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Higher Education and Police Officers: The Effects on Citizen Complaints

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Higher Education and Police Officers: The Effects on Citizen Complaints

by

Evan Brown

An Alternate Plan Paper Submitted in Partial Fulfillment
of the Requirements for the
Degree of Master of Science
In
Public Administration

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Abstract

This study was conducted to examine the effects that different levels of education may have on the number of citizen complaints filed against police officers. There are many literature articles pertaining to the education of police officers but few studies have been conducted to measure the specific effects of higher education in law enforcement. The analysis in this paper will show relationships between higher education of police officers and if it has a relationship with the number of officer complaints.
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Introduction

There has been a debate in the past few decades on whether or not police officers should need a college education. Traditionally, the field of law enforcement has been seen as a blue-collar position that can be learned on the job, similar to the careers of many labor fields. For a majority of American history those who have held the title of police officer typically came from a military background or had no relative experience at all. As our world modernized the push for higher education became the status quo. According to the United State Census Bureau there are 16.4 million 25-34 year-old working Americans who have a bachelors degree or higher (2018). This statistic has been increasing in recent years. A bachelors degree has become very common and more easily obtainable and is now required in many professions. By looking at the data in the 2007 Law Enforcement Management and Administrative Statistics (LEMAS) survey, the author found education requirements for police officers are not consistent throughout the United States. The 2007 LEMAS survey showed that just 1% of departments required a baccalaureate degree for employment and a two-year college degree was only required in 9% of local police departments.

Many career fields that once required no education, are now requiring a bachelors degree as a minimum requirement for employment. After the recession of 2008, many companies started requiring higher education for basic level
employment. An article written in the Monthly Labor Review found that “From May 2010 to May 2016 the U.S. gained 13.3 million jobs.” Ten percent was an increase for jobs that require a bachelor’s degree (Watson, 2017). In fact, the only two categories that saw a decrease in jobs over this period were in occupations that required a high school diploma or equivalent and some college or no degree needed for hire (Watson, 2017). As we can see from Watson’s study the idea of requiring a bachelor’s degree for entry level and blue-collar jobs has become far more common.

As other fields of employment are increasing the requirements for hire, it seems like law enforcement is not. There may be many side effects of education in police services. One way to measure the effects is to examine the number of citizen complaints and compare them to the level of education the officer has obtained. As a means to better understand how effective education can be for law enforcement the author of this study has chosen to examine the hypotheses that: higher education will lead to less citizen complaints. This paper will first give a general overview of the debate about higher education in law enforcement today. The author will discuss the background and history of education in law enforcement, arguments against this paper’s hypothesis and lastly a statistical analysis of data.
Literature Review

Introduction

The employment trends in America have been changing drastically over the last twenty years. The literature review portion of this study is intended to give the reader an understanding of the dynamic situation America is facing regarding education requirements for employment in law enforcement. This section will provide more information to support the idea that, among other benefits, higher education in law enforcement will create more effective police officers and reduce the number of citizen complaints against them.

Background

The first pioneer for police officer education in the United States was August Vollmer. Amongst being the Police Chief of Los Angeles he is notable for starting collegiate police education programs at the University of Chicago, the University of California and San Jose State University in the early 20th century (Willard, 2016). Today many of his accomplishments are regarded as setting the standard for law enforcement education.

Although there have been colleges with specific police orientated studies for over one hundred years, there is still a lack of understanding of how police fit into the culture of being an educated participant of society. America has some of
the most elite colleges in the world. The hierarchy of some social classes and work forces are commonly based on what level of college people have attended. For most Americans, a traditional community college, state university or small private college have been the common pathways to obtaining a post-secondary education.

Through most of American history law enforcement has been considered a blue-collar job because there are little to no education requirements in the field. In the early years of the 20th century the role of police officer was typically given to immigrants who were ranked lower on the societal hierarchy scale. Many of those immigrants happened to be Irish. In 1947, Life magazine wrote an article “Peoples of New York” and showed a picture of a young policeman with a caption that read “Once victims of a violent prejudice, New York’s many Irish are now thoroughly assimilated. Many have become politicians or members of the city’s police force” (Lee, 2006). Today, many police departments, particularly the Chicago and New York Police Departments, have strong traditional ties to Irish heritage stemming back over a century. Those traditions were forged by thousands of blue-collar immigrants seeking refuge and employment. Thanks to those many blue-collar police officers that today we can start considering the possibility of transitioning into well-educated police force and become a middle tier type of employee. Somewhat of a “grey-collar” workforce and start embracing the idea of higher education for police officers.
Twenty years after the Life Magazine article, in 1967, President Johnson created the President’s Commission on Law Enforcement and Administration of Justice (PCLEAJ). This commission was made up of 63 criminologists and scientists. Their goal was to deliver recommendations for lowering crime and improving the effectiveness of policing in America. The commission had numerous recommendations for local and municipal law enforcement. One of the many recommendations from the commission was the role of Community Service Officer (CSO). The idea of this role was to recruit and train young adults (ages 17-21) for future law enforcement purposes and build experience where education may lack. The commission recognized that many new police officers at the time did not have the capacity to perform “imaginative and responsible police work” (pg. 108). By creating the role of CSO, it allowed younger individuals to learn the physical and mental demands of being a law enforcement officer without having any legal responsibilities. If an organization was unable to create or fund the CSO position, the commission recommended that agencies only hire those who have obtained a baccalaureate degree of liberal or social sciences. The commission suggested only those with a degree should be eligible for the position of police officer or agent (pg. 108). The position of CSO is commonly used today as a method to recruit and train future officers at a slightly younger age.

The President’s Commission also recommended that police agencies pay more attention to college campuses for recruitment. It was believed that a four-year degree provided the department with higher quality candidates because those
candidates received higher scores on pre-employment exams. The commission states that between 1956 and 1961, the success rates on entry examination decreased 30-22 percent on a national average (1967). The commission suggested that a baccalaureate degree is more desirable because it provides young adults with much better social and cognitive skills. An individual who earns a four year degree will likely be more mature than a younger 17-21 year old. The candidate with a degree will have more life experiences such as managing stress, jobs, friendships, relationships and schoolwork. The study says that these candidates’ “intelligence, moral character, emotional stability and social attitudes” are all effected and improved by those who earn a degree (pg. 110, 1967). The commission found that fewer than two dozen of the nation’s 40,000 police agencies required a bachelor’s degree in 1967 (pg. 109).

Law Enforcement Education Today

Higher education in law enforcement has been strongly supported for many years but has not gained much ground. Only a few departments or states have mandated a degree prior to hire.

Minnesota, which already has the highest requirements to be a police officer in the nation (Hilal, 2010), has traditionally supported the idea of secondary education. Established in a 1990 legislative bill (Hilal, 2010), Minnesota was the first state to require a two-year degree prior to employment as
a police officer. Not only was Minnesota the first state to require post-secondary education, they were the first state to create a licensing system for their officers (Hilal, 2010). In 1977, the Minnesota Board of Peace Officer Standards and Training (Minnesota POST) was created and tasked with the authority to issue licenses and set training and education requirements for its officers. Many states have since adopted or created similar boards to oversee the police licensing within their states.

When studying two similar states, Arizona and Minnesota, Hilal and Densley found that even though states have created standardization boards the results of their study showed that just 9 percent of police departments nationwide required a two-year degree for hire and just 1 percent require a bachelors degree (2010). The use of these education requirements is generally accepted as a way to create well rounded police officers. The standard belief is that officers with high cognitive reasoning are more effective in public. Our modern world of policing is changing constantly and requires officers with a specific set of skills. Hilal states that “traditional policing to community-oriented problem solving requires skill sets, such as critical and analytical reasoning, enhanced understanding of socioeconomic causes of crime, and advanced interpersonal and intercultural communication, that are best developed in higher education programs” (2010). As suggested by The Presidents Commission (1967) these higher education programs are believed to develop a different breed of police officers for today’s modern police work.
Benefits of Higher Education

There are significant benefits to higher education. As explained earlier, many industries and fields of employment are requiring a higher education where they did not in previous decades. Firstly, those employed with a bachelors degree typically earn 66 percent more per year than those who don’t (National Center for Education Statistics, 2014). This indicates better long term and financial decisions are being made by those with a bachelors degree. Such significant implications in earnings can suggest that those individuals have made strategic choices to advance their career fields. If this is true, it would also indicate that law enforcement officers with a bachelors degree are able to make those same decisions in an ever-changing society. This would offer law enforcement organizations with more stable, competent and overall successful officers.

Some have suggested that post-secondary education is necessary for police officers to keep up with an ever changing and growing society that strongly embraces education. The Brookings Institute published a strong argument in favor of secondary education for police officers in 1970. The article argues that “if the education of police recruits does not keep pace with the steady rise in education level of the population, recruits will have to be drawn increasingly from that part of the population that is least prepared to assume the responsibilities of modern law enforcement” (Saunders, 1970). In order to prepare for the changes in law enforcement Saunders suggests that major universities offer specific law enforcement programs and organizations offer salary increases for those police
officers who obtain post-secondary education (1970). The implication by Saunders implies that more officers in the community who have a bachelors degree will lead to better community policing strategies because they have a better representation of the community they serve. There is additional support amongst police officers to require a bachelors degree as a prerequisite requirement. In 2008, nearly 31 percent of Minnesota’s police officers believed that a bachelor’s degree should be a requirement for hire (Hilal, 2013). Another survey conducted by Hilal in 2010 found that Minnesota police officers had reported that 54 percent of them were enrolled in secondary education courses. This indicates that a two-year degree requirement for hire is likely leading to a bachelors degree after hire. Hilal’s survey also showed that 56 percent of the responding officers said their department has some sort of tuition reimbursement policy. This shows evidence that many police departments in Minnesota recognize and understand the benefits to higher education and are investing back into their officers.

The education of police officers is often a critical factor when administration is determining performance satisfaction and is likely a reason departments are investing in education. Researchers from Radford University, Scott M. Smith and Michael G. Aamodt, collected data from 299 police officers from twelve different police departments in Virginia. The goal was to investigate the relationship between education and performance of these officers. Though they did not study any relationships with citizen complaints, the researchers found
significant data that suggests a positive relationship does exist between education and many other job performance measures. Some of the areas positively affected by education included: communication, report writing, decision making, level of commitment and overall performance (Smith, 1997). The only measures that were not related to education were the volumes of arrest, number of accidents and number of times the officer required discipline.

Data has been gathered for many decades regarding the education of police officers. Nearly all studies, in one form or another, suggest education is a vital component needed in order to modernize today’s law enforcement.

**Citizen Complaints**

Investing in police officer education is a proactive strategy to crime and is greatly used to develop community policing strategies (Purpura, 2013). Measuring the amount of citizen complaints against officers is one way to measure the effectiveness of community policing. Police departments and the federal government have been keeping data on citizens’ complaints for many years, there is plenty of data on that subject, but not as much on police officer education.

In 2008, Manis, Archold and Hassel published a study based on the premise that education levels had an effect on the amount of complaints sustained. They found that “officers without a four-year degree were more likely to have a
complaint sustained against them compared with officers who had earned four-year degrees” (2008, pg. 519). This study is vital because it was the one of the most recent and in-depth correlation researches conducted regarding police officer complaints and their level of education. They also found data that proves a correlation does exist between the number of officers employed by the agency and number of complaints. The majority of complaints received in their study were for departments that employed a large number of officers which impacted the ratio of complaints per officer (pg. 2). The data found that the more officers in the department the more complaints per officer were generated.

Counter Evidence

In research, wherever there is support for something, there is likely going to be opposition against it. Some of the similar studies that this author has found regarding education and citizen complaints against officers have indicated the hypothesis of this paper may not be validated.

While the author was researching information for this paper’s hypothesis, they found conflicting results in other independent studies conducted with similar hypotheses. In the same study mentioned earlier by Manis, they found that two of the six variables tested showed no significant value (2008). The variables that had no significance in their study were age of the officer, and major or declared major of study in formal education (pg. 620). The age and institutional major of a police
officer was expected to have a relationship with the number of complaints sustained. It was believed that an education in law enforcement, rather than a non-law enforcement or non-criminal justice degree, would have a significant impact on the amount of complaints the officer received. This is because that officer had the opportunity to study the field before employment and would likely decrease police officer complaints. In addition to that, the age of the officer was predicted to have a lower probability of receiving citizen complaints but Manis, determined that both of these hypotheses were incorrect. Though a specific major of study may not have an impact on number of complaints, it is commonly thought that the age, maturity and experience of the officer would have a relationship with the number of complaints received.

Villone conducted a study comparing the levels of education to different types of officer complaints (2010). Villone studied three types of liability (complaints) and related them to the level of education the officers held. The three types of liability are civil, criminal and administrative. The results of the study concluded that “higher education related to less criminal, was not supported through the statistical analysis” (Villone, pg. 62). The study’s evidence gathered supports the idea that police education was not affecting any of the three forms of liability tested (Villione, pg. 62). Villone’s research directly contradicts the findings of the report from Manis, Archold and Hassel who concluded “officers without a four-year degree were more likely to have a complaint sustained against them compared with officers who had earned four-year degrees” (2008, pg. 519).
Summary

The conclusion of this chapter gives the reader an idea of the current argument amongst education and law enforcement. Some have studied the topic before, but those studies have come to different conclusions. The hypothesis of this paper can be argued either way and neither side have been proven with large amounts of agreement by researchers. Nearly all of the researchers have argued that higher education for law enforcement is beneficial in many ways, but few have proved to show a direct correlation to how it effects citizen complaints. The next chapter is going to cover the methodology of the study conducted by this author and it will cover the source of the data, measurements, variables, and analysis used.
Methodology

Introduction

The relationship between higher education and police officer complaints has been studied for quite some time. One of the most notable results of the various studies is that the standardization of police officer education throughout the nation varies widely. The methodology of this paper is to study data and perform an analysis to prove that higher education has an effect on the police officer’s behavior. One way to argue this point would be to compare officer education and the amount of police officer complaints received against the education requirements. The data analysis question is as followed:

- Do police officer education requirements have a relationship with the number of police officer complaints?

There is some existing data relating to these subjects. Officer complaints are commonly recorded as a means for administration to monitor the effectiveness and behaviors of their force. On the other hand, police officer education is something that is not commonly recorded by individual departments. As I mentioned earlier police officer education levels differ widely across America. Even more complicating is the fact that many states do not have a standard of their own and the education of police officers is not recorded or monitored beyond a high school diploma.
The expected results of the study are that there will be a relationship between education requirements and the number of police officer complaints. The higher level of education is expected to generate lower numbers of police officer complaints.

The data for this study is coming from the Bureau of Justice Statistics, particularly the 2007 Law Enforcement Management and Administrative Statistics Survey (LEMAS). This data was accessed through the National Archive of Criminal Justice Data (NACJD) online archives and the Inter-university Consortium for Political and Social Research (ICPSR). All data was analyzed using SPSS Software.

About the Data

The Law Enforcement Management and Administrative Statistics (LEMAS) survey collects data from a sample of publicly funded local law enforcement agencies in the United States. The 2013 LEMAS sample design called for the survey questionnaire to be sent to 3,336 general purpose state and local law enforcement agencies including 2,353 local police departments, 933 sheriffs' offices, and the 50 primary state law enforcement agencies. After voiding surveys that were not answered correctly the final number of surveys used for the report was 2,875.
Variables

This study only had one variable pertaining to education so variables relating to training were also analyzed. Training is similar to education as far as how it is believed to effect performance of officers. To conduct an analysis of the LEMA survey certain variables were selected to be used in this papers analysis. The variables used are MINEDUC, SWNFTEMP, TOTACAD, TOTFIELD and NUMOFTOT.

• NUMOFTOT represents the number of total citizen complaints per department. This is also the dependent variable for this study (the hypothesis suggests the other variables affect the number of citizen complaints received).

• SWNFTEMP represents the number of fulltime employees with arresting powers at the department. (This is used as a constant variable; we know that the more officers a department has the more complaints they will receive).

• MINEDUC represents weather or not a minimum education requirement is set in place by the department prior to hire.

• TOTACAD represents total number of training hours at the police academy for that specific department.

• TOTFIELD represents the total number of field training hours set for new officers in that department.
Outliers

Because this data set reached thousands of different departments there were various outliers in the survey. One step taken to insure an accurate analysis was to remove the outliers in the data.

In order to guarantee a more accurate result the range of the department’s sworn full time employees (SWNFTEMP) was limited to between 1 and 35,000 (New York City employs just under 35,000 SWNFTEMP). The limitation was conducted so any department that did not answer how many sworn full time employees they had would not skew the results. It also eliminated departments with only part-time employees.

Under the total number of citizen complaints received (NUMOFTOT) the limitation was set to 0-663 (663 will include the highest number reported). This makes the study more accurate because many departments did not report on how many complaints were sustained. Those cases were eliminated from this study.

Measures

This multivariate analysis was conducted using SPSS program. Our finally analysis will be based off the results of a Pearson test, an R square test and coefficients of the regression model.
The Pearson test allows the researcher to determine the strength of correlation between two variables. The significant levels of correlations for Pearson test are >.10=weak, >.30=moderate, and >.50=strong. This indicates how skewed the data points are. If the result was positive 1 the test would have a perfect positive correlation. If the result was negative 1 the test would have a perfect negative correlation. The R square test allows to determine how much variability there was in our test. For example: if the result is .17, then 17 percent of the citizen complaints could be predicted by our variables. Multivariate regression allows us to analyze numerous variables at the same time. This is where we can get the coefficients for our study.

**Summary**

This chapter lays out the general methods used to determine if the hypothesis will be supported or rejected. The next section will explain the results of the analysis when they were computed.
Results

Pearson Correlation

From our findings we can determine that there is little to no significance in the three variables used. Our scale used in the Pearson test to determine the significance is based off the following decimal scale: significance = >.10=weak, >.30=moderate, and >.50=strong. The strongest variable relationship with the number of citizen complaints was TOTCAD at .207. This is still below the moderate level of .30. Anything below the moderate level is insignificant in the correlation and does not have a very meaningful value. The TOTCAD correlation with NUMOFTOT does not have a significant impact on the number of complaints. (See Table 1).

R Square

The R square results of this are extremely low. The data suggests that these variables can account for just 5% of the NUMOFTOT. In other words, the data used for this model can only predict 5% of the number of total complaints received. It is important to note that the R Square represents an overall strength of the model. It does not represent any specific variable. The large estimate of standard of error is likely to the large data set and representation of thousands of police officers. It suggests that there is still a lot of variability within the data. (See Table 2).
Coefficients of Variables

The coefficients of this data are providing some information. The standardized beta for the analysis uses the following scale to determine any effects on the dependent variable: $.10=$weak, $.30=$moderate, and $.50=$strong. The TOTCAD at .198 is the most significant standardized beta but it still falls short of having a moderate value of importance. (See Table 3).
Conclusion

Findings

The findings based on this model and the data used show evidence against the hypothesis that higher education requirements have an effect on the number of citizen complaints.

The only variable in this research that may be in association to this authors hypothesis is the relationship between total number of training hours in the police academy. Both the coefficients and Pearson test have suggested some sort of correlation with training in the academy and the levels of police officer complaints, however, they are both below the necessary levels to be considered significant.

As this data has found the variable MINEDUC was not related to a reduction in citizen complaints. Therefore, this data suggests a minimum education prior to employment policy would not help the department reduce citizen complaints. In the authors research there was not any significant evidence to suggest that a bachelors degree would lower the level of citizen complaints against police officers. Based on this information this author would have to reject this papers hypothesis and say that a higher level of education does not have a relationship with the number of citizen complaints against police officers.

The findings of this study are consistent with other independent research whereas one or more education or training variables may have a relationship with
the number of police complaints but not significant enough to make valid statements on the issue. As mentioned earlier, many studies have resulted in inconclusive results due to the numerous variables involved in the data.

When studying two different LEMAS surveys the author found nearly no improvement between 2007 and 2013 relating to higher education amongst police officers (see Tables 4, 5). Watson published in the Monthly Labor Review, “From May 2010 to May 2016 the U.S. gained 13.3 million jobs” with an increase of ten percent for professions now requiring a bachelors degree (2017). Its interesting that there was such an increase in jobs and higher education during that period, but it did not have a reflection in the two separate LEMAS surveys. This leads the author to believe that there has been a stalemate amongst the number of police officers earning a bachelors degree during that period.

Upon completion of this study the author finds that a lack of data pertaining to police officer education is hindering the future improvements of police department effectiveness and community relations. This research has found a push for investments in police officer education have been made for many decades, most notably the 1960’s and 1970’s. Since then we have not advanced standardization nationally or on a state level. Even though the data does not prove any correlation with police officer complaints, earning a bachelors degree would likely advance the officers wellbeing such as pay and promotion. With more young adults earning a bachelor degrees it would be a benefit to the individual to
obtain a bachelors degree even if they seek employment in a field that does not require one.

**Concerns**

The LEMAS data set is extremely large. Though just under 3,000 surveys were analyzed, it includes information pertaining to tens of thousands of officers and therefore results in different interpretation of questions. For example, when the survey asked the respondent “how many hours of training are required for new officers?” (TOTFIELD) some of the departments listed 2080. This leads the author to believe that those departments listed the length of time a new officer is under probation as 2080 hours is equivalent to one year of fulltime work. Therefore, their answers have now skewed the data by however many officers that department listed.

There was also some un-clarity in the numbers of total complaints received. The agency filling out the survey likely filled out the number of total complaints for the department. For example, a respondent possibly listed total number of complaints and not those specific to just police officers. The total number of complaints would include complaints made without knowing who the officer was, complaints against the department as a whole or complaints against non-sworn members of the department. There were no such clarifying questions
in this data and this extra information may result in inaccurate research by those using the LEMAS data.

Another area that would have been significantly helpful for this research was the level of education. This data only asked if each department had a minimum level of education requirement needed before hire. The data did not gather information pertaining to every individual police officer’s education level. This is an area that could use further study. The 2013 LEMAS survey asked excellent questions pertaining to officer education but failed to ask for data about total police officer complaints, instead asking questions about how police officer complaints are received (i.e. email, mail, and phone). These surveys change slightly from year to year as researchers are trying to broaden their scope when gathering information. Most of the standard questions stay the same but some others may vary.

The last issue that constrained this research was unforeseen by anyone. The outbreak of COVID-19 removed any access of physical institution or university resources for this author, which forced research to be conducted in online format. There were many pieces of literature and study that would have been greatly advantageous for this research if it would have been available, but unfortunately these resources were only in physical format within the University library or other public archives. The pandemic also made the possibility of doing any interviews irrational as most law enforcement leaders were occupied with addressing the dynamic health situation.
Expansion

This research would benefit many individuals if it were collected in a more clarifying and specific format. A large national research pertaining to police officer education and the internal and external effects it has should be conducted. There are many valuable issues that law enforcement and scholars can learn from by conducting such a survey. Particularly geared towards the subject of the levels of education police officers have earned. There is no evidence of any survey that has taken place in the past and this author suggest one be conducted in the future.

Summary

This paper gives readers a general overview of the debate about higher education in law enforcement today. This paper discussed the background and history of education in law enforcement, arguments against this papers hypothesis and lastly a statistical analysis of data. This study was concluded to be insignificant and the hypothesis was not proven to be correct. Other researchers have found very similar conclusions when conducting their own investigations. This author suggests that further investigation be conducted with more specific parameters. The following pages are for readers to view the outside references used as well as the appendixes created. This study adds to the overall debate of higher education in law enforcement because it substantiates that there is a significant lack of information in that subject. In conclusion, there is not enough
information or data on the subject and the author hopes this research will influence others to invest in further exploration.
References


Appendix

Table 1
Pearson correlation results

<table>
<thead>
<tr>
<th>Label</th>
<th>Significance</th>
<th>NUMOFTOT</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTFIELD (total hours of field training)</td>
<td>none</td>
<td>.082</td>
</tr>
<tr>
<td>TOTCAD (total hours of academy training)</td>
<td>weak</td>
<td>.207</td>
</tr>
<tr>
<td>MINEDUC (minimum education requirement)</td>
<td>none</td>
<td>.058</td>
</tr>
</tbody>
</table>

a. Significance = <.10 none, >.10=weak, >.30=moderate, and >.50=strong.

Table 2
Model Summary

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>.224</td>
<td>.050</td>
<td>-.069</td>
<td>19535.333</td>
<td></td>
</tr>
</tbody>
</table>

a. Dependent variable: NUMOFTOT.

b. All other variables are predictors.
### Table 3

Coefficients of variables

<table>
<thead>
<tr>
<th>Name</th>
<th>Standardized Beta</th>
<th>t Value</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTFIELD</td>
<td>.048</td>
<td>.216</td>
<td>.831</td>
</tr>
<tr>
<td>TOTCAD</td>
<td>.198</td>
<td>.941</td>
<td>.356</td>
</tr>
<tr>
<td>MINEDUC</td>
<td>.089</td>
<td>.422</td>
<td>.667</td>
</tr>
</tbody>
</table>

a. Dependent variable: NUMOFTOT.

### Table 4

2007 LEMA survey breakdown by education requirements.

<table>
<thead>
<tr>
<th>Label</th>
<th>N</th>
<th>Valid %</th>
</tr>
</thead>
<tbody>
<tr>
<td>High school diploma</td>
<td>2,276</td>
<td>80.1</td>
</tr>
<tr>
<td>Two year degree</td>
<td>268</td>
<td>9.4</td>
</tr>
<tr>
<td>Bachelor’s Degree</td>
<td>37</td>
<td>1.3</td>
</tr>
<tr>
<td>No education requirement</td>
<td>34</td>
<td>1.2</td>
</tr>
</tbody>
</table>
Table 5

2013 LEMA survey breakdown by education requirements.

<table>
<thead>
<tr>
<th>Label</th>
<th>N</th>
<th>Valid %</th>
</tr>
</thead>
<tbody>
<tr>
<td>High school diploma</td>
<td>2,314</td>
<td>81.88</td>
</tr>
<tr>
<td>Two year degree</td>
<td>261</td>
<td>9.3</td>
</tr>
<tr>
<td>Bachelor’s Degree</td>
<td>37</td>
<td>1.3</td>
</tr>
<tr>
<td>No education requirement</td>
<td>34</td>
<td>1.2</td>
</tr>
</tbody>
</table>