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# Police Officers Killed or Assaulted in the Line of Duty from 1998 to 2015

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Police Officers Killed or Assaulted in the Line of Duty from 1998 to 2015

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Senior Honors Project

Submitted in partial fulfillment of the graduation requirements  
of the Westover Honors College

Westover Honors College

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## **Abstract**

This project will test five variables that could influence the rate of police officers killed or assaulted in the line of duty from 1998 to 2015. These variables include the population per square mile, vacant housing, unemployment rate, percentage of high school graduates, and percentage of poverty rate. The information for the variables and the cases will be from the years of 1998 to 2015, and it will include officers who have been killed or assaulted while they are working.

This project will be analyzing these variables to determine if there is a correlation between one of the variables and the numbers of police officers that were killed or assaulted in the line of duty. If there are significant results from the statistical test, then the same test could be run on a larger set of data to see if there are significant results on the larger scale. If there are continuous significant results, then the information that is found from this project could be used to decrease the rate of law enforcement officers killed or assaulted in the line of duty. The results showed that the percent of poverty in the area is significant for the rate of officers being killed while working, and all of the variables tested were significant for the rate of officers being assaulted.

## **Introduction**

There has recently been a backlash against police officers because of the increased visibility of incidents depicting police brutality. However, the majority of police officers have the public's safety as their top priority and are just trying to do their best at their jobs. No one deserves to die early or be assaulted while doing their job, especially these officers who are trying to protect the community.

There has been previous research done on this topic; however, no one has been able to find common causes for officers being killed or assaulted in the line of duty. There has been research including variables such as equipment, officer demographics, gender, offender demographics, setting, and call type that the officer is answering. Although these results showed some impact, they did not measure other relevant variables that can cause officers to be killed or assaulted. Through testing these variables, the population per square mile, vacant housing, unemployment rate, percentage of high school graduates, and percentage of poverty rate, there is hope of finding more relevant variables for what is causing officers to be killed or assaulted while they are working. All five variables were significant when it comes to assault, however, the only significant variable for the officers who were killed was the percentage of poverty. This means that the previously listed variables have an impact on the rate of officers being assaulted. It also means that the percentage of poverty affects the rate of police officers being killed, but further research is needed to see what other variables impact the rate.

## **Literature Review**

Being a law enforcement officer is a dangerous job. These people are putting their lives on the line every day to protect the people within their community. This leads to officers being killed or assaulted while they complete their work. There are numerous variables that could cause this to happen, and for my research, I will be looking at five specific variables: the population per square mile, vacant housing, unemployment rate, percentage of high school graduates, and percentage of poverty rate

One of the reasons that it is important to research the rate of police officers being assaulted or killed is because they are at the forefront, and they are seen publicly. They are the people who stop criminals from victimizing the public, and they risk their lives by choice. Their safety is threatened every day, and they put the community's needs above their own (Schouten 2016).

### **Theory: Routine Activities Theory**

This theory applies police officers being killed or assaulted, as officers and the people they encounter follow a routine. This includes the officer responding to calls, the way they respond to calls, and the methods they use when speaking to a suspect. The suspect has a routine that could have landed them in the wrong place at the wrong time or could speak to people in a certain way. The outcome of a call can also be affected by someone straying from their routines.

The routine activity theory focuses on likely offenders, a target, and absence of others willing to report. So, if someone is committing a crime, that would provide the likely offender,

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because if they are the perpetrator for the call, then they are already committed a crime and would be likely to again. If a cop is responding to the call, then they are putting a victim into the equation, because it is someone for the likely offender to harm. Lastly, depending on the area/neighborhood and who the cop responds with, the perpetrator may feel that there is an absence of witnesses (Miro 2014). This could be because there is not someone who is willing to step in and stop what is happening or report what is happening. The areas of higher poverty rates and lower socioeconomic statuses are highly unlikely to have security systems or cameras that would capture the assault or killing that takes place.

This can also be applied, because someone might not usually shoot or assault an officer when they see them in public. However, if the officer is stopping them, getting in their way, trying to arrest them, or threatening them, the civilian could end up killing or assaulting the officer since the officer is trying to keep the civilian from doing what they want to do (Madero-Hernandez 2012). Routine Activity Theory also accounts for crimes that happen spur of the moment. The perpetrator may not usually attack an officer or kill them, but if the perpetrator is angry, they might strike out. People who have killed or attacked an officer do not usually plan on harming them; however, they may react quickly and without thinking and end up injuring or killing them.

### **Motive**

Steven G. Brandl's research focuses on whether an officer's death was accidental or had been the result of a felony. He broke accidents down into "two types: where the incident resulted from a completely unintended happening; and where the incident resulted from acts of a suspect

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but were not of an intentional or assaultive nature” (Brandl 1996). This study found that the majority of incidents had been accidents. The “felonious assaults account for less than 10 percent of all incidents” (Brandl 1996). The results also showed that the majority of the incidents happening because the officer had been trying to control or arrest the suspects (Brandl 1996). However, a study done by Bierie, Detar, and Craun found that “more than one third of the 1,800 line of duty officer deaths during the past 10 years were the result of felonious homicide” (2013). This study focused on firearm violence, and he studied “why offenders use firearms against police” (Bierie, Detar, & Craun 2013). Together these sources detail whether a perpetrator had meant to kill the officer attending the call or if it had been an accident. This tells the audience about the intent and what can arise at the call, but it does not highlight variables that can affect the rate of officers being killed or assaulted while they are working.

### **Equipment**

The type of equipment that law enforcement officers carry as well as the type of items that civilians have affects the rate at which police officers are killed or assaulted in the line of duty. A study focused on how wearing body armor affected the rate at which law enforcement officers were killed, and it found “that officers not wearing armor have a 68% chance of dying from a torso shot, compared with a 20% risk when wearing armor” (LaTourette 2010). This test found that the lethality when it came to rifles and shot guns were lower when there was use of body armor, and it was similar in the case of handguns (LaTourette 2010). The equipment that a police officer has is important, but the weapons that civilians have also affects the rate of officers killed or assaulted in the line of duty. Bierie, Detar, and Craun found that “Firearm Violence

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cases were twice as likely to involve a crime of violence before officers arrive, and 10 times as likely to involve a weapon offense before police contact” (2013). Their results also showed that the risk for police officers to be injured by gunfire “grew as the number of offenders, and their average age, increased... Risk also grew as the proportion of males in the offender group increased” (Bierie et al. 2013). Lastly, the risk to officers grew if at least one of the perpetrators had been drinking alcohol before the officers were called to the scene.

### **Officer Demographics**

Law enforcement officers are people just like everyone else, and there are certain demographics that can influence the rate at which they get killed or assaulted while working. Sarah Kachurik, Jim Ruiz, and Megan Staub completed a study that focused on the demographics of police officers who had been assaulted while they worked (2013). Their variables included marital status and parental status. They found that “married officers killed in the line of duty occurred in 38 per cent of all cases, while officers who were also parents died on the job in 41 per cent of all cases” (Kachurik, Ruiz & Staub 2013). Another study completed by Rabe-Hemp and Schuck concluded that “Officers who reported having prior medical attention were more likely to have violence used against them” (2003). Ellis, Choi, and Blaus found that assaults “happened more often to officers who were younger, lower-ranked, better educated, and had fewer years of service” (1993). Covington, Huff-Corzine, and Corzine found that “White officers comprising 72% of those battered, where as 16% were Black, 6% were Hispanic, and

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1% were Asian” (2014). This same study found that the officers who were assaulted had an average of 34.4 years (Covington, Huff-Corzine & Corzine 2014). These studies focused on the demographics of the officers, but they did not include any characteristics about the location of the call or demographics of the offender which also impact the rate of officers being killed or assaulted while working.

### **Officer Gender**

Female officers are becoming more prominent in today’s society. Studies have been completed in order to compare the rate at which female officers are assaulted or killed to the rate that male officers are assaulted or killed. Rabe-Hemp and Schuck found that “female officers were no more likely than male officers to have violence used against them in police-citizen encounters” (2007). However, Covington, Huff-Corzine, and Corzine found male officers to make “up 91% of the battery victims” in Orlando, Florida (2014). Female officers were more likely to be victimized if they were responding to a call involving a family conflict (Rabe-Hemp & Schuck 2007). These studies show the impact of an officer’s gender on the rate of which officers are assaulted.

### **Offender Demographics**

When a police officer responds to a call, they must interact with the perpetrator that the call was referencing. If there are specific offender demographics that show a higher rate of assaulting or killing police officers, then officers can be more alert and cautious when interacting with individuals that match those demographics. Kaminski, Jefferis, and Gu found that if the

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offender had been previously arrested or had a high tendency to be violent, then there was a significantly higher chance that there would be an assault against the officer (2003). Another study found that “Citizens who engaged in police violence were likely to have minority status and be under the influence of drugs and/or alcohol” (Rabe-Hemp & Schuck 2003). This was supported by another study which found that for the percentages of offenders “forty-three percent were White, whereas 43% were Black, 11% were Hispanic, and 1% were Asian” (Covington, Huff-Corzine & Corzine 2014). This study also found the offenders average age to be 28.9 years and had a height from 4’4” to 6;5” (Covington et al 2014).

### **Setting**

The buildings and their current condition can affect the rate of officers being killed or assaulted while they are working. Caplan, Marotta, Piza, and Kennedy focused on “foreclosures, problem buildings, bars, schools, gang territories, banks, apartment complexes, liquor stores, 311 service requests for street lights all out, grocery stores, and retail shops” (2014). They found that if calls were “within three blocks of foreclosures and/or within a dense area of problem buildings” there was a “two-to-three times greater risk of battery to police officers” (Caplan et al 2014). Another study found that “The odds of battery during incidents occurring in areas where there are more businesses licensed to sell alcohol are also significantly higher” (Covington, Huff-Corzine & Corzine 2014). These studies show that area surrounding the call that the officer is responding to impacts the rate of officers being killed, but they only discuss the state and classification of the buildings around the area.

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### **Location Characteristics**

There has been research completed to see if the area and its characteristics affect the rate at which law enforcement officers are assaulted or killed in the line of duty. Kaminski et al found that “resource deprivation was the most influential” in their model (2003). They classified an area to resource deprived if was characterized by “economic distress, family disruption, and larger percentages of non-Hispanic Black residents” (Kaminski et al 2003). If a location was “known to be dangerous [it] also increased the likelihood of violence” (Rabe-Hemp & Schuck 2007).

### **Call Type**

The type of call that an officer responds to could influence the rate at which officers are being killed or assaulted. Ellis, Choi, and Blaus found that “domestic disturbances rank third in terms of their dangerousness, after arresting/controlling suspects or prisoners, and robbery” (1993). Another call type that has been researched includes traffic stops. Lichtenberg and Smith found in their study that “eighty-nine (12.9 percent) of these [officer] killings occurred during routine traffic stops” (2001). Their study also included assaults, which they found 58,502 out of 621,244 assaults “9.4 percent were committed during traffic stops” (Lichtenberg & Smith 2001).

## **Methodology**

### **Research Question**

This research will be testing whether the population per square mile, vacant housing, unemployment rate, percentage of high school graduates, and percentage of poverty rate have a significant impact on the rate of officers being killed or assaulted in the line of duty. There have been numerous research projects that test similar variables, such as the gender, population, density, and others. However, there has not been research conducted that includes these exact variables together. By testing these variables, they will either show that the variables have an influence on the number of officers killed or assaulted, or they can be eliminated from future research projects. These variables are characteristics that are often discussed in different theories, and they are values that are listed in the census, which makes them information that can be studied from year to year.

### **Sampling and Data Collection**

Data was collected from the 2010 census for the control and predictor variables. The information for these variables was gathered on a county level. The data for the number of officers killed or assaulted was collected from the UCR, including information from 1998 to 2015. All of the data that had been collected was used in order to have more accurate results. The variables were chosen from the information provided from the census based on which ones were likely to cause an impact on the rate of officers killed or assaulted.

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### **Variables and Operationalization**

Out of the data set, all the data will be used for the statistical test; this includes all of the assaults and deaths of law enforcement officers that have been reported to the Uniform Crime Report. This will allow for a more accurate test and hopefully have better results than if the test was completed using only a portion of the data. The population includes police officers killed or assaulted in the line of duty from 1998 to 2015, and the data for the population per square mile, vacant housing, unemployment rate, percentage of high school graduates, and percentage of poverty rate from the same range of years from the United States Census.

### **Variables**

Since two tests are completed, the first outcome variable is the rate of officers being killed in the line of duty, and the second outcome variable is the rate of law enforcement officers being assaulted while they are working. The predictor variable for the first test was percentage of poverty, which was shown to be significant; because of this, the control variables will include the median household income, the unemployment rate, the percentage of high school graduates, and the total population of the area. The second test used all five variables, percentage of poverty, median household income, the unemployment rate, the percentage of high school graduates, and the total population of the area, as the control variables.

These variables will be tested to see if they show significant results, which would indicate they have an impact on the rate of police officers being killed or assaulted in the line of duty. The population per square mile of an area reflects how many people are living in that area, and the vacant housing will measure the number of houses that are unoccupied in the area to see

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if these statistics affect the rate of police officers killed or assaulted while working. The unemployment rate will allow us to identify if areas that have a higher number of unemployed residents lead to a higher rate of officers being killed or assaulted while working. The percentage of high school graduates will show if the level of education affects the rate of officers being killed or assaulted. Lastly, the percentage of poverty rate will show whether the perpetrator falling below the poverty line will cause a higher or lower rate of officers getting injured.

### **Analytical Plan**

I ran two Poisson distribution with log links tests, where a variable is a count of the number of times an event occurs. One test used the total number of police officers killed as the outcome variable and the second test used officers who were assaulted. The percentage of the poverty rate is included as the predictor variable for the test for officers killed in the line of duty, whereas the second test uses all five variables: the population per square mile, vacant housing, unemployment rate, percentage of high school graduates, and percentage of poverty rate. This allows me to compare the two tests and see if the same variables that are significant in one test are significant in the other. This also allows me to see which variables impact the rate of police officers being killed or assaulted in the line of duty.

## Results

### Discussion

**Mean and Standard Deviation.** The percentage of poverty from the data had a mean of 14.991 with a standard deviation of 5.8734. The unemployment rate had an average of 4.975 and the standard deviation was 1.6019. The amount of vacant housing had a mean of 20,010.32 with a standard deviation of 37,964.440, and the percentage of high school graduates had a mean of 83.782 and a standard deviation of 6.7915. Lastly, the mean of total population per square mile was 732.548 while the standard deviation was 2,178.2806.

**Parameter Estimates for Assaults.** All my variables were significant for assaults with p-values under 0.05. Vacant Housing, Percentage of Poverty, Percentage of High School Graduates, and Total Population per Square Mile all had p-values of 0.000, which means they did provide significant results. The unemployment rate had a significant p-value of 0.001. This means that all of the variables for police officers being assaulted were significant.

**Parameter Estimates for Deaths.** The majority of my variables were insignificant for deaths with p-values over 0.05. Vacant Housing, Unemployment Rate, Percentage of High School Graduates, and Total Population all had p-values above 0.200, which means they did not provide significant results. However, my model and the percentage of poverty were both significant. Percentage of poverty (B, 0.102 SE, 0.0250) had a p-value of 0.000, which means that it did have significant results. The odds ratio was 1.107, which means as the percentage of poverty increases the odds of police officers being killed in the line of duty increases by 10.7%.

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**Findings.** This information can be used to alter the method in which officers approach calls in higher areas of poverty in order to reduce the rate at which officers are being killed. This could include sending them with more partners, increasing the amount of training that is received, have their training geared to how to protect themselves in these areas, and equipping all officers with body armor. When it comes to assault, all five variables were significant. In order to decrease the rate of officers being assaulted, officers should be made aware that areas that meet these characteristics are more likely to have physical confrontations. They should also receive training on how to read a person's body language in order to be prepared for an assault. These results can be helpful with preparing officers to respond to call in this area. However, further research should be conducted to find a more definitive cause of officers being killed or assaulted in the line of duty.

Most people assume that if there is a high percentage of poverty in an area that it will also have a higher rate of crime. This is because these areas have lower socioeconomic statuses and tend to have a higher population of minority groups. In these areas, there is not as big a sense of community in other areas, because people are trying to get out of them quickly, so they do not make strong connections with one another or watch out for each other. So, if there is a higher rate of crime taking place, then there is more opportunities for a law enforcement officer to be injured or killed in these locations due to the fact that they would be responding to calls there more often.

These routine activities theory support these results, because the variable with the highest impact on the rate at which officers are killed or assaulted is the poverty rate. Areas that have a higher poverty rate tend to be populated with people who are trying to work their way out of

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those areas, so they are focused on themselves and their families. They tend to avoid involving themselves on matters that do not concern them, which means they would not be likely to step in or report someone fighting with an officer. It is also unlikely that there would be security systems or cameras to document these incidents taking place. This means that a likely offender, a target, and a lack of supervision would all be present in these areas.

### **Conclusion**

Through this research, my model and percentage of poverty were significant for police officers being killed. The other four variables I tested, Vacant Housing, Unemployment Rate, Percentage of High School Graduates, and Total Population per Square Mile, were insignificant as they had p-values over 0.05 for deaths but were significant for assaults. The results show that as the percentage of poverty increased by one standard deviation, the rate of officers being killed in the line of duty increased by 11%.

### **Limitations**

Limitations with this research include the number of subjects within the data and also the outside conditions that exist within the cases. If there had been more cases, then the data would have a higher rate of accuracy, and it could cause Vacant Housing, Unemployment Rate, Percentage of High School Graduates, or Total Population to have significant results. The conditions surrounding the cases also differ greatly. Since the test includes all cases of police officers killed or assaulted in the line of duty in the United States, there are numerous differences among the cases and each case is has unique conditions, which makes it difficult to find a

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specific cause of officers being killed or assaulted for the entirety of the United States of America.

### **Recommendations for further research**

If this subject was to be tested again in the future, I would suggest testing areas that have similar demographics. I would focus on cities within a certain range of population. This would allow for a similar sample, which I think would have more beneficial and significant results. It is hard to test this subject for the whole country because of the different situations and how sparse the assaults and deaths are, but if it was focused on one specific population size, I think it would allow for better results.

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Table 1: Mean and Standard Deviation of Variables for Assault

<u>Variable</u>	<u>Mean</u>	<u>Standard Deviation</u>
Percentage of Poverty	14.991	5.8734
Percentage of High School Graduates	83.782	6.7915
Unemployment Rate	4.975	1.6019
Vacant Housing	20010.32	37964.440
Total Population per Sq. Mile	732.548	2178.2806

This table shows the means and standard deviations for Percentage of Poverty, Percentage of High School Graduates, Unemployment Rate, Vacant Housing, and Total Population per Sq. Mile for the areas where officers have been assaulted.

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Table 2: Parameter Estimates for Assaults

<u>Variable</u>	<u>B(SE)</u>	<u>Exp(B)</u>	<u>Sig.</u>
Percentage of Poverty	0.011(0.0013)	1.011	0.000
Percentage of High School Graduates	0.014(0.0011)	1.014	0.000
Unemployment Rate	-0.015(0.0045)	0.985	0.001
Vacant Housing	1.076E-5 (7.0742E-8)	1.000	0.000
Total Population per Sq. Mile	3.126E-5 (8.8690E-7)	1.000	0.000

This table shows the B(SE), Exp(B), and significance for the Percentage of Poverty, Percentage of High School Graduates, Unemployment Rate, Vacant Housing, and Total Population per Sq. Mile for the areas where officers have been assaulted.

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Table 3: Mean and Standard Deviation of Variables for Deaths		
<u>Variable</u>	<u>Mean</u>	<u>Standard Deviation</u>
Percentage of Poverty	14.991	5.8734
Percentage of High School Graduates	83.782	6.7915
Unemployment Rate	4.975	1.6019
Vacant Housing	20010.32	37964.440
Total Population per Sq. Mile	732.548	2178.2806

This table shows the means and standard deviations for Percentage of Poverty, Percentage of High School Graduates, Unemployment Rate, Vacant Housing, and Total Population per Sq. Mile for the areas where officers have been killed.

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Table 4: Parameter Estimates for Deaths			
<u>Variable</u>	<u>B(SE)</u>	<u>Exp(B)</u>	<u>Sig.</u>
Percentage of Poverty	0.102(0.0250)	1.107	0.000
Percentage of High School Graduates	0.034(0.0267)	1.034	0.207
Unemployment Rate	-0.132(0.1100)	0.876	0.230
Vacant Housing	2.441E-6 (3.3028E-6)	1.000	0.460
Total Population per Sq. Mile	1.113E-5 (4.6590E-5)	1.000	0.811

This table shows the B(SE), Exp(B), and significance for the Percentage of Poverty, Percentage of High School Graduates, Unemployment Rate, Vacant Housing, and Total Population per Sq. Mile for the areas where officers have been killed.