Analysis of the Factors Affecting Violent Crime Rates in the US

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ABSTRACT

The goal of this study is to analyze the factors affecting violent crime rates in the US. It is hypothesized that an increase in the gun ownership rate tends to increase violent crimes in the US. It is hypothesized that urban areas in the US tend to have more violent crimes than rural areas. An OLS regression model is formulated using cross-sectional data set across 50 states and the District of Columbia for the year 2019. The endogenous variable is the violent crime rates per 100,000 inhabitants across 50 states and the District of Columbia. The independent variables used in the OLS regression model are population density per square mile, unemployment rate, percentage of the population living in poverty, and gun ownership rate. The four exogenous variables that are found to be statistically significant are gun ownership, unemployment rate, population density per square mile, and percentage of population living in property. An attempt is also made to formulate strategies that would help in reducing violent crime rates in the US.

Keywords— Population Density, Criminal Justice Reform, Gun Control, Unemployment Rate, Police Reform

I. INTRODUCTION

In 2019, the total number of violent crimes reported in the US was 1.2 million (UCR, 2019). Approximately, two thirds of violent crimes in the US can be attributed to aggravated assaults. Some of the prominent offences listed under the category of violent crimes include robbery, aggravated assault, rape and sexual assault, murder, and non-negligent manslaughter (UCR, 2019). In 2019, the violent crime rate in the US per 100,000 inhabitants was 366.7(UCR, 2019). In 2019, the violent crime rate in the District of Columbia per 100,000 inhabitants was 1,049(UCR, 2019). Research studies have shown that the violent crime rate per 100,000 inhabitants has fallen from 758.20 in 1991 to 366.7 in 2019 (UCR, 2019). Studies have shown that property crimes tend to outnumber violent crimes in the US. In 2019, the total number of property crimes in the US was around 6.93 million (UCR, 2019). It is very important to understand how crime levels may differ among different communities. It is imperative to understand how factors such as poverty, unemployment rate, gun ownership rate, social mobility, and population density impact violent crimes in the US.

II. LITERATURE REVIEW

Studies have shown that reduction in violent crime rates can lead to significant savings for municipal budgets (Hassett& Shapiro, 2012). Reduction in violent crimes can lead to gains in housing values (Hassett& Shapiro, 2012). Gains in housing prices would lead to increase in revenues from property taxes (Hassett &Shapiro, 2012). Studies have found that higher levels of firearm ownership are associated with firearm assault and firearm robbery (Hemenway, Fleegler, Lee, Mannix & Monuteaux, 2015). Social and economic forces such as poverty, social exclusion, and inequality tend to play a very important role in shaping the problem of violent crimes in the US (Kramer, 2000).

High violent crime rates can be attributed to structural linkages among unemployment, family disruption, and economic deprivation. Favorable employment market conditions are found to have a significant negative impact on violent crimes (Ahmed, Doyle & Horn, 1999). Sustained unemployment tends to increase violent crime rates (Land & Phillips, 2012). There is a positive relationship between robbery rates and unemployment rates (Kohfeld, & Sprague, 1988).Successfully targeted employment programs would go a long way in helping urban areas fighting crime (Kohfeld, & Sprague, 1988). Studies have shown that higher beer taxes tend to decrease the probability of assault as well as alcohol and drug involved assault (Markowitz, 2005).

III. METHODOLOGY

The goal of this study is to analyze the factors affecting violent crime rates in the US.

$$C = f (POP, U, P, G)$$
$$C = \alpha + \beta_1 POP + \beta_2 U + \beta_3 P + \beta_4 G$$

C is the reported violent crime rate in the US per 100,000 inhabitants across 50 states and the District of Columbia. POP is the population density per square mile across 50 states and the District of Columbia. U is the unemployment rate across 50 states and the District of Columbia. P is the percentage living in poverty across 50 states and the District of Columbia. G is the gun ownership rate across 50 states and the District of Columbia. Data has

been gathered from the Uniform Crime Reporting Program (UCR) published by the Federal Bureau of Investigation, and Statista; the statistics portal for market data and market research.

ANOVA					
	df	SS	MS	F	Significance F
Regression	4	842849.595	210712.4	13.10081	3.36028E-07
Residual	46	739860.4524	16083.92		
Total	50	1582710.047			

Table 1: ANOVA

It is hypothesized that urban areas in the US tend to have more violent crimes than rural areas. It is hypothesized that an increase in the gun ownership rate tends to increase violent crimes in the US. An OLS regression model is formulated using cross-sectional data set across 50 states and the District of Columbia for the year 2019. The endogenous variable is the violent crime rates per 100,000 inhabitants across 50 states and the District of Columbia. The independent variables used in the OLS regression model are population density per square mile, unemployment rate, percentage of the population living in poverty, and gun ownership rate.

Regression Statistics	
Multiple R	0.729750433
R Square	0.532535695
Adjusted R Square	0.491886625
Standard Error	126.8224068
Observations	51

Table 2: Regression Statistics

	Coefficients	Standard Error	t Stat	P-value
Intercept	-108.203376	96.37753179	-1.1227	0.267389
POP	0.039999312	0.012050456	3.319319	0.001771
U	63.68029483	27.79406346	2.291147	0.026585
P	17.27612561	8.348046	2.069481	0.044023
G	3.579717253	1.436040441	2.492769	0.016337

Table 3: Regression Coefficients

R square is a goodness of fit measure for linear regression models. It indicates the percentage of variance in the dependent variable that the independent variables explain. R square shows the amount of variance of reported violent crime rates in the US per 100,000 inhabitants explained by population density per mile, unemployment rate, and percentage living in poverty, and gun ownership rates across 50 states and the District of Columbia.

In this case, the model explains 53.25% of the variance in the violent crime rates per 100,000 inhabitants across 50 states of the US and the District of Columbia.

Two tail P values: tests the hypothesis that each coefficient is different from zero. To reject this, the P value has to be less than 0.05.

P value for POP is 0.0017 which is less than 0.05. Thus POP is statistically significant.

P value for U is 0.0265 which is less than 0.05. Thus U is statistically significant.

P value for P is 0.044023 which is less than 0.05. Thus P is statistically significant.

P value for G is 0.0163 which is less than 0.05. Thus G is statistically significant.

If the P value for the F test of overall significance is less than 0.05, you reject the null hypothesis and conclude that the model provides a better fit than the intercept only model. In this case, 3.36028E-07 is less than 0.05. In other words, the model does have merits. The results indicate that urban areas in the US tend to have more violent crime rates per 100,000 inhabitants than rural areas. The results indicate that an increase in the unemployment rate tends to increase the violent crime rates per 100,000 inhabitants across 50 states of the US and the District of Columbia. The OLS regression results also indicate that increases in the gun ownership rate as well as increases in poverty rates tend to increase the violent crime rates per 100,000 inhabitants across 50 states of the US and the District of Columbia.

IV. RECOMMENDATIONS

It is important to focus on gun control. Comprehensive background checks should be carried out for people who are contemplating to own guns.. People with diagnosed mental health conditions should not be allowed to own guns. Ownership of assault rifles should be banned completely. It is important to treat violent crimes as a major public health concern. Effective media campaigns and technology should be used to educate the masses of the adverse impacts of violent crimes. It is important to establish localized programs that would help in reducing the violent crimes. Gun-free zones should be established in different parts of the country. There is an immediate need for police reform. Research studies show that police officers with an undergraduate degree are found to be more culturally sensitive, and are often more successful in dealing with diverse neighborhoods. There is an immediate need to ensure that an entry level police officer has at least an undergraduate degree. It is also a good strategy to recruit police officers who have local ties to the neighborhood. Localized recruitment strategies for police officers should be implemented. It is important to ensure that entry level police officers are exposed to cultural sensitivity as well as anti-discrimination programs. It is important to build local networks and foster civic culture. It is a very bad idea to criminalize certain regions or ethnic groups. This strategy would actually make it difficult for people to coexist together.

It is important to look at the big picture and focus on locally targeted programs. It is imperative to analyze the risk factors that cause young people to get involved in criminality. The focus should be on prevention as well as diagnosing the reasons that cause people to commit crimes. Job training programs should be implemented in areas that have high rates of crime. Entrepreneurship should be encouraged in areas that have high crime rates. Financial institutions should be encouraged to provide credit/loans to budding entrepreneurs in neighborhoods that have high crime rates. NGOs/Non Profits operating in high crime neighborhoods should be provided with ample funds in order to create well-being campaigns. Issues such as early childhood education, and family interventions should be given utmost importance.

Traditionally, high schools located in high crime neighborhoods tend to have lower budgets due to less revenue from property taxes. High schools located in high crime neighborhoods tend to get a smaller share of state funding. It is imperative that states allocate substantial budgets for those high schools located in high crime neighborhoods. A large number of wealthy school districts have surplus funds left over at the end of their academic year. The state governments should encourage the wealthy school districts to share their surplus funds with those schools located in high crime neighborhoods. Community colleges and public universities should be established in neighborhoods that have high rates of poverty. Trade schools/vocational training schools should also be established in neighborhoods that have high crime rates. Educational opportunities would enable the residents of low income neighborhoods to experience a higher degree of social mobility. Revitalization of the high crime neighborhoods is vital. Firms should be given tax incentives for moving their operations to low income neighborhoods. Job opportunities coupled with a living wage employment would help in reducing violent crimes to a great extent. It is important to focus on reducing socio-economic inequalities as well as reducing the digital divide. The issue of educating the youth should be given utmost importance. It is imperative to examine the drivers of violence.

Low income households tend to have limited access to credit. Payday loan firms tend to thrive in low income neighborhoods. These payday loan companies tend to charge exorbitant rates of interest. It is essential that the government regulate the rates of interest that are charged by the payday loan firms. Low income households in the US are often at the mercy of these predatory lenders. There is an immediate need for criminal justice reform. US has the highest incarceration rate in the world. Racial disparities exist as far as incarceration rates are concerned. Research studies have shown that mass incarceration disproportionately impacts the poor and people of color. It is important to ensure that ex-offenders have access to stable housing. Access to job opportunities and a living wage would ensure that the ex-offenders are able to fully assimilate in the real world. There is a high likelihood that the lack of job opportunities might force the ex-offenders to again resort to crimes. Rehabilitation and reintegration polices need to be implemented for the ex-offenders. Issues such as urban planning and urban upgrading need to

be given importance. It is essential to promote partnerships between neighboring communities.

Lastly, cyberspace has become the new domain for violence. Social media is now being used to portray violence as well as bullying. It is important to control this aspect as the youth can easily get influenced by the violence that is going virtual on a regular basis.

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