A QUANTITATIVE COMPARISON OF COMMUNITY CONTEXT, STUDENT ACHIEVEMENT AND SCHOOL FUNDING

A Thesis
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ABSTRACT

The focus of this study was the relationship between the community context of schools and student achievement. This study also looked at the relationships between community context and school funding, and school funding and student achievement. The sample for this research was all 17 elementary schools in the South-Western City school district in Ohio.

Community context was measured as a composite of income, wealth, family structure, and race. Student achievement was measured by Ohio Proficiency tests scores and student mobility, attendance and promotion rates. School funding was measured as total per pupil expenditures and the breakdown of the five areas of spending: building operations, administration, instruction, pupil support and staff support. School was the unit of analysis for these data. Data sources were state report card records, the national census, and county auditor records. The analysis included bivariate correlations, stepwise regression and structural equation modeling.

Findings regarding the relationship between achievement and community context suggest that there is a relationship between income, wealth, and race on several of the indicators of student achievement. The findings comparing school funding, community context and achievement resulted in only one significant result suggesting a possible relationship between spending on pupil support and student mobility.
Dedicated to Tony, for believing in me more than anyone, even myself.
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CHAPTER 1

INTRODUCTION

The recent attention regarding school accountability and higher standards for public education has also raised concern about why some schools are not meeting the increased demands for student achievement. One of the most important findings of research attempting to understand this problem is that the characteristics of the school's community strongly affect the academic success of its students. Evidence suggests that characteristics of the local community such as racial composition, economic status, family structure and property wealth all have more of an effect on student achievement than anything under the school's control. Also, many practices and policies that are under the control of public schools such as ability grouping, standardized testing, disciplinary actions, and parent-school interactions have been criticized for discriminating against students from certain cultures or economic backgrounds (Nieto, 1999; Oakes, 1985; Lareau, 1987). In addition, in many states including Ohio, the judicial branch has declared the existing school funding system unconstitutional (DeRolph v. State, 2000).

Potentially unfair school policies and unconstitutional funding systems are especially dangerous for our society since studies have shown that these aspects of schooling combine with the effect of student background and therefore doubly limit the
opportunities of some groups of students. These problems, and the powerful influence of the community context of schools, suggest that the school system plays an important role in reproducing the inequality inherent in communities. Schools should not be held accountable for circumstances beyond their control, yet at the same time should not simply allow the problems apparent in society to continue into the school system and limit the opportunities of some groups of children.

Social reproduction theorists argue that schools are an essential part of the legitimization process of the cycle of poverty that continues from generation to generation (Bowles & Gintis, 1976; Bourdieu, 1977). Biased school practices that limit the opportunities of students from certain economic or cultural backgrounds are the primary reasons this legitimization is said to occur. Democratic education is based on the idea that schools should be an equalizer for all students, yet social reproduction theory states that American public schools instead reinforce the inequality that already exists in society. This study attempts to provide empirical evidence about whether the relationship between the community context of schools and student achievement is consistent with social reproduction theories.

Purpose

The purpose of this research is to understand the relationship between the community context of schools and student achievement within a single district. A secondary purpose is to find if there are differences in funding at each school related to the community context of the schools, and if these differences in funding have an impact
on student achievement. The focus of this research is on all 17 elementary schools in the sixth largest and one of the most diverse districts in Ohio. The ultimate intent of this study is to offer policy alternatives for the district administration based on the empirical evidence found.

Research Questions

The specific research questions this study attempts to answer are:

1. What is the strength of the relationship between student achievement and community characteristics in this school district?

2. How much variation in student achievement in each school is accounted for by variation in the community characteristics of the neighborhood surrounding each school?

3. Which specific community demographic measures account for the most variation in student achievement?

4. How much variation in student achievement is accounted for by variation in school spending?

5. Is there a relationship between the community context of each school and the spending differences in each school?

Variables

This study focuses mainly on the relationship between two variables in 17 elementary schools: student achievement and the community context of the schools. The student achievement construct consists partly of the percentages of students passing the Ohio Proficiency tests (reading, math, and all tests together) for each school. Student achievement is also measured by student attendance rates, mobility rates and the 4th to 5th grade promotion rates for each school. The community characteristic data are partially
attained by matching demographic census data with the attendance boundaries of each of the 17 elementary schools within the district. Other sources of community data will be each school’s state report cards, district food services records, and property valuations from the county auditor’s office. The community characteristic index consists of measures for each school community of number of single parent or two-parent family structures, racial composition, average property value, and number of students on free or reduced lunch status. School funding is also compared in this study to student achievement and to the community context of schools. The index for measuring funding is not only the amount of money spent per pupil in each school, but also the different areas of spending: instruction, building operations, administration, pupil support, and staff support.

Significance

This study carries great importance for the educational community both for this district studied and for every district in the country. Every student comes to school with a unique perspective and a unique history shaped in many ways by their culture and economic status. Even after students start school for the first time they are only in school for a fraction of the day; most of their time is still spent interacting both in family and community environments. Schools must recognize the influence these different experiences have on the academic success of each child. This study attempts to understand the extent to which the community context of schools is related to student achievement and whether these inequalities must be addressed in order for each child to
have an equal opportunity to learn in public schools. This is especially important considering social reproduction theories that claim schools are a major force in the continuing cycle of poverty. This study and its results have great importance in the design or reform of any school system concerned with providing true democratic education.

School funding is another issue that has surfaced as one of the more important considerations regarding equity and fairness in public education and will also be addressed in this study. This research analyzes the complicated connection between school funding and student success. It also looks one step further than most research in this area to see if there is also a relationship between the community context of the schools and school funding within the district. In his analysis of the effects of unequal funding systems, Jonathan Kozol (1991) found that poor or minority districts often received inadequate funding compared to wealthy, white districts. In this present research, the relationship between the community context of schools and funding is analyzed, yet within a single district. Although there may not be as much variation within a single district as there is across districts or states, this relationship is still an important problem to consider since it has strong implications regarding the equality of education in this district.

Though variation is greatly reduced, one of the strengths of this study is that it looks at the differences in the community context of schools and funding discrepancies within a single district. Many times in education research, variables are compared among districts or across states, but it is less common to have a comprehensive look at the
inequality and different social influences within districts. This study shows that educators must not only address differences in social background and funding across states or among districts, but must also ensure that the educational system is equitable within districts as well since there are often considerable and important differences among schools even within a single district. The important characteristic of this study that differentiates it from similar research comparing student background and achievement is the measure for community context. Too often free and reduced lunch status is the only indicator of student background. This research is an example of how to find and use other sources of information that are attainable for any school district to develop a more accurate, composite measure of community characteristics.

This study offers policy recommendations and empirical evidence that may help school administrators, teachers, teacher educators, policy-makers and program evaluators develop schools that meet the needs of students from different backgrounds. It will help ensure that the schools in this district are meeting more than just the needs of students from the mainstream culture or those from economically secure families.

Limitations

One limitation of this study is that it is correlational. Using multiple regression only shows the strength of the relationship between constructs, it does not prove causation. The second limitation is the reliance on multiple regression in this study since the analysis must be done very carefully. It is important to be sure that the constructs are measured as accurately as possible to reduce error. In this research, however, there are
multiple sources of data for each of the constructs so this should be less of a problem than if, for example, this study only used free and reduced lunch participation as an indicator of socioeconomic status. Multiple regression is also less effective when there is a great deal of multicollinearity between the independent variables, which is a high possibility when measuring community demographics. Race, income, family structure and wealth are often highly correlated. It will be important to look at multicollinearity in the data analysis.

A third limitation of this study is that it is based on a single district. There is not as much variation among the schools in this single district as there would be across districts or including all schools in the state, therefore it is more difficult to find results that are statistically significant. Also the use of a single district means that the sample size will be very small; in this case there are only 17 elementary schools. This reduces the stability of the data analysis techniques being used in this study.

A final limitation of this study is the use of census data for some of the measures of community context. The first issue with census data is that the information is self-reported by residents which means there could be a great deal of error in the answers. Another problem with the data is that it is organized into census tracts that can be used to measure community data, yet the tracts rarely match exactly with school districts or even neighborhoods. Simply looking at the tracts near a school does not give an accurate picture of the community that children at the school live in. To reduce this problem this study matches census data on a scale smaller than census tracts; using census blocks the data will be pieced together to create an accurate picture of the school community.
Assumptions

One of the major assumptions behind this study is that the data sources for the variables of community context and student achievement are accurate indicators of what is really occurring in this school district. This study is also based on the assumption that students are most strongly affected by the circumstances and experiences in the community surrounding their own school and not another community or other related influences that are not within the scope of this study. Finally, this study assumes that if the results show a relationship between the community context of schools and student achievement that it is the responsibility of the schools to adjust for these community influences to ensure that all students have an equal opportunity to learn.
Social Reproduction Theory

Democratic education is based on the idea that schools should be a place of equal opportunity for all students regardless of cultural, economic, family or geographic background. It should leave students free to live in a society structured to their own ideals, not the ideals of their predecessors (Scheffler, 1981). A school should not be designed to replicate the current design of society. Instead it should be open and allow the students and the next generation of citizens to live according to their own social values.

Although Scheffler's views are at the extreme end of open and democratic education, they are still important to consider in the context of social reproduction. Social reproduction theorists would claim that Scheffler's version of democratic education is far from the reality in American public schools. Instead they argue that schools are actually structured to replicate social inequalities that are apparent in society, and that schools play an important role in the legitimization of the cycle of poverty that continues from generation to generation (Bowles & Gintis, 1976; Bourdieu, 1977). Instead of allowing for students to shape and design their own future, social reproduction theorists claim that the education system instead determines a students' future based on
community background.

One way schools legitimize the cycle of poverty is by appearing to offer success in exchange for hard work. Educators promote ideas such as achievement ideology or the prospect of the American Dream to students. Both of these ideas follow the social ideals of an open and fair society where success is based on merit and differences in achievement are a direct result of differences in ability or determination (MacLeod, 1995). Though there are many with strong beliefs that this is the true reality in America, there is a great deal of evidence that other factors such as cultural or economic background have a greater influence on students’ ability to succeed. This process of promoting achievement ideology to students in schools while simultaneously limiting the opportunities of certain groups legitimizes reproduced poverty since students will now be led to believe it was their own lack of ability that caused their diminished returns from school.

In The Bell Curve, Herrnstein and Murray (1994) made the well-received claim that economic inequality was not a factor of structural inequality, but instead was a result of the varying intelligence of different groups of people. This study argued that groups that typically have lower economic success such as those with lower incomes, people of color, or single mothers, are in that situation as a result of inherently lower intelligence. Social reproduction theorists offer an alternate explanation that inequality is inherent not in intelligence but in society. Bowles and Gintis (1976) argue that the real function of schools in America is to socialize students to fill essentially the same position as their parents in the social structure. This type of schooling is based on a capitalist ideology.
that sees schools as the means to allocate people into the different roles or occupations needed by society. The American education system’s purpose is to produce educational and occupational losers and winners to match the need for workers at all levels of the social structure. This is accomplished primarily through the process of unequal school policies such as ability grouping, standardized testing, disciplinary actions and parent-school interactions (Nieto, 1999; Oakes, 1985; Lareau, 1987) that unequally target certain groups of students. These policies, combined with the promotion of achievement ideology to students, serve to legitimize the social stratification that results.

Bourdieu (1977) gave another reason for why the cycle of poverty is legitimized by the public school system. His ideas revolve around the concepts of cultural capital and habitus. Cultural capital is the general cultural background, knowledge, disposition and skills that are shared from one generation to the next (MacLeod, 1995). Bourdieu (1977) argues that different classes pass different cultural capital on to their children. This strongly affects a child’s chance for equal opportunity in school since schools reward the cultural capital of the dominant class. A person’s habitus is more than what has been passed on from her family, but represents the greater set of attitudes, beliefs and experiences in the social environment of each person. The habitus is a result of the community and environment of an individual, producing deeply held beliefs that influence the way each individual views her own potential to succeed and shapes her aspirations. The habitus, since it is entirely created from an individual’s environment, fosters attitudes and beliefs in poor or minority students that they are not as able or as likely to succeed compared to students from the mainstream culture. This perspective,
along with less rewarded cultural capital, combine to limit the opportunities of these students. Furthermore, the influence of social stratification from one generation to another combines with unequal policies in schools and a system that rewards only the mainstream culture's cultural capital to ensure that the American public school system is far from democratic.

**Community Influence on Student Achievement**

According to social reproduction theory and empirical evidence, the communities and neighborhoods surrounding public schools contribute a great deal to the success or failure of the children in those schools. The most obvious way this occurs is through the process of raising financial resources through the local property tax, but the influence of the community on schools extends much farther than money. According to the wisdom of the old African proverb, "It takes a village to raise a child", all aspects of a community can have a strong influence on schools. Each child entering the school system has already spent many of her formative years in environments other than the classroom, and even after students start school they are only in school for part of the day. The structure of each student's home environment and the resources available to families and the local community influence the public school system's ability to enrich the lives of all students.

For some communities, the openness of the educational system is a great benefit, for others it is a serious limitation. Since our society is clearly not equal in the way communities are structured or in the resources available to residents, there are undoubtedly differences among the influences communities have on schools. Again this
is most obvious in the process used to finance schools. Some districts are able to raise large amounts of money to spend on each pupil, while others depend almost completely on state aid to counteract low property values. Though school funding is a fundamental problem of inequality that must be solved before the public school system treats all students fairly (Kozol, 1991), there are also other community and family influences that contribute to the inequality in schools.

The Coleman Report concluded that a student's achievement was determined more by environmental factors and community influences than through the efforts of schools (Coleman et al., 1966). Even though this report was criticized for not measuring community influence accurately, many studies conducted since have found similar results. Recent studies show that the demographic and socioeconomic factors of a neighborhood weigh more prominently in student achievement than factors under the local school's control. Factors under a school's control (process variables) such as class size, school size, teacher ability, teacher salary and attendance rates contribute only a small proportion to explained variance in student achievement beyond what is accounted for by socioeconomic and demographic variables (input variables) (Alspaugh, 1991; Caldas, 1993; Sutton & Soderstrom, 1999). Clearly from these studies, schools must recognize the importance different community influences have on the academic success of each child. This is especially important considering social reproduction theories claiming that schools are a major force in the continuing cycle of poverty; our society will continue to only be fair for some students if we allow the socioeconomic status or demographic characteristics of a student's community to determine her future success.
Race

Racial segregation is one type of structural inequality inherent among different communities. Though we have come a long way from a society with unequal or racist laws, we are still a society with unequal practices. People of color still face unequal opportunities for wealth, power and privilege in the American social structure (Hare, 1987). This problem is confounded by racial segregation where the result is not just isolated incidents of discrimination, but instead develops into discrimination against an entire community.

Dornbusch et al. (1991) found a correlation between the percentage of people of color living in a community and student grades. The study concluded that the racial composition of predominantly minority communities has a stronger influence on student achievement than the characteristics of individual families. In predominantly white communities the opposite is true, family status and parent education are more accurate predictors of high school grades, community factors are less important. This study further found that the effects of living in a census tract with a high proportion of people of color affected all races, showing that the demographics of the community affect all children, not just those in certain ethnic groups. This study confirms the possibility that the racial composition of a neighborhood strongly influences the success of students in school.

Klingele and Warrick (1990) also found that the primary predictor of fourth-grade reading scores in Arkansas elementary schools was the percentage of minority students per district. In light of these results, residential segregation again becomes a part of
structural inequality. There is clearly more of a disadvantage for African American students since the racial composition of communities affects resident’s success in school and African Americans more often than whites live in neighborhoods with high minority racial composition. One possible solution is the racial integration of neighborhoods and schools, which may be one way to improve the academic achievement of African Americans without greatly reducing the achievement of white students. This solution is based on studies that have found that neighborhood racial composition matters more for African American students than it does for whites (Duncan, 1994; Gray-Little & Carels, 1997).

**Economic Status**

Economic status is the basis for a second type of structural inequality in school communities that also has a strong effect on student achievement. There is a correlation between race and socioeconomic status in this county since African American students are more likely to be from families with low-incomes or to live in a one-parent household (Hare, 1987; Patterson et al., 1990), yet many studies have found that socioeconomic status has a stronger influence than race on student achievement. Some even claim that the achievement gap between white and African American children can be explained by poverty, not race (Edelman, 1987), or that people from the same economic class have more cultural similarities than people with the same gender or ethnicity (Murdock, 2000). Clearly, the relationship between the socioeconomic status of a community and student achievement must be considered in addition to its racial composition.
Socioeconomic status of communities is important to consider mostly since communities are segregated economically in the same way they are segregated by race. Communities vary drastically on measures of wealth and income, and economic inequality in this country is increasing. Despite the economic boom in recent years, the income for those at the top end of the income distribution grew more rapidly than it did for those at the bottom (Mayer, 1997; Fisher et al, 1996).

Income inequality and economic segregation in communities play a crucial role in determining the opportunities available to students. Poor children are more likely to drop out of high school, get pregnant as a teenager, and when they are older they are more likely to have less education and earn lower wages (Mayer, 1997). In the same way that the racial composition of a community compounds problems faced by individual people of color, economic segregation also makes the problems experienced by a poor family or individual exacerbated for an entire community. These consequences of poverty on students’ lives undoubtedly carry over from the community experience to their achievement in local schools; a great deal of research on socioeconomic status has found that it is the most important predictor of student achievement (Klingele & Warrick, 1990; Patterson et al., 1990; Caldas, 1993; Chase-Lansdale & Gordon, 1996; Pitts & Reeves, 1999; Sutton & Soderstrom, 1999).

Family Structure

A third form of structural inequality is family structure, meaning whether a child lives in a single parent or two-parent household. This factor, however, is more difficult
to analyze because it is closely related to race and socioeconomic status. Again, African American youth are more likely to grow up in a one-parent household (Hare, 1987; Patterson et al., 1990), and a child from a one-parent family often will have lower socioeconomic status since there is only one income. Partly because this factor is difficult to measure, results from studies analyzing the relationship between single parent family structure and student achievement have been inconsistent.

Jackson et al. (1987) studied a sample of high achieving minority students from low-income families and found that subjects from one-parent families had higher scores, yet the difference was not statistically significant. This is still an important result to consider, however, because it shows that at least this group of students from single-parent families was not negatively affected since their scores were not significantly different from the group of students from two-parent homes. This result suggests that there is little difference between students from these two different types of households and is noteworthy since the two sample groups were similar on variables of race and socioeconomic status.

Another study found the opposite, however, when achievement was measured across different seasons (Entwistle & Alexander, 1995). This study found that, when measured during the school year, students from single parent families did not perform differently from two-parent family children, however when summer scores were compared there was a significant discrepancy between the two groups favoring children from two-parent families. These results corroborate Heyns’ (1978) work showing that schools in fact help students from disadvantaged homes or communities by equalizing the
inequalities that occur during summer vacation. Entwisle & Alexander (1995) provide
evidence that children from one-parent households face disadvantages in school
achievement. Other studies also show somewhat of a negative influence of family
structure favoring two-parent households, however most of the difference is more
accurately explained by the ethnicity or socioeconomic status of the student or her
community (Peng & Lee, 1992; Patterson et al., 1990).

School Funding

In addition to the structural inequality communities face from racial composition,
social status and family structure, there is also great inequality in property wealth and
therefore school funding. In many states the judiciary has declared the school funding
system to be unconstitutional. In Ohio, the *DeRolph vs. State* (2000) case required the
general assembly to reform the funding system based on Article VI, Section 2 of the Ohio
state constitution that states:

“The general assembly shall make such provision, by taxation, or
otherwise, as, with the income arising from the school trust fund,
will secure a thorough and efficient system of common schools
throughout the state; but no religious or other sect, or sects, shall
ever have any exclusive right to, or control of, any part of the
school funds of this state.”

Inequality in school funding results from the heavy reliance on local property taxation;
different property tax bases in communities result in very different abilities to raise
revenue for local schools (Swanson & King, 1997). This different tax base leads to a
great disparity in the quality of instruction and facilities that can be provided from school
to school since property tax is the most important source of direct revenue for schools
Empirical evidence regarding the relationship between academic achievement and school funding is inconclusive. In a meta-analysis of 45 major studies analyzing this relationship, Childs and Shakeshaft (1986) discovered that 19 studies found no relationship, 14 studies found a positive relationship, and 12 studies indicated a positive relationship under certain conditions. These authors recognize the limits of judging the impact of expenditures since no study can compare schools with unlimited funding; most compare school districts that do not spend greatly different amounts per pupil. This meta-analysis also found that on the whole there was a positive relationship between money spent for instructional activities and student achievement. They conclude that the amount of money spent in a school is not as important as how the money is spent.

A study by Sharp (1992) found a negative relationship between the two variables when he analyzed the relationship between per pupil spending and scores on Illinois state assessment exam scores. This study examined student performance in third, sixth, eighth, and eleventh grade. There was a negative correlation between spending and achievement that was small but statistically significant for all but the eleventh grade where there was no relationship between spending and achievement. The study concluded that providing more money for schools does not always raise student achievement especially since a large portion of school funds are used for personnel costs. His solution, similar to Childs and Shakeshaft's, is not to have general increases in expenditures, but instead to target additional funds for specific programs or purposes. Although this and other studies provide evidence that simply increasing school funding will not necessarily increase
student achievement, there is no doubt that inequality exists in school funding procedures and that this inequality has a direct effect on schools (Kozol, 1991). This inequality represents a way the property wealth of a community influences the success of a school, and without reform this structural inequality will continue to influence inequality in student success.

Race, socioeconomic status, family structure and school funding are only a few of the influences of structural inequality that children face within their own communities, yet evidence shows that these factors can be more influential in a student’s academic achievement than those under the school’s control. It is important to recognize the fact that schools are not closed systems and actually are heavily influenced by their environment. Structural inequalities such as racial discrimination and problems associated with poverty are not only affecting people in society as a whole but also the opportunities of children in public schools. Though socioeconomic status has a potentially powerful relationship with student achievement, measuring the influence and the extent of this relationship is difficult since these measures are often highly intercorrelated and free and reduced lunch is too often used as an incorrect proxy for socioeconomic status.

**Empirical Approaches**

Numerous studies have analyzed the relationship between the influence of the school community and student achievement. Some have been in the context of comparing input and process variables and others have looked at the relative influence of
different neighborhood influences, but regardless of purpose, the majority of studies have found that the primary predictor of student success is socioeconomic background. Most studies comparing these two factors analyze data using descriptive statistics, correlations, and multiple and stepwise regression to test the relative importance of the various independent variables.

Patterson et al. (1990) studied income, gender, ethnicity and household composition as predictors of three forms of student competence: conduct, peer relations and achievement. This study measured these variables with a sample of 2nd to 4th graders and used teacher reports, school records, and SRA achievement test scores as data sources. The major finding of this study was that children’s gender and family income level were the best overall predictors of their conduct and peer relations, yet their family income level and ethnicity were the best predictors of their academic achievement. The explained variance by the independent variables was quite low in this study, however, explaining only 20% of the variance in conduct, 7% of the variance in peer relations and 25% of the variance in achievement.

Klingele and Warrick (1990) studied 4th grade students in 332 school districts in Arkansas comparing noninstructional variables and reading achievement. Data sources included school and district records, reading achievement measured by the MAT-6, and the percentage of students eligible for free and reduced lunches as a measure of socioeconomic status. Data were analyzed using Pearson product-moment correlations between variables and stepwise regression to determine the impact of the different independent variables. Results indicate that the two most important variables affecting
reading achievement were the percentage of minority students per district and the percentage of students eligible for free and reduced lunch.

Caldas (1993) found the same result as these previous studies that socioeconomic status and minority status were the two most accurate predictors of school achievement. Caldas separated the variables in his study into three groups: input, process and output. Using correlations and multiple regression he found that input variables, those over which the school cannot control such as socioeconomic status and student demographics, accounted for 68% of the variance in student achievement. Process variables such as school size, attendance and class size only added 6.5% additional explained variance. The correlation between the percentage of African American students in the school and school student achievement based on two standardized tests was -.70, meaning the higher the concentration of African American students the lower the average school test scores were. Similarly, the correlation between the percentage of students enrolled in the free lunch program and school average achievement on standardized tests was -.68.

Another study followed a similar design comparing factors that are under and not under the control of schools and their relationship with student achievement (Sutton & Soderstrom, 1999). These researchers studied a sample of all the 3,856 public schools in Illinois, collecting data from the Illinois School Report Cards. Scores on the Illinois Goals Assessment Program (IGAP) measured student achievement, and socioeconomic status was measured with the percentage of students in the free and reduced lunch program. The data were analyzed using correlations, multiple regression and a stepwise multiple regression model. The study again found that, except for 10th grade reading
achievement where attendance was the most important predictor, low income was the
greatest predictor of reading and math achievement for 3rd grade students and math
achievement for 10th grade students.

Though most studies have found a significant contribution by low income or
socioeconomic status on the achievement of students there is some variation in the
constructs used for independent variables. Instead of looking only at the percentage of
low-income families, Duncan (1994) also analyzed the relationship between having
affluent neighbors and student achievement. This study found that affluent neighbors
were beneficial to all students in the community with the exception of black males. This
study also found that the racial composition of neighborhoods influenced student
achievement, however this influence affected only black youth. In another slightly
different comparison of community influence and achievement, Pitts and Reeves (1999)
added the influence of geographic location using geocoding. This study measured
socioeconomic status using the percentage of free or reduced lunch participation and
found that performance assessment scores on Kentucky Instructional Results Information
System (KIRIS) test results were negatively influenced by the socioeconomic status of a
neighborhood, yet positively influenced by rurality. This study also found that the
importance of community demographics increases as students reach higher grades.

Chase-Lansdale and Gordon (1996) also found a relationship between their results
and geographic location, however they measured student achievement across national
regions. Their study found that greater ethnic congruity and higher socioeconomic status
are related to higher cognitive functioning but only in the Northeast and the Midwest.
Entwisle and Alexander (1995) also studied the relationship between family demographics and student achievement but measured student achievement across different seasons. This study found that family structure and income had a greater influence on students in the summer than it did during the school year. This indicates that it is important not only to study the effect of community background during the school year, but also to examine the effects of different educational experiences during the summer.

Although many studies analyzing the relationship between community demographics and student success have reached the same conclusions, these studies are still based on constructs and variables that are difficult to measure. Murdock (2000), in a content analysis of articles, identifies problems in the measurement of socioeconomic status and gives some suggestions for improving measurement strategies. An important problem that most researchers admit as a limitation to their data is that the independent variables such as race, socioeconomic status and family structure are often intercorrelated. This is especially a problem considering the heavy reliance on multiple regression in the data analysis. To minimize this problem samples should be diverse and include a combination of people from different ethnicities and social classes; samples should not contain only middle- or low-income African Americans and high-income whites.

Another problem in using SES as an independent variable is that socioeconomic status is a multidimensional construct that is difficult to measure. Socioeconomic status not only designates economic status but also a family’s relative position in society;
multiple indicators of SES result in better estimates for research. Unfortunately, most studies simply use the percentage of students in the free and reduced lunch program. This is not necessarily accurate for several reasons, lunch status may only include a part of the construct of socioeconomic status, it is based on an inaccurate measure of poverty, and it usually only includes the percentage students enrolled in the program as opposed to the actual percentage of low-income students in the school.

There are also difficulties using other measures of economic status. Murdock states that family income is a less reliable measure of economic status since it changes often; multiple years of income information should be used to increase this measure's reliability. Wealth is also an important measure to use since African Americans and European Americans with similar incomes may have great differences in wealth. Parent education and occupation can be used in this type of analysis since it often provides influence that is not redundant with family income, but sometimes occupational status overestimates the SES of children living with single mothers since women are more likely to have lower paying jobs yet high prestige such as teaching. Other problems with measuring socioeconomic status are that it should be measured not only at the individual or family level but also at the community level, and also that measures of neighborhood economic status also should include the presence of affluent families, not just the concentration of low-income families (Murdock, 2000).
Summary

There is a great deal of literature indicating that socioeconomic status, race and family background have an influence on student achievement. Many times, this influence even outweighs the relationship between school-controlled factors and achievement. In light of this, it may help improve achievement if school districts evaluate the extent of the relationship between community background and student achievement, and then implement specific policies based on the results to counteract the problems in their schools. Another implication from the literature is that numerous studies of the general effect of school funding are inconclusive. One way for districts to ensure that school funding discrepancies are not creating inequality in student achievement is also for this to be tested at the local level. A final difficulty found in past research is that a valid and precise measure of student or family income is rarely used and hard to find. Too often the measure is simply whether or not students participate in the free or reduced lunch program, which is not a completely accurate indicator of family income.

From this review of literature it seems there is a need for more research at the local level to better understand the relationships among these variables in each school, and that there is a need for a more complete measure of socioeconomic status that does not rely solely on free or reduced lunch participation. This study attempts to add both of these qualities to the research in this area with a focus on schools in a single district and a composite measure of community characteristics that includes wealth, income, race and family structure.
The methodology of this study is centered on developing a more accurate and composite measure of community background that will improve on past research comparing student achievement and community context. This improvement is based on the use of detailed census block data, county records showing property values, and school records, all related to each school attendance boundary. The focus of the analysis is the empirical answers to five research questions on the relationships between community context, student achievement and school funding for the school district being examined.

*Population and Sample*

The population for this study was all of the elementary schools in the South-Western City school district. Located in central Ohio, the district covers 127 square miles and was chosen because it represents great diversity even within a single district, accounting for urban, suburban and rural school settings. Based on data from the 2000-2001 school year, the district serves 19,072 students and has a 21.5:1 pupil to teacher ratio in K-12 education. The class size ratio for the elementary level is 28:1. This district spends an average of $6,890 per pupil, which is less than the state average of $7,057. The beginning salary for teachers in this district is $29,570. The district has identified
13.1% of its students as special needs, and 30.1% receive free or reduced lunch benefits. The median family income for this district is $31,130.

The sample for this study was the 17 elementary schools in this district, the teachers and students in these schools, and the residents in the communities served by these schools. This was a purposive sample; the elementary schools were chosen because there are more schools in the district at this level that provided for a more accurate analysis and more degrees of freedom. In addition, policies such as the 4th grade guarantee and the increased focus on high-stakes standardized testing require more information on the factors influencing student results on the 4th grade Ohio Proficiency tests. Finally, elementary schools in this district are the first step in all students’ education and therefore are the place community influences are first beginning to relate to academic performance.

Variables

Community Characteristics (Predictor Variable) is defined for the purposes of this study as the social, economic, and family characteristics of the community within the attendance boundaries of each of the 17 elementary schools in this district. The indicators of this construct are:

- income: percentage of students in free and reduced lunch program
- wealth: average property valuation of community
- race: percentage of minority residents in community
- family structure: percentage of single parent families in community

Student Achievement (Criterion Variable) is defined for the purposes of this study as the measures of achievement and accountability from the Ohio School Report
Cards for each of the 17 elementary schools in this district. The indicators of this construct are:

- 4th grade Ohio Proficiency test pass rates (reading, math, all tests together)
- school attendance (percentage)
- mobility (percentage of students in school less than half the year)
- promotion (percentage of students promoted from the 4th to 5th grade)

School Funding (Predictor Variable/Criterion Variable) is defined for the purposes of this study as the amounts spent in different categories and the total per pupil spending for each of the 17 elementary schools in this district. The indicators of this construct are:

- total per pupil expenditures
- spending on instruction in each school
- spending on building operations in each school
- spending on administration in each school
- spending on pupil support in each school
- spending on staff support in each school

The unit of analysis for all indicators is the school level.

Instrumentation

There were various instruments used to measure the variables in this study, and all variables were measured at the school unit of analysis. Most of the data for the community context variable was obtained from census questions regarding community demographic information. These data were self-reported, a factor that must be recognized in any conclusions drawn from the information provided. People may have the tendency to misrepresent some information required on the census regarding personal questions such as education level or family income. These data do have the advantage,
however, in that it is a census and therefore represents as closely as possible the entire population under consideration. Other community demographic data were based on records from the county auditor’s office for property valuation, and the district’s food services office records on free and reduced lunch status.

The instruments used to collect student achievement data were the standardized tests that make up the Ohio Proficiency, and school records on attendance, mobility and promotion rates. The use of standardized tests as student assessment tools has been thoroughly debated, however the importance of these tests in a student’s success during her school career is justification for its use as a measure of student achievement in this study. This measure of achievement is even more important considering the current debate surrounding policies such as the 4th grade reading guarantee and high-stakes testing. With these types of policies possible in Ohio schools, evaluating the effect of community characteristics on standardized test scores is increasingly important in order to understand the needs of all students. The OPT is also useful in this analysis since it provides a standardized way to compare students across the 17 different elementary schools.

A final data source in this study was school records indicating attendance, mobility and promotion rates. In the same way that proficiency tests are an important indicator of a school’s success according to the state, these three rates are also evaluated as a part of each school’s annual report card and therefore were included as part of the measure of student achievement at the school level.
Data Collection

For the measure of student achievement, pass rates for each of the schools from the Ohio Proficiency Tests in reading, math, and all tests combined, and student attendance, mobility and promotion rates were gathered from the 2001 state school report cards, reflecting information from the 1999-2000 school year. School funding amounts for each school and in all categories (instruction, building operations, administration, pupil support, and staff support) were also gathered from the 2001 state school report cards. This information was downloaded from publicly available files located at the Ohio Department of Education website.

For the measure of wealth (property value) in the community context construct, data were collected from records kept by the Franklin County Auditor’s Office. A list of all the properties within the boundaries of the school district was obtained from the auditor’s office; the list was then systematically sampled to provide a smaller, yet stable number of properties that could be matched to the 17 school attendance boundaries and the auditor’s value assessment. There are over 40,000 properties listed within the boundaries for the South-Western City School district. Systematic random sampling was used to obtain a more manageable number of properties. The list was ordered alphabetically by owner to ensure that no geographic information would affect the results, and every 40th listing was chosen beginning randomly from the 14th listing. This sampling resulted in 749 usable parcels and addresses.

These addresses were then matched to the respective school and property valuation using geographic information software available from the county auditor’s
website. Parcel identification numbers were used with this software to obtain the total property value and a location map for each of the sampled addresses. The location maps from this result were used in combination with a district attendance boundary map (See Appendix A) to match each of the properties to their respective school. The property values for each of the schools in the district were then averaged, resulting in an average property value for the communities surrounding each of the elementary schools. One limitation to this procedure was that since each parcel ID had to be entered in the website software and matched to its school individually, there had to be a systematic sample of a reasonable number. This resulted in unequal sample sizes for each of the schools and therefore the averages are based on different group sizes. The smallest sample was 29 addresses and the largest was 75. To account for this a weighting procedure (# of households by school/total # of households) was used to compute the district average.

An additional source of community demographic information was obtained from the census bureau using online reference maps and American FactFinder software. The census geographical hierarchy is: nation, state, county, county subdivision, tract, block group, block. A census tract is defined as “a small statistical subdivision of a county. Tracts generally have stable boundaries. When census tracts are established, they are designed to be relatively homogeneous area with respect to population characteristics, economic status, and living conditions” (Jang & Radio, 1992). A census block is defined as “normally a rectangular piece of land, bounded by four streets. However, a block may also be irregular in shape or bounded by railroad tracks, streams, or other features. Blocks do not cross the boundaries of counties, census tracts, or block numbering areas”
(Jang & Radio, 1992). Census tracts are commonly used in these types of studies comparing community census data and student achievement. Although this would not be a problem in comparing districts, since this study dealt individual schools, it was not accurate enough to only use census tracts or even block groups (See Appendix B for census tract and block group maps for this school district).

Especially in rural areas, block groups tend to be fairly large and do not match well to school boundaries without considerable overlapping with nearby school areas. To avoid this problem in this study each school was matched to the many blocks that make up its attendance area, and the census data were downloaded at the block level only. The use of the block level allowed the census data to match very closely with the actual attendance areas of each of the schools in this study. Data were collected for each of the blocks within the block groups and census tracts surrounding each of the schools and the school district.

The first step in preparing for this data collection was to obtain a district attendance boundary map with street boundaries labeled. This map was then used with reference maps from the census bureau web page in .pdf file format; these census reference maps are also accessible at some libraries or they can be ordered directly from the Census Bureau. By following the street boundaries for each of the schools, each school was matched with the numerous census blocks within its attendance boundary with these online census maps.

After a list of blocks was compiled for each school, American FactFinder software from the census bureau web page was used to download community data for
each of the blocks listed. The data collected were from the 2000 Census, Summary File 1 and its tables for total population (P1), race (P7), household type (P18), and household units (H1). The 2000 census software is organized in a way that allows the user to enter multiple blocks of interest and the relevant tables of the census and download the data into a comma-separated file. This downloaded file was ordered by census tracts and block numbers and had to be reorganized to the respective schools using the list already compiled of the blocks for each of the schools.

After the block data were organized by school, the different indicators were created from this information. The population numbers for all minority groups from the race table were totaled and divided by the total population to produce a measure of the percent of minority residents in each community. The same was done for creating a measure of the percent of single parent families. Information from the household type table was summed for single male or female householders with children under 18 and this value was divided by the total population.

The percentage of students participating in the free and reduced lunch program for these schools were obtained from the South-Western City Food Services office. The qualifications for this program are based on standards developed by the United States Department of Agriculture; qualifying income levels are based on the number of children in the family. If there is one child the family income must be below $15,900 and for each additional child the income may increase by up to $5,600.
Research Design

This study followed a correlational research design, and data were analyzed to find the strength of the relationship between the three variables: student achievement, the community context of the school, and school funding. These variables were analyzed within a single school district, focusing on elementary schools. The primary concern of this research was the relationship between the community context of schools and the achievement of students in those schools. Secondary relationships studied were those measuring the relationship between school funding and the community context of schools, and the relationship between school funding and student achievement. This study showed the extent of these relationships, yet did not prove causation.

Data Analysis

This study relied on both descriptive and inferential statistics using SPSS 10.1 and AMOS 4.0 software. This study used descriptive statistics to describe and compare schools on the three measures of community context, student achievement and school funding. Inferential statistics were used to control for the community context of the schools while comparing student achievement at the school level. The significance level, unless otherwise marked in the correlation tables, was $\alpha = .05$.

The data analysis varied depending on which research questions were being answered:

Question 1: What is the strength of the relationship between student achievement and community characteristics in this school district?
Analysis: Correlations between student achievement (OPT passing, attendance, mobility, promotion rates) and community demographics constructs (income, wealth, racial composition, family structure).

Question 2: How much variation in student achievement in each school is accounted for by variation in the community characteristics of the neighborhood surrounding each school?

Analysis: Stepwise regression with community demographics predicting the different measures of student achievement. (SPSS)

Question 3: Which specific community demographic measures account for the most variation in student achievement?

Analysis: Stepwise regression with community demographic measures predicting the various indicators of student achievement. (SPSS) Structural equation modeling to test influence of various community demographic measures on student achievement. (AMOS)

Question 4: How much variation in student achievement is accounted for by variation in school spending?

Analysis: Correlation between different areas of spending and the indicators of student achievement. Regression with different categories of spending predicting student achievement. (SPSS) Structural equation modeling to test influence of various types of spending on the different indicators of student achievement. (AMOS)

Question 5: Is there a relationship between the community context of each school and the spending differences in each school?

Analysis: Regression with community demographics predicting total per pupil spending. (SPSS) Structural equation modeling to test influence of various community demographics measures on total per pupil spending. (AMOS)
Summary

The population studied in this research was all of the schools in the South-Western City school district; the sample was the students, teachers and community of the 17 elementary schools in the district. The variables of interest in this study were student achievement, the community context of schools, and school spending. The instruments used were school records, county records, and the national census. The data were collected from state school report cards, the census bureau, and the Franklin County Auditor's office. The design of this study was correlational and only provided indicators of relationships between the variables, it did not prove causation. The analysis included descriptive statistics and inferential statistics such as correlations, stepwise regression analyses and structural equation modeling.
Descriptive Statistics

Table 1 displays the descriptive statistics for the four measures of community context. The descriptive statistics for these data indicate that although this study only includes the 17 elementary schools within a single district, there is still variation in these variables. This is due in large part to the fact that the district spans both urban and rural areas and therefore has considerable differences in community demographics across schools.

The mean lunch status shows that over a third of the students in this district qualify for free or reduced lunch benefits. Though this is not a majority of the population it is still a rather large percentage, and is important to consider since most studies in this area find this variable to be the most important predictor of student success. The mean property value for all of the schools in this district is fairly high for the Columbus area; South-Western City schools do not qualify for additional equity aid from the state since they meet the minimum threshold without assistance. There is also some variation in the percentage of minority residents in each of the school communities, however, all schools in the district are still made up of almost 80% caucasian residents. Similarly, there is some variation in the percentage of single-parent families across the 17 schools, yet even
the school with the highest percentage, Prairie Norton, still only has 15.35% of its families in that category. This is an interesting district to analyze not only because there actually is variation in these community demographic variables, but also because none of these indicators seem to be at the extremes for community context. School profiles for each variable are presented in Appendix C.

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<td>% Minority Residents</td>
<td>2.05</td>
<td>20.38</td>
<td>10.36</td>
<td>6.42</td>
</tr>
<tr>
<td>% Single Parent Families</td>
<td>3.38</td>
<td>15.35</td>
<td>9.96</td>
<td>3.11</td>
</tr>
</tbody>
</table>

Note. N = 17. Property value mean is weighted by the proportion of household units in each school boundary to the total number of household units in the district. Values for the other three variables represent percentages of total school population.

Table 1: Descriptive Statistics for Community Characteristics for 17 Schools in South-Western City School District

Table 2 displays the descriptive statistics for the six measures of student achievement. There is less variation in some of these measures than in the community
demographics, especially on attendance and promotion rates. The percentages for these two variables are fairly high across all 17 schools and do not vary greatly. Mobility, however, has slightly higher variation than attendance or promotion rates. There is a surprising amount of variation in the OPT passing rates for the different schools. The values have a range (calculated by subtracting the minimum from the maximum and adding 1) of 52.8% (OPT math), 43.6% (OPT reading), and 34.4% (OPT all), which is a large difference between schools within the same district. None of the schools, however, meet the state standard of 75% of students passing.

<table>
<thead>
<tr>
<th></th>
<th>Min</th>
<th>Max</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPT All</td>
<td>5.50</td>
<td>38.80</td>
<td>23.94</td>
<td>10.44</td>
</tr>
<tr>
<td>OPT Math</td>
<td>14.90</td>
<td>66.70</td>
<td>42.09</td>
<td>15.35</td>
</tr>
<tr>
<td>OPT Reading</td>
<td>26.20</td>
<td>68.80</td>
<td>49.46</td>
<td>13.24</td>
</tr>
<tr>
<td>Mobility</td>
<td>4.00</td>
<td>17.40</td>
<td>9.16</td>
<td>4.05</td>
</tr>
<tr>
<td>Attendance</td>
<td>93.80</td>
<td>96.60</td>
<td>95.22</td>
<td>0.72</td>
</tr>
<tr>
<td>Promotion</td>
<td>96.60</td>
<td>100.00</td>
<td>99.46</td>
<td>1.04</td>
</tr>
</tbody>
</table>

Note. N = 17. Values represent percentages of total school population. State standard is 75% passing, no school made this level.

Table 2: Descriptive Statistics for Student Achievement Measures for 17 Schools in South-Western City School District
Table 3 displays descriptive statistics for the various measures of school spending. Since spending figures are calculated at the district level and are based on district-wide property valuation, any variation in this category should be attributable to the varying enrollments of the 17 schools. The mean for school enrollment across this district is 533, with a standard deviation of 170.76, so there is considerable variation in the different school enrollments. The correlation between school enrollment and total per pupil expenditure is -.94, significant at $\alpha = .01$, indicating that the differences in spending across schools, is inversely related to the number of students at each school.

<table>
<thead>
<tr>
<th></th>
<th>Min</th>
<th>Max</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instruction</td>
<td>2507.00</td>
<td>3815.00</td>
<td>3220.88</td>
<td>338.42</td>
</tr>
<tr>
<td>Building Operations</td>
<td>1074.00</td>
<td>1544.00</td>
<td>1189.18</td>
<td>111.41</td>
</tr>
<tr>
<td>Administration</td>
<td>258.00</td>
<td>849.00</td>
<td>356.24</td>
<td>141.32</td>
</tr>
<tr>
<td>Pupil Support</td>
<td>267.00</td>
<td>858.00</td>
<td>435.88</td>
<td>133.75</td>
</tr>
<tr>
<td>Staff Support</td>
<td>244.00</td>
<td>430.00</td>
<td>314.00</td>
<td>54.80</td>
</tr>
<tr>
<td>Total Per Pupil</td>
<td>4745.00</td>
<td>6555.00</td>
<td>5516.18</td>
<td>518.18</td>
</tr>
</tbody>
</table>

Note. N = 17. Values are in dollars.

Table 3: Descriptive Statistics for School Spending for 17 Schools in South-Western City School District
Research Questions with Results

Question 1: What is the strength of the relationship between student achievement and community characteristics in this school district?

The analysis to answer this research question involves the bivariate correlations between the predictor and criterion variables. The Spearman correlation was used in this analysis, measuring the relationship between the various indicators within the community context variable compared to the different indicators of student achievement. Spearman was used with these data because most of the information is in percentages, which is ordinal level data.\(^1\) It was expected from the literature and previous studies in this area that there would be significant correlations between these constructs, that community characteristics have a relationship with the school’s overall student achievement. Table 4 displays the correlation matrix between these two constructs.

Again, in light of the small sample size in this study it is more difficult to find statistical significance and stable estimates. Regardless, these data did have some interesting and significant correlations. First it is important to compare the relationships between the various indicators of community context. As anticipated, percentage of minority residents, average property valuation, percentage of students on free and reduced lunch, and percentage of single parent families in the community all have significant correlations with each other. The only exception is between the number of students qualifying for free and reduced lunch and the percent of single parent families in

\(^1\) Pearson product moment correlations were also calculated on these same data and the resulting correlations were similar to those obtained using the Spearman formula.
lunch program at each of the schools. This correlation is .85 and is significant at $\alpha = .01$, indicating that as there are more minority residents in a school community it is more likely for there to be a higher percentage of students in the free and reduced lunch program in the school. The percent of minority residents is also positively correlated with the number of single parent families in a school neighborhood in this district, but this correlation is not as strong at .54. Property value is negatively correlated with these three community variables, indicating that property value is lower in communities with more minority residents, single parent families, or students on the free or reduced lunch program.

The student achievement indicators also have some instances of intercorrelation, especially concerning the Ohio Proficiency tests. This is to be expected to some extent, yet the correlation between the reading, math and all of the tests combined is quite high in this district; all correlations are over .85 and are significant. Mobility rates and attendance rates are highly and positively correlated which is logical, mobility is a measure of the percentage of students not attending over half of the school year.

There are also some interesting correlations between the two constructs of student achievement and community context. Of the four indicators of community context, the percentage of single parent families seems to have the weakest relationship with student achievement. The only significant correlation in this area is a negative one between single parent families and OPT all, -.50. The other three indicators of community context seem to have a fairly strong relationship with student achievement, especially in the areas
of student mobility and student attendance. Of the three indicators of success on the Ohio Proficiency, pass rates for the reading portion have significant correlations with average property value, percent of minority residents and lunch status, and pass rates for all five tests combined have significant correlations with average property valuation and percent of single parent families in the school community.

Three of the community context indicators have a significant correlation with student attendance, and student attendance is also significantly correlated with the other measures of achievement. This is important to note since whether or not a student is able to attend school has a strong relationship on how much the student is able to learn. If the indicators of income, wealth, and racial background have a strong relationship with student attendance, this in turn indicates a possible connection to student achievement in general.
<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Lunch Status</td>
<td>--</td>
<td>.85**</td>
<td>.39</td>
<td>-.63**</td>
<td>-.41</td>
<td>-.40</td>
<td>-.54*</td>
<td>.88**</td>
<td>-.89**</td>
<td>-.02</td>
</tr>
<tr>
<td>2. Minority</td>
<td>--</td>
<td>.54*</td>
<td>-.53*</td>
<td>-.32</td>
<td>-.22</td>
<td>-.48*</td>
<td>.86**</td>
<td>-.83**</td>
<td>-.03</td>
<td></td>
</tr>
<tr>
<td>3. Single Par.</td>
<td>--</td>
<td>-.52*</td>
<td>-.50*</td>
<td>-.23</td>
<td>-.33</td>
<td>.42</td>
<td>-.43</td>
<td>-.44</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Prop Value</td>
<td>--</td>
<td>.57*</td>
<td>.37</td>
<td>.54*</td>
<td>-.51*</td>
<td>.65**</td>
<td>.04</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. OPT all</td>
<td>--</td>
<td>.88**</td>
<td>.86**</td>
<td>-.39</td>
<td>.59*</td>
<td>-.20</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. OPT math</td>
<td>--</td>
<td>.86**</td>
<td>-.41</td>
<td>.58*</td>
<td>-.27</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. OPT read</td>
<td>--</td>
<td>-.60*</td>
<td>.73**</td>
<td>-.29</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Mobility</td>
<td>--</td>
<td>-.79**</td>
<td>-.07</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Attendance</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-.15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Promotion</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* p < .05; ** p < .01  Note. N = 17.

Table 4: Correlations Between Community Characteristics and Student Achievement for 17 Schools in South-Western City School District
Question 2: How much variation in student achievement in each school is accounted for by variation in the community characteristics of the neighborhood surrounding each school?

To answer this research question, stepwise regressions were conducted with the four predictor variables regressed on each of the six indicators of student achievement separately. The stepwise procedure was used in order to compare not only the strength of the relationship between community context and each of the achievement indicators, but also to see which of the four variables in the community context construct accounted for the most variation in achievement. Stepwise selection means that each of the predictor variables will be evaluated as to their strength of meaningfulness in the regression, and will not be entered unless significant. At each step of the analysis the variable with the lowest significance value is entered first. At each additional step the variables are evaluated again; the criteria for entry is that the F-value of the variable must be less than a .05 significance level, and the criteria for removal is if the significance of the F-value becomes larger than .10. The use of stepwise regression helped reduce the problem of possible multicollinearity among the predictor variables in this analysis, and also avoided the problem of having too large of a ratio of predictor variables to sample size, since usually only one of the independent variables remained in this analysis.

Regression results for the predictor variables on OPT math and percent of students promoted to the 5th grade are not included since none of the predictor variables were meaningful or significant enough to be entered into a stepwise analysis. According to bivariate correlations between the predictor variables, multicollinearity will be a problem in any analysis where more than a single independent variable was entered, and
therefore should be diagnosed in those instances. The results and regression coefficients for the remaining four criterion variables are presented in Tables 5, 7, 8 and 9.

The regression of community context on student mobility was significant and has a very high $R^2$ value, indicating that lunch status and property value account for 85% of the variation in student mobility for this sample. In this analysis lunch status and property value were the two variables of the four in the community context construct that were significant enough to be entered into the regression equation. The standardized coefficients and the change in $R^2$ indicate that lunch status accounts for a considerably greater amount of the variation than property value, especially since the $\beta$ value is small for property value. The variable is still entered into the regression equation, however, and still accounts for a significant amount of additional variation in student mobility.

<table>
<thead>
<tr>
<th>Criterion: Mobility</th>
<th>B</th>
<th>SE of Est.</th>
<th>$\beta$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lunch Status</td>
<td>.231</td>
<td>.031</td>
<td>.886</td>
</tr>
<tr>
<td>Step 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lunch Status</td>
<td>.303</td>
<td>.040</td>
<td>1.163</td>
</tr>
<tr>
<td>Property Value</td>
<td>.00007</td>
<td>.000</td>
<td>.376</td>
</tr>
</tbody>
</table>

Note. $R^2 = .79$ for Step 1 and $\Delta R^2 = .064$ for Step 2. $N = 17$.

Table 5: Summary of Stepwise Regression Analysis for Community Variables Predicting Mobility for 17 Schools in South-Western City School District
Since two predictor variables were entered in this analysis, multicollinearity statistics must be addressed. Four indicators of multicollinearity are displayed in Table 6. Tolerance is defined as $1 - R_i^2$ and has a range of 0 to 1. The rule of thumb for this statistic is that the smaller the tolerance the greater the risk of computational error. VIF (variance inflation factor) is the reciprocal of tolerance, $1 / (1 - R_i^2)$, and is a measure of how much the variance of $b$ is inflated as a result of correlations between the predictor variables. A rule of thumb for this statistic is that when $VIF = 1$ there is no indication of a problem, yet if the values are greater than or equal to four there may be a problem. Condition indices and eigenvalues are also used to assess collinearity. Eigenvalues close to zero indicate a problem, and condition indices (created from the eigenvalues) indicate a problem with collinearity when they exceed 30. There is not a great deal of consensus surrounding these measures and their rules of thumb, and therefore no single statistic should be used to evaluate this problem.

For this regression on mobility, the two predictor values most likely have a multicollinearity problem since the bivariate correlations are so high and are significant, however the only collinearity diagnostic that indicates a possible problem in this sample is the eigenvalues. In light of this potential problem of collinearity, it is important to note that the first model including only lunch status still accounts for the majority of the variation in the criterion variable, and property value only adds a small change in $R^2$. 
Table 6: Multicollinearity Statistics and Diagnostics for Regression on Mobility

The regression of community context on OPT reading was significant, but had a low $R^2$ value indicating that free or reduced lunch status only accounts for 31% of the variation in OPT reading passing rates for each of the schools in this sample. In this analysis only lunch status was significant enough to be entered into the regression equation, therefore there is no need to be concerned with collinearity.

<table>
<thead>
<tr>
<th>Criterion: OPT read</th>
<th>$B$</th>
<th>$SE$ of Est.</th>
<th>$\beta$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lunch Status</td>
<td>-.475</td>
<td>.183</td>
<td>-.556</td>
</tr>
</tbody>
</table>

Note. $R^2 = .31$ for Step 1. $N = 17.$

Table 7: Summary of Stepwise Regression Analysis for Lunch Status Predicting OPT reading for 17 Schools in South-Western City School District
The regression of community context on the percentage of students in each school passing all five of the required Ohio Proficiency tests was significant with an \( R^2 \) value of .28 meaning that 28% of variation in OPT all is related to the average property valuation of the school community for this sample. In this analysis property value was the only predictor variable statistically significant enough to be entered into the regression equation, so collinearity is not a concern.

<table>
<thead>
<tr>
<th>Criterion: OPT all</th>
<th>( B )</th>
<th>SE of Est.</th>
<th>( \beta )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Property Value</td>
<td>.0003</td>
<td>.000</td>
<td>.529</td>
</tr>
</tbody>
</table>

Note. \( R^2 = .28 \) for Step 1. \( N = 17 \).

Table 8: Summary of Stepwise Regression Analysis for Property Value Predicting OPT all for 17 Schools in South-Western City School District

The regression of community context on student attendance was significant, and had a very high \( R^2 \) value indicating that free or reduced lunch status accounts for 81% of the variation in student attendance for this sample. In this analysis only lunch status was significant enough to be entered into the regression equation, so there is no need to be concerned with collinearity.
Table 9: Summary of Stepwise Regression Analysis for Lunch Status Predicting Attendance for 17 Schools in South-Western City School District

The regression analyses, though based on a small sample size and therefore must be interpreted cautiously, seem to indicate that there is some variation in student achievement related to community context in this sample. Lunch status accounted for 79% of the variation in mobility, 81% in attendance, and 31% in OPT reading. Property value accounted for 28% of the variation in OPT all. The following scatter plots give a visual representation of these four significant relationships. Just from these plots it is possible to see the strong relationships between lunch status and mobility, lunch status and attendance, and the slightly weaker, but still significant relationships between lunch status and OPT read, and property value and OPT all.
Figure 1: Scatter Plot and Regression Line of Best Fit for Lunch Status Predicting Mobility

Figure 2: Scatter Plot and Regression Line of Best Fit for Lunch Status Predicting Attendance

Figure 3: Scatter Plot and Regression Line of Best Fit for Lunch Status Predicting OPT read

Figure 4: Scatter Plot and Regression Line of Best Fit for Property Value Predicting OPT all
Percent of minority residents in the community did not account for enough additional variation in the criterion variables above what was accounted for by lunch status or property value to be entered into the regression equation, yet it still has strong relationships with two of the criterion variables. The following scatterplots provide visual representations of these important relationships for this sample. These include the strong correlation between the percent of minority residents and student attendance, and the percent of minority residents and mobility. Although percent of minority residents was not a part of the regression equation there is still a clear linear relationship between these variables indicating that the lower the percent of minority residents in these school communities the higher the attendance rate in the schools. Also, the higher percentage of minority residents in the community, the greater the mobility of its students.

Figure 5: Scatter Plot and Regression Line of Best Fit for % Minority Predicting Attendance

Figure 6: Scatter Plot and Regression Line of Best Fit for % Minority Predicting Mobility
Question 3: Which specific community demographic measures account for the most variation in student achievement?

The stepwise regressions of community context variables on the six achievement indicators can be used to find which of the four factors, race, income, wealth or family structure, account for the most variation in student achievement. Since only free or reduced lunch status and property valuation were significant enough to be entered into the equations, the other two indicators do not account for a significant amount of variation in student achievement in this sample. For this sample of 17 elementary schools, free and reduced lunch enrollment and average property valuation are the two measures accounting for the most variation according to the regression analyses.

This question was also tested using structural equation modeling. The models tested were regression models with the four predictor variables indicating the latent variable of community context, and community context indicating each of the six variables of student achievement separately. Due to the small sample size the tests of model fit may be unstable, especially $\chi^2$, which is highly sensitive to sample size. To attempt to reduce the instability of this analysis, two different methods were used to judge fit and only models meeting the requirements of both measures were considered to be a good fit. The two measures used to judge goodness-of-fit were the $\chi^2$ statistic and a residual moment analysis comparing sample correlations and implied correlations. For $\chi^2$, a value less than twice the degrees of freedom indicates a good fit; for the residual analysis the average across all residual calculations between the sample and implied correlations should be less than .02. Fit indices are displayed in Table 10, and models are
presented with unstandardized estimates in Figures 27 through 32 in Appendix D.

According to the structural equation models, there is good fit for community context predicting Ohio Proficiency test passing rates for schools in reading, math and all tests combined, and a good fit for predicting student attendance. There was not a good fit indicated for predicting mobility and promotion rates.

The standardized regression weights for the different predictor variables within the community construct variable indicate the amount of variation each accounts for in the criterion variable. These different estimates are presented in Table 11. In these models lunch status and the percent of minority residents in the community have the largest regression weights indicating these two variables account for larger amounts of variation in the criterion variable for this sample. It is also interesting to note that the regression weights across the different models testing the four variables do not vary greatly. This could indicate that there are similar relationships between the community context constructs across these different indicators of student achievement, or could be a result of the high intercorrelations between the variables in these constructs. Again the sample size is very small for these models, so the regression weights are not as stable as they would be in a larger sample.
<table>
<thead>
<tr>
<th>Model</th>
<th>df</th>
<th>$\chi^2$</th>
<th>Residual Avg.</th>
<th>Fit?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community Context on Mobility</td>
<td>5</td>
<td>13.85</td>
<td>.00</td>
<td>NO</td>
</tr>
<tr>
<td>Community Context on OPT math</td>
<td>5</td>
<td>4.86</td>
<td>.00</td>
<td>YES</td>
</tr>
<tr>
<td>Community Context on OPT reading</td>
<td>5</td>
<td>5.37</td>
<td>.00</td>
<td>YES</td>
</tr>
<tr>
<td>Community Context on OPT all</td>
<td>5</td>
<td>5.73</td>
<td>.00</td>
<td>YES</td>
</tr>
<tr>
<td>Community Context on Attendance</td>
<td>5</td>
<td>4.63</td>
<td>.01</td>
<td>YES</td>
</tr>
<tr>
<td>Community Context on Promotion</td>
<td>5</td>
<td>11.19</td>
<td>.03</td>
<td>NO</td>
</tr>
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</table>

Note. N = 17.

Table 10: Fit Indices for All Regression Models of Community Context on Student Achievement for 17 Schools in South-Western City School District
<table>
<thead>
<tr>
<th>Model</th>
<th>Regression Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Community Context</strong></td>
<td></td>
</tr>
<tr>
<td>on OPT reading</td>
<td></td>
</tr>
<tr>
<td>Property Value</td>
<td>-0.755</td>
</tr>
<tr>
<td>% Minority</td>
<td>0.876</td>
</tr>
<tr>
<td>Lunch Status</td>
<td>0.975</td>
</tr>
<tr>
<td>% Single Parent</td>
<td>0.645</td>
</tr>
<tr>
<td><strong>Community Context</strong></td>
<td></td>
</tr>
<tr>
<td>on OPT math</td>
<td></td>
</tr>
<tr>
<td>Property Value</td>
<td>-0.744</td>
</tr>
<tr>
<td>% Minority</td>
<td>0.867</td>
</tr>
<tr>
<td>Lunch Status</td>
<td>0.991</td>
</tr>
<tr>
<td>% Single Parent</td>
<td>0.623</td>
</tr>
<tr>
<td><strong>Community Context</strong></td>
<td></td>
</tr>
<tr>
<td>on OPT all</td>
<td></td>
</tr>
<tr>
<td>Property Value</td>
<td>-0.755</td>
</tr>
<tr>
<td>% Minority</td>
<td>0.875</td>
</tr>
<tr>
<td>Lunch Status</td>
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</tr>
<tr>
<td>% Single Parent</td>
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</tr>
<tr>
<td><strong>Community Context</strong></td>
<td></td>
</tr>
<tr>
<td>on Attendance</td>
<td></td>
</tr>
<tr>
<td>Property Value</td>
<td>-0.744</td>
</tr>
<tr>
<td>% Minority</td>
<td>0.875</td>
</tr>
<tr>
<td>Lunch Status</td>
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</tr>
<tr>
<td>% Single Parent</td>
<td>0.628</td>
</tr>
</tbody>
</table>

*Note. N = 17.*

Table 11: Standardized Regression Weights of Community Context (Good Fitting Models) on Student Achievement for 17 Schools in South-Western City School District
**Question 4**: How much variation in student achievement is accounted for by variation in school spending?

A secondary relationship studied in this research is the connection between school funding and student achievement. The first step to understanding the relationship between spending and achievement is to look at the correlations between the different areas of spending, total expenditures and the six indicators of student achievement. Again the Spearman correlation is used in these instances since the achievement measures are in the form of percentages, an ordinal level of measurement. The values are presented in Table 12; only those areas of spending with significant correlations are shown.

The intercorrelations of the student achievement measures have already been discussed so this section will only focus on the correlations between spending and achievement. The literature has found inconsistent results in this area, and this study also found inconsistent results for this comparison. There are not many significant correlations between these two constructs, and even those few that are significant are not very strong. Total spending per pupil had no significant correlations with any of the achievement variables.

Spending on building operations is significantly correlated with OPT all, OPT reading, and mobility although this makes little logical sense. Spending on pupil support had significant correlations with student attendance, mobility, and OPT reading. Spending on pupil support had a logical correlation to both student mobility and attendance indicating that the more money spent on pupil support, the less likely students
are to miss a great deal of school. This makes sense because the assistance of counselors and social workers may help students and parents deal with situations that might make students miss school.
<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Total Exp</td>
<td>--</td>
<td>.35</td>
<td>.16</td>
<td>.37</td>
<td>.08</td>
<td>.24</td>
<td>-.15</td>
<td>-.05</td>
<td>.27</td>
</tr>
<tr>
<td>2. Building Ops</td>
<td>--</td>
<td>.52*</td>
<td>.51*</td>
<td>.29</td>
<td>.52*</td>
<td>-.49*</td>
<td>.42</td>
<td>.25</td>
<td></td>
</tr>
<tr>
<td>3. Pupil Support</td>
<td>--</td>
<td>.41</td>
<td>.31</td>
<td>.54*</td>
<td>-.62*</td>
<td>.58*</td>
<td>-.09</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. OPT all</td>
<td>--</td>
<td>.88**</td>
<td>.86**</td>
<td>-.39</td>
<td>.59*</td>
<td>-.20</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. OPT math</td>
<td>--</td>
<td>.86**</td>
<td>-.41</td>
<td>.58*</td>
<td>-.27</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. OPT read</td>
<td>--</td>
<td>-.60*</td>
<td>.73**</td>
<td>-.29</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Mobility</td>
<td>--</td>
<td>-.79**</td>
<td>-.07</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Attendance</td>
<td>--</td>
<td>-.15</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Promotion</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* p < .05; ** p < .01  Note. N = 17

Table 12: Correlations Between Spending and Student Achievement for 17 Schools in South-Western City School District
In order to account for the amount of variation in achievement by discrepancies in the different areas of school funding, stepwise regression analyses were conducted. Only the regressions on mobility, OPT reading and OPT all were significant. The results of these are displayed in Tables 13, 14 and 15. Simple linear regressions were also conducted for total per pupil spending predicting all six indicators of achievement separately, however none of these were statistically significant. This indicates that per pupil spending in this sample does not account for a significant amount of variation in student achievement.

The stepwise regression of spending on mobility was significant, but had a low $R^2$ value indicating that spending on pupil support only accounts for 25% of the variation in student mobility. In this analysis, only spending on pupil support (such as librarians, counselors, and nurses) was significant enough to be entered into the regression equation, so there is no need to be concerned with collinearity.

<table>
<thead>
<tr>
<th>Criterion: Mobility</th>
<th>B</th>
<th>SE of Est.</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pupil Support</td>
<td>-.015</td>
<td>.007</td>
<td>-.500</td>
</tr>
</tbody>
</table>

Note. $R^2 = .25$ for Step 1. N = 17.

Table 13: Summary of Stepwise Regression Analysis for Spending Predicting Mobility for 17 Schools in South-Western City School District
The stepwise regression of school spending on OPT reading was significant, but had a low $R^2$ value indicating that spending on building operations only accounts for 29% of the variation in school passing rates on OPT reading. In this analysis only spending on building operations (such as utilities, maintenance, and repairs) was significant enough to be entered into the regression equation, so there is no need to be concerned with collinearity.

<table>
<thead>
<tr>
<th>Criterion: OPT read</th>
<th>B</th>
<th>SE of Est.</th>
<th>$\beta$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Building Operations</td>
<td>.064</td>
<td>.026</td>
<td>.539</td>
</tr>
</tbody>
</table>

Note. $R^2 = .29$ for Step 1. $N = 17$.

Table 14: Summary of Stepwise Regression Analysis for Spending Predicting OPT reading for 17 Schools in South-Western City School District

The stepwise regression of school spending on OPT all was significant, but had a low $R^2$ value indicating that spending on building operations only accounts for 26% of the variation in school pass rates on all of the required Ohio Proficiency tests. In this analysis only spending on building operations (such as utilities, maintenance, and repairs) was significant enough to be entered into the regression equation, so there is no need to be concerned with collinearity.
The only logical and statistically significant regression predicting student achievement was the prediction of student mobility by spending on pupil support. To further understand this relationship a structural equation model was created for the five areas of spending predicting mobility and analyzed for fit. The model is presented with unstandardized estimates in Figure 33 in Appendix D. Again the two different indicators of fit, a $\chi^2$ statistic and a residual analysis, must be met to help account for the small sample size in this research.

According to the model, there is good fit for spending predicting student mobility, however in this model spending on administration has the highest standardized regression weight and pupil support is no longer the strongest predictor. The fit indices and degrees of freedom are presented in Table 16; the standardized regression weights are presented in Table 17.
### Table 16: Fit Indices for Regression Model of Spending on Mobility for 17 Schools in South-Western City School District

<table>
<thead>
<tr>
<th>Model</th>
<th>df</th>
<th>$\chi^2$</th>
<th>Residual Avg.</th>
<th>Fit?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spending on Mobility</td>
<td>9</td>
<td>16.97</td>
<td>.01</td>
<td>YES</td>
</tr>
</tbody>
</table>

*Note. N = 17.*

### Table 17: Standardized Regression Weights of Spending on Mobility for 17 Schools in South-Western City School District

<table>
<thead>
<tr>
<th>Model</th>
<th>Regression Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spending on Mobility</td>
<td></td>
</tr>
<tr>
<td>Administration</td>
<td>1.974</td>
</tr>
<tr>
<td>Building Operations</td>
<td>0.393</td>
</tr>
<tr>
<td>Pupil Support</td>
<td>-0.096</td>
</tr>
<tr>
<td>Staff Support</td>
<td>0.029</td>
</tr>
<tr>
<td>Instruction</td>
<td>0.235</td>
</tr>
</tbody>
</table>

*Note. N = 17.*
Question 5: Is there a relationship between the community context of each school and the spending differences in each school?

To understand this relationship it is necessary to look at the bivariate correlations between the community context variables and total per pupil spending in this sample. Again the Spearman correlation is used to account for ordinal level data. The intercorrelations within the community context construct have been discussed, so the focus here will only be the correlations between these variables and per pupil spending. There were no significant correlations between community context and per pupil spending for this sample, an indication that there is very little relationship between the community context of each school and the amount spent per pupil. Interestingly, there is very little correlation between property values and spending, which is to be expected since property values have the majority of influence on spending at the district level, not for individual schools. The correlation values are displayed in Table 18.

A stepwise regression analysis was conducted to further understand this relationship between the community context of schools and total per pupil spending. All four of the variables concerning community context were used as predictors of total expenditures, however none were significant enough to be entered into the regression equation. The regression structural equation model was also not a good fit according to the same two tests used for the other research questions.
<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Lunch Status</td>
<td>--</td>
<td>.85**</td>
<td>.39</td>
<td>-.63**</td>
<td>-.08</td>
</tr>
<tr>
<td>2. Minority</td>
<td>--</td>
<td>.54*</td>
<td>-.53*</td>
<td>.15</td>
<td></td>
</tr>
<tr>
<td>3. Single Par.</td>
<td>--</td>
<td></td>
<td>-.52*</td>
<td></td>
<td>-.48</td>
</tr>
<tr>
<td>4. Prop Value</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td>.04</td>
</tr>
<tr>
<td>5. Per Pupil Spending</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. N = 17.

Table 18: Correlations Between Community Characteristics and Total Per Pupil Spending for 17 Schools in South-Western City School District
CHAPTER 5

DISCUSSION

Limitations of the Analysis

The focus on a single district is both a strength and a limitation for this study. It is a strength because research is rarely conducted on the relationships between community context, student achievement and school spending using school as the level of analysis. This is an important level to investigate however, because there is often variability in these constructs among individual schools. For example, in the South-Western City school district there are schools with only 26% of students passing the reading proficiency tests while others have a much higher rate with almost 70% of students passing. Likewise, there are some schools with only 6% of students qualifying for free and reduced lunch benefits while other schools have over 66% of students qualifying. These discrepancies pose an interesting problem of inequality not only among states or districts, but also among individual schools within a single district.

The use of only one district in this study is also a limitation since there is such a small sample size. The use of the 17 elementary schools increased the sample as much as possible but it still falls short of an ideal number for stability in the analysis. This problem could be improved in future studies with the use of individual student data and the community measures developed in this research. The use of individual student data
would also solve the problem of another limitation of this analysis, which is the use of percentage-based data. Since percentages are only at ordinal level of measurement it is not the best data to use in regression analyses and structural equation models. The consequences of the small sample size and the use of percentages in this analysis is that the statistical power for the correlations, regressions and structural models is very low, and the results are less reliable. All results and conclusions drawn in this study are only meaningful to the population under consideration, the 17 elementary schools in this district.

Research Questions and Interpretation

Question 1: What is the strength of the relationship between student achievement and community characteristics in this school district?

Correlations in these data indicate that there are significant and strong relationships between student achievement and community context in this school district. There are eleven significant correlations between these constructs for this sample. The strongest correlations involve lunch status and the percent of minority residents in each community, and the report card indicators of mobility and attendance. These two community context variables are also both related to pass rates for the reading proficiency, although the relationship is not as strong. Since three areas of achievement are related to these measures it shows that race and income have fairly important relationships with achievement in this sample.
Another important correlation in these data is between property value and student attendance rates. This means that all but the percent of single parent families had a fairly strong and significant relationship with student attendance. Student attendance also had significant relationships with other indicators of achievement, OPT all, OPT reading, OPT math, and student mobility. This is an important indication of a way community context is related to student achievement in this district, which is through student attendance. There may be aspects of different communities that encourage or discourage attendance, or there are aspects of the school environment that are more or less welcoming to students from different backgrounds. This is an important implication to consider since it is inevitable that not attending to school regularly will decrease achievement.

The relationship between community context and achievement is present between enough indicators of these constructs to require attention from this school district. According to the results of these correlations, this relationship does not favor students in schools whose attendance boundaries include communities that have a higher percentages of low income families or minority residents, or lower average property valuation. The implication of these relationships is that the differences among the school communities in this district are related to achievement, creating potential inequalities for students in the different schools.
Question 2: How much variation in student achievement in each school is accounted for by variation in the community characteristics of the neighborhood surrounding each school?

There was a significant amount of variation in achievement accounted for by community context in this sample. There were some very high $R^2$ values in some of the regression analyses of the data. Lunch status accounted for 81% of the variation in student attendance and 75% of the variation in student mobility. Although it is clear from the scatterplots of these relationships that there is a good fit of the linear regression line, it is also possible that these $R^2$ values were affected by the low variability in these two achievement indicators. Although they are important variables to consider, student attendance and mobility do not vary greatly across the 17 elementary schools in this sample. This means that the high amount of variation accounted for could have been influenced by the small amounts of change in these variables from school to school. Even if there is little variation among schools in this sample on these variables it is still clear that there are fairly strong relationships between lunch status and attendance and mobility.

Lunch status also accounts for 31% of the variation in OPT reading scores, and average property value accounts for 28% of the variation in OPT all. These results are more consistent with similar studies in the literature, which commonly have $R^2$ values in the mid-twenties or thirties. Although these are low values, they still indicate that there is some relationship between the variables, meaning a student’s community life is at least partially related to her achievement in this district. With around 30% of the variance explained in this sample, there is still the majority of variance in achievement.
unexplained by the variables in this study. This is encouraging for the school district in the sense that it may be factors within the school’s control that constitutes the remaining 70% of unexplained variance in student achievement. This means that it could easily be special programs, teacher quality, class size or other efforts that have allowed community context only a partial relationship with achievement.

In light of social reproduction theory these results still have the implication that the income or property wealth of a student’s family is at least somewhat related to achievement, which should be reduced as much as possible. True democratic education would provide a public education system that allows all students to participate equally in society and not be limited by the social status of their parents or the community in which they live. South-Western City schools must evaluate current policies and programs that attempt to reduce the relationship between these variables and ascertain what more can be done to even further reduce this relationship. Ideally a student’s achievement would have no variation accounted for by her family or community background.

Question 3: Which specific community demographic measures account for the most variation in student achievement?

The results of the stepwise regression analyses showed that the percentage of students enrolled in the free or reduced lunch program accounted for the most variation in student achievement. Average property value accounted for some additional and significant variation, but there was not a large change in $R^2$. The structural equation models indicated that percentage of students in the lunch program and the percentage of
minority residents accounted for the most variation in achievement. In addition, the measures of race and income also had the strongest correlations with the achievement indicators. This result is consistent with studies in this area that also found these two variables are strong predictors of student achievement (Patterson et al., 1990; Klingele & Warrick, 1990; Caldas, 1993).

It is unfortunate that this and other studies find that these variables account for the most variation since ideally a child’s achievement in school should have nothing to do with the percent of minority or poor residents in her community. An important consideration is whether this relationship is based on factors in the community alone, such as the stigma that goes with being poor, or whether the problem occurs in schools where students from these types of communities are treated unfairly. Social reproduction theorists would argue that regardless of the origin of the problem, the school has some role to play in this relationship between community context and student achievement since programs and policies in the school should be in place to counteract the inequalities that exist in society. In light of the result that about a third of the variation of OPT all and OPT read is related to wealth and income and potentially even more variation in mobility and attendance is related to income, South-Western City schools might want to evaluate its vision for teaching and meeting the needs of students from different racial and economic backgrounds.
**Question 4:** How much variation in student achievement is accounted for by variation in school spending?

There is not a great deal of variation in student achievement related to variation in school spending. There were not many significant or strong correlations between the five categories of spending and the different indicators of achievement, and there were no significant correlations between per pupil expenditures and student achievement. One interesting area of significant correlation is between spending on pupil support and student attendance, mobility and pass rates on the reading proficiency test. However, regression analyses of per pupil spending predicting achievement produced a significant result for only mobility. This is still an important result because it shows that there is the possibility that this area of spending is related to students staying in the same school for longer than half the year. The structural equation model testing these same relationships did not have the same results, showing the instability of these analyses and especially in this area of school spending. There is not a great deal of variation in the spending amounts among these 17 schools, making it very difficult with such low statistical power to find consistent results.

This problem of low variation across schools or district has caused a great deal of inconsistent results in studies attempting to compare student achievement and spending. Although they made be difficult to measure, it still seems logical that there must be some relationship between these constructs. The results for this sample, indicating a possibility that spending on pupil support may have some relationship with student mobility, are encouraging. This is consistent with ideas in the literature that money should be carefully
targeted; an implication of this result for this district is that additional spending could be directed to specific programs, and further research could be conducted to evaluate their effectiveness.

**Question 5:** Is there a relationship between the community context of each school and the spending differences in each school?

There seemed to be no relationship between the two variables of community context and per pupil spending for this sample. There were no significant correlations, and the regression analyses and the model tested of the community context variables predicting per pupil spending was not a good fit. This research question was asked based on results of other studies such as Kozol’s (1991) work analyzing the differences in funding for rich and poor communities. This result is very encouraging for this school district in that it does not appear that these types of problems appear in these schools. This problem is likely to be more of an issue among different states or districts, or in larger districts such as those in other states that are based on county boundaries. The strong correlation between per pupil spending and school enrollment shows that the variation in spending among schools in this sample is more likely due to different enrollments as opposed to differences in school community contexts.

**Use of Census Data**

The results of this study suggest that the percentage of students enrolled in the free or reduced lunch programs has an important relationship with student achievement,
therefore it is not surprising that most research in this area is based on this proxy for family income. Unfortunately there are inaccuracies in this measure of income, the primary reason being that not everyone in the school who might qualify for the program is enrolled. Studies attempting to examine the relationship between community context and other variables might find more accurate and reliable results if the construct is based on a composite of multiple sources.

Part of the significance of this study is its use of this type of composite measure of community context, and also the use of detailed census data to isolate the community information for each of the schools in this sample. This study did not rely solely on the free and reduced lunch enrollment as a proxy for income, it also included measures of wealth, racial background and family structure. These variables were chosen from the theoretical foundations of social reproduction theory and consist of a more complete picture of community context.

The use of census data is a means to develop these more accurate and composite measures of community or student background. For example, the data in this study were compiled at the block level, the lowest level of the census geographic divisions, and allowed the community context for each school to be measured very accurately. The blocks are composed of an area bounded by four streets and are geographically very small. This means that a list of blocks can be compiled for any area of interest and census data related to those blocks can be obtained in order to develop an accurate picture of the demographics of that area. In relation to these types of studies for schools it means that even individual student addresses could be used and matched to block data to bring
the comparison of community context and achievement to an even more detailed level of analysis. This study was not able to incorporate the measures of parent education and median family income as they have not been released by the Census Bureau at the block level, but when these indicators become available the community context measure would become an even more accurate picture of socioeconomic status and community context.

One of the limitations of this procedure is the great deal of time required to create the list of blocks that match each school boundary and organize the data. This would be an even greater task if more than the schools from a single district were considered, or if individual student data were used. It would be difficult for school administrators or district personnel to find the time to compile the data block by block. Another limitation is that the census data are only updated every decade, which means the most recent census data may not be a very accurate indicator of the community being researched if there has been recent growth or decline. Fortunately, if the district can afford to hire assistance or if the census is recent, such as the 2000 data used in this study, these limitations can be avoided.

Summary

This analysis of the relationship between community context and student achievement produced similar results to those that have been found in past research that lunch status, or income, has a strong relationship with student achievement. The regression analyses suggested that free and reduced lunch status and property valuation, measures of income and wealth, were the primary variables accounting for variation in
student achievement for the elementary schools in this sample. The percent of minority residents in the school communities also had a significant relationship with student achievement in this sample based on correlations and structural equation modeling. Of all the achievement indicators, these measures of community context had the strongest relationship with student attendance.

The amount of variation in the Ohio Proficiency test scores accounted for by community context was not high in this sample, only about 30% of the variation in test pass rates were related to community variables. In some ways it is an encouraging outcome for South-Western City schools that at least for this sample there is only a portion of the variation in Ohio Proficiency scores accounted for by community context, yet ideally there would be no variation in standardized test scores based on a student’s wealth or income. These are often the tests that are used for graduation and promotion requirements and therefore carry a great deal of weight for student success. Even if only 30 percent of the variation in a student’s ability to pass these tests is accounted for by community demographics, schools may still find this to be a practically important amount.
CHAPTER 6

CONCLUSIONS AND RECOMMENDATIONS

Community Context

The results of this analysis have several implications for the South-Western City school district if democratic and equitable education is its goal. The overall implication is that the district should address the fact that there is at least some variation in student achievement accounted for by variation in the community context of these 17 elementary schools. There are two separate areas of achievement that the results of this study indicate are important to address, attendance and mobility, and standardized test scores. First, the district must assess its programs, policies and efforts to provide a welcoming and empowering environment for students from many different backgrounds. Since the community context is significantly related to student attendance in this sample it is possible that some aspects of the school community are not encouraging students to attend regularly. Secondly, the district and its elementary schools should critically evaluate the accuracy and fairness of current standardized assessment measures, such as the Ohio Proficiency tests, if they are even slightly related to the school community. It is difficult to hold schools accountable to standards for these types of tests if a portion of the results are based on factors outside the scope of the school’s control.

One way for the elementary schools in this sample to reduce the effect of student
background on attendance, while at the same time possibly reducing the effect of background on standardized assessment, is to incorporate the theory of multicultural education into all aspects of education. Multicultural education is the idea that teachers and administrators must accept every student for what she brings to the classroom, as opposed to expecting students to conform to dominant culture norms. This means that educators must treat students as individuals, and must base teaching strategies on individual needs, avoiding cultural stereotypes or subconscious grouping of students based on background. For example, sometimes students who come from low income families have older clothes or poor hygiene, and educators can make the mistake of judging these students as less capable or intelligent based on appearance. Multiculturalism means educators will not allow these types of differences to create a conscious or subconscious decision not to expect less from these children.

Nieto (1996) defines multicultural education as:

“A process of comprehensive school reform and basic education for all students. It challenges and rejects racism and other forms of discrimination in schools and society and accepts and affirms the pluralism (ethnic, racial, linguistic, religious, economic, and gender, among others) that permeates the curriculum and instructional strategies used in schools, as well as the interactions among teachers, students and parents, and the very way that schools conceptualize the nature of teaching and learning. Because it uses critical pedagogy as its underlying philosophy and focuses on knowledge, reflection, and action (praxis) as the basis for social change, multicultural education furthers the democratic principles of social justice.”
Nieto (1999) also describes five conditions necessary for true multicultural education:

1. School reform that is antiracist and antibias
2. School reform that reflects an understanding of all students as having talents and strengths that can enhance their education
3. School reform that is based on the notion that those most intimately connected with students need to be meaningfully involved in their education
4. School reform that is based on high expectations and rigorous standards for all learners
5. School reform that is empowering and just.”

This description of multicultural education is a possible vision South-Western City schools could adopt to reduce the effects of community context on student achievement. In light of the relationship found in this sample between community context and achievement, this type of mission might reduce the possibility that this district was contributing to the legitimization of social reproduction in its schools.

Multicultural education, to be effective, must be the goal at every step of the education process. In order for a school district to incorporate this concept in its schools, this would have to be the goal for pre-service and in-service teacher training, curriculum development, instructional strategies, school culture and even disciplinary procedures.

The second way the results of this study indicate a need for change in South-Western City schools is the possibility that community context has a negative relationship with student success on the Ohio Proficiency tests. These tests are the major source of statewide accountability for these schools, and especially in elementary schools with the possibility of the 4th grade guarantee. If a student’s background is related to her success on these tests, then the tests are not accurate indicators of a child’s ability. It is possible
that state policy on assessment must be reevaluated. One possible solution would be to incorporate the principles of authentic pedagogy and assessment into the elementary schools in this district.

Authentic pedagogy is present when the standards of construction of knowledge, disciplined inquiry, and value beyond school are integrated into every aspect of the curriculum. If a school were to adopt authentic pedagogy it would focus on improving intellectual quality by incorporating in-depth understanding, personal relevance to students, and higher-order thinking into all instruction and assessment activities (Newmann & Associates, 1996). Unfortunately, changing state policy and reducing its heavy reliance on standardized testing would be a long and likely unsuccessful effort with new national laws requiring this method of assessment in 3rd through 8th grades. However, South-Western City elementary schools, and any school concerned with improving the fairness and accuracy of its assessment procedures, could make an effort within the schools in its own district to increase the prevalence of authentic pedagogy and assessment.

School Funding

The results for school funding in this sample and in many previous studies have been inconclusive. There is little evidence that increasing or decreasing school funding has a relationship with student achievement, but logically this relationship must exist. The finding in this sample indicated one significant area that spending has a relationship with achievement, which related spending on pupil support to student mobility rates.
This indicates that there is at least some relationship between school funding in the elementary schools and situations that enable students to remain in school or to have regular attendance. More research is needed to further understand these relationships between specific areas of spending and specific indicators of student achievement.

**Recommendations for Further Research**

There are many aspects of this research on the relationship between community context and student achievement that can be enhanced and repeated in different situations or circumstances. This study could serve as an example for other districts concerned that similar problems exist in their schools. Districts could learn a great deal by evaluating the community context for each of their schools and its relationship to the student achievement within those schools. Changes in school policies or programs could be based around these data to improve the ability of the schools to reach all groups of students.

One of the strengths of this study is its use of a composite measure of community demographics; this broader construct should be used more widely in these types of studies and those attempting to compare socioeconomic status and student achievement. The construct used in this study could also be improved when more economic data such as median family income and parent education level is released at the block level for the 2000 census.

This research could also be repeated with a larger sample size, but still at the school level of analysis, to increase the stability of its analysis and improve the
generalizability of the results. The student achievement and community context data could also be measured at the individual student level of analysis to have an even more detailed picture of the relationship. Additionally, it would be useful to include other local standardized measures of achievement to see if these same relationships with community context exist, or if these results are only relevant to the Ohio proficiency tests. The results of this study would also be well complemented by a more qualitative analysis of how this relationship is developed in these schools and communities.

A final possibility for further research follows from the conclusions of this study for this school district to add multicultural education and authentic pedagogy to its vision. An interesting comparison could be made between schools already incorporating multicultural education and authentic pedagogy and those who have yet to develop these aspects. The comparison of the relationship between community context and student achievement across these two different types of schools would be very informative as to the success of these measures as opposed to standardized testing and traditional pedagogy.
APPENDIX A

SCHOOL BOUNDARY MAP
Figure 7: Attendance Boundary Map for all 17 Elementary Schools in the South-Western City School District
APPENDIX B

CENSUS MAPS
Figure 8: Census tracts in the SW City School District.
Figure 9: Block Groups in the SW City School District.
APPENDIX C

SCHOOL PROFILES
Note. Achievement and spending data are based on state report cards, community data are based on the national census and the property values are based on the sample from county auditor records.

Figure 10: Alton Hall School Profile by Achievement, Community Context, Property Value and Spending by Category

Alton Hall Elementary

- School Built: 1960
- Enrollment: 598
- Staff: 28 teachers; 18 staff
- Per Pupil Spending: $5,039
- Programs: 60 classroom volunteers; YMCA after school program; Peer tutoring; Newsletter; Rise & Shine readers; CCC computer program; DARE; Education Success Program aide; Business partnership with Al Silva Cardinal Store; Talent Show; After school care.
Note. Achievement and spending data are based on state report cards, community data are based on the national census and the property values are based on the sample from county auditor records.

Figure 11: Buckeye Woods School Profile by Achievement, Community Context, Property Value and Spending by Category

Buckeye Woods Elementary

- School Built: 1995
- Enrollment: 770
- Staff: 30 teachers; 21 staff
- Per Pupil Spending: $4,745
- Programs: Volunteer program; CCC computer program; DARE; Newsletter; ESL; Head Start/Early Start; Spirit Day Activities; Computer lab; Outdoor science lab; Publishing Center; Doughnuts for Dad; Muffins for Mom; PTA Carnival; Invention Convention.
Note. Achievement and spending data are based on state report cards, community data are based on the national census and the property values are based on the sample from county auditor records.

Figure 12: Darby Woods School Profile by Achievement, Community Context, Property Value and Spending by Category

**Darby Woods Elementary**

- School Built: 1995
- Enrollment: 784
- Staff: 35 teachers; 18 staff
- Per Pupil Spending: $4,954

- Programs: Literacy Collaborative Framework; OSU partnership; After school intervention program; Child care; Early Reading Intervention; ESL; DARE; Team teaching; Computer Lab; Parent and community volunteers; Business partnership with Kinko’s.
Note. Achievement and spending data are based on state report cards, community data are based on the national census and the property values are based on the sample from county auditor records.

Figure 13: Darbydale School Profile by Achievement, Community Context, Property Value and Spending by Category

**Darbydale Elementary**

- School Built: 1958
- Enrollment: 327
- Staff: 12 teachers; 8 staff
- Per Pupil Spending: $6,190
- Programs: CCC computer program; Art Reflections program; Early Reading Intervention; Reading Recovery; Monthly newsletter; Math Matters; Doughnuts with Dad; Muffins with Mom; Career Day speakers; Ohio Reads tutors; Classroom volunteers.
Note. Achievement and spending data are based on state report cards, community data are based on the national census and the property values are based on the sample from county auditor records.

Figure 14: East Franklin School Profile by Achievement, Community Context, Property Value and Spending by Category

East Franklin Elementary

- School Built: 1955
- Enrollment: 348
- Staff: 17 teachers; 12 staff
- Per Pupil Spending: $5,930
- Programs: Student art gallery; Emotional Disturbance Class; Wee Deliver; Reading Recovery; Title I; After School Mentoring; Literacy Collaborative; Cultural Diversity programs; Career Day; Monthly newsletters; Business partnerships.
Note. Achievement and spending data are based on state report cards, community data are based on the national census and the property values are based on the sample from county auditor records.

Figure 15: Finland School Profile by Achievement, Community Context, Property Value and Spending by Category

Finland Elementary

- School Built: 1958
- Enrollment: 445
- Staff: 22 teachers; 10 staff
- Per Pupil Spending: $5,586
- Programs: CCC computer program; Literacy Initiative Grant; Title I; DARE; Monthly newsletter; Peer mediation; RIF grant; Reading Recovery; Stop and Think social skills program; Volunteer program; PTA Carnival; After-school tutoring.
Harrisburg - Achievement Indicators

Harrisburg - Community Indicators

Harrisburg - Property Value

Harrisburg - Spending by Category

Note. Achievement and spending data are based on state report cards, community data are based on the national census and the property values are based on the sample from county auditor records.

Figure 16: Harrisburg School Profile by Achievement, Community Context, Property Value and Spending by Category

Harrisburg Elementary

- School Built: 1960
- Enrollment: 165
- Staff: 7 teachers; 9 staff
- Per Pupil Spending: $6,555
- Programs: CCC computer program; Village readers; Math club; Family reading nights; Parent education workshops; Ohio Reads; Book fairs; Math-a-Thon; Reading challenge; Doughnuts with Dad; Muffins with Mom; Science extravaganza night.
Highland Park - Achievement Indicators

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Highland Park - Property Value

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Highland Park - Spending by Category

- Pupil Support: 8%
- Staff Support: 5%
- Administration: 7%
- Building Operations: 21%
- Instruction: 59%

Note. Achievement and spending data are based on state report cards, community data are based on the national census and the property values are based on the sample from county auditor records.

Figure 17: Highland Park School Profile by Achievement, Community Context, Property Value and Spending by Category

Highland Park Elementary

- School Built: 1969
- Enrollment: 432
- Staff: 25 teachers; 9 staff
- Per Pupil Spending: $5,835
- Programs: Professional development program with OSU; Venture Capital Grant School; Conflict management; Integrated learning; Multi-age classes; DARE; student council; CCC computer program; Open space architecture; Portfolio assessment.
Note. Achievement and spending data are based on state report cards, community data are based on the national census and the property values are based on the sample from county auditor records.

Figure 18: Harmon School Profile by Achievement, Community Context, Property Value and Spending by Category

**James Harmon Elementary**

- School Built: 1950
- Enrollment: 640
- Staff: 30 teachers; 14 staff
- Per Pupil Spending: $5,136
- Programs: Staff training in authentic assessment; Literacy Collaboration; Title I; Accelerated Reader Program; REA grant; Publishing Center; Tech grant; Ohio Reads Volunteer program; Reading Recovery; Literacy Blocks; CCC computer program.
Note. Achievement and spending data are based on state report cards, community data are based on the national census and the property values are based on the sample from county auditor records.

Figure 19: Monterey School Profile by Achievement, Community Context, Property Value and Spending by Category

**Monterey Elementary**

- School Built: 1963
- Enrollment: 501
- Staff: 25 teachers; 11 staff
- Per Pupil Spending: $5,496
- Programs: CCC computer program; DARE; Newsletter; Read at Home; Career Education; Book Buddies; Wee Deliver; Doughnuts with Dad; Muffins with Mom; Scholastic Readers; Parent Volunteer program; Community partnerships.
North Franklin - Achievement Indicators

North Franklin - Community Indicators

North Franklin - Property Value

North Franklin - Spending by Category

Note. Achievement and spending data are based on state report cards, community data are based on the national census and the property values are based on the sample from county auditor records.

Figure 20: North Franklin School Profile by Achievement, Community Context, Property Value and Spending by Category

North Franklin Elementary

- School Built: 1920
- Enrollment: 333
- Staff: 20 teachers; 12 staff
- Per Pupil Spending: $6,374
- Programs: Literacy Collaborative; CSRD; CCC computer program; Title I; Social skills program; Reading Recovery; ESL; COSI on wheels; Reading Olympics; Math and Literacy Homework Nights; Parent visitations; Business partnerships.
Note. Achievement and spending data are based on state report cards, community data are based on the national census and the property values are based on the sample from county auditor records.

Figure 21: Prairie Lincoln School Profile by Achievement, Community Context, Property Value and Spending by Category

**Prairie Lincoln Elementary**

- School Built: 1957
- Enrollment: 600
- Staff: 33 teachers; 15 staff
- Per Pupil Spending: $5,466
- Programs: CCC computer programs; Class Size Reduction Grant; After school tutoring; Social Skills program; Title I; Ohio Reads; Monthly Newsletters; YMCA latchkey program; Book-It; Parent volunteers; Publishing program; Child care; Student council.
Note. Achievement and spending data are based on state report cards, community data are based on the national census and the property values are based on the sample from county auditor records.

Figure 22: Prairie Norton School Profile by Achievement, Community Context, Property Value and Spending by Category

Prairie Norton Elementary

- School Built: 1951
- Enrollment: 696
- Staff: 30 teachers; 17 staff
- Per Pupil Spending: $5,373

- Programs: CCC and SchoolNet computers; Title I; Newsletters; Parent workshops; Grandparent volunteers; Early Success Programs; CARE team; Math Matters club; COSI on wheels; School to Work; ESL; WEB program; Business partnerships; Operation feed.
Note. Achievement and spending data are based on state report cards, community data are based on the national census and the property values are based on the sample from county auditor records.

Figure 23: Richard Ave School Profile by Achievement, Community Context, Property Value and Spending by Category

Richard Avenue Elementary

- School Built: 1958
- Enrollment: 563
- Staff: 25 teachers; 13 staff
- Per Pupil Spending: $5,268

- Programs: Book Buddies; Cambodian Family Night; CCC computer lab; Art show; Publishing center; DARE; Career program; STAR students; Book-it; Parent volunteers; Business partners; Grandparents "I Remember When" program; Parent newsletter.
JC Sommer - Achievement Indicators

JC Sommer - Community Indicators

JC Sommer - Property Value

JC Sommer - Spending by Category

Note. Achievement and spending data are based on state report cards, community data are based on the national census and the property values are based on the sample from county auditor records.

Figure 24: JC Sommer School Profile by Achievement, Community Context, Property Value and Spending by Category

JC Sommer Elementary

- School Built: 1957
- Enrollment: 557
- Staff: 26 teachers; 14 staff
- Per Pupil Spending: $5,623
- Programs: CCC computers; DARE; Walk-A-Thons for Food Pantry; Early Reading Intervention; Reading Recovery; Student Council; Social Skills program; Career Week; Parent Newsletters; Business partnerships.
Note. Achievement and spending data are based on state report cards, community data are based on the national census and the property values are based on the sample from county auditor records.

Figure 25: Stiles School Profile by Achievement, Community Context, Property Value and Spending by Category

Stiles Elementary

- School Built: 1963
- Enrollment: 643
- Staff: 22 teachers; 12 staff
- Per Pupil Spending: $4,985
- Programs: Educational Success Program; CCC computer labs; Wetlands project; Business partnership with Crowe Chizek; Title I; Publishing center; Library helpers; Newsletters; Math Science Network Partnership Stiles Family Center.
Note. Achievement and spending data are based on state report cards, community data are based on the national census and the property values are based on the sample from county auditor records.

Figure 26: West Franklin School Profile by Achievement, Community Context, Property Value and Spending by Category

West Franklin Elementary

- School Built: 1954
- Enrollment: 661
- Staff: 29 teachers; 15 staff
- Per Pupil Spending: $5,220
- Programs: Urban Demonstration School; Reading Recovery; Accelerate Reader program; DARE; CCC computers; Early Reading Intervention; Parent volunteer program; Parent newsletter; Carnival of Creativity; Cooperative learning training.
APPENDIX D

STRUCTURAL EQUATION MODELS
Figure 27: Regression model showing community context predicting mobility with unstandardized estimates
Figure 28: Regression model showing community context predicting OPT reading with unstandardized estimates
Figure 29: Regression model showing community context predicting OPT math with unstandardized estimates
Figure 30: Regression model showing community context predicting OPT all with unstandardized estimates
Figure 31: Regression model showing community context predicting student attendance with unstandardized estimates.
Figure 32: Regression model showing community context predicting promotion rates with unstandardized estimates
Figure 33: Regression model showing school spending predicting student mobility with unstandardized estimates
BIBLIOGRAPHY


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