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## Identifying the Effect of Unemployment on Hate Crime

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# Identifying the Effect of Unemployment on Hate Crime

A Capstone Project Submitted in Partial Fulfillment of the  
Requirements of the Renée Crown University Honors Program at  
Syracuse University

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and Renée Crown University Honors  
May 2013

Honors Capstone Project in Economics

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Date: April 24, 2013

## **Abstract**

Hate crimes are those crimes that are motivated by bias against groups different from the perpetrator. They are especially contemptible offenses in that they, like terrorism, negatively impact an entire community as well as the victim targeted. While crime has been, and will continue to be, widely studied by economists, the specific area of hate crimes is relatively understudied. To contribute to the understanding of hate crimes, this paper examines whether hate crimes are economically motivated: in particular, whether there is a relationship between the incidence of hate crimes and the unemployment. Comprehending this link can help build the knowledge necessary to understand the motivations of hate crimes necessary to craft policy and design strategies to prevent and disincentivize hate crime in the future. I primarily make use of the FBI's Uniform Crime Reports data on hate crime to estimate the effect of unemployment on hate crime across states. I find a statistically significant positive effect of unemployment on violent hate crimes in an inverted parabola shape suggesting that, for the relevant unemployment levels, low levels and high levels of unemployment correlating with low violent hate crime and medium levels of unemployment correlating with high violent hate crime. I also find a small statistically insignificant positive effect of unemployment on property hate crime that takes an inverted parabolic shape very similar to that of unemployment's effect on violent hate crime.

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## I. Introduction

“Hate” crimes are an especially abhorrent type of crime, as they negatively impact not only the victim of the crime, but the larger community against which the crime was aimed. Due to the far-reaching implications of hate crimes, it is especially important to put in every effort to curtail the proliferation of these terrible acts. Congress, for statistical record keepings, defines a hate crime as a "criminal offense against a person or property motivated in whole or in part by an offender's bias against a race, religion, disability, ethnic origin or sexual orientation." While crime has been, and will continue to be, widely studied by economists, the specific area of hate crimes is relatively understudied.

To contribute to the understanding of hate crimes, this paper examines whether hate crimes are economically motivated: in particular, whether there is a relationship between the incidence of hate crimes and the unemployment. Comprehending this link can help build the knowledge necessary to understand the motivations of hate crimes necessary to craft policy and design strategies to prevent and disincentivize hate crimes in the future.

There are three plausible theoretical theses that may harbor important insights into the relationship between hate crime and unemployment. They are: treating hate crime like all other crime, applying Dollard’s theory of “frustration-aggression” to hate crimes, and applying Becker’s model of household altruism and envy to hate crime.

I primarily make use of the FBI's Uniform Crime Reports data on hate crime to estimate the effect of unemployment on hate crime across states. I use a fixed effect panel data model that estimates both linear as well as quadratic unemployment results for both violent hate crime as well as property hate crime. I also include controls for both state fixed effects and year fixed effects. Because reporting to the FBI for the Uniform Crime Reports is voluntary by state, there are some problems with the data. I control for these problems by only using observations that achieve an extremely high standard.

I find a statistically significant positive effect of unemployment on violent hate crimes in an inverted parabola shape suggesting that, for the relevant unemployment levels, low levels and high levels of unemployment correlating with low violent hate crime and medium levels of unemployment correlating with high violent hate crime. I also find a small statistically insignificant positive effect of unemployment on property hate crime that takes an inverted parabolic shape very similar to that of unemployment's effect on violent hate crime. Finally, I include a check for robustness in the form of a control for criminogenic substance consumption.

## II. Background Info

There are a few different possible theories that attempt to explain the unemployment hate crime relationship. The first idea is that hate crime behaves similarly to overall crime. Levitt (2001) argues for use of a

panel data model, similar to the one I employ in this paper, as one of several strategies for attempting to measure the unemployment crime relationship. Another idea is proposed by Leeson and Ryan (2010), suggests that the “frustration-aggression” thesis, originally proposed by Dollard et al. (1939), could apply to hate crimes. This thesis suggests that when there are few economic opportunities available, individuals get frustrated, and, in turn, take out their frustration on vulnerable minorities. Finally, Gale Heath and Ressler (2001) suggest the application of Becker’s, 1981 model of household altruism and envy. Here, envy requires the hate criminal to be motivated by the desire to make the victim worse off.

There have been empirical papers that have explored these theories. With respect to measuring the unemployment and overall crime relationship using panel data, there have been a few papers that have tried such an approach (Levitt, 1996, 1997; Raphael and Winter-Ebmer, 2000) have found significant, but relatively small, effects of unemployment on property crime while finding insignificant and ambiguous results for violent crime. As for the “frustration-aggression” idea, Leeson and Ryan find application of the thesis to hate crime ambiguous, with some variables supporting and others undermining the thesis. Most importantly to this paper, they find unemployment to have significant positive effects on hate crime. Finally, Gale Heath and Ressler investigate the application of Becker’s model. While Gale Heath and Ressler were using Becker’s model to inspect a number of different variables associated with hate crime, they do in fact find a positive

relationship between hate crime and unemployment. Outside of the previously mentioned papers that view hate crime, there is very little literature on the topic. Falk (2005) looks at German data and finds a positive relationship between unemployment and extreme right wing hate crime. Green, Glaser, and Rich (1998) examine New York City data from the 1980's and 1990's but fail to identify a link between economic performance and maltreatment of minorities. Krueger and Pischke (1995) find that unemployment mattered little for crime against foreign-born Germans in the early 1990's.

These empirical studies have different implications for this paper. If hate crime behaves similar to normal crime with respect to unemployment, then results similar to those found by other papers would be expected from this paper. If the "frustration-aggression" thesis does in fact apply to hate crime, then positive effect should be expected from this paper. Becker's theory of household altruism and greed could have several implications for this paper, but it is clear that, at the very least, a positive relationship between hate crime and unemployment is predicted.

### III. Methodology

To estimate the relationship between unemployment and hate crime, I use a fixed effects panel model:

$$HateCrime_{i,t} = \beta_0 + \beta_1 Unemployment_{i,t} + \beta_2 Unemployment_{i,t}^2 + Year_t + \delta_i + \varepsilon_{i,t}$$



Where  $HateCrime_{i,t}$  is the number of hate crime per 100,000 people in state  $i$  in year  $t$ .  $Unemployment_{i,t}$  is the unemployment rate in state  $i$  in year  $t$ .  $Unemployment_{i,t}^2$  is the quadratic of the unemployment rate in state  $I$  in year  $t$ .  $Year_t$  is a year fixed effect,  $\delta_i$  is a state fixed effect, and  $\varepsilon_{i,t}$  is the residual. Leveraging the panel aspects of my model, I can use the state fixed effect to control for variation across by only exploiting within state changes over time. I can also use the year fixed effect to control for nationwide shocks that are common to all states.

I use multiple data sets in this paper. For unemployment rates, I use data gathered from the US Bureau of Labor Statistics website. I also make use of state population numbers obtained from the US Census Bureau for use in calculating population coverage rates. I use data on yearly sales of tobacco by state obtained from the 2011 Tax Burden on Tobacco. In 1990, the United States congress passed the Hate Crime Statistics Act, which led to the collection of hate crime statistics from states by the FBI in the Uniform Crime Reporting Program. Uniform Crime Reports are published online yearly. I make use of data contained in the Uniform Crime Reports from 1996-2011, as 1996 is the oldest report listed on the website and 2011 is the newest. This data set lists the number of hate crimes in 49 states, excluding Hawaii, and the District of Columbia, as well as the type of hate crime perpetrated and whether it was a violent crime or a property crime.

Because of the voluntary reporting nature of the Uniform Crime Reports, the sample chosen has to be modified. States are not required to report to the FBI, and while most years, almost all states reported, the amount of the population covered by the reports varied. For example, in 2000, Arkansas's reporting covered a microscopic 77,190 residents of their 2,678,588 residents, for a coverage rate of just fewer than 3%. By 2006, that rate had grown to 97% with 2,739,473 residents of their 2,821,761 total residents covered. Therefore, it is important to not include such states, as these changes may have spurious effects on the unemployment hate crime relationship. If states began covering a larger number of rural areas, for example, and rural areas have lower rates of hate crime, then adding more population would lower the hate crime rate per 100,000 people without taking unemployment into account, thus biasing the results.

Table 1 shows the coverage rates for all states and all years. If a state is missing a value, then that state did not send a report to the FBI for that year. The numbers for the population covered by reports is given by the FBI in the Uniform Crime Reports, while the total population is available from the US Census Bureau. Due to fluctuations in coverage rates, Alabama, Arkansas, Connecticut, Georgia, Illinois, Indiana, Kansas, Kentucky, Louisiana, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Nebraska, New Hampshire, New York, North Carolina, North Dakota, South Dakota, Tennessee, Utah, Vermont, West Virginia, and Wyoming have been dropped out right. Even when coverage rates are stable, if they are not near 100%, the

inconsistency of the data cannot be ruled out. For instance, if a state has two metropolitan areas of similar size, one year city A may report while city B does not, while the next year city A does not report while city B does. This will not lead to a fluctuation in the coverage rate of a state around 50% or 60% but could lead to spurious changes seen in hate crime rates unrelated to changes in unemployment. For this reason, Alaska and New Mexico have also been eliminated. Of the remaining states, some have constant coverage rates for the most part, with one or two anomalies that can have biasing effects. Here, Oregon serves as an excellent example. While Oregon shows coverage rates that are consistently close 100%, in 2003, something caused their coverage rate to drop to 15% before rebounding back to 100%. Therefore, in order to not lose large amounts of data due to single observations, I have elected to drop single observations from a number of states. The observations that are eliminated are 2005 for Arizona, 1998 for Delaware, 1998 and 1999 for Montana, 1996 for Nevada, 1997 New Jersey, 1996 and 1997 for Ohio, 2003 for Oregon, 1997 for South Carolina, 1997 for Washington, and 2003 and 1997 for Wisconsin. The remaining states: California, Colorado, District of Columbia, Florida, Idaho, Iowa, Maine, Maryland, Oklahoma, Pennsylvania, Rhode Island, Texas, and Virginia have all of their observations, with the few exceptions when a state did not report to the FBI. While these changes to the sample may seem extreme, Table 1 shows that the omitted observations leave a sample of consistently covered populations that will be free of spurious effects.

A final problem arises when using Uniform Crime Reports. While there are reports published through 2011, I drop the most recent three years and stop my sample with 2008's observations. The motivation for reducing the data set by eliminating three years worth of observations is simply that the observations from the years in question are extreme. Due to the financial crisis of 2008, the unemployment rates sky rocket in the last three years. Interestingly, though problematic for this investigation, the amount of hate crime drops precipitously. Even without this strange inverse occurrence, I still would have dropped the observations from 2009-2011 because the unemployment rates are so high. Including observations with such extreme values would exert too extreme an influence on the results and would obscure the true relationship between the variables of interest. That the jump in unemployment rates coincided with a large fall in hate crime is very strange, and would probably prove to be a fruitful research topic, and a clear explanation may not be clear for a period of time. Regardless, the aim of this paper is to measure the effect of unemployment on hate crime and dropping these extreme observations in a small portion of the data allows for a more fruitful exploration of the vast majority of the available data.

#### IV. Results

Table 2 presents the fixed effects results of my model for both violent and property hate crime. Columns (1) and (4) show the results from regressions including only the linear unemployment term. The results are

small and statistically insignificant for both categories of crime suggesting the relationship is not simply a linear one.

Columns (2) and (5) present the results from regressions including a quadratic term for unemployment. The results of these regressions are much more interesting. The results for violent hate crime, listed in Column (2), are significant at the 5% level and suggest an inverse parabolic shape for the relationship between violent hate crime and unemployment. This shape can be seen in Graph 1. Violent hate crime rises as unemployment rises from lower levels in the 2% to 3% range, reaching a peak at 5%, and continues to fall through the 8% range, which constitutes over 90% of the observations in the sample.

Column (5) presents the results for property hate crime. Graph 2 depicts these results. These results also suggest an inverse parabolic shape, but while the max of the parabola for violent hate crime falls at an unemployment rate of 5%, property hate crime's parabola peaks a bit farther to the right at an unemployment rate of about 6%. Again, the parabola begins in the 2% to 3% unemployment rate range and runs through the 8% unemployment range.

These results have some interesting implications.

First, the idea that hate crime and overall crime may behave similarly with respect to unemployment is incorrect. The small and statistically insignificant values associated with property crime suggest that hate crimes are not motivated by lost wages as some studies, such as that of Raphael and Winter-Ebmer, have suggested overall crime may be. This could also have

something to do with how hate crimes are recorded. Evidence of prejudice must be established in order for a crime of any type to become a hate crime. Because it is much easier to see violent crimes as motivated by prejudice and hate (i.e. extrapolating that a member of a majority assaulting a member of a minority is a hate crime as opposed to a normal assault) than it is to see property crime in a similar light (i.e. extrapolating that member of a majority stealing the television of a member of a minority is a hate crime as opposed to a normal theft), some property hate crimes may be reported as normal crimes by police. Therefore, property hate crimes would be underreported in this data, and this underreporting would bias the results. However, the impossibility of exactly discerning the intent of every given crime will never subside, and this problem will be present in most crime data, and especially hate crime data (one crime related data set that is free of this bias is murder rate data, as the intent of a successful murder is clearly murder and is always reported as murder). Still, the evidence points to the idea that property hate crimes are not especially motivated by changes in unemployment.

In regards to violent crime, the statistically significant results are inconsistent with the related literature on unemployment and crime. The consensus is that the effect of unemployment on violent crime is both very small and ambiguous, while this paper finds statistically significant results for the effect of unemployment on violent hate crime. Due to the disparity between the results of this paper for the effect of unemployment on both property and violent hate crime and the results of the consensus for the effect

of unemployment on both property and violent crime, it is clear that hate crime does not act like normal when exploring its relationship with unemployment.

Second, the violent crime results undermine the “aggression-frustration” thesis as violent hate crime begins to fall after the 5% unemployment level, where the “aggression-frustration” thesis would instead predict it would rise. The theory would assert that the increase in economic hardship, shown by increasing unemployment rates, would increase frustration, in turn, increasing aggression against vulnerable minority groups. The results do not support this thesis as the unemployment rates at the highest end of the sample, which imply the highest level of frustration, have relatively low hate crime rates, implying low levels of aggression against minority groups.

In contrast, Leeson and Ryan, in a paper investigating the effect of hate groups on hate crime, find ambiguous support for the “aggression-frustration” thesis. While some of their economic variables undermine the “aggression-frustration” thesis, other variables, most notably unemployment, support the thesis. There are important differences between the analysis of Leeson and Ryan and the analysis presented here. Their findings supporting the “aggression-frustration” thesis differ from this paper’s findings that do not support the thesis. However, the two papers’ results do not necessarily undermine each other. Leeson and Ryan use observations from 2002 to 2008, while my observations date back to 1996. If there is a larger concentration of

lower unemployment rates in the sample used by Leeson and Ryan, then the two papers could agree because this paper shows a positive relationship between unemployment and crime, similar to Leeson and Ryan's results, for observations with low unemployment rates.

Finally, the results seem to most support the envious behavior thesis. As unemployment rises from very low rates, people are losing their jobs and could be motivated by envy to commit hate crimes. Envious behavior leading to violent hate crime may rise to a peak at the 5% level due to the fact that people are not as worried about finding another job when unemployment is low. While people understand the economic conditions are good enough that they can still easily find work, they are still angered by the fact that they lost their job. Therefore, they may not spend their time actively looking for work and may instead act on their envious feelings and commit violent hate crimes.

Another possibility for the low hate crime rates observed at low unemployment levels can be seen as unemployment rises from these very low levels. Because wages are "sticky" and do not quickly fall during economic downturns, a large income gap will take time to narrow. Large income gaps, then, persist into times of rising unemployment and cause envy in those who have recently lost their jobs, while it may not cause envy when the gap is growing because both high and low earners' wages are increasing. Envious behavior, and hence hate crime, results from this large income gap. Then, as unemployment rises past 5%, envious behavior may dissipate due to the need to actively look for work. Here, the assumption is that economic



considerations, in this case wages, outweigh envious feelings when work becomes scarce enough. People then begin shifting resources away from acting on their envious feelings and instead toward searching for wages (again, difficulty in establishing evidence of prejudice in determining hate crimes may bias the property hate crime results as people may choose crime to earn wages while also acting on their envious feelings by seeking out only minorities from whom to steal).

These possible justifications also support the envious behavior when unemployment starts high and falls. With crime at very high rates, people have shifted most of their resources toward searching for wages and have far fewer resources to devote to acting on envious behaviors. As the economy picks up and unemployment falls, envious feelings grow strong in those that remain unemployed toward others from minority groups who are hired. As envy grows, more resources are shifted toward actions motivated by envy, which leads to greater instances of hate crime. The growing economy also grows the income gap increasing envy and hence increasing hate crime. When unemployment falls past 5%, people are now being hired in greater numbers and no longer being fired in large numbers. Greater hiring and less firing dissipate both anger and envy thus decreasing hate crime.

Another factor that is probably small and may be irrelevant is the fact that high unemployment rates increase the number of workers who discontinue their search for work and drop out of the labor force due to frustration. This would decrease the unemployment rate while also generating

individuals who, due to ceasing their job search, now have more resources to pursue envious behavior thus increasing hate crime. The growing income gap may not be as big a factor in increasing envy in good economic conditions as wages increase for all income levels; and the fact that higher incomes rise faster than lower incomes is therefore less important.

Therefore, a hate crime peak at 5% before falling appears to make sense in the framework of envious behavior for two reasons. First, when unemployment rises from very low levels, this is the point when searching for a job begins to take up resource that otherwise could be allocated to committing violent hate crimes; and the income gap begins to shrink as fast or faster than the unemployment rate rises. Second, when unemployment falls from very high levels, this is the point when enough of the labor force has been hired that the envious feelings of the unemployed toward the employed begin to dissipate; and the growing income gap does not cause envy because all earning levels' wages are increasing.

#### V. Robustness Checks

In order to check for the robustness of my results, I include an extra regressor in my model. One possible unobserved variable that could bias the results of a study of the unemployment and crime relationship is the amount of consumption of criminogenic substances. Criminogenic substances are those that have a tendency to generate criminal activity. Alcohol and drugs are powerful criminogenic substances. It is easy to see how consumption of criminogenic substances can bias the results of a paper such as this one. For

example, criminogenic substances can be luxury goods that are consumed when times are good and not consumed when times are bad. Therefore, changes in crime that appear related with changes in unemployment are instead related to changes in consumption of criminogenic substances. Criminogenic substances, then, might be responsible for this paper's results. In order to control for this possibility, I include a yearly measure of tobacco sales for each state. This data was obtained from the Tax Burden on Tobacco 2011. Tobacco and alcohol are compliments, with changes in alcohol sales reflected in tobacco sales. This complimentary relationship, alcohol's criminogenic properties, and immediate access to tobacco sales data motivated the use of tobacco sales as a control. The results from the model with the tobacco control included are given in Table 2 Columns (3) for violent hate crime and (6) for property hate crime. The results for violent hate crime are effectively the same for both the linear and quadratic unemployment terms while also retaining their significance. The results for property hate crime tell a comparable story with miniscule changes in the linear and quadratic unemployment terms while remaining insignificant. The inclusion of a control for tobacco sales yielding what are for practical purposes irrelevant changes to the results suggest that, even if direct control for alcohol is included in place of the complimentary tobacco control, criminogenic substances are not responsible for the variation explained in the model by the unemployment rate.

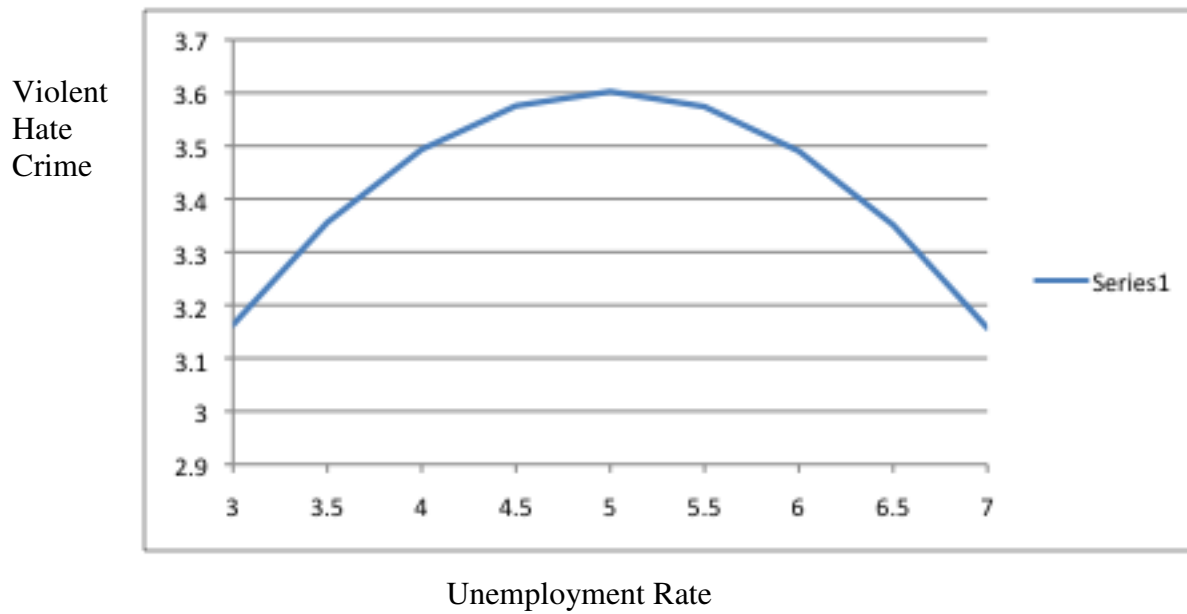
## VI. Conclusion

In an ever more globalizing world, the effective management of hate crime is an important area of research for all types of social scientists. However, economists have been historically far more interested in overall crime while greatly ignoring the enormous potential in studying hate crimes separately. My study finds an interesting relationship between hate crime and unemployment that suggests hate crime is low at low unemployment rates, rises as unemployment rates rise to relatively medium levels, before again falling as unemployment rises to relatively high rates. Possible causal interpretations of the inverted parabolic shape found in the relationship of violent hate crime and unemployment or an empirical rebuttal of the results is a potential area of future study. But even outside of this paper, there are several fruitful research opportunities in analyzing hate crime. Applying Becker's altruism envy household model to hate crime was a particularly creative and interesting idea, but as Gale Heath and Ressler note, "the really interesting thesis, in the context of public policy, is that altruistic governments reduce envious behavior just as the altruistic head of household does so within the family." This paper is now over ten years old and no one that I am aware of has yet taken up the task of looking into this thesis. In closing, research into the motivations of hate crime is extremely important as the globalized world makes people of different faiths, ethnicities, sexual preferences, or disabilities next door neighbors.

## VII. Tables and Graphs

	Table 1												
	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996
1 Alabama	0.59	0.51	0.15	0.1	0.12	0.05	0.06	0.06	0.06	0.42	0.42	0.94	0.98
2 Alaska	0.42	0.42	0.98	0.41	0.42	0.42	0.42	0.42	0.42	0.95	0.95	0.42	0.42
3 Arizona	1.03	0.93	0.98	0.72	0.98	0.98	0.93	0.94	0.89	1	1	0.95	0.99
4 Arkansas	0.96	0.97	0.97	0.61	0.59	0.43	0.14	0.03	0.03	1	1	1	1.01
5 California	1	1.01	1.01	1.01	1.01	1.01	1.01	0.98	1	1	1	1	1
6 Colorado	0.98	0.99	1	0.98	0.97	0.92	0.82	0.98	0.97	0.97	0.83	0.59	0.85
7 Connecticut	0.99	0.99	1	0.98	1	0.91	0.82	0.98	0.97	1	0.76	0.99	1.01
8 Delaware	0.99	0.99	1	0.97	0.97	0.99	1	1	1	1	1	1	0.98
9 District of Columbia	1.02	1.02	1.02	0.97	1	1	1	1	1	1	1	1	1
10 Florida	0.96	0.99	0.99	0.99	1	1	1	1	0.99	1	0.99	1.02	1.03
11 Georgia	0.06	0.07	0.13	0.22	0.18	0.19	0.18	0.14	0.13	0.11	0.88	0.06	0.06
12 Idaho	0.99	1	0.99	1	1	1	1	0.99	0.98	1	0.99	1	1.03
13 Illinois	0.63	0.39	0.42	0.4	0.4	0.41	0.37	0.39	0.36	0.39	0.41	0.43	0.46
14 Indiana	0.48	0.45	0.44	0.63	0.48	0.5	0.73	0.5	0.72	0.52	0.63	0.53	0.63
15 Iowa	0.99	0.98	0.98	0.99	0.98	0.98	0.98	0.97	0.96	0.98	0.93	0.95	1
16 Kansas	0.82	0.77	0.77	0.73	0.77	0.87	0.9	0.85	0.83	0.13	0.13	0.12	0.12
17 Kentucky	0.89	0.9	0.88	0.85	0.89	0.91	0.9	0.85	0.83	0.69	0.75	0.64	1
18 Louisiana	0.55	0.57	0.53	0.71	0.77	0.76	0.76	0.87	0.86	0.85	0.64	0.73	0.62
19 Maine	0.99	0.99	1	1	1	1	1	1	1	1	0.98	1	1
20 Maryland	0.99	0.99	1	1	1	1	1	1	1	1	1	1	1.01
21 Massachusetts	0.99	0.98	0.94	0.88	0.91	0.81	0.91	0.94	0.99	0.87	0.71	0.99	1
22 Michigan	0.98	0.99	0.99	0.99	0.89	0.87	0.98	0.99	0.99	0.94	0.69	0.66	0.82
23 Minnesota	0.82	1	0.83	0.96	1	0.97	0.97	0.99	1	1	0.52	1	1.01
24 Mississippi	0.26	0.24	0.29	0.3	0.35	0.29	0.33	0.33	0.43	0.45	0.47	0.42	0.64
25 Missouri	1	0.97	0.6	0.61	0.61	0.5	0.52	0.41	0.69	0.78	0.75	0.73	0.8
26 Montana	0.98	0.98	0.97	0.82	1	0.93	0.97	0.99	1	0.85	0.81	0.9	0.99
27 Nebraska	0.45	0.71	0.83	0.82	0.85	0.79	0.79	0.75	0.79	0.92	0.81	0.13	0.13
28 Nevada	0.98	0.97	0.99	0.99	1	1	1	1	0.99	1	1	1	0.77
29 New Hampshire	0.86	0.78	0.75	0.79	0.73	0.65	0.52	0.52	0.55	0.49	0.4	1	0.07
30 New Jersey	1	1	1.01	1.01	1.01	1	1	1	1	1	1	0.63	1
31 New Mexico	0.59	0.59	0.62	0.63	0.62	0.62	0.64	0.63	0.59	0.68	0.65	0.97	0.77
32 New York	0.91	0.8	0.79	0.41	1	1	1	1	1	1	1	0.99	0.97
33 North Carolina	0.98	0.81	0.94	0.97	0.94	0.99	0.99	0.99	0.56	0.98	0.99	0.78	0.4
34 North Dakota	0.91	0.89	0.88	0.88	0.87	0.86	0.88	0.88	0.9	0.78	0.78	0.64	1
35 Ohio	0.79	0.76	0.75	0.76	0.79	0.74	0.72	0.67	0.66	0.71	0.66	1	0.8
36 Oklahoma	0.99	1	0.99	1	1	1	1	1	1	1	0.99	1	1.01
37 Oregon	1	1.01	1.01	1.01	1.01	0.15	1	1	0.99	1	0.99	0.98	1
38 Pennsylvania	0.97	0.96	0.94	0.93	0.92	0.89	0.9	0.85	0.93	0.98	0.98	1	0.98
39 Rhode Island	1	1	1	1.01	1.01	1	1	1	1	1	1	0.99	1
40 South Carolina	0.99	0.99	0.99	1	1	1	1	1	1	1	1	0.55	0.99
41 South Dakota	0.86	0.85	0.77	0.69	0.99	0.66	0.97	0.9	0.99	0.99	0.77	0.43	0.35
42 Tennessee	0.99	1	0.99	1	1	1	1	1	1	0.8	0.57	1	0.55
43 Texas	1	1	1.01	1	1	1	1	1	0.98	1	1	1	1.02
44 Utah	1.01	1.01	1	0.99	0.77	0.75	0.72	0.76	0.99	1	0.87	0.53	1.01
45 Vermont	0.97	0.98	0.98	0.97	0.97	0.92	0.92	0.92	0.83	0.84	0.71	1	0.06
46 Virginia	0.99	0.99	0.99	0.99	0.99	0.99	1	0.99	0.98	0.86	1	0.98	1.01
47 Washington	1	1	1	1	1	0.99	0.99	0.99	0.98	0.91	0.97	0.2	1.01
48 West Virginia	0.89	0.92	0.93	0.92	1	0.94	0.97	0.98	0.92	0.81	0.39	0.99	0.1
49 Wisconsin	1	1	1	0.95	1	0.24	1	0.98	0.92	1	1	0.69	1
50 Wyoming	0.97	0.97	0.96	0.74	0.69	0.59	0.58	0.64	1	1	0.55	1	1

Graph 1



Graph 2

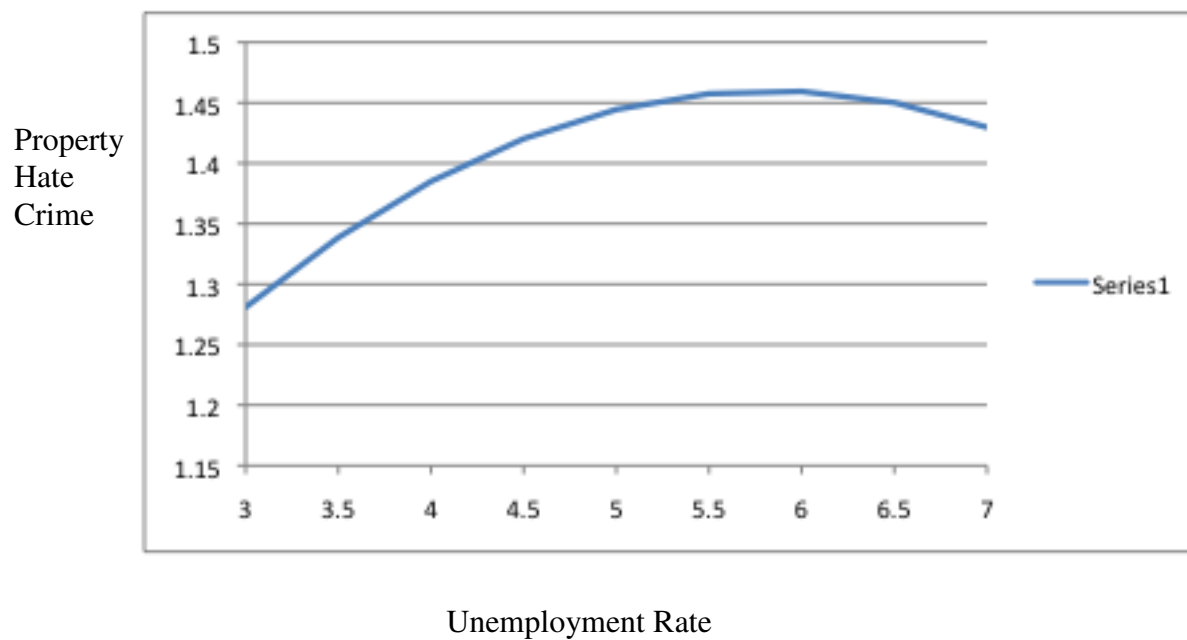


	Table 2						
	Violent Crime			Property Crime			
	(1)	(2)	(3)	(4)	(5)	(6)	
Unemployment	-0.032 (0.089)	1.105** (0.458)	1.1** (0.459)	0.031 (0.048)	0.26 (0.248)	0.271 (0.247)	
Unemployment <sup>2</sup>	-	-.111** (0.044)	-0.109** (0.044)	-	-0.022 (0.024)	-0.024 (0.024)	
Year	-0.058** (0.019)	-0.061** (-.019)	-0.049* (0.028)	0.014 (0.01)	0.013 (0.01)	-0.01** (0.015)	
Tobacco Sales	-	-	0.047 (0.081)	-	-	-0.086** (0.043)	
	*denotes 10% significance level						
	**denotes 5% significance level						

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## Summary of Capstone Project

Hate crimes are those crimes that are motivated by bias against groups different from the perpetrator. They are especially despicable offenses in that they, like terrorism, negatively impact an entire community as well as the victim targeted. Therefore, it appears prudent to explore the possible causes of aggregate change in hate crimes separate from crime. While there are an enormous number of studies on crime in general, there are far fewer on hate crime. Luckily, the United States Congress found hate crimes important enough that they passed an act requiring the FBI to attempt to keep track of them nationally. This data set has the number of hate crimes committed and has categories for both the type of hate crime, either a violent or property crime, as well as what state in which the crime took place. There are some problems with the data that spring up from the fact that states are not required to report to the FBI and some do not. However, I try to eliminate some of these problems with some statistical techniques in my paper. In order to better be able to craft policy and incentives to limit the instance of hate crime, it is important to understand what influences it. Therefore, in my project, I attempt to measure and better understand unemployment's influence upon hate crime.

I use a statistical model using the FBI data to attempt to measure the relationship between unemployment and hate crime. The data is a panel data set, or multiple observations taken over time for a set of individuals. In this case, the observations are the number of hate crimes and they are taken over a

number of years (1996 to 2011) for a set of states. Using such a data set allows me to aggregate the relationships seen in each state while ignoring general national, time, or state specific trends that may be influenced by other factors outside of unemployment. The idea is to isolate unemployment's relationship on hate crime by keeping all other factors the same. After I estimate my model this way, I then also include a control for consumption of criminogenic substances, or substances that cause crime, in order to see if there are other factors that are influencing my estimates. Including this control shows that criminogenic factors are not biasing my estimates, however it is impossible to control for every variable and there is the possibility that my results are being biased by some other unseen variable.

My study finds an interesting relationship between hate crime and unemployment. I find that hate crime is low at low unemployment rates, rises as unemployment rates rise to relatively medium levels, before again falling as unemployment rises to relatively high rates. If graphed, this looks like an inverted parabola, or the top half of an oval. There are a few possible explanations for this behavior. First, that hate crimes and normal crimes behave the same way with respect to unemployment is ruled out. Second, my evidence does not support the idea that as the economy worsens, people become more frustrated, and this frustration eventually manifests itself as aggression toward vulnerable minorities seen as hate crime. Although I do not find support for this claim, there are other empirical studies that do find evidence to back up this idea. Finally, my evidence most strongly supports an

idea that envious behavior drives hate crime. There is also outside empirical support for this claim.

In conclusion, my paper finds an interesting relationship between hate crime and unemployment. Using ideas gleaned from this study, and others like it, we will be able to better prevent hate crimes in the future.

Unfortunately, the amount of analysis of hate crime, especially empirically, is severely lacking. Hopefully, more interesting results, such as the one found in this study, will warrant a closer look at the motivators of hate crime.