

Econometric Analysis of Eviction and Violent Crime Rates

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Evictions can be a heartbreaking and humiliating situation for many who struggle to take care of themselves and their families. The negative mental and social toll this takes can be extremely harmful and decrease the quality of life of an individual. An eviction occurs when rent is not paid for an extended period of time which indicates that the tenant is likely unemployed or impoverished. Impoverished communities come with a lot of issues such as a high number of violent crimes. Today with the coronavirus outbreak, unemployment has elevated to record highs, and many will not be able to pay their rent in the near future. This paper will examine the relationship that eviction rates have on violent crime rates.

In places like San Francisco, home to a fiery gentrification debate, wages have stagnated, and rent has skyrocketed leaving many in tough conditions. Eviction isn't just a condition of poverty, it's also a cause of poverty. The situation in San Francisco can be compared to "A Tale of Two Cities", this is due to the booming Silicon Valley that has brought many new high paying jobs. It is interesting to note is that unemployment is down as evictions are going up. According to recent surveys the median household income in San Francisco was \$73K. Rent also increased from \$2,726 in 2011 to \$3,475 in 2014. This amounts to almost a 27% in three years. Ordinance Section 37.9(a) in San Francisco states that a landlord can begin the eviction process after a tenant has been given a warning after one or two missed payments. The transformation in San Francisco has greatly widened the wealth gap within the city. The richest households earned 28 times more than the poorest. This is the highest income inequality gap in America, second to New York which has its richest making 25 times more than the poor (Steinmetz, 2014). The increased wealth into the city forced many to be evicted and instead higher paid individuals

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come and move in. The government is currently in a dire situation as tensions continue to rise as attempts to build more affordable housing or raise minimum wages have failed. These tensions have also lead to an increased amount of violent crime as well.

With the rise in homelessness an argument that is gaining traction that housing should not be considered a commodity, but rather a human right. The issue is that the housing market and housing itself as a commodity is highly profitable. On the other hand, the negative effects of homelessness have destroyed countless families and communities. The increased distress that impoverished, unemployed, and homeless often leads to increased cases of crime. Food, clothing, and shelter are considered the three basic needs for humans to live (Soederberg, 2018). Some have proposed a vacant housing tax as it is believed that evictions are the result of an inadequate distribution of limited housing resources (Hoover, 2015). It is well known that evictions are a severe blow to the quality of life for an individual, however not much research has been done regarding violent crime rates and how they have been affected by increased eviction rates in America. The housing market is dominated by developers, investors, and realtors which is a main reason as to why the government hasn't stepped in to do much in the past. Now that homelessness has risen at alarming rates many are attempting to solve the affordable housing issue. By spreading awareness of the overall societal harms of high eviction rates it will allow the public to understand that the unemployed and poor will not be the only ones to suffer from a decreased quality of life.

Examining past violent crime rate and eviction rate data can demonstrate what could possibly happen in the near future. Housing is a very profitable commodity and landlords operate

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on a strict method of rent collection. If the government does not step in to offer relief for those that are unemployed, there will be much greater societal distress that could upend entire communities after the coronavirus pandemic ends.

Data

To accurately measure the relationship between eviction rates and violent crime rates, it data regarding unemployment rates were also taken into account. The unemployment rates were collected for almost all 50 states from the United States Bureau of Labor. The eviction rates and violent crime rates were also collected from a database with all 50 states. Certain states did not have data regarding eviction rates and appear in the dataset as N/A. The eviction rate data was collected from the Eviction Lab database funded by the Bill and Melinda Gates foundation. The violent crime rate data was retrieved from the FBI's database and is unadjusted. The crime, unemployment, and eviction rates for each state are calculated with respect each states population and is not simply a total number of evictions or violent crimes. Other variables that were calculated included the rate of change for all three rates (Ch_Evict, Ch_Unempl, and Ch_Crime). This was to make it simpler to show how these three variables changed over time with respect to each other. All data is from the year 2000 to 2014. New lagged variables for all three were created as well (lag_Evict, lab_Unempl, lag_Crime) to account for the fact that evictions and unemployment rates from the past would cause the crimes that happen at a later date. The year variable was adjusted to control for time during the tests. The OLS regression models used for the experiment were as follows:

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$$Crime = \beta_0 + \beta_1 Eviction + \beta_2 Unempl + \beta_3 State + \beta_4 Time + u$$

$$Crime = \beta_0 + \beta_1 lag_Evict + \beta_2 lag_Unempl + \beta_3 State + \beta_4 Time + u$$

$$Crime = \beta_0 + \beta_1 Eviction + \beta_2 lag_Evict + \beta_3 lag_Unempl + \beta_4 State + \beta_5 Time + u$$

$$Ch_Crime = \beta_0 + \beta_1 Ch_Evict + \beta_2 Ch_Unempl + u$$

The explanatory variables Eviction, Unempl, State, lag variables, and Time were regressed into Crime for the first three regressions. The last regression had the explanatory variables Ch_Evict and Ch_Unempl regressed into Ch_Crime. Heteroskedasticity was dealt with by using robust standard errors.

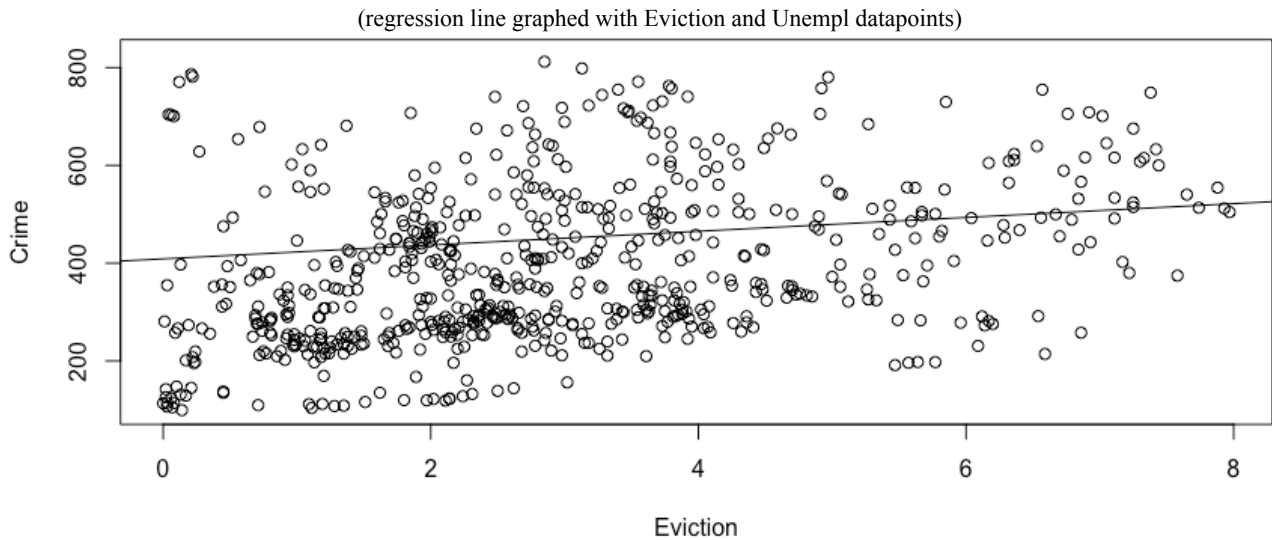
Results

Summary Statistics

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Pctl(75)	Max
Eviction	653	2.932	1.799	0.000	1.660	3.870	7.970
Crime	675	395.039	163.164	99.300	275.500	501.550	828.100
Unempl	675	6.012	2.053	2.300	4.500	7.150	13.700
Ch_Evict	607	0.010	0.477	-2.880	-0.170	0.175	2.010
Ch_Crime	630	-6.705	24.394	-94.900	-18.600	5.400	140.800
Ch_Unempl	630	0.143	1.189	-2.700	-0.600	0.600	5.700
lag_Crime	630	398.854	164.931	103.700	275.825	504.625	828.100
lag_Unempl	630	6.022	2.102	2.300	4.500	7.200	13.700
lag_Evict	608	2.955	1.820	0.000	1.668	3.895	7.970

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$$Crime = \beta_0 + \beta_1 Eviction + \beta_2 Unempl + \beta_3 State + \beta_4 Time + u$$



OLS Results, Dependent Variable: Crime

Regression 1

Dependent variable:	
Crime	
Eviction	5.165** (2.495)
Unempl	-4.970*** (1.060)
Time	-5.553*** (0.437)
Constant	504.163*** (12.395)
Observations	653
R ²	0.945
Adjusted R ²	0.940
Residual Std. Error	38.536 (df = 605)
F Statistic	219.135*** (df = 47; 605)
Note: * p<0.1; ** p<0.05; *** p<0.01	

Regression 2

Dependent variable:	
Crime	
Eviction	-0.581 (3.631)
lag_Evict	6.656* (3.403)
lag_Unempl	-8.121*** (1.094)
Time	-4.610*** (0.507)
Constant	514.229*** (12.367)
Observations	607
R ²	0.951
Adjusted R ²	0.947
Residual Std. Error	35.985 (df = 558)
F Statistic	224.542*** (df = 48; 558)
Note: * p<0.1; ** p<0.05; *** p<0.01	

Regression 3

Dependent variable:	
Crime	
lag_Evict	6.472*** (2.462)
lag_Unempl	-8.063*** (1.090)
Time	-4.585*** (0.496)
Constant	512.916*** (11.967)
Observations	608
R ²	0.951
Adjusted R ²	0.947
Residual Std. Error	35.948 (df = 560)
F Statistic	229.947*** (df = 47; 560)
Note: * p<0.1; ** p<0.05; *** p<0.01	

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*OLS Results, Dependent Variable, Ch_Crime**Regression 4*

<i>Dependent variable:</i>	
	<i>Ch_Crime</i>
Ch_Evict	-1.895 (2.043)
Ch_Unempl	-4.433*** (0.817)
Constant	-6.019*** (0.980)
Observations	607
R ²	0.047
Adjusted R ²	0.044
Residual Std. Error	23.996 (df = 604)
F Statistic	15.028*** (df = 2; 604)
<i>Note:</i>	* p<0.1; ** p<0.05; *** p<0.01

The estimated equations resulted as:

$$Crime = 504.16 + 5.17Eviction - 4.97Unempl - 5.55Time$$

$$Crime = 512.92 + 6.47lag_Evict - 8.06lag_Unempl - 4.59Time$$

$$Crime = 514.23 - .58Eviction + 6.66lag_Evict - 8.12lag_Unempl - 4.61Time$$

$$Ch_Crime = -6.02 - 1.90Ch_Evict - 4.43Unempl$$

After performing a BP-Test a significant level of influenced affected the regressions. In order to account for this, robust standard errors were used to correct the rejection of homoscedasticity.

Regression 1 had a residual standard error of 38.54 on 605 degrees of freedom. R- squared is equal to .9402 and 114 observations were deleted due to unavailability. Eviction rates were statistically significant and had a p value of .04. Unemployment rates had a p – value of 3.44e-06 and was therefore not statistically significant. Eviction rates were economically significant as

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violent crime rates increased by around 5 per increase in eviction rates. This regression analyzed eviction and crime rates from the same year. In the second regression a lag variable for eviction and unemployment was utilized to show how crime rates would be affected a year after someone was evicted or unemployed. In the second regression, lag_Evict was even more statistically significant with a p value of .008 and was slightly more economically significant as after each increase in lag_Evict crime rates increased by 6.47.

Linear Hypothesis Test

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Pctl(75)	Max
Res.Df	2	559.000	1.414	558	558.5	559.5	560
RSS	2	726,759.300	5,931.279	722,565.200	724,662.300	728,856.300	730,953.300
Df	1	2.000		2.000	2.000	2.000	2.000
Sum of Sq	1	8,388.096		8,388.096	8,388.096	8,388.096	8,388.096
F	1	3.239		3.239	3.239	3.239	3.239
Pr(> F)	1	0.040		0.040	0.040	0.040	0.040

After performing a hypothesis test with the null hypotheses $\text{Eviction} = 0$ and $\text{lag_Evict} = 0$ for the third regression the results came up with a p- value of .040, leading to a rejection of the null hypothesis. By rejecting the null, the regression further proves that evictions rates and especially lagged eviction rates have a significant effect on violent crime rates. Unemployment rates across the board for each regression analysis displayed a negative relationship to violent crime rates. This result is inline with the situation that is occurring in many large cities such as

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New York where although many tenants are getting evicted and losing their jobs, an influx of high paid individuals also enter the city.

Conclusion:

The experimental analysis results prove that eviction rates have a strong economic significance in regard to crime rates. Unemployment rates had a negative relationship to violent crime rates as well. Meaning, as unemployment rates increased, violent crime rates decreased. Prior to the experiment unemployment and eviction rates were presumed to decrease the quality of life and contribute to increased crime rates. It was also presumed that unemployment rates would increase eviction rates, thus in turn increasing the crime rates as well. With the inevitable increase in unemployment and evictions approaching due to the pandemic, crime rates may not increase solely due to eviction rates. Factors outside the performed analysis such as food shortages, education levels, and amount of police (many officers may fall ill) would influence future crime rates. It would be beneficial to analyze these outside factors to make a more accurate prediction for crime rates in the aftermath of the pandemic once businesses are able to reopen.

Areas such as San Francisco are a perfect example of how a city with mismanaged housing policies look like. Based on the data presented from this study, it's clear that drastic actions must be taken by the government to prevent the situation from not only getting worse in San Francisco, but occurring in other cities throughout the nation. The coronavirus pandemic may very well lead to even greater wealth disparities and a great deal of tenants unable to pay their rent. From the regression model it is concluded that while unemployment is not as big of a

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factor when faced with the issue of violent crime, instead homelessness is shown to have a greater impact. To preserve the quality of life around the nation the government must focus its resources on making sure tenants are granted rent relief. It would be best to pass legislation that would delay rent payments for the time being. The primary focus should be to ensure that citizens are granted housing rather than employment to reduce an increase in violent crime rates.

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