

241 The National Rifle Association (NRA), a membership organization with standing to sue under
242 punitive preemption laws, vigorously supports both preemption and punitive preemption. The
243 NRA has argued that punitive preemption is necessary “to strengthen existing state firearms
244 preemption statutes”, counter defiant localities and “provide a much-needed check on the radical
245 impulses of local politicians... by providing a clear avenue” to enforce firearm preemption laws,
246 while awarding the plaintiff damages.³³ Thus, punitive preemption seeks to prevent localities
247 from considering or attempting to enact laws that may be perceived to weaken a state’s gun
248 rights framework, and deter local officials from discussing such policy options with their
249 constituents. Reports suggest punitive preemption has accomplished both goals.³⁴ Gun control
250 advocates, especially in neighboring states without such laws, should focus their efforts on
251 opposing passage of punitive preemption, as bills are still being proposed³⁵ and new protective
252 laws may be out of reach after the Supreme Court’s decision striking down a New York State
253 gun control law as unconstitutional.³⁶

254

255 **Limitations**

256 This study has several strengths, including the use of a new legal dataset and event history
257 analysis (EHA) using state dyads to elucidate characteristics of both sending and receiving states.
258 One limitation is that these models rely on assumptions of statistical independence. While the
259 models controlled for state-level clustering, we cannot discount the possibility that the dependent

260 nature of interstate dynamics may have affected the results. Temporal autocorrelation was
261 controlled by clustering standard errors on each state-state dyad, but models did not address
262 possible geospatial autocorrelation. This study was also unable to directly assess the effects of
263 punitive preemption laws or state-level differences in their effectiveness or enforcement. Finally,
264 while not a limitation, there are other laws that may be considered punitive firearm preemption
265 laws that did not fall into the definition used in this paper. States have passed laws that seek to
266 punish state and local officials and government entities for restricting firearms during a state of
267 emergency³⁷ or for implementing federal law (in essence seeking to nullify federal law)³⁸; the
268 constitutionality of these latter laws are being evaluated by the courts.³⁹ Thus, because this study
269 was limited to the laws that met our definition's inclusion criteria, future research may be
270 warranted to evaluate the diffusion of additional punitive laws as well.

271

272 **Conclusions**

273 States' enactment of punitive firearm preemption laws is likely driven by both internal and
274 external factors, among these the number of neighboring states that have enacted such laws. In
275 light of the recent Supreme Court decision striking down a state's restrictive firearm law, state
276 laws may move towards being more permissive, possibly increasing the likelihood of continued
277 adoption of punitive preemption. As such, the room for innovative policymaking to address
278 firearm safety at the local level may be imperiled.

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289

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291

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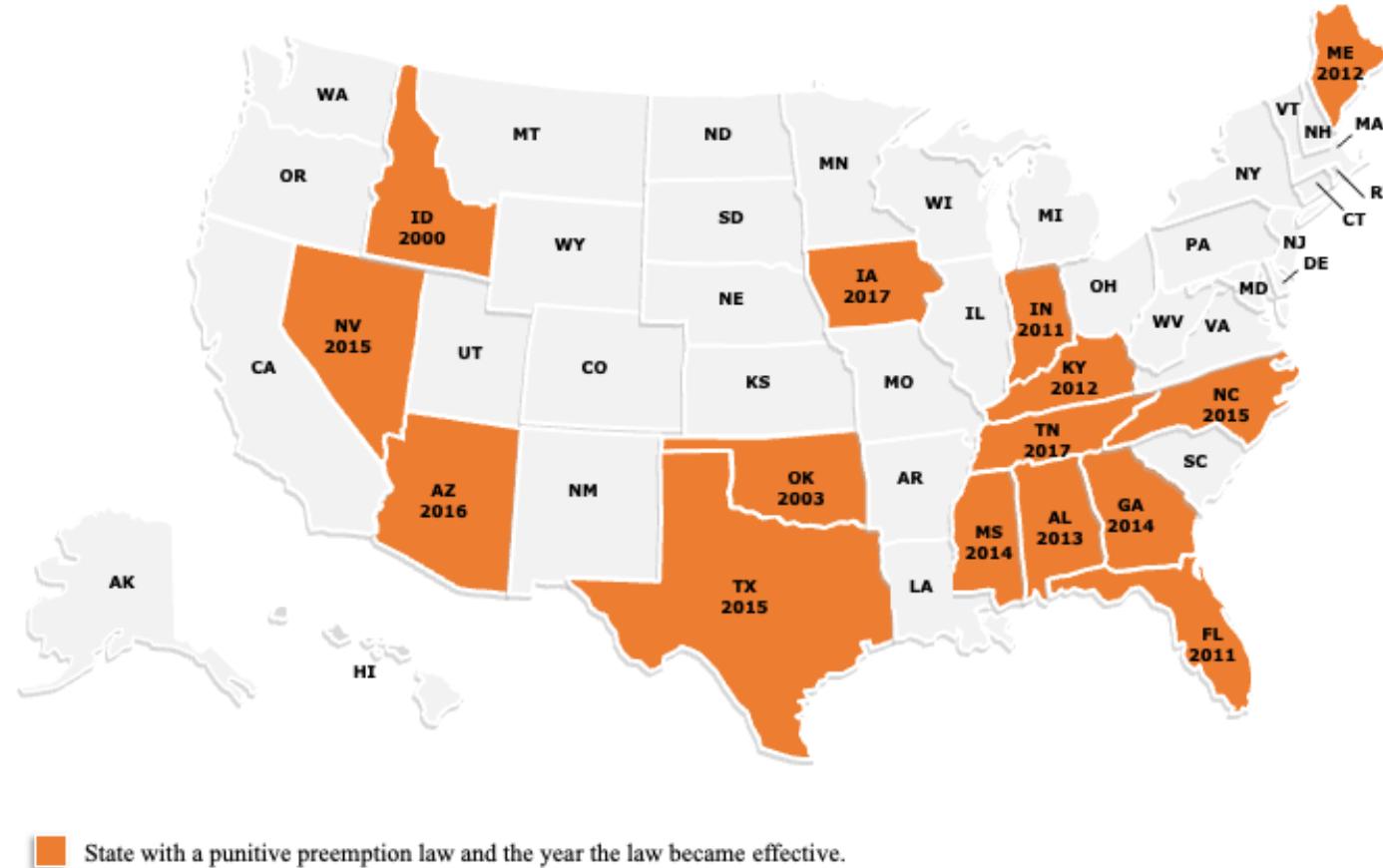
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383

Figure 1: Map of States with Firearm Punitive Preemption Laws



Data source: Author's original legal research

Table 1: Descriptive characteristics of states, by year

Variable	2009	2018	p-value
Squire Index	0.19 (0.12)	0.19 (0.12)	1.0000
Unemployment rate, (%)	8.48 (1.98)	3.73 (0.79)	0.0000
Citizen ideology (0-100)	54.9 (16.10)	55.46 (15.76)	0.8606
Government Ideology (0-100)	50.14 (15.32)	50.32 (15.42)	0.9539
Mean income per capita (in US\$ 1,000s)	49.79 (7.56)	63.98 (10.01)	0.0000
Homicides per 100,000	24.79 (14.54)	24.31 (14.29)	0.8684
Population (in 1000s)	6.12 (6.79)	6.52 (7.36)	0.7803
Background checks per capita (count/1,000)	0.06 (0.07)	0.09 (0.15)	0.1310
Neighbors enacting punitive preemption laws (count)	0.00 (0.00)	1.44 (1.33)	0.0000
Permissive firearm laws (count)	3.18 (1.56)	3.6 (1.55)	0.1803

Notes: State covariate means with standard deviations in parenthesis.

P-value from paired t-test assessing if the covariate changed from 2009 to 2018. Values in bold are statistically significant (p<0.05)

Table 2: Event history analysis models of punitive preemption diffusion, with sender (S) and receiver (R) covariates

Parameter	Model 1		Model 2		Model 3		Model 4	
	aOR	95% CI	aOR	95% CI	aOR	95% CI	aOR	95% CI
Gov't ideology (R)	0.47*	(0.312, 0.67)	0.49*	(0.33, 0.19)	0.22	(0.06, 1.16)	0.32	(0.09, 1.37)
Gov't ideology (S)	0.42***	(0.27, 0.62)	0.42***	(0.27, 0.62)	0.54***	(0.22, 0.66)	0.61*	(0.24, 0.96)
Neighbor enacted (R)			2.59*	(1.58, 4.33)	2.99*	(1.26, 7.39)	3.97*	(1.52, 11.51)
Income (R)					0.23**	(0.08, 0.57)	0.16***	(0.05, 0.44)
Income (S)					0.27***	(0.09, 0.68)	0.24***	(0.08, 0.64)
Squire Index (R)					0.17	(0.02, 1.10)	0.42	(0.04, 1.80)
Squire Index (S)					1.42	(0.46, 4.41)	1.84	(0.52, 6.89)
Homicides (R)					0.81	(0.28, 2.21)	0.63	(0.24, 1.72)
Homicides (S)					0.73	(0.36, 1.49)	0.68	(0.32, 1.42)
Background check(R)					1.65*	(1.28, 2.24)	1.50*	(1.15, 2.04)
Background check(S)					1.52***	(1.05, 2.16)	1.43***	(1.01, 2.14)
Population (R)					1.17	(0.30, 3.22)	0.54	(0.09, 1.77)
Population (S)					0.47	(0.06, 1.55)	0.36	(0.03, 1.40)
Citizen ideology (R)					3.43*	(1.07, 13.00)	7.79*	(2.05, 35.02)
Citizen ideology (S)					0.39**	(0.17, 0.86)	0.39*	(0.65, 0.87)
Unemployment (R)					2.295	(0.73, 6.75)	1.75	(0.48, 5.53)
Unemployment (S)					0.85	(0.34, 2.13)	0.81	(0.30, 2.11)
Permissive firearm laws (#) (R)							2.75**	(1.57, 5.30)
Permissive firearm laws (#) (S)							1.25	(0.74, 2.11)
AIC	491		479		252		242	
AUC	0.838		0.850		0.954		0.956	

Boldface indicates statistical significance *** p-value < 0.001, ** p-value < 0.01, * p-value < 0.05; Standard errors clustered on state dyad.

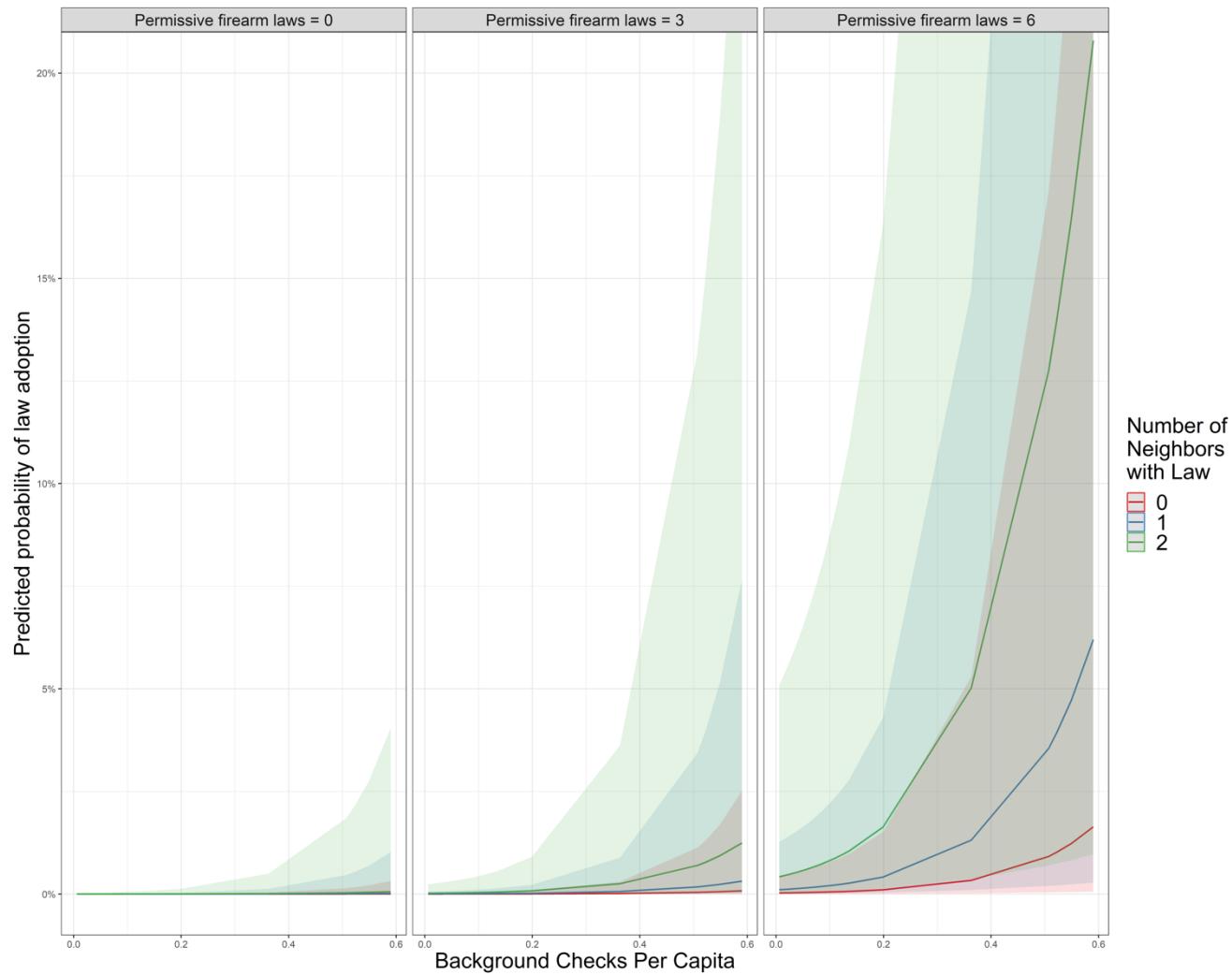
R= Receiving state (a state in the dyad/year that does not yet have the punitive preemption law); S = sending state (a state in the dyad/year that has already adopted the punitive preemption law).

Permissive laws = state laws that make it easier to obtain or use a firearm.

AIC = Akaike Information Criterion; AUC = area under the curve

Numbers are adjusted odds ratios (aOR) and their 95% confidence intervals (CI) from dyadic logistic regression event history analyses.

Figure 2: Predicted probability¹ of adoption of punitive firearm preemption laws, by state background checks, neighboring states with the law, and existing permissive firearm laws



Predicted probabilities calculated as marginal effects with all other covariates held at their mean from results of Model 4, Table 2.