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Evaluating the Effectiveness of Gun Control Laws in the United States

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Evaluating the Effectiveness of Gun Control Legislation in the United States



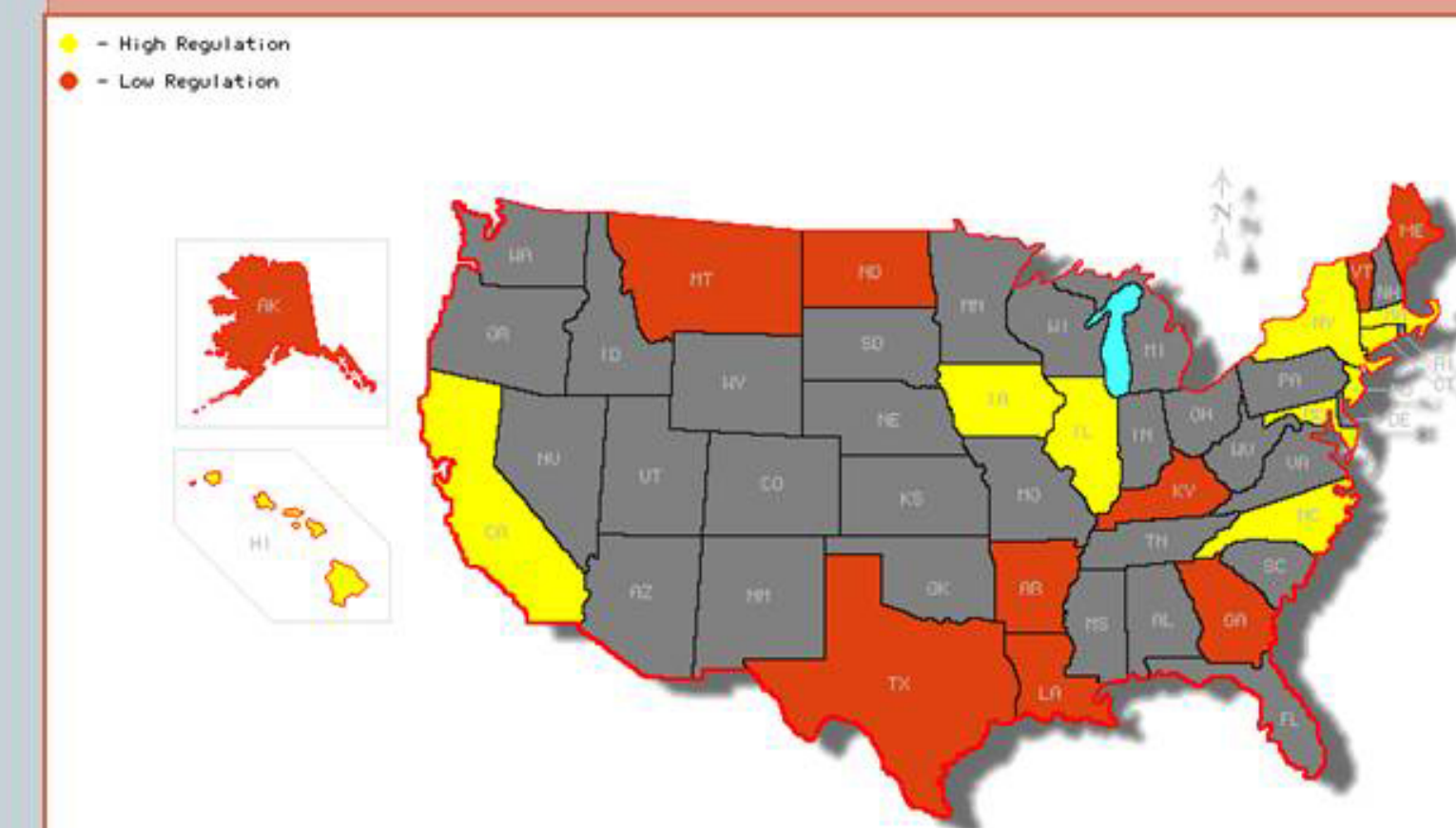
Objectives

- Provide a comprehensive survey of the gun laws in the ten most and least stringent states and construct an annual Gun Control Index (GCI) for each of the twenty sample states from 1996 to 2005.
- Next using this index, the study aims to discover if gun control legislation is an effective deterrent mechanism for crime, or more specifically gun crime, anticipating that gun control legislation will have a significant impact on reducing violent crimes involving firearms.

Index Construction

- Uses the methodology of the Open Society Institute's Gun Control Index created for the publication, *Gun Control in the United States, A Comparative Survey of State Firearm Laws*
- Takes a comprehensive survey of gun control laws in each state, analyzing the entire body of gun-related legislation, systematically comparing gun laws and scoring them on 30 weighted criteria in six different categories. Each criteria is assigned points on a scale.

Sample States



Regression Results

	All Sample States		High Regulation		Low Regulation	
Model	(1)	(2)	(3)	(4)	(5)	(6)
Variables	VCR	VCRF	VCR	VCRF	VCR	VCRF
Constant	480.180***	-180.162**	164.789	15.637	-508.574***	-277.811***
GCI	-.470	-.552***	-2.101**	-1.175***	-5.514***	-1.705***
LAW	.545	.152	.354	-.330	3.892***	1.788***
UR	1.191221***	32.408***	51.501	34.358*	79.457*	-5.465
POP	5.125**	.944	1.059	1.071	.623	-1.450
R ²	.389	.228	.153	.244	.753	.711
F-stat	30.995	13.461	4.293	7.029	72.580	55.410
Durbin-Watson	.401	.527	.269	.823	1.182	.805

* Denotes significance at the $\alpha=0.10$ level
** Denotes significance at the $\alpha=0.05$ level
*** Denotes significance at the $\alpha=0.01$ level

Previous Studies: Kwon and Baack (2005)

- Open Society Institute's Gun Control Index
- Years of analysis: 2000
- Multivariate linear regression
- Sample of 12 highest and 12 lowest ranking states
- Dependent: total gun-related fatalities (per 100,000 people) in each state
- Controls: violent crimes per 100,000 people, % of population that is African American, # of law enforcement employees, annual unemployment rate, % of population in a metropolitan area
- Results: States with high levels of gun control experience 6 fewer fatalities per 100,000 people and socioeconomic and law enforcement factors are as statistically significant in reducing firearm-related fatalities as are gun control laws

Weighted Criteria for Evaluating Gun Control Laws

Registration of Firearms	Safety Training	Regulation of Firearm Sales	Safe Storage & Accessibility	Owner Licensing	Litigation & Prosecution
Registration of assault weapons (0-5)	Registration of handguns (0-7)	Background check in dealer sale of handgun (0-2)	Safe Storage requirement (0-4)	Owner licensing for assault weapons (0-3)	Bar on litigation against the gun industry (1-5)
Permit to purchase assault weapons from a dealer (0-2)	Permit to purchase handguns from a dealer (0-3)	"Junk gun" or "Saturday night special" ban (0-6)	Child Access Prevention (CAP) law (0-2)	Owner licensing for handguns (0-3)	State prosecution of municipal gun law (1-4)
Permit to purchase assault weapons in private transactions (0-2)	Permit to purchase handguns in private transactions (0-4)	Background check in private sale of handgun (0-1)	Minimum age for private purchase of handgun (1-3)	Minimum age for possession of handgun (0-3)	
Registration of handguns (effect and storage) (0-2)		Background check in private sale of handgun (0-2)	Waiting period for handgun (0-6)	Owner licensing for handgun (0-6)	
Permit to purchase handgun from a dealer (0-2)		Minimum age for private purchase of handgun (1-2)	One-guns-a-month law for handgun (0-7)	Minimum age for possession of handgun (1-3)	
Permit to purchase handgun in private transactions (0-2)		Waiting period for handgun (0-5)			

Variable Definitions and Sources

Dependent Variables		Definition	Source
	Violent Crime Rate (VCR)	# of incidents per 100,000 inhabitants	FBI's Uniform Crime Report
	Violent Crime Rate - Firearms Only (VCRF)	# of incidents per 100,000 inhabitants	FBI's Uniform Crime Report
Independent Variables		Definition	Source
-	Gun Control Index Rating (GCI)	See Section II for complete definition	ATF's State Laws and Published Ordinances - Firearms
-	Number of Law Enforcement Personnel (LAW)	# of full-time equivalent police protection employees per 1,000 inhabitants	Annual Survey of Public Employment
+	Unemployment Rate (UR)	average rate (%) for calendar year	Bureau of Labor Statistics
+	Population Density (POP)	total number of residents per square mile	US Census Bureau

Regression Results, lagged GCI

	All Sample States	High Regulation	Low Regulation
Model	(7)	(8)	(9)
Variables	VCRF	VCRF	VCRF
Constant	-143.798**	35.110	-299.669***
GCI _{t-1}	-.446**	-.899***	-1.104**
LAW	.092	-.356	1.558***
UR	31.102**	30.348*	1.820
POP	.940	.897	-.729
R ²	.204	.211	.733
F-stat	10.477	5.152	56.271
Durbin-Watson	.561	.912	.929

* Denotes significance at the $\alpha=0.10$ level
** Denotes significance at the $\alpha=0.05$ level
*** Denotes significance at the $\alpha=0.01$ level

Previous Studies: Moorhouse and Wanner (2006)

- Open Society Institute's Gun Control Index
- Years of analysis: Model 1—1999 and 2001, Model 2—1995
- Sample includes all 50 states
- Dependent: Model 1—overall crime rate, as well as violent, property, murder, rape, robbery, assault, burglary, larceny, and vehicle crimes; Model 2—Open Society Institute's Gun Control Index
- Controls: Model 1—"spill-in" effect of neighboring states' gun control laws, population density, % of population in a metropolitan area, per capita income, poverty rate, high school dropout rate, proportion of African American and Hispanic populations, arrest rate, average prison sentence; Model 2—aggregate crime rate, population, state size in sq. mi., % of population in a metropolitan area, per capita income, proportion of Democrats in state legislature, dummy for 17 southern states
- Results: Model 1—gun control does not reduce the crime rate and the "spill-in" effect is negligible; Model 2—crime rate does influence gun control legislation and the probability of adopting new gun control laws is positively related to the proportion of Democrats in the state legislature

Index Scoring Methodology

- Laws included in index represent ideal gun control setting and are assigned the maximum possible points
- High score denotes high regulation (max 100 points)
- Low score denotes low regulation (min -10 points)
- Each law is distributed points from the pool of total possible points based on its relative importance
 - Example: Handguns are more frequently involved in gun crimes, thus handgun laws receive more points than rifle laws

Empirical Model

- Ordinary Least Squares (OLS) regression
 - (1) $VCR = a_0 + a_1(GCI) + a_2(LAW) + a_3(UR) + a_4(POP)$
 - (2) $VCRF = a_0 + a_1(GCI) + a_2(LAW) + a_3(UR) + a_4(POP)$

Policy Implications

- Gun control has a statistically significant effect on reducing violent crimes
 - Largest effect is seen in states with low regulation
- Wide variation in state gun control laws is most likely due to variation in state demographics