Northeastern North Carolina:

A Study of School Quality in Public High Schools & County Violent Crime Rates

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A Seniors Honors Project

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Appendix Table 1: Public High Schools located in Northeastern N.C.

School Name	County	Type	Grades
Beaufort County Early College High	Beaufort	EC	9-13
Beaufort County Ed Tech Center Alternative School	Beaufort	ALT	6-12
Northside High	Beaufort	TRAD	9-12
Southside High	Beaufort	TRAD	9-12
Washington High	Beaufort	TRAD	9-12
Bertie Early College High	Bertie	EC	9-13
Bertie High	Bertie	TRAD	9-12
Bertie STEM High	Bertie	TRAD	9-12
CamTech High	Camden	TRAD	9-12
Camden County High	Camden	TRAD	9-12
John A. Holmes High	Chowan	TRAD	9-12
Currituck County High	Currituck	TRAD	9-12
J.P. Knapp Early College High	Currituck	EC	9-13
Cape Hatteras Secondary School	Dare	TRAD	6-12
Dare County Alternative School	Dare	ALT	7-12
First Flight High	Dare	TRAD	9-12
Manteo High	Dare	TRAD	9-12
Gates County Senior High	Gates	TRAD	9-12
Northwest Halifax High	Halifax	TRAD	9-12
Southeast Halifax High	Halifax	TRAD	9-12
Roanoke Rapids High	Halifax	TRAD	9-12
Roanoke Valley Early College High	Halifax	EC	9-13
Weldon High	Halifax	TRAD	9-12
C.S. Brown High	Hertford	TRAD	9-12
Hertford County Early College High	Hertford	EC	9-13
Hertford County High	Hertford	TRAD	9-12
Mattamuskeet Early College High	Hyde	EC	6-13
Ocracoke School	Hyde	TRAD	PK-12
Riverside High	Martin	TRAD	9-12
South Creek High	Martin	TRAD	9-12
Northampton County Alternative School	Northampton	ALT	K-12
Northampton County High	Northampton	TRAD	9-12
Pasquotank County High	Pasquotank	TRAD	9-12
Northeastern High	Pasquotank	TRAD	9-12
H.L. Trigg Community Alternative School	Pasquotank	ALT	6-12
Perquimans County High	Perquimans	TRAD	9-12
Columbia High	Tyrrell	EC	9-13

Creswell High	Washington	TRAD	7-12
Plymouth High	Washington	TRAD	9-12

Introduction

Since the 19th century, researchers have devoted their time to studying risk factors that influence a person's likelihood to commit crime (Christle et.al, 2005). These risk factors occur at the individual, peer group, and neighborhood levels, to name a few. One risk factor at the neighborhood level that has continuously been studied is school quality. Schools are one of the major social institutions that people encounter where they learn norms, behaviors, and knowledge to interact and grow in American society. Schools are the institutions in which Americans believe a productive, law-abiding citizen is taught and developed. Yet, risk factors exist in schools that can influence a person's likelihood to commit crime, such as academic failure, high suspension and dropout rates, and lack of educated personnel (Christle et.al, 2005). These risk factors are believed to be associated with crime. Much of the available research that concerns schools and crime is focused on the idea of the 'school to prison pipeline.'

According to the American Civil Liberties Union, "the school-to-prison pipeline is a disturbing national trend wherein children are funneled out of public schools and into the juvenile and criminal justice systems" (ACLU, 2014). This means that the public schools most children attend to obtain a quality education are not benefitting and educating them. Instead, the school-to-prison pipeline implies that children who are disadvantaged or at-risk and who would benefit most from public education are, in fact, the same individuals that public schools isolate, punish, and push into the juvenile and criminal justice systems. The school-to-prison pipeline is another result of American society punishing its disadvantaged citizens, creating an "us versus

them" mentality in schools. Based on the ACLU definition, children in public schools are channeled into a lifestyle of crime due to the public education system, not by the actions of the children. Unfortunately, only a few researchers have tried to determine how public schools move children into the juvenile and criminal justice systems.

Literature Review

In 2005, Christle, Jolivette, and Nelson conducted three multi-method studies to understand the variables within schools that exacerbate or counteract the school-to-prison pipeline. They examined three school characteristics related to delinquency: academic failure, suspension, and dropout, all at the elementary, middle, and high school levels respectively. They measured academic failure by looking at the following variables: number of students enrolled; attendance rate; number of absences; socioeconomic background of the students (measured by the percentage of students enrolled in the Federal Free and Reduced Lunch Program [FRLP]); number of suspensions; number of expulsions; number of students assigned to alternative placements; number of board violations (measured by the number of student behaviors that resulted in an administrative referral and consequence); number of law violations (measured by the number of illegal acts committed by students on school grounds or at school-related activities that may result in arrest); number of students receiving corporal punishment; average Reading state test scores; average Math state test scores; average Language state test scores; and retention rate. With respect to each of these 14 variables, they compared schools that were high-performing to those that were low-performing.

In Study 1, Christle, Jolivette, and Nelson completed correlation analyses to determine if any of the 14 school characteristic variables were related to academic failure in elementary

schools. Their results suggested that the percentage of students enrolled in FRLP showed the strongest relationship to academic failure. The number of board violations, law violations, absences, and retention rate also had significant negative correlations to academic achievement. On the other hand, attendance rate and school enrollment indicated a positive relationship to high academic achievement meaning that elementary schools reporting higher school enrollment and attendance also reported lower rates of academic failure (Christle et.al, 2005). The remaining school characteristic variables were not significant correlated to academic failure in elementary schools.

In Study 2, Christle, Jolivette, and Nelson continued to complete correlation analyses to search for correlations between school characteristics and suspension rate in middle schools. Instead of using all 14 school characteristic variables, they modified their data to include 10 school characteristics- number of students enrolled; gender of the student body (measured by the percentage of boys); percentage of students enrolled in the FRLP; ethnic background of the students (measured by the percentage of Caucasian students); average 6^{th} grade Reading and Math state test scores; attendance rate; retention rate; dropout rate; number of board violations; and number of law violations. Five of the 10 variables related to school characteristics- board violations, FRLP (Federal Free and Reduced Lunch Program), law violations, retention rate, and dropout rate- were positively correlated to suspension rate. This meant that as these five school characteristic variables increased in middle schools, the suspension rate increased as well. Yet, "attendance rate, average 6^{th} grade Reading and Math state test scores, and percentage of students of Caucasian ethnic background were negatively correlated to suspension rate in middle schools indicating that schools reporting higher school attendance, higher academic achievement, and a greater percentage of ethnic majority students also reported lower rates of student

suspension. The gender and school size variables were not significantly correlated with suspension rate" (Christle, Jolivette, and Nelson, 2005, p. 77).

For Study 3, the school characteristic variables were further modified to determine if any relationship existed between school characteristics and dropout rate in high schools. The 12 school characteristic variables were- number of students enrolled; percentage of boys; percentage of students enrolled in the FRLP; percentage of Caucasian students; National Percentile score on Reading and Math state tests; attendance rate; retention rate; suspension rate; expulsion rate; board of education violation rate (measured by the number of board violations per 100 students; law violation rate (measured by the number of law violations per 100 students);and successful transition rate (measured by the percentage of graduates who are either employed or enrolled in postsecondary education the following school term). Five of the 12 school characteristic variables- retention rate, percentage FRLP, law violation rate, suspension rate, and board violation rate- were positively correlated to dropout rate. Dropout rate was negatively correlated with National Percentile score on Reading and Math state tests, attendance rate, successful transition to adult life rate, and percentage of students of Caucasian ethnic background. As seen in Study 1 with middle schools, the correlation analyses revealed that gender and school size variables were not significantly correlated with dropout rate in high schools.

In the three multi-method studies that Christle, Jolivette, and Nelson conducted to understand the variables within schools that enhance the school-to-prison pipeline, certain school characteristics were shown to positively correlate to academic failure, suspension rate, and dropout rate, all factors known to be related to delinquency. Their results also suggest that specific school-based practices and policies can help minimize the risks of academic failure, suspension rates, and dropout rates in elementary, middle, and high schools. Christle, Jolivette,

and Nelson concluded that school-level characteristics, such as supportive leadership, effective academic instruction, school-wide behavior management, and dedicated and collegial staff, can help minimize academic failure, suspension rate, and dropout rate, thus supporting the idea that school characteristics, both positive and negative, are related to risk factors of youth delinquency.

In 2001, Amy Pandjiris, then a senior at Oberlin College in Ohio, wrote an essay for the Federal Reserve Bank of Cleveland Ohio's 2000-2001 Essays in Economics Competition, in which she investigates whether students who attend higher-quality schools commit fewer crimes. She writes that "Gary Becker was one of the first scientists to describe the decision to participate in illegal activities as an economic one" (Pandjiris, 2001, p. 1). Becker's theory asserts that people engage in crime after comparing the costs and benefits of crime with those of legal employment. Using Becker's theory, Pandijirs explored the relationship between school quality and juvenile crime. To measure juvenile crime, Pandijirs obtained data from the National Longitudinal Survey of Youth (1997) on four types of illegal behaviors- destruction of property, assault, selling drugs, and theft and other property crimes- and the rate at which individuals commit these crimes. The National Longitudinal Survey of Youth asks respondents whether they have engaged in these illegal activities since the date of their interview the previous year. Pandijirs then used three measures of school quality as independent variables- the student-teacher ratio, the presence of an apprenticeship program, and the type of admission policy (that is, whether students are assigned to the school or whether they can elect to attend it). The results of Pandijirs's study suggest that school quality did not have a significant effect on the probability of young persons' committing more serious crimes, such as assault, or more lucrative ones, such as selling drugs or theft and other property crimes. With these results, she concluded that school

quality may influence a young person's decision to commit low-level crimes but may not have an effect on his or her decision to participate in more serious crimes.

In 2009, Broidy, Willits, and Denman wanted to determine the degree to which neighborhood crime patterns are influenced by the location, level, and quality of neighborhood schools. They used data from Albuquerque, New Mexico that covered three areas: crime, social and demographic features of neighborhoods, and schools. The incident-level crime data used in the research were provided by the Albuquerque Police Department (APD), and the school data came from two sources: the National Center for Education Statistics (NCES) and the Albuquerque Public School's (APS) Research, Development, and Accountability Office. Using the NCES website, the researchers studied the following school quality characteristics: the level of school, the pupil to teacher ratio, and the number of students receiving free or reduced lunches. They also used the APS website to obtain standardized reading and math scores from 2002-2005, and created a testing average for each school over these three years.

The results of the school quality regression models were less than clear. Controlling for other factors, Broidy et. al. found that block groups with below average quality middle schools reported significantly more crime than block groups without middle schools and block groups with above average quality middle schools. However, block groups with above average quality high schools reported more aggravated assaults and narcotics incidents than block groups with below average quality or no high schools. Similar results were seen in the block groups with below average quality elementary schools, where burglaries and larcenies were reported significantly less than block groups with above average quality elementary schools and block groups with no elementary schools. In sum, the research did not support the hypothesis that

higher quality schools would be associated with lower levels of crime, and lower quality schools would be associated with higher levels of crime (Broidy et.al, 2009).

Another researcher, Dr. David Deming, Associate Professor of Education and Economics at Harvard University, wrote an article in which he asks the question, "Can improvement in the quality of public schools be an effective crime prevention strategy?" In the article, Deming links administrative data from the Charlotte-Mecklenburg school district to arrest and incarceration records from Mecklenburg County and the North Carolina Department of Corrections (NCDOC). In 2002, the Charlotte-Mecklenburg school district implemented a district-wide open enrollment school choice plan. This meant that students and their families could enroll in a lottery where they could choose the schools that the students wanted to go to. The lottery winners would be selected randomly and the winners would be able to attend the school that they listed as their first choice. Seven years after this lottery program was implemented, Deming found consistent evidence that winning the lottery reduced adult crime (Deming, 2011). He noted that lottery winners had been arrested for fewer serious crimes and had spent fewer days incarcerated than those were not lottery winners. The gain in school quality as measured by peer and teacher inputs was equivalent to moving from one of the lowest-ranked schools to one at the district average. In answering his initial question of, "Can improvement in the quality of public schools be an effective crime prevention strategy," Deming would argue, "Yes, better public schools can reduce the adult crimes in an area."

Statement of Problem

In 2011, the U.S. government spent $3.6 trillion on a range of activities and programs (U.S. OMB, 2011). Of this $3.6 trillion, $700 billion or 4.7% was spent on defense while

another $725 billion or 4.8% was spent on social security. From 2010-2011, the United States' total expenditures for public elementary and secondary schools amounted to $632 billion or 4.3% (NCES, 2014). During this same year, North Carolina spent about $7.2 billion on public education in schools, which included child nutrition, salaries, employee benefits, purchased services, supplies and materials, and instructional equipment (N.C. Department of Public Instruction, 2014). Yet, despite the large amount of spending for public schools, the United States has continued to rank poorly compared to other countries for its public education system. According to the latest international rating of education in 65 countries, American public schools are in a free fall. The overall rank of the U.S. is 29th in the world behind Russia, Vietnam, China, and Singapore (Fedewa, 2014). This study will focus on the public education systems of the 16 counties located in Northeastern North Carolina.

Northeastern North Carolina is composed of the following 16 counties: Beaufort, Bertie, Camden, Chowan, Currituck, Dare, Gates, Halifax, Hertford, Hyde, Martin, Northampton, Pasquotank, Perquimans, Tyrell, and Washington. Northeastern N.C. is known as an economic development region due to marketing companies promoting the area for new businesses, economic growth, and tourist attractions. Halifax County, the county in which I received my K-12 public education, has received major media attention for its students' continuous low-performing test scores and graduation rates, and high poverty levels. In 2009, the state of North Carolina intervened and took control of Halifax schools so that the state's own education team could try to boost student performances. This intervention was the first of its kind in the N.C. school system. Yet, Halifax County does not get the same media attention for its violent crimes as its public education system does, although a violent crime problem exists there as well.

In 2012, the violent crime rate in Halifax County per 100,000 people was 537.9. This is an increase from the violent crime rate of 437.4 in the county in 2011 (NC DOJ, 2012). Cumberland County, where Fayetteville is located, had a 2012 violent crime rate of 583.1 which is only 45.2 higher than the violent crime rate in Halifax County. Wayne County, where Goldsboro is located, had a 2012 violent crime rate of 442.7 which is less than the violent crime rate in Halifax County. Martin County, another county located in Northeastern N.C., had a 2012 violent crime rate of 510.7, one more similar to that of Halifax County. Even the 2012 total violent crime rate in the state of North Carolina per 100,000 people was 358.6, illustrating that both Halifax and Martin Counties, counties in which violent crime is not seen as a problem, have higher violent crime rates than the state.

Research Questions

Using the hypothesis initiated by researchers Christle, Jolivette, and Nelson, this study examines the question, "Does school quality in public high schools affect county violent crime rates in Northeastern North Carolina?" The fact that I was born and raised in Northeastern N.C. makes this topic personal to me. I have seen the poor quality of education in this area, and am a product of the disadvantages that this type of education brings. I have witnessed friends and family members turn to a life of crime because of the environment in which they live. All of these thoughts and experiences have led me to believe that the poor educational quality of schools in this region of N.C. has a detrimental effect on a person's likelihood to commit crime. I assume that schools with better test scores, better educated teachers, and more parent participation in the community are in lower crime areas.

Definition of Key Terms

In answering my research question, I have to ask first, "How is school quality measured?" For some individuals, school quality is based upon students' performance on tests, which is the way N.C. determines if a school is meeting its standards. Other people may believe that school quality is based upon the safety of the school. Using studies that have previously looked at how to measure school quality (Christle et. al. 2005; Deming, 2011), I used 9 variables to measure school quality: percentage of students in need of Federal Free and Reduced Lunch Program (FRLP); percentage of students ' scores at or above grade level on NC EOC Math I Test; percentage of students ' scores at or above grade level on NC EOC English II Test; average total SAT score (only critical reading and math); percentage of total course enrollments in advanced college prep courses (AP, IB, community college, university courses); average course size in Math I courses; average course size in English II courses; percentage of teachers with advanced degrees, including a master's or doctoral degree; and teacher turnover rate (left the classroom from March of the prior year to March of the current year).

For this research, I reviewed the idea of an economic development region. As mentioned before, Northeastern North Carolina has been given the title of an economic development region. When individuals enter Northeastern N.C., the green highway signs welcome them by saying, "Northeastern North Carolina: An Economic Development Region." I have looked at these signs for many years of my life but have had no idea what this means. According to the Salmon Valley Business and Innovation Center in Idaho, the term "economic development" is often used in a regional sense. In this sense, "economic development focuses on the recruitment of business operations to a region, assisting in the expansion or retention of business operations within a region or assisting in the start-up of new businesses within a region" (SVBIC, 2011). Using this definition, Northeastern N.C. is an economic development region in that the area receives

assistance in the development of economic wealth, business operations, and well-being of its inhabitants.

The City of Greensboro, N.C. has an Economic Development Office, which is used to promote Greensboro as a place to locate and grow business. This office works with businesses to receive assistance with reviewing of plans and projects, collaboration on ideas, and provision of recommendations. North Carolina's Northeast Alliance is similar to the Economic Development Office in Greensboro in that it promotes the area of Northeastern N.C. for new businesses and assists with business expansions. It establishes a climate for job growth and economic improvement of the entire region (N.C. Department of Commerce, 2014).

Public schools as defined in this study are schools that are supported by public funds. Of the 39 schools located in Northeastern N.C. that are used for this study, all of them are listed as public schools and funded as such from the N.C. Department of Public Instruction. Traditional high schools are schools that typically comprise grades 9-12, and are attended after primary and middle schools. Traditional high schools are usually the last institution that individuals attend before continuing a post-secondary education into a college or university. While traditional high schools are still relevant in the United States, the greater emphasis on receiving a post-secondary education and the culture of zero tolerance in schools has led to an increase in alternative and early college high schools. Of the 39 public high schools researched in this study, 28 of them are labeled as traditional by the N.C. Department of Public Instruction, although some are comprised of grades K-12 and others 7-12.

Alternative schools are characterized as an alternative learning program in which "students at any level, suspended or expelled students, or students whose learning styles are

better served in an alternative program are provided primary instruction outside the standard classroom. It serves at-risk students, and has an organizational designation based on the N.C. Department of Public Instruction's assignment of an official school code. Some of these designations include the enrollment of students for a designated period of time, graduation requirements, course credit, and grade level promotion credit" (N.C. DPI, 2015). Of the 39 public high schools in the Northeastern region of North Carolina, 4 schools are designated as alternative.

"Early college high schools are schools that enable students, particularly students who are typically under-represented in college, to earn a high school diploma and an associate's degree or two years of transferable, tuition free, college credit within four or five years" (N.C. DPI, 2010). From 2005-2010, the number of early college high schools located and opened in N.C. grew from 13 to 70. Of the 39 public high schools researched in this study, 7 schools are early college high schools, which means that out of the total 39 public high schools researched in this study, 28 are traditional, 4 are alternative, and 7 are early colleges.

"In the FBI's Uniform Crime Reporting (UCR) Program, violent crime is composed of 4 offenses: murder and non-negligent manslaughter, forcible rape, robbery, and aggravated assault. Violent crimes are defined in the UCR Program as those offenses which involve force or threat of force" (FBI, 2013). One limitation of the UCR and its data on violent crimes is that it includes only crimes that are reported to the police. Violent crimes not reported to the police then will not be included in the UCR. This creates a particular problem for the crime of forcible rape since this type of violent crime is less likely to be reported. However, considering that violent crimes are those crimes that result in the most physical danger, most violent crimes are reported and therefore are included in the UCR.

Another limitation of the UCR is that some police do not send or report its data to the FBI. With this study, Hyde and Gates County Police Departments do not report to the FBI; therefore, none of the data on the violent crimes in these counties are reflected in the UCR. Consequently, I was not able to gather data on the violent crime in these areas or calculate violent crime rates for these counties.

Violent crime rates are calculated by using the following formula: (Number of Reported Violent Crimes/ Population) x Standard Number = Violent Crime Rate per the standard number. To calculate county violent crimes rates of the 16 counties located in Northeastern N.C., I used this formula with the standard number of 1,000.

Methods for Study 1: School Analysis

The methods for my research study are strictly quantitative due to IRB approval and available time. Unfortunately, because my study would have involved an at-risk-population of mostly high school students under 18 years old, IRB approval would have been difficult to obtain. I would have had to obtain parental and students' consent to conduct my study as well as the trust of the officials and administrators in each school. Time constraint is another issue that led me to choose quantitative research.

My method of research includes two studies and analyses, where the independent and dependent variables are different for each one. The reason for this is due to the fact that school quality and county violent crime rates are not measured on the same level. School quality is based on the school level, but violent crime rates are measured at the county level. Therefore, before I could answer my research question, "Does school quality in public high schools affect

county violent crime rates in Northeastern North Carolina?" I had first to ensure that school quality in public high schools is measured on the same county level as violent crime rates.

For Study 1, I collected data for all of the 39 public high schools located in Northeastern N.C. The independent variables were the 9 school quality measures- percentage of students in need of Federal Free and Reduced Lunch Program (FRLP); percentage of students ' scores at or above grade level on NC EOC Math I Test; percentage of students ' scores at or above grade level on NC EOC English II Test; average total SAT score (only critical reading and math); percentage of total course enrollments in advanced college prep courses (AP, IB, community college, university courses); average course size in Math I courses; average course size in English II courses; percentage of teachers with advanced degrees, including a master's or doctoral degree; and teacher turnover rate (left the classroom from March of the prior year to March of the current year). The 3 dependent variables used in Study 1 are the number of short-term suspensions, expulsions, and dropouts. These data were collected from the N.C. Department of Public Instruction's publication of 2013 N.C. School Report Cards. The data were then separated into 3 school data sets: the entire population of 39 schools, the 35 schools that did not include alternative schools, and the 32 schools that did not include early colleges. The reason that alternative and early college high schools were excluded is due to the expectation that alternative schools will have higher school crime and violence while early college high schools will have more advanced college prep courses. Therefore, to ensure that the data is not skewed or misleading, I excluded alternative and early college high schools, which resulted in 3 school data sets. Table 1, Appendix includes the list of the 39 schools for which data were collected, and the counties in which they are located.

In order to answer the questions of, "What school quality measures are significant to the number of short-term suspensions? What school quality measures are significant to the number of expulsions? What school quality measures are significant to the number of dropouts," several linear regression analyses were undertaken in Study 1. The linear regressions were completed with the entire population of 39 schools, with the 35 schools that did not include alternative schools, and with the 32 schools that did not include early colleges. Each independent variable was computed into a linear regression with one dependent variable using 3 school data sets. For example, FRLP was computed into 3 linear regressions: one in which the data set was the entire population of 39 schools and the dependent variable was number of short-term suspensions, second in which the data set was the 35 schools that did not include alternative schools and the dependent variable was number of short-term suspensions, and third in which the data set was the 32 schools that did not include early college high schools and the dependent variable was number of short-term suspensions. FRLP was then computed into 6 more linear regressions using the number of expulsions and dropouts individually as the dependent variables. This step was repeated for each of the other 8 school quality measures to determine what school quality measures were significant to the number of short-term suspensions, expulsions, and dropouts of schools from the 3 school data sets.

In preparation for Study 2, I also calculated the average number of short-term suspensions, expulsions, and dropouts of the entire population of 39 schools, the 35 schools that did not include alternative schools, and the 32 schools that did not include early college. After computing these averages, I looked for any patterns amongst the average number of suspensions, expulsions, and dropouts that occur at schools and the type of schools where these events were occurring.

Methods for Study 2: Crime Rate Analysis

For Study 2, average short-term suspensions, expulsions, and dropouts of each school were used as the independent variables. The dependent variable of violent crime rate was calculated using data from the 2013 Uniform Crime Report as published by the FBI, and from the 2013 Certified County Population Estimates published by the N.C. Office of State and Budget Management. The calculation of 2013 county violent crime rates was completed by using the following formula: (Number of Reported Violent Crimes in 2013/ County Population in 2013) x 1,000 = County Violent Crime Rate per 1,000. Once again, these data were separated into 3 school data sets: all schools, all schools that are not alternative, and all schools that are not early colleges.

In order to answer the questions, "Is the average number of short-term suspensions of each school significant to county violent crime rates? Is the average number of expulsions of each school significant to county violent crime rates? Is the average number of dropouts of each school significant to county violent crime rates", several linear regression analyses were undertaken in Study 2. The linear regressions were completed with the entire population of 39 schools, with the 35 schools that did not include alternative schools, and with the 32 schools that did not include early colleges. Each independent variable was computed into a linear regression with the one dependent variable of county violent crime rates. For example, the average number of short-term suspension was computed into 3 linear regressions: one in which the data set was the entire population of 39 schools and the dependent variable was county violent crime rates, second in which the data set was the 35 schools that did not include alternative schools and the dependent variable was county violent crime rates, and third in which the data set was the 32 schools that did not include early college high schools and the dependent variable was county

violent crime rates. This step was repeated for each of the other 2 independent variables to determine if the average number of short-term suspensions, expulsions, and dropouts of each county in the 3 school data sets had a significant effect on county violent crime rates.

In Study 2, I also set up a table, Table 5, to illustrate how counties rank in terms of average number of suspensions, expulsions, and dropouts in all schools, and how counties rank in terms of violent crime rates. Using Table 5, I looked for patterns and similarities amongst counties that had the same standings on both rankings. I then revisited the data from Study 1 to see if any school quality measures were similar amongst the schools whose counties ranked high in suspensions, expulsions, dropouts, and violent crime rates.

Results for Study 1

Based on the linear regressions, slope (B) and significance were computed to determine if significant relationships, whether positive or negative, existed between the school quality measures in the 3 school data sets and the number of short-term suspensions, expulsions, and dropouts. R-square was calculated to determine the percentage of variation in the dependent variables that were caused by each of the independent variables.

Results from Table 2 show Math I and English II course sizes are both significant and negatively correlated to the number of short-term suspensions when all schools are included in the data, and when only traditional and alternative schools are included in the data. This means that as the average course size in either Math I or English II courses increases in all schools or only traditional and alternative schools, the number of short-term suspensions decreases. These results are opposite of what I expected. I assumed that small average course sizes in Math I or English II would result in a lower number of suspensions. Yet, in thinking about the level of

these courses, Math I and English II may be categorized as high level courses depending upon the school. Therefore, if Math I and English II are considered high level courses, more students are taking higher level courses, which could result in better behavior.

In spite of average course sizes being significant to the number of short-term suspensions, Math I course size is not significant to the number of expulsions when all schools are included in the data, and when only traditional and alternative schools are included in the data. This result can once be related to the level of the course. If Math I is categorized as an average or remedial course in early college, then it is likely that Math I courses are not available at early colleges or not enough students enroll in the course to have a significant relationship between the course size and expulsions.

Furthermore, Math I and English II scores and the percentage of students enrolled in advanced college prep courses are not significant to the number of expulsions when all schools are included in the data, and when only traditional and alternative schools are included in the data. This indicates that a relationship does not exist between these three school quality measures and the number of expulsions when all schools and only traditional and alternative schools are included.

The results also show that teachers with advanced degrees and the teacher turnover rate are not significant as related to- the number of short-term suspensions, expulsions, or dropouts in any type of school. On the other hand, FRLP (Federal Free and Reduced Lunch Program), Math I score, English II score, and total SAT score always had significant relationships with the number of short-term suspensions in every type of school. Furthermore, Math I scores and English II course sizes are always significant to the number of dropouts in every type of school.

Overall, most public high schools do not expel students, and most of the school quality measures that are significant for the number of short-term suspensions are not significant for the number of expulsions.

Table 2

Multiple regression analyses of the relationship of school quality measures with the number of short-term suspensions, expulsions, and dropouts using 3 school data sets

	# of short-term susp. R-square (B)	# of expulsions R-square (B)	# of dropouts R-square (B)
FRLP all schools	.404 (1.693) ***	.028 (0.002)	.006 (-0.031)
FRLP excl. alt.	.350 (0.749) ***	.000 (-3.844E-5)	.001 (0.017)
FRLP excl. early c.	.509 (1.952) ***	.042 (0.002)	.012 (0.041)
Math score all sch.	.180 (-1.683) **	.001 (0.000)	.316 (-0.309) ***
Math score excl. alt.	.186 (-0.747) **	.147 (0.002) **	.415 (0.361) ***
Math score excl. early c.	.166 (-1.758) *	.027 (0.002)	.309 (0.337) **
English score all sch.	.372 (-2.206) ***	.006 (0.001)	.027 (0.076)
English score excl. alt.	.483 (-1.148) ***	.185 (0.002) **	.079 (0.136)
English score excl. early c.	.380 (-2.558) ***	.002 (0.001)	.001 (0.012)
SAT score all sch.	.300 (-0.189) ***	.069 (0.000)	.069 (-0.027)
SAT score excl. alt.	.300 (-0.189) ***	.069 (0.000)	.069 (-0.027)
SAT score excl. early c.	.414 (-0.232) ***	N/A	.104 (-0.033)
Math course size all sch.	.232 (-6.778) **	.091 (-0.019)	.073 (0.569)
Math course size excl. alt.	.013 (-1.012)	.011 (0.003)	.056 (0.581)
Math course size excl. early c.	.272 (-7.332) **	.140 (-0.023) *	.065 (0.518)
English course size all sch.	.177 (-5.799) **	.034 (-0.009)	.244 (0.845) **
English course size excl. alt.	.023 (0.999)	.004 (0.001)	.236 (1.003) **
English course size excl. early c.	.279 (-7.422) **	.065 (-0.013)	.223 (0.802) *

College prep courses all sch.	.103 (-2.254)	.004 (0.002)	.125 (-0.406) *
College prep courses excl. alt.	.164 (-1.242) *	.237 (0.004) **	.153 (-0.445) *
College prep courses excl. early c.	.164 (-15.026) *	.054 (-0.030)	.007 (-0.357)
Teacher advanced degrees all sch.	.001 (-0.128)	.010 (0.002)	.030 (-0.134)
Teacher advanced degree excl. alt.	.013 (-0.316)	.013 (0.001)	.030 (-0.162)
Teacher advanced degrees excl. early c.	.008 (-0.536)	.004 (0.001)	.026 (-0.12)
Teacher turnover rate all sch.	.004 (0.304)	.051 (-0.004)	.025 (0.102)
Teacher turnover rate excl. alt.	.009 (0.228)	.007 (0.001)	.099 (0.299)
Teacher turnover rate excl. early c.	.030 (0.951)	.084 (-0.005)	.022 (0.096)

*p<0.05, **p<0.01, ***p<0.001

Overall, the results from Table 2 show that the exclusion of alternative schools and early college high schools in a data set can affect the significance of school quality measures. For example, FRLP, Math, English, and SAT scores are school quality measures that significantly impact the number of short-term suspensions in the entire population of 39 schools, the 35 schools that did not include alternative schools, and the 32 schools that did not include early colleges. However, Math and English scores are only significant to the number of expulsion in the 35 schools that did not include alternative schools. FRLP and SAT scores both were significant to the number of short-term suspensions in all 3 data sets yet neither one was significant to the number of expulsions or dropouts in any of the schools. As a result of these various outcomes, I need to continue focusing on the relationship between independent and dependent variables when certain schools are excluded. I also need to keep focusing on school

quality measures, such as FRLP, test scores, SAT scores, and course sizes since these variables have shown to be significant to various dependent variables. Unfortunately, both teacher turnover rate and teachers with advanced degrees were school quality measures that never had significant relationships to any of the dependent variables in any school therefore I am able to drop these school quality measures from the study.

Results from Table 3 show the average number of short-term suspensions, expulsions, and dropouts in Study 1 using the 3 school data sets. The calculation was done to identify any patterns amongst the number of suspensions, expulsions, and dropouts that occur at schools and the type of schools where these events are occurring. The results show that the average number of short-term suspensions of 62.40 was the highest in the school data set where early college high schools were excluded. In addition, the results also show that the average number of short-term suspensions of 31.80 was the lowest when alternative schools were excluded. This means that when alternative schools are included in the data, suspensions increase but when early college high schools are included in the data, suspensions decrease. The results also show that the average number of dropouts of 11.41 was highest in the school data set where early college high schools were excluded. Surprisingly, the average number of dropouts of 11.21 was not tremendously lower when alternative schools were excluded meaning that the average number of dropouts is similar in school data sets even when alternative schools or early college high schools are excluded.

Table 3

Averages of short-term suspensions, expulsions, and dropouts using 3 school data sets

	All schools	All schools excl. alt.	All schools excl. early c.
Average # of short-term susp.	52.63	31.80	62.40

Average # of expulsions	0.05	0.05	0.04
Average # of dropouts	10.30	11.21	11.41

Overall, the results from Table 3 show that the exclusion of alternative schools and early college high schools in a data set can affect the average number of short-term suspensions and dropouts. The average number of short-term suspensions decreased tremendously when alternative schools were excluded yet the average rose again once all schools were included and when traditional and alternative schools were included. The average number of dropouts was also dependent upon which schools were excluded as seen with the different averages from the 3 school data sets. On the other hand, the average number of expulsions stayed constant. As a result of these various outcomes, I can see that I need to continue focusing on the relationship between suspension and dropouts, and type of schools but not the relationship between expulsions and type of schools.

Results for Study 2

Based on the linear regressions, slope (B) and significance were all computed to determine if significant relationships, whether positive or negative, existed between the average number of short-term suspensions, expulsions, and dropouts in the 3 school data sets, and the county violent crime rates. R-square also was calculated to determine the percentage of variation in the county violent crime rates that were caused by each of the independent variables.

Results from Table 4 show that the average number of short-term suspensions and the average number of dropouts for all 16 counties do not significantly affect the violent crime rate in the counties under any circumstances, including the type of schools. The only circumstance in

which the average number of expulsions for all 16 counties is significant to the county violent crime rates is when alternative schools are excluded. In other words, none of the independent variables are significant except for the instance in which the average number of expulsions of all schools that are not alternative is positively correlated to the county violent crime rates.

Table 4

Multiple regression analyses of the relationship of average number of short-term suspensions, expulsions, and dropouts in each county with the county violent crime rates using 3 school data sets

	County violent crime rate R-square (B)
County average # of short-term susp. all schools	.117 (0.008)
County average # of short-term susp. excl. alt.	.109 (0.012)
County average # of short-term susp. excl. early c.	.276 (0.012)
County average # of expulsions all schools	.000 (0.043)
County average # of expulsions excl. alt.	.530 (16.929) **
County average # of expulsions excl. early c.	.018 (0.849)
County average # of dropouts all schools	.001 (0.003)
County average # of dropouts excl. alt.	.000 (-0.001)
County average # of dropouts excl. early c.	.005 (0.008)

*p<0.05, **p<0.01, ***p<0.001

Table 5 shows how each county ranked in terms of average number of suspensions, expulsions, and dropouts, and violent crime rates. The results from Table 5 illustrate that Beaufort County had the highest violent crime rate amongst the 14 Northeastern N.C. counties that have data in the UCR, and the 3rd highest average number of short-term suspensions in all its schools. Northampton County had the highest average number of short-suspension in all its schools although it had the 5th highest violent crime rate. Bertie County was ranked 8th in the

highest violent crime rate and highest average number of short-term suspensions in its schools. The results for Table 5 are important in that it shows similar rankings between counties that have high violent crime rates, and high average number of short-term suspensions. Although the linear regressions found that no relationship existed between the average number of short-term suspensions and violent crime rates, the table shows that most counties who rank in the top 5 highest violent rates also rank in the top 5 highest average number of suspensions. Northampton, Beaufort, and Martin Counties all fall into this pattern. Halifax County had the 3rd highest violent crime rate but had the 6th highest average number of short-term suspensions. The only real exception to this pattern is Tyrrell County, which had the 4th highest violent crime rate but had the 14th highest average number of suspensions. Therefore, in looking at the linear regressions from Study 2 and Table 5, I can see disparities between the two analyses.

Table 5

Ranking of counties from highest to lowest in terms of county violent crime rate, average number of short-term suspensions, expulsions, and dropouts in all schools

	Ranking in county violent crime rate (highest-lowest, 1-8)	Ranking in average # of short-term susp. in all schools (highest-lowest, 1-8)	Ranking in average # of expulsions in all schools (highest-lowest, 1-8)	Ranking in average # of dropouts in all schools (highest-lowest, 1-8)
Beaufort County	1	3	2	7
Bertie County	8	8	N/A	1
Camden County	13	16	N/A	9
Chowan	11	12	N/A	1
Currituck	9	13	N/A	2
Dare	12	4	N/A	13
Gates	N/A	9	N/A	6
Halifax	3	6	N/A	4
Hertford	6	7	N/A	10

Hyde	N/A	15	N/A	11
Martin	2	5	N/A	3
Northampton	5	1	N/A	8
Pasquotank	10	2	1	10
Perquimans	14	11	N/A	5
Tyrrell	4	14	N/A	12
Washington	7	10	N/A	8

In looking back at the school quality measures, Beaufort County had data that were similar to data from other counties although it ranked 1st in the highest violent crime rate. On the other hand, Halifax County did have the lowest percentage of students at or above grade level on Math I and English II EOC tests, and had the 3rd highest violent crime rate. Tyrrell County was notably one of the best counties for school quality measures in terms of enrollment in college prep courses, teachers with advanced degrees, and total SAT scores yet had the 4th highest UCR violent crime rate. Northampton County ranked very low in terms of school quality measures, especially student performance on Math I and English II EOC tests, and ranked 5th highest in violent crime.

Discussion

The results from Study 1 revealed that teachers with advanced degrees and the teacher turnover rate do not impact on the number of short-term suspensions, expulsions, or dropouts in any type of school. This means that the number of teachers with advanced degrees and the likelihood of teachers staying at a school do not influence the rates of suspensions, expulsions, and dropouts of students. The results from my study are in direct opposition to the conclusion reached by Christle, Jolivette, and Nelson in their study. In these researchers' study, Christle et.

al. concluded that school-level characteristics, such as supportive leadership, effective academic instruction, school-wide behavior management, and dedicated and collegial staff, can help minimize academic failure, suspension rate, and dropout rate. However, the results from my study clearly indicate that teacher turnover rate and teachers with advanced degrees have no effect on the number of short-term suspensions, expulsions, and dropouts in schools. For this reason, I can conclude that dedicated and collegial staff does not have a relationship with the number of suspensions, expulsions, and dropouts in schools. Yet, this does not mean that the quality of teachers does not affect the number of suspensions, expulsions, and dropouts. Other school quality measures, such as the number of years in experience in teaching, salary, and level of licensure, could be another way to measure the quality of teachers.

Another way to look at the results from Study 1 could be that the school environment is a predictor of the number of short-term suspensions, expulsions, and dropouts, not the teachers. In Study 1, Math I and English II course sizes were significantly negatively correlated to the number of short-term suspensions when all schools are included in the data, and when only traditional and alternative schools are included in the data. The percentage of students in need of FRLP was also significant to the number of short-term suspension in the 3 school data sets. Course sizes are an indicator of school environment in that the size of the course is usually related to the size of the school. FRLP is also an indicator of school environment because a school that has many students in need of FRLP is most likely a school with students from a lower socioeconomic status. These results are not related to teachers, and instead, are more related to school environment. The fact that FRLP had a significant relationship with suspensions could show that the students' socioeconomic status and household circumstances play a major role in suspensions as well as the school environment. Furthermore, English II course sizes were shown

to be significant to the number of dropouts in every type of school. These results could further indicate that suspensions and dropouts are related to the school environment and students' socioeconomic status and household.

This discussion of the results from Study 1 concerning school environment, students' performance, and students' socioeconomic status leads to further questions concerning school quality. Rather than determine which school quality measures to study, the next step could be to answer the question of, "Is school quality an indicator of its environment?" Many Americans are aware that the funds that public schools use to operate are not given to them only by the federal government. State and local governments play tremendous roles in the funding of public schools and the practices that are taken by public schools in their area. Therefore, it is common knowledge that the ways in which public schools operate and look is based on the funds that they are allocated and the environment in which they are located.

In reviewing the data from Study 1, I noticed that not much data existed on the number of expulsions throughout the 39 schools. Of the 39 schools located in Northeastern N.C., only two schools had a real number of expulsions; the other 37 schools had zero expulsions. Surprisingly, the two schools that did have expulsions were both alternative schools. Using this information, a person may conclude that alternative schools are the only public schools that are expelling students. I would also look for more information about North Carolina's policy for expulsions. Are students immediately expelled after a maximum number of suspensions? Is there an appeals process for students to petition their expulsions? These are questions for which information needs to be further gathered before I can reach a conclusion about alternative schools and their relationship with expulsions.

First, if students are transferred to alternative schools once they are expelled from their traditional or early college schools, are they recorded in the data as transferred students or expelled students? If expelled students are recorded as transfers, then having zero expulsions makes sense in the data of public high schools. Second, are students more likely to be expelled from alternative schools because alternative schools are their last chance in a school setting? Since, alternative schools are noted as the schools for at-risk, and suspended and expelled students, the practices amongst the staff at alternative schools may vary. Faculty members at alternative schools may have misconceptions about the students and their backgrounds, and may have less patience with these students. These students may be allowed to only misbehave once before they are expelled whereas students in traditional schools are given multiple chances. Alternative school students may realize that they are being labeled as 'problematic,' which results in their continued maladaptive behavior. They may truly believe that they are 'bad students' and behave in ways that could result in them being expelled.

Third, is receiving an education from an alternative school better than having no education? By thinking about the environment that alternative schools have and the ways in which they are criticized, some people would argue that alternative schools are an inadequate and unsatisfactory setting to receive an education. Some individuals may think that since students are expelled from alternative schools, which was shown to be true in the data for Study 1, then alternative schools do not serve a purpose. Other may see the results from Study 1 in which the average number of short-term suspensions was lowest when alternative schools were excluded, and think that alternative schools counties to foster misbehavior. Yet, where else would at-risk, suspended, and expelled students go if they did not attend alternative schools? Would someone with a kind heart provide these students an education or would our society turn

its back on these students? These are further questions that need to be recognized before misconceptions about alternative schools emerge from the data.

These same types of questions need to be asked when researching dropouts. The results from Study 1 show that the average number of dropouts was highest in the school data set where early college high schools were excluded. This means that when early college high schools were removed from the data, the average number of dropouts increased. Unlike students at alternative schools, students have to be accepted into early college high schools before enrollment, similar to the application process undertaken by American colleges and universities. As a result of having to apply for an early college, students seem to have a certain level of interest and desire to attend early college, and withstand the environment and practices that occur within it. Therefore, it may not be shocking that the data reveal that dropouts were lower when early colleges were excluded. Yet, the conclusion cannot be reached that students are less likely to drop out of early colleges. It may be that students are unable to dropout of early colleges or the process is harder for them to dropout of these schools rather than alternative and traditional high schools. Faculty at early college high schools may be more willing to work with students rather than allowing the students to drop out. Also, students may not drop out of early colleges but simple elect to return to their traditional high schools. Since students choose to attend early colleges, students have the option to return to their traditional high schools. By returning to their traditional high schools, students are transferring, not dropping out. Researchers can look for further information about the attitudes and practices of early college high schools, and how these attitudes and practices relate to dropout.

The results from Study 2 reveal that the average number of short-term suspensions and the average number of dropouts for all 16 counties did not significantly affect the violent crime

rate in the counties under any circumstances, according to the type of schools. On the other hand, the only circumstance in which the average number of expulsions for all 16 counties was significant to the county violent crime rates is when alternative schools were excluded. The implication from these results is that the number of dropouts and short-term suspensions from all schools does not affect the amount of violent crime that occurs in an area. Additionally, expulsions only affect violent crime rates when alternative schools are removed from the data. As mentioned from the discussion of Study 1, many questions have to be answered about alternative schools before any conclusions can be made about the influences that they have. Inquiries need to be further made between the relationships of dropouts and alternative and early college high schools. Most importantly, the limitations of the UCR and its data on violent crimes needs to be taken into account since the violent crimes included in the data are only those that are reported, not the actual numbers of violent crimes that are occurring.

The rankings of counties from highest to lowest in terms of county violent crime rates, average number of suspensions, expulsions, and dropouts in all its schools also proved to be a vital point for discussion. Beaufort County had the highest violent crime rate amongst the 14 Northeastern N.C. counties that have data in the UCR, and had the 3rd highest average number of short-term suspensions in all its schools. Tyrrell County ranked 15th in the highest average number of dropouts but 4th in violent crime rate. Looking at these rankings, I can see how inconsistent counties rank in the 4 categories. Some counties only move within 3 levels across the 4 categories while others moved almost 10 levels. As I result, I cannot find any patterns in terms of county violent crime rates and the average number of suspensions, expulsions, and dropouts of all schools in each county.

I was also not able to find a consistent pattern when I reviewed the school quality measures of schools that were located in counties with the highest violent crime rate. Beaufort County had schools whose data were similar to schools located in other counties although it ranked 1st in the highest violent crime rate. Tyrrell County was notably one of the best counties for school quality measures in terms of enrollment in college prep courses, teachers with advanced degrees, and total SAT scores yet had the 4th highest violent crime rates. On the other hand, Halifax and Northampton Counties ranked low in terms of school quality, and were in the top 5 of having the highest violent crime rate, thus implying a connection may exist between the two, but not definitively.

Conclusion

In conclusion, to answer my research question of, "Does school quality in public high schools affect county violent crime rates in Northeastern North Carolina?" I cannot conclusively say that school quality does not affect county violent crime rates in Northeastern N.C. although I can argue that school quality affects school practices such as student performance and suspensions. During the review of literature, I found that much of the available research that concerns schools and crime is focused on the idea of the 'school to prison pipeline' in which children are funneled out of public schools and into the juvenile and criminal justice systems. These children, who are usually disadvantaged or at-risk, are further punished for their unfortunate circumstances and are isolated to the extent of being forced into the juvenile and criminal justice systems,. Researchers like Christle et. al. (2005) and Deming (2011) have completed studies to examine school characteristics that they believe are related to delinquency, and to determine strategies that can improve the quality of public schools as a way to decrease crime. Using the knowledge and information gained from these researchers, I conducted my

own study to examine school quality in public high schools and the county violent crime rates in Northeastern N.C.

Considering that I was born and raised in Northeastern N.C., this topic and study is personal. Through my own experiences and the way that the United States is continuously ridiculed for its failing public education system, I decided to look for evidence if a relationship existed between school quality in public high schools and county violent crime rates. In order to complete my study, I had to define key terms such as alternative schools, economic development region, and early college high schools. I needed to explain why answering this question was important for me as well as a problem for the community. I collected data from the 2013 N.C. School Report Cards, FBI's Uniform Crime Report, and 2013 Certified County Population Estimates to define school quality measures and calculate the violent crime rates of each of the 16 counties. I also completed several linear regression analyses where I looked for relationships between 9 school quality measures and the number of short-term suspensions, expulsions, and dropouts, and the relationships between suspensions, expulsions, and dropouts and county violent crime rates. I used 3 school data sets to ensure that the data were not skewed.

Overall, I found that the percentage of students in need of FRLP (Federal Free and Reduced Lunch Program), the percentage of students ' scores at or above grade level on NC EOC Math I and English II Tests, and average total SAT scores (only critical reading & math) significantly affect the number of short-term suspensions in every type of school. Average course sizes in Math I and English II courses, and percentage of total course enrollments in advanced college prep courses were also significant to short-term suspensions if either alternative schools or early high schools were excluded. In addition to these school quality measures that were related to the number of short-term suspensions, the percentage of students '

scores at or above grade level on NC EOC Math I Test, and average course size in English II courses significantly affect the number of dropouts in every type of school. The percentage of total course enrollments in advanced college prep courses was significant to the number of dropouts in the entire population of 39 schools, and the 35 schools that are not alternative.

I was not able to retrieve enough data on expulsions to draw a conclusion about its relationship to school quality and county violent crime rates. In addition, I found that while some school quality measures affect suspensions, expulsions, and dropouts, suspensions, expulsions, and dropouts do not have a significant effect on county violent crime rates. However, when looking for patterns within the school quality data in the counties that had the highest violent crime rates, I found that some of the counties that had the worst school quality data also ranked within the top 5 highest violent crime rates. Nonetheless, many questions concerning the value of alternative schools and the likelihood of dropouts of early college high schools students still exist. More investigations into how to measure school quality and the limitations of the UCR need to be undertaken before anyone can definitely conclude that school quality in public high schools does not affect county violent crime rates. Until then, I will continue to be an advocate for improving the public education school systems in Northeastern N.C. even if it does not affect the problem of county violent crime rates in the area.

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