Crime Rate in Massachusetts Cities: Has the Negative Economy Affected This?

Karissa Guerette[1]

Abstract:

This review concentrates on the relationship between the effects the downturned economy has had on the crime rate. The paper examines specifically Massachusetts cities unemployment rate and average income, along with education level. With the financial crisis starting in 2008, this paper will take a look 2010, a couple years after the peak of the recession. The results show the increasing crime rates are positively related to the change of times with the economy leading to unemployment and lower income level.

[1] Undergraduate, Bryant University, 1150 Douglas Pike, Smithfield, RI 02917. Phone: (207) 838-15552. Email: kguerett@bryant.edu.

1.0 INTRODUCTION

Crime has played a key role in problems cities have faced over the last decade. With the economic recession reaching its peak in 2008 it seems that crime has increased dramatically in certain communities and states. The beginning of the recession caused communities to worry about their safety as jobs were being cut and people were losing means of income (ABC News).

This study aims to enhance the understanding of the direct links to crime during the recession. This analysis is important because it will exam variables that one would typically associate with crime and then others that may be surprising; such as how many homes are vacant. Cities and highly urbanized states are often the first to display an increase of unlawful activity but this study will look at a region people would usually not suspect (Chain Store Age). Recently, in maybe towns in Massachusetts people are recognizing that many immigrants are taking over towns, forcing the original residents to move out. This can be because of the stereotype that people have and races and different religions but it is proving true that with a diverse population comes increased crime. Many if the immigrants are not even documented which can cause problems in the future for the individual, but also the town because being undocumented limits the individual on what they are allowed to do, such as purchase car insurance. This can have a negative effect of a community and also lead to a rise in unemployment.

This paper was guided by different variables and geographical region than other studies. I am using data based specifically based after the recession so we will be able to see where the recession has had the most impact on crime. I will also be looking at the 50 largest cities in Massachusetts, a region that has not yet been researched. In addition to a new location there will also be some new variables that have not been looked at before. By examining these new variables

and region it may be able to help improve policy implications that Massachusetts as a whole or by community can put in place.

The rest of the paper is organized as follows: Section two outlines trends involving variables used relating to crime. Section three gives a brief literature review. Definitions of variables are discussed in section four followed by data in section five. Empirical results are in the sixth section. Finally, section seven presents the conclusion.

2.0 TREND

Figure 1 shows that the amount of people living below poverty is Massachusetts is largest in 2010. This is interesting because the peak of the recession was in 2008. This graph shows that the effects the recession has on people may not be immediate and may actually have an after shock later down the road when people are adjusting to the current state in the economy. This could have a negative effect on the crime rate because as the amount of poverty increases in Massachusetts the crime in the cities with also increase.

Figure 1: Massachusetts Poverty
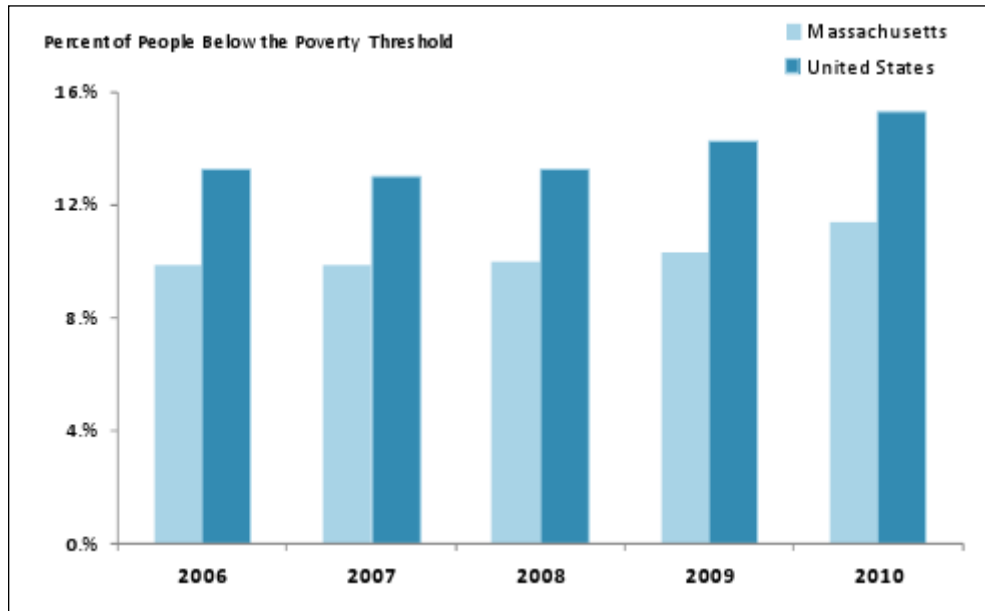
Source: U.S. Census Bureau, 2010 American Community Survey

Interestingly, in Figure 2 you will see that in 2010 the amount of jobs was actually growing. One would think that if there are more jobs, less people will be living in poverty. Additional jobs may not have an effect on the poverty rate right off people are still adjusting to the labor force. In Figure 3 one will see the actual areas examined by looking at the most populated areas in the state.

Figure 2
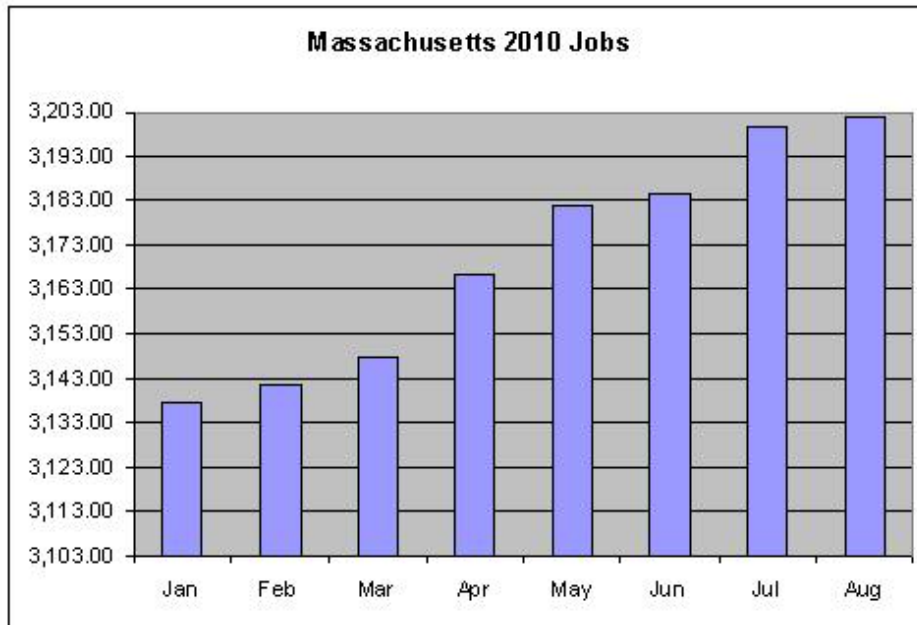
Source: Blue Mass Group

Figure 3: Population Density of Massachusetts
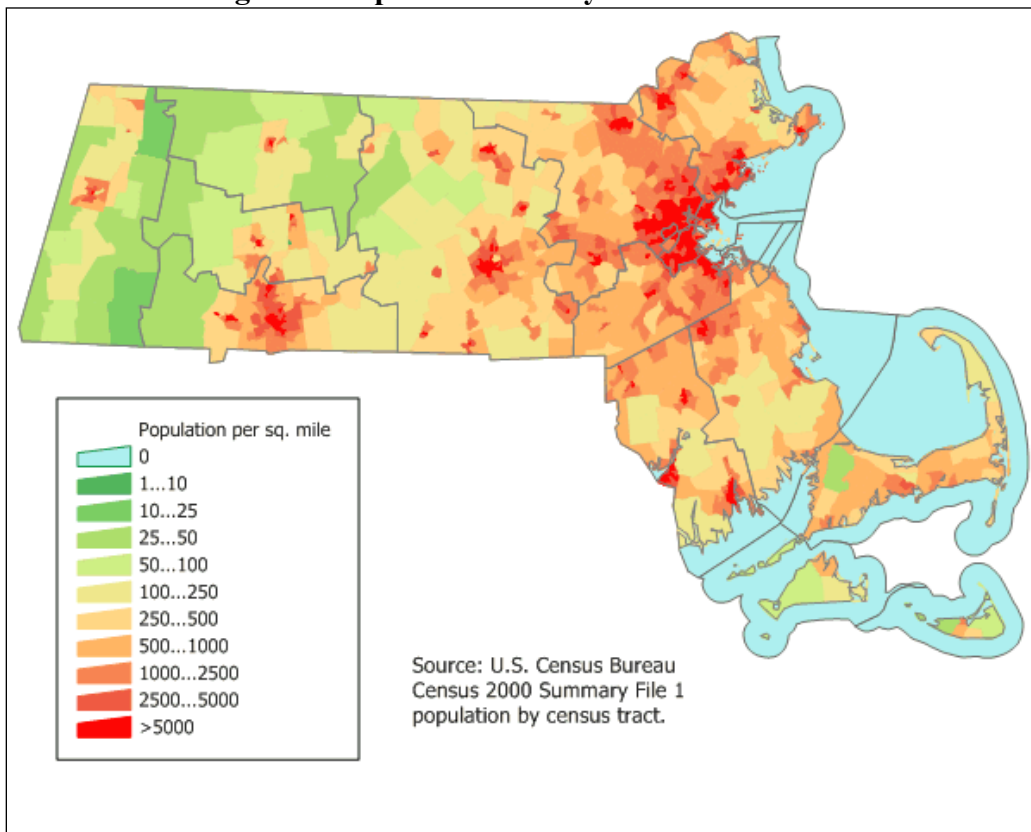
3.0 LITERATURE REVIEW

There are many studies that have examined crime prior to this study including: Crime usually occurs when there is an unstable situation or a dire need caused by different variables. People commit acts of crime because they are unable to purchase an item or want to prove a point and want attention. Crimes are committed many times because of wants and sometimes because of needs. Allen (1996) suggests that crime is the poor person's method of borrowing against future human capital and they are more likely to engage in criminal activity due to limited access of capital. Allen's time-series model suggests that crime will only decrease if inflation decreases.

Nunley et al. (2011), examine the relationship of age distribution and murder rate. They look at young men and the unemployment rate along with age-distribution to determine that it was neither that influenced the crime rate, but policies that were legalized during this period. Lin (2007) reviews the correlation of unemployment and crime. Lin concludes that they are positively related, when the unemployment increases by one percent the crime rate also does. Unemployment could be related to the education level people have which could also affect the crime rate. Groot and van den Brink (2010) examined how investing in education can decrease the crime rate. The results showed that by investing in education the social costs of crime will decrease.

4.0 DEFINITION OF VARIABLES

$$CR=\beta_0+\beta_1 INC+ \beta_2 EDUC+ \beta_3 POV+ \beta_4 UNEMP+ \beta_5 MALE+ \beta_6 AGE+ \beta_7 LAW+ \beta_8 POP+ \beta_9 VACANT+ \beta_{10} WHITE+ \beta_{11} CRIMEINDEX$$

This is the overall model used in this paper. Other models included the Gini Ratio and Inflation (Allen, 1996) while others used percentage of people attempting college (Gould et al. (2002). While many previous papers have used some of these variables before, none of them have been used together when examining this specific region.

CR is the Crime rate of both violent crime and property crime in the specified city during 2010. This variable is dependent on the numerous independent variables. The independent variables consist of eleven variables obtained from various sources including the Census Bureau and the FBI for the year 2010. The first variable, INC, is the median household income. The second variable, POV, is the percentage of the given population that is living under the poverty level. The next variable is UNEMP, which is the unemployment rate for that specified city or town.

The next variables, MALE and AGE, are a percentage of the population that is male and under the age of 18. The seventh variable is the amount of law enforcement officers assigned to the designated location that is in charge of the value represented by the eighth variable POP which is the population. The amount of vacant homes is the area is followed by the ninth variable, VACANT. To continue with the breakdown of demographics, the next variable, WHITE, represents the percentage that is Caucasian. Finally the last variable is CRIMEINDEX, which self-explanatory represents the crime index in which the city obtained compared to other towns in the state.

5.0 DATA

The data for this study comes from various sources. The Census Bureau provided data on

the 2010 population for 50 Massachusetts cities as well as the demographic break down of each

population including age, gender and race. Data regarding the dependent variables of violent and

property crimes reported to law enforcement was found on Trulia.com. Summary statistics are

found in Table 1.

Table 1

Variable	Observation	Std. Dev.	Min.	Max	Mean
Population	50	88780.16	27861	644064	68765
Violent	49	896.7677	9	5819	475
Property	49	3063.195	127	20628	1971
Total Crime	49	3952.558	139	26447	2447
Income	50	82442.73832	31631	626664	72771
Crime Index	44	150.978	38	652	269
Unemployment	45	2.198	5	16	9
Law Enforcement	44	307.4994	53	2094	178
Poverty	45	6.32813	3	31	12
Graduation Rate	50	8.45	64	97	86
Caucasian	50	14.61	42	96	77
African American	50	7.59	1	38	7
Hispanic	50	14.92	2	74	13
17 & Under	50	3.846	11	29	21
Female	50	1.196	49	57	52
Vacant Homes	50	3.5789	4	27	7
Male	50	1.196	43	51	48

6.0 EMPIRICAL RESULTS

Table 2 and Table 3 reports the results of the two regressions run for both property crime

and violent crime based on the hypothesis introduced earlier in the study. Most studies have used

OLS estimation and some Panel analysis, in this study a cross sectional analysis was done. It is

obvious in both studies that education level is vital when trying to control the crime rate. Since the

recession schools have lost funding and not everyone can afford to go to school. During this hard time it also causes young adults to choose between working and schooling to many times help provide for their families in urban areas.

One can see in Table 3 that both and education level are highly significant. Included in Table 1 relating to property crime is the amount of vacant homes in the specified area. This is important with property crime and not violent crime because vacant homes can entice people to cause damage or break in due to their inability to afford homes or items in homes.

The findings in this study agree with the findings of both Lin (2007) and Allen (1996) that crime increases as access to capital lessens which is directly correlated with results from the recession. Since the study agrees with previous research, even when using different variables and examining a different location, these results can be used for implementing policies in these specific locations. One will be able to look at trends and facts of certain significant variables playing into both types of crime. New policies created by this research can make communities safer and benefit the town as a whole in the long run.

Table 2: Property Crime

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Population	.021748	0.006899	3.152484	0.0033***
Vacant Homes	31.35462	58.99302	.531497	0.5983
Law Enforcement	3.000481	2.069236	1.450043	0.1557
Education	-2.855141	14.93696	-0.191146	0.8495
African American	20.71036	10.17329	2.035758	0.0492**
Poverty	56.80845	22.43028	2.532668	0.0158**

R^2: 0.982979
F-Statistic: 346.5027

Note: *** , **, and * denotes significance at the 1%, 5%, and 10%
        respectively

Table 3: Violent Crime

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Unemployment	20.45441	24.83922	0.823472	0.4158
Population	0.007080	0.002369	2.987908	0.0051***
Hispanic	-2.240391	2.691852	-0.832286	0.4109
African American	7.011339	3.686005	1.902151	0.0654*
Education	-12.83259	7.092932	-2.091179	0.0438**
Law Enforcement	0.698212	0.717189	0.973539	0.3370
Age	17.82959	9.107515	1.957679	0.0583*

R^2: 0.976423
F-Statistic: 207.0701
Note: *** , **, and * denotes significance at the 1%, 5%, and 10%
        Respectively

7.0 CONCLUSION

In summary, since the economic downturn, the state of Massachusetts crime rate for both property and violent crime has increased. The results of this paper imply that crime rates increase as unemployment and poverty increase. This is mostly a problem adults deal with but the crime rate is also positively related with the amount of people under the age of 18 and students that do not graduate. The study done by Lin (2007) proves correct, as it showed that unemployment and crime are positively related.

This study was originally going to examine the 10 largest cities in Massachusetts annually for the years 2000-2010, looking at more basic variable but there was insufficient data available. The study was then expanded to examine 50 cities and towns and observe variables directly related to both property and violent crime.

In conclusion the revised study also found results to back up previous studies, concluding that even though crime may be taking place in different regions, there are still key variables that come into play when analyzing crime in the current economy. Massachusetts may want to offer jobs to adults who are less experienced so then they can gain experience but it is also important that they provide students incentives to stay in school so they will gain an education and stay employed once they graduate.

Appendix A: Variable Description and Data Source

Acronym	Description	Data source
POP	Population of given city/town	US Census Bureau
EDUC	Graduation Rate for given city/town	US Census Bureau
INC	Median Household Income	US Census Bureau
UNEMP	Unemployment rate	Citydata.com
MALE	Percentage of Population Male	Calculated
FEMALE	Percentage of Population Female	US Census Bureau
VAC ANT	Percentage of vacant homes	US Census Bureau
CRIMEINDEX	Rate of crime compared to surrounding cities/town	Citydata.com
POV	Percentage of population living below poverty	US Census Bureau
AGE	Percentage of population age 17 & under	US Census Bureau
VIOLENT	Percentage of Violent crimes reported to Law Enforcement	FBI
PROPERTY	Percentage of Property crimes reported to Law Enforcement	FBI
LAW	Number of Law Enforcement officers assigned to designated area	Calculated
BLACK	Percentage of population that is African American	US Census Bureau
HISPANIC	Percentage of population that is Hispanic	US Census Bureau
WHITE	Percentage of population that is Caucasian	US Census Bureau
TOTAL	Total number of property and violent crimes reported to Law Enforcement	Calculated

Bibliography

Allen, R. (1996) "Socioeconomic Conditions and Property Crime," American Journal of Economics and Sociology, Vol. 55 No. 3, pp. 292-308.

Blau, J. and Blau, P. (1982) "The Cost of Inequality: Metropolitan Structure and Violent Crime," American Sociological Review, Vol. 47 No. 1, pp. 114-129.

Bureau of Labor Statistics, [online data file],
http://www.bls.gov/lau/

City-Data, [online data file],
http://www.city-data.com/

Department of Labor, [online data file],
http://www.dol.gov/

Gould, E., Mustard, D., Weinberg, B. (2002) "Crime Rates and Local Labor Market Opportunities in the United States: 1979-1997," The Review of Economics and Statistics, Vol. 84 No. 1, pp. 45-61

Groot, W. and van den Brink, H.M. (2010) "The effects of education on crime," Applied Economics, Vol. 42, pp. 279-289.

Lin, M. (1996) "Does Unemployment Increase Crime?" Journal of Human Resources, Vol. 43 No. 2, pp. 413-436.

Nunley, J., Seals, R., Zietz, J. (2011) "Demographic change, macroeconomic conditions, and the murder rate: The case of the United States, 1934-2006," The Journal of Socio-Economics, Vol. 40, pp. 942-948.

Trulia, [online data file],
http://www.trulia.com/home_prices/Massachusetts/

United States Census, [online data file],
http://2010.census.gov/2010census/