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The Effects of Socioeconomic Factors on Violent and Property CRIMES

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Abstract

Due to poor socioeconomic conditions such as declining wages and high unemployment rates, unskilled young people may be drawn to the commission of crime. Several recent studies have found that worsening economic conditions cause social disorder and crime. The purpose of this study is to assess whether various socioeconomic indicators have a positive impact on both violent and property crime rates at the county level within the state of Texas in the United States. The present study hypothesizes that: 1) violent and property crime rates are higher in counties with high levels of poverty; 2) violent and property crime rates are higher in counties with high levels of unemployment; 3) violent and property crime rates are higher in counties with low levels of median household income; 4) violent and property crime rates are higher in counties with low levels of educational attainment.

The data used in the analysis was collected from the Uniform Crime Report (UCR) and the United States Department of Agriculture: Economic Research Service (USDA) for the year 2015. Within the present study, the total enumeration of counties (254) located in the state of Texas (United States) was designated as the units of analysis. This study measures two dependent variables: violent crime rates and property crime rates. Four unique independent variables were chosen for the analysis based off findings in the current body of literature: (a) poverty, (b) unemployment, (c) median household income, and (d) educational attainment. An Ordinary Least Squares (OLS) regression model is employed to empirically investigate the relationships between socioeconomic indicators and crime rates. In addition, Geographic Information Systems (GIS) were employed to demonstrate the link between unemployment, violent crime, and property crime.

The findings of the current study reveal that (1) violent crime rates are on average higher in counties with high levels of unemployment; (2) property crime rates are higher on average in counties with higher levels of unemployment. To clarify, a 1 Standard Deviation (SD) unit increase in unemployment predicts a 6% increase in the expected count of violent crime (p < .001). Also, a 1 SD unit increase in unemployment predicts a 29% increase in the expected count of property crime (p < .001). Unemployment is the only significant independent variable and can thus be viewed as a possible source of criminality within the counties in Texas. One method of reducing unemployment and ultimately reducing crime is by implementing a community development model. This will lead to the creation of a "community network" that draws local resources, services, and facilities together for the creation of more jobs. The contributions, limitations and suggestions for the future study were discussed in conclusion.

1. Introduction

Due to poor socioeconomic conditions (e.g. declining wages and high unemployment rates), unskilled young people may be drawn to the commission of crime[1].

Several studies found that worsening economic conditions cause social disorder and crime[2][3]. Rosenfeld and Levin (2016) represented the most plausible research on the correlation between acquisitive crime and inflation[2]. They examined how macroeconomic conditions (i.e., inflation, unemployment, income, economic growth, and consumer sentiment) impacts financial crime rates covering the period from 1960 to 2012 on the national level[2]. The study concluded that inflation factors affect crime rates on a both short and long-term basis. Similarly, Seals and Nunley (2007) found that the exogenous macroeconomic variable (inflation) is statistically significant, positive, and consistent for all property crime rates in the United States from 1959 to 2005 on the national level[4]. Also, Arvanites and Defina (2006) have conducted research on the relationship between state-level gross domestic product (GDP) per capita and property crime rates[5]. In the study, they confirmed that GDP per capita is significantly associated with increasing crime rates in the United States[5]. The present study investigates the relationship between socioeconomic indicators (i.e., poverty, unemployment, median household income, and educational attainment) and the occurrences of violent and property crime. Indeed, scholars have increasingly taken advantage of the focus on socioeconomic factors affect to develop and test crime theory[2][3][5][6][7]. Yet little attention has been given to empirically examining the affect of socioeconomic factors on violent and property crime at the country level. Drawing on prior research, we developed and tested a series of hypotheses about the affect of socioeconomic factors on violent and property crime rate. Accordingly, the current study focuses on assessing the relationship on socioeconomic factors affect the likelihood of both violent and property crimes among the 248 counties analyzed in the state of Texas. In addressing these gaps in the literature, the following hypotheses highlight the main goals of the analysis:

Hypothesis 1: Poverty factor have a positive impact on violence and property crime. (violent and property crime occurrences are higher in counties with high levels of poverty)

Hypothesis 2: Unemployment factor have apositive impact on violence and property crime. (violent and property crime occurrences are higher in counties with high levels of unemployment)

Hypothesis 3: Median household income factor have a negative impact on violence and property crime. (violent and property crime occurrences are higher in counties with lower levels of median household income)

Hypothesis 4: Educational attainment factor have a negative impact on violence and property crime. (violent and property crime occurrences are higher in counties with lower levels of educational attainment)

2. Methods

This section presents the specific research methods implemented to assess the relationship between socioeconomic indicators and crime rates via the use of multiple data sets. The specific procedures, measures, and the method of data analysis are presented below.

2.1. Data

The data on violent and property crime was collected from the Uniform Crime Report (UCR) for the year 2015. UCR data has been available for law enforcement, students, and researchers since the early 1930s. It is a summary-based report in which crime information is stratified to aggregate units (e.g., states or counties). The data is provided by law enforcement agencies who voluntarily participate in the UCR program[8]. In total, 248 counties in the state of Texas are used as the units of analysis in the present study (6 counties are left out due to the unavailability of data). Texas was chosen for analysis because it is the second most popu-

lated state and has a high concentration of crime in the United States. Additionally, data was collected from the United States Department of Agriculture: Economic Research Service (USDA) on poverty, unemployment, median household income, and educational attainment for the year 2015.

2.2. Measures

This study measures two dependent variables: violent crime occurrences and property crime occurrences. Four unique independent variables were chosen for the analysis based off findings in the current body of literature: (a) poverty, (b) unemployment, (c) median household income, and (d) educational attainment.

2.3. Analytic strategy

Descriptive analyses were performed on all variables to describe the sample characteristics and responses to the candidate variables. Multiple regression analyses were employed to predict the net impacts of the set of predictors (i.e., poverty, unemployment, median household income, and educational attainment – less than high school diploma) on the variables of violent and property crime. Ordinary Least Squares (OLS) regression was used for the analysis since the set of predictors had linear relationships with the dependent variables.

To examine the links between socioeconomic variables and violent and property crime, a multi-variate analysis was conducted. Specifically, the current study diagnoses the correlations between poverty, unemployment, median household income, and educational attainment. The OLS model considered in this study has the following form[9]:

$$y_i = \alpha + \beta x_i + \varepsilon_i.$$

In addition, Geographic Information Systems (GIS) were employed to demonstrate the link between unemployment, violent crime, and property crime.

3. Results

The relatively high R2 value of .65, indicates that the variables included in the model account for a large amount of variation in the dependent variable: violent crime. It shows that 65% of the variation in violent crime comes from the socioeconomic factors. Likewise, the relatively high R2 values of .67 shows that the variables included in the second model account for a large amount of variation in the dependent variable: property crime. It demonstrates that 67% of the variation in property crime comes from the socioeconomic variables. To investigate the detrimental presence of multicollinearity, Tolerance and Variance Inflation Factor (VIF) tests were conducted. The findings of this study reveal that all the independent variables in both models have Tolerance levels above .20, and the VIF scores for all the independent variables are less than 10. Therefore, multicollinearity is not problematic in the two OLS regression models.

<Table 1 and 2> indicate that there are relationships between socioeconomic factors, violent crime, and property crime. First, unemployment is positively associated with both violent crime and property crime. A 1 Standard Deviation (SD) unit increase in unemployment predicts a 6% increase in the expected count of violent crime (p < .001). Also, a 1 SD unit increase in unemployment predicts 29% increase in the expected count of property crime (p < .001). Second, poverty is not a significant predictor of either violent or property crime. Third, median household income is not associated with either violent or property crime. Last, educational attainment is not a significant predictor of either violent or property crime.

Table 1. Ordinary least squares regression model for violent crime.

Model		Unstandardized coefficients		Standardized coefficients	t	Sig.	Collinearity statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	353.427	334.278		1.057	.291		
	Poverty	-6.687	6.273	-.088	-1.066	.287	.216	4.628
	Unemployment	.056***	.003	.817	20.619	.000	.928	1.078
	Median household income	-3.115	2.286	-.107	-1.363	.174	.236	4.230
	Less than a high school diploma	1.861	3.374	.025	.552	.582	.709	1.410

Note: *p<.05. **p<.01. ***p<.001

Table 2. Ordinary least squares regression model for property crime.

Model		Unstandardized coefficients		Standardized coefficients	t	Sig.	Collinearity statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1645.832	1609.121		1.023	.307		
	Poverty	-30.647	30.198	-.080	-1.015	.311	.216	4.628
	Unemployment	.287***	.013	.833	21.921	.000	.928	1.078
	Median household income	-13.834	11.002	-.095	-1.257	.210	.236	4.230
	Less than a high school diploma	7.007	16.243	.019	.431	.667	.709	1.410

Note: *p<.05. **p<.01. ***p<.001

A geospatial analysis was conducted to illuminate exactly where unemployment, property crime, and violent crime exist in space. The counties with the top five highest counts of unemployment are Harris (103,800), Dallas (54,348), Tarrant (41,251), Bexar (33,500), and Hidalgo (26,299). The counties with the top five highest counts of violent crimes are Harris (9,209), Fort Bend (830), Montgomery (821), Hidalgo (684), and Travis (613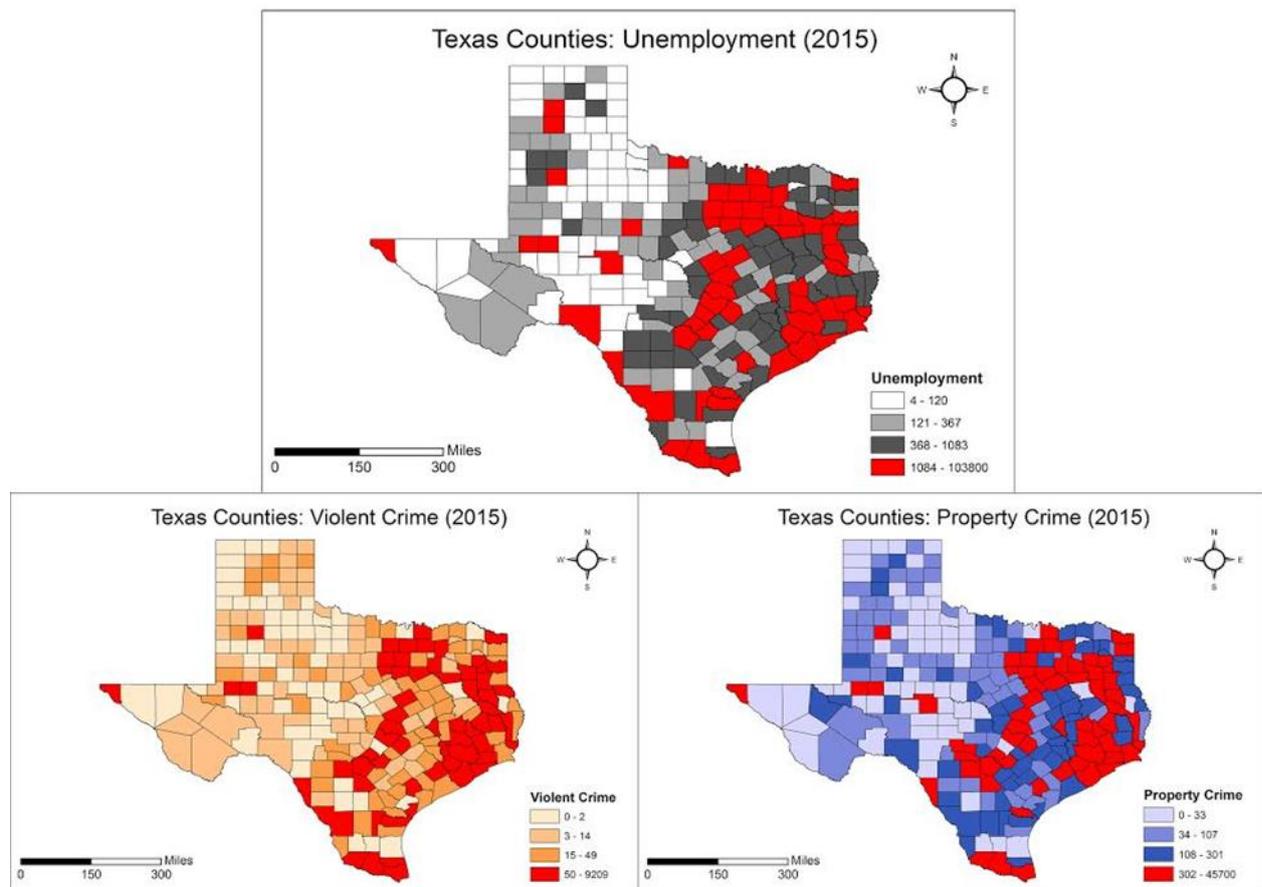). The counties with the top five highest counts of property crimes are Harris (45,700), Bexar (6177), Montgomery (5655), Hidalgo (4519), and Fort Bend (4233). Harris County accounts for the most sums among all three comparative variables. In addition, Hidalgo County is present among all three variables.

According to the maps in <Figure 1>, it is clear to see that the counts of unemployment (the one significant variable in the regression model) are concentrated in the eastern sectors of Texas. The two de-

pendent variables in the analysis (property and violent crime) are also located in the same eastern segment. The "hotspots" of all three comparative variables are highlighted in red on the maps in <Figure 1>.

The results found in the geospatial analysis supports the findings of the OLS regression analysis, which examine the links between unemployment, violent crime, and property crime.

Figure 1. The spatial links between unemployment, violent crime, and property crime.

4. Discussion and Conclusion

The current study seeks to explore how socioeconomic factors affect the likelihood of both violent and property crimes among the 248 counties analyzed in the state of Texas. This study hypothesized that violent and property crime rates would be higher in counties with higher levels of poverty, unemployment, low levels of median household income, and low levels of educational attainment. In the current body of literature, forms of economic deprivation such as poverty and low median household income are correlated with violent crime[6][10]. Unlike these previous studies, unemployment was found to be strongly affect on both violent crime and property crime. Contrary to preconceived expectations, poverty was not a significant predictor of either violent or property crime. Finally, the occurrence of both violent and property crime were not influenced by median household income or educational attainment. Therefore, counties with high levels of unemployment are more

likely to face both violent and property crimes.

These findings dictate that policy/reform efforts should focus on increasing employment opportunities. Unemployment is the only significant independent variable and can thus be viewed as a possible source for criminality within the counties in Texas. Theoretically, if the source is effectively combatted, then a reduction should be seen in crime rates/occurrences. One method of accomplishing this goal is by implementing a community development model. This will lead to the creation of a "community network" that draws on local resources, services, and facilities for the creation of more jobs[7].

According to a study conducted by Greenstone and Looney (2011), what all effective development programs have in common is that they match people to jobs that they are suited for[11][12]. Therefore, a specific tailored approach must be taken within each county to enhance the job market. Coordinating businesses, non-profit organizations, and public service departments can do this. This approach will drastically reduce the monetary costs associated with big "one-size-fits-all" tactics. If a community comes together to create jobs and reduce unemployment, they will also actively reduce crime rates.

There are two main limitations present in the current study. First, the conclusions drawn in the analysis were based on cross-sectional data gathered at one point in time. Thus, any conclusions drawn will be significant to the year 2015. Second, six counties were left out of the analysis due to the unavailability of data for their specific geographic locations (Anderson, Coleman, Concho, Foard, Hays, and San Augustine). Future research should use longitudinal data to attain a more in-depth understanding of the relationship between socioeconomic factors and crime. In conclusion, the findings presented here support a key principle for studying the causes of crime: unemployed individuals are more likely to be involved in the commission of violent and property crimes.

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