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Race, Politics, and Public Safety: A Panel Study of U.S. Highway Patrol and State Police Strength, 1981-2015

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Race, Politics, and Public Safety: A Panel Study of U.S. Highway Patrol and State Police Strength, 1981-2015

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Abstract

This study assesses the social, political, economic, and traffic-/travel-related predictors of sworn highway patrol and state police strength in the United States between 1981 and 2015. Fixed-effects estimates based on analyses of 1,635 state-years indicate that theoretical accounts centered on racial threat theory, partisan politics, and gendered politics in part explain variation in this outcome. Findings suggest that changes in population density, the tax base, the percentage of the population without a high school degree, violent crime rates, and spending on social welfare at the state level, as well as shifts in local law enforcement strength, also influence state police and patrol organization strength over this period. Surprisingly, fluctuations in the number of state traffic fatalities per million vehicle miles traveled and the number of driver's licenses per 100,000 state population—two seemingly important traffic-/travel-related factors—have no impact on the rate of state police and patrol officers per 100,000 population.

Keywords: state police, highway patrol, police strength, policing, social control

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Raza, Política y Seguridad Pública: Un Estudio de las Patrullas de Autopistas y la Fuerzas Policiales Estatales de los Estados Unidos, 1981-2015

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Resumen

Este estudio evalúa los predictores sociales, políticos, económicos, y relativos al tráfico y viajes de las fuerzas policiales de autopistas y estatales en Estados Unidos de 1981 a 2015. Estimaciones, según el modelo de efectos fijos, y basadas en el análisis de 1.635 estado-años, indican que los acercamientos teóricos fundados en la teoría de amenazas raciales, y la política partisana y de género explican en parte la variación en estos números. Los resultados sugieren que los cambios en la densidad de población, la base imponible, el porcentaje de población sin título de bachillerato, el índice de crímenes violentos, y el gasto en prestaciones sociales a nivel estatal, así como las fluctuaciones en los números de la policía local, también influyen las fuerzas de la policía estatal y la organización de patrullas durante este periodo. Sorprendentemente, las fluctuaciones en el número de fatalidades en accidentes de tráfico estatales por millón de millas viajadas, y el número de carnets de conducir por 100.000 habitantes del estado—dos factores relativos al tráfico o viajes que parecen importantes—no tienen ningún impacto en los números de la policía estatal.

Palabras clave: policía estatal, patrulla estatal, efectivos policiales, vigilancia policial, control social

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Contemporary state police and highway patrol agencies only constitute around 8% of the sworn law enforcement community in the United States (Reaves, 2011), on average, yet these organizations are an integral part of local, state, and federal government efforts to safeguard U.S. citizens from harm[1]. For example, state-level police forces often manage and implement state-level counterterrorism efforts, coordinate responses to state disasters and emergencies, operate state crime labs, investigate major crimes, maintain state sex offender registries, and perform drug interdiction and traffic stops on state highways and roads (Cordner, Seifert & Ursino, 2014; Correia, Reisig & Lovrich, 1996; Foster & Cordner, 2005). The latter traffic enforcement efforts—while negatively viewed by individuals who receive citations (Correia et al., 1996)—are especially important to U.S. public safety (DeAngelo & Hansen, 2014). The literature clearly demonstrates that expansions in number of highway patrol units within a set area substantially reduces the number of traffic violations and accidents in that same area (Cox, 1970; Lee, Franz & Wynne, 1979). Conversely, state traffic fatality numbers dramatically rise when patrol strength substantially declines (DeAngelo & Hansen, 2014). The examination of the relevant factors that affect sworn state police and highway patrol strength therefore is a necessary endeavor in the effort to maintain and increase public safety in the United States.

Understanding variation in state-level police strength is important for theoretical reasons as well. Specifically, the study of shifts in this outcome over time provides additional insight into the persistence of racial, partisan, and gendered divisions in U.S. society. Threat theorists (Blumer, 1958) posit, for example, that the amount of social control directed at blacks within a jurisdiction expands as the percentage of black population increases. Most police strength studies support these assertions and indicate that black population size at the city, county, and Standard Metropolitan Statistical Area (SMSA) levels indeed is positively associated with police strength (e.g., Carmichael & Kent, 2014; Jacobs, 1979). However, an extensive review of the extant literature reveals that researchers have yet to examine whether this relationship also applies to state police organization strength.

Decisions about police force strength also are inherently political in nature. U.S. state-level police organizations are funded by state legislatures and report to governors via state police chiefs, police superintendents, or public safety directors (Cordner et al., 2014; Cox, 1970). Political partisanship and gendered politics thus could substantially influence police strength at the state level. For instance, the literature clearly documents a positive association between partisanship—specifically, Republican strength—in state government and increased social control (i.e., Davey, 1998; Stucky, Heimer & Lang, 2007; Jacobs & Carmichael, 2002; Jacobs, Malone & Iles, 2012; Western, 2006). The correlation between female strength in the governor's office and state legislature and similar outcomes, however, is relatively underexplored despite the increasing presence of women in state political positions of power over time (Paxton & Hughes, 2014).

The current study adds to several relevant literatures by utilizing panel data from a variety of sources and a fixed-effects pooled-time series estimator to examine the preceding and additional applied and theoretical predictors of the number of sworn U.S. highway patrol and state police officers per 100,000 state population from 1981 to 2015, net of several controls. Specifically, by assessing the impact of expansions in the percentage of black population on police force strength at the state level, this study adds to ongoing discussions in the racial threat literature[2]. This research additionally fills gaps in the policing and social control literatures by estimating the influence of gendered politics on state police force strength. It also adds to the voluminous literature on political partisanship by evaluating the relationship between Republican strength in state government and the outcome at hand. Finally, this analysis builds on two recent descriptive studies of state police organizations (i.e., Cordner, 2011; Cordner et al., 2014) and extends several public safety studies by determining whether travel- and traffic safety-related factors in fact influence state police organization strength over time.

Literature Review, Theory, and Hypotheses

Political Partisanship

U.S. state criminal justice policies widely vary based on whether members of the Democratic or Republican party control the state legislature and the governor's office. These dissimilarities largely emanate from the fact that successful Republican political candidates at the state and federal levels of government often enact harsher criminal justice policies consistent with the "law and order" and "tough on crime" rhetoric popular on the campaign trail during and after the mid-1960s (Beckett, 1997; Scheingold, 2010). For example, throughout the time that U.S. police disproportionately targeted minorities for drug law violations as a part of the most recent Republican-initiated "War on Drugs," Malone (in press) finds that Republican legislative strength is positively correlated with the severity of state cocaine drug laws (in the South). Stucky et al. (2007) also find that higher proportions of state expenditures are allocated for corrections when Republican strength in state legislatures expand. Jacobs et al. (2012) show that Republican control of state legislatures produces higher state prison admission rates and Jacobs and Carmichael (2002) find that the presence of a Republican dominated state legislature leads to an increased likelihood that a state will have a legal death penalty. Davey (1998), Malone (in press), and Western (2006) connect the presence of Republican "law and order" governors to more punitive sentences, harsher drug laws, and escalating imprisonments as well.

Additionally, the latter studies together suggest that Republicans favor reactive responses to crime that incapacitate criminals after the fact over proactive strategies that claim to attack the root causes of crime (Beckett, 1997). If these inclinations extend to reactive social controls besides imprisonments and capital punishment, Republican control of state government should affect highway patrol and state police strength in markedly different ways. For instance, states that utilize the highway patrol as their primary state law enforcement agency also operate major state criminal investigative units (e.g., Bureaus of Investigation) that are independent of the former agency (Cordner, 2011; Cordner et al., 2014).

Accordingly, the more reactive criminal investigative functions of state police detectives are funded and managed separately from the proactive traffic enforcement responsibilities of the highway patrol in these states (Taylor et al., 1985)[3]. Republicans who seek to enhance their "tough on crime" credentials and curb expansions in predatory street crime can do so by voting for funding expansions in agencies that contain sworn state detectives with relatively little or no concern for sworn officer strength in highway patrol agencies. Consequently, this study hypothesizes that **highway patrol strength should decline after Republicans gain control of the legislature and the governor's office in these states (H1).**

States that rely upon state police as their primary state law enforcement agency, conversely, locate their traffic patrol and criminal investigation divisions within the same agency (Foster & Cordner, 2005). Selectively altering sworn police strength based on political preferences thus is more complicated in these states. However, Republicans still can maintain or even promote a reactive approach to crime control in several ways. For example, for previously stated reasons, these officials can summarily reject any requests for increased patrol strength and recommend that patrol divisions make do with their current officers. Republicans also can encourage state police chiefs to transfer or promote officers from patrol to detective divisions to achieve greater investigative strength. Additionally, these politicians can mandate that all increased funding for sworn officers be directed to divisions that investigate crime and incapacitate criminals. Given these options, this study hypothesizes that **state police strength should remain unchanged or increase after Republicans take charge of the state government (H2).**

Gendered Politics

While the policing and social control literature has devoted substantial attention to the impact of political partisanship on social control, the relevance of gendered politics to such outcomes remains largely unexamined. This oversight is surprising for two related reasons. First, the ranks of state legislatures and governors' offices—which state police forces ultimately are accountable to—have increasingly been filled by women

over the last three to four decades (Paxton & Hughes, 2014; Thomas & Welch, 1991). Second, the policy preferences of women in state government substantially vary from those of their male counterparts on several issues. Regarding the latter, for example, Heidbreder and Scheurer (2013) find that female governors place a higher priority on state social welfare policies than male governors and Thomas and Welch (1991) indicate that women in state legislatures prioritize bills that address welfare, women, children, and family issues. Caiazza (2004) locates a positive relationship between women's political representation in state government and the eventual enactment of women friendly policies at the state level. Thomas (1991) similarly discovers that in states where female representation in the legislature is higher, women tend to prioritize and pass more bills related to women, children, and family issues than their male counterparts.

Importantly, Kathlene (1995) demonstrates that male and female politicians also characterize the causes of and solutions to crime in starkly different terms. Regarding the former, Kathlene (1995) explains that male politicians view crime as the result of rational individual choices and personal deficiencies while female politicians are more apt to locate the root causes of crime in societal-level factors such as poor education systems or job opportunities. Such disparate views on the causes of crime expectedly lead to disagreements over the proper policy solutions to crime. According to Kathlene (1995), male legislators are more likely to advocate for reactive sanctions that include longer criminal sentences. Female legislators, on the other hand, tend to be more proactive, focus on the social conditions that lead to crime, and prefer legislation that prevents crime from occurring in the first place (e.g., through increased funding for early childhood education). The latter assertions also partially align with Yates and Fording (2005), who show that increasing percentages of women in state legislatures reduce black imprisonment rates within states.

If the influence of gendered politics described by the preceding scholars extends to the study of state-level policing, highway patrol and state police strength should be affected in remarkably different ways. Namely, because highway patrol organizations are proactive organizations whose officers primarily patrol highways and unincorporated roadways in an effort to

increase police visibility and prevent traffic-related violations, accidents, and deaths (Taylor et al., 1985), this study hypothesizes that **highway patrol strength should increase following the election of a woman to the governor's office and after the percentage of women in the state legislature increases (H3)**. As previously detailed, however, state police style agencies employ a sizeable number of sworn detectives who operate as reactive forces. Given the findings of Kathlene (1995), it seems likely that female politicians—when their numbers or positions permit—will attempt to weaken the reactive and promote the proactive components of state police agencies. Accordingly, this study additionally hypothesizes that **after the election of a woman to the governor's office and as the percentage of women in the state legislature increases, state police strength should remain unchanged or decrease (H4)**.

Racial Threat Theory

Proponents of racial threat theory assert that as the percentage of minorities—in this particular case, blacks—within a jurisdiction increases in size, the amount of discrimination and social control directed towards the racial group by whites also increases (Blumer, 1958). According to Bobo and Hutchings (1996), this occurs because whites perceive blacks as interlopers whose expanding population size unjustly endangers the long-established, hard-won cultural and political dominance of whites. But whereas white responses to black threat in decades past were formal (e.g., Jim Crow laws) and informal (e.g., lynchings) in nature (Jacobs et al., 2012), contemporary whites mainly utilize formal political pathways to accomplish their goals. Specifically, the latter group lobbies for and elects public officials who promise to implement harsher state-sanctioned social controls that can be used to target blacks.

The preceding account of the association between racial politics and social control receives considerable support in the literature. Giles and Buckner (1993) and Giles and Hertz (1994), for example, respectively show that white voters in Louisiana are willing to vote for openly racist political candidates and defect from the Democratic party in areas with higher percentages of registered black voters and where voting-age black

population percentages are rising. Importantly, several studies demonstrate that these political reactions are not exclusive to Louisiana and produce harsher state-level social controls across the United States. Jacobs and Carmichael (2002) indicate that the legalization of the death penalty is more likely in states with higher percentages of blacks while Smith (2004) reveals that the percentage of blacks in a state is positively correlated with state-level imprisonments.

A substantial number of studies also detect a positive relationship between black population size and police strength. Jacobs (1979), for instance, finds that greater black presence at the SMSA level results in more law enforcement personnel per 100,000 population in 1970. Lizotte, Mercy, and Monkkonen (1982) indicate that increasing black population percentages lead to growth in police per capita in Chicago between 1947 and 1970. Kent and Jacobs (2005) utilize a fixed-effects panel design and find that expansions in the group size of blacks increases the number of sworn police officers per 100,000 population in large U.S. cities. Recent U.S. city-level, fixed-effects panel studies by Carmichael and Kent (2014) and McCarty, Ren, and Zhao (2012) buttress the preceding threat-related conclusions as well.

Overall, the literature generally indicates that there is a positive and substantial correlation between black threat and police strength in the United States (Sever, 2001). The possibility of the existence of a similar relationship between black population size and U.S. state-level police strength thus appears more likely than not. And because increased social control over blacks can be achieved utilizing sworn patrol and investigative officers (e.g., see Harris' (1999) discussion of the intersection of the racial profiling of minorities by police during the most recent U.S. drug war, as well as Kleiman's (1988) account of the use of state police to target open-air drug markets), this study hypothesizes that **highway patrol and state police strength should increase as the percentage of black population increases within a state (H5)**.

Additionally, studies by Greenberg, Kessler, and Loftin (1985); Holmes, Smith, Freng, and Munoz (2008); and Nalla, Lynch, and Leiber (1997) intimate that the effects of minority threat on police strength, budgets, and patrol practices may vary across region. Works by King (2007) and Sever

(2001) buttress this claim and show that variation in certain U.S. social control measures are indeed attributable to regional differences in the effects of black group threat. Considered in tandem with Cordner (2011), who explains that the largest state police forces tend to be located in the Northeastern United States while the smallest generally are found in the sheriff-dominated South, the preceding studies plausibly suggest, and this study hypothesizes, that **the effects of black population increases on highway patrol and state police strength may vary by region (H6)**.

Travel- and Traffic-Related Determinants

Fluctuations in factors that independently affect travel and traffic safety may also influence the sworn officer strength in highway patrol organizations as well as the patrol divisions of state police organizations. For example, as state unemployment levels rise, people drive less. Fewer miles driven usually translates into less crowded roads and smaller numbers of motor vehicle-related deaths (Evans & Graham, 1988; Leigh & Waldon, 1991). Fewer highway deaths, in turn, should reduce the need for patrol officers. Conversely, factors that reduce highway safety or lead to greater numbers of vehicle deaths on state roads should increase the need for patrol officers. Specifically, as the number of licensed drivers expands in a state, it is reasonable to assume that patrol officer strength also will increase to maintain a requisite level of public safety. This study incorporates variables that account for both of the previously detailed factors.

Individuals who do not graduate high school are at a substantially greater risk of being involved in fatal automobile accidents than those who successfully complete high school (Braver, 2003; Cubbin, LeClere, & Smith, 2000). This study therefore adds a predictor that captures the proportion of the state population without a high school degree and expects a positive association between this variable and patrol officer strength. The effects of population density on this outcome are considered as well. Clark and Cushing (1999) show that as population density increases within an area, fatal crash rates decrease. A factor driving this relationship, according to these authors, is proximity and transportation to appropriate medical resources after a serious motor vehicle crash. If accurate, more densely

populated states should have fewer traffic fatalities and less need for patrol officers to monitor traffic. Additionally, it is plausible that the aforementioned factors do not fully capture all of the causes of higher traffic fatality rates that arguably lead to enhanced state police and highway patrol strength. This research accounts for this possibility by additionally including a measure for state traffic fatalities expressed as a rate per million vehicle miles traveled (VMT). By adjusting traffic fatalities by state VMT per year, this study also indirectly controls for changes in other relevant transportation-related factors such as highway system length and the presence of mass transit (Houston, Richardson, & Neeley, 1995).

Controls

Since state police organizations provide patrol and investigative services to rural and semi-rural areas not otherwise supported by local police or county sheriffs (Coate & Schwester, 2009), a state's degree of rurality should be positively associated with state police strength. Additionally, expansions in police strength and other social controls usually are contingent upon the capacity of the government to fund such items (Greenberg et al., 1985; Kent & Jacobs, 2005). This study thus controls for real state tax revenues per capita as well. Beckett and Western (2001) also find some support for a connection between state social welfare and penal policies and explain that expansions in state spending on the former policies may signal a less punitive stance on the latter policies. If this claim is accurate and extends to spending on sworn state police forces, state shifts toward a social welfare approach to managing crime should result in increased spending (or at least the maintenance of current spending) on proactive highway patrol organizations and strength and reduced spending on more reactive state police forces. Accordingly, this study also accounts for real state expenditures on education, public welfare, and health per capita.

The persistence or rapid increase of violent crime within state borders threatens order and raises doubts about a state's ability to protect its citizens from harm. To maintain legitimacy in these situations, governments often respond by increasing the resources available for social control and targeting those they deem most challenging to their authority (Weber,

1946). Increases in the violent crime rates consequently should result in greater spending on the reactive, investigative elements of state police forces, yet are likely to have little—if any—effect on highway patrol strength. In addition to controlling for the violent crime rate in each state-year, this study also considers the impact of the number of sworn local police officers and sheriffs per 100,000 population in each state. As is the case with several other variables in this study, the influence of the number of local officers varies by type of state police organization. Specifically, the creation or expansion of patrol units in suburban police departments (Reiss, 1992) simultaneously eliminates the need for highway patrol units and increases the opportunity to collaborate with state police officers that "assist smaller local agencies with serious criminal and internal investigations, complex traffic crash investigations, special event security, dignitary protection, and critical incident (SWAT) response" in these areas over time (Cordner et al., 2014, p.8). Accordingly, expansions in the number of local and county sworn officers per 100,000 population should reduce highway patrol officer strength and lead to the maintenance of or expansions in state police officer strength.

Methods

Sample

Data for two key predictors (i.e., percentage non-Hispanic blacks and the number of local sworn police officers and sheriffs per 100,000 population) are not available before 1980. The use of a partisan legislative variable—Republican control of the state legislature—eliminates Nebraska from all analyses. The state legislature in Nebraska is nonpartisan. Furthermore, because Hawaii lacks an official state police organization, the state is excluded from analyses as well. The latest year that data for the dependent variable is available is 1998 in Arkansas; 2007 in Mississippi; 2011 in Alabama and Georgia; 2013 in Louisiana, Oklahoma, Texas, and Wyoming; 2014 in Alaska, Kentucky, and New Mexico; and 2015 in all other states. These data limitations—along with the use of one-year lags on the independent variables (save the region indicators, the state police

indicator, and the year trend terms)—together lead to analyses of U.S. state police force strength based on 1,635 state-years.

Measurement

Dependent Variable: U.S. state-level police strength is conventionally measured with the number of sworn highway patrol and state police officers, divided by state population, and multiplied by 100,000 to obtain a rate per 100,000 state population.

Independent Variables: Racial threat is measured with the percentage of non-Hispanic blacks in a state. Political partisanship is assessed using two indicator variables: Republican control of the state legislature and the presence of a Republican governor. Respectively, the variables are coded as "1" if Republicans occupy greater than 50% of seats in each chamber of state legislature and if a Republican holds the position of governor. The effects of gendered politics also are assessed using two variables: percentage of women in the state legislature and the presence of a female governor. The former variable is calculated by averaging the mean percentage of women across both chambers of the state legislature while the latter variable is coded as "1" if a female holds the position of governor.

Five variables are utilized to assess travel- and traffic-related factors. Unemployment is gauged with the percentage of unemployed individuals in a state. The rate of licensed drivers in a state is calculated by dividing total number of licensed drivers by the subpopulation of eligible drivers (those age 15 and older) in a state and then multiplying by 100,000. The percentage of the state population without a high school degree is calculated using data obtained from Mark Frank (2014). Specifically, the percentage of state residents with a high school degree is subtracted from 100 to yield the percentage without a high school degree. Population density is measured by dividing state population by the total square miles of land in a state. The number of state traffic fatalities are divided by the number of vehicle miles traveled in a state to obtain vehicle fatalities per million VMT.

State rurality is measured as the percentage of state residents employed in rural job sectors (i.e., crop production, animal production, forestry, logging, fishing, hunting, and trapping). The capacity of state government to pay for increased police strength is captured by dividing real state tax revenues by state population to yield per capita real state tax revenues. The violent crime rate per 100,000 state population is obtained from Uniform Crime Reports and includes forcible rape, robbery, murder (and non-negligent manslaughter), and aggravated assault. Local sworn officers per 100,000 population is assessed by dividing the total number of sworn local police officers and county sheriffs by state population and multiplying by 100,000.

The indicator for state police denotes state police agencies that include major internal state investigative as well as patrol units. States that meet these criteria include: Alaska, Arkansas, Connecticut, Delaware, Idaho, Illinois, Indiana, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Missouri, Nebraska, New Hampshire, New Jersey, New Mexico, New York, Oregon, Pennsylvania, Rhode Island, Vermont, Virginia, Washington, and West Virginia. Hawaii's Department of Public Safety was classified as a special jurisdiction agency until recently and is excluded from all analyses (Reaves, 2011). For previously detailed reasons, Nebraska also is excluded from this study. All remaining states utilize highway patrol style agencies and major external state investigative units. Finally, the regional dummy variables for South, West, Midwest, and Northeast are based on U.S. Census definitions.

To reduce skew and minimize the effect of any outliers (Western, 2006), the aforementioned continuous variables—except for percentage black and percentage women in the state legislature—are converted to natural log form. Since the dependent variable and many of the independent variables are expressed in natural log form, interpretations of changes in the logged predictors are expressed as elasticities when possible. Elasticities are the percentage change in the dependent variable that result from a percentage change in the independent variable. To avoid potential problems with simultaneity and to allow sufficient time for the predictors to affect the outcome at hand, all explanatory variables (except for region dummies, the state police dummy, and the year trend terms) are lagged by one year.

Descriptive statistics and data sources for the preceding variables are provided in Appendixes B and C, respectively.

Estimation

Because this study examines the determinants of changes in state police organization strength over time, data for the independent and dependent variables consist of repeated observations at yearly intervals. Random-effects and fixed-effects regression estimators are specifically designed to handle this type of data (Mundlak, 1978). While a Hausman (1978) test typically is utilized to select between the two estimators, the detection of heteroskedasticity and autocorrelation in the sample data requires the use of cluster-robust standard errors to correct for the latter conditions and precludes the use of a Hausman test. Accordingly, this study relies upon the Mundlak approach to select the most appropriate estimator. Results from a joint F-test conducted as a part of the latter approach suggest that the predictors in a random-effects model are correlated with unobserved, time-invariant variables, which leads to omitted variable bias. Consequently, a fixed-effects estimator—which automatically controls for unobserved time-invariant variables—and cluster-robust standard errors are employed in all subsequent models. Years trend variables and their squares also are incorporated into this study's more comprehensive models to control for long-term changes in the dependent variable not attributable to specific years and not otherwise explained by included predictors[4].

Analyses

Initial and Interactive Fixed-Effects Multivariate Analyses

Model 1 in Table 1 introduces a year trend and all primary theoretical, travel- and traffic-related, and control variables into the equation. Importantly, Model 1's Akaike information criterion (AIC) statistic of -2782.6 provides a baseline from which subsequent models may be evaluated. Lower AIC statistics (i.e., more negative) in subsequent models indicate better model fit. Models 2 through 5 retain all of the variables

Table 1.

Initial and Interactive Fixed-Effects Estimates of the Determinants of Sworn Highway Patrol and State Police Strength, 1981-2015 (N=1635)

Independent Variable	Model 1	Model 2	Model 3	Model 4	Model 5
Racial Threat					
% Black $_{t-1}$	.007	.032	.006	.013	-.003
	(.019)	(.027)	(.019)	(.022)	(.016)
Partisan Politics					
Republican Control of State Legislature $_{t-1}$	-.027	-.028*	-.026	-.023	-.025
	(.014)	(.014)	(.014)	(.013)	(.014)
Republican Governor $_{t-1}$	.013	.012	.013	.013	.009
	(.016)	(.016)	(.016)	(.016)	(.015)
Gendered Politics					
% Women in State Legislature $_{t-1}$	.002	.002	.002	.002	.003
	(.002)	(.002)	(.002)	(.002)	(.002)
Female Governor $_{t-1}$	.012	.011	.012	.011	.006
	(.023)	(.023)	(.023)	(.022)	(.023)
Travel- / Traffic-Related					
% Unemployed (ln) $_{t-1}$	-.030	-.035	-.030	-.030	-.044*
	(.019)	(.019)	(.019)	(.019)	(.018)
Driver's Licenses per 100,000 Population	-.026	-.036	-.022	-.030	-.094
Ages 15+ (ln) $_{t-1}$	(.147)	(.142)	(.144)	(.146)	(.136)
% Population without High School Degree (ln) $_{t-1}$	.248*	.232*	.261*	.275*	.211*
	(.103)	(.104)	(.104)	(.109)	(.098)
Population Density (ln) $_{t-1}$	-.636***	-.606***	-.660***	-.669***	-.514**
	(.164)	(.158)	(.161)	(.172)	(.156)
Fatalities per Million Vehicle Miles Traveled (ln) $_{t-1}$	-.013	-.008	-.012	-.015	-.007
	(.056)	(.054)	(.056)	(.055)	(.051)
Controls					
% Rural (ln) $_{t-1}$	-.005	-.004	-.004	-.001	.007
	(.013)	(.013)	(.013)	(.012)	(.011)
Real Tax Revenue Per Capita (ln) $_{t-1}$	.113***	.106**	.115***	.112***	.073
	(.031)	(.031)	(.032)	(.030)	(.037)
% Real Expenditures on Social Welfare (ln) $_{t-1}$	-.196	-.188	-.202	-.220	-.211
	(.141)	(.139)	(.142)	(.143)	(.131)
Violent Crime Rate per 100,000 Population (ln) $_{t-1}$	.034	.032	.033	.044	.060
	(.038)	(.037)	(.039)	(.039)	(.042)
Local Sworn Officers per 100,000	-.030	-.011	-.030	-.041	.006
Population (ln) $_{t-1}$	(.129)	(.118)	(.127)	(.128)	(.114)
Interactions					
% Black $_{t-1}$ * South	—	-.035	—	—	—
		(.033)			
% Black $_{t-1}$ * West	—	—	.025	—	—
			(.045)		
% Black $_{t-1}$ * Midwest	—	—	—	-.040	—
				(.032)	
% Black $_{t-1}$ * Northeast	—	—	—	—	.122**
					(.045)
Intercept	5.854***	5.792***	5.893***	6.017***	5.947***
	(1.705)	(1.704)	(1.727)	(1.671)	(1.671)
Year Trend Variable Included?	Yes	Yes	Yes	Yes	Yes
Square of Year Trend Variable Included?	No	No	No	No	No
AIC Score	-2782.6	-2798.6	-2782.2	-2796.4	-2887.2
Adjusted R-Squared	.938	.939	.938	.939	.942

All models utilize clustered standard errors that are robust to serial correlation and heteroskedasticity.
*p ≤ .05; **p ≤ .01; ***p ≤ .001 (two-tailed tests)

contained in Model 1 and respectively interact indicators for the South, West, Midwest, and Northeast with the percentage black variable to test for regional variation in the effects of black threat. As demonstrated by the presence of a significant interaction term and a lower AIC statistic equal to -2887.2, results from Model 5 support the findings of King (2007) and Sever (2001)—who locate regional variation in the effects of black threat on social controls—and provides the best model fit thus far. Results from the latter model also indicate that the state unemployment percentage, percentage of population without a high school degree, and population density matter. None of the political variables included in Model 5, however, are significantly correlated with highway patrol and state police organization strength.

Additional Interactive Fixed-Effects Multivariate Analyses

Models 6 through 9 in Table 2 interact controls for percentage real spending on social welfare, violent crime rates, and the number of local sworn officers per 100,000 state population with an indicator for state police organizations. The reference category for each interaction with state police is highway patrol. Additionally, Model 6 interacts the state police indicator with the racial threat and political variables, Model 7 tests for possible interactions between the main effects for the political variables, and Model 8 interacts the state police indicator with the political interactions inserted into the equation in Model 7. Model 9 retains all of the significant interactions from Models 7 and 8, adds a squared year trend variable, and is considered this study's best model. Model 9's AIC statistic (equal to -3108.6) also buttresses the latter assertion.

Results from Model 9 indicate that state unemployment percentage and population density are negatively correlated with this outcome and that the percentage of the population without a high school degree is positively associated with state police and patrol organization strength. Tax revenue per capita and the number of local sworn officers per 100,000 state population also are shown to influence these police organizations. But whereas the impact of the tax base is positively correlated with state police and highway patrol strength, the influence of the number of local police

officers and sheriffs is mixed. As anticipated, increases in the latter numbers result in reductions in highway patrol strength and increases in state police strength. The effects of other predictors vary according to organization type as well. For instance, growth in social welfare spending and the violent crime rate at the state level leads to a reduction and expansion in state police strength, respectively, yet neither predictor impacts highway patrol strength.

Partisan politics, gendered politics, and racial threat matter to the outcome at hand as well. Specifically, the transition from a male, Democratic governor to a male, Republican governor results in growth in state police strength. The transition from a male, Democratic governor to a female, Republican governor interestingly results in decreases in highway patrol strength. Results also indicate, however, that a transition to a female, Democratic governor; Republican control of the state legislature; and increasing percentages of women in the state legislature have no impact on state police and highway patrol strength[5]. Finally, Model 9 results show that expansions in percentage of blacks in states in the Northeastern United States lead to growth in state police strength. There is no evidence that similar expansions in black population size within states in other regions generate similar results in state police or highway patrol organizations.

Table 2.

Additional Interactive Fixed-Effects Estimates of the Determinants of Sworn Highway Patrol and State Police Strenght, 1981-2015 (N=1635)

Independent Variable	Model 6	Model 7	Model 8	Model 9
Racial Threat				
% Black $_{t-1}$	-.018	-.020	-.021	-.025
	(.013)	(.013)	(.013)	(.013)
Partisan Politics				
Republican Control of State Legislature $_{t-1}$	-.010	.003	.0004	-.008
	(.019)	(.023)	(.024)	(.017)
Republican Governor $_{t-1}$	-.018	-.006	-.007	-.007
	(.011)	(.012)	(.011)	(.011)
Gendered Politics				
% Women in State Legislature $_{t-1}$	.002	.002	.002	.002
	(.002)	(.002)	(.002)	(.002)
Female Governor $_{t-1}$	-.002	.036	.012	.041
	(.029)	(.051)	(.067)	(.032)
Travel-/Traffic-Related				
% Unemployed (ln) $_{t-1}$	-.039**	-.039**	-.039**	-.060***
	(.013)	(.013)	(.014)	(.014)
Driver's Licenses per 100,000 Population Ages	-.054	-.050	-.050	-.007
15 and Over (ln) $_{t-1}$	(.092)	(.092)	(.091)	(.091)
% Population without High School Degree (ln) $_{t-1}$	.243**	.233*	.229*	.202*
	(.090)	(.094)	(.095)	(.091)
Population Density (ln) $_{t-1}$	-.586***	-.578***	-.580***	-.563***
	(.111)	(.110)	(.111)	(.107)
Fatalities per Million Vehicle Miles	.009	.011	.012	-.025
Traveled (ln) $_{t-1}$	(.047)	(.046)	(.046)	(.044)
Controls				
% Rural (ln) $_{t-1}$	.003	.003	.002	.013
	(.010)	(.011)	(.011)	(.011)
Real Tax Revenue Per Capita (ln) $_{t-1}$	.080**	.077*	.075*	.097***
	(.027)	(.029)	(.030)	(.023)
% Real Expenditures on Social Welfare (ln) $_{t-1}$	.060	.054	.052	.097
	(.099)	(.097)	(.098)	(.096)
Violent Crime Rate per 100,000	.006	.003	.004	.010
Population (ln) $_{t-1}$	(.029)	(.030)	(.030)	(.028)
Local Sworn Officers per 100,000	-.241**	-.243**	-.247**	-.236**
Population (ln) $_{t-1}$	(.083)	(.079)	(.080)	(.077)

(continued)

Table 2. (continued)

Independent Variable	Model 6	Model 7	Model 8	Model 9
Interactions				
% Black $_{t-1}$ * State Police	.022	.023	.025	.029
	(.022)	(.022)	(.023)	(.022)
% Black $_{t-1}$ * State Police * Northeast†	.109*	.113*	.111*	.117*
	(.046)	(.046)	(.046)	(.047)
Republican Control of State Legislature $_{t-1}$	-.020	-.020	-.015	-.014
* State Police	(.028)	(.028)	(.035)	(.028)
Republican Governor $_{t-1}$ * State Police	.058*	.055*	.057*	.050*
	(.024)	(.023)	(.027)	(.025)
Republican Governor $_{t-1}$	—	-.022	-.015	—
* Republican Control of State Legislature $_{t-1}$		(.021)	(.029)	
Republican Governor $_{t-1}$	—	—	-.014	—
* Republican Control of State Legislature $_{t-1}$			(.044)	
* State Police				
% Women in State Legislature $_{t-1}$	.001	.001	.001	.001
* State Police	(.003)	(.003)	(.003)	(.003)
Female Governor $_{t-1}$	.016	.009	.052	-.009
* State Police	(.035)	(.031)	(.104)	(.046)
Female Governor $_{t-1}$	—	-.0004	.001	—
* % Women in State Legislature $_{t-1}$		(.002)	(.002)	
Female Governor $_{t-1}$	—	—	-.002	—
* % Women in State Legislature $_{t-1}$			(.003)	
* State Police				
Female Governor $_{t-1}$	—	-.069*	-.085*	-.098**
* Republican Governor $_{t-1}$		(.032)	(.039)	(.030)
Female Governor $_{t-1}$	—	—	.025	.040
* Republican Governor $_{t-1}$			(.066)	(.058)
* State Police				
% Real Expenditures on Social Welfare (ln) $_{t-1}$	-.481*	-.474*	-.472*	-.524*
*State Police	(.211)	(.209)	(.207)	(.210)
Violent Crime Rate per 100,000	.164*	.166*	.166*	.174*
Population (ln) $_{t-1}$ * State Police	(.068)	(.068)	(.067)	(.067)
Local Sworn Officers per 100,000	.594***	.586***	.591***	.574***
Population (ln) $_{t-1}$ * State Police	(.155)	(.150)	(.152)	(.147)
Intercept	5.177***	5.205***	5.236***	4.592***
	(1.286)	(1.273)	(1.283)	(1.295)
Year Trend Variable Included?	Yes	Yes	Yes	Yes
Square of Year Trend Variable Included?	No	No	No	Yes
AIC Score	-3084.4	-3095.7	-3091.3	-3108.6
Adjusted R-Squared	.949	.949	.949	.950

All models utilize clustered standard errors that are robust to serial correlation and heteroskedasticity.
† All states in the Northeastern United States utilize a state police-type style organization.
*p ≤ .05; **p ≤ .01; ***p ≤ .001 (two-tailed tests)

Discussion and Conclusion

This study builds on two contemporary descriptive studies of state police organizations (i.e., Cordner, 2011; Cordner et al., 2014) as well as several public safety and social science studies by examining the social, political, economic, and traffic-/travel-related determinants of the number of U.S. sworn highway patrol and state police officers per 100,000 state population. As anticipated, several traffic- and travel-related factors influence state police organization strength in the United States. In terms of elasticities and according to this study's best model (Model 9 in Table 2), a 10% growth in the state unemployment rate results in a 0.6% reduction in state police and highway patrol force strength while the same percentage increase in population density leads to a substantial 5.6% decrease in this outcome. Conversely, a 10% expansion in the percentage of state population without a high school degree generates a 2% rise in police force strength. Somewhat surprisingly, changes in the state rate of licensed drivers and traffic fatalities have no impact on highway patrol and state police officer strength. The nonsignificance of the latter variables, however, likely are a consequence of independently accounting for intervening variables (i.e., unemployment and population density) that contribute to state traffic fatality rates.

As is the case with other social controls in the United States (Jacobs et al., 2012), the tax base matters to the outcome at hand. Specifically, a 10% increase in state tax revenue per capita yields about a 1% increase in state police and patrol force strength. In accord with expectations derived from the work of Weber (1946), growth in state violent crime rates affect state police—but not highway patrol—strength. In terms of elasticities, a 10% increase in a state's combined murder, forcible rape, robbery, and aggravated assault rates result in an approximate 1.7% expansion in the number of sworn state police officers per 100,000 state population. Best model results additionally indicate that increased spending on social welfare has no effect on highway patrol strength, yet considerably reduces spending on state police strength. A 10% increase in social welfare spending leads to around a 5.2% drop in the latter's force strength. Also as hypothesized, changes in local police strength influence state police and

highway patrol organizations in different ways. Increases in the number of local police officers and sheriffs per 100,000 population reduces the need for, and hence the rate of, highway patrol officers, yet increases the rate of state police officers who collaborate with local officials during complex crimes, traffic investigations, and critical incident responses. Overall, a 10% increase in sworn local police strength leads to an approximate 2.4% reduction in a highway patrol officer strength and a remarkable 5.7% growth in a state police strength. In terms of elasticities, the latter effects are the strongest in this study.

Consistent with prior studies (e.g., Davey, 1998; Kathlene, 1995; Western, 2006), this research finds that partisan and gendered politics also matter to state police and patrol strength. Yet, the effects of partisanship and gendered politics on this outcome are more complex than previously hypothesized. Plausible interactions between several political variables reveal that a transition from a male, Democratic governor to a male, Republican governor results in a 5% growth in state police strength, yet makes no significance difference in terms of highway patrol strength. A transition from a male, Democratic governor to a female, Republican governor, on the other hand, leads to a 9.8% decrease in patrol strength and does not significantly impact state police strength. Results also indicate that transitions from a male, Democratic governor to a female, Democratic governor are virtually indistinguishable in terms of highway patrol and state police force strength. Interestingly, the preceding findings in tandem suggest that female, Republican governors pursue party over gender interests while the political actions of female, Democratic governors align with their party and gender interests when making decisions about police strength at the state level.

This study also locates a positive, significant relationship between black threat and state police strength in the Northeastern United States. Yet this discovery, while consistent with Cordner's (2011) documentation of large state police force numbers in the region, raises the question, "Why does state police strength only grow in response to black threat in the Northeast?". A plausible answer can be derived from the socio-historical work of Bechtel (1995). Specifically, the latter author reveals that throughout the early 20th century, politicians and business owners in this

historically industrialized region increasingly advocated for and relied upon state police forces (instead of local police or state militia) to control threats and violence emanating from organized labor disputes. Given this precedent, it seems likely that contemporary state police forces in the Northeast continue to play an active part in the suppression of groups deemed politically or economically threatening to dominant societal groups. It further follows that the targeting of black motorists by state police in the Northeast region during the most recent U.S. drug war (see Harris, 1999 for details) may in fact be partly attributable to blacks' subordinate group position vis-à-vis whites, not the individual racial prejudices of white officers. As Blumer (1958) explains, the seemingly individual-based acts of racial prejudice by majority group members towards subordinate group members are based on former perceiving themselves as representatives of the dominant racial group and the latter as representatives of subordinate racial group. Accordingly, future studies of racial profiling by state police organizations should consider accounting for state-level contextual factors—especially the percentage of black population—in their analyses to arrive at the most accurate conclusions.

In sum, this research utilizes a fixed-effects estimator and panel data to assess the influence of race, politics, the economy, and travel-/traffic-related factors on sworn highway patrol and state police force strength in the United States between 1981 and 2015. Analyses indicate that racial threat theory partly explains variation in this outcome over time, but only in the Northeastern United States. Other theory-based predictors resulting from interactions between partisan and gendered political variables account for fluctuations in state police and highway patrol strength as well. Additionally, findings suggest that changes in population density, the tax base, the percentage of the population without a high school degree, violent crime rates, and spending on social welfare at the state level, as well as shifts in local law enforcement strength, influence state police and patrol organization strength over this period. Surprisingly, fluctuations in the number of state traffic fatalities per million vehicle miles traveled and the number of driver's licenses per 100,000 state population—two seemingly important traffic-/travel-related factors—have no impact on the rate of sworn state police and patrol officers per 100,000 state population.

Notes

[1] In 2008, for instance, state police and highway patrol organizations employed 60,772 of the 765,246 full-time sworn law enforcement officers utilized at the federal, state, special jurisdiction, and local levels of government (Reaves, 2011). Figures A1 through A4 in Appendix A depict the variation in the average raw and per 100,000 population numbers of sworn officers in state police and highway patrol organizations (excluding Hawaii and Nebraska) between 1981 and 2015.

[2] This study does not examine ethnic (i.e., Hispanic) group threat. A reliable measure of percent Hispanic is unavailable for many of the state-years between 1981 and 2015.

[3] Sworn officers in Bureaus of Investigation are not included in the counts for highway patrol-style agencies.

[4] The present research cannot incorporate year dummy variables because the number of variables in each equation would exceed the number of clusters (k-1) used to calculate the standard errors and result in an invalid global F-test for the model.

[5] All Northeastern U.S. states utilize a state-police type organization. Accordingly, the cell for highway patrol-type organizations in this region is a structural zero, automatically omitted by the statistical program, and not further discussed.

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Appendix A

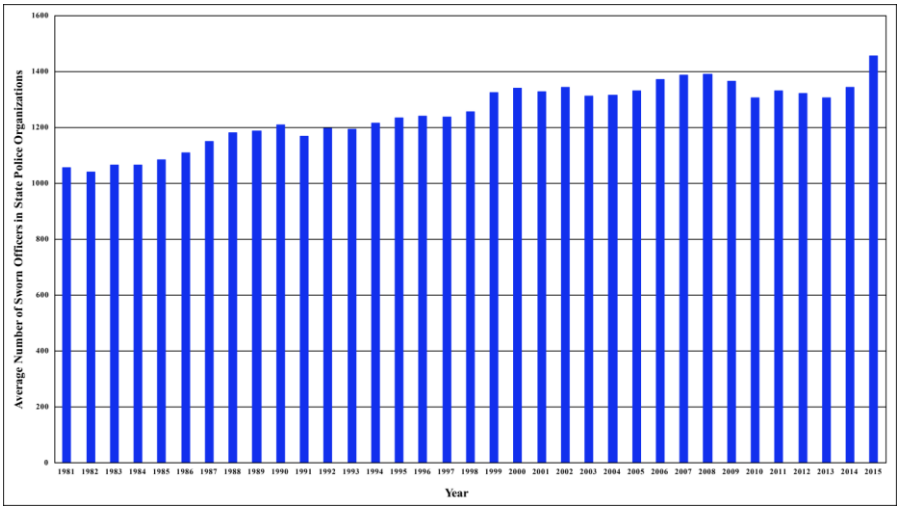

Figure A1. Variation in the Average Number of Sworn Officers in State Police Organizations, 1981-2015

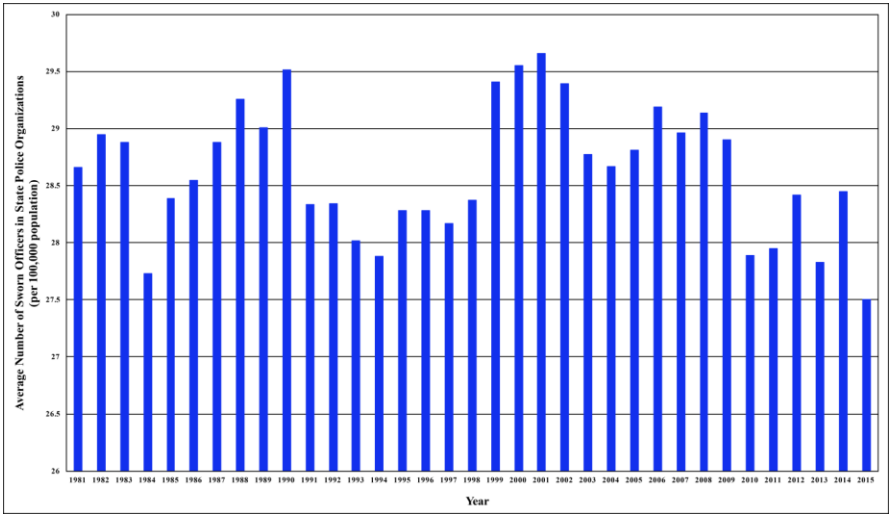

Figure A2. Variation in the Average Number of Sworn Officers in State Police Organizations per 100,000 Population, 1981-2015

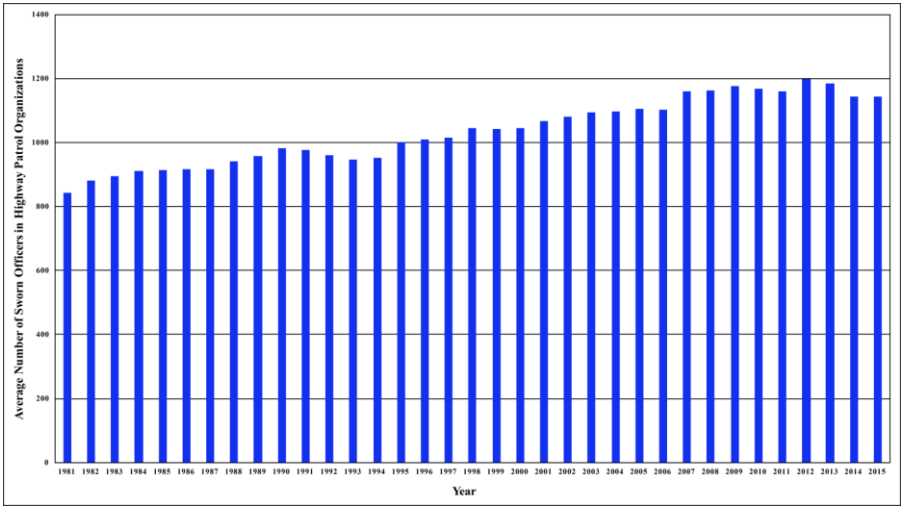

Figure A3. Variation in the Average Number of Sworn Officers in Highway Patrol Organizations, 1981-2015

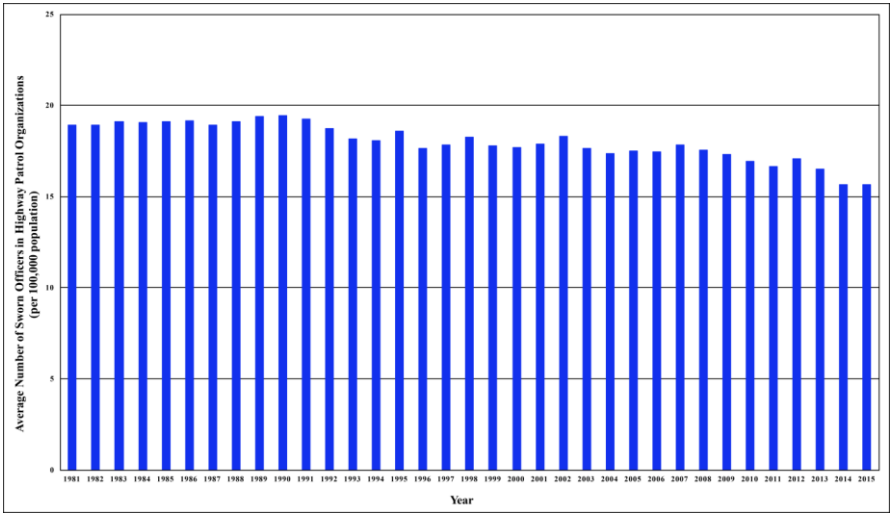

Figure A4. Variation in the Average Number of Sworn Officers in Highway Patrol Organizations per 100,000 Population, 1981-2015

Appendix B

Table B1.
Predicted Signs, Means, Standard Deviations, and Ranges of Variables (N =1,635)

Variable	Mean	SD	Minimum	Maximum
Ln State-Level Police Force Strength	3.063	.420	1.990	4.577
% Black$_{t-1}$	9.687	9.156	.215	36.607
Republican Control of State Legislature$_{t-1}$	.313	.464	0	1
Republican Governor$_{t-1}$	.484	.500	0	1
% Women in State Legislature$_{t-1}$	18.717	8.584	.820	45.333
Female Governor$_{t-1}$	.076	.266	0	1
Ln % Unemployed$_{t-1}$	1.760	.336	.833	2.890
Ln Driver's Licenses per 100,000 Population$_{t-1}$	11.378	.074	11.070	11.748
Ln % Population without High School Degree$_{t-1}$	3.695	.151	3.267	4.110
Ln Population Density$_{t-1}$	4.381	1.439	-.351	7.105
Ln Fatalities per Million Vehicle Miles Traveled$_{t-1}$	-4.049	.407	-5.167	-2.871
Ln % Rural$_{t-1}$	-.784	.878	-4.737	1.291
Ln Real Tax Revenue Per Capita$_{t-1}$	.098	.738	-2.048	2.534
Ln % Real Expenditures on Social Welfare$_{t-1}$	3.996	.132	3.369	4.279
Ln Violent Crime Rate per 100,000 Population$_{t-1}$	5.969	.571	3.850	7.126
Ln Local Sworn Officers per 100,000 Population$_{t-1}$	5.134	.241	4.415	5.885
State Police	.477	.500	0	1
South	.318	.466	0	1
West	.254	.436	0	1
Midwest	.235	.424	0	1
Northeast	.193	.395	0	1

ABBREVIATIONS: Ln = Log-transformed; SD = Standard Deviation

Appendix C

Data Sources

Sworn State Police and Highway Patrol Officers and Violent Crime Rates: Uniform Crime Reports. U.S. Federal Bureau of Investigation.

Population: Census of Population and Housing. U.S. Census Bureau.

Percentage Black: Population Estimates. U.S. Census Bureau.

Republican Governor, Female Governor, and Republican Control of the Legislature: Klarner, Carl. 2011. State Partisanship Balance and State Elections Data Files. http://www.indstate.edu/polisci/klarnerpolitics.htm

Percentage Women in Legislature: Center for American Women and Politics, Eagleton Institute of Politics, Rutgers University. http://www.cawp.rutgers.edu/facts/levels_of_office/state_legislature

Percentage Unemployment and Rural: Bureau of Labor Statistics. U.S. Department of Labor.

Number of Driver's Licenses: Federal Highway Administration. U.S. Department of Transportation.

Land Area: Topologically Integrated Geographic Encoding and Referencing Geographic Database. U.S. Census Bureau.

Traffic Fatalities and Vehicle Miles Traveled: Fatality Analysis Reporting System. U.S. National Highway Traffic Safety Administration.

Real Tax Revenue and Social Welfare Expenditures: Government Finance Statistics. U.S. Census Bureau.

Sworn Local Police Officers and County Sheriffs: Government Employment and Payroll Data. U.S. Census Bureau.

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