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No Child Left Behind? A Socioeconomic Comparison of Urban, Suburban and Rural School Systems in Ohio

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by

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Abstract

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The intention of this study is to show the causal relationship between poverty and the low achievement scores that are found in various Ohio schools that include urban, suburban, and rural systems. This research is an attempt to uncover the reasons that cause some school systems to fail as others thrive in Ohio. The study is also to determine if the various school systems of Ohio are in compliance with the No Child Left Behind Act (NCLBA).

Key Words: No Child Left Behind Act (NCLBA), Standardized testing, urban, suburban, rural, achievement test, achievement gaps, school report cards, variance, ANOVA, Kruskal-Wallis, Mann Whitney U, Wilcoxon W, Geographic Information Systems (GIS)

Dedication

I would like to dedicate this study to my two beautiful children, Brianna and Layla Brown. I appreciate the significant time I was given away from you during this research project to fulfill this important personal goal. Always remember that Daddy loves you very much.

Acknowledgments

I would like to thank my thesis advisor, Dr. James Leonard, for his patience and guidance in making this research into a meaningful academic accomplishment. I also want to thank Professor Larry Jarrett and Dr. Joshua Hagen for their input into my research goals of the three study areas that comprise the urban, suburban and rural school systems of Ohio. I want to thank my thesis review committee in advance for their time. I also want to give a special thank you to my family for the free time that I was given in order to be able to accomplish this research paper.

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Chapter One

Introduction

The geography of educational attainment in Ohio is an understudied area. This research examines spatial variation in student achievement by focusing on socioeconomic factors that affect student performance in three Ohio school districts including urban, suburban, and rural school systems. The reasons for the achievement gap between the wealthy, poor, and minorities are analyzed. One hypothesis is that some school systems of Ohio are failing because of a lack of funding to support those schools, especially in the urban areas that have higher poverty concentrations. The secondary hypothesis is that school systems are failing to educate children due to social and environmental factors, as these affect the students' ability to focus on receiving the education that is attempted. The study will appear to have five distinct areas because the urban and suburban areas of District Four and Eleven are separated for analysis. The purpose of this research is to investigate and explain the effect of economic segregation and poverty on school achievement and the quality of education in selected school districts in Ohio. The selected school districts represent urban, suburban, and rural school districts. Ohio was chosen because of my own personal familiarity with the state. I am a graduate of Chesapeake High School in Lawrence County which is included in the rural school system District Ten.

One example of a school system in distress can be found in District Eleven in Cuyahoga County. In order to perform statistical analysis, it was required to divide this district into urban and suburban areas. The urban section of District Eleven is in distress while the suburban section is experiencing success. The city of East Cleveland is 93.4%

African American. This disproportionate number is due to racial segmentation and/or economic segregation. People who live in the central city are poor and presumably cannot afford to move to a different location. Other social and economic factors may also be working to bring standardized achievement scores down.

The second school system in this study, District Four, is the urban and suburban school system found around Cincinnati. Like the Cleveland area, Cincinnati was also subdivided into urban and suburban areas for statistical analysis. The central city has similar socioeconomic characteristics comparable to East Cleveland. District Four is comprised of Warren and Hamilton counties, and it, unlike the Cleveland school system that comprises District Eleven, is considered successful.

The last district included in this study is the predominately rural school system of District Ten, which consists of seventeen rural counties, including Adams, Brown, Clark, Clermont, Clinton, Fayette, Gallia, Greene, Highland, Jackson, Lawrence, Madison, Pickaway, Pike, Ross, Scioto, and Vinton Counties. District Ten comprises a large geographic portion of south central Ohio. The rural demographics demonstrate a pattern of assumed poverty levels, which may or may not be true.

The first step in this research process was to define the study area. It was important to get a reasonably accurate sample from Ohio's various school systems. Three districts were picked in Ohio that would meet the criteria of urban, suburban, and rural. The district that represents the rural school systems of Ohio is District Ten. The second study area, District Eleven, represents both urban and suburban school systems in Cleveland. It was picked because it was found to be lacking in meeting educational goals during preliminary research. The last study area, District Four, also represents urban and

suburban school systems and is found in Cincinnati. Cincinnati was chosen due to its geographic location that is distinctly separate from Cleveland, and because it is the eighth most segregated city in America. Comparing the similarities and social characteristics of Cleveland and Cincinnati allows reasonable expectations for assumed outcomes. The three school districts were picked because they are geographically independent of each other.

The collection of data was from secondary sources. The first data collected was the tenth grade graduation testing scores from each school system in the three districts of study. These tests represent the criteria for graduation as set forth by the state school board of Ohio and by the No Child Left Behind Act (NCLBA). The test results are used to determine if the child is on course for graduation in the twelfth grade. This data was collected from the Ohio Board of Education website. Once the data was collected it was logged into a Microsoft Excel spreadsheet for statistical analysis.

To explain the socioeconomic and environmental factors that serve as detractors of the educational process, the areas that surround the various school systems must be analyzed. In order to accomplish this task, other data was collected from the United States Census Bureau that helped to describe the economic realities that involve the study areas. This data includes education levels, property values, household incomes, individual incomes, poverty levels, populations, percentage of white and black people, and lastly population densities. Employment and Unemployment data was also collected from the Bureau for Labor and Statistics (BLS) for the study areas. The data was collected in order to show what life is actually like in these areas.

Quantitative data came from secondary sources, including the United States Census Bureau, Bureau of Labor and Statistics (BLS), and the Ohio Board of Education. The state of Ohio assigns a designation to each school system that is based on the amount of goals they could have achieved. One school system may have six possible criteria and another may have ten. Criteria often considered are student achievement, school facility, teacher accreditation, and plans for future improvements. The school system is graded on the amount of criteria they could have achieved as compared to the amount they did achieve. The assigned grades range from excellent 94-100% (5), effective 75-93% (4), continuous improvement 50-74% (3), academic watch 31-49% (2), and lastly academic emergency 0-30% (1). Each school system was already graded for this study so I assigned numerical values arbitrarily to each grade received ranging from five for a high performance and one for a low performance.

The literature review examines the current research that involves urban, suburban and rural school districts. Student performance and the subsequent evaluation of their performance are discussed in the review. The No Child Left Behind Act (NCLBA) is examined. Various issues that concern crime and poverty in the settings of urban, suburban, and rural schools are analyzed. The concept of prematurely labeling a school system as troubled due to socioeconomic status is discussed. Racial integration and a lack of integration are also examined. Teacher experience levels and teacher certification are analyzed. School funding issues and the lack of equity that is supposedly present in Ohio is also discussed.

The analysis found urban Cleveland to be surprisingly deficient in educating their children as compared to the other urban area in this study. Both suburban school systems

in this study were found to be above average in meeting educational criteria as set forth by the NCLBA. Finally, the rural school system was also found to be somewhat successful in their goal of educating their children. Although their scores were above those of urban Cleveland, they still trail behind their suburban counterparts. The spirit of the NCLBA is meeting with limited success; however, it is still allowing children to be left behind.

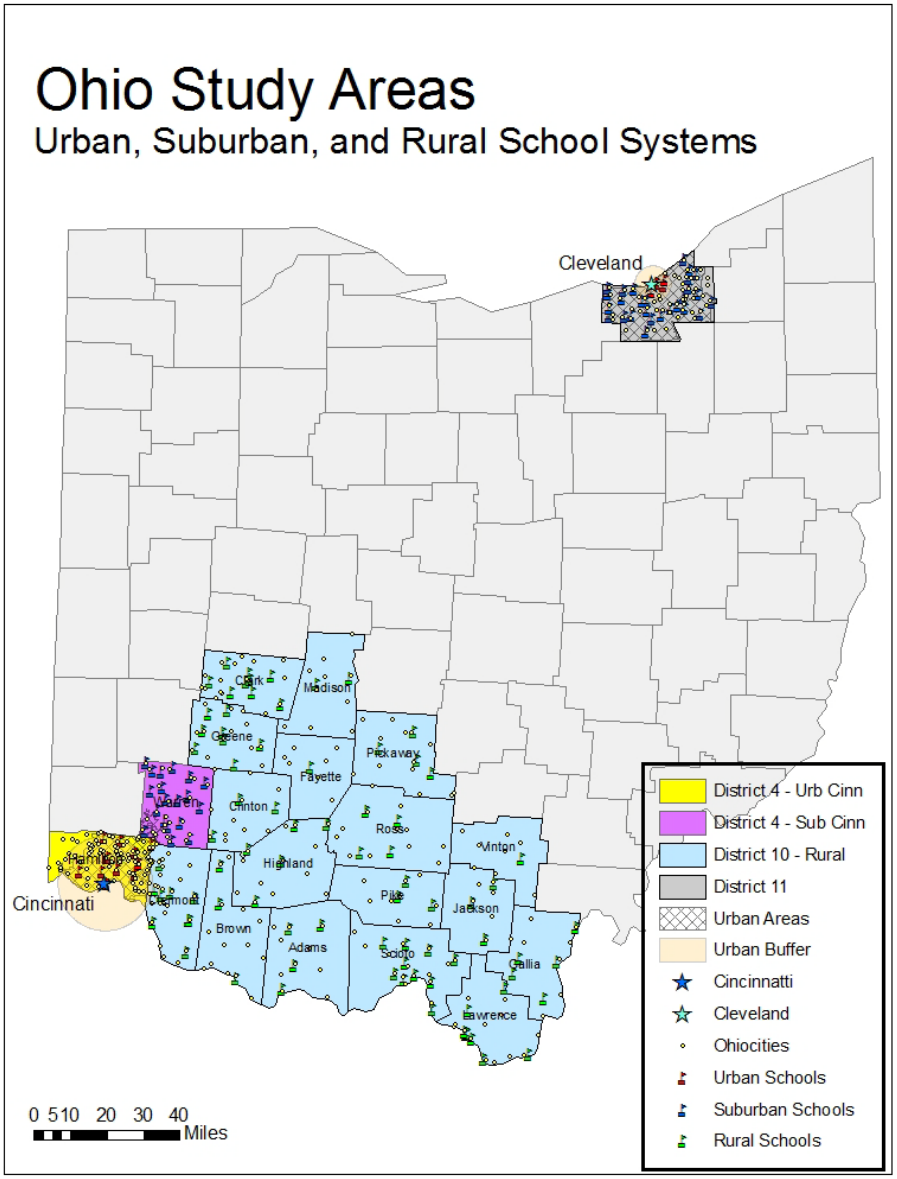


Figure 1.1: All Study Areas

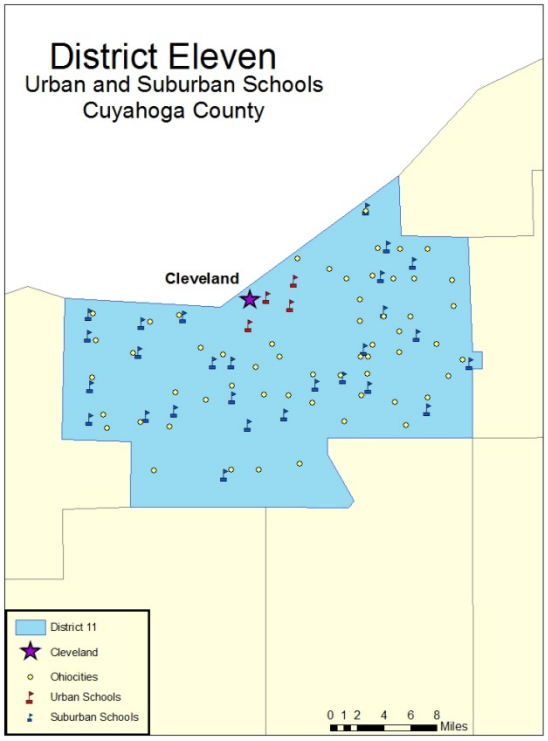


Figure 1.2: District 11

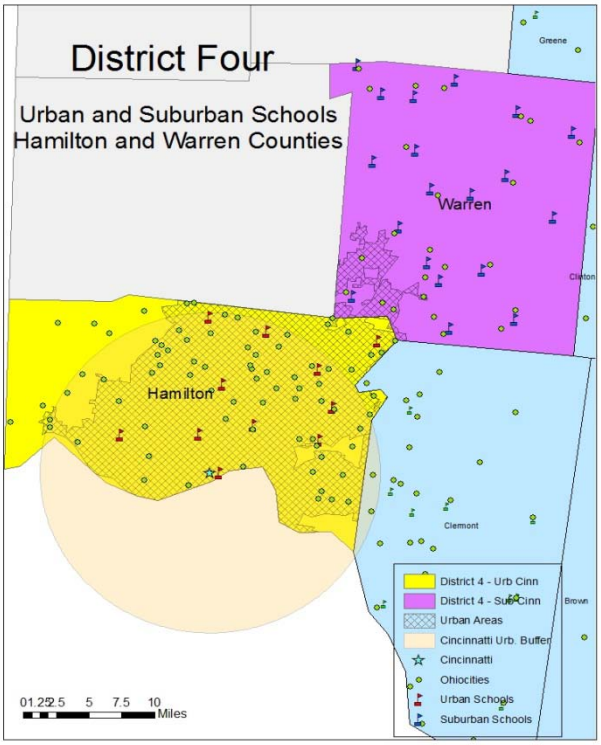


Figure 1.3: District 4

Cleveland is a heavily urbanized area and was difficult to determine where the urban and suburban schools were located. I spoke with Virgil Brown who is the superintendent of District Eleven. During our conversation, he stated that several of his schools have high student numbers, but only four high schools fall within their urban classification, as they are located in the inner city. This is clearly illustrated in Figure 1.2.

Cincinnati is also heavily urbanized, but its schools are more clearly separated between the urban county of Hamilton and the mostly suburban county of Warren. This made the classification of schools clear by geographic location. A thirteen mile buffer was placed as an overlay on Cincinnati and it shows the eleven schools that fall within the urban zone, which can be seen in Figure 1.3.

Socioeconomic Conditions of the Study Areas

The urban areas in Cleveland and East Cleveland are in dilapidated condition according to 2000 census tract data. The socioeconomic setting is one of poverty and desperation. Twenty-six percent of Cleveland's residents are below the poverty line and another thirty two percent of East Cleveland's residents are below the poverty line of America. The average poverty level for the two cities is 29.15%. The population density of East Cleveland is the highest of all the chosen study areas at 8761.8 people per square mile and it represents a large cluster of poor people. Only 68.9% of the people in this study area have completed high school. This seems to agree with the data of the school systems in East Cleveland that average a graduation ratio of 68%. The numbers of people who hold Bachelor degrees in East Cleveland are very low at 8.5%.

Property values in this study area are the lowest of all three study areas with an average of $67,000 per unit. The mean property value for the three study districts as computed by the Kruskal-Wallis test is $102,515.38, placing the average property values in the Cleveland area well below the study areas' average. Crime rates were higher in the urban area but are to be expected with higher populations, and are one of the environmental factors that may influence school performance. The negative factors combine together to create a very desperate situation in the urban school setting. A single negative factor alone may be harmless; however, many negative factors working together are devastating.

The suburban school systems outside of Cincinnati found in Warren and Hamilton counties are doing very well with educational attainment for their children. The average property value in these two counties is $126,700. This number is above the average

property value for the three study areas, which was found to be $102,515.38. In these two counties, 84.45% of the people have completed high school with another 28.8% completing Bachelor's degrees. These are the best educational attainment ratios for all three study areas in Ohio. Eight percent of the people in the study area are below the poverty line, while 21.98% of the people in the urban area of this study area are below the poverty line. The school buildings in this study area are in very good condition, if not new.

The rural school systems that are found in District Ten are poor in general, but have other factors that help their educational achievement for children. Poverty involves 13.32% of the people in District Ten. The average property value in District Ten is $80,594.11. This number is well below the mean of the three study areas of $102,515.38 as determined by the Kruskal–Wallis test. The average educational attainment in this study area shows that 76.62% of the people have finished high school and 12.46% have Bachelor's degrees.

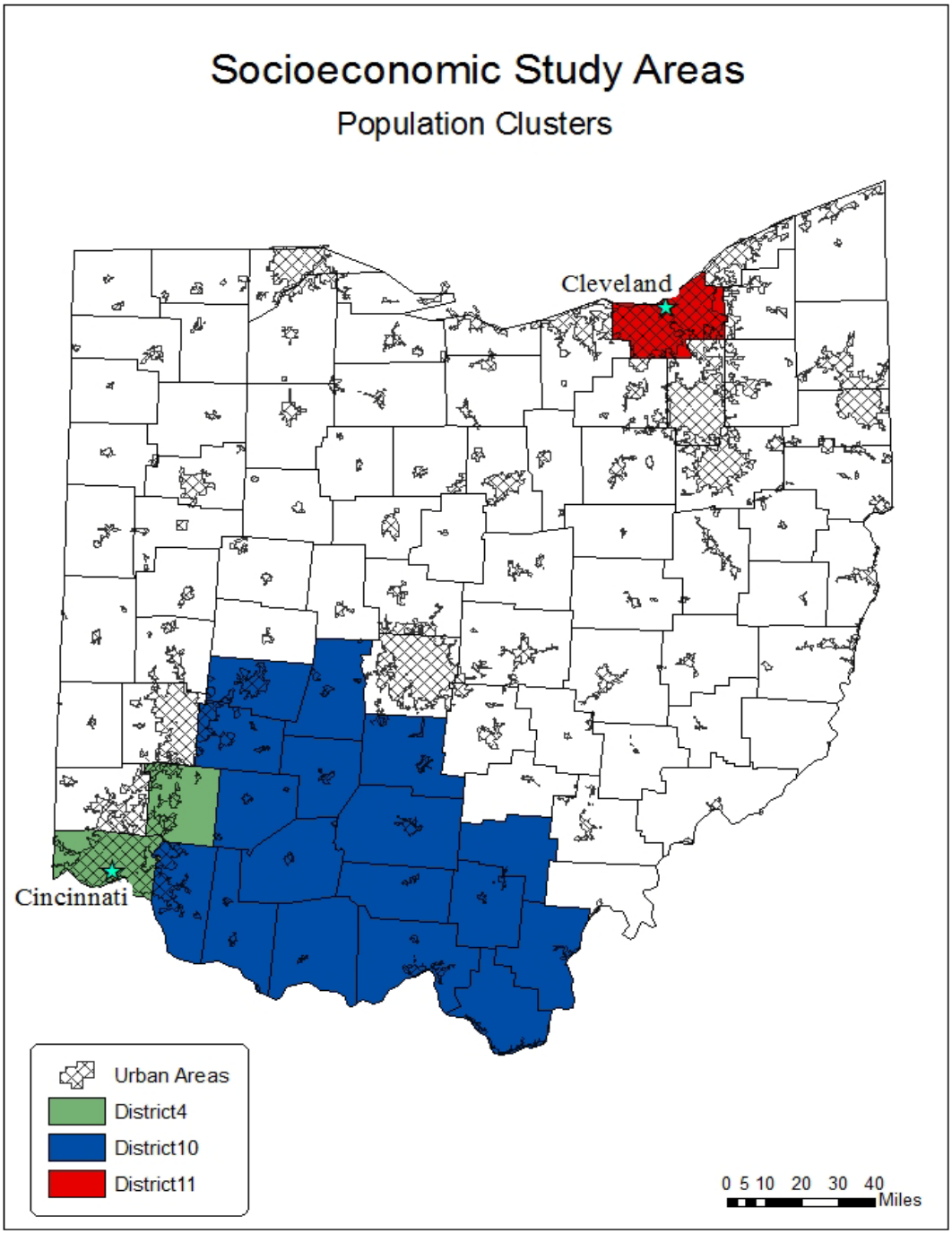


Figure 1.4: Population Clusters

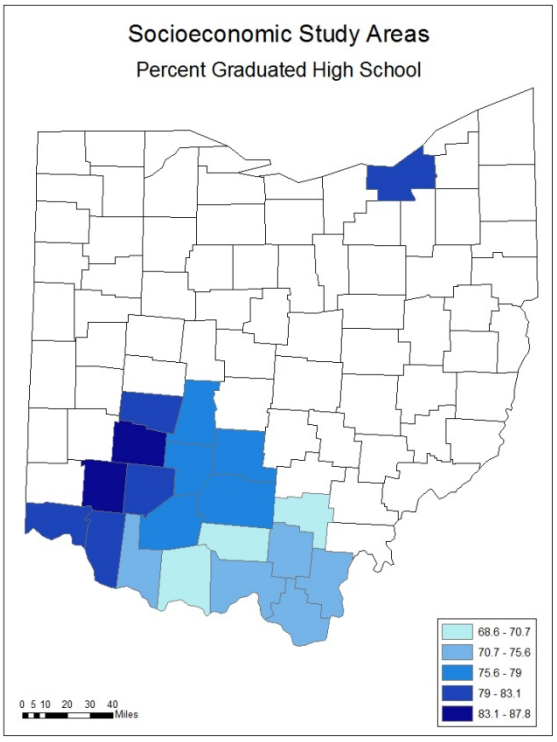


Figure 1.5: Percent of High School Graduates

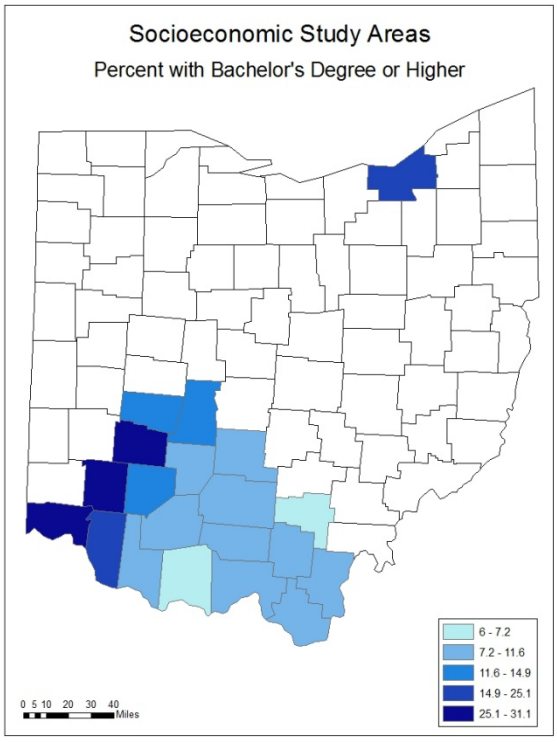


Figure 1.6: Higher Educational

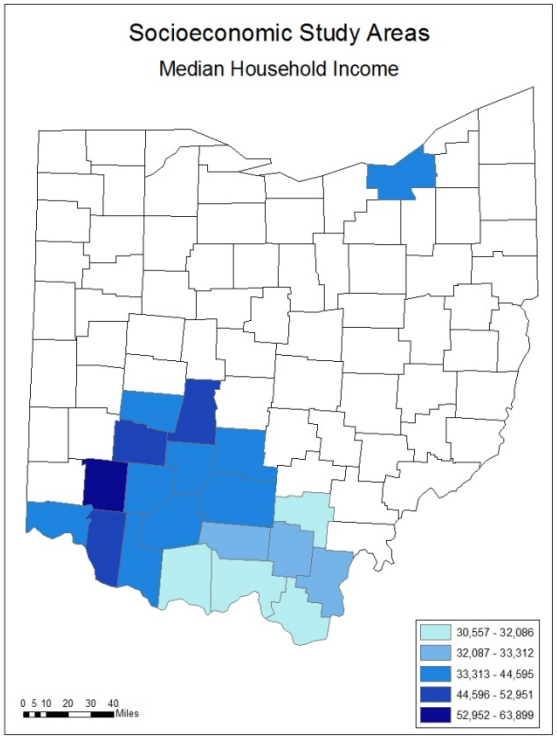


Figure 1.7: Household Income Level

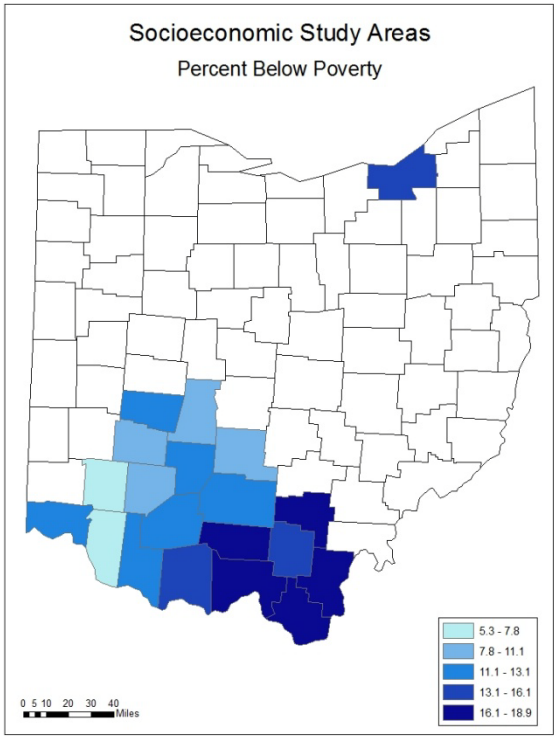


Figure 1.8: Poverty Level

Chapter Two

Literature Review

Urban, Suburban and Rural School Environments

Socioeconomic and environmental factors have an importance on the educational outcomes of students and should not be overlooked. William L. Yancey and Salvatore J. Saporito elaborated on this idea that racial and economic determinants of family structure, crime, unemployment, and school achievement are very dependent on economic characteristics of the area in question (1995). Some key environmental factors include school district, availability of technological resources, racial hegemony, and socioeconomic status.

Segregation of communities by economic means is not illegal and is the plight of many minorities in America. Efforts have been attempted by most school districts to overcome educational inequity that results from financial difficulties. Susan Mayer pointed out that economic segregation steadily increased from the 1970s to the 1990s and that no one is trying to determine what affect it has on the children of the involved areas. The census of 2000 shows that economic segregation is in decline; however, this does not reach the poorest of the poor that are trapped in their desperate situation (www.census.gov). A major point uncovered by Mayer is that the problems are actually undefined or at least un-agreed upon by most parties involved. Mayer's study uncovers conflicting hypotheses and their outcomes. The first hypothesis Mayer provides as argument suggests that economic segregation reduces educational attainment among low-income students. The second suggests that income inequality among affluent neighbors on low-income neighbors raise educational attainment. The last hypothesis provided as

evidence suggests that income liabilities that lower educational attainment stem from affluent neighbors. The three given hypotheses predict gains for affluent people's children and inversely losses to poor families' children. These conflicting hypotheses about the problems involved with education serve to confuse the issues. No problem is clearly defined, so no solution can be created. This is further explained when Mayer quotes Eric Hanushek's research:

> The effect of school educational outcomes is still hotly debated. Some reviews claim that neither school spending nor school resources affect achievement or educational outcomes. Other studies find that per pupil spending has a positive effect on educational outcomes. (Hanushek 1997)

The urban neighborhood that is in a state of decline experiences school achievement problems on a larger more problematic scale due to the size of the school. Mayer alludes to the effect of neighborhoods on school achievement. Children's educational outcomes are affected by default when they are from economically depressed areas. This is due to economic inequality, not economic segregation. Mayer tests this statement and concludes that educational outcomes are affected by economic inequality and not by segregation. Large clusters of impoverished people are one of the many causes of low student achievement. Mayer warns that the wealthy will segregate as they get richer, which leaves the poor trapped behind. The clustering of impoverished people and the problems that come with poverty serve to drive property values downward. The property values fall because of the erosion of the tax base. Schools are funded from those very tax dollars that are diminishing. It does not take long for the situation to spiral downward as the school system attempts to achieve their daily functions with less and

less money available per pupil. Mayer concludes that the process repeats itself as economic segregation grows in intensity; it causes even greater inequality that causes a repetitive cycle. The final analysis of the problem is that it causes the people of these areas to become more and more desperate as the gap in educational equality grows. Mayer bases her conclusion on secondary longitudinal data that seem to fit her purpose (Mayer 2002).

Educational attainment is difficult without proper access to the necessary technology and equipment. Covey and Cobb (2003) demonstrated spatial variation in student achievement based on access to computers. This task was completed by measuring computer and software purchases in Jacksonville, Florida (Duval County). They then compared and contrasted the collected data from census tracts to analyze computer usage and purchases with student achievements. Their findings showed that computer access to wealthier students did seem to raise their achievement in academics, and inversely, the lack of access to technology did seem to be undermining the academic achievement of poorer students. They explained that "high school and college students were more likely than elementary students to use their home computers for schoolwork, and the more affluent the student's family, the more likely the student was to use the computer for their schoolwork" (Covey and Cobb 295, 2003).

The problem does not only involve black communities, and can be found in many other poor ethnic groups. The link between these groups is their economic status. John R. Logan explained that all racial groups in America experienced growth in their incomes and in their neighborhood property values except blacks and Hispanics during the 1990 to 2000 decade. Census 2000 data reveals this to be correct because poor blacks and

Hispanics did not see income increases as other groups had received. The black and Hispanic middle class did have growth, but it was limited and did not affect the extremely poor or their neighborhood property values. This is troubling as the inability to advance in higher education does not allow for quality careers and their corollary salaries to be present in the affected neighborhoods. The lack of prerequisite skills that qualify an individual for higher-paying career opportunities in a given area will, by default, allow those people involved to seek predominantly lower-paying jobs. The difference in income between these job opportunities is known as the "income gap." When the presence of an income gap exists, minority groups are often affected and they may become impoverished. The downward trend will lead to the clustering of poor people in cities and metropolitan areas. These people will be forced to live somewhere, and as the choice comes down to economic realism, it creates areas that will become dilapidated over time. As the community fails, the people with economic means relocate as they can afford to do so, leaving behind the poorest of the poor and a community that will rapidly disintegrate. Logan calls it the "Neighborhood-Gap" as the only people who stay are the people who cannot afford to move (2002). A heavily gentrified poor populous will not be able to support an adequate amount of tax revenue in order to support the school system. This under-funded school system will by default struggle to pay for educational technology that will aid their task of providing quality instruction for the students. This will cause achievement scores to decline over time.

Assessing Assessment

The Florida board of education created and launched a plan to hold schools accountable based on their performance as weighted by standardized testing results in

1999. State funding for the school systems was linked to the testing results (Dittmer 2004). The equity of school funding that involves African American children comes into serious question during this article. The idea is to award higher performing schools more money, and inversely, less money to lower performing schools. The Florida Comprehensive Assessment Test (FCAT) is used as a tool to measure student performance and teacher quality. Local policy is then derived from this testing. Students that failed the test more than twice were given vouchers to attend private schools. This caused the already failing school system to be more handicapped by financial constraints until the system collapsed. The voucher was called an "opportunity scholarship." The higher performing schools were given more money per pupil as reward for their efforts. This policy was later ruled unconstitutional by the Florida Supreme Court (Dittmer 2004). Dittmer focuses on Duval County, Florida to explain the uneven distribution of resources that is linked to socioeconomic status. It is alleged that schools are highly segregated even though the local housing patterns do not indicate this segregated pattern (Dittmer 2004). Schools that are economically struggling to provide an education for children will be punished by this policy. They will find their revenue decreasing which will cause the struggle to educate increasingly difficult. The reciprocal effect is that other schools considered successful will be forced to grow. This growth will cause student to teacher ratios to increase and may hurt quality educational attainment.

The idea behind proficiency testing was to create an administrative tool for educational systems to self evaluate through testing. These reports, once generated, give the local and state school boards a ranking order in the state school system. It evaluates the local schools' performance as compared to students of the same age range of other

schools. The issue of fairness seems to play a major role in this testing effort. A key concern of the related literature would be whether or not it is fair to compare different students from various socioeconomic groups as if they were homogeneous. This is what the standardized testing system does much by default. If the testing process was modified to involve evaluation for peer groups, it may be perceived as fair. Researchers have found that the design is constructed to evaluate all students on the same basis as if they came from the same background, which is not true. It is what gives credibility to the idea that proficiency testing is culturally and racially subjective. Julie A. Washington, from the University of Michigan, wrote that "poor reading skills in African American children are well documented and that poorer children are at even greater risk" (214, 2001). She believes that the testing methodology is biased since it does not account for this fact. Her argument may be somewhat true but it also presents a larger question. Why are African American reading abilities so low? Washington's research, if accepted, would seem to explain the school system failures in East Cleveland when considering the racial segmentation and socioeconomic status of the citizenry of this area (2001). The link between poverty and a lack of higher educational attainment is well established in Washington's work and it seems to provide proof of the relationship, but it does not reveal the causes in a clear manner.

Alfred Tatum is in agreement with what is being reported about African Americans and their reading abilities, but does offer a solution, which is for the parents and teachers to get involved early with readings that are meaningful to the African American youth. He reports that "by selecting appropriate reading materials, teachers can engage African American males with text, particularly those students who have not

mastered the skills, strategies, and knowledge that will lead to positive life outcomes" (Tatum 45, 2006). The article goes on to say these readings should cover the academic, cultural, social, and emotional needs of the children. His assessment is accurate but financial constraints do not allow individual attention to all the children in need (Tatum 2006).

No Child Left Behind

In fear of falling behind other countries of the world academically due to the perceived achievement gap, the United States Congress passed the No Child Left Behind Act (NCLBA) in 2001. This law requires 95% of students to participate in academic proficiency testing. Teachers have mixed views of the NCLBA. They accept high standards as being important to student achievement, but reject the penalty aspects of the act. The NCLBA is the name given to the reauthorization of the previous Elementary and Secondary Education Act (ESEA) of 1965, and was passed in 2001 and signed in January 2002. This act is the current incarnation of one of the principal pillars of President Lyndon Johnson's War on Poverty, that created the Title I federal aid program aimed at reducing "*achievement gaps*" between rich and poor and among the races. The NCLBA links its federal dollars to draconian penalties for schools that cannot meet a series of one-size-fits-all standards. These penalties especially hurt schools that take on the greatest educational challenges, according to the National Education Association (www.NEA.org).

The perception or perhaps misperception of what has been labeled an *achievement gap* is the underlying reason for concern in the American educational system. The perceived achievement gap is prevalent enough in scholarly literature to make it an

assumed intuitive truth. Conflicting research results further confuse the issue when academic achievement studies are in disharmony with each other. Academic achievement disparities vary greatly from district to district and school to school for many underlying socioeconomic reasons. Wealthy white peers were discovered to achieve higher on standardized testing than their poor white and minority counterparts (Zhang and Cowen 2009). When a school is found to have a legitimate academic crisis, change is necessary.

The mechanism meant to compel change in the American educational system is the NCLBA. The NCLBA calls for quick action based on poor school and student performances. Students from schools that are in crisis are supposed to have a choice about changing schools, but often do not have that chance to change schools due to a lack of successful schools to chose from in their geographic areas. Charlie Zhang found that "public schools with large minority enrollments and concentrated poverty are more likely to be labeled as in need of improvement regardless of urban, suburban, and rural locality" (Zhang and Cowen 24, 2009). He points out that not having a choice is not a fair choice and is in direct conflict with the purpose of the NCLBA.

The NCLBA has criteria that must be achieved in order to receive federal school funding. All school systems are subject to these rules, which are a 90% graduation ratio, and a 75% score on all academic subjects on the aforementioned achievement tests. However, all school systems in this study do not meet the set criteria. If this law is to be enforced it would withhold funding to the schools that need it the most. Karen Hager and Timothy Slocum explain what the process of proficiency testing is like for "normal" students and then expand on it to explain what the testing process is like for children with

special needs. The rule of law requires that all students are to be tested, including the special needs children. They explain how different testing resources can be employed to help children with special needs achieve higher marks on standardized tests. They start by determining how the child learns through a brief study of the child's Individual Education Plan (IEP). They then use what is learned to help the child receive higher scores on the test. All of this is done to help the school systems obtain higher scores on the standardized testing that is required of them in order to keep receiving federal funding (Hager and Slocum 2006).

The amount of failure or success is measured by standardized proficiency testing that evaluates the various schools in question as all students that are tested are averaged together for a mean score that reflects the effectiveness of the school system. When testing scores fall below certain averages the school is placed on Academic Emergency. *Academic emergency* is the bottom rung on a ladder of possible school system success or failure. This score system means that the majority of their students received 0 to 30% on their tenth grade achievement test. The next step up on the ladder is *academic watch*, which means that the school system is under heavy scrutiny. Testing scores are between 31 to 49%. The middle step is called *continuous improvement*. This means that the school system in question is making advances in educational goals with test scores in the 50 to 74% range. The next step up is an *effective school*, which means that the school is doing a fair job of educating children with test scores from 75 to 93 %. The most hoped for position on top of the success ladder, *Academic Excellence*, means that the school meets or surpasses all state, mandated criteria for education with test scores from 94 to

100%. These aptitude-testing criteria also coincide with the standards that are set forth by Federal Law of the NCLBA (Ohio BOE).

Urban and Suburban Schools

According to most literature, urban schools have a difficult time securing adequate funding and educational achievement suffers as a result. Urban schools have unique problems that suburban and rural schools do not normally have to endure. The idea that the urban school may be in trouble is called the "perception of crisis" (Theobald 117, 2006). The idea goes back to the 1830's when various religious groups started adopting schools as a means of controlling the youth of America that were perceived as running wild The suspicion grew about these children who caught most of the blame for the ills of the city, such as crime and vandalism. The distrust grew between urban and rural school populations until the assumption was made that urban schools are poor. The argument was to look at how the children were acting at the time. The urban children were more likely to be criminal because of their impoverished nature. The leap was made that the urban schools are very poor for children (Theobald 2006).

Paul Theobald examines the argument and finds that the idea of urban schools being bad for student achievement persist even though it actually has no basis in fact. It is merely an opinion that has carried over from generation to generation that grows stronger as time passes. This idea had nothing to do with race in its beginning, but has transcended time to forge an amalgam of ideas. The poor desperate white people of the urban center were blended spatially with poor people from a variety of different races, which served to reinforce the idea that urban areas are poor and more desperate. The paradigm was shared by wealthy, religious elite, which validated the idea among the

middle classes. The school systems in question may or may not have been doing a reasonable job of educating children; however, it would not be known because of the misperception concept that now comes from a basis in fiction and from prejudices according to Theobald (2006).

The idea of size in schools plays a critical role in forming the opinions that influence the governmental and educational policy towards the schools in question. The idea of the school's size is linked to their assumed needs. The need to label school systems according to their individual size may be partially to blame for the stigmas that arise from the labeling process. Diane Truscott suggests that it may be more productive to think of the school systems as high need versus resource-rich schools instead of urban versus rural. This helps to abolish the pre-existing stigmas. The schools are still urban and rural, but the thought process changes to the individual needs of the various schools. It also helps to inventory the resources that the different school systems posses and do not yet possess. The goals are linked to the different communities and the idea of reform for their schools, assuming it is needed. A select few feel that their schools are doing a great job of educating their children no matter what the evidence is to the contrary (Truscott 2005).

Rural Schools

Rural schools do not offer the same learning experiences that can be found in larger school systems. The relevant literature seems to indicate that this is true but rural school systems do seem to offer greater statistical success in academic achievement. Rural schools do have common ground with urban schools. The literature indicates that both school systems in question have difficulties in attracting and keeping qualified teachers.

This is caused by the personal preferences of the individual teachers and by the inability of the different school systems to be able to attract quality teachers with enticing offers of stability and large financial rewards. They do not possess this ability because they simply do not have the financial resources to grant such offers. Paul Theobald explains that financial difficulties usually limit the school system in all aspects of educational attainment. His statements should be taken in a general context because some teachers may make the conscience choice to not follow this pattern. The statistical evidence does lend credence to what he is theorizing without deeper investigation. When a school system is experiencing financial difficulties, including aging school buildings, the typical reaction is to attempt to consolidate the aging schools in an effort to save money by reducing the cost of operations for that school system (Theobald 2005).

School Consolidation

When a school system is experiencing financial difficulties, including aging school buildings, the typical reaction is to attempt to consolidate schools in an effort to save money by reducing the cost of operations for that school system. The decision that is based on financial concerns does not always have a positive outcome. The socioeconomic reality of some school systems makes consolidation an attractive alternative, especially when the school system in question is failing because of a lack of financial support. The problem with consolidation is that it blindly ignores the needs of the individual students and increases the average class size of each individual teacher. A teacher with a typical class size of 20 to 25 students may now have classes that number in the 40s or 50s. This increase in class size is extremely bad for those students who typically learn at a slower rate, as the teacher will not have time to help all of the slower

learning students. A middle ground to teach all students effectively will be difficult to achieve for a single teacher in a large class setting (Logan 2002).

Sandy Cutshall wrote about school consolidation and makes the argument that small schools have higher graduation ratios and that those children are more likely to move on to higher education. Her argument by default must indicate that the opposite is true of larger schools. These statements are general while discussing all groups involved so very broadly. She explains that larger schools could adopt policies that would make them achieve the desired results as smaller schools often achieve. This is wishful thinking from an administrative stand point. It would be very good for underachieving and slow students if this were possible; however, it is very unrealistic. To achieve this desired outcome the class size would need to be smaller to allow more individual attention to slower learning students. This smaller class size would cause a need for more classrooms and for more teachers to teach in them.

This defeats the intended purpose of saving money through consolidation. It is argued by many scholars that are backed by statistical data that smaller schools do a better job of teaching students and this is a direct result of the student teacher relationship that is created through close attention and individual one-on-one work time. It is easy to understand why this is difficult to achieve in larger schools. The teacher simply does not have the time to help each individual student because it would eventually hurt all the students in the class if they did since some students would be neglected in the process. The typical classroom management plan would be to cater to the middle. The bright children would not advance and the slower learning children will fall behind even more. This is an extreme problem for poor children that do not have the same access to

information as wealthier children. If they enter the school system already behind their peers, the teacher will not have the time to give enough individual attention to the at-risk student in order to bring them up to current class levels, causing the student to fall further and further behind. The measure of how far behind a child has fallen is brought into focus during the process of student performance assessment (2003).

Also in support of this idea, Covey and Cobb stated that Duval County, Florida has 126,000 students that attend 100 elementary, 24 middle, and 17 high schools. This supports other articles in my study that show how schools are growing larger via consolidation. It is important to remember that the 17 mentioned high schools will eventually teach all of the 126,000 students (Covey and Cobb 2003). Larger class size is proven to be harmful to student achievement for slower achieving students, and is proven in studies done by such researchers as Cutshall, Galletti, Demi and Hanusek, that have previously been mentioned.

School Funding

Affecting change in large metropolitan areas is a key to economic and social stability. Larry Bourne pointed out that cities are slowly changing because "immigration is highly concentrated, it is transforming the social character of the larger metropolitan areas while bypassing most of the rest of the country. This trend points to an urban future in which some cities are remarkably diverse while others are persistently homogeneous" (Bourne 5, 2007). Expanding on his argument, as wealthier families move out, poorer families, often minorities, move in to replace them. This creates clusters of poor people which erode the tax base. When property values fall, revenue for quality schools also declines.

Some research, including research done for this paper, shows no connection between money spent and school success. Some believe it to be a problem, and my research will test this theory for three Ohio School Districts. The tax base of the local community is in general the driving force for the success or failure of an individual school system. The money that is generated from the collection of local taxes is what is used to fund the schools. This means that if the area is blighted or poor, the taxes collected will be less than those of the neighboring affluent communities, and much by default will cause the blighted area to have less monetary resources with which to work. The school system becomes less able to meet its task of quality education for children. Terri Sexton (2003) explained that property tax is wrongly viewed as being universally equal even though it is not equal at all. Each state has previsions in its constitution for the collection of taxes. The tax that is collected is determined by the assigned value of a property. It is easy to understand how less desirable communities are valued as being worth far less than more desirable communities. The problem is that the communities that are valued as being worthless are areas that are often impoverished. This causes less in tax collection and fewer resources on which the local school system to survive. The problem is then compounded by the products of the failing schools as they are returned into the community from which they came. The upward mobility that is the "American Ideal" was lost to them because they were from an underprivileged place, according to Sexton (6, 2003).

Equity in School Funding

According to *Education Week*, Ohio earns an overall grade of D+ when it comes to spending equity on education within the state. This grade is derived from the ability to

meet six set criteria. The criteria are: summary of grades, student achievement, standards and accountability, efforts to improve teacher quality, school climate, and lastly resource adequacy and equity. According to this study, the state of Ohio is not doing well when it comes to spending money evenly in different school settings. The web resources of *Education Week* made the point that Ohio is 38th out of 50 states when it comes to spending equity in their school systems. Other literature supports their argument.

The United States General Accounting Office (GAO) pointed out the inequity in educational funding for Ohio ranked tenth on their list of fifty states that have more funding available to wealthier school districts than to poorer school districts. The GAO discusses how this process is perpetuated, and calls the discovered difference the "funding gap". The paper lists three factors that cause the situation: The first is the targeting of state funds to poorer districts. If this effort is lacking, the poor districts will suffer. Second is the relative local tax collection of revenue in the poorer areas that will have to be greater than those efforts in the wealthier areas. The final factor is the most important according to the study and is the state's own funding towards education. The poor students' educational funding is weighted by the wealthier students educational funding. The two categories are the local funding and the state funding, and the difference in these numbers can be very large. The state will not give wealthier students as much funding as they do the poor. Their funding must come from the local area and is not a problem because they are wealthy. The state will give more funding to poor school systems; however, the rest must be made up by the local revenue efforts, and in a poor area this is difficult. Their research alludes to the lack of effort to change the funding gap in Ohio as it is below the national average (GAO).

Crime and Poverty

The link between crime and poverty should not be overlooked. Poor people are sometimes driven to desperate measures in order to provide the basic necessities for survival. A recent study from the University of New York pointed out that crime is related to the amount of poverty that is found in central cities. The greater concentration of poverty yields higher crime rates. Joong Hwan Oh pointed out that crime does increase when unemployment increases. This demonstrates that statistical evidence does exist that links the rise in crime to the rise in unemployment. As the people living in poverty become more desperate they may turn to crime in order to overcome financial shortcomings. It is important to understand that not all poor people are criminals. The study is merely saying that the likelihood of crime is directly related to people that are in a desperate situation. Poverty and unemployment are not the only factors at play in this study; however, they are the major contributors to the problem (Joong Oh 2003).

Crime may be on the rise in areas that are impoverished; however, crime in Ohio schools is decreasing according to the Ohio Board of Education. Steven Scarpa explains that crime is down in schools because of the No Child Left Behind Act (NCLBA). Many schools are being forced to provide extra activities to aid students in learning, causing those students to have less time to get into trouble. If the student does get into trouble it is usually away from the school building and is not reported, according to Scarpa. He goes on to say that recent school shootings have also increased sensitivity to what is and is not allowed at school (Scarpa 2005).

Serious crime can happen to the children on the way to and from school, Olivia Doherty and Darcia Harris explain that many measures have been taken to keep kids safe

at school, but the trips to and from school can still be very dangerous, if not deadly. The paper explains how violence in neighborhoods finds children as they travel from the safety of their homes to school and then back. This paper fits in well with the other research that has been conducted on violence and schools because all seem to agree with each other that violence is on the rise in poor socioeconomic areas but not at their school systems (Doherty and Harris 2003).

Crime in urban areas is expected to be higher than its suburban and rural counterparts due to population densities. Violent crime rates are a growing problem in smaller communities according to William Ackerman. He states that "poverty and its associated conditions and processes are the principal correlates of crime" due to "low economic status, ethnic heterogeneity, and residential mobility (which leads) to disruption of community social organization which accounts for high crime and delinquency rates" (Ackerman 373, 1998). The higher rates of crime and poverty serve to be an outside distraction from the main goal of educating children that will become the citizens of that area.

Economic segmentation by race leads to further distractions from education as poor minorities cluster via economic realities. The relationship between high poverty and crime is explained by Gary Lafree and Richard Arum's research provides statistical evidence that seems to show a link in crime rates among African Americans and Whites that were from schools that were segregated and integrated. Their paper shows that incarceration rates are higher among African Americans and Whites that were not from a school that was inclusive. Therefore it is concluded that if the school system the people attended was heavily segregated, for various reasons, the students who went to that

school are more likely to commit serious crimes punishable by jail or prison terms. The study also points out that the school systems that were more inclusive seemed to have less people who committed serious crimes. In light of the evidence it would seem highly desirable to have integrated school systems. Racial segregation is illegal but that does not stop some schools from being heavily segregated through economic means or a lack of economic means (Lafree and Arum 2006).

Teacher Experience

Brett Everhart and Marlys Vaugh explain that all teachers are not qualified teachers. They show evidence that suggests that up to twenty five percent of all teachers are not qualified in the beginning of their career. They may or may not become qualified over time. It is also pointed out that many states have emergency teacher licensure procedures in order to be able to fill the positions that are available. The decline of poorer school systems happens because the qualified teachers are taken first and usually go to higher paying school systems. Much by default narrowing the pool of candidates, the poorer school systems must then choose from whom they wish to pick from the teachers that are left available. The candidate pool that is left will be the lesser-qualified teachers and they will be going to areas that are already struggling to achieve. Their study was conducted in three different school settings, which were urban, suburban, and rural (Everhart and Vaughn 2005).

Chapter Three

Methodology

The purpose of this research is to investigate and explain the effect of economic segregation and poverty on school funding and the quality of education in selected school districts in Ohio. All standardized test score averages from the various high schools within the selected school districts were chosen to represent the different types of human settlements that are typical of urban, suburban, and rural school districts. The sample taken represents twenty counties. Ohio was chosen because of my own personal familiarity with the state, as I am a product of Chesapeake High School located in rural school District Ten.

The general approach to the collection of information analyzed involves the collection of quantitative data from secondary sources. The necessary data collected came from the United States Census Bureau and the Bureau of Labor and Statistics (BLS). The report cards for all schools in the study areas were obtained from the Ohio Board of Education and the data from those report cards was statistically processed in a digital spreadsheet program called SPSS. The different methods used consist of finding the various measures of central tendency such as the mean, median, and mode. The standard deviation was also calculated. When these numbers had been derived from the Excel worksheet they were logged into the Statistical Package Spread Sheet (SPSS). This software program allowed for the analysis of variance (ANOVA) to be computed along with sample t-test for paired samples. Additional data from web resources include graduation rates, teacher salaries, spending per pupil, enrollments, student to teacher

ratios, and lastly teacher experience levels for all schools that were considered in the study areas.

Statistics from three study areas were used that allow both parametric and non-parametric tests to analyze the data sets. ANOVA is a parametric test that is used to determine if data sets are different in a statistically significant manner, and "requires interval/ratio data drawn from normally distributed populations" (McGrew and Monroe 2000, 146). It works by determining if a hypothesis about a given geographic problem should be accepted or rejected. In order to determine if the null hypothesis should be accepted or rejected, an analysis of variance was performed. It is best to explain the ANOVA test by saying that "if the variability between the group means is relatively large as contrasted with a relatively small amount of variability within each group around its group mean, then the statistical conclusion will likely be that the different groups have been drawn from different populations" (McGrew and Monroe 2000, 147). Testing that shows results coming from different populations allow for the null hypothesis to be rejected. The alternative hypothesis is then accepted and it confirms that at least one sample is drawn from a different population than the other samples (McGrew and Monroe 2000).

The equivalent nonparametric procedure is the Kruskal-Wallis one way analysis of variance ranks test, which "uses ordinal data directly or interval/ratio data downgraded to ordinal if either the assumption of normality or equal variance is badly violated" (McGrew and Monroe 2000, 146). If the data proves to be nonparametric, then "the Kruskal-Wallis test examines whether the mean rank values are significantly different"

(McGrew and Monroe 2000, 149). McGrew and Monroe fully explain the Kruskal-Wallis test in the following passage:

> The Kruskal-Wallis test is the nonparametric equivalent of ANOVA. Kruskal-Wallis may be the most appropriate technique in cases where assumptions required for the use of the parametric ANOVA test (Such as normality and equal population variances) are not fully met. In this test, values from all samples are combined into a single overall ranking. The rankings from each sample are summed, and the mean ranks of each sample are then calculated. For example, in sample one, the sum of ranks is R_1 and then mean rank is R_1/n_1. In sample two, the sum of ranks is R_2 and the mean rank is R_2/n_2, and so on. Because of the random nature of sampling, the sample mean ranks should differ somewhat, even if the samples are drawn from the same population. The Kruskal-Wallis test examines whether the mean rank values are significantly different.
>
> If the multiple (k) samples are from the same population, as asserted by the null hypothesis, their mean ranks should be approximately equal. The best estimate of the mean rank of population I is the sample mean rank (R_1/n_1). Thus, if the null hypothesis is correct:

$$\frac{R_1}{n_1} = \frac{R_2}{n_2} = \ldots = \frac{R_k}{n_k}$$

> On the other hand, if the mean ranks differ more than is likely with chance fluctuations, it may be concluded that at least one of the samples comes from a different population, and the null hypothesis is rejected.
>
> The Kruskal-Wallis H test statistic is:

$$H = \frac{12}{N(N+1)} \sum_{j=1}^{k} \frac{R_j^2}{N_j} - 3(N+1)$$

Where N = total number of observations or values in all samples

$= n_1 + n_2 + \ldots + n_k$

n_i = number of observations or values in sample i

R_i = sum of ranks in sample i

The Kruskal-Wallis H distribution approximates the commonly used chi-square (x^2) distribution, when $k > 3$ and/or at least one sample has a size (n_i) > 5. (McGrew and Monroe 149-150, 2000)

On occasion, data is only available in ordinal or ranked form making it not viable to calculate sample means or variances. When this situation occurs, the most reliable statistical test is the Mann-Whitney U or Wilcoxon rank sum W test. McGrew and Monroe discuss these tests and how they are performed as follows:

> The most widely used nonparametric alternatives for the two-sample difference of means test are the Wilcoxon rank sum W test and the directly related Mann-Whitney U statistic. Like the t test, the Wilcoxon and Mann-Whitney tests examine two independent samples for difference. Rather than using parameters like mean and variance, however, these techniques use the ranks of sample observations to measure the magnitude of the differences in the ranked positions or locations between the two sets of sample data. In the Wilcoxon rank sum W test, the data from the two samples are combined and placed in a single ranked set. When two or more values are tied for a particular rank, the average rank value is assigned to each position. The samples are then considered separately

and the sum of ranks (W) calculated for each sample set of data. (McGrew and Monroe 133, 2000)

The Mann-Whitney U or the Wilcoxon W test use variables that are measured at the interval or ratio scale.

The Wilcoxon test uses a variation of the Z test to see if the sum of sample ranks is significantly different from what it should be if the two samples are actually drawn from the same population. The test statistic (Z_w) for the two-sample Wilcoxon procedure is

$$Z_w = \frac{W_i - \overline{W_i}}{s_w} \qquad (3.1)$$

where W_i = sum of ranks for sample *i*

$$\overline{W_i} = \text{mean rank of } W_i = \frac{(n_i + n_2 + 1)}{2} \qquad (3.2)$$

s_w = standard deviation of W

$$= \sqrt{\frac{n_1 n_2 (n_1 + n_2 + 1)}{12}} \qquad (3.3)$$

$\overline{W_i}$ and s_w represent the theoretical mean and standard deviation of $\overline{W}i$, respectively, and are determined totally by the sample sizes. As shown in equation 3.3, only one standard deviation exists for W. However, because rank sums (W_1 and W_2) can be determined for each sample, two means can also be calculated using equation 3.2 – one for sample 1 ($\overline{W_1}$) and another for sample 2 ($\overline{W_2}$).

The Wilcoxon statistic W is simply the value or magnitude of the sum of ranks of the group with the smaller sample size. The Mann-Whitney statistic, U, which

> complements the Wilcoxon statistic, is determined by the number of times an observation from the group with the smaller sample size ranks lower than an observation from the group with the larger sample size. The two test statistic values are equivalent in that they always provide the same significance level (*p*-value) when applied to the same set of data. (McGrew and Monroe 134, 2000)

The previously mentioned test will allow statistical analysis to be performed on the data that should reveal if the hypothesis should be accepted or rejected through statistical significance. If the findings do not support the hypothesis, then the null hypothesis would be accepted. The hypothesis is that schools in urban Cleveland are failing due to a lack of financial support. The null hypothesis is that the same schools are failing due to unknown variables.

Ohio assigned a designation to each school system that is based on the amount of goals they could have achieved. The physical school building, student educational achievements, teacher readiness, and future plans for improvement are some of the criteria. One school system may have six possible criteria and another may have ten. The school system is graded on the amount of criteria they could have achieved as compared to the amount they did achieve. The assigned grades range from excellent (5), effective (4), continuous improvement (3), academic watch (2), and lastly academic emergency (1). Each school system was already graded for this study, so values were arbitrarily assigned to each grade received ranging from five for a high performance to one for a low performance.

The first step in this research process was to select the study areas. It was important to get a reasonably accurate sample from Ohio's various school systems.

Three districts in Ohio that would meet this criterion were picked. The first district is District Ten representing rural schools, and it was chosen as the first point because of familiarity. The second, District Eleven, is found in Cuyahoga County. The urban sector in District Eleven found in Cleveland and East Cleveland was picked because it was found to be lacking in meeting educational goals during the preliminary research, and it represents the central city. The third, District Four, was chosen to represent the suburban area around Cincinnati. Cincinnati was selected due to its geographic location and because it is the eighth most segregated city in America, which seems to match the socioeconomic situation in Cleveland and East Cleveland. The three districts were selected because they are geographically independent of each other.

Step two was the collection of data from secondary sources. The first data was collected from the tenth grade graduation testing scores from each school system in the study areas. These tests represent the criteria for graduation as set forth by the state school board of Ohio and by the No Child Left Behind Act (NCLBA). The test results are used to determine if the child is on course for graduation in the twelfth grade. The data was collected from the Ohio Board of Education website. Once this data was collected it was logged into a spreadsheet for analysis. The different methods used consist of finding the various measures of central tendency such as the mean, standard deviation, and analysis of variance (ANOVA). The other data from this website is graduation rates, teacher salaries, spending per pupil, enrollments, student to teacher ratios, and lastly teacher experience levels for all schools that were considered in the study area. The data also went through the same process of quantification mentioned earlier.

To explain the socioeconomic side of the educational process the areas that surround the various school systems must be analyzed. In order to accomplish the research task, other data was collected from the United States Census Bureau that explains the economic realities that involve each study area. The data includes education levels, property values, household incomes, individual incomes, poverty levels, populations, percentage of white and black people, and lastly population densities. These numbers went through the quantitative process in order to establish the mean, standard deviation, and analysis of variance (ANOVA).

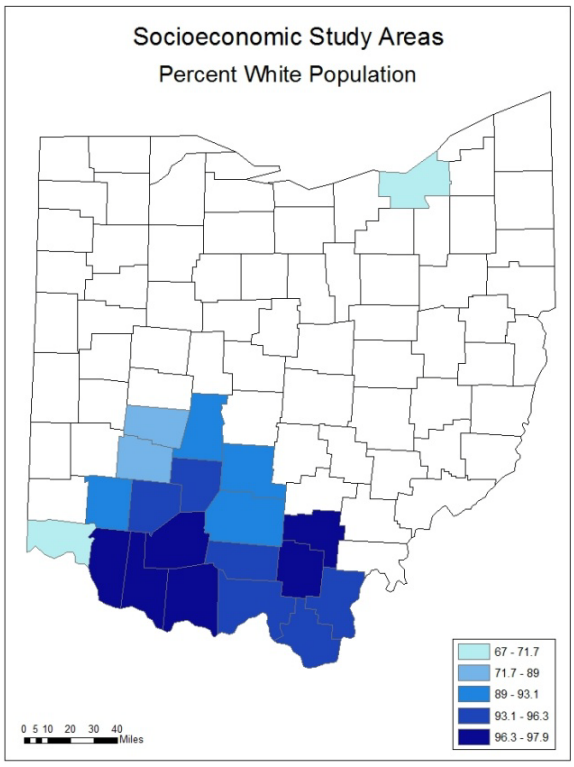


Figure 3.1: Percent White Population

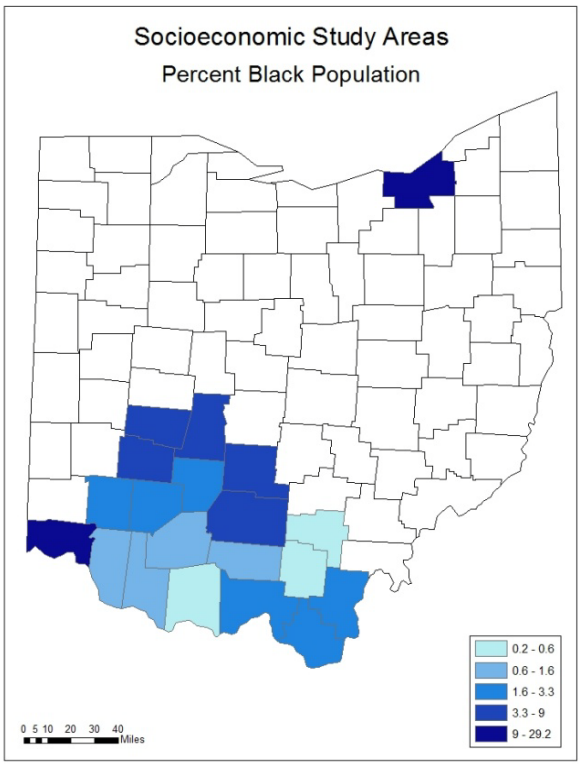


Figure 3.2: Percent Black Population

Employment and unemployment data was also collected from the Bureau for Labor and Statistics (BLS) for the study areas. It was necessary to collect this data in order to show what life is truly like in these areas. This data was also quantified in the same manner as all other data collected and a Kruskal-Wallice test also performed.

Chapter Four

Statistical Analysis & Discussion

Urban School Systems

The findings from this study were somewhat surprising. The urban District 11, located in Cleveland, was found to be academically deficient when compared to rural District 10 and the schools in Cincinnati, situated in urban District 4. The results of the descriptive statistics are summarized in Figure 4.1 below.

	# of Schools	School Rank	Spending Per Pupil	Tea/St Ratio	Salary BA	Salary MA	Teacher Exp. 0-4 Years	Teacher Exp. 5-9 Years	Teacher Exp. 10+ Years	Grad. Ratio	Reading Mean score	Writing Mean score	Math Mean score	Science Mean score	Social Science Mean score
Urban															
Cleveland	4	2.5	11685.3	13.5	31777	33839	41	19.4	39.6	74	85.5	73.6	65.7	54.4	65.7
Cincinnati	11	4.1	10896.5	14	30595.5	33273.1	27.5	22	50.5	87.5	94.5	88.3	86.2	78	85.1
Total	15	3.3	11290.9	13.8	31186.2	33556.1	34.3	20.8	44.9	80.8	92.1	84.4	80.7	71.7	79.9
Suburban															
Cleveland	27	4.1	13196.9	14.8	36215	39655	15.6	25.2	59.2	95	95.5	90.4	86.4	79.6	86.4
Cincinnati	19	4.1	14125.9	15.6	36025	38654	16.2	38.6	45.2	91.4	95.4	88.7	86.4	77.8	84.2
Total	46	4.1	13661.4	15.2	36120	39154.5	15.9	31.3	52.8	93.2	95.4	89.7	86.4	78.9	85.5
Rural	83	4	9390	16	24654	27873	16.1	30.2	53.7	88.6	91	81.5	80.2	71.4	78

Figure 4.1: Statistical Means Table (Red indicates non-compliance with NCLBA)

The school performance mean in the urban area of Cleveland was found to be 2.50. An analysis of variance (ANOVA) study was performed on the data. I found that the sample mean for all three study areas when concerning school performance was 3.76. The school system in Cleveland is substantially below the mean of 3.76 at 1.66. This means that the urban school systems of Cleveland are failing. This is in violation of the No Child Left Behind Act (NCLBA) of 2001.

Kruskal-Wallis Test Results								
All Schools Tested Together	**School Score**	**Grad Ratio**	**Reading**	**Writing**	**Math**	**Science**	**Social Studies**	**Spending Per Pupil**
Chi Square	16.07	14.786	31.759	29.687	18.93	15.376	20.757	85.146
Degrees Freedom	2	2	2	2	2	2	2	2
Significance	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001	P<0.001

Figure 4.2: Kruskal-Wallis Test Results Table

The Kruskal-Wallis test results of the data are summarized in Figure 4.2 above. Intuitively, I was certain that a lack of school funding contributed to this poor performance condition. Performing a Kruskal-Wallis test on spending per pupil exposed that the inner-city school systems spend less per pupil than the suburban and rural school systems in this study. The urban school systems spend $11,290.90 per student, which is below the mean of the three study areas of $11,858.92. The urban school system of Cleveland spends $568.02 less than the mean of the study areas per student. The difference in data does become statistically significant according to the Kruskal-Wallis test result of P<0.0001. The new discovery did seem correct, and with further investigation, it was learned that according to the United States General Accountability Office of the Federal Government, the weighted spending per pupil is not equitable. The students from wealthier areas will receive more in educational tax dollars than the students of the poorer areas.

It was assumed that the classes in the urban areas would be over-crowded with higher student to teacher ratios, causing learning to be difficult and the teacher to be over-tasked. It was found that the urban school system of Cleveland has lower student to teacher ratios than their suburban and rural counterparts. The mean student to teacher

ratio is 14.78 for the three area study. The urban school system of Cleveland has a student to teacher ratio of 13.5. This means that they have fewer students on average than the other school systems in this study. These numbers are not statistically significant; however, they are surprising.

It was determined that a teacher with a Bachelor's degree in Cleveland earns less than the teachers in the other study areas. It was also learned that the mean for the three study areas was $31,853.30 and that the average teacher salary in the urban study area is $31,186.20, which is $667.10 less than the average in the three study areas of teachers who hold Bachelor's degrees. The urban school system's teachers that hold Masters Degrees also make $102.72 less than the other teachers in the three study areas. The average salary for a Masters degree in the urban study area is $33,556.10, which is below the mean of $34,658.82. The graduation ratios for the urban areas were determined to be 80.8%, and this is 6.5% below the average of 87.3%. The 80.8% graduation ratio is also in violation of the NCLBA.

The reading score mean in the urban area was found to be 92.1%, .37% below the mean of 92.38% for the three study areas. The mean of the urban area is somewhat behind in regard to reading skills. Also, the writing mean was found to be 84.4% in the urban area, which is only .1% below the mean of 84.5% of the three study areas. The translation of these numbers is somewhat misleading. The urban area of Cleveland is substantially below all the other study areas. The children are behind when it comes to writing skills as compared to other children in this study.

The math mean for the urban areas was discovered to be 80.7%. This number is lower than the three study area mean of 80.98% with a difference of .91%. It is important

to note that most of the achievement scores for urban Cleveland serve as outliers that lessen the urban means of the urban study areas when averaged together. The urban area of Cleveland has an extremely low math mean of 65.7%. The low score mean places the children of the urban area of Cleveland at the bottom of achievement in Mathematics scores of the three study areas. The science mean for the urban area was found to be 71.7%, which is very low. The mean is .54% below the average mean of the three study area of 72.24%. Again, it is important to point out the extremely low science mean of 54.4% in the urban area of Cleveland. The low score in science is to be expected if the Mathematical scores are accurate. The Social Science mean for the urban area is 79.9% which is .02% above the three-area study mean of 79.88%. These results are definitely misleading as the Social Science mean in the urban area of Cleveland is only 65.7%. Thus, being further proof of the poor education that is being received by the children of the urban area of Cleveland.

The experience level of the teachers that are responsible for educating the children was calculated to find the mean for each study area. The experience levels of the teachers were divided into three categories, the first category was zero to four years of experience, the second category was over four to nine years of experience, and the last category was all experience over ten years. The mean was determined for the entire study area. An experience level of 34.3% for new teachers, zero to four years experience, was found in the urban study areas. This number is substantially above the 23.28% mean average of the three study area. This means that the teachers in the urban study area are not as experienced as the teachers in the rural and suburban areas. When the experience level is moved to category two, from over four to nine years of experience, the urban

areas have only 20.8% of teachers that are at this experience level. This is below the three study area average of 27.08%.

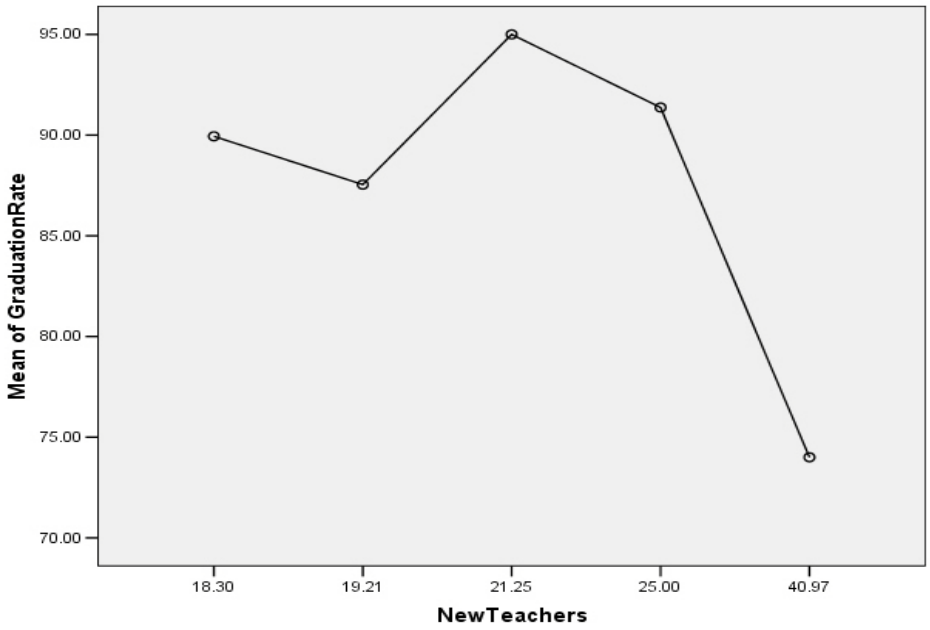


Figure 4.3: Graduation Rates vs. New Teachers

This is important because it shows that the urban school system is serving as a training ground for new teachers to gain experience and then move away from the area taking their experience with them. Experience levels of teachers that are above ten years were found to be 44.9% in the urban areas, which is also below the three study area mean that was found to be 49.64%. This demonstrates that urban school systems are having difficulty in retaining experienced teachers and are in a constant state of bringing new inexperienced teachers in to take their places.

After performing the ANOVA test in SPSS, it was found that the test scores of the urban area in Cuyahoga County are statistically different than the other study areas when poverty is used as the weight field. The significance level is .003 which shows that the difference is not statistically significant.

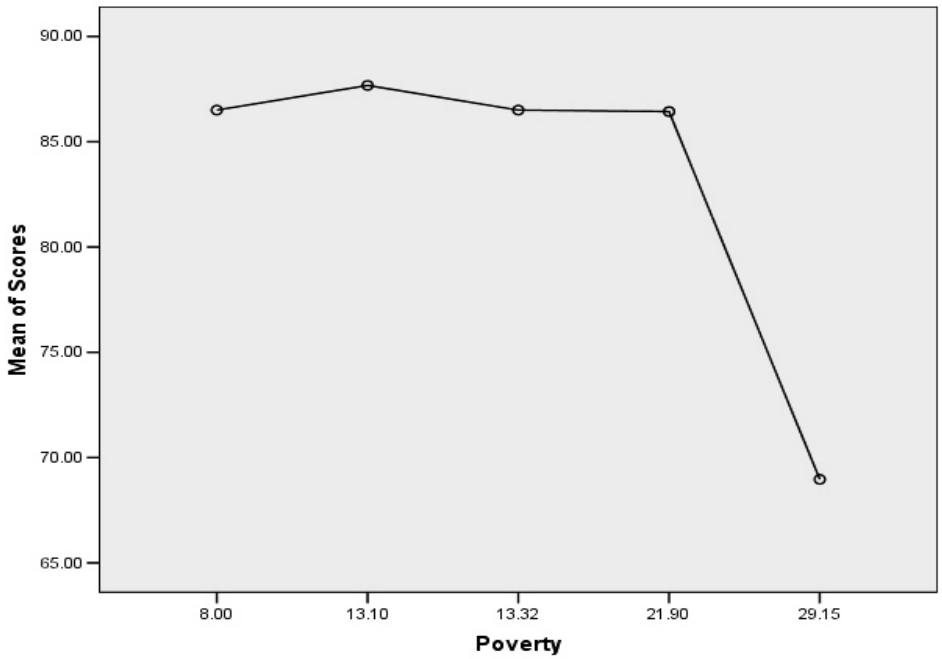


Figure 4.4: Test Scores vs. Poverty Levels

The chart above was created by the one way ANOVA test and shows that as the poverty level increases 22% above the mean testing scores on proficiency test fall sharply. This data is important as it represents a trend that is occurring in the urban area of District Eleven in Ohio. The reasons for this have not been discovered.

Suburban School Systems

The suburban study areas were found to be doing a reasonable job at educating children as determined by testing results and school performance reports. The suburban school system is above the mean of 3.76 at 4.1 on the school performance scale. The average performance for the suburban school systems was determined to not be statistically significant.

The spending per pupil was determined to be $13,661.40 in the suburban area and that places their spending per pupil as first in the three study areas. This number is above the mean of the three study areas at $11858.92. Student to teacher ratio was discovered

to be 15.2 to 1 in the suburban area. This number is just above the study area mean at 14.78 to 1. Teacher salaries were determined to be first in the three study areas at $36,120, which is above the three study area mean of $31,853.30. The graduation ratio for the suburban areas was found to be 93.2% and is first in the three study areas. This number is above the mean of 87.3% of the three study areas.

School performance in the suburban school systems was the highest of all three study areas. The reading score mean was above the three study area mean of 92.38% at 95.4%. The suburban writing mean was found to be 89.7%. The number is also above the three study area mean of 84.5% in writing. The Mathematical score of the suburban area was discovered to be 86.4% which is also above the three study area mean of 80.98% for mathematics. The mean of science scores in the suburban area was determined to be 78.9%. This number is above the three study area mean of 72.24% for science testing. The Social Sciences mean of the suburban area was found to be 85.5% and this number is once again above the three study area mean of 79.88%.

In the suburban area of Cleveland, teacher experience was found to be 15.6% in the first category of zero to four years experience. This is below the three study area mean of 23.28%. The category two experience level of over four to nine years was found to be 25.2%, which is just below the mean of the three study area at 27.08%. In the ten years of experience and over category in the suburban area, the mean was discovered to be 52.8%, which is above the mean of the three study areas of 49.64%. These numbers seem to indicate that the suburban school systems do a great job of keeping their experienced teachers.

Rural School Systems

Seventeen counties with numerous different school systems comprise the rural school District Ten that was analyzed in this study. The rural school performance was found to be a 4, which is just above the three study area mean of 3.76. This earns the rural school system second place in the three study areas when it comes to overall school performances.

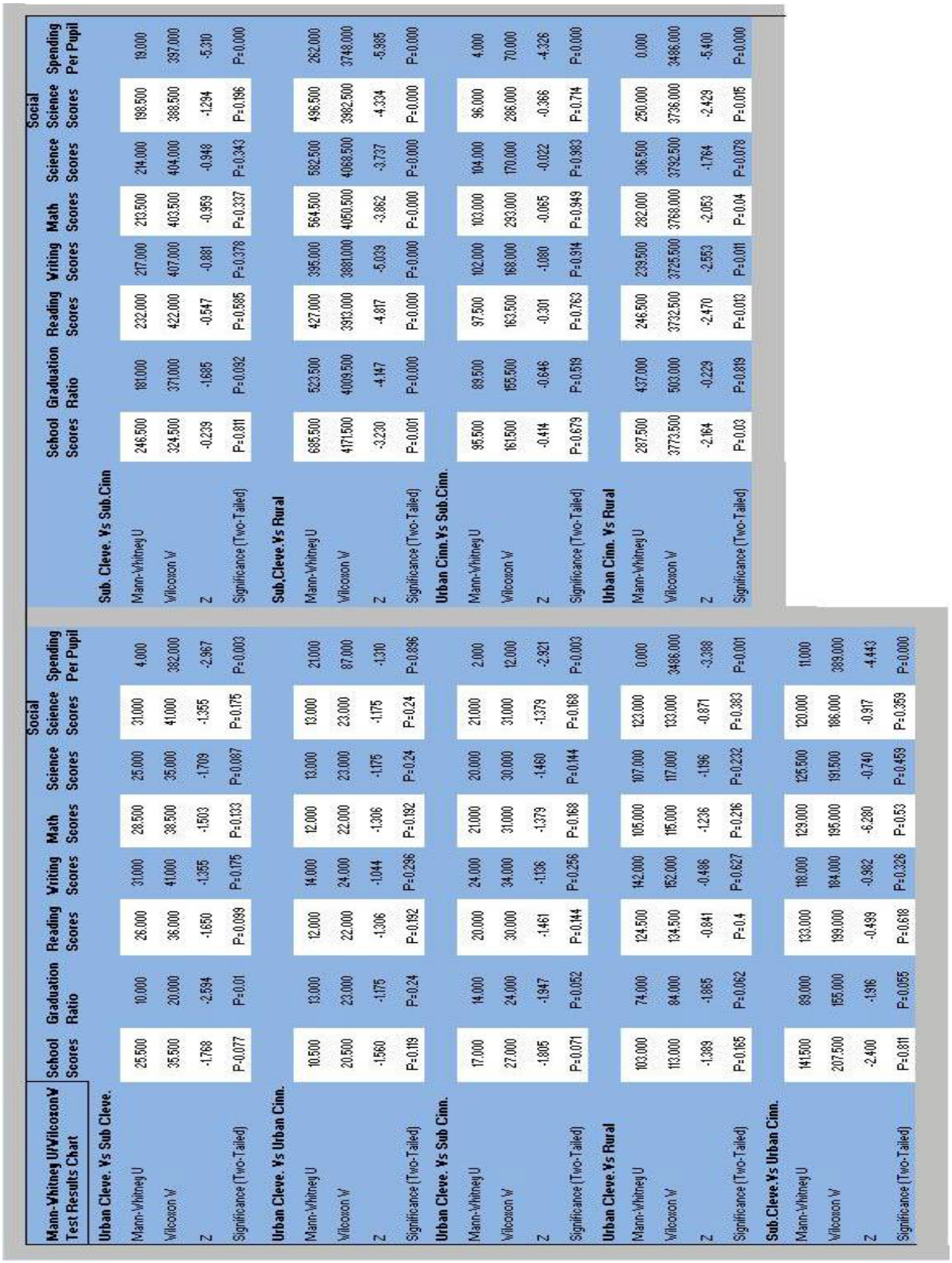
The spending per pupil in the rural area was found to be $9,390.00. This number is below the three study area mean at $11,858.92. Spending per pupil was actually found to be the lowest in the rural school systems. This is in agreement with the General Accountability Offices claim that poor areas receive less in spending dollars than their wealthier counterparts receive for educational goals. The student to teacher ratio for the rural area was found to be 16 to 1, which is just above the three study area mean of 14.78 to 1. Teacher salaries in the rural areas were found to be the lowest in the three study areas at $24,654.00 for Bachelor's degree holders. This number is below the three study area mean of $31,853.30. The teachers that hold Masters Degrees average $27,873.00 in the rural areas, which is also below the three study area mean of $34,658.82. Rural schools systems are in last place when it comes to salaries. Cost of living in the three study areas is also a factor that may make these salaries less economically viable. The rural school system graduation ratio was found to be 88.6%, which is just above the average for the three study area of 87.3%. This is second place in the three study areas concerning graduation ratios of students.

The school performance for the rural schools is consistent enough to earn second place in this study. The reading scores were discovered to be 91%, which is below the

mean of 92.38% of the three study area. The writing scores of the rural areas were discovered to be 81.5% and the number is below the mean of 84.5% for the three study area. Math averages were found to be 80.2% in the rural school systems, which is also below the 80.98% mean of the three study area. The science mean was discerned to be 71.4%, which is below the science mean for the three study area of 72.24%. The mean for the social sciences in the rural areas was discovered to be 78%, which is also below the three study area mean of 79.88%.

Levels of teaching experience were also determined for the rural areas. The zero to four year experience level in the rural area was found to contain 16.1% of the teachers in this first category, and is below the three study area mean of 23.28%. A majority of the teachers in the rural study areas are above the average level of experience. The second category, from over four to nine years of experience, reveals this to be true as the mean is 30.2%. This number is above the three study area mean of 27.08%. In the last category of experience, over ten years, the rural area has the highest teacher retention rate of 53.7%, which is above the three study area mean of 49.64%. This simply means that the rural areas are keeping and/or attracting experienced teachers for various unknown reasons. The higher levels of experienced teachers in the rural area schools seem to be having a positive effect on educational outcomes for the rural school systems. The ability to retain qualified teachers for long periods of time has proven to be a blessing in the rural school atmosphere.

Inferential Statistics



Mann-Whitney U/Wilcoxon W Test Results Chart	School Scores	Graduation Ratio	Reading Scores	Writing Scores	Math Scores	Science Scores	Social Science Scores	Spending Per Pupil
Urban Cleve. Vs Sub Cleve.								
Mann-Whitney U	25.500	10.000	26.000	31.000	28.500	25.000	31.000	4.000
Wilcoxon W	35.500	20.000	36.000	41.000	38.500	35.000	41.000	382.000
Z	-1.768	-2.594	-1.650	-1.355	-1.503	-1.709	-1.355	-2.967
Significance (Two-Tailed)	P=0.077	P=0.01	P=0.099	P=0.175	P=0.133	P=0.087	P=0.175	P=0.003
Urban Cleve. Vs Urban Cinn.								
Mann-Whitney U	10.500	13.000	12.000	14.000	12.000	13.000	13.000	21.000
Wilcoxon W	20.500	23.000	22.000	24.000	22.000	23.000	23.000	87.000
Z	-1.560	-1.175	-1.306	-1.044	-1.306	-1.175	-1.175	-1.310
Significance (Two-Tailed)	P=0.119	P=0.24	P=0.192	P=0.296	P=0.192	P=0.24	P=0.24	P=0.896
Urban Cleve. Vs Sub Cinn.								
Mann-Whitney U	17.000	14.000	20.000	24.000	21.000	20.000	21.000	2.000
Wilcoxon W	27.000	24.000	30.000	34.000	31.000	30.000	31.000	12.000
Z	-1.805	-1.947	-1.461	-1.136	-1.379	-1.460	-1.379	-2.921
Significance (Two-Tailed)	P=0.071	P=0.052	P=0.144	P=0.256	P=0.168	P=0.144	P=0.168	P=0.003
Urban Cleve.Vs Rural								
Mann-Whitney U	103.000	74.000	124.500	142.000	105.000	107.000	123.000	0.000
Wilcoxon W	113.000	84.000	134.500	152.000	115.000	117.000	133.000	3486.000
Z	-1.389	-1.865	-0.841	-0.486	-1.236	-1.196	-0.871	-3.388
Significance (Two-Tailed)	P=0.165	P=0.062	P=0.4	P=0.627	P=0.216	P=0.232	P=0.383	P=0.001
Sub.Cleve.Vs Urban Cinn.								
Mann-Whitney U	141.500	89.000	133.000	118.000	129.000	125.500	120.000	11.000
Wilcoxon W	207.500	155.000	199.000	184.000	195.000	191.500	186.000	389.000
Z	-2.400	-1.916	-0.439	-0.962	-0.280	-0.740	-0.917	-4.443
Significance (Two-Tailed)	P=0.811	P=0.055	P=0.618	P=0.326	P=0.53	P=0.459	P=0.359	P=0.000

	School Scores	Graduation Ratio	Reading Scores	Writing Scores	Math Scores	Science Scores	Social Science Scores	Spending Per Pupil
Sub. Cleve. Vs Sub.Cinn								
Mann-Whitney U	246.500	181.000	232.000	217.000	213.500	214.000	198.500	19.000
Wilcoxon W	324.500	371.000	422.000	407.000	403.500	404.000	388.500	397.000
Z	-0.239	-1.695	-0.547	-0.881	-0.959	-0.948	-1.294	-5.310
Significance (Two-Tailed)	P=0.811	P=0.092	P=0.585	P=0.378	P=0.337	P=0.343	P=0.196	P=0.000
Sub.Cleve.Vs Rural								
Mann-Whitney U	685.500	523.500	427.000	395.000	564.500	582.500	496.500	262.000
Wilcoxon W	4171.500	4009.500	3913.000	3881.000	4050.500	4068.500	3982.500	3748.000
Z	-3.230	-4.147	-4.817	-5.039	-3.862	-3.737	-4.334	-5.985
Significance (Two-Tailed)	P=0.001	P=0.000	P=0.000	P=0.000	P=0.000	P=0.000	P=0.000	P=0.000
Urban Cinn.Vs Sub.Cinn.								
Mann-Whitney U	95.500	89.500	97.500	102.000	103.000	104.000	96.000	4.000
Wilcoxon W	161.500	155.500	163.500	168.000	293.000	170.000	286.000	70.000
Z	-0.414	-0.646	-0.301	-1.080	-0.065	-0.022	-0.366	-4.326
Significance (Two-Tailed)	P=0.679	P=0.519	P=0.763	P=0.314	P=0.949	P=0.983	P=0.714	P=0.000
Urban Cinn. Vs Rural								
Mann-Whitney U	287.500	437.000	246.500	239.500	282.000	306.500	250.000	0.000
Wilcoxon W	3773.500	503.000	3732.500	3725.500	3768.000	3792.500	3736.000	3486.000
Z	-2.164	-0.229	-2.470	-2.553	-2.053	-1.764	-2.429	-5.400
Significance (Two-Tailed)	P=0.03	P=0.819	P=0.013	P=0.011	P=0.04	P=0.078	P=0.015	P=0.000

Figure 4.5: Inferential Statistics Chi Square Table

Inferential Statistics Discussion

The Mann-Whitney U / Wilcoxon Rank Sum W test was used to show how different representative pairs of data set means, once ranked for testing, compare to each other. The statistical tests were completed in order to show if the diverse geographic study area data sets were similar or distinct from one another to a statistically significant level. A few requirements or assumptions of these tests include that:

1. Two Independent random samples are used
2. Each population is normally distributed
3. Variable is to be measured at the interval or ratio scale (McGrew-Monroe 133, 2000).

The data sets that were tested include: School Report Cards, Graduation Ratio, Reading Scores, Writing Scores, Math Scores, Social Studies Scores, Science Scores, and lastly, Spending per Pupil. The Z score and two tailed significance P result were recorded in the chart located in Figure 4.5. In order to understand the chart in Figure 4.5, the P score must be explained. The translation of the P score means that the closer a test result number is to zero, the more statistically significant that result represents. It means that the difference between the two independent random samples did not happen by mere chance or accident.

An important note to remember is that the extremely poor results of achievement testing scores in urban Cleveland may have caused the data to be flawed. I think that the low scores of urban Cleveland serve as outliers that may have altered the urban data set when Cincinnati and Cleveland were added together for an urban study area mean. The

point is that the urban study area of Cleveland is not in compliance with the NCLBA in most study areas.

Urban Cleveland vs. Suburban Cleveland

The test results show that the original hypothesis of spending being a factor in educational outcomes was proved to be true as the P score result was .003 when spending per pupil is the point of concern. Urban Cleveland does have less money to spend per pupil than its suburban counterpart. The P score shows that spending per pupil is significantly statistically different from urban to suburban Cleveland. This is more evidence that spending is a factor when it comes to educational outcomes on achievement tests.

Urban Cleveland vs. Urban Cincinnati

Testing results of achievement scores show that Cleveland's urban schools are in serious academic trouble when compared to the urban schools of Cincinnati. The low test score means show that urban Cleveland is not on the same level as urban Cincinnati. The difference in Spending per pupil is still a fairly significant factor.

Urban Cleveland vs. Suburban Cincinnati

Urban Cleveland is not comparable to suburban Cincinnati when it comes to academic performance. Urban Cleveland did much worse on achievement testing results than their suburban Cincinnati counterparts. Spending per pupil was still found to be a significant factor in the difference between the two study areas of urban Cleveland and suburban Cincinnati with a P result of .003.

Urban Cleveland vs. Rural District Ten

The spending per pupil changed a small amount between urban Cleveland and rural District Ten of Ohio. The spending per pupil changed to be even more statistically significant with a P result of .001. Urban Cleveland's academic performance was found to be less than that of the rural school systems. In this test case, spending per pupil was less in the rural area. This result seems to show that spending per pupil is not the only factor at work to drive educational attainment down in urban Cleveland.

Suburban Cleveland vs. Urban Cincinnati

Suburban Cleveland and urban Cincinnati were somewhat comparable when it came to academic achievement scores on testing. Spending per pupil was extremely significant with a P result 0.00. This represents a large difference in spending per pupil; however, the result is not consistent with the study. If a lack of spending is the cause of poor student performance, it does not show up in this case. Academic achievements on testing are somewhat similar in these two study groups.

Suburban Cleveland vs. Suburban Cincinnati

Suburban Cleveland and suburban Cincinnati are similar when it comes to academic testing scores. Suburban schools proved to be consistently the best when over all student performance was the data set tested. Both suburban study areas received achievement testing scores that reflect a positive educational outcome. Spending was higher in these study areas than it was in the urban and rural study areas. Spending per pupil was statistically significant with a P score of 0.00; however, it did not seem to make a large difference in educational outcomes in this test case. The suburban school systems of this study are in full compliance to the NCLBA of 2001.

Suburban Cleveland vs. Rural District Ten

Spending per pupil was discovered to be statistically significant in this case study with a P result of 0.00. The rural schools had less money to work with per pupil than their suburban counterparts. The suburban schools were found to be in full compliance with the NCLBA. The rural schools were not making the goals mandated by the NCLBA in science and graduation ratio.

Urban Cincinnati vs. Suburban Cincinnati

The differences between urban and suburban Cincinnati were not statistically significant when academics were concerned. The spending per pupil was statistically significant with a P result of 0.00. The only issue found in District Four, which is this test case in its entirety, is that the graduation ratio is not in compliance with the NCLBA of 2001. Urban Cincinnati only graduates 87.5% of its students, which does not meet the required 90%. If not for that small issue, District Four would be in full compliance to the NCLBA.

Urban Cincinnati vs. Rural District Ten

Urban Cincinnati and rural District Ten have low graduation rates that do not meet the requirements of the NCLBA (Figure 4.1). Spending per pupil was discovered to be statistically significant with a P result of 0.00. Rural District Ten had less to spend per pupil than did the urban schools of Cincinnati. The rural schools did not make the standards set forth by the NCLBA in Science with a mean score of 71.4%. The NCLBA mandates a 75% in all academic areas, along with a 90% graduation ratio.

Chapter Five

Conclusion

It is clear that achievement test scores in the urban sector of Cleveland are very poor. The reasons for this lower performance remain unclear. Other school systems in the state seem to be having some success when it comes to the education of their children. The logical conclusion is that the difference in the school districts can be found while examining other factors that were not tested in this study.

Based on the data used for the urban, suburban and rural school systems in Ohio, I concluded that the educational attainment levels in the urban areas of Cleveland are failing due to a lack of financial support as I had intuitively thought. It was made clear that the wealthy areas have more money available to them for education, but the difference between the two can only be found in the equity of spending those funds between the wealthy and the poor school systems. The average Ohio spending on education was $4,709 per pupil. When the local spending was also considered in the spending equity formula, the spending was $4,305 per poor student and $5,688 per wealthy student, making the spending on education somewhat inequitable to poorer students that does rise to the point of being statistically significant with a P score of $P<0.000.32$

The urban school system of Cleveland is well below the mean in all subject assessment areas of the three study areas. These schools are failing and are not in compliance with the No Child Left Behind Act of 2001, which requires a 90% graduation ratio and a 75% average in all academic assessment areas. In order to maintain Federal funding, all districts are required to make average yearly progress (AYP) when found

deficient. If the AYP is not achieved as measured by student achievement tests, the school system in question loses Federal funding which leaves less financial resources with which to work. This only causes the task of educating children to become more burdensome on the school system that was already in distress.

The suburban schoolteacher makes more in salary than their urban and rural counterparts, because they have more teaching experience, which explains the difference in salary. The student to teacher ratio is lower in the urban area but does not translate into results on achievement testing. The graduation ratio for students is also the lowest in the urban areas. Second place in graduation ratio goes to the rural school systems and first place goes to the suburban school system.

The higher educational attainment of the local community seems to be the lowest in the rural areas and highest in the suburban areas. This may be the single greatest reason that educational attainment is so low in the urban areas and so high in the suburban areas. The parents in the suburban areas statistically have more education and live in areas that have lower poverty levels because of their incomes.

An important finding uncovered in this study was that teacher experience in the urban area of Cleveland is very low to start and then drops slightly as the newly trained teachers relocate and take their experience with them. This demonstrates how the urban areas of Cleveland are serving as a training ground for inexperienced and unlicensed teachers and may be the reason for the poor student performances on achievement tests. Based on the results of this study, I would be compelled to send my children to suburban schools in Ohio due to higher performance on proficiency testing. This thought process is also part of the problem in urban areas, as the poor children who live there do not get a

choice of where to attend school because they are too impoverished. The people who can afford to relocate do just that. It seems that most people would make the conscious choice to avoid a bad situation instead of working together to find a method to fix the problem.

The cycle of poverty continues unless something is done to stop it, and education is meant to be the tool to do just that. A degree from a university should provide the means to escaping poverty, but a person must be qualified to gain access to institutions of higher learning. Upward mobility cannot be achieved through education if the individual is not qualified to attend a university. They are limited in the life options that would help the individual lift themselves out of poverty. If the school system that educated that child is failing in the process of education, then they are in part to blame for their own decline as the cycle of poverty repeats itself over generations of people. The cycle of poverty is complete when the school system begins to depend on the people that are their product in order to survive. These are the people that are uneducated with little opportunity for advancement. They will be forced to live in poorer areas because they do not have the economic means to survive anywhere else.

When the situation involves enough extremely poor people, it can systematically erode the tax base that supports the school system. The clustering of poor people systematically causes the property values of the area in which they live to decline. This negative reciprocal effect causes funding for the local school system to be very limited. The children from poorer areas are forced to rely on these school systems for a quality education and it is not received. The cycle of poverty is complete when the student learns that they are not qualified to go to a school of higher learning. This failure can

cause the cycle of poverty to consistently repeat itself. If this paradigm is true, the NCLBA is not meeting the spirit of the Act because it is leaving many children behind. Even though the Federal Government had the best intentions when instituting the NCLBA, it falls short when actually applied to real-world educational outcomes.

Escape from socioeconomic crisis is not impossible if born into a lower social standing. It takes a determined individual to escape the vicious cycle of poverty. The person in question will have to be extremely resolute to overcome the educational inadequacies that they may receive from their individual school system, especially if that school system is in academic emergency as found in urban Cleveland.

Recommendations for Future Research

Recommendations for future study in this area may be to compare a larger sample of the state with each different type of school system in order to reduce error that may be present because of the samples that were chosen to represent the state of Ohio. If the samples I have taken were in error then the correction would be to take larger samples throughout the state in each type of school system to correct the margin of error. I strongly recommend a longitudinal study of these areas to determine if true meaningful progress in being achieved. The future is at risk in the present if we do not act now. It would be interesting to complete some analysis on data to uncover if racial bias has anything to do with lower achievement scores on standardized achievement testing when it involves minorities.

Bibliography

Ackerman, William. "Socioeconomic Correlates of Increasing Crime Rates in Smaller Communities." Professional Geographer 50(3): 372-387, 1998.

Bourne, Larry. "New Urban Divides: How Economic, Social and Demographic Trends are Creating New Sources of Urban Difference in Canada." Centre for Urban and Community Studies 33: Feb 2007.

Bureau of Labor and Statistics. 10 Apr. 2006. <http://www.stats.bls.gov>.

Card, David and Abigail Payne. "School Finance Reform, The Distribution of School Spending, and the Distribution of Student Test Scores." Journal of Public Economics 83: 49-82, 2002.

Covey, Melissa and Sharon Cobb. "Using A Geographic Information System to Examine the Relationship Between Access to Technology and the Academic Achievement of Primary and Secondary Students." Southeastern Geographer 43(2): 293-306, 2003.

Cutshall, Sandy. "Is Smaller Better? When it Comes to Schools, Size Does Matter." Techniques: Connecting Education and Careers 73(3): 22-25, 2003.

Dawkins, Casey. "The Spatial Pattern of Black-White Segregation in US Metropolitan Areas: An Exploratory Analysis." Urban Studies 43(11): 1943-1969, 2006.

Demie, Feyisa. "Pupil Mobility in Schools and Implications for Raising Achievement." Educational Studies 31(2): 131-147, 2005.

Dittmer, Jason. "Assessing School Assessment." Southeastern Geographer 44(2): 170-185, 2004.

Doherty, Olivia and Darcia Harris. "Violence Outside School Walls Raises Concerns." Education Week 23(15): 1-15, 2003.

Everhart, Brett and Marlys Vaughn. "A Comparison of Teaching Patterns of Student Teachers and Experienced Teachers in Three Distinct Settings: Implications for Preparing Teachers for All Settings." Education 126(2): 231-239, 2005.

Federal Bureau of Investigation. 14 Nov. 2009. <http://www.fbi.gov>.

Galletti, Susan. "School Size Counts." The Educational Digest May: 15-19, 1999.

Gibson, Chris. "Digital Divides in New South Wales: A Research Note on Socio-Spatial Inequality Using 2001 Census Data on Computer and Internet Technology." Australian Geographer 34(2): 239-257, 2003.

Gibson, Gordon. "Urban Size, Spatial Segregation and Inequality in Educational Outcomes." Urban Studies 43(1): 213-236, 2006.

Gottlieb, Paul and Barry Lentnek. "Spatial Mismatch is not Always a Central-City Problem: An Analysis of Community Behavior in Cleveland, Ohio, and its Suburbs." Urban Studies 38(7): 1161-1186, 2001.

Hanushek, Eric "Assessing the Effects of School Resources on Student Performance: An Update." Educational Evaluation and Policy Analysis 19(2): 141-64, 1997.

Hager, Karen and Timothy Slocum. "Using Alternative Assessment to Improve Outcomes." Special Education Quarterly 24(1): 54-59, 2005.

Hartshorn, Truman. "Inner City Residential Structure and Decline." Annals of Associationof American Geographers 61: 72-96, 1971.

Imber, Michael. "Adequacy in School Funding." American School Board Journal Nov: 43-48, 2004.

Jacobs, Jane. Dark Ages Ahead. New York, NY: Random House, 2000.

Joassart-Marcelli, Pascale M., Juliet A. Musso and Jennifer R. Wolch. "Fiscal Consequences of Concentrated Poverty in a Metropolitan Region." Annals of the Association of American Geographers 95(2): 336-356, 2005.

Joong, Hwan Oh. "Social Disorganization and Crime Rates in U.S. Central Cities: Toward an Explanation of Urban Economic Change." Social Science Journal 42(4): 569-582, 2005.

Kirby, Andrew. "'Neglected Factors in Public Services Research: A Comment on "Urban Structure and Geographical Access to Public Services.'" Annals of the Association of American Geographers 73(2): 289-295, 1983.

Lafree, Gary and Richard Arum. "The Impact of Racially Inclusive Schooling on Adult Incarceration Rates Among U.S. Cohorts of African Americans and Whites Since 1930." Criminology 44(1): 73-103, 2006.

Logan, John R. "Separate and Unequal: The Neighborhood Gap for Blacks and Hispanics in Metropolitan America." 2002.

Lowry, Mark. "Schools in Transition." Annals of Association of American Geographers 63(2): 167-180, 1973.

McGrew, J. Chapman and Charles B. Monroe. An Introduction to Statistical Problem Solving in Geography. McGraw Hill, 2000.

Madden, Janice Fanning. "The Changing Spatial Concentration of Income and Poverty Among Suburbs of Large US Metropolitan Areas." Urban Studies 40(3): 481-503, 2003.

Maxfield, Donald W. "Spatial Planning of School Districts." Annals of the Association of American Geographers 62(4): 582-590, 1972.

Mayer, Susan E. "How Economic Segregation Affect Children's Educational Attainment." Social Forces 81(1): 153-176, 2002.

National Center for Educational Statistics. 14 Nov. 2009. <http://nces.ed.gov>.

National Education Association. 11 Mar. 2009. <http://www.NEA.org>.

Ohio Board of Education. 14 Nov. 2009. <http://www.ode.state.oh.us/board/>.

Power, Anne. "Area-Based Poverty and Resident Empowerment." Urban Studies 33(9): 1535-1564, 1996.

Reeves, Edward. "Are Rural Schools Inferior to Urban Schools?" Rural Sociology 70(3): 360-386, 2005.

Rose, Harold M. "The Developmen t of an Urban Subsystem: The Case of the Negro Ghetto." Annals of Association of American Geographers 60(1): 1-17, 1970.

Scarpa, Steven. "School Violence is Down, or Is It?" District Administration 41(2): 19, 2005.

Self, Tucker. "Evaluation of a Single School District Consolidation in Ohio." American Secondary Education 30(1): 71-81, 2001.

Sexton, Terri. "The Property Tax Base in the United States: Exemptions, Incentives, and Relief." Assessment Journal Fall: 1-30, 2003.

Silverman, Fran. "All Alone." District Administration Fall 2005.

Talen, Emily. "School, Community, and Spatial Equity: An Empirical Investigation of Access to Elementary Schools in West Virginia." Annals of Association of American Geographers 91(3): 465-486, 2001.

Tatum, Alfred. "Engaging African American Males in Reading." Educational Leadership 63(5): 44-49, 2006.

Theobald, Paul. "Urban and Rural Schools: Overcoming Lingering Obstacles." Phi Delta Kappan 87(2): 116-122, 2005.

Traore, Rosemary Lukens. "African Students in America: Reconstructing New Meanings of 'African American' in Urban Education." Intercultural Education 14(3): 243-254, 2003.

Truscott, Dianne. "Differing Circumstances, Shared Challenges: Finding Common Ground Between Urban and Rural Schools." Phi Delta Kappan 87(2): 123-130, 2005.

U. S. General Accounting Office. School Finance: State Efforts to Reduce Funding Gaps Between Poor and Wealthy Districts. Washington, D.C.: GAO (GAO/HEHS-97-31), 1997.

United States Census Bureau. 14 Nov. 2009. <http://www.census.gov>.

Washington, Julie. "Early Literacy Skills in African-American Children: Research Considerations." Learning Disabilities Research and Practice 16(4): 213- 221, 2001.

Yancey, William L. and Salvatore J. Saporito. "Racial and Economic Segregation and Educational Outcomes: One Tale-Two Cities." The National Center on Education in the Inner Cities 389(804): 1995.

Zhang, Charlie and David J. Cowen. "Mapping Academic Achievement and Public School Choice Under the No Child Left Behind Legislation." Southeastern Geographer 49(1): 24-40, 2009.

Appendix A

Results Table

The No Child Left Behind ACT (NCLBA) requires a Graduation Ratio of 90%. Standardized testing scores of 75% out of 100% possible are required for Reading, Writing, Math, Science, and Social Sciences. The scores define compliance to the NCLBA mandates. The system mean is an arbitrary number from 1 to 5 with one being the lowest and five being the best and it is based on the Ohio schools criteria that determine how they are doing according to the state board of education school system report cards.

* Red font color is non-compliance to the No Child Left Behind Act.

District #	Reading	Writing	Math	Science	Social S.	Graduation Ratio	System Mean
10 Rural	91.01%	81.53%	80.24%	71.43%	78%	89.94%	3.51
4 Urban	94.53%	88.3%	86.19%	78.02%	85.12%	87.54%	4.09
4 Sub-Urban	95.38%	88.73%	86.43%	77.81%	84.16%	91.37	4.21
11 Urban	85.5%	73.57%	65.72%	54.37%	65.67%	74%	2.5
11 Sub-urban	94.53%	88.3%	86.19%	78.02%	85.12%	95%	4.11

District 04 is comprised of Hamilton and Warren counties of Ohio

District 10 is rural and is comprised of: Adams, Brown, Clark, Clermont, Clinton,

Fayette, Gallia, Greene, Highland, Jackson, Lawrence, Madison, Pickaway, Pike, Ross,

Scioto, and lastly Vinton Counties of Ohio.

District 11 is Cuyahoga County of Ohio.

Appendix B

Data Table for School Districts 4, 10, and 11

County	Graduation%	Reading	Writing	Math	S.Studies	Science	Grade
NCLB Score	90%	75%	75%	75%	75%	75%	N/A
Adams Cty	88.7	86.5	86.6	81.3	72.4	64.7	3
Manchester	86.8	86.4	67.8	78.0	69.5	59.3	3
Brown Cty							
Eastern L.	88.7	88.5	86.6	84.1	80.2	78.4	4
Fayetteville	97.3	95.4	90.8	83.1	84.6	84.6	4
Georgetown	90.4	93.5	81.7	81.7	87.1	74.2	4
Ripley	94.9	88.1	75.0	75.9	77.3	68.5	3
Western B.	77.4	91.6	85.2	79.3	72.8	66.1	3
Clark Cty							
Clark	93.5	94.0	88.0	85.3	82.6	81.5	5
Greenon	93.1	98.0	95.4	87.5	86.8	90.7	4
Northeastern	94.4	96.2	87.0	84.4	76.6	80.6	4
Northwestern	92.3	93.8	89.7	88.3	79.3	84.0	4
Southeastern	95.6	94	89.6	88.1	83.6	86.6	4
Springfield	76.2	86.8	72.6	71.9	59.7	67.6	2
Tecumseh	86.3	90.6	83.3	80.8	72.0	80.8	3
Clermont Cty							
Batavia	87.0	92.4	88.7	80.6	75.7	75.7	4
Bethel Tate	90.4	94.9	85.9	88.5	76.8	78.8	4

Clermont	80.3	95.8	78.9	85.9	82.4	82.3	4
Felicity	94.4	85.1	73.4	69.1	64.5	60.6	4
Goshen	90.2	88.3	75.3	81.3	69.2	60.6	4
Milford	90.0	96.8	91.3	92.2	92.6	87.1	5
N.Richmond	87.4	93	81.3	85	84	82.4	4
W.Clermont	79.6	95.3	88.7	86.8	82.2	75.9	4
Williamsbur	88.7	90.2	90.6	92.7	90.2	85.4	4
Clinton Cty							
Blanchester	92.4	92.6	86.8	87.5	88.8	84.3	4
Clinton	89.9	97.0	92.5	89.5	91.0	83.5	4
East Clinton	92	85.2	78.9	77.4	77.4	78.3	4
Wilimngton	94.6	90.2	81.8	83.3	86.2	79.8	3
Fayette Cty.							
Miami	83.9	87.5	77.5	74.0	71.5	70.5	3
Washington	85.5	96.3	93.6	92.7	86.2	79.8	4
Gallia Cty.							
Gallia Local	81.2	84.8	72.7	76.6	77.0	62.8	3
Gallipolis Ct.	86.6	92.3	83.8	87.7	85.4	78.5	4
Greene Cty.							
Beavercreek	95	96.6	89.4	91.8	92.7	89.2	5
Cedar Cliff	100	96.7	95.1	91.8	96.7	95.1	4
Farborn	83.0	93.3	84.9	86.6	83.5	77.5	3
Greenview	94.4	94.5	88.2	81.7	73.0	71.2	4

Sugarcreek	97.1	98.6	94.6	96.4	93.2	92.3	5
Xenia	81.0	92	83.3	77.7	78.3	65.1	3
Yellow Spr.	89.7	94.2	90.4	88.5	86.5	82.7	4
Highland Cty							
Bright	90.6	94.6	83.9	85.7	78.6	67.9	2
Fairfield	93.8	89.7	85.3	76.5	75	73.5	4
Greenefield	77.6	93.8	81.3	82	82.0	71.9	3
Hillsboro	95.4	93.0	75.7	80.7	83.5	74.2	3
Lynchburg	93.8	93.8	84.5	86.6	83.5	74.2	4
Jackson Cty							
Jackson City	90.8	90.1	77.5	79.1	79.2	69.8	3
Oak Hill	85.7	87.3	83.5	74.7	67.1	65.1	3
Wellston	86.5	77.2	64.0	72.8	65.5	61.1	3
Lawrence Cty							
Chesapeake	92.4	88.1	77.1	67.0	72.5	48.6	4
Dawson	94.2	92.5	80.6	84.9	61.3	54.8	4
Fairland	84.5	97.2	90.8	90.8	89.4	85.1	5
Ironton	91.2	88.9	86.3	79.5	75.2	65.8	3
Rock Hill	81.3	85.8	80.4	73.0	70.3	60.1	3
South Point	82.1	90.5	83.9	82.5	74.5	65.7	4
Symmes V.	94.8	90.9	81.8	83.6	81.8	70.9	4
Madison Cty							
Jefferson	92.9	96.6	87.6	78.7	79.8	77.5	3

Jonathan	92	96.1	80.3	90.8	82.2	81.6	4
London City	87.1	91.0	82.8	82.8	76.9	70.9	3
Madison-P	95.8	96.7	89.1	85.8	90.8	75.8	4
Pickaway Cty							
Circleville	87.5	87.1	82.8	76.3	76.6	70.4	3
Logan	93.5	90.4	83.0	82.5	87.0	73.3	3
Teays Valley	92.3	89.1	78.1	78.7	85.6	75.2	4
Westfall	89.5	95.2	90.2	85.6	85.6	75.2	4
Pike Cty							
Eastern Loc.	81.8	83.9	71.4	66.1	57.1	41.1	3
Scioto Valley	95.7	91.2	81.3	86.7	77.5	63.6	3
Waverly	90.3	89.6	73.0	79.1	75.5	69.9	3
Western Loc.	93.0	82.4	65.8	58.9	60.3	54.8	2
Ross CTY							
Adena	96.7	92.2	80.2	78.3	82.4	71.4	3
Chillicothe	87.9	91.8	79.3	78.4	74.5	69.2	4
Huntington	91.8	95.2	76.0	70.9	77.7	66.0	3
Paint Valley	97.6	79.3	55.3	58.1	54.7	55.3	3
SouthEastern	93.0	92.3	81.8	80.3	83.7	75.6	2
Union Scioto	92.9	94.3	78.7	81.3	83.7	75.6	3
Zaine Trace	97.1	93.3	84.4	70.4	70.4	60.7	3
Scioto CTY							
Bloom	85.1	93.5	77.4	77.4	75.8	71.0	4

Clay	97.3	85.7	83.3	73.8	83.3	57.1	3
Green	89.1	86.4	61.4	63.6	70.5	45.5	3
Minford	98.2	90.8	81.7	79.8	79.8	70.0	4
N. Boston	95.0	90.0	75.0	75.0	80.0	85.0	3
Northwest	95.9	83.9	66.1	68.0	60.2	54.5	3
Portsmouth	61.3	83.0	66.4	60.2	65.2	53.6	2
Valley Loc.	94.4	85.5	72.5	78.3	72.5	72.5	3
Washington	89.1	87.4	78.4	68.6	65.7	53.9	3
Wheelersbur.	98.6	92.3	93.3	82.7	86.5	78.8	4
District 04							
Hamilton Cty							
Cin. City	72.1	86.3	77.7	72.4	68.4	52.9	3
Dear Park	87.6	96.9	89.6	89.7	88.5	78.1	4
Tinneytown	92.0	92.7	86.8	85.5	77.0	78.9	4
Forest Hills	93.0	98.7	95.3	94.9	92.9	92.4	5
Indian Hill	98.3	99.0	96.9	95.9	96.9	95.3	5
Lockland	61.0	93.3	90.9	80.0	81.8	75.0	3
Loveland	94.1	97.6	95.3	92.2	88.9	83.4	5
Madeira	98.1	97.6	96.8	91.1	92.7	88.7	5
Marimont	96.9	99.1	99.4	94.6	92.7	88.7	5
Mt. Healthy	83.1	91	79.7	76.3	66.7	45.8	3
N.College	85.5	89.2	78.4	69.4	68.8	47.7	3

NW Local	88.4	97.4	93.2	91.0	87.0	79.7	4
Norwood	72.1	94.3	81.1	82.9	79.4	75.4	3
Oak Hills	98.4	98.2	89.4	92.8	91.1	86.8	5
Princeton	86.7	90.5	79.3	77.1	82.9	66.5	4
Reading	91	93.5	82.6	83.7	79.3	77.2	4
Southwest	94.2	94.3	85.5	84.6	82.8	74.5	4
St. Bernard	84.7	93.1	86.2	84.5	75.9	69	3
Sycamore	97.6	96.7	94.1	93.0	93.0	90.1	5
Three rivers	85.6	96.9	91.5	86.0	88.3	84.4	4
Winton W.	87.9	90.2	78.1	75.8	76.9	62.5	3
Wyoming	100	100	98.2	95.1	97.0	93.3	5
Warren Cty							
Carlisle	94.7	94.6	87.7	76.9	80.8	66.2	4
Franklin City	89.2	90.0	76.1	80.6	76.1	63.8	3
Kings Local	90.8	96.8	92.7	92.3	91.9	89.9	5
Lebanon	95.3	95.5	86.4	88.0	88.1	76.1	5
Little Miami	89.5	96.2	88.5	91.5	81.1	76.1	4
Mason City	95.4	98.1	95.2	94.8	94.0	91.0	5
Springboro	98.2	97.8	95.6	94.0	93.7	93.3	5
Wayne	97.7	96.8	89.4	83.7	84.6	83.7	5
District 11							
Cuyhoga Cty							

Urban							
Cleveland H.	90	91.6	86	76.8	78.4	67	3
Cuyahoga H	90.1	98.6	98.4	95.7	95.7	92.8	5
Cleve Mun.	50.2	72.5	50.5	49.5	40.8	31.9	1
E.Cleveland	65.2	79.3	59.2	40.9	47.8	25.8	1
Suburban							
Bay Village	96.4	97.8	94.7	95.7	95.2	92.0	5
Beachwood	97.9	96.9	93.1	93.1	94.6	90.8	5
Bedford	86.2	91.7	83.9	64.5	72.7	52.5	3
Berea	94.0	95.3	89.9	86.3	83.2	78.4	4
Brecksville	97.7	97.6	95.7	92.8	83.9	93.3	5
Brooklyn	94.5	94.7	91.5	83.0	83.9	74.5	3
Chagrin	100	100	98.7	98.1	96.9	95.2	5
Euclid	93.8	90.4	80.0	70.1	67.3	51.8	2
Fairview	96.2	97.2	92.9	90.8	92.2	88.7	4
Garfield	89.9	93.2	87.6	80.8	77.1	69.0	3
Independenc.	97.6	98.9	98.8	94.5	93.4	85.7	4
Lakewood	89.9	94.9	86.6	88.0	87.2	79.6	4
Maple	84.4	84.1	75.4	53.9	66.4	35.7	3
Mayfield	96.2	97.1	94.2	95.5	91.5	89.6	5
N. Olmstead	93.5	96.4	91.5	91.6	90.3	87.0	5
N.Royalton	95.0	98.1	95.0	94.4	92.5	91.4	5
Olmstead F.	95.6	97.3	92.5	94.5	89.8	85.9	5

Orange	98.3	97.3	95.6	93.4	94.5	94.0	5
Parma	84.8	94.5	85.8	86.9	86.1	77.9	4
Richmond	93.2	98.8	95.2	85.5	88.0	79.5	4
Rocky R.	95.3	99.1	96.2	96.3	93.0	93.9	5
Shaker	98.7	95.9	89.8	86.2	88.7	80.1	4
Solon	97.4	98.3	96.5	94.3	95.0	93.4	4
S. Euclid	98.0	93.6	85	79.1	82.8	73.2	4
Strongsville	97	96.2	93.3	93.8	90.2	90.1	5
Warrensville	100	86.3	69.5	58.8	53.4	32.6	2
Westlake C.	96.3	96.5	93.0	91.6	93.4	93.0	5

Appendix C

Demographics of Study Areas

District # and counties.	Population	% White	% Black	% High School. Grad	% College BA or Higher	% Below Poverty	Median Household Income	% Persons Under 18	People P.SQ.M.
District 10									
Adams	28,516	97.7	.2	68.6	7.2	16.1	$31,364	24.3	46.8
Brown	44,423	97.8	1.1	74.8	8.8	11.9	$41,165	25.1	85.9
Clark	141,872	88.3	9.0	81.2	14.9	12.8	$40,776	23.7	361.9
Clermont	192.706	96.8	1.3	82.0	20.8	7.8	$52,951	26.0	393.8
Clinton	43,399	95.4	2.5	83.1	14.1	9.8	$41,826	24.7	98.6
Fayette	28,305	95.5	2.4	78.7	10.7	12	$39,690	24.1	69.9
Gallia	31,313	95.1	2.8	73.7	11.6	17.4	$33,156	23.0	66.2
Greene	152,298	89.0	6.2	87.8	31.1	9.4	$51,173	9.4	356.4
Highland	42,833	96.7	1.6	76.3	9.7	12.2	$37,597	25.4	73.9
Jackson	33,543	97.7	.6	73.5	11.0	15.5	$33,312	24.0	77.7
Lawrence	63,179	96.3	2.2	75.6	10.3	17.4	$31,131	22.9	137
Madison	41,496	91.4	6.5	79	13	9.6	$46,252	22.7	86.5
Pickaway	53,606	93.1	5.1	77.2	11.4	11.1	$44,595	22.8	105
Pike	28,269	96.3	1.1	70.1	9.7	17.2	$33,302	25.0	62.8
Ross	75,556	91.5	6.2	76.1	11.3	13.1	$38,939	22.2	106.6
Scioto	76,441	94.9	2.6	74.1	10.1	18.9	$30,557	23.3	129.4
Vinton	13,519	97.9	.4	70.7	6.0	16.8	$32,086	24.8	30.9
District 04									
Hamilton	822,596	71.7	25.0	82.7	29.2	13.1	$43,811	25.1	2,076.9
Warren	201,871	92.5	3.3	86.2	28.4	5.3	$63,899	25.5	396
District 11									
Cuyahoga	1,314,241	67.0	29.2	81.6	25.1	15.0	$40,547	24.4	3,043.6

County Data Table 2006

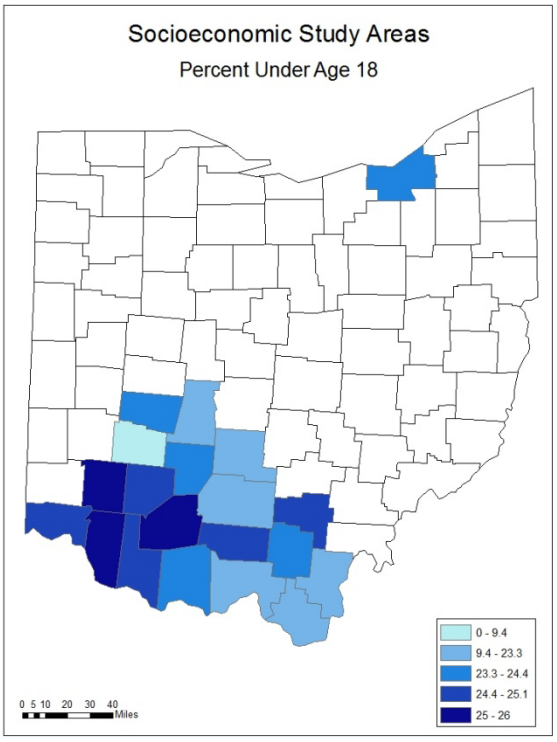


Figure C-1: Population under Age 18

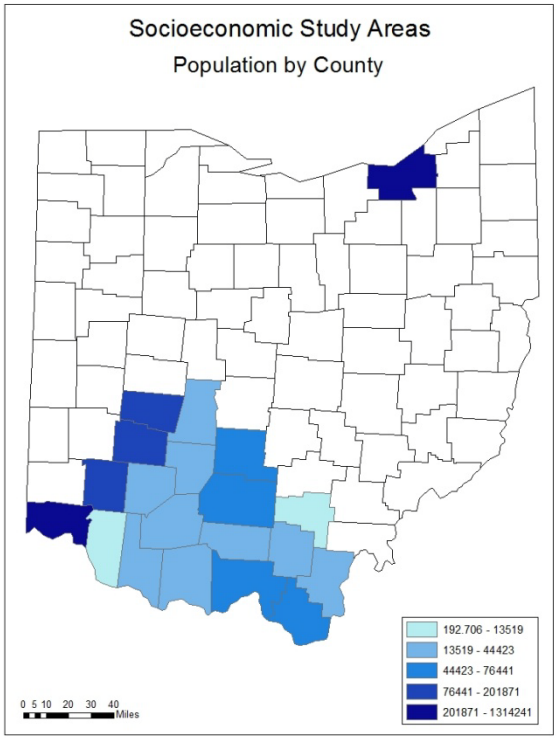


Figure C-2: Population by County

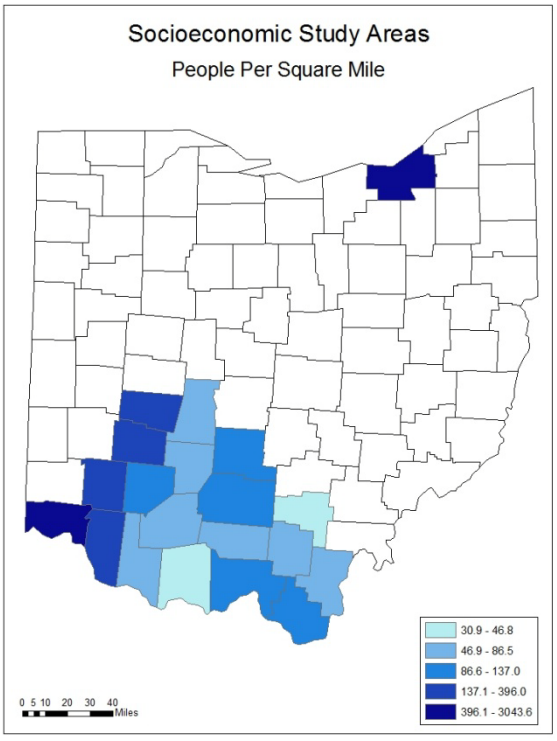


Figure C-3: Population Density