How Does Police Activity Affect Crime Rates?

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ABSTRACT

We study the relationship between crime rates and police activity using data from communities across the country in 2018. Through regression analysis, using OLS methodology, we test and find a negative relationship between crime rates and police activity, while taking into consideration factors that measure the economic condition, demographics, and income in communities across the United States. This negative relationship supports the expected trend of increasing police resources leading to a decrease in crime.

Introduction

Crime is generally defined as an act that is punishable by law. Whether the crime is violent or nonviolent, researching what variables impacts these rates is an interesting area to study. In this study, the total crime per 100,000 people in different communities across the United States, and different variables are used to indicate what may increase or decrease crime among these communities. Examples of violent crimes include murder, rape, and assault, and nonviolent crimes may include larceny. The main purpose of this analysis is to study what variables may impact total crime among communities, which is the combination of both violent crimes and nonviolent crimes.
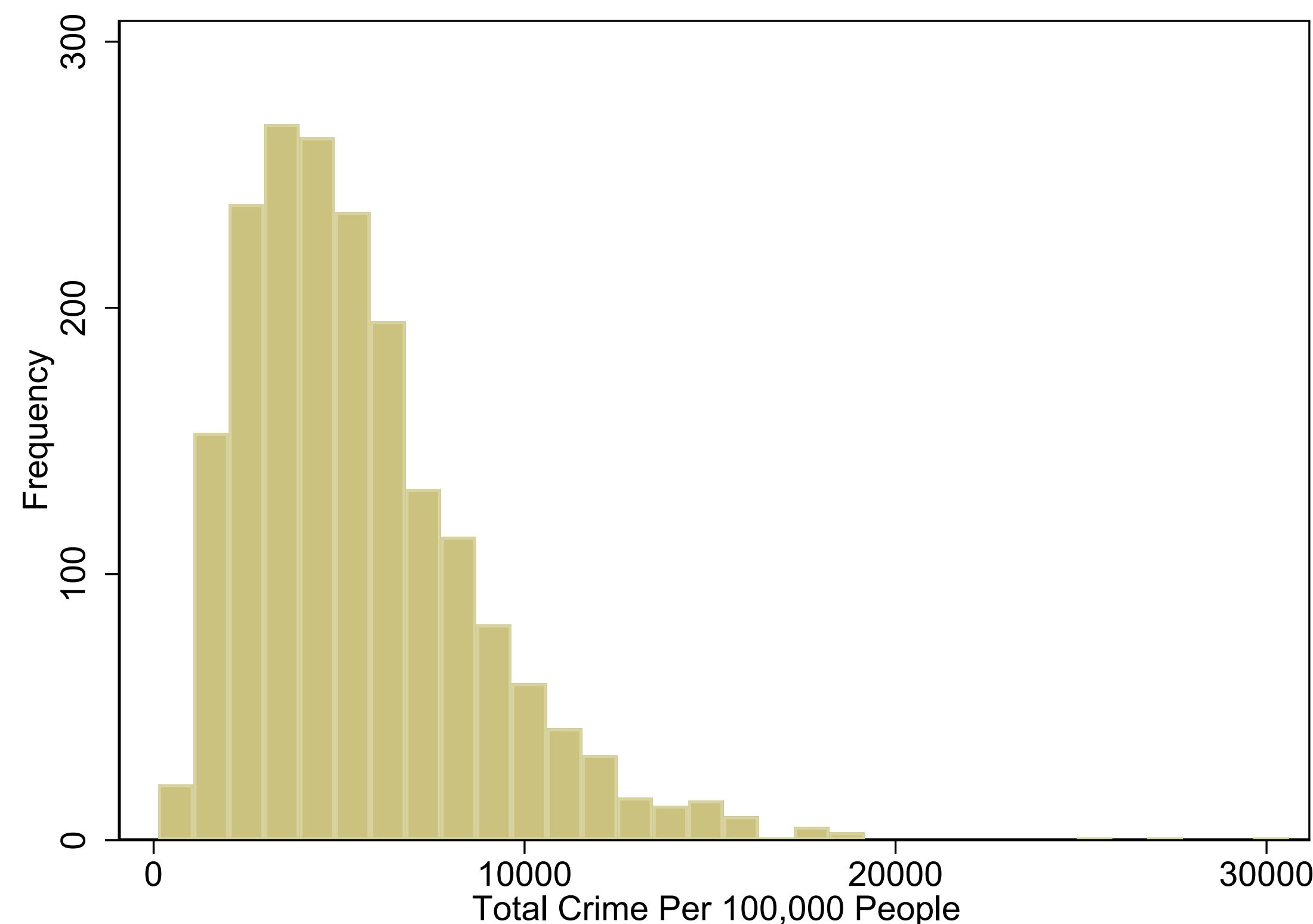
Regression Results

Regression (7) is the full model that includes all the variables and robust standard errors. The results show that r-squared is approximately .722, indicating that approximately 72.2% of the total variation in the crime per 100,000 among communities in the United States is 'explained' by this model. The explanatory variable 'police per 100,000 people', which measures police activity, is statistically significant at the 5% and 10% levels of significance in regression (7). This means that, holding all other variables constant, if the police per 100,000 people increases by 100 police per 100,000 people, the estimated total crime per 100,000 people will decrease by approximately 69.3. This is consistent with the expectation that if police activity increases, crime will decrease.

Summary Statistics

Variable	Obs.	Mean	Std. dev.
Total Crime Per 100,000 People	1,902	5526.02	3228.74
% Under Poverty	2,215	11.62%	8.6
% Use Public Transportation	2,215	3.04%	4.9
% Divorced	2,215	10.81%	3
Avg. People Per Family	2,215	3.13	0.2
Police Per 100,000 People	343	246.49	273.8

Regression Results

VARIABLES	(6) Total Crime per 100,000 people	(7) Total Crime Per 100,000 People
% Under Poverty	199.4***	199.4***
	-23.08	-24.57
% Use Public Transportation	41.43**	41.43**
	-17.62	-18.28
% Divorced	523.9***	523.9***
	-60.93	-66.83
Avg. People Per Family	-811.5	-811.5
	-610.6	-676.1
Police Per 100,000 People	-0.693*	-0.693**
	-0.396	-0.303
Constant	-91.53	-91.53
	-2,888	-2,474
State Control	Yes	Yes
Observations	302	302
R-squared	0.722	0.722

Standard errors in parentheses
Regression (7) includes robust standard errors
*** p<0.01, ** p<0.05, * p<0.1

Distribution of Total Crime Per Population

The graph above illustrates how the distribution of total crime per 100,000 people is right skewed.

Methodology and Model

The data set was attained from Kaggle, a data science community. The data set is compiled of data from US communities in 2018 and contains 146 variables that fall into the following categories: Community/Location, Demographics, and Types of Crimes/Overall Crime Rates.
The methodology implemented was Ordinary Least Squares to take advantage of its four unique assumptions which are: The expected value of the error terms is zero, the variance of each error term is equal to a constant, the error terms are normally distributed, and each error term is independent of other error terms.

Conclusion

The aim of this study was to consider how police activity impacted the number of crimes per 100,000 individuals in a community, and the results aligned with our intuition and indicated an inverse relationship, that is, if police activity increases, crime will decrease analyzing how different variables can impact crime rates can help researchers understand how communities can mitigate crime. Our hypothesis is that as police activity in communities increases, crime will decrease, and the regression results reinforce this idea.